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9 IN THE UNITED STATES DISTRICT COURT
10 FOR THE SOUTHERN DISTRICT OF CALIFORNIA
11 CIVIL DIVISION
12

13 **VIRGINIA DUNCAN, RICHARD**
14 **LEWIS, PATRICK LOVETTE,**
15 **DAVID MARGUGLIO,**
16 **CHRISTOPHER WADDELL, and**
CALIFORNIA RIFLE & PISTOL
ASSOCIATION, INC., a California
corporation,

17 Plaintiffs,

18 v.
19

20 **ROB BONTA, in his official capacity**
21 **as Attorney General of the State of**
California; and DOES 1-10,

22 Defendants.
23
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25
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27
28

Case No. 3:17-cv-1017-BEN-JLB

**COMPENDIUM OF WORKS
CITED IN SUPPLEMENTAL
DECLARATION OF DENNIS
BARON**

Courtroom: 5A
Judge: Hon. Roger T. Benitez
Action Filed: May 17, 2017

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Subject(s):

- Transportation

Jurisdiction(s):

- Maryland

Year(s):

1776

[1776 Md. Laws 146.Resolved, that no muskets or rifles, except by the owner thereof on his removal to reside out of this province, or any gun barrels, gun locks, or bayonets, be carried out of his province, without the leave of the council of safety for the time being.]



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1919 Me. Laws 193, Possession of loaded shotgun or rifle in motor vehicle on highways, fields or forests prohibited; penalty.

Subject(s):

- Sensitive Places and Times

Jurisdiction(s):

- Maine

Year(s):

- 1919

No person shall have a rifle or shotgun, either loaded or with a cartridge in the magazine thereof, in or on any motor vehicle while the same is upon any highway or in the fields or forests. Whoever violates any provision of this section shall be subject to a penalty of not more than one hundred dollars and costs for each offense or imprisonment for not more than sixty days or both said fine and imprisonment in the discretion of the court.


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1923 Vt. Acts and Resolves 127, An Act to Prohibit the Use of Machine Guns and Automatic Rifles in Hunting, § 1.

Subject(s):

- Hunting

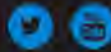
Jurisdiction(s):

- Vermont

Year(s):

1923

A person engaged in hunting for game who uses, carries, or has in his possession a machine gun of any kind or description, or an automatic rifle of military type with a magazine capacity of over six cartridges, shall be fined not more than five hundred dollars nor less than fifty dollars. The presence of such a firearm in a hunting camp shall be presumptive evidence that the possessor of such a firearm has violated the provisions of this section.

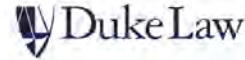

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1927 (January Session) R.I. Pub. Laws 256, An Act to Regulate the Possession of Firearms: §§ 1, 4, 5 and 6

Subject(s):

- [Carrying Weapons](#)
- [Dangerous or Unusual Weapons](#)

Jurisdiction(s):

- [Rhode Island](#)

Year(s):
[1927](#)

§ 1. When used in this act the following words and phrases shall be construed as follows: "Pistol" shall include any pistol or revolver, and any shot gun, rifle or similar weapon with overall less than twenty-six inches, but shall not include any pistol without a magazine or any pistol or revolver designed for the use of blank cartridges only. "machine gun" shall include any weapon which shoots automatically and any weapon which shoots more than twelve shots semi-automatically without reloading. "Firearm" shall include any machine gun or pistol. . . "Crime of violence" shall mean and include any of the following crimes or any attempt to commit any of the same, viz.: murder, manslaughter, rape, mayhem, assault or battery involving grave bodily injury, robbery, burglary, and breaking and entering. "Sell" shall include let or hire, give, lend and transfer, and the word "purchase" shall include hire, accept and borrow, and the expression "purchasing" shall be construed accordingly. . . § 4. No person shall, without a license therefor, issued as provided in section six hereof, carry a pistol in any vehicle or concealed on or about his person, except in his dwelling house or place of business or on land possessed by him, and no person shall manufacture, sell, purchase or possess a machine gun except as otherwise provided in this act. § 5. The provisions of section four shall not apply to sheriffs, deputy sheriffs, the superintendent and members of the state police, prison or jail wardens or their deputies, members of the city or town police force or other duly appointed law enforcement officers, nor to members of the army, navy or marine corps of the United States, or of the national guard, when on duty, or of organizations by law authorized to purchase or receive firearms from the United States or this state, nor to officers or employees of the United States authorized by law to carry a concealed firearm, nor to duly authorized military organizations when on duty, nor to members thereof when at or going to or from their customary places of assembly, nor to the regular and ordinary transportation of pistols as merchandise, nor to any person while carrying a pistol unloaded in a wrapper from the place of purchase to his home or place of business, or to a place of repair or back to his home or place of business, or in moving goods from one place or abode or business to another. § 6. The licensing authorities of any city or town shall upon application of any person having a bona fide residence or place of business within such city or town, or of any person having a bona fide residence or place of business within the United States and a license to carry a pistol concealed upon his person issued by the authorities of any other state or subdivision of the United States, issue a license to such person to carry concealed upon his person a pistol within this state for not more than one year from date of issue, if it appears the applicant has good reason to fear an injury to his person or property or has any other proper reason for carrying a pistol, and that he is a suitable person to be so licensed. The license shall be in triplicate, in form to be prescribed by the attorney-general and shall bear the fingerprint, name, address, description and signature of the licensee and the reason given for desiring a license. The original thereof shall be delivered to the licensee, the duplicate shall within seven days be sent to the attorney-general and the triplicate shall be preserved for six years by the licensing authorities issuing said license. A fee of two dollars may be charged and shall be paid for each license, to the officer issuing the same. Before issuing any such permit the applicant for the same shall be required to give bond to the city or town treasurer in the penal sum of three hundred dollars, with surety satisfactory to the authority issuing such permit, to keep the peace and be of good behavior. Every such permit shall be valid for one year from the date when issued unless sooner revoked. The fee charged for the issuing of such license or permit shall be applied in accordance with the provisions of section thirty-three of chapter 401 of the general laws.


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1927 Mass. Acts 413, An Act Relative to Machine Guns and Other Firearms, ch. 326, §§ 1-2 (amending §§ 121, 123)

Subject(s):

- Dangerous or Unusual Weapons (<https://firearmslaw.duke.edu/subjects/dangerous-or-unusual-weapons/>)

Jurisdiction(s):



- Massachusetts (<https://firearmslaw.duke.edu/jurisdictions/massachusetts/>)

Year(s):

1927

In sections one hundred and twenty-two to one hundred and twenty-nine, inclusive, “firearms” includes a pistol, revolver or other weapon of any description, loaded or unloaded, from which a shot or bullet can be discharged and of which the length of barrel, not including any revolving, detachable or magazine breach, does not exceed twelve inches, and a machine gun, irrespective of the length of the barrel. Any gun of small arm calibre designed for rapid fire and operated by a mechanism, or any gun which operates automatically after the first shot has been fired, either by gas action or recoil action, shall be deemed to be a machine gun for the purposes of said sections, and of sections one hundred and thirty-one and one hundred and thirty one B. . . § 2. . . Eighth, That no pistol or revolver shall be sold, rented or leased to a person who has not a permit, then in force, to purchase,

rent or lease the same issued under section one hundred and thirty-one A, and that no machine gun shall be sold, rented or leased to a person who has not a license to possess the same issued under section one hundred and thirty-one. . .

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1933 Tex. Gen. Laws 219-20, 1st Called Sess., An Act Defining “Machine Gun” and “Person”; Making It an Offense to Possess or Use Machine Guns. . . , ch. 82, §§ 1-4, § 6

Subject(s):

- [Dangerous or Unusual Weapons](#)

Jurisdiction(s):

- [Texas](#)

Year(s):

1933

§ 1. Definition. “Machine gun” applies to and includes a weapon of any description by whatever name known, loaded or unloaded, from which more than five (5) shots or bullets may be automatically discharged from a magazine by a single functioning of the firing device. “Person” applies to and includes firm, partnership, association or corporation. § 2. Whosoever shall possess or use a machine gun, as defined in Section 1, shall be guilty of a felony and upon conviction thereof, shall be confined in the State Penitentiary, for not less than two nor more than ten (10) years. § 3. Whoever shall sell, lease, give, barter, exchange, or trade, or cause to be sold, leased, given, bartered, exchanged, or traded, a machine gun as hereinabove defined to any person shall be guilty of a felony and upon conviction thereof, shall be confined to the State Penitentiary, for not less than two (2) nor more than (10) years. § 4. (excludes military, police, unusable keepsakes, prison officers) § 6. The fact that there are many gangsters purchasing machine guns in Texas, causing a menace to the citizenry of Texas, creates an emergency and imperative public necessity that the Constitutional Rule requiring bills to be read on three several days be suspended, and said Rule is hereby suspended, and this Act shall take effect and be in force from and after its passage, and it is so enacted.


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LAW REVIEWS AND JOURNALS

THE YALE LAW JOURNAL

THOMAS R. LEE & STEPHEN C. MOURITSEN

Judging Ordinary Meaning

ABSTRACT. Judges generally begin their interpretive task by looking for the ordinary meaning of the language of the law. And they often end there – out of respect for the notice function of the law or deference to the presumed intent of the lawmaker.

Most everyone agrees on the primacy of the ordinary meaning rule. Yet scholars roundly bemoan the indeterminacy of the communicative content of the language of the law. And they pivot quickly to other grounds for interpretation.

We agree with the diagnosis of important scholars in this field – from Richard Fallon and Cass Sunstein to Will Baude and Stephen Sachs – but reject their proposed cures. Instead of setting aside the threshold question of ordinary meaning, we seek to take it seriously. We do so through theories and methods developed in the scholarly field designed for the study of language: linguistics.

We identify theoretical and operational deficiencies in our law’s attempts to credit the ordinary meaning of the law and present linguistic theories and tools to assess it more reliably. Our framework examines iconic problems of ordinary meaning – from the famous “no vehicles in the park” hypothetical to two Supreme Court cases (*United States v. Muscarello* and *Taniguchi v. Kan Pacific Saipan, Ltd.*) and a Seventh Circuit opinion by Judge Richard Posner (in *United States v. Costello*). We show that the law’s conception of ordinary meaning implicates empirical questions about language usage. And we present linguistic tools from a field known as corpus linguistics that can help to answer these empirical questions.

When we speak of ordinary meaning we are asking an empirical question – about the sense of a word or phrase that is most likely implicated in a given linguistic context. Linguists have developed computer-aided means of answering such questions. We propose to import those methods into the law’s methodology of statutory interpretation. And we consider and respond to criticisms of their use by lawyers and judges.



AUTHORS. Thomas R. Lee is Associate Chief Justice of the Utah Supreme Court and a Distinguished Lecturer of Law at Brigham Young University. Stephen C. Mouritsen is an Associate at the University of Chicago Law School and Adjunct Professor of Law and Corpus Linguistics at Brigham Young University. The authors express thanks to those who commented on earlier drafts or offered insights in response to presentations in various conferences, symposia, and talks, including Randy Barnett, Will Baude, Ryan Doerfler, Frank Easterbrook, Ed Finegan, Jonah Gelbach, Stefan Th. Gries, Dan Klerman, Kurt Lash, John Manning, John McGinnis, Noah Messing, Greg Murphy, Gordon Smith, Larry Solan, Larry Solum, Eugene Volokh, and John Yoo. Thanks also to Brigham Young University and to the Georgetown University Law Center for cosponsoring a conference on law and corpus linguistics, at which the ideas in this piece were initially vetted, and to the Olin-Searle-Smith Fellows in Law program for making possible Mr. Mouritsen's association with the University of Chicago Law School. Special thanks to James C. Phillips for his editorial and research assistance at every stage of this project. Thanks also to John Cutler, Chauntel Lopez, Daniel Ortner, Bradley Pew, and Aaron Worthen for their research assistance.



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INTRODUCTION

A key component of the meaning we ascribe to law concerns its “communicative content.” Professor Lawrence Solum has spoken of such content as consisting of the “linguistic meaning” of the words of a statute or regulation.¹ We can also think of it as encompassing the “intended” meaning of the lawmaker, to use the words of Professor Richard Fallon,² or the “contextual meaning” understood by the public, as framed by Professors Will Baude and Stephen Sachs.³ This is the threshold question for the “standard picture” of legal interpretation, which starts with a search for the “ordinary communicative content” of the words of the law.⁴ That search is the focus of this article. We highlight deficiencies in the law’s search for ordinary meaning and introduce a tool imported from linguistics—corpus linguistic analysis—that can help overcome some of those deficiencies.

Most everyone—not just textualists anymore—agrees that “[t]here are excellent reasons for the primacy of the ordinary meaning rule.”⁵ Most of the reasons stem from the purported determinacy of the ordinary meaning inquiry. We

-
1. Lawrence B. Solum, *Communicative Content and Legal Content*, 89 NOTRE DAME L. REV. 479, 480 (2013) (distinguishing the “communicative content” of a legal text from its “legal content,” or in other words “the legal norms the text produces”).
 2. Richard H. Fallon, Jr., *The Meaning of Legal “Meaning” and Its Implications for Theories of Legal Interpretation*, 82 U. CHI. L. REV. 1235, 1249–50 (2015) (speaking of these and other conceptions of the communicative or “conversational” content of the words of the law).
 3. William Baude & Stephen E. Sachs, *The Law of Interpretation*, 130 HARV. L. REV. 1079, 1106 (2017).
 4. See *id.* at 1086 (speaking of the “Standard Picture,” or the “view that we can explain our legal norms by pointing to the ordinary communicative content of our legal texts,” in other words “an instrument’s meaning as a matter of language”); see also Mark Greenberg, *The Standard Picture and Its Discontents*, in 1 OXFORD STUDIES IN PHILOSOPHY OF LAW 39, 48 (Leslie Green & Brian Leiter eds., 2011) (describing the “Standard Picture”). Here and elsewhere we sometimes conflate “communicative content” and “ordinary meaning.” Yet we acknowledge that some legal terms are used in an *extraordinary* sense—as with legal terms of art. And we recognize that legal language may be viewed as a distinct dialect, and thus that “communicative content” may sometimes be understood to encompass “extraordinary” (specialized legal) meaning. See John O. McGinnis & Michael B. Rappaport, *The Constitution and the Language of the Law* 4–5 (Univ. of San Diego Sch. of Law Legal Studies Research Paper Series, No. 17–262, 2017), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2928936 [<http://perma.cc/2V4V-C69M>] (asserting that the Constitution is written in the “language of the law,” not ordinary English, and thus that its interpretation should account for the canons and legal conventions that would have been accepted by the legal community at the time of the founding).
 5. WILLIAM N. ESKRIDGE, JR., *INTERPRETING LAW: A PRIMER ON HOW TO READ STATUTES AND THE CONSTITUTION* 35 (2016).

JUDGING ORDINARY MEANING

speak of a search for meaning “not in the subjective, multiple mind of Congress but in the understanding of the objectively reasonable person.”⁶ And we generally conclude that the search for such meaning “matches up well with our understanding of what the *rule of law* entails”⁷: it assures notice to the public, protects reliance interests, assures consistency of application, and respects the will of the legislative body.⁸ So although we recognize that “ordinary meaning does not always yield predictable answers to statutory issues,” we tend to accept that it “yield[s] greater predictability than any other *single* methodology.”⁹

This premise has taken hold in our courts: “[W]e’re all textualists now.”¹⁰ That holds true at least in the sense that most judges begin the interpretive inquiry with the words of a statute – and even end there if they find the meaning of those words to be “plain.”¹¹

Yet the academy has been less sure of the premises of this trend. Scholars like Fallon and Cass Sunstein generally have endorsed the value of determinacy but roundly doubted the judge’s ability to find it in the mere “communicative content” or “ordinary meaning” of statutory text.¹² There are two dimensions to this

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6. Frank H. Easterbrook, *The Role of Original Intent in Statutory Construction*, 11 HARV. J.L. & PUB. POL’Y 59, 65 (1988).
 7. ESKRIDGE, *supra* note 5, at 35.
 8. *See id.* (“A polity governed by the rule of law aspires to have legal directives that are known to the citizenry, that are predictable in their application, and that officials can neutrally and consistently apply based upon objective criteria.”).
 9. *Id.* at 36.
 10. Elena Kagan, *The Scalia Lecture: A Dialogue with Justice Kagan on the Reading of Statutes*, HARV. L. TODAY (Nov. 17, 2015), <http://today.law.harvard.edu/in-scalia-lecture-kagan-discusses-statutory-interpretation> [<http://perma.cc/3BCF-FEFR>].
 11. *See* JOHN F. MANNING & MATTHEW C. STEPHENSON, LEGISLATION AND REGULATION: CASES AND MATERIALS 60 (2d ed. 2013) (“Over the last quarter-century, textualism has had an extraordinary influence on how federal courts approach questions of statutory interpretation. When the Court finds the text to be clear in context, it now routinely enforces the statute as written.”); Abbe R. Gluck, *The States as Laboratories of Statutory Interpretation: Methodological Consensus and the New Modified Textualism*, 119 YALE L.J. 1750, 1756–58 (2010) (concluding, based on a comprehensive study of state court approaches to statutory interpretation, that state courts are engaged in an “effort[] to increase predictability in statutory interpretation,” and that they give primacy to text and decline to look to external sources of meaning if they find the text “plain”).
 12. *See* Fallon, *supra* note 2, at 1255–63, 1272 (exploring a range of possible meanings of communicative or “conversational” meaning, including “semantic” or “literal” meaning, “contextual” meaning embraced by “shared presuppositions of speakers and listeners,” “intended meaning,” and others, and asserting that there accordingly is “no single, linguistic fact of the matter concerning what statutory or constitutional provisions mean”); Cass R. Sunstein, *There Is*

skepticism — questions about the *meaning* of the law’s search for “ordinary meaning” and concerns about a judge’s ability to *measure* or assess it with any degree of determinacy.¹³

As Baude and Sachs say, “we can’t treat the meaning of [a given text’s] language as the only source of its legal effect.”¹⁴ Our law of interpretation may have good reasons to depart from the “standard picture” — to substitute “fake” answers to linguistic questions for real ones.¹⁵ It is doubtless true, moreover, that some of our rules of interpretation dictate a “process” that “often looks nothing like a straight-forward search for linguistic meaning.”¹⁶

We share these commentators’ concerns but offer a different solution. In this Article, we show that the law has done a poor job conceptualizing the notion of ordinary meaning, and we ultimately agree that “[u]ncertainty and division” in assessing such meaning “seem inevitable” under the methods currently resorted to by judges.¹⁷ But we do not see these problems as an invitation to *abandon* the search for the ordinary communicative content of the law in favor of case-by-case “interpretive eclecticism.”¹⁸ Nor do we find in the indeterminacy of the search for ordinary meaning a broad license for “normative judgments” about whatever “interpretation” “makes our constitutional system better rather than

Nothing that Interpretation Just Is, 30 CONST. COMMENT. 193, 194-95 (2015) (identifying possible notions of meaning, including authorial intention, public meaning, moral reading, and others).

13. See Fallon, *supra* note 2, at 1272 (noting that “there can be a multitude of linguistically pertinent facts, generating different senses of meaning, which in turn support a variety of claims”); *id.* at 1268-69 (asserting that “[u]ncertainty and division” in measuring ordinary meaning are “inevitable,” that evidence of “communicative or assertive content, understood as a matter of linguistic fact, is often sparse, minimal, or indeterminate as applied to particular cases,” and that we “cannot proceed by taking or imagining the outcome of an opinion poll” about ordinary meaning).
14. Baude & Sachs, *supra* note 3, at 1088; see also *id.* at 1096 (“We see this as one of the most important functions of a legal system: to replace real answers with fake ones. There may be real answers out there to lots of important normative and policy questions, such as how fast we should drive on the highway, what tax policy is best, and so on. But people persistently disagree on the real answers, and the legal system helpfully offers fake answers instead — answers that hopefully are somewhat close to the real ones, but on which society (mostly) agrees and which allow us (mostly) to get along.”).
15. *Id.* at 1082, 1096.
16. *Id.* at 1088.
17. Fallon, *supra* note 2, at 1268.
18. *Id.* at 1305, 1308 (describing “interpretive eclecticism” as involving the choice of the “best interpretive outcome as measured against the normative desiderata of substantive desirability, consistency with rule of law principles, and promotion of political democracy, all things considered”).

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worse.”¹⁹ This kind of “interpretation” overrides – rather than protects – the values served by the ordinary meaning rule. It undermines reliance and fair-notice interests and gives voice to the will of judges, not lawmakers.

We may eventually throw up our hands and conclude that some questions of ordinary meaning have no good answers. Or we may conclude that the law has good reason to substitute a nonlinguistic answer that vindicates policies more important than the ones advanced by the “standard picture.”²⁰ But we cannot skip or assume away the threshold question of ordinary meaning. While the search for ordinary meaning is hard, the premises of this inquiry are too deeply embedded in our law and too clearly rooted in important policy considerations to give up at the first sight of difficulty or indeterminacy, or to judge the enterprise on the fuzzy premises or mistaken methodologies of the past. So we take up the inquiry here.

Our thesis is that words have meaning, and that meaning can be theorized and measured using principles and methods devised in the field of linguistics. When we speak of *ordinary* meaning, we are asking an empirical question – about the sense of a word or phrase that is most likely implicated in a given linguistic context.²¹ Linguists have developed computer-aided means of answering such questions. We propose to import those methods into the modern theory and practice of interpretation, and we identify problems in the methods that the law has been using to address these issues.

Our proposed methodology is a set of tools utilized in a field called corpus linguistics. Corpus linguists study language through data derived from large bodies – *corpora* – of naturally occurring language. They look for patterns in meaning and usage in large databases of actual written language. And we think their methods may easily be adapted in a manner that will allow us to conceptualize and measure the “standard picture” in a much more careful way.²²

19. Sunstein, *supra* note 12, at 193-94.

20. In other words, maybe the “standard picture” doesn’t claim to be a picture of American law. Cf. Baude & Sachs, *supra* note 3, at 1089 (arguing that there may be “real trouble for the standard picture, at least if it claims to be a picture of American law”).

21. Judge Posner framed the ordinary meaning question in this (empirical) way in his opinion in *United States v. Costello*, 666 F.3d. 1040, 1044 (7th Cir. 2012). There he proposed to answer this question using the results of a Google search. We think Judge Posner’s instincts were right but his methods fell a bit short, as explained below. See discussion *infra* Section I.B.3.

22. Corpus linguistics is not the only linguistic discipline that relies on empirical observation and experimentation. Empirical observation is a vital component of a variety of linguistic disciplines, including sociolinguistics, historical linguistics, phonetics, discourse analysis, field linguistics, computational linguistics, cognitive linguistics, and psycholinguistics. As we will discuss below, this Article focuses on corpus linguistics, but we do not mean to suggest that other

In Part I, we begin by noting the circumstances in which the “standard picture” controls under statutory interpretation, highlighting exemplary cases where the ordinary communicative content of the words of a statute seems to dictate the court’s holding. Next, we identify shortcomings in the law’s attempt to give effect to that communicative content—shortcomings in both the theory of ordinary meaning and in attempts to operationalize (or measure) it. In Part II, after outlining these two sets of problems, we introduce theories and empirical methods from the field of corpus linguistics that may help us deliver on the promise of an objective inquiry into ordinary meaning.²³ In Part III, we apply these tools to our exemplary cases. We close, in Part IV, by responding to actual and anticipated criticisms of our approach and by highlighting unresolved issues that must be addressed going forward.

I. ORDINARY MEANING IN THE LAW OF INTERPRETATION

Everyone agrees that our sense of the ordinary communicative content of legal language is an important starting point for interpretation. All agree, moreover, that the law should credit that content *at least sometimes*. This holds even for those who doubt our ability to settle on a single notion of meaning or to assess it with any degree of consistency.²⁴

empirical linguistic disciplines could not be brought to bear on questions of ordinary meaning. We briefly discuss a few of these approaches below.

23. Some judges (present company included) are beginning to take note of the deficiencies we highlight here and to try to address them. In a few recent cases, judges have made a studied effort to define the inquiry into ordinary meaning more precisely. And, importantly, they have presented empirical analysis in support of their conclusions. *See, e.g.,* *People v. Harris*, 885 N.W.2d 832, 838–39 & n.29 (Mich. 2016) (citing a Utah Supreme Court opinion in support of the methodology of corpus linguistics and relying on corpus linguistic data to buttress the court’s interpretation of the term “information” in a Michigan statute forbidding the use of “information” provided by a law enforcement officer if compelled under threat of employment sanction); *id.* at 850–51 n.14 (Markman, J., concurring in part and dissenting in part) (citing another Utah Supreme Court opinion and relying on corpus linguistic data, but drawing a different inference from the data); *State v. Rasabout*, 2015 UT 72, ¶¶ 68–75, 356 P.3d 1258 (Lee, Associate C.J., concurring in part and concurring in the judgment) (advancing corpus linguistic data in support of his interpretation of the phrase “discharge[] a firearm” in a state statute); *State v. Canton*, 2013 UT 44, ¶ 27 & n.6, 308 P.3d 517 (presenting corpus linguistic data in support of the court’s construction of the phrase “out of the state” in a tolling provision for criminal statutes of limitations under Utah law); *J.M.W. v. T.I.Z. (In re Adoption of Baby E.Z.)*, 2011 UT 38, ¶ 89 & nn.23–24, 266 P.3d 702 (Lee, J., concurring in part and concurring in the judgment) (advocating the use of corpus linguistic data in support of his interpretation of “custody” proceeding under the federal Parental Kidnapping Protection Act, 28 U.S.C. § 1738A (2006)).

24. *See* Baude & Sachs, *supra* note 3, at 1089; Fallon, *supra* note 2, at 1239.

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Judges are generally even more sanguine about the matter. The case law in this field is marked by numerous references to the “standard picture.” Judges routinely advert to the idea of crediting the “ordinary meaning” of statutory text.²⁵ Where such meaning is viewed as “plain,” moreover, judges consistently declare the interpretive enterprise to be at an end.²⁶ The general rule is to credit the communicative content of statutory text where it is “plain,” and in that event, to close the door to the consideration of extratextual sources of meaning or intent.²⁷

A variation on the theme applies in the realm of substantive canons of construction or principles of deference. The rule of lenity, for example, says that genuine ambiguities in criminal laws are resolved in favor of the defendant;²⁸ the converse is the notion that “the rule of lenity has no application when the statute is clear.”²⁹ *Chevron* deference is similar: the courts defer to agencies only where the terms of the statute are ambiguous.³⁰

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25. See, e.g., *Clark v. Rameker*, 134 S. Ct. 2242, 2246 (2014) (“[W]e give the term its ordinary meaning.”); *Bond v. United States*, 134 S. Ct. 2077, 2091 (2014) (“In settling on a fair reading of a statute, it is not unusual to consider the ordinary meaning of a defined term”); *Mohamad v. Palestinian Auth.*, 566 U.S. 449, 454 (2012) (“Because the [Act] does not define the term ‘individual,’ we look first to the word’s ordinary meaning.”); *Mac’s Shell Serv., Inc. v. Shell Oil Prods. Co.*, 559 U.S. 175, 182 (2010) (“We . . . give [the relevant] terms their ordinary meanings.”).
 26. See William Baude & Ryan D. Doerfler, *The (Not So) Plain Meaning Rule*, 84 U. CHI. L. REV. 539, 539 (2017) (characterizing the “plain meaning rule” as a “compromise” in which “other information can’t be considered” if “the statute’s meaning is plain,” but in which other information “comes in” if “it isn’t plain”).
 27. See, e.g., KENT GREENAWALT, *LEGISLATION: STATUTORY INTERPRETATION: 20 QUESTIONS* 35 (1999) (“No one seriously doubts that interpretation of statutes turns largely on textual meaning.”); Gluck, *supra* note 11, at 1758 (stating that the “modified textualism” approach embraced in most state courts “ranks interpretive tools in a clear order—textual analysis, then legislative history, then default judicial presumptions—and it includes legislative history in the hierarchy”).
 28. How much ambiguity, of course, is a difficult question. See *Abramski v. United States*, 134 S. Ct. 2259, 2272 n.10 (2014) (asserting that the rule applies only if “there remains a grievous ambiguity or uncertainty in the statute” that cannot be resolved—if the Court is left to “simply guess as to what Congress intended” (quoting *Maracich v. Spears*, 133 S. Ct. 2191, 2209 (2013))); *id.* at 2281 (Scalia, J., dissenting) (suggesting that the rule should apply if “after all legitimate tools of interpretation” have been employed “a reasonable doubt persists” (quoting *Moskal v. United States*, 498 U.S. 103, 108 (1990))); ANTONIN SCALIA & BRYAN A. GARNER, *READING LAW: THE INTERPRETATION OF LEGAL TEXTS* 299 (2012) (decrying the “multiplicity of expressed standards” for invoking the rule of lenity, “leav[ing] open the crucial question . . . of how much ambiguousness constitutes an ambiguity” (quoting *United States v. Hansen*, 772 F.2d 940, 948 (D.C. Cir. 1985))).
 29. See SCALIA & GARNER, *supra* note 28, at 301.
 30. See *Michigan v. EPA*, 135 S. Ct. 2699, 2707 (2015).

However, commentators are undoubtedly right to question the determinacy of the inquiry into ordinary meaning. The problem, as noted, is twofold – going both to the law’s conception of ordinary meaning and to our judges’ attempts to measure it. First is a problem of theory: ironically, we have no ordinary meaning of “ordinary meaning.”³¹ The same goes for “plain meaning.” “Courts and scholars sometimes use the phrase ‘plain meaning’ to denote something like *ordinary* meaning,” or in other words, “the meaning one would normally attribute to [the] words” of a statute “given limited information about their context.”³² Other times “plain meaning” is used to denote *obvious* meaning – i.e., “the meaning that is clear.”³³ This is the sense at work in the “plain meaning rule.”³⁴

Second is a problem of operationalization or measurement. The concern here is that even if we could settle on a theory of ordinary or plain meaning, we are unsure how to assess it. “Uncertainty and division seem inevitable.”³⁵ That is true because the question of intended or understood meaning is an empirical one, and judges cannot “proceed by taking or imagining the outcome of an opinion poll” as to intended or perceived meaning.³⁶ The problem is underscored by the tools (mis)used by judges to try to answer this empirical question (resort to dictionary definitions or even a word’s etymology, for example, as explored below).

The theoretical and measurement problems plaguing the ordinary meaning inquiry are even bigger than most have acknowledged. The depth of the problem is best illustrated by reference to concrete examples in the case law. Throughout this article we consider the following:

- Is a person guilty of *carrying a firearm* (under a federal sentencing enhancement provision) in connection with a drug crime if he merely

31. WILLIAM N. ESKRIDGE, JR. ET AL., *CASES AND MATERIALS ON LEGISLATION: STATUTES AND THE CREATION OF PUBLIC POLICY* 792-93 (4th ed. 2007) (noting the irony that “‘plain meaning’ is . . . a deeply ambiguous term” and highlighting differences in the ways courts use the terms “plain meaning,” often to refer to a sense that is “quite clear in a literal sense,” and “ordinary meaning,” which may mean “the best (most coherent) textual understanding that emerges after close textual analysis”); Richard A. Posner, *Statutory Interpretation – in the Classroom and in the Courtroom*, 50 U. CHI. L. REV. 800, 808 (1983) (observing, as to the “start with the words’ canon,” that “[i]t is ironic that a principle designed to clarify should be so ambiguous”).

32. Baude & Doerfler, *supra* note 26, at 545.

33. *Id.*

34. *Id.*

35. Fallon, *supra* note 2, at 1268.

36. *Id.*

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transports it to a drug deal in a locked glove compartment of the car he is driving? This was the question presented in *United States v. Muscarello*.³⁷ The *Muscarello* Court was sharply divided. All nine Justices agreed that the question came down to the “ordinary meaning” of the notion of *carrying a firearm*. Yet they divided 5-4 on whether the ordinary sense of that phrase encompassed the conveyance of a gun in a glove compartment. Each side proffered varying senses of the meaning of “ordinary meaning” and claimed support for their view in sources ill-suited to providing a reliable answer to the empirical question presented—looking to dictionaries, to isolated examples of language from literature, and even to the etymology of the verb *carry*.

- Is a litigation expert who is paid to translate written documents from one language to another an *interpreter* under a statute authorizing an award of costs for prevailing parties who utilize such an expert in litigation? This question arose in *Taniguchi v. Kan Pacific Saipan, Ltd.*³⁸ The Court agreed that the case came down to a matter of ordinary meaning of the term *interpreter*. Yet again the Court was divided, this time 6-3. In *Taniguchi*, the majority and dissent agreed that the more common sense of *interpreter* referred to a person engaged in simultaneous oral translation. But again, they resorted only to dictionaries and similar sources for their conclusions. They also disagreed about what the search for *ordinary meaning* ultimately entails, with the majority insisting that only the more common sense of the term is covered and the dissent asserting that a permissible sense should also count.
- Is a woman who allows her boyfriend—an undocumented immigrant—to sleep at her apartment guilty of *harboring an alien* under a federal statute criminalizing that act? This question arose in *United States v. Costello*.³⁹ Like *Muscarello* and *Taniguchi*, *Costello* involved a statutory term broad enough to encompass both parties’ positions. Sometimes *harbor* refers to the mere act of providing shelter, but it may also indicate the sort of sheltering that is aimed at concealment. How is the court to decide which sense is the ordinary one? Writing for the majority, Judge Posner recognized the deficiencies of standard methods—principally, dictionaries—in answering that question. So he proceeded to a search

37. 524 U.S. 125 (1998).

38. 566 U.S. 560 (2012).

39. 666 F.3d 1040 (7th Cir. 2012).

for data, and he did so using the tool that is perhaps most familiar to us today. He performed a Google search.

Is this the best we can do? Below, we use these cases to highlight the theoretical and operational deficiencies in the law's search for ordinary meaning.

A. Theoretical Shortcomings

The case law embraces a startlingly broad range of senses of ordinary meaning. When judges speak of ordinary meaning, they often seem to be speaking to a question of relative frequency – as in a point on the following continuum:

POSSIBLE → COMMON → MOST FREQUENT → EXCLUSIVE

At the left end of the continuum is the idea of a possible or linguistically permissible meaning – a sense of a word or phrase that is attested in a known body of written or spoken language. A meaning is a possible one if we can say that “you *can* use that word in that way” (as attested by evidence that other people have used the word in that way in the past). Yet a possible meaning may be an uncommon or unnatural sense of a given term. In that case, we might note that a given sense of a term is not common in a given linguistic setting, even if it is possible to speak that way. And even a common sense of a term might not be the most frequent use of it in a certain context.

The notion of plain meaning adds the final point to the continuum. When courts speak of plain meaning (as a concept distinct from ordinary meaning) they generally mean to “denote *obvious* meaning” or “meaning that is clear.”⁴⁰ A plain – obvious or clear – meaning would be more than most frequent. It would be nearly exclusive.

The four points on the continuum can be illustrated by a range of senses of the term *vehicle* in the hypothetical “no vehicles in the park” provision.⁴¹ One attested sense of *vehicle* is the notion of a “carrier” or “agent of transmission.”⁴² That sense could sweep broadly. If we are thinking of the *carrier* sense of *vehicle*, the “no vehicles in the park” prohibition could possibly be viewed as covering a

40. Baude & Doerfler, *supra* note 26, at 545.

41. H.L.A. Hart, *Positivism and the Separation of Law and Morals*, 71 HARV. L. REV. 593, 606-15 (1958). In this Section, we make some suppositions on the points on the continuum – on which senses of *vehicle* are possible, common, and most frequent. We do so to illustrate the range of senses of ordinary meaning. We will move from supposition to empirical analysis of these questions later. See *infra* Section III.C.2.a.

42. WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 2538 (1961).

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dog or cat, which could be referred to as a *vehicle* (as a carrier of infection). Yet that sense of *vehicle* would not be viewed as a natural or common one in this linguistic setting. If the “no vehicles” ordinance is aimed at only common senses of *vehicle*, we likely would not deem it to prohibit pets. Alternatively, we could say that the meaning of *vehicle* in this setting is plain or clear, meaning that the exclusive sense of *vehicle* is one that eliminates the possibility of its extension to pets.

Is a bicycle a *vehicle* covered by the ordinance? Perhaps so – as encompassed by the sense of *vehicle* as “a means of carrying or transporting something: conveyance.”⁴³ This sense of *vehicle* could easily be viewed as a common sense of vehicle – certainly more common than the sense of an infection *carrier* noted above. But conveyance may not be the *most* common – the statistically most frequent – sense of vehicle in this linguistic setting (an outdoor public park). If we are looking for the most frequent sense of *vehicle* in this context,⁴⁴ we might understand the term to encompass only *motor vehicles*, and thus not to cover the bicycle.

The four points on the frequency continuum do not completely capture the range of senses of ordinary meaning embraced by our courts. Sometimes judges seem to have reference to a fifth notion of ordinary – a notion of linguistic *prototype*.⁴⁵ A *prototype* is a sense, or example of a sense, that is viewed as most strongly associated with a given term in a given context. And that may jibe with the way we separate senses or definitions in our minds. A difference in word meaning may “be represented in cognition not as a set of criterial features with clear-cut boundaries” the way a dictionary would represent things, but instead “in terms

43. *Id.*

44. This notion of “ordinariness” is attested in the *Oxford English Dictionary*. See 10 THE OXFORD ENGLISH DICTIONARY 912 (2d ed. 1989) (defining “ordinary” as “Of language, usage, discourse, etc.: that most commonly found or attested . . .”); see also Lawrence M. Solan & Tammy Gales, *Finding Ordinary Meaning in Law: The Judge, the Dictionary or the Corpus?*, 1 INT’L J. LEGAL DISCOURSE 253, 263 (2016) (“‘Ordinary meaning,’ especially as applied to particular words and phrases, is a distributional fact. A usage is ‘ordinary’ when it predominates.”).

45. See *McBoyle v. United States*, 283 U.S. 25, 27 (1931) (Holmes, J.) (determining whether an “airplane” was a “vehicle” for the purposes of the National Motor Vehicle Theft Act of 1919, and stating: “When a rule of conduct is laid down in words that *evoke in the common mind only the picture of vehicles moving on land*, the statute should not be extended to aircraft . . .” (emphasis added)). This notion of a “picture” “evoke[d] in the common mind” maps very well onto the concept of prototype.

of prototypes (the clearest cases, best examples) of the category.”⁴⁶ Thus, prototype analysis has shown that people consider *chair* to be a more prototypical example of *furniture* than *stool*,⁴⁷ *automobile* to be a more prototypical *vehicle* than *yacht*,⁴⁸ and *robin* to be a more prototypical bird than *ostrich*.⁴⁹

Prototype is another way to conceive of the notion of ordinary meaning in the law.⁵⁰ A judge who approaches the question of ordinary meaning by attempting to determine the most prototypical example of a given sense of a term is searching for a linguistic prototype.⁵¹ Under this approach, the ordinary (prototype) sense of *vehicle* would be the one that is most “vehicle-like,” perhaps encompassing a *passenger vehicle* with four wheels and an engine. If that is our sense of the ordinary meaning of *vehicle*, we might conclude that the hypothetical ordinance prohibits cars and trucks but not motorized scooters.⁵²

This range of meaning can also be illustrated through our three feature cases. We turn to them here.

46. Eleanor Rosch, *Cognitive Representation of Semantic Categories*, 104 J. EXPERIMENTAL PSYCHOL. 192, 193 (1975).

47. *Id.* at 229.

48. *Id.* at 230.

49. *Id.* at 232.

50. See Lawrence M. Solan, *Law, Language, and Lenity*, 40 WM. & MARY L. REV. 57, 67-68 (1998) [hereinafter Solan, *Law, Language, and Lenity*] (“In the realm of statutory interpretation, judges often evoke the canon that they are to give words in a statute their ‘ordinary’ meaning. Prototype analysis tells us that the notion of ordinary meaning has a cognitive basis.”); Lawrence M. Solan, *Why Laws Work Pretty Well, but Not Great: Words and Rules in Legal Interpretation*, 26 L. & SOC. INQUIRY 243, 258 (2001) (“Some Supreme Court cases concerning statutory interpretation can be seen as battles among the justices over definitions versus prototypes.” (citing *Smith v. United States*, 508 U.S. 223 (1993))); see also ESKRIDGE ET AL., *supra* note 31, at 850 (discussing prototypical meaning in the context of statutory interpretation); Lawrence M. Solan, *The New Textualists’ New Text*, 38 LOY. L.A. L. REV. 2027, 2042-55 (2005) [hereinafter Solan, *The New Textualists’ New Text*] (“One function of the ordinary meaning approach is to use prototypical experiences as a proxy for contextualization.”); *The Supreme Court, 1997 Term—Leading Cases*, 112 HARV. L. REV. 355, 362 (1998) (“[W]hen a legislature uses non-technical terms . . . it is likely that both the legislature and the general public interpret the term in accordance with its prototypical meaning.”).

51. Solan, *Law, Language, and Lenity*, *supra* note 50, at 67-68.

52. This conclusion, however, cannot be derived with mere intuition. The discovery of a prototype for a given word in a given context requires the application of empirical methods, as we will discuss below.

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1. Muscarello v. United States

In *Muscarello* the Court was asked to interpret a statute calling for a five-year mandatory prison term for a person who “uses or carries a firearm” “during and in relation to” a “drug trafficking crime.”⁵³ Frank Muscarello was convicted on drug charges after he was shown to have transported a gun in the locked glove compartment of his car to a drug deal. The question presented was whether that counted as “carrying” under the statute. Both the majority (Justice Breyer) and dissenting (Justice Ginsburg) opinions agreed that the proper interpretation of “carries a firearm” came down to the “ordinary English meaning” of that “phrase.”⁵⁴ Yet neither opinion settled on a single sense of “ordinary.” Instead, both opinions slide back and forth along the continuum, without acknowledging that they are doing so.

At some points Justice Breyer seems to employ a merely “common” sense of ordinary. For example, he asserts that the *transport in a vehicle* sense of *carry* is ordinary given that “many” – “perhaps more than one-third” – of the instances of *carrying a firearm* in the *New York Times* and *U.S. News* databases reflect that sense,⁵⁵ and he concludes that “the word ‘carry’ in its ordinary sense *includes* carrying in a car.”⁵⁶ Yet elsewhere Justice Breyer seems to speak of the car-carrying sense as most frequent. He reasons that 1) the “ordinary English” sense of *carry* is to *transport* it in a vehicle; 2) the *bear personally* sense is “special”; and 3) “we believe Congress intended to use the word in its primary sense and *not* in this latter, special way.”⁵⁷

Justice Ginsburg’s dissent is also inconsistent. In concluding that the personally *bearing* sense is ordinary, Justice Ginsburg asserts that it is “hardly implausible, nor at odds with *an accepted* meaning” of the statutory terms.⁵⁸ That is the language of possibility or commonality.⁵⁹ Elsewhere, however, Justice Ginsburg seems to speak in terms of personally *bearing* as the most frequent sense of the

53. *Muscarello v. United States*, 524 U.S. 125, 126 (1998) (quoting 18 U.S.C. § 924(c)(1)(A) (2012)).

54. *Id.* at 127; *id.* at 139 (Ginsburg, J., dissenting).

55. *Id.* at 129 (majority opinion).

56. *Id.* at 131 (emphasis added).

57. *Id.* at 128 (emphasis added).

58. *Id.* at 149 (Ginsburg, J., dissenting) (emphasis added).

59. *Id.* at 143-44 (asserting “that ‘carry’ is a word commonly used to convey various messages,” and that it “could mean” either personally bear or transport in a vehicle).

term—in noting, in response to Justice Breyer’s statistics, “what meaning showed up some two-thirds of the time.”⁶⁰

2. *Taniguchi v. Kan Pacific Saipan, Ltd.*

Taniguchi was a personal injury case.⁶¹ The plaintiff was a Japanese baseball player suing for medical expenses and lost income from contracts he was unable to honor as a result of injuries at the defendant’s resort.⁶² The defense “paid to have various documents translated from Japanese to English,”⁶³ and when the district court dismissed *Taniguchi*’s case on summary judgment, the defense submitted a request for compensation for the amounts it paid for document translation. As in *Muscarello*, the *Taniguchi* case came down to ordinary meaning. Here the operative language was from a statute allowing the prevailing party in federal litigation to recover certain costs, including those incurred by an “interpreter.”⁶⁴

This case also seems to turn on the operative notion of ordinary meaning. Writing for the majority, Justice Alito concludes that the ordinary sense of *interpreter* is *oral translator*: “an interpreter is normally understood as one who translates orally from one language to another.”⁶⁵ While Justice Alito says that *written translator* is possible, he concludes that this is “hardly a common or ordinary meaning.”⁶⁶ Indeed, Justice Alito characterizes the *written translator* notion of *interpreter* as “obsolete,” citing dictionaries to support that conclusion.⁶⁷

Justice Ginsburg’s dissent acknowledges that *interpreter* “commonly refers to translators of oral speech” but concludes that the term “more than occasionally” is “used to encompass those who translate written speech as well.”⁶⁸ This is the core basis of the view of the *Taniguchi* dissenters. They do not expressly disagree with Justice Alito’s assertion that the *oral translator* notion is most common; they

60. *Id.* at 143.

61. *Taniguchi v. Kan Pac. Saipan, Ltd.*, 566 U.S. 560 (2012).

62. *Id.* at 562.

63. *Id.* at 563.

64. *Id.* at 562.

65. *Id.* at 569.

66. *Id.*

67. *Id.*

68. *Id.* at 576 (Ginsburg, J., dissenting).

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are simply saying that both common senses of the term should count as ordinary.⁶⁹

3. United States v. Costello

The defendant in *Costello* was charged with knowingly “conceal[ing], harbor[ing], or shield[ing] from detection” an “alien in any place, including any building or any means of transportation.”⁷⁰ Her alleged crime was “having permitted [her] boyfriend to live with her,”⁷¹ knowing that he was an “illegal alien.”⁷² The principal question presented was whether the ordinary meaning of the verb *harbor* required proof of concealment.

As in *Taniguchi*, the difference between the majority and dissent in *Costello* seems to come down largely to the conception of the meaning of ordinary meaning. Judge Posner, writing for the majority, warns of the perils of overreliance on the dictionary to resolve questions of ordinary meaning. And he directs the ordinary meaning analysis to an empirical inquiry, which he proposes to resolve by means of a Google search.⁷³

Judge Posner’s reliance on his Google results places his sense of ordinary meaning on the frequency continuum. He uses Google to look for relative numbers of “hits” for phrases like “harboring fugitives” and “harboring guests.”⁷⁴ Because Judge Posner found more hits for the former than for the latter, he concludes that “‘harboring,’ as the word is actually used, has a connotation . . . of deliberately safeguarding members of a specified group from the authorities.”⁷⁵ This is a “most frequent” sense of ordinariness — and a blatantly empirical example of that inquiry.

The *Costello* dissent takes a different tack. In concluding that the *providing shelter* notion of *harbor* falls within the statute, Judge Manion asserts that “the ordinary meaning of ‘harboring’ certainly *includes* ‘providing shelter to.’”⁷⁶ In support of this point, Judge Manion cites definitions from dictionaries in print

69. *Id.* (asserting that the *written translator* sense is an “acceptable usage” even if it is “not ‘the most common usage’” (quoting *id.* at 568 (majority opinion))).

70. *United States v. Costello*, 666 F.3d 1040, 1041 (7th Cir. 2012) (quoting 8 U.S.C. § 1324(a)(1)(A)(iii) (2012)).

71. *Id.* at 1043.

72. *Id.* at 1042.

73. *Id.* at 1044–45.

74. *Id.* at 1044.

75. *Id.*

76. *Id.* at 1052 (Manion, J., dissenting) (emphasis added).

at the time of the statute's enactment. He says that these dictionaries show that "[t]his was a *common understanding* of the term when the term 'harbor' was first added to the statute in 1917, and when the statute was amended and the term retained in 1952."⁷⁷

What can we learn from these cases? Our judges purport to be speaking of a consistent, common sense of ordinary meaning. But they switch back and forth between different senses of ordinary meaning, usually without acknowledging the inconsistency. Sometimes (as in *Muscarello*) judges embrace varying senses of ordinary meaning within a single opinion. Elsewhere (as in *Taniguchi* and *Costello*) the seemingly nuanced distinction between different senses of ordinary meaning becomes outcome-determinative. This is problematic—not just for statutory interpretation, but also for the rule of law.⁷⁸

B. Operational Shortcomings

The theoretical deficiencies identified above are one element of the problem. Another is operational—in the way we seek to identify or measure the ordinary meaning of statutory terms. Typically, this assessment is made at a gut level, on the basis of a judge's linguistic intuition, without recognition of the empirical nature of the question.

A judge considering the prohibition on *vehicles* in the park, for example, would reject out of hand the notion that the ordinance extends to pets, insisting (without further analysis or support) that the *infection carrier* sense of *vehicle* is an outlier—an extraordinary meaning. A parallel conclusion would be likely in response to an attempt to extend the *no vehicles* ordinance to bicycles. We understand *vehicle* to encompass a *conveyance on wheels*, but again a court seems likely to jump to the conclusion that the ordinary sense of *vehicle* is *motor vehicle*, and that a bicycle does not count.

These conclusions seem uncontroversial. But the judge who makes them is making an empirical assessment. Gut-level empirics probably will not bother us if they go only to a holding that a pet or bicycle is not a *vehicle* prohibited in the

77. *Id.* (emphasis added) (first citing WEBSTER'S NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE 981 (1917) (defining "harbor" as "[t]o afford lodging to; to entertain as a guest; to shelter; to receive; to give refuge to"); and then citing WEBSTER'S NEW COLLEGIATE DICTIONARY 376 (John P. Bethel et al. eds., 1953) (defining "harbor" as "to entertain as a guest; to shelter; to give a refuge to"))).

78. See Baude & Sachs, *supra* note 3, at 1089-90 (noting that "we have to decide *which* meaning, produced by which *theory* of meaning, we ought to pick").

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park. But what about a motorized scooter or a golf cart? These are harder questions. And here we may have more cause for concern about the lack of transparency and determinacy.

With this in mind, judges sometimes turn to other grounds for their assessment of ordinary meaning, looking up a word in a dictionary or even turning to the word's etymology. A common use of a dictionary involves simple cherry-picking. "Instead of acknowledging and rejecting contrary senses of a statutory term, judges tend to ignore them—identifying only the sense of a word they deem ordinary without acknowledging any others."⁷⁹ As to *vehicle*, for example, a judge might simply cite a definition referring to an automobile and assert, without more, that the term's ordinary meaning does not encompass a motor scooter, or maybe even a golf cart. That is troubling—a judge who cherry-picks a preferred dictionary definition while ignoring an alternative is misusing the dictionary.

Some judges, to their credit, are more transparent. Instead of ignoring a contrary definition—the *conveyance on wheels* notion of vehicle, for example—a judge may acknowledge competing senses but find a basis for embracing one as ordinary. For example, a judge might prefer the definition that appears first in a dictionary's list of senses, or cite the etymology of the statutory term. Neither of these approaches is defensible, however, for reasons explained immediately below in our critique of the Court's ordinary meaning analysis in *Muscarello* and *Taniguchi*. *Costello*, on the other hand, acknowledges some of the problems we identify and turns to Google, albeit in a manner that raises a new set of problems.

1. *Muscarello v. United States*

The *Muscarello* majority invokes both sense ranking and etymology in support of its holding. Justice Breyer acknowledges that *carry* can be understood to mean either *transport* in a vehicle or *bear* on your person.⁸⁰ But he embraces the

79. *State v. Rasabout*, 2015 UT 72 ¶ 53, 356 P.3d 1258, 1274 (Lee, Associate C.J., concurring in part and concurring in the judgment); *see also, e.g., Kovach v. Zurich Am. Ins. Co.*, 587 F.3d 323, 346 (6th Cir. 2009) (McKeague, J., dissenting) (criticizing the majority for ignoring other definitions in basing its presentation of the "ordinary meaning" of "accidental" on one definition without regard to others); *Konop v. Hawaiian Airlines, Inc.*, 302 F.3d 868, 878 (9th Cir. 2002) (ignoring broader definitions in favor of a narrow definition as "ordinary meaning" of "intercept"); *United States v. Warner Bros. Well Drilling*, No 89-5494, 1990 WL 37610, at *2-3 (6th Cir. Apr. 3, 1990) (citing only one definition of "operator" in determining the ordinary meaning, even though opposing definitions existed).

80. *Muscarello v. United States*, 524 U.S. 125, 128 (1998).

former sense as “primary” and dismisses the latter as “special.”⁸¹ His first argument in support of that conclusion is that “[t]he Oxford English Dictionary gives as its *first* definition ‘convey, originally by cart or wagon, hence in any vehicle, by ship, on horseback, etc.’”⁸² The italicized emphasis on “first” is Justice Breyer’s. His opinion takes a similar tack in citing the “*first* definition” in *Webster’s Third*—“move while supporting (*as in a vehicle* or in one’s hands or arms)”⁸³—and the “*first* definition” in the *Random House Dictionary*—“to take or support from one place to another; convey; transport.”⁸⁴

Justice Breyer reinforces his reliance on sense ranking in his reference to the personally *bear* sense of carry in the *Oxford English Dictionary*, noting that this is the “*twenty-sixth* definition” in the dictionary.⁸⁵ This is the threshold basis of Justice Breyer’s conclusion that “[t]he relevant linguistic fact[]” is “that the word ‘carry’ in its ordinary sense includes carrying in a car.”⁸⁶

Justice Breyer also turns to etymology, in asserting that “[t]he origin of the word ‘carries’ explains why the first, or basic, meaning of the word ‘carry’ includes conveyance in a vehicle.”⁸⁷ Justice Breyer states that *carry* traces from “Latin ‘carum,’ which means ‘car’ or ‘cart,’” and from “Old French ‘carier’ and late Latin ‘carricare,’ which meant to ‘convey in a car.’”⁸⁸ The precise premises of Justice Breyer’s analysis are left implicit. But the point seems clear: the etymology of the verb *carry* confirms that the *transport* sense of the term is ordinary and the personally *bear* sense is unusual.

This is problematic. If the ordinary meaning question in *Muscarello* is an empirical question of frequency or prototype analysis, neither the dictionary nor etymology is useful. The dictionaries typically cited by our courts (including those cited by Justice Breyer) make no claims about the relative frequency of the listed senses of a given word.⁸⁹ Many commonly used, unabridged dictionaries

81. *Id.*

82. *Id.* (quoting 2 THE OXFORD ENGLISH DICTIONARY, *supra* note 44, at 919).

83. *Id.* (quoting WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 343 (1986)).

84. *Id.* (quoting THE RANDOM HOUSE DICTIONARY OF THE ENGLISH LANGUAGE—UNABRIDGED 319 (2d ed. 1987)).

85. *Id.* at 130 (citing 2 THE OXFORD ENGLISH DICTIONARY, *supra* note 44, at 921).

86. *Id.* at 131.

87. *Id.* at 128 (citing THE BARNHART DICTIONARY OF ETYMOLOGY 146 (Robert K. Barnhart ed., 1988)).

88. *Id.* (first citing THE BARNHART DICTIONARY OF ETYMOLOGY 146 (Robert K. Barnhart ed., 1988); and then citing 2 THE OXFORD ENGLISH DICTIONARY, *supra* note 44, at 919).

89. See Stephen C. Mouritsen, *The Dictionary Is Not a Fortress: Definitional Fallacies and a Corpus-Based Approach to Plain Meaning*, 2010 BYU L. REV. 1915, 1924–29 (discussing problems with dictionary usage by courts and identifying the “sense-ranking fallacy”). The *Random House*

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arrange their definitions based on evidence of historical usage.⁹⁰ *Webster's Third* expressly disavows any attempt to establish a “hierarchy of importance” among different senses and admits that “[s]ometimes an arbitrary arrangement or rearrangement is the only reasonable and expedient solution to the problems of ordering senses.”⁹¹

A similar problem undermines Justice Breyer’s use of etymology. As the philologist Henry Sweet observed:

The meaning of a word in a given period of a given language is a matter of usage, and the fact of its having had a certain meaning at some earlier period or in some cognate language does not necessarily afford any help in determining, and still less in remembering, its present meaning.⁹²

If this were not true, then *December* would mean the tenth month, and an *anthology* would mean a bouquet of flowers.⁹³ Yet, so common is the assumption

Dictionary of the English Language appears to be an exception. Its front matter states “a general policy of putting the most frequently used meanings . . . at the beginning of the entry, followed by other senses in diminishing frequency of usage, with archaic, and obsolete senses coming last.” RANDOM HOUSE DICTIONARY OF THE ENGLISH LANGUAGE – UNABRIDGED, at viii (2d ed. 1987). But we see grounds for skepticism of these sorts of claims. *See infra* notes 99–102, 137–140 and accompanying text. When unabridged dictionaries assembled their citation files, they were concerned about possible usage, not about making a representative, scientific sample of the speech community. So, their claims about frequency and obsolescence are suspect. *Random House* acknowledges that its sense ranking based on frequency holds only “generally.” RANDOM HOUSE DICTIONARY OF THE ENGLISH LANGUAGE – UNABRIDGED, *supra*, at xxii. Without more (and there is no more in this dictionary), the reader is left to guess about which senses are ordered according to frequency and which ones follow some other organizing principle.

90. *See* 1 THE OXFORD ENGLISH DICTIONARY, *supra* note 44, at xxix (“That sense is placed first which was actually the earliest in the language: the others follow in order in which they have arisen.”); WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 19a (1971) (indicating that the order of senses is “historical,” in that “the one known to have been first used in English is entered first”; also stating that its “system of separating senses” is “only a lexical convenience,” and not an “enduring hierarchy”).
91. WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE, *supra* note 90, at 17a.
92. HENRY SWEET, THE PRACTICAL STUDY OF LANGUAGES: A GUIDE FOR TEACHERS AND LEARNERS 88 (1900).
93. THE BARNHART CONCISE DICTIONARY OF ETYMOLOGY 29 (Robert K. Barnhart ed., 1995) (providing the etymology of “anthology” as “1640, collection of the ‘flowers’ of verse (i.e. small, choice poems) by various authors; borrowed, perhaps by influence of French *anthologie*, from Greek *anthologíā* flower-gathering (*ánthos* flower + *légein* gather).”); *id.* at 188 (providing the etymology of “December” as “1122, borrowed from Old French *decembre*, from Latin *December*, from *decem* TEN, this being originally the tenth month of the early Roman calendar (which began with March)).

that a word's etymology shows its true meaning that the assumption has been given a name: the "etymological fallacy."⁹⁴ For this reason, Justice Breyer's analysis of the etymology of *carry* tells us nothing about its ordinary meaning.⁹⁵

2. *Taniguchi v. Kan Pacific Saipan, Ltd.*

The *Taniguchi* opinion appears, at first glance, to employ dictionaries in a less arbitrary way. Justice Alito does not turn to sense ranking or etymology. He presents an informal "survey" of dictionary definitions, asserting that "only a handful" of dictionaries include the *written translator* sense of *interpreter*, but "all" of them speak of the *oral translator* sense.⁹⁶ And he says that the "sense divider[s]" in the cited dictionaries confirm the Court's holding in designating the *oral translator* notion as one that is "especially" indicated and flagging the *written translator* sense as "obsolete."⁹⁷

Yet Justice Alito's approach is still problematic. The "survey" of dictionaries is far from systematic. Justice Alito presents his own set of preferred dictionaries. And within the cited dictionaries, the Court sometimes cites a definition of the noun *interpreter* and sometimes cites a definition of the verb *interpret*. We cannot tell from the opinion whether the *written translator* sense of *interpreter* is less often listed in a real "survey" of dictionaries because we are not presented with an actual *survey* of dictionaries. We have only the definitions that Justice Alito has presented for our review.⁹⁸

94. SWEET, *supra* note 92, at 88; *see also* RANDOLPH QUIRK, *STYLE AND COMMUNICATION IN THE ENGLISH LANGUAGE* 86 (1982) (characterizing as "one of the most pernicious of popular *idées fixes*" the notion that a word's etymology "gives you the 'real' meaning").

95. It is also worth noting that neither the ordinary legislator nor the ordinary citizen are likely to have a working knowledge of the etymology of most words. Interpreting a statute according to a long-lost meaning that neither the drafter nor the citizen is aware of seems a far cry from searching for ordinary meaning.

96. *Taniguchi v. Kan Pac. Saipan, Ltd.*, 566 U.S. 560, 568-69 (2012).

97. *Id.* at 568-69; *see id.* at 567-68 & n.2 (noting that the *Concise Oxford Dictionary of Current English*, *Webster's Third New International Dictionary*, the *World Book Dictionary*, and *Cassell's English Dictionary* designate the oral translator meaning as "especially" indicated); *id.* at 569 (noting that the *Oxford English Dictionary* "designated [the written translator] meaning as obsolete").

98. Even a documented survey of every known dictionary might not be sufficient, moreover, for reasons explained below. *See infra* notes 99-102, 137-140 and accompanying text. Dictionaries are not trying to show ordinary meaning. But even if they were, the methods that they use to sample language use don't create a reliable sample—aggregating dictionaries isn't going to accomplish anything if none of them has a reliable sample of language usage.

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Justice Alito's sense dividers are also insufficient. First, not all dictionaries designate *written translator* as obsolete or *oral translator* as special. At least one definition mentioned in the majority opinion explicitly encompasses the written sense of the term, without any indication of obsolescence.⁹⁹

Second, sense dividers are not reliable measures. Dictionaries tell us very little about the basis for the "obsolete" sense designation. Ultimately, such a designation must be made on the basis of some underlying data that is unavailable to the reader of the dictionary. So the "obsolete" designation tells us only that the lexicographers who compiled the dictionary in question deemed a particular sense to no longer be in use; but, without more, such designation gives us only the opinion of those lexicographers and not a hard basis for an empirical conclusion.¹⁰⁰

An "especially" designation may be even more unreliable. Such a designation suffers from all of the problems inherent in the "obsolete" designation, and it also masks another deficiency, going to the arbitrariness of the distinction between two senses listed in a dictionary (described further below). The fact that a given sense, or subsense, of a term is a *special* application of another highlights the interrelationship between the two senses.¹⁰¹ It suggests that the two senses are not highly distinct from each other, but instead are exemplars or prototypes of a broader category. That is what the *Webster's* definition cited in *Taniguchi* seems to convey. The cited *Webster's Third* definition of *interpreter* is "one that translates; *esp*: a person who translates orally for parties conversing in different tongues."¹⁰² This is an indication that the lexicographers who formulated this definition for *Webster's* viewed the *especially* designated notion *not* as a separate sense but as an exemplar of it—perhaps a common, prototypical example.

For these reasons the *Taniguchi* opinion also employs inadequate tools of measurement. Justice Alito's "survey" and sense designations seem more sophisticated, but ultimately they are also poor tools for assessing empirical questions of ordinary meaning.

99. *Taniguchi*, 566 U.S. at 567 (citing *Interpreter*, BALLENTINE'S LAW DICTIONARY 655 (3d ed. 1969) (defining "interpreter" as "[o]ne who interprets, particularly one who interprets words written or spoken in a foreign language")).

100. See DOUGLAS BIBER ET AL., CORPUS LINGUISTICS: INVESTIGATING LANGUAGE STRUCTURE AND USE 22 (1998) (observing that "citation slips" used by lexicographers represent only those contexts "that [human] readers happen to notice").

101. See *infra* Part III.

102. *Taniguchi*, 566 U.S. at 567-68 (quoting WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1182 (1976)).

3. United States v. Costello

Judge Posner rejects a dictionary-based approach to ordinary meaning in *Costello*. He rightly notes that “[d]ictionary definitions are acontextual, whereas the meaning of sentences depends critically on context, including all sorts of background understandings.”¹⁰³ And for that reason, Judge Posner turns to Google to get a “rough index of the frequency of [*harboring*’s] use.”¹⁰⁴ This approach is innovative. But it is far from perfect.

Google might seem to be a good source for data-driven analysis of language usage. “The World Wide Web is enormous, free, immediately available, and largely linguistic.”¹⁰⁵ And it is “appealing to use the Web as a data source” because “language analysis and generation benefit from big data.”¹⁰⁶ Google has low entry costs, moreover. Even the most Luddite lawyer or judge is likely to be able to perform a basic Google search. Yet we still see a range of problems in Judge Posner’s approach.

First is the black box of the Google algorithm. Google searches “are sorted according to a complex and unknown algorithm (with full listings of all results usually not permitted) so we do not know what biases are being introduced.”¹⁰⁷ Google returns can vary by geography, by time of day, and from day to day.¹⁰⁸ Google search results are thus rather unscientific, if we understand good science as including replicability.

Second are problems with the Google search engine: the fact that it does not allow us to search only for verb forms of *harbor* and that it will not allow us to look at a particular speech community or period of time (only contemporary web pages, even if their content was first published in the past). If we are interested in knowing the ordinary use of *harbor* as a verb among ordinary English speakers at the time of the enactment of the statute at issue (1917), Google cannot give us that kind of parsed data.

In light of these search engine problems, Judge Posner formulated his own set of search terms—comparing hit counts for phrases like “harboring fugitives”

¹⁰³. United States v. Costello, 666 F.3d 1040, 1044 (7th Cir. 2012).

¹⁰⁴. *Id.*

¹⁰⁵. Adam Kilgarriff, *Googleology Is Bad Science*, 33 COMPUTATIONAL LINGUISTICS 147, 147 (2007) (discussing the limitations of Google as a corpus).

¹⁰⁶. *Id.*

¹⁰⁷. *Id.* at 148.

¹⁰⁸. *Id.*

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and “harboring guests.”¹⁰⁹ But this innovation introduces a third set of problems: Judge Posner gives no basis for his chosen set of search terms, and the terms he chose seem likely to affect the outcome.

Finally, even setting aside the problems discussed above, the hit counts that Judge Posner relies on may not be indicative of ordinariness in the sense of frequency of usage. Judge Posner implies that relative hit counts are an indication of frequency of usage in our ordinary language. But that may not hold. Google hit counts are based on the total number of web pages, not the total number of occurrences of a given phrase.¹¹⁰ A single web page may have tens, hundreds, or thousands of uses of an individual word or phrase that would only register in a Google search as a single hit. So hit counts may not be a reliable indication of ordinariness, even if we could overcome the other problems identified here.

We think Judge Posner was onto something in seeking an empirical method of measurement, but we also think his Google search was inadequate.

II. THEORIZING ORDINARY MEANING

The deficiencies in the courts’ approaches to ordinary meaning are also reflected in legal scholarship. Here we outline some of the approaches to ordinary meaning reflected in the scholarly literature, in an attempt to expand on the themes discussed in Part I.

Legal scholarship posits a range of conceptions of ordinary meaning. Professor Richard Fallon’s catalog is perhaps the most extensive. He speaks of the “semantic” or “literal” meaning of the words of the law; the “contextual” meaning informed by “shared presuppositions” of speakers and listeners (which we take to align with Sunstein’s notion of “public meaning”¹¹¹ and Baude and Sachs’s idea of the “reader’s understanding”¹¹²); the “intended meaning” of the law-maker; the “reasonable” or “imputed” meaning attributed to “hypothetical, reasonable legislators”; and the “interpreted meaning” of laws in judicial precedent.¹¹³

Not all of these conceptions of meaning are applicable to our analysis here. Certainly there is a case for respecting statutory meaning embedded in judicial precedent. If judges have deemed a statute to have a certain meaning in the past,

¹⁰⁹. *Costello*, 666 F.3d at 1044.

¹¹⁰. Kilgariff, *supra* note 105, at 147.

¹¹¹. Sunstein, *supra* note 12, at 198.

¹¹². Baude & Sachs, *supra* note 3, at 1090 (distinguishing the “author’s intent” and the “reader’s understanding”).

¹¹³. See Fallon, *supra* note 2, at 1255-63.

the law of interpretation—informed by principles of stare decisis—can (and should) yield due deference to the “interpreted meaning” established by precedent.¹¹⁴ But our reasons for respecting such meaning have nothing to do with the rule of law premises behind the law’s search for ordinary communicative content.

Fallon’s notion of “reasonable” or “imputed” meaning is also, but less obviously, a conception of extra-ordinary meaning. This construct is related to the “fair reading” method advanced by Justice Scalia and Bryan Garner in *Reading Law*.¹¹⁵ The fair reading inquiry is framed in objective-sounding terms—in a search for “objectified intent.”¹¹⁶ But on closer review this notion of meaning has nothing to do with actual communicative content of the words of the law (or of intentions attributable to lawmakers). It is an idealized, constructive inquiry aimed at an impossibly well-informed legislator—one with “aptitude in language, sound judgment, the suppression of personal preferences regarding the outcome, and, with older texts, historical linguistic research”; “an ability to comprehend the *purpose* of the text, which is a vital part of its context,” and to glean it “only from the text itself”; and even an understanding of “a word’s historical associations acquired from recurrent patterns of past usage” and “a word’s immediate syntactic setting—that is, the words that surround it in a specific utterance.”¹¹⁷

This notion of meaning has little or nothing to do with the actual meaning intended by a legislator or understood by the public. We may well have reasons to credit this sort of idealized, constructive meaning. But if we do, it will not be because we think that any actual legislator is likely to have read the words of a law and understood it in this “reasonable” way, much less that an ordinary member of the public gleaned that understanding. It will be because we deemed other policies—policies having nothing to do with vindicating linguistic meaning—to be of greater significance.¹¹⁸

114. See *id.* at 1251 (articulating stare decisis arguments in support of the law’s acceptance of “interpreted meaning”).

115. SCALIA & GARNER, *supra* note 28, at 428.

116. ANTONIN SCALIA, Common-Law Courts in a Civil-Law System: The Role of United States Federal Courts in Interpreting the Constitution and Laws, in *A MATTER OF INTERPRETATION: FEDERAL COURTS AND THE LAW* 17 (Amy Gutmann ed., 1997).

117. *Id.* at 33.

118. See Gary Lawson & Guy Seidman, *Originalism as a Legal Enterprise*, 23 CONST. COMMENT. 47, 48 (2006) (stating that the “touchstone” of this approach to interpretation “is not the specific thoughts in the heads of any particular historical people . . . but rather the hypothetical understandings of a reasonable person who is artificially constructed by lawyers”).

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That leaves, in Fallon's taxonomy, (a) semantic meaning, (b) contextual meaning (public meaning or the reader's understanding), and (c) intended meaning. Semantic meaning is meaning that the language of the law would have "for someone operating solely with dictionary definitions, rules of grammar, and other general propositions bearing on how the meaning of a sentence emerges from the combination of its elements."¹¹⁹ Fallon attributes this sort of meaning to a sort of "literalist" textualism, asserting that "[p]articipants in legal discourse frequently assume or argue that a legal provision's semantic or literal meaning determines its legal meaning."¹²⁰

The point here is the notion that "literalist" textualism excludes nonsemantic context. In contrasting his notion of "contextual" meaning, for example, Fallon distinguishes "semantics, which is concerned with the context-independent meaning of words, phrases, and sentences, and pragmatics, which involves the meaning of utterances in particular contexts."¹²¹ Here he cites an example from *Reading Law*: "*Nail* in a regulation governing beauty salons has a different meaning from *nail* in a municipal building code."¹²² He also distinguishes semantic meaning from "contextual meaning" because the latter is "framed by the shared presuppositions of speakers and listeners."¹²³

We agree that judges often frame their discussion of ordinary meaning in terms of literalist versus contextual meaning. But our theory of ordinary meaning parts company with Fallon at his suggestion that what he calls the "semantic meaning" of an utterance should be distinguished from its "contextual meaning," or that these two competing notions of meaning allow for a "choice among multiple candidates to supply legal or conversational meaning."¹²⁴

Whenever we engage in the act of communication—whenever a speaker speaks and a hearer hears—our minds take in the relevant interpretative information at once. We take account of the formal aspects of an utterance (its lexical, syntactic, and semantic content), as well as the pragmatic (in the linguistic sense of the term) aspects of the utterance (for example, the physical or social setting in which it is uttered). We interpret an utterance as part of a community of

¹¹⁹. Fallon, *supra* note 2, at 1245.

¹²⁰. *Id.*

¹²¹. *Id.* at 1246.

¹²². *Id.* (quoting SCALIA & GARNER, *supra* note 28, at 20). We use the phrase "semantic meaning" more specifically to refer to the formal linguistic features of an utterance (i.e., syntax and argument structures, semantic features, and functional roles), but we do not suggest that semantic meaning can ever be derived with reference to pragmatics or the "meaning of utterances in particular contexts."

¹²³. *Id.*

¹²⁴. *Id.* at 1266.

speakers of a language (with shared linguistic conventions and a shared understanding of different linguistic registers), and we necessarily interpret the utterance according to the shared linguistic conventions that exist at the time of the utterance.

If we are to have a theory of ordinary meaning that tracks the way we actually use and interpret language, we cannot artificially separate out formal and pragmatic considerations. Literalist semantic meaning alone is not an indication of ordinary communicative content. Real human beings do not derive meaning from dictionary definitions and rules of grammar alone. Everyone takes nonsemantic context—pragmatics—into account in deriving meaning from language.¹²⁵ And for that reason we see no basis to credit semantic meaning without consideration of pragmatic context.¹²⁶ If no lawmaker would read the text that is voted into law purely semantically—devoid of pragmatic context—then there is no reason to credit that kind of meaning as a means of vindicating the intent of a lawmaker. The same goes for the public governed by the law. If no one reads

125. As Lawrence Solum has noted:

The word “pragmatic” is ambiguous. In contemporary legal theory, “pragmatism” refers to an antifoundationalist approach that is strongly associated with Judge Richard A. Posner. Legal pragmatism is related to the philosophical pragmatism that is associated with philosophers Professor John Dewey, Professor William James, and Charles Sanders Peirce. As used in the philosophy of language and theoretical linguistics, pragmatics is a technical term with a contested and evolving meaning.

Lawrence B. Solum, *Originalist Methodology*, 84 U. CHI. L. REV. 269, 286 n.58 (2017) (citations omitted). Often in linguistics, pragmatics is used to refer to the study of specific linguistic phenomena like conversational implicature or deixis. ALAN CRUSE, *MEANING IN LANGUAGE: AN INTRODUCTION TO SEMANTICS AND PRAGMATICS* 332-37, 355-94 (2d ed. 2004). But pragmatics is also “sometimes defined as being concerned with the role or effects of context.” See Solum, *supra*, at 286 n.59. Unless otherwise specified, we use the term pragmatics in this paper to refer to nonverbal context that may affect meaning.

126. As we will demonstrate below, a significant amount of contextual information may be derived from corpus data. In this respect, the corpus can provide insight into the context of an utterance. Yet there are some aspects of nonverbal context that are harder to derive from corpus data. These include notions of contextual enrichment like implicature, implicature, presupposition, and modulation. See Solum, *supra* note 125, at 288-91 (discussing types of contextual enrichment). The use of linguistic corpora to analyze these linguistic phenomena has only recently begun to be explored by linguists. See Christoph Rühlemann & Karin Aijmer, *Introduction: Corpus Pragmatics: Laying the Foundations*, in *CORPUS PRAGMATICS: A HANDBOOK* 1, 1 (Karin Aijmer & Christoph Rühlemann eds., 2015) (“For a long time pragmatics and corpus linguistics were regarded as ‘parallel but often mutually exclusive.’ However, in recent years corpus linguists and pragmaticists have actively begun exploring their common ground.” (citation omitted)).

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laws literally by pure semantics, we have no reason to protect reliance interests or notice concerns rooted in that kind of understanding.

This does not mean that it is never worthwhile to consider the formal aspects of an utterance. Humans do take verbal, semantic context into account in interpreting language. It is just that humans also take nonverbal, pragmatic context into account. In developing a more robust theory of ordinary meaning, we think it important to highlight each of these elements of context that might affect our understanding – and to clarify the determinants of ordinary meaning that our law might seek to measure.

Before we turn to that endeavor, however, we first finish our treatment of Fallon's taxonomy by addressing "intended" meaning. Is the law's search for meaning aimed at finding the "public" meaning inferred by a "reader" of the law or a more private "intended" sense of a lawmaker? On this we agree with Baude and Sachs. "There may be good reasons for a legal system to prefer" either public meaning or intended meaning.¹²⁷ And "neither has to win every time," because the "right" answer "depends on our reasons" for the resort to ordinary meaning "in the first place."¹²⁸

Intended meaning is an appropriate construct to the extent we are aiming to vindicate the preferences of lawmakers. This is a viable, distinct basis for crediting ordinary meaning. We may say, as does Professor Larry Alexander, "that the reason we should seek the actual authors' intended meaning is that the actual authors possessed the legal authority to promulgate norms, and their texts just *are* their communications of the norms they intended to promulgate."¹²⁹ If that is our premise for looking to the ordinary communicative content of the law then we will certainly look to the intended meaning of lawmakers (informed by relevant elements of context, as presented below). Even the reader, at least arguably, would seek this meaning.¹³⁰ But if we are to seek the intended meaning of the authors of the law, we must have some objective means of doing so.

^{127.} Baude & Sachs, *supra* note 3, at 1091.

^{128.} *Id.* at 1090.

^{129.} Larry Alexander, *Telepathic Law*, 27 CONST. COMMENT. 139, 140 (2010).

^{130.} See Larry Alexander, *Originalism, the Why and the What*, 82 FORDHAM L. REV. 539, 540 (2013) (asserting that "our job is to determine the uptake the legislator(s) intended us to have"). We also agree with Professor Ryan D. Doerfler, however, that legislative intent is ultimately a fiction – not only because "Congress is a 'they,' not an 'it,'" or because "Members of Congress . . . share no . . . intention to treat as authoritative the views of a statute's 'principal sponsors' or 'others who worked to secure enactment,'" but also because language must be understood in light of context consisting of "information salient to both author and audience." Ryan Doerfler, *Who Cares How Congress Really Works?*, 66 DUKE L.J. 979, 982–83 (2017). This suggests that the line between intended meaning and public meaning is thin or perhaps non-existent, a point we return to below. See *infra* Section III.C.1.

There is also a case for the public or “reader’s” understanding. This sort of meaning makes sense to the extent we are seeking to vindicate the notice rationale for the “standard picture” – the protection of reliance interests and the avoidance of unfair surprise.¹³¹ Enforcing “hard-to-find intentions” of lawmakers “would make the law unpredictable or arbitrary.”¹³² So to the extent our search for ordinary meaning is aimed at protecting these interests, we should seek to assess the public’s understanding of the law at the time it was passed.

In summary, before framing the theory of meaning in a manner that may allow us to measure it, we must first delineate the components of such meaning. At a broad level, those components encompass semantic meaning and pragmatic meaning. To assess meaning, linguists would tell us that we must also take into account the relevant speech community (*whose* meaning?) and the relevant timeframe (meaning *as of when?*). We explore each of these components below.

A. Semantic Meaning

Semantic meaning encompasses several components: lexicography, syntax, and semantics.

1. Lexicography

The search for “semantic” meaning often distills to a question of *word sense*. In *Muscarello*, *Taniguchi*, and *Costello*, for example, the courts were considering a problem of competing word senses – senses numbered separately from each other in the cited dictionaries.

Judges tend to assume that a dictionary’s division of senses (by numbers and letters) represents an immutable linguistic fact about the universe. We tend to “ignore the fact,” as Professor Larry Solan has put it, “that someone sat there and wrote the dictionary, and we speak as though there were only one dictionary,

¹³¹. See Michael Herz, *Purposivism and Institutional Competence in Statutory Interpretation*, 2009 MICH. ST. L. REV. 89, 102 (arguing that “the case for textualism” is in part “[t]he claim . . . that if legal rules are embedded in publicly available texts, affected persons will be able to know, understand, and comply with those rules [T]he fair notice argument for textualism in statutory interpretation presupposes, and seeks to ensure the full benefit of, a shift from the common law to statutes”); Note, *Textualism as Fair Notice*, 123 HARV. L. REV. 542, 542 (2009) (“Perhaps the most intuitive and straightforward argument for textualism is that it promotes fair notice of the law.”); see also SCALIA, *supra* note 116, at 17 (asserting that it is “incompatible with democratic government, or indeed, even with fair government, to have the meaning of a law determined by what the lawgiver meant, rather than by what the lawgiver promulgated”).

¹³². Baude & Sachs, *supra* note 3, at 1091.

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whose lexicographer got all the definitions ‘right’ in some sense that defies analysis.”¹³³ But that is not the case. Dictionaries may differ sharply in the number of senses they assign to a given term or in the divider they use to distinguish senses. “And human beings, try as they may, bring their prejudices and biases into the dictionaries they make.”¹³⁴

The question of “what is a word sense” turns out to be a very challenging one in lexical semantics. Linguists and lexicographers lack “decisive criteria for defining word senses and clearly discriminating between them.”¹³⁵ And linguists also acknowledge that the sense distinctions reflected in dictionaries are “more of a descriptive device rather than a claim about psycholinguistic reality.”¹³⁶

In traditional lexicography, words are defined first by determining the class of things to which they belong (their *genus*) and second by distinguishing them from all other things in their class (their *species*).¹³⁷ Words are then divided into senses based on a variety of factors, including their part of speech, pronunciation, inflection, etymology, and shades of meaning.¹³⁸ This approach to defining words and dividing them into senses can be highly impressionistic and has a number of limitations. There is no agreed-upon formula for sense division—some lexicographers make very fine-grained distinctions between senses (they are sometimes called *splitters*), while others tend to make broader, more coarse-grained distinctions (they are sometimes called *lumpers*).¹³⁹ Moreover, the citation or quotation files from which many dictionaries are derived were collected without the benefit of modern sampling methods. Accordingly, these files cannot be relied upon for information about the frequency of a given word or word sense.¹⁴⁰

133. Lawrence Solan, *When Judges Use the Dictionary*, 68 AM. SPEECH 50, 50 (1993) (“[O]ur society’s reverence for dictionaries is not driven by the latest discoveries in psycholinguistic research. Rather, it is deeply embedded in our culture.”).

134. JONATHAN GREEN, *CHASING THE SUN: DICTIONARY MAKERS AND THE DICTIONARIES THEY MADE* xiv (1996).

135. Nikola Dobrić, *The Predictive Power of the (Micro)Context Revisited—Behavioral Profiling and Word Sense Disambiguation*, 57 ZBORNIK MATICE SRPSKE ZA FILOLOGIJU I LINGVISTIKU 77 (2014).

136. Stefan Th. Gries, *Polysemy*, in *HANDBOOK OF COGNITIVE LINGUISTICS* 482 (Ewa Dabrowska & Dagmar Divjak eds., 2015); see also Dylan Glynn, *Polysemy and Synonymy: Cognitive Theory and Corpus Method*, in *CORPUS METHODS FOR SEMANTICS: QUANTITATIVE STUDIES IN POLYSEMY AND SYNONYMY* 7, 10 (Dylan Glynn & Justyna A. Robinson eds., 2014).

137. SIDNEY I. LANDAU, *DICTIONARIES: THE ART AND CRAFT OF LEXICOGRAPHY* 153 (2d ed. 2014).

138. BO SVENSÉN, *PRACTICAL LEXICOGRAPHY: PRINCIPLES AND METHODS OF DICTIONARY-MAKING* 204–05 (John Sykes & Kerstin Schofield trans., 1993).

139. Elizabeth Walter, *Using Corpora To Write Dictionaries*, in *THE ROUTLEDGE HANDBOOK OF CORPUS LINGUISTICS* 433–34 (Ann O’Keeffe & Michael McCarthy eds., 2010).

140. LANDAU, *supra* note 137, at 153.

Contemporary lexicographers have moved past relying on citation files alone and have begun to rely on electronic “corpora” – large bodies or databases of naturally occurring language – to gather linguistic data.¹⁴¹ Corpus analysis has allowed lexicographers to address the problem of sense division with greater granularity. Lexicographers can now view a more complete range of potential uses of a given word and collect statistical information about the likelihood of a given word appearing in a particular semantic environment.¹⁴²

Linguistic corpora allow us to make observations about the way that language is (and was) used through a less arbitrary and more readily measurable methodology than resort to dictionaries. And because language is the output of the mind, it is reasonable to assume that we can learn something about the way the mind perceives language by examining the way language is used in natural language environments. As mentioned above, there may be other ways to measure the way that language utterances are perceived.¹⁴³ Linguists in other linguistic disciplines use a variety of experimental methods to account for human perception of sense and meaning. But for now, our focus is on corpus linguistic analysis.

The challenge of sense division can be illustrated by reference to competing senses of *carry* in *Muscarello* or the alternative notions of *interpreter* in *Taniguchi*. Lexicographers may disagree about where to draw the lines between senses of these terms, or whether the two alternatives are distinct from each other.¹⁴⁴ But if the question of the dividing line is in some sense arbitrary and not reflective of the way in which the mind perceives and interprets language, then we ought to seek to measure – to the extent it is possible to measure – whether the mind perceives a sense distinction between two occurrences of the same word, rather than relying on the sense-divisions in the dictionaries before us.

This problem is most acute as to two senses that are viewed as closely related to each other. The two notions of *interpreter* in *Taniguchi* are illustrative. We can

141. See, e.g., OXFORD DICTIONARY OF ENGLISH xi (3d ed. 2010) (“The general principle on which the senses in the Oxford Dictionary of English are organized is that each word or part of speech has at least one core sense or core meaning, to which a number of subsenses may be attached. . . . Core meanings represent typical, central uses of the word in question in modern standard English, as established by analysis of the Oxford English Corpus and our other language databases.”). Below we will discuss in greater detail the nature of the language databases in question and why the language in those databases is properly characterized as “naturally occurring.”

142. JOHN LYONS, LINGUISTIC SEMANTICS: AN INTRODUCTION 80 (1995) (noting that another way to think about word senses is as “the set, or network, of sense-relations that hold between [an expression] and other expressions of the same language”).

143. See *supra* note 22.

144. See BIBER ET AL., *supra* note 100, at 40 (documenting the differences in the definition and sense distribution of the noun “deal” as recorded in five general-use dictionaries).

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find distinct definitions encompassing *oral translator* and *written translator*. But that may not tell us how these two senses are perceived, or that one sense would be viewed as excluding the other. The notion of *oral translator* could simply be perceived as a more common “prototype” of the more general notion of “one who translates.” The *written translator* idea could certainly be viewed as an *atypical* example. That may be all that dictionaries are telling us by indicating that *written translator* is “obsolete.” And if so, that sort of obsolescence would not tell us that an ordinary person would not understand text providing for compensation for an *interpreter* to cover a *written translator*.

A dodo, after all, is an obsolete bird. But it is still a bird. And a person who happened to discover a remaining dodo on a remote island would certainly be understood to be in possession of a bird. Such a person would be covered, for example, by the terms of a rental agreement prohibiting tenants to keep “dogs, cats, birds, or other pets” in their apartments. If you are found in possession of a caged dodo, you are not likely to escape the wrath of the landlord by insisting that a dodo is an “obsolete” sort of a bird.

2. Syntactic and Semantic Context

The need to consider context is a staple element of the judicial inquiry into ordinary meaning. Courts often reference the notion of context when they invoke the ordinary meaning canon.¹⁴⁵ Yet they rarely say what they mean by context. Linguistic theory can help identify which elements of context may matter, and thereby offer some discipline for what has been haphazard judicial practice.

Context can be viewed as encompassing both verbal and non-verbal components.¹⁴⁶ The verbal context of a word or phrase in a statute includes its *syntactic* and *semantic* environments. Syntax is a set of rules and principles that governs sentence formation and determines which sentences will convey meaning to

^{145.} See *Johnson v. United States*, 559 U.S. 133, 139 (2010) (observing that in the ordinary meaning inquiry, “[u]ltimately, context determines meaning”); *Chisom v. Roemer*, 501 U.S. 380, 404 (1991) (Scalia, J., dissenting) (arguing that the “regular method for interpreting the meaning of language in a statute” was to “first, find the ordinary meaning of the language in its textual context”); *Braunstein v. Comm’r*, 374 U.S. 65, 70 (1963) (defining the ordinary meaning of “gain” in a particular context). We are referring to linguistic context, which is a somewhat different concept than seeing if the statutory context precludes turning to ordinary meaning altogether. See, e.g., *Gonzales v. Carhart*, 550 U.S. 124, 152 (2007) (“In interpreting statutory texts courts use the ordinary meaning of terms unless context requires a different result.”).

^{146.} Charles Goodwin & Alessandro Duranti, *Rethinking Context: An Introduction*, in *RETHINKING CONTEXT: LANGUAGE AS AN INTERACTIVE PHENOMENON* 1, 6–9 (Alessandro Duranti & Charles Goodwin eds., 1992).

members of the same speech community.¹⁴⁷ One aspect of syntax is *argument structure*, a linguistic term of art that refers to the participants in the action of a verb.¹⁴⁸ A transitive verb, like *carry*, has two arguments – the subject and the object. If we are interested in examining the meaning of phrases like *carries a firearm*, we would look for phrases that have a similar argument structure. And those arguments may affect our understanding of the meaning of *carry*.

Semantic context may also affect our perception of meaning. *Semantics* is the study of meaning at the word or phrase level.¹⁴⁹ Embedded within the words and phrases we use are a number of concepts that are sometimes referred to as the semantic features or semantic components of a word.¹⁵⁰ These features include concepts like number, animacy, gender, humanness, and concreteness (i.e., tangibleness).¹⁵¹ In semantic theory, words can also be understood with reference to their functional role. A word has an *agentive* function if it is an instigator of the action of a verb, or an *objective* function if it is the entity that is affected by the action of the verb. A word may also serve an *instrumental* function if it is a force or object involved in, but not instigating, the action.¹⁵²

An illustration of these linguistic concepts may be made by reference to the *Muscarello* statute's requirement of a mandatory minimum sentence for "anyone who . . . carries a firearm." Our understanding of *anyone who carries a firearm* is informed by the syntactic arguments – with *who* as the subject and *firearm* as the object of the verb. With respect to semantic features, we can characterize the relevant subject of the statute in *Muscarello* as *animate*, *human*, and *concrete*. Similarly, we can characterize the relevant object as *inanimate*, *concrete*, *non-human*, and even *weapon*. With respect to functional roles, *who* performs the agentive

147. 17 OXFORD ENGLISH DICTIONARY 487 (2d ed. 1989). Syntax is also the study of these rules and principles. NOAM CHOMSKY, SYNTACTIC STRUCTURES 11 (1957) ("Syntax is the study of the principles and processes by which sentences are constructed in particular languages.").

148. CRUSE, *supra* note 125, §§ 14.1-5, at 281-90 (3d. ed. 2011). An intransitive verb (*fall*, *die*, *yawn*) has one argument – the subject. *Id.* § 14.4.1, at 283. A di-transitive verb (*throw*, *send*) has three arguments – the subject, the direct object, and the indirect object. *Id.* § 14.4.3, at 287-88.

149. MICHAEL MORRIS, AN INTRODUCTION TO THE PHILOSOPHY OF LANGUAGE 152 (2006) ("Semantics is the attempt to give a systematic explanation of how the meaning of sentences depends upon the meaning of their parts.").

150. JOHN I. SAEED, SEMANTICS 260, 265 (4th ed. 2015).

151. *Id.*

152. Following Charles Fillmore, Alan Cruse lists a number of functional roles for words, including *agentive* – the instigator of the action; *instrumental* – the force or object involved in the action of the verb; *dative/experiencer* – the animate being affected by the action of the verb; *factive* – the result of the action of the verb; *locative* – location or spatial orientation of the verb; and *objective* – the inanimate entity affected by the action of the verb. CRUSE, *supra* note 125, § 14.5, at 288-290 (3d. ed. 2011).

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function, instigating the action of *carry*, and *firearm* serves an *objective* function. In the phrase *anyone who carries a firearm in a car*, *car* serves an *instrumental* function—it is involved in the action of the verb, but does not instigate it and does not receive it.

By looking to the argument structure and semantic features of the relevant statute, we are able to perform a more targeted search for language data to inform our inquiry into ordinary meaning. When we seek to measure language usage, we may wish to limit our search to uses of the verb *carry* that share the above-noted features—the syntax of a transitive verb, with the semantic features of a human subject and a weapon object.¹⁵³

Limiting our search in this way will also inform the utility of information about frequency. We may find, for example, that the most frequent use of a given word is in fact quite rare in the syntactic and semantic context that is most similar to the statute. For example, we could find that the most common use of *carry* is to *carry on one's person*, but that the more prevalent use is different in the context of a human agent *carrying* an inanimate, weapon object—there, the *carry in a car* meaning may be most prevalent. Thus, when we search for ordinary meaning, we ought to be looking for the most common use of a given word in the contexts that are most similar to that of the statute in question.

B. Pragmatic Meaning

The meaning of an utterance will not always be expressly communicated in its semantic content. Non-verbal (pragmatic) contextual considerations will also be taken into account.¹⁵⁴ Such considerations may encompass the physical or social setting of an utterance, and even an inference about the intent of the speaker.¹⁵⁵

153. See *Muscarello v. United States*, 524 U.S. 125, 143 (1998) (Ginsburg, J., dissenting) (noting that the issue presented “is not ‘carries’ at large but ‘carries a firearm’”).

154. See CRUSE, *supra* note 125, at 347; Goodwin & Duranti, *supra* note 146, at 6–9. Pragmatics includes concepts like conversational implicature, where the meaning of an utterance is strongly implied but not expressly stated—as where a spouse who says “there sure are a lot of dishes in the sink” is not just making an observation about the state of the universe but is reminding somebody about whose turn it is to do the dishes.

155. Careful scholars have recognized this point, and they have identified it as a basis for concluding that the space between textualism and intentionalism is small. See SCALIA, *supra* note 116, at 144 (conceding that “what the text would reasonably be understood to mean” and “what it was intended to mean” are concepts that “chase one another back and forth to some extent, since the import of language depends upon its context, which includes the occasion for, and hence the evident purpose of, its utterance”); Larry Alexander & Saikrishna Prakash, “*Is That English You’re Speaking?*”: *Why Intention Free Interpretation Is an Impossibility*, 41 SAN DIEGO L.

Judge Richard Posner's "Keep off the grass" problem is a good illustration. As Posner notes, a sign in a park that says "'Keep off the grass' is not properly interpreted to forbid the grounds crew to cut the grass."¹⁵⁶ Our understanding of the meaning of this sign is informed by more than just its semantic and syntactic content. We understand it in light of its pragmatic context, which includes inferences about the place and manner of the utterance and presumed intentions of the speaker.

Pragmatic considerations are of relevance to any attempt to assess the ordinary meaning of a statutory phrase. An utterance that merely *describes* a person carrying a firearm might be understood to convey one ordinary meaning. But a criminal prohibition – more precisely, a requirement of a mandatory minimum criminal sentence – may be understood differently. At least that is possible, and we may need to take such context into account in assessing ordinary meaning.

Pragmatic context may also inform the utility of frequency information, just as semantic and syntactic considerations do. In searching for the ordinary meaning of a given word, we might focus our search for the most frequent uses of the word that occur in contexts that share similar physical or social features to those represented in the statute. The more frequently a given use of a word occurs in circumstances that reflect a physical and social setting similar to that of the statute, the more confidence we should have that the use in question is the ordinary meaning of the word in that context.

C. *Meaning as of When?*

Human language is in a constant state of change.¹⁵⁷ But it does not change at a predictable rate.¹⁵⁸ Nor do different linguistic features change at the same

REV. 967, 979 (2004) ("[T]he commonplace truth that all understandings of texts are contextual just demonstrates that all texts *qua* texts acquire their meaning from the presumed intentions of their authors.").

156. See RICHARD A. POSNER, *HOW JUDGES THINK* 40 (2010) ("[Pragmatism] refers to basing judgments (legal or otherwise) on consequences, rather than on deduction from premises in the manner of syllogism.").

157. JOHN LYONS, *INTRODUCTION TO THEORETICAL LINGUISTICS* 43 (1968) ("All languages are subject to constant change. This is an empirical fact All living languages . . . are of their nature efficient and viable systems of communication serving the different and multifarious social needs of the communities that use them. As these needs change, languages will tend to change to meet the new conditions.").

158. TERRY CROWLEY & CLAIRE BOWERN, *AN INTRODUCTION TO HISTORICAL LINGUISTICS* 149–51 (4th ed. 2011) (discussing criticisms of attempts to quantify the rate of language change).

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time.¹⁵⁹ A compelling theory of ordinary meaning must take account of this variation and allow us to examine the linguistic norms prevailing at different historical periods.

Lawyers and judges are used to thinking about timeframe in constitutional interpretation. There we often acknowledge that *original meaning* may differ from *modern meaning*. But we often ignore the problem in statutory interpretation. Or sometimes we just assume it away. In *Costello*, for example, Judge Posner noted that the *harboring an alien* statute was enacted in 1917, but looked for modern data as to the ordinary sense of the verb *harbor*.¹⁶⁰ Perhaps he did so out of convenience or necessity, given that his Google search framework would not have allowed historical analysis. But his stated reason reflected the reality of much litigation over statutory interpretation: the parties simply didn't bother to consider the possibility that the term *harbor* may have evolved over time – both sides presented dictionary definitions from modern times – so Judge Posner appears to have concluded that this gave him license to do the same thing.

That phenomenon is sometimes reflected in our theory of statutory interpretation. At least a few courts have looked to the ordinary meaning of a statute *as of the time it was enacted*.¹⁶¹ That approach seems appropriate to the extent we are seeking “intended” meaning. This is the point of the originalists who argue for the vindication of intended original meaning—that the “ratifiers of the Constitution . . . are the persons with authority to make and change constitutional norms,” and thus that contemporary interpreters (and citizens) are bound by their views.¹⁶² If we “‘interpret’ the Constitution as if it had been authored by someone other than its ratifiers,” these originalists argue, we are “mak[ing] constitutional ‘law’ without authority to do so.”¹⁶³ The same point can be made as to statutes. If intended meaning is the relevant construct, we must be bound by meaning as of the time of the statute's initial enactment. Otherwise, we are vindicating intentions at other times and by other people.

The “public” meaning construct could encompass either contemporary or historical meaning. If we are seeking to protect contemporary reliance interests and fair notice, we should arguably be seeking contemporary (not historical) evidence of ordinary meaning. “Normal” English speakers are guided by their con-

¹⁵⁹. *Id.*

¹⁶⁰. *United States v. Costello*, 666 F.3d 1040, 1043-44 (7th Cir. 2012).

¹⁶¹. See, e.g., *Carcieri v. Salazar*, 555 U.S. 379, 388 (2009); *Norfolk S. Ry. Co. v. Perez*, 778 F.3d 507, 512 (6th Cir. 2015); *State Bd. of Nursing v. Ruebke*, 913 P.2d 142, 157 (Kan. 1996); *State v. Ziska*, 334 P.3d 964, 967 (Or. 2014).

¹⁶². Alexander, *supra* note 129, at 141.

¹⁶³. *Id.*

temporary understanding, and they lack a sophisticated understanding of historical usage. So if we are trying to protect those interests we should arguably be seeking contemporary public meaning. But that is not the only way to think about public meaning. The premises of originalism can also be understood to seek to protect *original* public meaning—to preserve the public meaning fixed at the time of adoption or ratification.

Frequency considerations may also be applied to theories of both the “intended meaning” and “public meaning” of historical texts. If we are looking for what the ratifiers of the Constitution intended a particular word to mean, we might search for the most common way that word was used in texts drafted by the ratifiers (taking into account similarities in syntactic, semantic, and pragmatic context). If, on the other hand, we are looking for the original public meaning of a word or phrase in the Constitutional text, we might look to how that word was most commonly used by the public at large in similar contexts.

If we seek to measure historical meaning, how can we do so? One common means of assessing *historical* ordinary meaning is to consult an old dictionary. That is an approach that courts often take in seeking the original meaning of the Constitution. But that practice is fraught with all of the difficulties highlighted above as to contemporary dictionaries: historical dictionaries, just like their contemporary peers, cannot yield reliable information about which of various senses is more ordinary. Indeed, the problems are compounded for historical dictionaries.¹⁶⁴

This is not to say that historical dictionaries do not have value. Historical dictionaries can be useful for defining unknown terms and attesting contested uses.¹⁶⁵ But we ought to regard them with skepticism when they are offered as evidence of “ordinary” or “original” meaning.

¹⁶⁴. See Rickie Sonpal, *Old Dictionaries and New Textualists*, 71 *FORDHAM L. REV.* 2177, 2209–10 (2003) (“Supreme Court Justices are sometimes very scrupulous about choosing the dictionary and edition with a publication date close to the date the statute was enacted; yet, this practice is often of deceptively limited value. This practice is of even less value when old dictionaries are used because some popular older dictionaries were not only reprinted but even appeared in new editions without any substantive change to the body of the dictionary. . . . Accordingly, judges who carefully choose the printing or edition of an old dictionary that is most closely contemporary with the statute risk relying on a dictionary the substance of which far antedates the statute.” (footnotes omitted)).

¹⁶⁵. The same is true for general-use, unabridged dictionaries. They can be useful for defining unknown terms, showing the range of potential meanings, or attesting contested meanings.

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D. Whose Meaning?

Our understanding of meaning is also shaped by our speech community—the group of people with whom we share a set of linguistic norms, conventions, and expectations about linguistic behavior.¹⁶⁶ Meaning may also vary across different linguistic registers—varieties of texts, ranging from spoken communications, to newspapers, academic prose, or even congressional committee reports that tend to share linguistic features. Our theory of ordinary meaning must be able to account for the speech community we are evaluating and address the differences in various linguistic registers.

Limiting our search to a given speech community or register will have an important effect on the usefulness of information about frequency. It would not be unusual to find that a use of a word that is common in one speech community or register is quite rare in another. By limiting a search for ordinary meaning to the relevant speech community and register in question, we can have greater confidence that information about the frequency of use of a given word is telling us something useful about ordinary meaning.

The choice between “public” meaning and “intended” meaning may have implications for our identification of the relevant speech community. The public-meaning construct seems to dictate a speech community consisting of a broad cross-section of the public. The intended-meaning inquiry, on the other hand, could at least arguably point to a more limited community. Members of Congress are generally not common, ordinary people and their usage of certain words may not be colloquial. So, if our search for ordinary meaning is aimed at deriving intended meaning, we may wish to assess the usage or understanding of a more sophisticated group of English speakers. We may also wish to take into account

166. See, e.g., MARCYLIENA H. MORGAN, *SPEECH COMMUNITIES: KEY TOPICS IN LINGUISTIC ANTHROPOLOGY* 1 (2014) (“Speech communities are groups that share values and attitudes about language use, varieties and practices. These communities develop through prolonged interaction among those who operate within these shared and recognized beliefs and value systems regarding forms and styles of communication.”); Reed Dickerson, *Statutory Interpretation: Dipping into Legislative History*, 11 *HOFSTRA L. REV.* 1125, 1154 (1983) (defining *speech community* as the “group of people who share a common language (or sublanguage) and thus a common culture (or subculture), which in turn defines the context that conditions the utterances that occur within it” (footnote omitted)); John Sinclair, *Meaning in the Framework of Corpus Linguistics*, 20 *LEXICOGRAPHICA* 20, 22 (2004) (“The differences in interpretation between members of a speech community are small and they do not interfere much with normal communication.”); Kamal K. Sridhar, *Societal Multilingualism*, in *SOCIOLINGUISTICS AND LANGUAGE TEACHING* 47, 49 (Sandra Lee McKay & Nancy H. Hornberger eds., 1996) (“A conglomeration of individuals who share the[] same norms about communication is referred to as a speech community. A *speech community* is defined as a community sharing a knowledge of the rules for the conduct and interpretation of speech.”).

the pragmatic consideration that the more formal nature of legal language can affect human understanding of meaning.¹⁶⁷

III. OPERATIONALIZING ORDINARY MEANING

The above sets the stage for a more careful formulation of the law's assessment of the ordinary communicative content of the language of the law. A compelling theory of ordinary meaning recognizes that we may choose to measure either public meaning or intended meaning. And however we choose to frame the inquiry, we should account for all of the relevant semantic, pragmatic, temporal, and speech-community considerations.

That leaves the question of measurement or operationalization. We propose the use of tools employed in corpus linguistics. Corpus linguistics is an empirical approach¹⁶⁸ to the study of language that involves large, electronic databases of text known as corpora (the plural of corpus).¹⁶⁹ A corpus is a body or database of naturally occurring language.¹⁷⁰ Corpus linguists draw inferences about language from data gleaned from “real-world” language in its natural habitat—in books, magazines, newspapers, and even transcripts of spoken language.¹⁷¹ The

167. *But see* Doerfler, *supra* note 130, at 983–84 (articulating a “conversation” model of “fictionalist” legislative intent in which “[a]n interpreter occupies the position of conversational participant, hearing statements directed at her and other participants” and credits “information salient both to members of Congress and to citizens”).

168. PAUL BAKER ET AL., A GLOSSARY OF CORPUS LINGUISTICS 65 (2006) (“In linguistics, empiricism is the idea that the best way to find out about how language works is by analysing real examples of language as it is actually used. Corpus linguistics is therefore a strongly empirical methodology.”); TONY MCENERY & ANDREW HARDIE, CORPUS LINGUISTICS: METHOD, THEORY AND PRACTICE 49 (2012) (“Empiricism lies at the core of corpus linguistics . . .”).

169. *See* MCENERY & HARDIE, *supra* note 168, at 1–3.

170. *See* Douglas Biber, *Corpus-Based and Corpus-Driven Analyses of Language Variation and Use*, in THE OXFORD HANDBOOK OF LINGUISTIC ANALYSIS 159, 159 (Bernd Heine & Heiko Narrog eds., 2010) (“Corpus linguistics is a research approach that has developed over the past several decades to support empirical investigations of language variation and use, resulting in research findings that have much greater generalizability and validity than would otherwise be feasible . . . [I]t utilizes a large and principled collection of natural texts, known as a ‘corpus,’ as the basis for analysis . . .”).

171. *Id.* at 160–61 (“[Corpus linguistics] depends on both quantitative and qualitative analytical techniques . . . [T]he major contribution of corpus linguistics is to document the existence of linguistic constructs that are not recognized by current linguistic theories. Research of this type—referred to as a ‘corpus-driven’ approach—identifies strong tendencies for words and grammatical constructions to pattern together in particular ways, while other theoretically possible combinations rarely occur . . . [C]orpus-based research investigates the patterns of variation among the full set of spoken and written registers in a language. In speech, these

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defining characteristic of corpus linguistics is “the claim that it is possible to actually ‘represent’ a domain of language use with a corpus of texts, and possible to empirically describe linguistic patterns of use through analysis of that corpus.”¹⁷² Through corpus analysis we can test our hypotheses about language through rigorous experimentation with observable and quantifiable data. And the results of a corpus-based conclusion will be replicable and falsifiable.¹⁷³

Corpus data can tell us the relative frequency of different senses of *vehicle* (or of *carrying* a firearm, of *interpreter*, or of *harboring* an alien) in naturally occurring language.¹⁷⁴ And if the search for ordinary meaning entails analyzing the relative frequency of competing senses of a given term, then corpus linguistics seems the most promising tool.¹⁷⁵

Corpus data can also help us resolve different types of linguistic uncertainty in the interpretation of legal texts.¹⁷⁶ We can use corpus data to address questions of vagueness, where “a word or phrase has borderline cases.”¹⁷⁷ The scope

include casual face-to-face conversation, service encounters, lectures, sermons, political debates, etc.; and, in writing, these include e-mail messages, text-messaging, newspaper editorials, academic research articles, etc.” (citation omitted)).

172. DOUGLAS BIBER & RANDI REPPEN, *THE CAMBRIDGE HANDBOOK OF ENGLISH CORPUS LINGUISTICS* 1 (2015).

173. See MCENERY & HARDIE, *supra* note 168, at 66 (“As a key goal of corpus linguistics is to aim for replicability of results, data creators have an important duty to discharge in ensuring that the data they produce is made available to analysts in the future.”).

174. Assuming, of course, the corpora used are properly constructed such that they enable us to make generalizations about a larger population. See generally Douglas Biber, *Representativeness in Corpus Design*, 8 LITERARY & LINGUISTIC COMPUTING 243 (1993) (addressing a number of issues related to achieving “representativeness” in linguistic corpus design).

175. One problem in finding ordinary meaning is the problem of modulation, the idea that “a conventional semantic meaning can be adjusted or modulated to fit the context—essentially, a new meaning is created (sometimes on the spot) so that an old word is used in a new way.” Solum, *supra* note 125, at 290. It is possible that corpus data establishing the prevailing use of a given word in a given period could also be used to triangulate instances of modulation. It is similarly possible that historical corpus data could be used to trace circumstances in which modulation resulted in new coinages with important legal implications. See *id.* (arguing that the “Constitution contains a variety of modulations”). We do not address these phenomena here, however.

176. See *id.* at 286 n.60 (“Lawyers sometimes use the words ‘ambiguity’ and ‘vagueness’ interchangeably to refer to a lack of clarity.”); Lawrence M. Solan, *Pernicious Ambiguity in Contracts and Statutes*, 79 CHI.-KENT L. REV. 859, 860 (2004) (“When discussing indeterminacy in meaning, linguists and philosophers often distinguish between ambiguity and vagueness. . . . Legal writers, and judges in particular, use the word ‘ambiguity’ to refer to all kinds of indeterminacy, whatever their source. Because this Article focuses heavily on what judges say, I will generally use the word ambiguity in this looser, legal sense.”).

177. Solum, *supra* note 125, at 286.

of the term *vehicle* in the *no vehicles* ordinance is perhaps an example of vagueness. We can also use corpus data to address questions of ambiguity, where a word or phrase has more than one potential meaning in a given context.¹⁷⁸ *Muscarello* seems to fit here; the choice between the competing senses of *carry* is largely a question of ambiguity.

Such data can also inform our assessment of linguistic prototype.¹⁷⁹ If the corpus data reveal that most *vehicles* that we speak of are automobiles, or that most instances of *carrying* a firearm involve bearing it on your person, we may infer that those senses are more likely to be prototypical senses of the operative terms.

Below we drill down further on the proposed means of measurement. First we present linguistic tools and means of measuring the components of ordinary meaning identified above. We then illustrate the utility of those tools by applying them to the cases and examples discussed throughout the Article. We conclude this Part with some observations about inferences that can be drawn from the data about the ordinary meaning of *vehicle*, *carry a firearm*, *interpreter*, and *harbor*.

A. Tools

Corpus linguistic tools can be employed to measure ordinary meaning as conceptualized in this Article. Here we explore the range of available corpora and the functionalities they encompass.

1. Varieties of Linguistic Corpora

Linguistic corpora come in a number of varieties, each tailored to suit the needs of a particular set of empirical questions about language use. Corpora may be *general* or *special*. A *general* corpus endeavors to represent the language used by a broad (often national) speech community. *Special* corpora are limited to a

178. See *id.* (defining ambiguity as “cases in which a word or phrase has more than one sense.”).

179. Intuitively, we might assume that frequency and prototype would map onto one another with some precision, but this is not always the case. See John R. Taylor, *Prototype Theory*, in 1 *SEMANTICS: AN INTERNATIONAL HANDBOOK OF LANGUAGE MEANING*, 643, 649–50 (Claudia Maienborn et al. eds., 2011) (“In response to the question ‘where does prototypicality come from?’, many people are inclined to say that prototypes (or prototypical instances) are encountered more frequently than more marginal examples and that that is what makes them prototypical. Although frequency of occurrence certainly may be a factor (our prototypical vehicles are now somewhat different from those of 100 years ago, in consequence of changing methods of transportation) it cannot be the whole story.” (citation omitted)).

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particular genre, register, or dialect.¹⁸⁰ There are *monitor* corpora that are continuously updated with new texts in order to track contemporary language use, and there are *historical* or *sample* corpora that reflect the language use of a particular period. We will rely on both monitor and historical corpora in the analysis below.

Corpora may also be *raw*, *tagged*, or *parsed*. A *raw* corpus contains almost no linguistic metadata (e.g., a .txt file containing the complete works of Shakespeare would be a raw corpus). *Tagged* corpora typically contain metadata from a grammatical “tagging” program that automatically marks each word with a part of speech. A tagged corpus can dramatically improve corpus analysis by allowing a researcher to look for all different forms of a single word in a single search (e.g., a search for the verb *carry* would automatically include every verb inflection, including *carries*, *carrying*, and *carried*) and to limit results to a particular part of speech (e.g., the verb *harbor*, not the noun *harbor*). This type of search is called a *lemmatized* search—a search for the base form of a word that reveals its permutations. *Parsed* corpora contain phrase-, clause-, or sentence-level annotation, revealing the syntactic relationships among the words in the corpus. While automated tagging is highly accurate, automated parsing is not. Thus, parsed corpora tend to require a significant amount of human editing and annotation, which increases the costs of their production dramatically. For that reason, parsed corpora tend to be smaller than tagged corpora. The corpora we rely on in the analysis below are tagged, but not parsed.¹⁸¹

2. Corpus Tools—Frequency, Collocation, and Key Word in Context

Linguistic corpora can perform a variety of tasks that cannot be performed by human linguistic intuition alone. For example, as noted above, corpora can be used to measure the statistical *frequency* of words and word senses in a given speech community and over a given time period.¹⁸² Whether we regard the ordinary meaning of a given word to be the *possible*, *common*, or the *most common*

¹⁸⁰. For example, the Linguistic Data Consortium at the University of Pennsylvania produced a corpus of recorded Egyptian Arabic telephone calls. See Alexandra Canavan et al., *CALL-HOME Egyptian Arabic Speech*, LINGUISTIC DATA CONSORTIUM (1997), <http://catalog.ldc.upenn.edu/LDC97S45> [<http://perma.cc/P6NQ-MUT5>].

¹⁸¹. The corpora relied on in this paper were tagged by the Constituent Likelihood Automatic Word-tagging System (CLAWS-7) program. Mark Davies, *The 385+ Million Word Corpus of Contemporary American English (1990-2008+): Design, Architecture, and Linguistic Insights*, 14 INT’L J. CORPUS LINGUISTICS 159, 164 (2009).

¹⁸². TONY MCENERY & ANDREW WILSON, CORPUS LINGUISTICS: AN INTRODUCTION 82 (2d ed. 2001).

sense of that word in a given context, linguistic corpora allows us to determine empirically where a contested sense of a term falls on that continuum.

Corpora can also show *collocation*, “which is the tendency of words to be biased in the way they co-occur.”¹⁸³ As we have seen, words are often interpreted according to the semantic environment in which they are found. A collocation program can show the possible range of linguistic contexts in which a word typically appears and can provide useful information about the range of possible meanings and sense divisions.¹⁸⁴

Corpora also have a *concordance* or *key word in context* (“KWIC”) function, which allows their users to review a particular word or phrase in hundreds of contexts, all on the same page of running text. This allows a corpus user to evaluate words in context systematically.

Commonly accepted canons of interpretation like *ejusdem generis* and *noscitur a sociis* already counsel legal interpreters to look for meaning in the surrounding linguistic context of an utterance—to know a word by the company it keeps.¹⁸⁵ The data made available through a linguistic corpus allows one to make such inquiries systematically, and to gain meaningful and quantifiable insight about the range of possible uses of a word and the frequency of its different senses.¹⁸⁶

3. Representing Speech Community and Register in a Corpus

Linguistic corpora can be built from the ground up using text or speech from any given speech community or register. As Professor Larry Solan has noted:

When the legal system decides to rely on the ordinary meaning of a word, it must also determine which interpretive community’s understanding it wishes to adopt. This choice is made tacitly in legal analysis, but becomes overt when the analysis involves linguistic corpora because the software displays the issue on a screen in front of the researcher.¹⁸⁷

183. SUSAN HUNSTON, CORPORA IN APPLIED LINGUISTICS 68 (2002); see also John R. Firth, *A Synopsis of Linguistic Theory, 1930-1955*, in STUDIES IN LINGUISTIC ANALYSIS 1, 14 (1957) (“Collocations are actual words in habitual company.”).

184. HUNSTON, *supra* note 183, at 69.

185. ESKRIDGE, *supra* note 5, at 76-78 (discussing the *ejusdem generis* and *noscitur a sociis* canons).

186. Early discussions of collocation analysis used language very similar to the *noscitur a sociis* canon. See, e.g., Firth, *supra* note 183, at 11 (“You shall know a word by the company it keeps!”).

187. Solan, *The New Textualists’ New Text*, *supra* note 50, at 2059 (footnotes omitted).

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In this Article we rely on a pair of corpora of standard written American English (one contemporary and one historical). But a corpus can be constructed to represent the language use of a wide variety of speech communities or registers.¹⁸⁸

One possibility worth highlighting is that of a distinct *legal* corpus. Some of the language of the law, of course, is written in a distinct legal dialect.¹⁸⁹ Where a given term is thought to be a legal term of art, a legal corpus could be built to analyze its meaning in the legal vernacular. Such a corpus could be employed to compare the ordinary sense of a given term and its legal term-of-art usage.

4. *Representing Historical Language Use*

Finally, a linguistic corpus can be built from texts representing the language use from any period in history. To the extent our understanding of ordinary meaning should be informed by the linguistic norms and conventions prevailing at the time that a given legal text was drafted, corpus linguistics can provide powerful evidence of historic language use.

5. *The BYU Corpora*

Below we will tackle the interpretive problems posed by the *Muscarello*, *Taniguchi*, and *Costello* cases using data from two linguistic corpora: the News on the Web (“NOW”) Corpus and the Corpus of Historical American English (“COHA”), both developed at Brigham Young University and referred to here as the BYU Corpora. Here we outline the parameters of each corpus and highlight their differences.

a. *NOW Corpus*

The NOW Corpus is a database of “5.2 billion words of data from web-based newspapers and magazines from 2010 to the present time.”¹⁹⁰ It is a monitor corpus that “grows by about 5-6 million words of data each day (from about 10,000

¹⁸⁸. While corpora vary in size and sophistication, anyone can build a corpus using freely available software like AntCorGen. See *AntCorGen*, LAURENCE ANTHONY’S WEBSITE, <http://www.laurenceanthony.net/software/antcorgen> [<http://perma.cc/NJV9-5JVP>].

¹⁸⁹. See generally McGinnis & Rappaport, *supra* note 4, at 4 (asserting that the Constitution is written in the “language of the law,” not ordinary English).

¹⁹⁰. *NOW Corpus (News on the Web)*, BYU, <http://corpus.byu.edu/now> [<http://perma.cc/UTD2-BC86>].

new articles), or about 150 million words each month.”¹⁹¹ The NOW Corpus downloads content every night from dozens of websites listed on Google News, using an automated software program.¹⁹² These texts are then automatically tagged and lemmatized (adding part-of-speech metadata to each word) and integrated into the existing corpus.¹⁹³ Because of this extraordinary rate of growth, the NOW Corpus is currently the largest tagged corpus of English in the world.

“[T]here is no data like more data,”¹⁹⁴ and the chief virtues of the NOW Corpus are its size and immediacy. With the NOW Corpus, the user is able to examine what is happening in the language at the moment. And because of the size and scope of the corpus, lower frequency linguistic phenomena (words, word senses, syntactic structures, etc.) are more likely to be attested, while the distribution of higher frequency phenomena will be better and more completely represented.

The NOW Corpus has a few limitations. First, even with searches limited to U.S. sources, the NOW Corpus records the language use of a single, large speech community (the United States) in a single linguistic register (newsprint). But if the interpretation of a federal statute requires us to consider the linguistic norms and conventions of the citizens subject to that statute, then U.S. newsprint may be the appropriate speech community and register. Spoken dialects of American English show sharp (and increasing) differences in vocabulary, grammar, and phonology,¹⁹⁵ but the norms and conventions of the written variety of American English (sometimes called standard written American English) tend to be more uniform. Since we are interpreting a written text, evaluating that text through the lens of standard written American English (from newsprint) may be the right approach.

The NOW Corpus is also limited with respect to timeframe. NOW tracks the linguistic norms and conventions over the past decade. So if we want to evaluate interpretive problems against the backdrop of linguistic norms prevailing at the enactment of the Constitution, we will need to turn elsewhere.

191. *Id.*

192. *Id.*

193. *Id.*

194. Kenneth Church, *Has Computational Linguistics Become More Applied?*, in *COMPUTATIONAL LINGUISTICS AND INTELLIGENT TEXT PROCESSING* 1, 3 (Alexander Gelbukh ed., 2009) (internal quotation marks omitted) (attributing the statement to Robert Mercer).

195. See WILLIAM LABOV, *DIALECT DIVERSITY IN AMERICA: THE POLITICS OF LANGUAGE CHANGE* 1–2 (2012).

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b. Corpus of Historical American English (“COHA”)

The COHA is “the largest structured corpus of historical English.”¹⁹⁶ It contains “more than 400 million words of text from the 1810s-2000s (which makes it 50-100 times as large as other comparable historical corpora of English) and the corpus is balanced by genre decade by decade.”¹⁹⁷ Using data from the COHA, we can gather linguistic information from the decade that a statute was enacted, going back approximately 200 years.

Like the NOW Corpus, the COHA is limited in terms of speech community and register. Though it has texts from a wider variety of registers than the NOW Corpus (including fiction, magazines, and non-fiction), these tend to fall within the ambit of standard written American English. In addition, the 400 million words of the COHA are spread out over 200 years. Consequently, the COHA is essentially a collection of twenty separate corpora (one for each decade from 1810 to 2010) averaging just over twenty million words).¹⁹⁸

There is a lot of linguistic information to be gleaned from a twenty-million-word corpus. But as we have seen, in the specialized setting of statutory interpretation it is important to evaluate words in context. These contexts may be poorly represented (or not represented at all) in the corpus with limited data for a given period. The earliest texts in the COHA date from the period of 1810 to 1820. These texts come in twenty to thirty years shy of the Founding Era, leaving us without a data source for the prevailing linguistic norms during the drafting and ratification of the Constitution.¹⁹⁹

196. *Corpus of Historical American English*, BYU, <http://corpus.byu.edu/coha> [<http://perma.cc/N44U-NQ8T>].

197. *Id.*

198. For a breakdown of the total number of words in the COHA for each decade, go to <http://corpus.byu.edu/coha> and click on “400 million words.” Note that any searches performed will normalize frequency measurements in words-per-million, so that measurements of statistical frequency over multiple decades will not be adversely affected by differences in the number of words in the corpus for each decade.

199. There are good reasons for this omission. Prior to the 1806 publication of Noah Webster’s influential text, *A Compendious Dictionary of the English Language*, American spelling was very much in disarray, with many common words having as many as a half dozen potential spellings. This makes the construction of a corpus interface and the automated tagging of corpus data very difficult (and expensive). Moreover, because of widely varied orthographic practices, many historical texts are difficult, if not impossible, to subject to optimal character recognition (“OCR”). BYU Law School is seeking to fill this gap. It is currently working on a Corpus of the Founding Era American English (“COFEA”). See *Law & Corpus Linguistics Conference*, BYU LAW: LAW & CORPUS LINGUISTICS, <http://lawcorpus.byu.edu> [<http://perma.cc/S256-N8FQ>].

With all of that said, the COHA remains the largest corpus of historical American English and it contains significant linguistic information relevant to the statutes at issue in *Muscarello*, *Taniguchi*, and *Costello*.

B. Applications

1. Vehicles in the Park

The “no vehicles” problem seems a mandatory subject for any serious treatment of statutory interpretation. It was introduced initially by Professor H.L.A. Hart²⁰⁰ in his famous debate with Professor Lon Fuller,²⁰¹ but seemingly everyone has treated the problem since then.²⁰² There is also no shortage of extensions of the hypothetical. Hart says that “[p]lainly” the rule “forbids an automobile,” but asks “about bicycles, roller skates, toy automobiles” and airplanes.²⁰³ The airplane example invokes an actual case — *McBoyle v. United States*,²⁰⁴ in which the U.S. Supreme Court held that an airplane was not a vehicle under the National Motor Vehicle Theft Act, which prohibited transporting stolen “vehicles” across state or national borders.²⁰⁵

The scholars cited throughout this Article have offered their own views on the scope of “vehicle.” Justice Scalia and Garner’s *Reading Law* says that the Hart prohibition should extend to any “*sizable* wheeled conveyance,” and thus to automobiles — including “ambulances, golf carts, mopeds, motorcycles, and (perhaps) Segways” — but not “remote-controlled model cars, baby carriages, tricycles, or perhaps even bicycles.”²⁰⁶ Professor Fallon objects to the extension to ambulances. He says the “reasonable meaning” of vehicle should not be understood to extend to ambulances — at least those responding to emergencies.²⁰⁷ Professor William Eskridge disagrees with Justice Scalia and Garner’s suggestion as to bicycles; he says that “bicycles are commonly considered vehicles,” a conclusion he claims to confirm using corpus data.²⁰⁸

200. Hart, *supra* note 41, at 607.

201. Lon L. Fuller, *Positivism and Fidelity to Law — A Reply to Professor Hart*, 71 HARV. L. REV. 630, 662–69 (1958).

202. See, e.g., ESKRIDGE, *supra* note 5, at 45–46; SCALIA & GARNER, *supra* note 28, at 36–39; Fallon, *supra* note 2, at 1260–62.

203. Hart, *supra* note 41, at 607–08.

204. 283 U.S. 25, 26–27 (1931).

205. 18 U.S.C. § 2312 (2012).

206. SCALIA & GARNER, *supra* note 28, at 37–38.

207. See Fallon, *supra* note 2, at 1260–61.

208. ESKRIDGE, *supra* note 5, at 45–46.

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Yet there has been very little attempt to assess the ordinary meaning of *vehicle* with any data. We present some relevant data below, concerning the frequency or prototypicality of various senses of this term.

a. Lexical Collocation of Vehicle Through Time

One way to examine the most common context in which a word appears is collocation. The collocation function of the corpus can show us the words that are statistically most likely to appear in the same context as *vehicle* for a given period. We can use collocation to get a snapshot of the semantic environment in which *vehicle* appears and the kinds of vehicles that tend to appear in that environment.

We can view the most common contemporary collocates²⁰⁹ of *vehicle* in the NOW Corpus.²¹⁰ In NOW, the fifty most common collocates of *vehicle* are as follows:

*electric, motor, plug-in, unmanned, armored, connected, cars, aerial, charging, pure, launch, owners, hybrid, traffic, fuel, driving, gas, autonomous, struck, operating, road, safety, accidents, battery, ownership, emergency, batteries, emissions, seat, advanced, driver, primary, demand, gmv, commandeered, fuel-efficient, uavs, automakers, demonstrators, excluding, lunar, passenger, fleet, gasoline, luxury, drove, parking, retirement, vehicles, infrastructure*²¹¹

Many of the collocates of *vehicle* in the NOW Corpus strongly indicate *automobile* as a likely candidate for the most common use of the term. The NOW Corpus lists a number of automotive collocates like *motor, car, traffic, fuel, driving,*

209. The NOW Corpus and other BYU corpora are available without a subscription. To access NOW, go to <http://corpus.byu.edu/now>. To generate a list of collocates in NOW, take the following steps: (1) Select “Collocates” on the NOW Corpus homepage; (2) Enter “VEHICLE_n” in the “Word/phrase” field (capitalization makes the search lemmatized—assuring that we find all inflections of the word; the “_n” is to limit the search to noun forms); (3) Enter an asterisk “*” (a wildcard) in the “Collocates” field; (4) Select “Sections” and select “United States” in column “1” (ignoring column “2”); (5) Select “Sort/Limit” and set the “Minimum” to “MUT INFO”; and (6) Click “Find collocates.”

210. The following link will reproduce the search above, except that the user would need to repeat step four, select “Sections,” and select “United States,” which doesn’t repopulate automatically. See *NOW Corpus (News on the Web)*, BYU, <http://corpus.byu.edu/now/?c=now&q=54596680> (last visited Mar. 8, 2017).

211. The search results are saved at the following link. See *NOW Corpus (News on the Web)*, BYU, <http://corpus.byu.edu/now/?c=now&q=52902048> (last visited Dec. 21, 2016).

gas, battery, batteries,²¹² emissions, driver, fuel-efficient, automakers, gasoline, drove, and parking. It also includes more recent automotive collocates of *vehicle* like *electric*, *plug-in*, *connected*, *charging*, and *hybrid*. Some of the collocates by themselves have a range of possible uses (owners, operating, safety, accidents, ownership, emergency, seat, primary, infrastructure), but when examined in context almost always indicate an automotive meaning.²¹³ *Airplane* does not appear, though two particular types of aircraft are attested in the collocates – unmanned aerial vehicles (drones) and spacecraft.²¹⁴ Similarly, *bicycle* does not appear among the collocates of *vehicle* in contemporary usage.

We can also examine the collocates of *vehicle* during the 1950s, the decade of the Hart/Fuller debate, in the COHA. These collocates are listed below:

*motor, space, trucks, moving, wheeled, tax, self-propelled, passenger, unit, tracked, orbit, test, b.g., launching, highways, tanks, license, robot, emergency, units, taxes, streets, equipment, manned, armored, vehicles, fees, vehicle, traveling, operate, loaded, fuel, commercial, driver, ride, traffic, designed, weight, speed, cars, carrying, operation, unsafe, horse-drawn, high-powered, amphibious, administrators, tactical, registration, delivery*²¹⁵

We can see from this data that the meaning of *vehicle* has evolved significantly from the 1950s, though the automotive use of *vehicle* predominated then as well. The decade is remarkable as the first in which the spacecraft sense of *vehicle* appears, but also the last in which the *horse-drawn* collocate of *vehicles* appears.²¹⁶ *Unmanned* does not appear, but *manned vehicle* does (*spacecraft* in this case). Still, the overwhelmingly most common use of *vehicle* is the *automotive* sense, while a number of context-specific possible senses are attested. Again, none of the top fifty collocates of *vehicle* include the notions of *airplane* or *bicycles*.

212. Collocates are not lemmatized in the BYU corpora, so the singular and plural form of a given collocate are counted separately. In this case, that means that *battery* and *batteries* both make the list separately.

213. To the extent that there is any doubt that any of these collocates suggest the automotive meaning of *vehicle*, clicking on any of the listed collocates in the NOW Corpus interface will display the context in which it appears and confirm the automotive meaning is intended. For example, it is possible to speak of *bicycle traffic* or *airplane emissions*, but in the context of the word *vehicle*, the words *traffic* and *emissions* are used in the automotive sense.

214. *NOW Corpus (News on the Web)*, *supra* note 211.

215. See *The Corpus of Historical American English*, BYU, <http://corpus.byu.edu/coha/?c=coha&q=52600298> (last visited Dec. 21, 2016).

216. An additional *vehicle* is added to our collection with *amphibious vehicle*, and *tanks* makes an appearance again. Two collocates (the abbreviation *b.g.* for background, and *robot*) are the result of including science fiction screenplays in the corpus. In both cases the vehicles in question are spacecraft.

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We can also use the COHA to examine the collocates of *vehicle* from the period relevant to the *McBoyle* case. Because the statute at issue in *McBoyle* was enacted in 1919,²¹⁷ and because the COHA only allows us to search in ten-year increments, it may make sense to include data from 1910 through 1930.

Whether or not the use of the word *vehicle* “evoke[s] in the common mind only the picture of vehicles moving on land,” as Justice Holmes suggests, may not be a question that can be addressed with a corpus.²¹⁸ But the collocate data from this period (consistent with the collocate data above) allow us to draw a similar inference that the automotive use is the most common use of *vehicle*, and that the *airplane* sense remains unattested:

*motor, horse-drawn, wheeled, horses, pedestrians, kinds, expression, driver, passing, moving, various, horse, automobiles, tax, heavy, drawn, carry, road-less, rickety, trucks, communication, approaching, traffic, electric, mental, physical, 3,500,000, astral, belonging, steam, transportation, commissioner, rear, total, carrying, propulsion, propelled, oncoming, carriages, registration, ego, conceivable, tires, drivers, vehicle, carriers, 45, loaded, halted, manufacturers*²¹⁹

The collocates from this period add a few interesting *vehicles* to our growing list, including *astral vehicle* (a reference to the theosophical notion of an “intermediate between the intelligent soul and the mental body, composed of a subtle material”).²²⁰ It should also be noted that only a few of the collocates in this period occur more than once, and only four—*motor, horse-drawn, wheeled*, and *horses*—occur ten times or more, with *motor* occurring twice the number of times as the other three combined.²²¹

From the collocates of *vehicle* displayed by the NOW Corpus and the COHA, we can make the following preliminary observations (observations that we can later confirm by reviewing KWIC data). First, the collocates of *vehicle* strongly suggest that the most common use of *vehicle* is with reference to automobiles. Second, the absence of *airplane* and *bicycle* in the top fifty collocates of *vehicle*

217. See *McBoyle v. United States*, 283 U.S. 25, 25-26 (1931) (citing the National Motor Vehicle Theft Act, 18 U.S.C. § 408 (1928)).

218. *Id.* at 27.

219. See *The Corpus of Historical American English*, BYU, <http://corpus.byu.edu/coha/?c=coha&q=53847214> (last visited Feb. 8, 2017).

220. See *Astral Body*, WIKIPEDIA, http://en.wikipedia.org/wiki/astral_body [<http://perma.cc/R98L-A57F>]. This notion also explains the presence of *ego* and *mental* in the collocates of *vehicle*.

221. See *supra* note 219.

raises an important question for our frequency continuum.²²² If we accept that the necessary and sufficient conditions of *vehicle* are “[a]ny means of carriage, conveyance, or transport”²²³ or “a means of carrying or transporting something,”²²⁴ then there seems little question that both an *airplane* and a *bicycle* are possible readings of *vehicle*. But if *vehicle* is never used to refer to *bicycle* or *airplane* in the corpus data, then we may end up with an even further extension of our frequency continuum from *possible but rare* to *possible but unattested*. Before jumping to the conclusion that the *airplane* and *bicycle* uses of *vehicle* are entirely unattested in the corpora or the language at large, however, we should evaluate the use of *vehicle* in the concordance data.

b. Vehicle as a KWIC

We can extract concordance data from the NOW Corpus.²²⁵ A NOW search for concordance lines of *vehicle* will yield an output along these lines:

222. It is worth noting that while the words *airplane* and *plane* do not appear among the collocates of *vehicle* during any of the timeframes examined above, there are, at least, a number of aircraft terms that do appear, including reference to two specific types of aircraft: *spacecraft* and *unmanned aerial drones*. It is not clear why the more general terms *airplane* and *plane* do not appear in the collocate data for *vehicle*, while terms like *spacecraft* and *unmanned aerial drone* do appear.

223. 19 OXFORD ENGLISH DICTIONARY 480 (2d ed. 1989).

224. WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 2538 (1961).

225. The concordance line search in NOW is executed as follows: (1) Select “KWIC” on the NOW Corpus homepage; (2) Enter “VEHICLE_n” in the “Word/phrase” field; (3) Click on “Sections” and select “United States”; (4) Click “Keyword in Context (KWIC).” See *NOW Corpus (News on the Web)*, BYU, <http://corpus.byu.edu/now/?c=now&q=54499369> (last visited Mar. 5, 2017). By selecting “Options” and “# KWIC,” the corpus user can select the number of randomized concordance lines to be reviewed. While the search parameters can be saved in a link, the corpus randomizes the results, and, in the case of the NOW Corpus, the corpus updates with millions of new words on a nightly basis. Therefore, until the BYU corpora develop the ability to save the exact content of a particular randomized search, it is useful to copy the results of the search into a spreadsheet.

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TABLE 1.
KWIC OF *VEHICLE*²²⁶

the driver, Bhaskar Jha, apparently lost control of the	vehicle	because he was traveling too fast for the wet road conditions.
of the troopers. Parrott says the suspects in the	vehicle	began showing aggression and shots rang out. Corporal Shane
injury and leaving a child under 12 unsupervised in a motor	vehicle	but released on a written promise to appear.) Risk
Hybrid electric vehicles use regenerative braking (when the	vehicle	captures energy that would be otherwise lost from braking) and
pushed onto the property because of the speed of which these	vehicles	collide,” said Dr. Tom Lawrence, of Clinical Nutrition
, 2009. That day the two officers saw a	vehicle	connected to a domestic violence case in which shots had been
say automakers would be better. Wakefield says autonomous	vehicles	could erode the image of certain brands more than others. Brands
biogas, and Daimler, which supplies a number of experimental	vehicles	designed to run on natural gas. The German Federal Ministry of
is that they aren’t kept on file with the Motor	Vehicle	Division or any other entity. By contrast, beneficiary

The KWIC output in the NOW Corpus allows us to select anywhere from one hundred to one thousand randomized sample uses of *vehicle(s)* and display them in their semantic environment. To the extent that the snippet view above fails to provide sufficient evidence of usage, the corpus interface allows us to click through to an expanded passage from the article referenced in a given concordance line.

In order to examine the sense distribution of *vehicle*, we reviewed one hundred randomized concordance lines of *vehicle* in the NOW Corpus. Of those, ninety-one were *automobiles*. There was a single reference to a bus, and one reference to an ambulance, but in every other instance, a passenger car was referenced. Of the remaining *vehicles*, there was one cargo ship, one jet ski, and an ambiguous reference to a military ground vehicle of an unknown type. There were three metaphorical uses of *vehicle* (e.g., the role of the city as a vehicle for

²²⁶. Note that these concordance lines have been shortened to fit this page. Moreover, because the content of the corpus is constantly updated, and because the results of the search are typically randomized, a search performed on any given day will provide a different data set.

development). The results also contained a reference to the military's efforts to create a flying Humvee/helicopter hybrid.²²⁷

The NOW Corpus data included no *airplanes*, *bicycles*, *tricycles*, *skateboards*, *roller-skates*, *toy cars*, or any of what Hart and others have characterized as penumbral, disputed cases. To the extent that our notion of ordinary meaning has a frequency component, this data suggests that *automobile* is overwhelmingly the most common use of the word *vehicle* in the modern written American English represented in the NOW Corpus. The corpus data also suggest that there are numerous possible (if much less common) uses of *vehicle*, and that some seemingly possible meanings are unattested and may not be current.

A similar review of data from the COHA for the 1950s showed a wider range of *vehicles*. Still, approximately sixty-five percent of the usages of *vehicles* during this timeframe referred to *automobiles*. Another thirty percent referred to the space program or missile defense, while the remaining five percent referred to metaphorical uses of *vehicle* (e.g., a film as a starring vehicle for an actor). For the period spanning the 1910s and 1920s, *automobiles* made up approximately sixty percent of the instances of *vehicle*. References to carriages or horse-drawn *vehicles* were more common, and there were a significant number of cases where the choice between automobile and horse-drawn vehicle was not clear. (When a text from 1915 says that Fifth Avenue was crowded with vehicles, it is not clear from context whether automobiles, carriages, or both were intended.) Finally, there were a number of references to theosophy and the notion of an astral vehicle. The COHA data also included no references to *airplanes*, *bicycles*, *tricycles*, *skateboards*, *roller-skates*, or *toy cars* for either period.

c. Searching for Vehicles in the Context of a Park

Hart's interpretive puzzle is not simply about *vehicles* at large, but *vehicles in the park*. As we have discussed, with the corpus we can examine the question of ordinary meaning in the relevant semantic and syntactic context. We can search for *vehicles* that collocate with the term *park*.²²⁸

227. We are not making this up. See *Aerial Reconfigurable Embedded System*, WIKIPEDIA, http://en.wikipedia.org/wiki/Aerial_Reconfigurable_Embedded_System [<http://perma.cc/9HVS-82R9>].

228. (1) Select "Collocates" on the NOW Corpus homepage; (2) Enter "VEHICLE_n" in the "Word/phrase" field; (3) Enter "PARK_n" in the "Collocates" field; (4) Select "Sections" and select "United States"; (5) Select "Sort/Limit" and set the "Minimum" to "FREQUENCY" and "15"; (6) Click "Find collocates"; and (7) Click "PARK" or "PARKS." See *NOW Corpus (News on the Web)*, BYU, <http://corpus.byu.edu/now/?c=now&q=63434268> (last visited Mar. 5, 2017).

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A review of the concordance data from this search reveals at least one limitation of the corpus. We can search for specific parts of speech (e.g., nouns, verbs), but not specific senses. That means that our search for *vehicles in the park* must begin by eliminating the approximately forty percent of the concordance lines that refer to *vehicles* that are *in park* as opposed to *in reverse*, *neutral*, or *drive*. Approximately five percent of the concordance lines refer to recreational vehicles in recreational vehicle parks. Of the remaining instances of vehicle, more than fifty percent refer specifically to *automobiles*. *Bicycles* are not attested in this context, nor are *airplanes*, *skateboards*, or *roller skates*.

Our understanding of a prohibition on *vehicles in the park* may depend largely on the physical and spatial characteristics of the park itself. If a municipal park has no means of ingress or egress for automobiles, then we might assume that cutting across the grass in a car would be prohibited. It is not surprising then that where municipal parks are concerned, the *vehicle* most likely to show up in the context of *park* in the corpus data (i.e., automobiles) is often not *in the park*, as in (1) and (2) below:

- (1) *juvenile[s] were taken into custody Wednesday, accused of discharging a BB gun at passing vehicles near Sunset Park.*
- (2) *two males in another vehicle near a park on Toledo's west side when one of those males opened fire*

In the very rare circumstance in which there is any actual debate about vehicles in municipal parks, such debates tend to center around closing off existing roads through the park, as in (3) below:

- (3) *A revived plan to remove vehicle traffic from the center of San Diego's Balboa Park was moved forward Monday by the City Council, which agreed to spend \$1 million to complete planning and documentation.*

Yet even in the specific *park* context, where the physical and spatial features of a park might seem to preclude the entrance of an automobile, it is the *automobile* usage of *vehicle* that predominates.

d. Is Bicycle a Vehicle? Is Airplane a Vehicle?

We can use the KWIC function of the corpus to perform targeted searches for concordance lines featuring two key terms raised in the Hart/Fuller debate — *bicycle* and *airplane*.²²⁹

Professor Eskridge has asserted that “[a] corpus search reveals that bicycles are commonly considered vehicles — a quantitative result in striking contrast to the understanding advanced by linguist Bryan Garner, who joined Justice Scalia in opining that the ordinary meaning of ‘vehicles’ excludes bicycles.”²³⁰ Professor Eskridge is certainly correct that there are numerous instances of the co-occurrence of *bicycle* with *vehicle*. Some of these instances establish that the *bicycle* sense of *vehicle* is, at the very least, attested, as in (1) and (2) below:

- (1) *There are a lot of potholes. It is hard to ride bicycles and other vehicles.*
- (2) *In New Jersey, bicycles are considered vehicles and must follow the same laws as motorists.*

Yet other instances show that *bicycle* is often used in contrast to the word *vehicle*, as in (3) and (4) below:

- (3) *there were 68 collisions between bicycles, pedestrians and vehicles*
- (4) *side mirrors to detect hazards (bicycles, humans, vehicles, pets, etc.)*

Based on the corpus data reviewed above, *bicycle* is certainly a possible sense of *vehicle*, but from the standpoint of statistical frequency, it is not a common meaning and certainly not the most common.

With respect to the use of *vehicle* to reference *airplane*, the answer is simpler. In both the contemporary NOW Corpus and the COHA (for the relevant periods of the 1910s, 1920s, and 1950s), we were unable to find a single collocation or concordance line that reflected the use of *vehicle* to mean *airplane*. *Vehicle* is neither most commonly used nor even commonly used when discussing airplanes, and based on its absence from any of our corpus data, we might ask if *airplane* is even a possible sense of *vehicle*. To the extent that *airplane* fits what some lexicographers have regarded as the necessary and sufficient conditions for

229. (1) Select “Collocates” on the NOW Corpus homepage; (2) Enter “VEHICLE_n” in the “Word/phrase” field; (3) Enter “BICYCLE_n” in the “Collocates” field; (4) Select “Sections” and select “United States”; (5) Select “Sort/Limit” and set the “Minimum” to “MUT INFO” and “3”; (6) Click “Find collocates”; and (7) Click “BICYCLES.” See *NOW Corpus (News on the Web)*, BYU, <http://corpus.byu.edu/now/?c=now&q=54497865> (last visited Mar. 5, 2017).

230. ESKRIDGE, *supra* note 5, at 45-46.

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inclusion in the class of *vehicles* (i.e., anything that is a “means of carriage, conveyance, or transport”), all that can be said of *airplane* is that it may be a possible meaning of *vehicle*, but it is unattested in the corpus data.

Thus, corpus linguistics can advance the theory of ordinary meaning by, on the one hand, allowing judges and lawyers to more specifically define what they mean by *ordinary* and, on the other hand, providing objective data illustrating the way in which words are used in particular contexts.

2. Muscarello and Carries a Firearm

The *Muscarello* question – of the meaning of *carry* – is likewise susceptible to measurement. We can assess the relative frequency of the *personally bear* sense and the *transport* sense using corpus analysis.

a. The Collocates of Carry

We can view collocation data for *carry* in the NOW Corpus. The fifty most common collocates of *carry* in the NOW Corpus are listed as follows:

*out, yards, concealed, weight, gun, attacks, weapons, guns, sentence, weapon, exchange, maximum, margin, passengers, heavy, penalty, bag, signs, opinions, firearm, express, burden, permit, thoughtful, load, bags, plane, firearms, virus, tradition, flag, capable, torch, handgun, cargo, openly, permits, duties, pipeline, mosquitoes, touchdowns, ships, executions, loads, trucks, felony, tasks, handguns, experiments, knife*²³¹

These collocates suggest that a number of uses of *carry* do not fit neatly into the syntactic structure and the semantic relationships we have previously identified. There are instances in which an inanimate object serves as *carry*’s subject (*planes carrying passengers, trucks carrying loads, ships carrying cargo*). There are also a number metaphorical uses of *carry* (*felonies carrying certain penalties, people carrying opinions*). There are also references to *carrying out of attacks and executions*, and sporting references (*carrying the ball for so many yards or for so many touchdowns*).²³²

231. Follow the same steps set forth in note 209, substituting “CARRY_v” for “VEHICLE_n.” See *NOW Corpus (News on the Web)*, BYU, <http://corpus.byu.edu/now/?c=now&q=54015027> (last visited Feb. 15, 2017).

232. We can see similar results in the COHA using the same instructions in note 231, except that when we click on “Sections” we select “1960.” The results of this search in the COHA can be viewed at the link below. See *Corpus of Historical American English*, BYU, <http://corpus.byu.edu/>

Yet “[a]t issue here is not ‘carries’ at large, but ‘carries a firearm.’”²³³ And a list of collocates simply tending to show that there are a variety of small, inanimate, concrete objects (including weapons) that can be carried on your person or in your car does not get us much closer to determining which of these senses of *carry* is the most frequent.²³⁴ But as we will see, this search reveals common collocates of *carry* that have similar semantic features to *firearm* (i.e., *pistol*, *handgun*, *rifle*, *gun*) that will help us better evaluate the contexts in which *carry a firearm* occurs.

b. Carry as a KWIC

The KWIC data give us a clearer picture of the use of *carry*.²³⁵ The NOW Corpus gives us a randomized sample of concordance lines featuring *carry*,²³⁶ and we can review these concordance lines to determine both the range of possible meanings of *carry* and the comparative frequency of those meanings. We can also locate (and determine the comparative frequency) of instances of *carry* with the same syntactic and semantic features as § 924(c)(1).

Yet we might be able to eliminate a lot of irrelevant uses of *carry* by searching instead for *carry* within a few words of *firearm*.²³⁷ A search for concordance lines containing these terms will require coding. Because every interpretative question is different, the process of coding concordance lines will vary with each task.

.edu/coha/?c=coha&q=54015512 (last visited Feb. 15, 2017). The COHA, when divided by decade, results in a functionally smaller corpus for that decade. As a consequence, it is more susceptible to being offset by unusual collocations.

233. *Muscarello v. United States*, 524 U.S. 125, 143 (1998) (Ginsburg, J., dissenting).

234. As we will see, in the case of *carry*, the collocates do help us in identifying words with similar semantic features as *firearm*—*gun(s)*, *weapon(s)*, *handgun(s)*, *rifle(s)*, *pistol(s)*—and that would serve similar functional roles in a sentence. This will help us locate relevant concordance data, but does not answer the question of which sense of *carry* is most common.

235. One way to examine *carry* in context is simply to enter a search similar to that in note 225, but substituting “CARRY_v” for “VEHICLE_n.”

236. As we have already seen, *carry* has a transitive argument structure and, in the relevant context of § 924(c)(1), *carry* has a human subject and a non-human, inanimate, weapon object. See *supra* Section II.A.2. If we are going to take context into consideration, we should be looking for uses of *carry* that reflect the same or similar syntactic structure and semantic relationship.

237. Such a search can be executed as follows: (1) Select “Collocates” on the NOW Corpus homepage; (2) Enter “CARRY_v” in the “Word/phrase” field; (3) Enter “FIREARM_n” in the “Collocates” field; (4) Click on “Sections” and select “United States”; (5) Select “Sort/Limit” and set the “Minimum” to “FREQUENCY” and “3”; and (6) Click “Find collocates.” See *NOW Corpus (News on the Web)*, BYU, <http://corpus.byu.edu/now/?c=now&q=63434628> (last visited Feb. 15, 2017).

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Here, after examining only a few concordance lines, a problem emerges: a significant majority of the instances of *carry* in the context of *firearm* in the NOW Corpus refer back to the statutory prohibition in § 924(c)(1) or similar statutes. In order to ensure that we have sufficient data from outside of a legal context, we also examined instances of *carry* in the context of a number of common synonyms of *firearm* listed among the most common collocates of *carry*—*gun(s)*, *pistol(s)*, *handgun(s)*, and *rifle(s)*. These synonyms share the same semantic features with *firearm*, but less commonly appear in statutory prohibitions against carrying a firearm.

Our search parameters eliminate a number of irrelevant uses of *carry*.²³⁸ All that is left is to review the concordance lines and determine in how many instances *carry a firearm* refers to *carry on one's person* or *carrying in a car*. Here, the physical and spatial context can be helpful, as with the physical locations in (1), (2), and (3) below:

- (1) *Dressed in body armor and carrying two handguns, [the suspect] tried to flee out a back door*
- (2) *adults with the proper permits no longer need to hide the handguns they carry in their shoulder or belt holsters*
- (3) *the crowd was sedate and well-behaved with those carrying guns checking their ammunition at the door.*

A number of concordance lines were unclear, and a number of them, as noted, refer to statutory provisions similar to § 924(c)(1).

All told, we reviewed 271 concordance lines from the NOW Corpus in which *carry* co-occurred with *firearm(s)*, *gun(s)*, *pistol(s)*, *handgun(s)*, and *rifle(s)*. Of these instances of *carry*, we found that 104 instances indicated a sense of *carry a firearm on one's person*, while only five instances suggested a *carry a firearm in a car* sense. The remaining senses either were unclear (i.e., the appropriate sense could not be determined by context) or were senses of *carry* unrelated to the question at hand. As would be expected, much less data was available for *carry* in the COHA. We found twenty-eight concordance lines from the COHA, in which *carry* co-occurred with *firearm(s)*, *gun(s)*, *pistol(s)*, *handgun(s)*, and *rifle(s)*. Of these instances of *carry*, we found that eighteen were instances of *carry on one's person*, and two were instances of *carry in a car*. The remaining instances were either unclear or reflected a different sense of *carry*.

²³⁸. For example, the metaphorical sense (*carry a tune*), senses where the subject or agent is an inanimate object (*the ship carries cargo*), and the sporting sense (*carried the football nine yards*) were all eliminated.

To the extent that we view the question of ordinary meaning as involving statistical frequency, the analysis above tells us that carry on one's person is overwhelmingly the most common use, while carry in a car is a possible but far less common use.

3. Taniguchi and the Meaning of Interpreter

We can also measure the relative frequency of the *written translator* and *oral translator* senses of *interpreter*. We can do so using collocation and concordance analysis.

a. The Collocates of Interpreter

The fifty most common collocates of *interpreter* in the NOW Corpus are as follows:

*an, through, language, sign, spanish, via, speaking, afghan, translators, iraqi, certified, served, english, qualified, translator, army, basic, deaf, spoke, moderator, sign-language, asl, costumed, interpreter, translate, full-time, dream, trained, soldiers, yun, interpreters, arabic, translated, translation, freelance, certification, courts, maladies, requests, spanish-language, communicate, cespedes, languages, troops, carlotto, simultaneous, somali, listened, proceedings, employed*²³⁹

A number of the collocates tend to support the Taniguchi majority's position that *interpreter* most commonly refers to an *interpreter of spoken language*. These include *speaking, spoke, and listen*. A number of the collocates refer to battlefield interpreters (such as *Afghan* or *Iraqi*),²⁴⁰ where context would suggest their role is primarily as spoken interpreters. The collocates *an* and *through* both come from the very common phrase that a public figure is *speaking through an interpreter*. These collocates stand in contrast to the collocates of *translator* in the NOW Corpus, which make a number of references to the writing and publishing contexts, including *bible, writer, poet, editor, literary, publisher, journalist, Borders,*

239. See NOW Corpus (News on the Web), BYU, <http://corpus.byu.edu/now/?c=now&q=54018483>.

240. We do not need to assume that the Afghan or Iraqi interpreters listed in the collocate display are battlefield interpreters. By clicking on each individual collocate in the display, we can view concordance lines—lines of running text showing the word in context. This expanded context feature shows a battlefield context for these interpreters in numerous instances.

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and even *Wycliffe*.²⁴¹ The collocates from the 1970s, when the Court Interpreters Act was passed, suggest a similar conclusion.²⁴²

b. Interpreter as a KWIC

With respect to Key Words in Context, we reviewed 188 concordance lines from the NOW Corpus in which *interpreter* occurred.²⁴³ In a number of instances, *interpreter* referenced an artistic expression or the interpretation of works of art (*a noted interpreter of modern music*). Another common sense refers to the interpretation of documents written in a primary language (*interpreters of the Constitution*). There were numerous instances in both corpora of cases of the spoken language conversion from a primary language to a second language notion of *interpreter*, as in (1) and (2) below:

- (1) *civil rights violations for not providing professional interpreters for patients who do not feel comfortable speaking English*
- (2) *Motto was speaking in French, through a volunteer interpreter*

In addition, there were numerous transcripts of spoken interviews from news sites with the annotation “through interpreter,” referencing a spoken interview facilitated by an interpreter. There was one instance of an interpreter translating a foreign language document into spoken English, included below:

- (3) *In 1992, during a top-level meeting in Moscow, Russia finally released the cockpit voice recorder transcript. It was 10 p.m. in a dimly lit meeting room of the Presidential Hotel when an interpreter for the U.S. ambassador translated the Russian transcript into English for Ephraimson-Abt and other delegates.*

²⁴¹. See NOW Corpus (*News on the Web*), BYU, <http://corpus.byu.edu/now/?c=now&q=54609539> (last visited Mar. 9, 2017).

²⁴². *Interpreter* has very few frequent collocates during the 1970s. The two most common collocates of *interpreter* from this period are *an* and *through*, function words that mutual information scoring typically eliminates if other options are available. A review of the concordance lines associated with these collocates reveals their origin in the extremely common phrase *speaking through an interpreter*, or related phrases. See *Corpus of Historical American English*, BYU, <http://corpus.byu.edu/coha/?c=coha&q=54495283> (last visited Mar. 5, 2017).

²⁴³. The statute at issue in *Taniguchi* states: “A judge or clerk of any court of the United States may tax as costs the following: . . . (6) Compensation of interpreters” 28 U.S.C. § 1920 (2012). The noun phrase *compensation of interpreters* is part of a standalone enumeration that has an attenuated relationship to the argument structure of the verb *to tax*. What we can say about the relevant context for *interpreter* is that we are looking for individuals who are capable of decoding a foreign language into a native one. The operative variable is whether the language at issue is spoken or written.

Absent from all of these concordance lines was a single instance of anyone referred to as an *interpreter* performing a text-to-text translation from a foreign language into a primary language like English. To the extent that our notion of ordinary meaning has a frequency component, we can say from this data that the *text-to-text translation* sense of *interpreter* is neither the most common nor even a common use of *interpreter*. We might question whether it is even a possible sense of *interpreter* as the *text-to-text translator* sense of *interpreter* is entirely unattested in our data.

4. *Costello and Harboring an Alien*

The interpretive issue in *Costello* bears some similarity to the question at issue in *Muscarello*. In both cases the question turns on the meaning of a transitive verb and its relation to its object, though in the case of *harbor* our object has the semantic features of *human*, *animate*, etc. We would therefore look to the corpus data to tell us which senses of *harbor* are the most frequent, common, or possible senses of *harbor*, and to help us make informed decisions about sense division. We will look at the use of *harbor* in contemporary English, using the NOW Corpus, and in the decade 1910-1919, the period during which the relevant statute was enacted.²⁴⁴

a. *Collocation of Harbor*

With respect to the collocation data, it is immediately apparent from a review of the collocates of *harbor* that the overwhelmingly most common use of the term *harbor* refers to *harboring feelings*:

bacteria, feelings, resentment, doubts, terrorists, species, secret, mariners, views, ambitions, immigrants, fugitive, planets, illusions, hatred, dreams, cells, mutations, ocean, hopes, animosity, virus, secrets, anger, grudge, suspicions, fantasies, planet, fears, sentiments, desire, pathogens, galaxy, viruses, suspicion,

²⁴⁴ See NOW Corpus (*News on the Web*), BYU, <http://corpus.byu.edu/now/?c=now&q=54496834> (last visited Mar. 5, 2017). This search examines only the nominal (noun) collocates of *harbor*. *Harbor* is a low frequency verb and as such instances of *harbor* are rare in the COHA for the period of 1910-1919. Even expanding the search through the 1920s reveals only a sparse number of collocates. While some of these are relevant to our present inquiry (such as *alien* and *refugee*), no other relevant collocate appears more than once in the COHA. See *Corpus of Historical American English*, BYU, <http://corpus.byu.edu/coha/?c=coha&q=54496926> (last visited Mar. 5, 2017).

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*persons, thoughts, fugitives, germs, mutation, tumors, aliens, moon, bias, genes, gene, hole, diversity, grudges, resentments*²⁴⁵

This use of *harbor* does not match the semantic features in the relevant statute. We are looking for objects of *harbor* that are human, animate, concrete, etc. With that in mind, we tailored our searches to those nominal objects of *harbor* reflected in the collocates listed above that had these same semantic features – *fugitives, terrorists, criminals, aliens, and refugees*.

b. Harbor as a KWIC

In the NOW Corpus, we examined 140 concordance lines in which *harbor* occurred in the same environment as *fugitives, terrorists, criminals, aliens, and refugees*. Of these, twenty-three instances of *harbor* referred to *concealment* while thirty-two referred to *shelter*. In an additional eighty-three instances, the distinction could not be determined by context. There were also three instances of unrelated senses of *harbor*. In the COHA, there were only three clear-cut cases of the *shelter* sense. The remaining five instances of *harbor* could not be determined by context.

This data raises more questions than it answers. With respect to frequency, we would be hard-pressed to say that either the *shelter* meaning or the *conceal* meaning of *harbor* are the most common. We might say that both are common meanings, and they are both certainly possible and attested meanings. But where more than half of the instances of *harbor* are unclear as to whether they include *shelter* or *concealment* or both, it is hard to state from the standpoint of frequency what the ordinary meaning actually is.

C. Caveats and Conclusions

Such are the data. But what to make of them? Do corpus data yield means of measuring ordinary meaning? We think the answer is a resounding yes – with a few caveats. Certainly, the answer is yes by comparison with existing means of measurement. If ordinary meaning is an empirical construct – and we think it is – then corpus analysis is superior to an intuitive guess (or, worse, crediting a dictionary or a word's etymology).

We also think that corpus data are well suited to give reliable answers to the question of ordinary meaning. To support this conclusion (as applied to the problems analyzed throughout the Article), here we provide a more careful synthesis of the theory of ordinary meaning discussed above. We then offer some

²⁴⁵. See *id.*

conclusions about what the corpus data tell us about the ordinary meaning of *vehicle*, *carry a firearm*, *interpreter*, and *harbor*.

1. Caveats

Corpus analysis may be applied to the range of issues bearing on ordinary meaning identified above – to semantic context, pragmatic context, the temporal aspects of meaning, and speech community and register. Through data from the COHA, the NOW Corpus, or other corpora, we can assess the relative frequency of competing senses of a statutory term or phrase. From frequency and collocation data we can draw inferences about the semantic meaning of the language of the law and even about intended or public meaning. Yet we see some possible limitations on the strength of the inferences to be drawn from this sort of data.

a. Semantic Meaning

One possible limitation stems from the vagaries of word sense division. Sense division is subjective.²⁴⁶ Linguists, as noted above, have no agreed-upon formula for distinguishing senses of a word.²⁴⁷ They concede that distinctions among senses may be “more of a descriptive device rather than a claim about psycholinguistic reality.”²⁴⁸ This seems particularly true as regards closely related or fine-grained sense distinctions. The space between some senses will be sufficient to justify a strong inference from clear corpus data. Consider the above-cited example of the use of the term *nail* in *Reading Law*: “*Nail* in a regulation

246. Nikola Dobrić, *Word Sense Disambiguation Using ID Tags—Identifying Meaning in Polysemous Words in English*, in PROCEEDINGS OF THE 29TH INTERNATIONAL CONFERENCE ON LEXIS AND GRAMMAR/LGC 97, 97 (Dusko Vitas & Cvetana Krstev eds., 2010) (explaining that polysemy—multiple word meaning—is “[o]ne of the persisting issues in modern lexicography”).

247. No one is quite sure where to draw the line—research “show[s] that different polysemy criteria (i.e., criteria that may be invoked to establish that a particular interpretation of a lexical item constitutes a separate sense rather than just being a case of vagueness or generality) may be mutually contradictory, or may each yield different results in different contexts.” DIRK GEERAERTS, *THEORIES OF LEXICAL SEMANTICS* 196 (2009). And there is no agreed-upon taxonomy of polysemy. While some linguists speak of senses and subsenses, see, e.g., Glynn, *supra* note 136, at 17, others speak of more or less prototypical exemplars of senses, see, e.g., Dagmar Divjak & Antti Arppe, *Extracting Prototypes from Exemplars: What Can Corpus Data Tell Us About Concept Representation?*, 24 COGNITIVE LINGUISTICS 221, 222–30 (2013).

248. Gries, *supra* note 136, at 482. The “problem of an apparent lack of decisive criteria for defining word senses and clearly discriminating between them has always been a burning issue of lexical semantics to the point that it fundamentally questions the possibility to provide a clear account of polysemy.” Dobrić, *supra* note 135, at 78.

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governing a beauty salon has a different meaning from *nail* in a municipal building code.”²⁴⁹ Surely we could confirm that using corpus data. We could show that the term *nail* as used in the context of a beauty salon is almost always with reference to a fingernail or toenail. We would likely feel confident concluding that such data supports the conclusion that the ordinary understanding of *nail* in this semantic setting is not a piece of metal used to attach pieces of wood.

But what about more closely related senses? The two competing notions of *carry* in *Muscarello* are closely related. Both get at the idea of *transport*; the difference concerns the mechanism—on one’s person or in a vehicle. Accordingly, it seems hard to know whether this difference is reflected in the way that human beings perceive the different uses of *carry*. The *bear personally* sense seems to be the notion of *carry* that we speak of almost always, and for that reason it may also be the sense we think of most often. But if pressed, we might well concede that the *transport by vehicle* sense may be encompassed within the way in which we perceive the notion of carrying a firearm. It could be that most ordinary people first think of the *bear personally* sense but on reflection agree that the *transport* sense is included.

b. Pragmatic Meaning

Even with a very large corpus, some pragmatic information may be elusive—because the relevant physical or social setting is rare, for example, or the pragmatic information needed is not of the type that would appear in a corpus of written texts.

Consider the two illustrations referenced above: Posner’s “Keep off the grass” sign at a park and Fallon’s extension of the “no vehicles” rule. Posner rightly says that the park sign would “not properly [be] interpreted to forbid the grounds crew to cut the grass.”²⁵⁰ And Fallon understandably asserts that the lawmaker adopting the “no vehicles in the park” rule would “reasonably” be understood to intend for the “gatekeeper” at the park to allow an ambulance to enter in the event of an emergency.²⁵¹

We may be able to examine these questions from a corpus-based perspective. If we had a large enough database, that contained a sufficient number of park prohibitions (together with references to groundskeepers, ambulances, etc.), we might be able to draw conclusions about the pragmatic circumstances in which such prohibitions are most commonly invoked and how they are most commonly interpreted. To find any ordinary exceptions to the “Keep off the grass”

²⁴⁹. SCALIA & GARNER, *supra* note 28, at 20.

²⁵⁰. RICHARD A. POSNER, REFLECTIONS ON JUDGING 180 (2013).

²⁵¹. Fallon, *supra* note 2, at 1260–61.

or the “no vehicles” rules we might look for park owners who have these rules in place. If park owners and municipalities routinely allow ambulances into their parks or routinely allow groundskeepers access, we can infer something about how these prohibitions are ordinarily used or understood. The point is that corpus analysis often contains at least some pragmatic data and is at least theoretically capable of providing information about the pragmatic context. But there is no guarantee that even a very large and targeted corpus would contain sufficient examples of circumstances with similar pragmatic content. And the question for corpus linguistics is how much of the relevant pragmatic context is reflected in the formal record found in the corpus.²⁵²

In many cases such meaning may be beyond the reach of most corpora that are currently available. As to *Muscarello*, for example, it might be impossible to find a corpus sufficient to identify the pragmatic components of the intended meaning of a sentencing enhancement for carrying a firearm in connection with a drug crime. If we are looking at the question of the intended meaning of Congress, the right corpus may be one that would reflect dialogue among the 535 members that voted on the sentencing enhancement in § 924(c)(1). If we had such a corpus, and if it recorded extensive discussion among them about the kind of gun carrying they were talking about when they enacted this statute, we might be able to get data of relevance to the intended meaning of this provision. Perhaps it would reveal only examples of personal *bearing* of firearms and never of *transporting* in a vehicle. If so, that might tell us that the intended meaning is limited to the former.

Even then, however, the *might* qualifier is necessary. The limitation here is whether a preponderance of examples of uses of one sense of *carry* may indicate only that this is the first sense to come to mind, and whether a broader sense that might occur to a lawmaker on reflection should count as ordinary. Moreover, data from a general, balanced corpus could tell us something about the way the human mind conceptualizes the notion of carrying a firearm. But that might not be the right question to ask. We might be missing an important element of pragmatic context if we ask only about *carrying a firearm* in the abstract. Another relevant element of such context may be the legal nature of the language of this law. The human mind may react differently to a criminal prohibition—a law imposing harsh consequences like a sentencing enhancement—than to a mere statement of description. Thus, we may form one understanding when listening to a

252. Not all corpora are collections of written texts. Recent work in corpus-based pragmatics includes “‘multi-modal’ corpora” with audio and visual components that allow researchers to study “feedback in the form of gesture, body posture and gaze as well as their integration with discourse.” Christoph Rühlemann & Karin Aijmer, *Introduction: Corpus Pragmatics: Laying the Foundations*, in *CORPUS PRAGMATICS: A HANDBOOK* 1, 4–5 (Karin Aijmer & Christoph Rühlemann eds., 2015).

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descriptive narrative of a person *carrying a firearm* in connection with a drug crime, and another when warned that the punishment for a drug crime could be significantly enhanced if we *carry a firearm* in that circumstance. That sort of context may be impossible to suss out with corpus analysis alone. We may have to turn to other empirical approaches to language meaning and perception.

How might a judge answer this question? Some such questions may be framed within the standard picture. Where the question is presented as one of the likely intended meanings of rules like the “Keep off the grass” sign or the prohibition on “vehicles,” we think judges are in a good position to assess likely intended meaning (even absent hard data about actual usage). We say that because we think the relevant pragmatic context of these rules is likely to be apparent in the cited circumstances. It seems difficult to think of a legislative “compromise” that would call into question the inference of uniform legislative intent to allow groundskeepers on the grass or ambulances in the park.²⁵³ If so, it seems safe to conclude that the intended communicative content of these rules would sustain exceptions for groundskeepers and ambulances.

That will not always be so, however. *Muscarello* may be a good example. If we lack confidence in the corpus data on *carry*, we may be left to make an inference about likely legislative intent. Here that seems hard. As the majority and dissenting opinions in that case demonstrate, it is easy to contemplate legislative intent running in either of two directions—to call for a sentencing enhancement (a) whenever a gun is available to the defendant in a drug deal, since a gun may

253. See MANNING & STEPHENSON, *supra* note 11, at 54 (stating that “laws will be messy, uneven, and ill-fitting with their apparent purposes not because Congress is short-sighted or imprecise, but rather because legislation entails compromise, and compromise is untidy by nature”); SCALIA & GARNER, *supra* note 28, at 39 (“Not only is legal drafting sometimes imperfect, but often the imperfection is the consequence of a compromise that it is not the function of the courts to upset—or to make impossible for the future by disregarding the words adopted.”); Frank H. Easterbrook, *Text, History, and Structure in Statutory Interpretation*, 17 HARV. J.L. & PUB. POL’Y 61, 68 (1994) (noting that if a particular outcome under a statute seems “unprincipled,” it may be the “way of compromise” in the legislative process and that “[l]aw is a vector rather than an arrow,” “[e]specially when you see the hand of interest groups”).

always be used in a harmful way if it is available,²⁵⁴ or (b) only if the gun is being carried on the defendant's person, since that kind of availability is even riskier.²⁵⁵

Muscarello is thus an example of a case in which pragmatic judgments about legislative intention are likely to be difficult. If we cannot decide the case on the basis of usage, informed by semantic context, and if we lack reliable evidence from similar pragmatic contexts, then we may be left to resolve it on other grounds. Here we could simply turn to the law of interpretation – giving the law legal content that does not pretend to be based on communicative content (because we have not been able to find it).²⁵⁶ We could do so, for example, on the basis of a substantive canon like the rule of lenity. Reliance on that canon may make sense doctrinally, as lenity appears appropriate given genuine ambiguity about statutory meaning. Such a move, moreover, would be more open and transparent than a false assertion about communicative content. For that reason, we would favor it, even though it might not obviously vindicate the principles motivating the law's baseline devotion to ordinary meaning.

254. *Muscarello v. United States*, 524 U.S. 125, 133 (1998) (“How persuasive is a punishment that is without effect until a drug dealer who has brought his gun to a sale (indeed has it available for use) actually takes it from the trunk (or unlocks the glove compartment) of his car? It is difficult to say that, considered as a class, those who prepare, say, to sell drugs by placing guns in their cars are less dangerous, or less deserving of punishment, than those who carry handguns on their person.”).

255. *Id.* at 145 (Ginsburg, J., dissenting) (“It is reasonable to comprehend Congress as having provided mandatory minimums for the most life-jeopardizing gun-connection cases (guns in or at the defendant's hand when committing an offense), leaving other, less imminently threatening, situations for the more flexible Guidelines regime.”).

256. An alternative formulation would follow under the interpretive premises of the original methods originalists. See John O. McGinnis & Michael B. Rappaport, *The Constitution and the Language of the Law* (San Diego Legal Studies Paper No. 17-262, 2017), http://papers.ssrn.com/abstract_id=2928936 [<http://perma.cc/TD97-EJ6Q>] (articulating premises of original methods originalism, including the idea that the Constitution is written in the “language of the law,” not ordinary English, and thus that it should be interpreted in accordance with the canons and legal conventions that would have been accepted by the legal community at the time of the founding). To the extent the law is written in a specialized legal dialect, we can think of the “law of interpretation” as a mere component of the “communicative content” of the law. We can do so by treating canons of construction not as departing from communicative content but as informing our understanding of the peculiar dialect of the law.

We have no problem with the framing proposed by McGinnis and Rappaport. But we mostly speak here of a distinction between ordinary communicative content and the law of interpretation – because we think the distinction helps highlight a component of the inquiry that corpus linguistics can help us improve.

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c. Meaning as of When?

Judges sometimes make reference to the temporal aspects of interpretation and insist that they are seeking the meaning of the text at the time it was drafted. Yet in practice judges often ignore the temporal aspect of interpretation or attempt to address it using tools of questionable utility, like historical dictionaries. Our linguistic intuitions about usage and meaning in our own time and our own speech community can be highly unreliable. But this problem is amplified when we are interpreting a text that dates from a period of which we have no linguistic memory or experience. To the extent that the law wishes to take into account the meaning of a text at the time of its enactment, some empirical measure of historical usage is necessary and corpus linguistics presents itself as an attractive option.

Of course, historical data from linguistic corpora face the same challenges that contemporary data face. If it is not clear whether carrying a firearm on one's person or carrying a firearm in an automobile would be perceived as two distinct senses in contemporary usage, it may not be clear from historical data either. Moreover, while we may be able to address the sense division problem using other linguistic empirical methods (discussed below), these methods generally involve attempting to measure the perceptions of living, human study participants. In many cases of historical interpretation, test subjects from the relevant speech community will not be available. In a historical context, corpus data may not just be a type of linguistic evidence; it may be the only type available.

d. Whose Meaning?

Corpus linguistics allows us to take account of variations in usage among different speech communities and linguistic registers. Because the interpretive problems addressed above have to do with the interpretation of federal statutes—written texts meant to be applied broadly to the population of the United States—we have relied on linguistic corpora that present evidence of usage from standard written American English.

Linguistic corpora are not limited to broad-based, standardized dialects or speech communities. We can well imagine interpretive problems that require appeal to language data from more narrowly drawn speech communities (including language use from different geographical regions) and registers (including language use from different professions or industries). Corpora can be created and corpus data made available to address questions of interpretation from these narrowly drawn speech communities and registers.

But sometimes the public will interpret statutory language in pragmatic context differently than a legislative body would interpret it. And that implicates the “whose meaning” and “speech community” questions.

The speech community question, as we have noted, has implications for the selection of a relevant corpus. If we are trying to measure intended meaning, we might want to gather data from a corpus of a community of speakers who look demographically like Congress. Yet if we are interested in public meaning, we would want to turn to a broader corpus.

What if our sense of public meaning differs from our sense of intended meaning? If that happens we would need to decide which data set to rely on. That is a problem for legal theory – and essentially a choice of which of two sets of justifications for the “standard picture” we seek to vindicate. In the *Muscarello* setting, the answer may well be the fair notice rationale. The law of interpretation may already have given that answer in the rule of lenity. In criminal cases the rule of lenity suggests that the notice rationale predominates. It indicates that a criminal defendant is entitled to the benefit of the doubt in cases of ambiguity as to the law’s communicative content.

The question may be harder to answer in civil cases. But again, that is a problem for legal theory. As above, we will simply say for now that transparent answers are better than opaque ones. Further thinking on this problem is needed. Yet surely we will be better off with an open, transparent discussion about whether (and when) to give primacy to intended meaning and when to credit public meaning. Once we speak more carefully about the meaning we are looking for and proceed more reliably in trying to measure it, we can have a better dialogue about these difficult questions of legal theory.

2. Conclusions

Here we offer some data-backed conclusions about the ordinary sense of *vehicles* in the park, *carrying* a firearm, *interpreter*, and *harboring* an alien. In so doing, we highlight strengths of the corpus analysis while also acknowledging some drawbacks and unresolved questions.

In each of the test cases, we start with a premise of ordinary meaning that is susceptible to both definition and measurement. The premise is that the ordinary sense of a term is that which occurs most frequently in a properly controlled linguistic context – namely, a context that controls for relevant syntactic and semantic considerations, that is aimed at the relevant speech community, and that is limited to the appropriate time frame. In other words, the sense of a word that is most frequent (after taking semantic factors into account) is *prima facie* also the sense most likely to avoid unfair notice (public meaning) and to vindicate the will of the legislature (intended meaning).

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Yet we also recognize some possible grounds for questioning this *prima facie* showing. One possible response would be to question the viability of the relevant sense division – to suggest that the less frequent sense is just the dodo bird (an unusual example of a bird, but no less a bird). Another would be to identify pragmatic considerations that are not adequately assessed through a corpus search. In circumstances in which either of these concerns is present, we think the conclusion that the most frequent sense of a term is the ordinary one may be in doubt. In that event, we may turn to alternative means of empirical analysis (discussed below) or, ultimately, considerations that go to legal content rather than communicative content.

a. Vehicles

Based on the common collocates of *vehicle* and our analysis of its use in concordance lines, we can conclude that the most common sense of this term is in reference to automobiles. Airplanes and bicycles appear on our frequency continuum: they are attested in the data as possible examples of *vehicle*. But they are unusual – not the most frequent and not even common. If we accept the most common use of the word as the ordinary meaning, we can conclude that the ordinary meaning of *vehicle* is *automobile*.

We can also make a strong case for crediting the most common meaning as the ordinary one, in that it will best avoid unfair surprise (public meaning) and vindicate the presumed intent of the lawmaker (intended meaning). A decision to extend the law to bicycles or airplanes could upset reliance interests of those who – according to the data – are likely to think of automobiles when they read the law prohibiting vehicles. And the data give us no reason to think that those who enacted this prohibition were thinking of airplanes, bicycles, or toy cars. In our view, this weighs against treating these examples as falling under the ordinary sense of *vehicle*. But, as discussed above, that is a question for legal theory.

A similar question for legal theory concerns the ambulance question. Again, *ambulance* is attested as a *vehicle* in the corpus data. Ambulance also easily fits within the ordinary (automobile) sense of *vehicle*. So the question here is one of intended meaning or pragmatic public meaning – another question for legal theory.

What about golf carts? We found no examples of golf carts as vehicles in the corpus. But does that mean they do not qualify under the ordinary meaning of *vehicle*? Like the ambulance, a golf cart shares a number of features with the most common vehicles: automobiles. On the other hand, we would not expect to see a lot of golf carts on the Autobahn. The question whether a golf cart fits into the ordinary meaning of *vehicle* (an ordinary meaning that the corpus data tells us is the *automotive* use of *vehicle*) is accordingly a difficult one. It turns on the viability

of the sense divisions at work—on whether the golf cart is an unusual example or perceived as a distinct linguistic construct. That is not an easy question to answer. It depends, as noted in Part II above, on the sufficient conditions for the *automobile* sense of *vehicle*.

There is more than one way to answer questions like this one. One way would be through further corpus analysis. With sufficient corpus data, we could assemble a list of criteria for things we speak of as an automobile, and then ask whether a golf cart has those criteria.²⁵⁷

In addition to corpus analysis, there are other empirical linguistic techniques that could be employed. One alternative may be empirical methods employed in the field of psycholinguistics. Psycholinguists use a variety of experimental techniques in order to measure how we perceive and interpret language, including cross-modal priming,²⁵⁸ visual world paradigm analysis,²⁵⁹ and eye tracking during reading.²⁶⁰ Yet it is costly to design and implement psycholinguistic experiments of this sort; both specialized equipment and a high degree of expertise are required. While psycholinguistic approaches to ordinary meaning are promising, the current hurdles are significant.

257. Possible criteria, for example, would likely include a steering wheel, motor, wheels for passage on land, and seats for passengers. If those are the criteria, then a golf cart might count. But we can also imagine other criteria, like usual usage on paved roads or highways, or licensure by the state motor vehicle division. And if those are the criteria, then a golf cart might not count.

258. Simon Garrod, *Psycholinguistic Research Methods*, in 10 *ENCYCLOPEDIA OF LANGUAGE & LINGUISTICS* 251, 252 (Keith Brown et al. eds., 2d ed. 2006) (“Cross-modal priming can indicate the immediate interpretation of an ambiguous word, such as *bug*, in contexts that promote either one or other meaning of the word (e.g., ‘insect’ or ‘listening device’). As participants listen to *bug* in the different contexts, they are presented with a written word (ANT or SPY) or a nonword (AST) and have to decide as quickly as possible whether the target is a word or not (this is called lexical decision).”).

259. *Id.* at 253 (explaining that the visual world paradigm uses eye-tracking technology to measure “the focus of attention correspond[ing] to the words being looked at [at] any time or it can be used to measure which part of a scene a participant attends to as they interpret spoken utterances about that scene”).

260. *Id.* at 254 (“Eyetracking has been used to study a wide range of linguistic processes, including lexical access, resolving lexical ambiguities, syntactic analysis, and various discourse processing phenomena, such as anaphora resolution. It is particularly effective in determining precisely when the reader makes a decision about some aspect of the linguistic input during sentence or discourse processing.”).

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Cognitive linguists²⁶¹ and sociolinguists²⁶² assemble language data through surveys or interviews with test subjects. Analysts in these fields may view the mind's conception of words as "represented in cognition not as a set of criterial features with clear-cut boundaries but rather in terms of prototype (the clearest cases, best examples) of the category."²⁶³ In an important study, participants ranked words as "good examples" of particular categories, including *toys*, *fruits*, *birds*, *weapon*, and *vehicle*,²⁶⁴ and demonstrated "high agreement" on these rankings.²⁶⁵ *Chair* was found to be a more prototypical example of *furniture* than *stool*,²⁶⁶ *automobile* was found to be a more prototypical *vehicle* than *yacht*,²⁶⁷ and *robin* was found to be a more prototypical *bird* than *ostrich*.²⁶⁸

Similar survey methodologies have been employed to address questions of ordinary meaning, both in statutory interpretation²⁶⁹ and the interpretation of contracts.²⁷⁰ Yet there are significant barriers to using survey data to address questions of ordinary meaning. If we want to find meaning as of the date of a statute's enactment, we will never be able to measure it through survey data. And survey data is notoriously susceptible to context effects and response bias.²⁷¹

261. Dirk Geeraerts & Hubert Cuyckens, *Introducing Cognitive Linguistics*, in THE OXFORD HANDBOOK OF COGNITIVE LINGUISTICS 3, 3 (Dirk Geeraerts & Hubert Cuyckens eds., 2010) (explaining that cognitive linguistics is a linguistic discipline that "focuses on language as an instrument for organizing, processing, and conveying information" and as "the analysis of the conceptual and experiential basis of linguistic categories").

262. BERNARD SPOLSKY, SOCIOLOGICAL LINGUISTICS 3 (1998) ("Sociolinguistics is the field that studies the relation between language and society, between the uses of language and the social structures in which the users of language live.").

263. Rosch, *supra* note 46, at 193.

264. *Id.* at 197-98.

265. *Id.* at 198.

266. *Id.* at 229.

267. *Id.* at 230.

268. *Id.* at 232.

269. Clark D. Cunningham et al., *Plain Meaning and Hard Cases*, 103 YALE L.J. 1561, 1599-1601 (1994); J.P. Sevilla, *Measuring Ordinary Meaning Using Surveys* (Sept. 28, 2014) (unpublished manuscript), http://papers.ssrn.com/abstract_id=2466667 [<http://perma.cc/BK82-GM2C>].

270. Omri Ben-Shahar & Lior Strahilevitz, *Interpreting Contracts via Surveys and Experiments* (Coase-Sandor Inst. for Law & Econ., Working Paper No. 791, 2017), http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2464&context=law_and_economics [<http://perma.cc/Z8JY-CTG8>].

271. See Stephen C. Mouritsen, *Hard Cases and Hard Data: Assessing Corpus Linguistics as an Empirical Path to Plain Meaning*, 13 COLUM. SCI. & TECH. L. REV. 156, 202 (2011) (discussing the limitations of survey data when applied to questions of ordinary meaning).

Nevertheless, these alternative empirical linguistic methods provide possible approaches to addressing questions of ordinary meaning beyond the use of corpus linguistics.

The limitations of the empirical methods discussed here may be prohibitive. They may lead us to conclude that we cannot give a conclusive answer to the question of whether the ordinary understanding of *vehicle* extends to the *golf cart*—or to related questions about go-karts or four-wheelers. At that point it may be time to abandon the standard picture—to fall back on “fake” answers giving legal content to the law that is not necessarily in line with its communicative content. That seems fine, but as a fallback. As our sense of the law’s communicative content becomes less clear, the reasons for crediting it are much weaker. Our point is just that this should not be the law’s first instinct.

b. Carrying a Firearm

The corpus data tend to support the dissenting position in *Muscarello*. In both the NOW Corpus and the COHA, the vast majority of concordance lines involved the *bearing on your person* sense of *carry*. That gives us some meaningful empirical data about language usage. It tells us that when people speak of carrying a firearm they are almost always talking about carrying it on their person. That provides a *prima facie* basis for concluding that the ordinary communicative content of the mandatory minimum sentencing provision in § 924(c)(1) is limited to the personally *bearing* notion of *carry*.

Solan and Tammy Gales might observe that the data may merely be an artifact of the greater commonality of the personally *bearing* notion of *carrying* in the real world.²⁷² That is probably correct, but not necessarily a reason to distrust the data. If most every time we speak of carrying a firearm we are talking about personally *bearing* it, then the first sense of *carrying* to come to mind is likely to be that sense. Extending the statute to the *transporting* in a car sense may therefore jeopardize significant reliance interests.

That leaves, as above, the question of whether *bearing* and *transporting* are two distinct linguistic constructs or just alternative examples within the same construct. Again, we could test this by further empirical analysis—by finding (through corpus or other empirical linguistic study) the sufficient conditions of *carrying*, and asking whether *bearing* and *transporting* both qualify.

Perhaps we will not ultimately find a satisfactory answer to this question in any empirical data. But even then the data will have been helpful. They will allow us to avoid the smokescreen grounds for assessments of ordinariness articulated

272. See Solan & Gales, *supra* note 44.

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by the competing opinions in *Muscarello*, and provide a sufficient basis for turning to other means of assessment.

One such means could be an attempt to assess intended meaning. This inquiry may be a difficult one, as noted above. But again, at least a decision on this basis will be a transparent one – rooted in a disagreement about whether Congress was likely concerned only about firearms on a drug dealer’s person, or might also have been concerned about guns within relative reach in the dealer’s vehicle. That sort of debate may seem an empty one to a judge seeking determinacy in the ordinary meaning of the text; but where such meaning is indeterminate, this debate seems preferable to a completely fabricated answer – like one rooted in a dictionary or etymology.

c. *Interpreter*

The data seem to provide support for Justice Alito’s majority view in *Taniguchi*. We did not find a single instance of *interpreter* in the context of text-to-text written translation in the concordance lines we reviewed in the NOW Corpus. That strongly indicates that this is not the kind of interpreter that first comes to mind when we use this term.

That leaves the same question highlighted in the other examples: whether the *written translator* sense would be perceived as separate from the *oral translator* notion.²⁷³ Here we see reason to suspect that these are just alternative examples of a single linguistic construct. There is at least some indication of that in the fact that some lexicographers treat these as just alternative examples of a single sense.²⁷⁴ And, again, that is likely a question that could be tested empirically.

We have not sought to study intended meaning in our corpus analysis. But as noted above we think such a study is possible. One approach would be to think of *interpreter* as a term used by lawmakers, and to look for evidence of usage in this speech community. If we assembled such evidence, then we could have

273. See *Taniguchi v. Kan Pac. Saipan, Ltd.*, 566 U.S. 560, 580 (2012) (Ginsburg, J., dissenting) (asserting that “[d]istinguishing written from oral translation” is a “dubious” endeavor, noting that “some translation tasks do not fall neatly into one category or another,” and asserting that an oral interpreter “may be called upon to ‘sight translate’ a written document”).

274. See *id.* (“[A]s the Court acknowledges, *ante*, at [567–568], and n. 2, ‘interpreters’ is more than occasionally used to encompass those who translate written speech as well. See Webster’s Third New International Dictionary of the English Language 1182 (1976) (hereinafter Webster’s) (defining ‘interpreter’ as ‘one that translates; esp: a person who translates orally for parties conversing in different tongues’); Black’s Law Dictionary 895 (9th ed. 2009) (defining ‘interpreter’ as a ‘person who translates, esp. orally, from one language to another’); Ballentine’s Law Dictionary 655 (3d ed. 1969) (defining ‘interpreter’ as ‘[o]ne who interprets, particularly one who interprets words written or spoken in a foreign language’).” (alteration in original)).

the debate flagged above – as to whether intended meaning should win out over public meaning, or whether they ought to collapse together as a matter of theory.

d. Harbor

Our *harbor* data seem inconclusive. We found a significant number of instances of both the *conceal* sense and the *shelter* sense of this term. That suggests that both senses are common and attested. To the extent we regard the ordinary meaning as a common or attested sense, then the data indicate that both are “ordinary.” To the extent we regard the ordinary meaning as the most common sense of a word, however, the data appear to indicate that neither sense is “ordinary.”

It is hard to know what conclusion to draw from these inferences (even accepting that we have a statistical basis for doing so). One possibility is to say that both senses are ordinary in that they are both commonly attested. This is presumably the dissenting view in *Costello*, and in line with the approach at least sometimes taken on the “carry” question in *Muscarello* (that both personal carrying and car carrying count as ordinary).

Another alternative is simply to abandon our search for the “standard picture.” If we lack probative data on the most frequent sense of a given term, we may conclude that we cannot determine the ordinary communicative content of the law – and thus that we need a “fake” answer, like that provided by the rule of lenity. Yet even here the data will have proven useful. The application of the rule of lenity requires an antecedent finding that the criminal statute is ambiguous – that the words of the statute are susceptible of two competing interpretations.²⁷⁵ Often, such determinations are highly impressionistic.²⁷⁶ Here, the antecedent finding of ambiguity necessary to the application of the rule of lenity is based not on intuitions or dictionaries, but on quantifiable data about real-world usage – data that establishes that both senses of *harbor* are attested and comparatively common. The standard picture here yields to the law of interpretation, but only after the necessary work has been done.

275. *Barber v. Thomas*, 560 U.S. 474, 500-01 (2010) (Kennedy, J., dissenting) (“When a penal statute is susceptible of two interpretations, the one more favorable to the defendant must be chosen unless ‘text, structure, and history . . . establish that the [harsher] position is unambiguously correct.’” (alteration in original)).

276. Ward Farnsworth, Dustin F. Guzik & Anup Malani, *Ambiguity About Ambiguity: An Empirical Inquiry into Legal Interpretation*, 2 J. LEGAL ANALYSIS 257, 276 (2010) (“[T]here is no avoiding the fact that impressionistic judgments are doing important work. Some judges read the text and say that it just seems clear. Other judges read the same text and say that it just doesn’t.”).

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IV. OBJECTIONS AND RESPONSES

We have little doubt of the need and basis for corpus linguistic analysis of ordinary meaning. But we anticipate – and already have seen – significant objections to the use of these new tools of interpretation. In a few recent cases, judges have proffered corpus linguistic analysis in support of their assessment of the ordinary meaning of statutory terms.²⁷⁷ Some of these attempts have prompted doubt and criticism from fellow judges.²⁷⁸ And even the judges who have advocated for this approach (present company included) have acknowledged cause for concern and care in this endeavor.²⁷⁹

The criticisms that we have considered fall into three categories: proficiency, propriety, and practicality. Each concern has an element of viability but crumbles under careful scrutiny.

After addressing these concerns, we close with some observations about the potential role for corpus linguistic analysis going forward – about the extent to which corpus data can address the deficiencies in the ordinary meaning analysis highlighted herein. We also highlight the ideological or theoretical neutrality of this methodology, explaining why corpus analysis is not just for textualists (or originalists), but for anyone who takes language seriously.

A. Proficiency: Judges (and Lawyers) Can't Do Corpus Linguistics

Judges and lawyers are not linguists. Most all of us, at least, are not professionally trained ones. From that premise it is easy to jump to the conclusion that judges and lawyers should leave the linguistic analysis to professional linguists – meaning, in practice, to expert witness reports or testimony. A majority of the Utah Supreme Court has so concluded in recent cases.²⁸⁰

²⁷⁷. See, e.g., *People v. Harris*, 885 N.W.2d 832 (Mich. 2016); *State v. Rasabout*, 2015 UT 72, 356 P.3d 1258 (Lee, Associate C.J., concurring in part and concurring in the judgment); *J.M.W. v. T.I.Z. (In re Adoption of Baby E.Z.)*, 2011 UT 38, 266 P.3d 702 (Lee, J., concurring in part and concurring in the judgment).

²⁷⁸. See, e.g., *Rasabout*, 2015 UT 72, 356 P.3d 1258; *In re Adoption of Baby E.Z.*, 2011 UT 38, 266 P.3d 702.

²⁷⁹. See, e.g., *Rasabout*, 2015 UT ¶ 97, 356 P.3d at 1282-83 (Lee, Associate C.J., concurring in part and concurring in the judgment).

²⁸⁰. *Id.* ¶ 18, 356 P.3d at 1265 (majority opinion) (“The knowledge and expertise required to conduct scientific research are ‘usually not within the common knowledge’ of judges, so ‘testimony from relevant experts is generally required in order to ensure that [judges] have adequate knowledge upon which to base their decisions.’” (quoting *Bowman v. Kalm*, 2008 UT 9 ¶ 7, 179 P.3d 754, 755-56)); *In re Adoption of Baby E.Z.*, 2011 UT ¶ 19 n.2, 266 P.3d at 708 n.2

The “proficiency” critique has some bite. For reasons noted above, we concede that corpus linguistics is not “plug and play” analysis. Corpus data can be gathered and analyzed properly only with care and a little background and training in the underlying methodology. A judge who proceeds willy-nilly may, either consciously or unwittingly, proffer data that has only the appearance of careful empiricism.²⁸¹ For these and other reasons we wholeheartedly agree that the judicial analysis of ordinary meaning will be improved in cases in which the parties or their experts proffer corpus analysis that can be tested by the adversary system.²⁸²

So we take the “proficiency” critique as an appropriate word of warning. Judges should acknowledge the pitfalls and limitations of the tool of corpus linguistics. They should not overstate its utility, ignore the care required to use it properly, or overlook the potential for subjectivity or even strategic manipulation.

But that is as far as this critique can take us. The fact of the matter is that judges and lawyers *are* linguists. We may not be trained in linguistic methodology, but our work puts us consistently and inevitably in the position of resolving ambiguities in legal language. Judges and lawyers are experts, in other words, in interpreting the law.²⁸³ So the question, ultimately, is not whether we trust judges to engage in linguistic analysis. It is whether we want them to “do so with

(“Unless this linguistic ‘context’ is placed in its proper context, it is of little analytical or persuasive value.”).

281. See *Rasabout*, 2015 UT ¶ 21, 356 P.3d at 1266 (noting that a potentially significant portion of corpus data “require[s] an interpretive assumption” or retains some level of ambiguity); Michael Stubbs, *Corpus Semantics*, in THE ROUTLEDGE HANDBOOK OF SEMANTICS 106, 107 (Nick Riemer ed., 2016) (noting that “a constant background question is whether a corpus can ever, strictly speaking, provide semantic data, since intuition is always required to interpret the data,” but concluding that “corpora allow us to study language ‘with a degree of objectivity [. . .] where before we could only speculate’” (quoting Adam Kilgarriff, *Putting Frequencies in the Dictionary*, 10 INT’L J. LEXICOGRAPHY 135, 137 (1997))); Ben Zimmer, *The Corpus in the Court: ‘Like Lexis on Steroids,’* ATLANTIC (Mar. 4, 2011), <http://www.theatlantic.com/national/archive/2011/03/the-corpus-in-the-court-like-lexis-on-steroids/72054> [<http://perma.cc/KBQ5-BSQ4>] (“While the corpus revolution promises to put judicial inquiries into language patterns on a firmer, more systematic footing, the results are still prey to all manner of human interpretation.”).
282. *Rasabout*, 2015 UT ¶ 97, 356 P.3d at 1287 (Lee, Associate C.J., concurring in part and concurring in the judgment) (agreeing that judicial analysis of any kind is “better when adversary briefing is complete and in-depth”).
283. *Id.* ¶ 107, 356 P.3d at 1285 (explaining that although they do not have “the kind of training possessed by ‘linguistics experts’ . . . judges *are* experts on one thing—interpreting the law”).

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the aid of—instead of in open ignorance of or rebellion to—modern tools developed to facilitate that analysis.”²⁸⁴

Judges are likewise not historians. And it may rightly be said that many lawyers and judges are even “bad historians” that tend to “make up an imaginary history and use curiously unhistorical methods.”²⁸⁵ As one of us recently noted, “[J]udges of all stripes engage in historical analysis, particularly in their interpretation of the [C]onstitution.”²⁸⁶ “So the response to our lack of historical training is not to back away from the enterprise; it is to arm ourselves with the tools necessary to do the best history we can.”²⁸⁷

The same goes for linguistic analysis. “We could continue to judge the ordinary meaning of words based on intuition, aided by the dictionary. But those tools are problematic.”²⁸⁸ Thus “it is our *current* methodology and tools that involve bad linguistics produced by unscientific methods.”²⁸⁹ Therefore, “[i]f the concern is reliability, the proper response is to embrace—and not abandon—corpus-based analysis.”²⁹⁰

The potential for subjectivity and arbitrariness is not heightened but reduced by the use of corpus linguistics.²⁹¹ Without this tool, judges will tap into their linguistic memory to make assessments about the frequency or prototypicality of a given sense of a statutory term. Such recourse to memory and judicial intuition is neither transparent nor replicable. Nothing is statistically worse than one data point—especially a biased one. The potential for motivated reasoning is evident.²⁹²

²⁸⁴. *Id.*

²⁸⁵. MAX RADIN, LAW AS LOGIC AND EXPERIENCE 138 (1940).

²⁸⁶. *Rasabout*, 2015 UT ¶ 109, 356 P.3d at 1285 (Lee, Associate C.J., concurring in part and concurring in the judgment).

²⁸⁷. *Id.*

²⁸⁸. *Id.* ¶ 112, 356 P.3d at 1285.

²⁸⁹. *Id.*

²⁹⁰. *Id.*

²⁹¹. As one of us has noted, while a judge may “go looking for supporting evidence in a corpus,” it is possible that “after reviewing a few hundred concordance lines, a salient meaning contrary to the judge’s initial conclusion becomes harder to ignore.” Mouritsen, *supra* note 271, at 202.

²⁹². A common critique of the use of legislative history comes to mind: “It sometimes seems that citing legislative history is still, as [Judge] Harold Leventhal once observed, akin to ‘looking over a crowd and picking out your friends.’” Patricia M. Wald, *Some Observations on the Use of Legislative History in the 1981 Supreme Court Term*, 68 IOWA L. REV. 195, 214 (1983). A parallel problem appears in cases in which judges summon examples of word usage in literary works. See, e.g., *Whitfield v. United States*, 135 S. Ct. 785, 788 (2015) (interpreting the ordinary meaning of “to accompany” using a host of sources, including quotes from a Jane Austen as well as

Corpus linguistics, by contrast, facilitates transparency and scrutiny.²⁹³ It is “an empirical check on our (imperfect) linguistic intuition.”²⁹⁴ And it is not, ultimately, a terribly complex or difficult endeavor. “Corpus analysis is like math”—everyone can do it at some basic level; at more advanced levels it becomes too complicated for all but the experts.²⁹⁵ We’re advocating rudimentary linguistic analysis that most anyone can do.²⁹⁶ We “just think we should be using a calculator instead of doing it in our heads.”²⁹⁷

The path forward is for judges and lawyers to identify the corpus analysis that we can perform sufficiently and reliably to supplement the tools we are now using (and the sort of analysis we must leave to linguists). In time, the law and corpus linguistics movement will develop standards and best practices for this field. Until then we should proceed cautiously and carefully in a direction that will allow us to be the best linguists we can. Paraphrasing an observation made by Justice Scalia and his co-author Garner regarding judges performing historical analysis, we may or may not be able to do corpus linguistics with the precision of an expert, but “[o]ur charge is to try.”²⁹⁸

B. Propriety: Judges Shouldn’t Do Corpus Linguistics

The law puts limits on judicial analysis of matters that exceed the bounds of the briefing and record in a particular case. Our rules of judicial ethics say that “[a] judge shall not investigate facts in a matter independently,” but shall “consider only the evidence presented and any facts that may properly be judicially

a Charles Dickens novel). That kind of data cherry-picking is fraught with risk of hindsight bias or motivated reasoning.

293. See Mouritsen, *supra* note 271, at 203 (“[C]orpus analysis brings these subconscious assumptions about language and meaning out in the open.”); Zimmer, *supra* note 281 (“[A]t least these ideological arguments can proceed on a basis of concrete facts about how we use language, rather than on a welter of idiosyncratic assumptions, as has too often been the case.”).

294. *Rasabout*, 2015 UT ¶ 66, 356 P.3d at 1277 (Lee, Associate C.J., concurring in part and concurring in the judgment).

295. *Id.* ¶ 115, 356 P.3d at 1286.

296. While the COHA and similar linguist-designed corpora are more foreign than Google or Westlaw, they are being employed in the same way. In short, we are advocating using a corpus as a search tool or database to find uses of language that are as easy to read as a Google search result. The results are just more reliable.

297. *Rasabout*, 2015 UT ¶ 115, 356 P.3d at 1286 (Lee, Associate C.J., concurring in part and concurring in the judgment).

298. SCALIA & GARNER, *supra* note 28, at 400.

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noticed.”²⁹⁹ With this in mind, a majority of the Utah Supreme Court has challenged the “sua sponte” use of corpus linguistics as falling beyond the proper domain of the judge.³⁰⁰

The analogy here may arguably be to cases in which judges perform their own experiments to assess the factual assertions of the parties in a particular case. A prominent example appears in Judge Posner’s opinion in *Mitchell v. JCG Industries*.³⁰¹ A question in that case was how long it took poultry processing workers to change in and out of the safety clothing they used to do their jobs. Judge Posner’s opinion included a reference to an experiment he conducted on that question in chambers – in which he ordered the clothing in question and asked “three members of the court’s staff” to change in and out of it “as they would do if they were workers at the plant.”³⁰² “Their endeavors were videotaped,”³⁰³ and “[t]he videotape automatically recorded the time consumed in donning and doffing and also enabled verification that the ‘workers’ were neither rushing nor dawdling.”³⁰⁴ Posner referred to the results of this experiment in support of “the common sense intuition that donning and doffing a few simple pieces of clothing and equipment do not eat up half the lunch break.”³⁰⁵

Chief Judge Wood, in dissent, asserted that the Posner majority went “beyond the proper appellate role” in conducting an experiment of relevance to a factual question in the case.³⁰⁶ She complained that the results of Judge Posner’s experiment “cannot be considered as evidence in the case,” which is limited to matters placed in the record pursuant to applicable rules of civil procedure.³⁰⁷

This may be the paradigm that critics of corpus linguistics have in mind when they question the viability of sua sponte use of this tool. The governing rules of judicial ethics prohibit judges from “investigat[ing] facts in a matter independently” and only allow the courts to consider “facts that may properly be judicially noticed.”³⁰⁸ But the analogy is inapt. Judges who consider corpus data

²⁹⁹. MODEL CODE OF JUDICIAL CONDUCT r. 2.9(C) (AM. BAR ASS’N 2011).

³⁰⁰. *Rasabout*, 2015 UT ¶ 17, 356 P.3d at 1264-65 (majority opinion).

³⁰¹. 745 F.3d 837 (7th Cir. 2014).

³⁰². *Id.* at 842.

³⁰³. *Id.*

³⁰⁴. *Id.*

³⁰⁵. *Id.*

³⁰⁶. *Id.* at 847 (Wood, C.J., dissenting).

³⁰⁷. *Id.* at 849.

³⁰⁸. UTAH CODE OF JUDICIAL CONDUCT r. 2.9(C) (2017); MODEL CODE OF JUDICIAL CONDUCT r. 2.9(C) (AM. BAR ASS’N 2011).

in assessing the ordinary meaning of a statute are not investigating the *adjudicative facts* of a case; they are considering facts of relevance to the proper interpretation of the law. These are known as *legislative facts*, and their investigation is the inevitable – and quite proper – domain of the judge’s *sua sponte* analysis.

The point is supported by the law of evidence. Governing rules of evidence typically state that limitations on the judge’s judicial notice power are addressed to “an adjudicative fact only, not a legislative fact.”³⁰⁹ The distinction is this: “[L]egislative facts are matters that go to the policy of a rule of law as distinct from the true facts that are used in the adjudication of a controversy.”³¹⁰ Such facts “are not appropriate for a rule of evidence.”³¹¹ They are “best left to the law-making considerations by appellate and trial courts.”³¹² And that is precisely what is involved in the corpus linguistic analysis of the meaning of statutory text. Corpus analysis has nothing to do with adjudicative facts – with the who, what, when, or where of an underlying controversy. It has only to do with the proper construction of the applicable law. For that reason, there is no ethical or evidentiary prohibition on *sua sponte* corpus analysis by a judge.³¹³

“A contrary conclusion would call into question a wide range of” inquiries routinely conducted by our courts, including the use of dictionaries:³¹⁴

If we were foreclosed from considering outside material that informs our resolution of open questions of law, we would be barred from engaging in historical analysis relevant to a question of original meaning of a provision of the [C]onstitution, or from considering social science literature

309. FED. R. EVID. 201(a) (“This rule governs judicial notice of an adjudicative fact only, not a legislative fact.”); UTAH R. EVID. 201(a) (same).

310. UTAH R. EVID. 201(a) advisory committee note; see also Kenneth Culp Davis, *An Approach to Problems of Evidence in the Administrative Process*, 55 HARV. L. REV. 364, 402–03 (1942) (“When an agency wrestles with a question of law or policy, it is acting legislatively, just as judges have created the common law through judicial legislation, and the facts which inform its legislative judgment may conveniently be denominated legislative facts. The distinction is important; the traditional rules of evidence are designed for adjudicative facts, and unnecessary confusion results from attempting to apply the traditional rules to legislative facts.”).

311. UTAH R. EVID. 201(a) advisory committee note.

312. *Id.*

313. For further commentary on the distinction between adjudicative and legislative facts, see, for example, *Bulova Watch Co. v. Hattori & Co.*, 508 F. Supp. 1322, 1328 (E.D.N.Y. 1981), which explains that the “court’s power to resort to less well known and accepted sources of data to fill in the gaps of its knowledge for legislative and general evidential hypothesis purposes must be accepted because it is essential to the judicial process.” See also ROBERT E. KEETON, JUDGING 38–39 (1990) (discussing the distinction between legislative and adjudicative facts).

314. *State v. Rasabout*, 2015 UT 72 ¶ 106, 356 P.3d 1258, 1285 (Lee, Associate C.J., concurring in part and concurring in the judgment).

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in resolving a difficult question under the common law. Linguistic analysis is no different; to the extent we charge our judges with resolving ambiguities in language, we cannot (*and do not*) reasonably restrict their ability to do so on a well-informed basis – even on grounds not presented by the parties, and not within the domain of judges’ professional training.³¹⁵

For better or worse, judges do that all the time. State court judges decide questions of common law that require us to consider and weigh questions implicating literature in fields of social science about which we are hardly experts.³¹⁶ No one bats an eye when judges do their own research and thinking on a broad range of “legislative facts.” The matter should be no different for linguistic analysis of ordinary meaning.

C. Practicality: Corpus Linguistics Will Impose an Unbearable Burden

The widespread use of corpus linguistics could put a strain on parties and the courts. This is another criticism that has appeared in majority opinions in the Utah Supreme Court. The argument is that turning the analysis of ordinary meaning into an empirical, data-driven enterprise will introduce the “dueling expert” problem and make statutory cases more costly and time-consuming.³¹⁷ The effects of the proliferation of expert testimony are a matter meriting careful consideration. For every question on which we require expert analysis, we compound the expense and time it takes for a case to be resolved. We should not do that without a good reason.

Yet we find this objection to corpus analysis unpersuasive for several reasons. First is the fact that not all problems of statutory interpretation lend themselves to corpus linguistic analysis. The utility of this tool, as currently conceived, is limited to problems of *lexical ambiguity* – of a contest between two meanings of the terms of the statutory text. That excludes a category of problems of *semantic* (or in other words *structural ambiguity*) – a problem, for example, as to whether a modifier is understood to apply to all items in a statutory list or only the “last

³¹⁵. *Id.*

³¹⁶. Recent examples in the Utah Supreme Court include the question whether a medical practitioner owes a duty to third parties who are foreseeably injured by the negligent prescription of pharmaceuticals, *B.R. & C.R. ex rel. Jeffs v. West*, 2010 UT 11, 275 P.3d 228; and the question of the appropriate age at which a child may be required to defend against a claim for negligence, *Nielsen ex rel. C.N. v. Bell ex rel. B.B.*, 2016 UT 14, 370 P.3d 925.

³¹⁷. *Rasabout*, 2015 UT ¶ 19, 356 P.3d at 1265 (majority opinion).

antecedent.”³¹⁸ Even as to the class of cases of lexical ambiguity, moreover, not all cases will call for corpus analysis. In our view “[c]orpus analysis is something of a last resort.”³¹⁹ “It comes into play only if we find that the legislature is not using words in some specialized sense, and only if we cannot reject one of the parties’ definitions based on the structure or context of the statute.”³²⁰ This yields a limited but important domain for corpus linguistics. Judges should turn to an empirical analysis of frequency only in cases in which they have “no better way” of resolving a contest between probabilities of meaning.³²¹ That is a relatively rare case.³²²

Second, corpus-based analysis will not always require an expert. This “isn’t rocket science.”³²³ Lawyers are crafty, ingenious creatures with the capacity to learn and even master new tools, technologies, and methodologies. Witness the way attorneys have learned to parse historical materials and present them when litigating the original meaning of the Constitution. In a way, lawyers have been doing corpus analysis for a long time; they scour Westlaw or Lexis to determine how courts have interpreted a phrase or concept. So it is undoubtedly true that lawyers will have to bone up on some basic linguistic methodology. But continuing education is an ongoing element of the legal profession. And a familiarity with and capacity for corpus analysis can take root just like Westlaw and Lexis searches did.³²⁴ The rising generation of millennials is particularly suited to the

318. See *Lockhart v. United States*, 136 S. Ct. 958, 962 (2016) (describing the “rule of the last antecedent” and applying it to interpret a statute imposing a mandatory minimum sentence on defendants who violate the federal child pornography statute and have previously been convicted of certain crimes); CRUSE, *supra* note 125, at 107–08 (“Ambiguity has been presented here as a lexical phenomenon; it is important to emphasize, however, that there are other sources of ambiguity. One of these, of course, is syntax, as in *Mary saw the man with the telescope*. Many syntactic ambiguities arise from the possibility of alternative constituent structures, as here: *with the telescope* is either a manner adverbial modifying *saw*, or a prepositional phrase modifying *the man*.”).

319. *Rasabout*, 2015 UT ¶ 118, 356 P.3d at 1286 (Lee, Associate C.J., concurring in part and concurring in the judgment).

320. *Id.*

321. *Id.*

322. *Id.* ¶ 118, 356 P.3d at 1287 (asserting that in “five years” on the Utah Supreme Court, Associate Chief Justice Lee had “employed such analysis only a very few times,” and that “[i]n the many other statutory cases” that have arisen, he “disposed of the matter using more traditional tools of interpretation”).

323. *Id.* ¶ 114, 356 P.3d at 1286.

324. The advent of computer-aided legal research is now an accepted staple. But it wasn’t always thought to be so. Early reactions paralleled some of the responses to corpus linguistics. See, e.g., Robert C. Berring, *Legal Research and the World of Thinkable Thoughts*, 2 J. APP. PRAC. & PROCESS 305, 316 (2000) (declaring that it “scares” the author “[i]f search engines like Google

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task. They have never known life without a computer, and are constantly embracing new applications and tools for computer analysis. In time we may see competing corpus presentations as a matter of course in adversary briefing.³²⁵ There will often be no need for dueling experts, just as there is often no need for dueling historical experts in constitutional litigation, or dueling dictionary experts on a statutory question.

Finally, if in the rare case there is a need for the parties to retain corpus linguistic experts, that is hardly cause for alarm. Where the issue is complex enough and the stakes are high enough, expert analysis could be helpful – and certainly preferable to deciding a matter as significant as, say, the applicability of a federal sentencing enhancement on the basis of an unreliable source like a dictionary or an opaque one like a judge’s intuition. Some problems are important enough to merit expert analysis. We should leave that matter to the marketplace – to the clients and lawyers who decide how best to formulate and present a legal position.

D. Corpus Data Represents Only “More Factually Common Iterations”

Solan and Gales have observed that corpus data may reflect only the fact that a given sense of a certain term is a more factually common iteration of that term

move into legal information”); Barbara Bintliff, *From Creativity to Computerese: Thinking Like a Lawyer in the Computer Age*, 88 LAW LIBR. J. 338, 339 (1996) (warning that computer-aided legal research will undermine the ability to think like a lawyer); Molly Warner Lien, *Technocentrism and the Soul of the Common Law Lawyer*, 48 AM. U. L. REV. 85, 85-86 (1998) (arguing that computer-aided legal research “may be harmful to the process of legal reasoning” and that lawyers should be aware of the “negative impacts” of using technology in this way); Scott P. Stolley, *Shortcomings of Technology: The Corruption of Legal Research*, FOR THE DEFENSE 39 (Apr. 2004) (viewing the likes of LexisNexis and Westlaw as leading to a generation of lawyers who can’t find cases on point). Most of us view this criticism as downright silly today. We realize that computer research tools can be misused, and may be improved if supplemented by more traditional methods. But they cannot properly be rejected on the basis of their unfamiliarity.

325. This will hold if, but only if, our courts continue to embrace this methodology – as has happened recently in Michigan. If we (judges) build it, they (attorneys) will surely come. See Appellants’ (Third) Supplemental Authority, *In re Estate of Cliffman*, 892 N.W.2d 380 (Mich. 2017) (No. 67-151998), 2016 WL 4480882 (submitting supplemental authority with exhibits “show[ing] the relative frequency with which the words or word combinations appear in the COCA database,” and noting that “[i]n *Harris*, this Court approved the use of the *corpus linguistics* in determining the common usage and meaning of statutorily undefined words”). But lawyers need not wait on the courts to begin incorporating corpus analysis in their briefing. Courts, including the United States Supreme Court, have already proven amenable to well-executed corpus-based analysis. See Zimmer, *supra* note 281 (discussing Neal Goldfarb’s influential, corpus-based amicus brief in *FCC v. AT&T, Inc.*, 562 U.S. 397 (2011)).

in the real world.³²⁶ If that is true, there may be reason to doubt the probity of the data in establishing the semantic meaning³²⁷ perceived by lawmakers or the public.

These are important concerns. And anyone turning to corpus analysis would do well to consider these limitations before jumping too quickly to an inference about ordinary meaning. But we do not view the sense-division problems noted here to be fatal to the probity of corpus linguistic analysis (even for related senses of a statutory term). We propose a range of responses to this concern.

First, the Solan-Gales point seems overstated. Let's apply it to the *carry* data. It may be likely, as Solan and Gales might suggest, that the corpus data we found is indicative of the fact that most iterations of carrying a firearm in the real world involve personally *bearing* it. Yet we do not see that as depriving the data of probative value. If most iterations of firearm carrying involve personally *bearing*, then that sense of carrying seems likely to be the one that first comes to mind when we think of this term. That top-of-mind sense, as noted, may not exhaust the breadth of human perception of this term. If pressed, some people might concede that the term encompasses the *transport* sense too. As discussed below, there may be a way to measure such perceptions of meaning.

This raises the question of whether to credit only the top-of-mind sense or a possibly broader, "reflective" sense as ordinary. But this is not a deficiency in corpus data—or even in linguistic theory. It is a question for law—"we have to decide *which* meaning, produced by which *theory* of meaning, we ought to pick."³²⁸ We think the answers to these questions are dictated in part by the rationales that drive us to consider ordinary meaning. A concern for fair notice and protection of reliance interests may well direct us to stop at the top-of-mind sense of a statutory term. If the personally *bear* sense of *carry* is the first one that comes to mind, then that may be the sense that the public will have in mind upon reading the terms of a statute, and if we are interested in protecting reliance interests and avoiding unfair surprise, we may want to stop short of including the broader *transport* sense that the public might concede to be covered upon reflection.

We emphasize that corpus analysis does not take place in an acontextual vacuum. A corpus-based approach to ordinary meaning, as noted, does *not* simply evaluate which of two competing uses is the most common. Instead, the corpus

326. Lawrence M. Solan & Tammy Gales, *Corpus Linguistics as a Tool in Legal Interpretation*, 2017 BYU L. REV. (forthcoming 2018).

327. The point is not to suggest that mere semantic meaning is the right framing. Above we conceded that the pragmatic context of relevance to so-called "intended" or "public" meaning is the correct focus. But for now we are speaking only of semantic meaning. We add the wrinkle of pragmatic context below.

328. Baude & Sachs, *supra* note 3, at 1089–90.

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allows us to examine the use of a word or phrase in a particular syntactic, semantic, or pragmatic context, in the speech or writing of a particular speech community or register, and at a particular point in time. Our analysis of *carry*, for example, does not simply examine the use of *carry* at large. We look for sentences in which the verb *carry* has a human agent performing the carrying and a weapon object (*firearm* or one of its synonyms) being carried. We look for such instances in what we have argued is the relevant speech community and in texts dating from the era in which the relevant statute was enacted. With this level of granularity, we are often able to find not only common ways to describe common real-world occurrences, but also the most common ways in which highly particularized and highly contextualized occurrences are described in a given speech community at a given point in time. If there are cases where “it is natural to use a particular expression, but the circumstances do not arise often,”³²⁹ as Solan and Gales suggest, an appropriately designed corpus search (performed in a sufficiently robust corpus) will help us identify these instances and make informed, evidence-based judgments about them.

Second, above we were considering data at the right end of the frequency continuum – an indication that one of two senses is clearly the most frequent, or even almost exclusive. But what if the data is less clear? What if the data suggests that each of two senses is about equally possible? Or that one is a bit more frequent but not clearly so?

Sometimes an indication that *both* senses of a term are relatively frequent will be telling. If two senses are closely related and both appear relatively equally in the data, that may tell us that both are about equally likely to be called to mind. In that event it may be difficult to exclude either as *extraordinary*.

The salience of inconclusive data may also depend on the nature of the question presented. We have been speaking here of isolated questions of ambiguity and ordinary meaning. But sometimes the question of whether the language of a statute is plain or ordinary is bound up with questions of whether or not the court will consider extrinsic evidence of meaning like legislative history, or apply a substantive canon, or defer to an agency interpretation. In such cases, inconclusive data about which meaning is ordinary may be quite conclusive – it may tell us that there is ambiguity sufficient to proceed past the threshold “standard picture.” Corpus data can bring rigor to this range of questions too; instead of guessing about plainness we can summon data.

In some cases, that data may be too mixed to yield any helpful answers. Even then that does not require us to abandon the standard picture. We could, for example, look to other empirical methods for measuring perceptions of meaning. Barring that kind of help, we can fall back on a principle of interpretation

329. Solan & Gales, *supra* note 326 (manuscript at 3).

framed by something other than a view of the standard picture—as in a rule of interpretation that has to do with “legal content” of the law, like the rule of lenity. But we see no reason to fall back too quickly. The law commits to the standard picture for good reason. We think the courts should try their best to find real answers to linguistic questions before falling back on fake ones.

E. Political Neutrality

A final potential concern goes to the utility of the methodology of corpus linguistics across a range of theories of interpretation. The utility of this methodology may be most apparent to the textualist or the originalist. But we see much broader applications for corpus linguistics. We also see reason for those who are skeptical of textualism and originalism to resort to this new tool with equal alacrity.

The textualist finds statutory meaning in the words of a legal text. For that reason, the textualist would have a natural affinity for a tool that promises to help uncover the meaning of the text. That affinity would be sharpened to the extent the tool can help deliver on the promise of determinacy—a promise at the heart of this theory.

The originalist’s expected attraction to corpus analysis rests on similar grounds. An originalist who seeks the original public meaning of the words of the Constitution,³³⁰ for example, would quickly see the value of data-based answers to questions previously left to more impressionistic analysis. The data would be viewed as delivering on a core promise of originalism—“fixation,” which is the idea that written constitutions are viewed as carrying fixed content as of the time of their adoption.³³¹

Yet it would be a mistake to dismiss corpus linguistic analysis as a methodology of likely interest only to the textualist and the originalist. Even the most jaded skeptics of these two approaches should find this methodology significant. A threshold reason was discussed above: even those who search for legislative intent or purpose view the text as the “best evidence” of intent or purpose.³³²

330. See John O. McGinnis & Michael B. Rappaport, *Original Methods Originalism: A New Theory of Interpretation and the Case Against Construction*, 103 NW. U. L. REV. 751, 761 (2009) (“[O]riginal public meaning, in contrast to original intent, interpret[s] the Constitution according to how the words of the document would have been understood by a competent and reasonable speaker of the language at the time of the document’s enactment . . . [and] is now the predominant originalist theory.”).

331. See Lawrence B. Solum, *The Fixation Thesis: The Role of Historical Fact in Original Meaning*, 91 NOTRE DAME L. REV. 1, 1 (2015).

332. See *id.* at 52 n.130, 65 n.154 and accompanying text.

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“We’re all textualists now” in that most all of us at least start with the text.³³³ If we’re going to start with the text, we should seize the best tools for discerning its meaning.

Yet even an avowed “anti-textualist” should be attracted to corpus linguistics, here for an instrumental or strategic reason. A key move for the anti-textualist is to challenge the purported determinacy of statutory text (or fixation of constitutional language). Corpus analysis can often help in that endeavor.³³⁴ Where the data show that there is no ordinary meaning, or that there is a wide range of ordinary meanings, the interpreter will be free to dismiss the notion of determinacy (or fixation) and turn to other theories or tools of interpretation.

For these reasons, we see corpus linguistic analysis as a tool without any necessary connection to a theory of interpretation or an often-corresponding political ideology. It is a neutral tool with broad utility for anyone interested in data of relevance to the analysis of ordinary meaning.

F. Potential: The Role for Corpus Linguistic Analysis in Addressing Problems of Ordinary Meaning

Another critique is one not yet made by critics but implicitly acknowledged in our analysis throughout this Article. For all our bemoaning of the deficiencies in the law’s construct of ordinary meaning, and touting of the insights provided by corpus linguistic analysis, we have not really offered our own grand theory of corpus-based ordinary meaning. Because we acknowledge that corpus data may at least sometimes be indeterminate, we cannot claim that corpus linguistic analysis will definitively resolve ongoing debates about the ordinary meaning of the language of the law.

In that sense, we are left to concede that the methodology we propose is not an answer to the many facets of the ordinary meaning problem highlighted herein. That said, we are not shy in asserting that corpus linguistic analysis is an essential step in improving the quality of the ordinary meaning inquiry going forward. At a minimum, the data that can be compiled through corpus linguistic analysis will allow lawyers and judges to have a transparent debate informed by real data instead of inferences from sources (like dictionaries or etymology or intuition) that are both opaque and ill-suited to the task to which they are applied. The corpus methodology that we have introduced promises three contri-

333. Kagan, *supra* note 10.

334. Mouritsen, *supra* note 271, at 161 (arguing that textualist analysis may be “vulnerable” to attack from corpus data because textualist claims about meaning “can be proven true or false using empirical linguistic methods”).

butions to ordinary meaning analysis going forward. First is a diagnostic contribution: the methodology of corpus linguistics helps to identify shortcomings in the law's current approach to identifying and assessing ordinary meaning. Second, corpus linguistic analysis can help advance the theory of interpretation. The tools and methodologies presented herein will aid in the development of a more sophisticated legal conception of ordinary meaning. Third, having identified the problem and laid out the requirements for a proposed solution, we advance the methodology of corpus linguistics as the best mechanism for yielding a satisfactory solution.

We grant that some problems of ordinary meaning will require resort to other tools or principles of interpretation for their resolution. Where the corpus data are inconclusive, or the distinction between two proposed definitions seems so thin that we doubt that it represents any real difference in human perception, we may need to look elsewhere to resolve the interpretive question presented. But that does not mean that the corpus data were unhelpful. It means that we looked at data—at comparatively empirical, falsifiable grounds for assessing ordinary communicative content—as a threshold step and decided we needed to go further to find a satisfactory answer.

CONCLUSION

Some points of analysis outlined here are necessarily tentative. That seems inevitable in the course of breaking new ground. We trust that some of the value in our contribution will be to spark further analysis and scholarship on the questions we have raised.

Moving forward, judges, lawyers, and linguists will need to collaborate to settle on some best practices in this emerging field. Some important questions to answer include methods for selecting the best corpus for a given type of ambiguity, standards for the appropriate sample size for a given search, standards for determining appropriate search terms and search methods for various types of inquiries, and the identification of suitable coding methods. Scholars have begun to explore these and other related questions.³³⁵ Further work is in order. But we are confident that lawyers and linguists can work together to develop an orthodox set of methods that will refine an approach that is now in its infancy.

335. See James C. Phillips & Jesse A. Egbert, *A Concise How-To Guide for Law and Corpus Linguistics: Importing Principles and Practices from Survey and Content-Analysis Methodologies To Improve Corpus Design and Analysis*, 2017 BYU L. REV. (forthcoming 2018) (arguing that principles and methodologies from survey and content-analysis methodologies need to be applied to corpus design, selection, and coding).

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Linguists have observed that corpus linguistics generally “has not yet reached the stage where it can present a stable set of methodological procedures coupled to specific descriptive questions.”³³⁶ That is undoubtedly all the more true for the application of this tool to a brand new field. The law, after all, asks questions that linguists historically have not deemed important – concerning the average or “ordinary” understanding of a given term in a given linguistic setting. The methodology of corpus linguistics will undoubtedly experience growing pains as it is employed for new purposes. Yet linguists have noted elsewhere (more generally) that “[t]he observation that distributional corpus analysis has not reached” the stage at which we have embraced a set of widely accepted norms “is certainly not a reason to abandon the approach; rather, it defines a promising and exciting research [program].”³³⁷ That is certainly true as to the application of corpus linguistics to the enterprise of judging ordinary meaning. Whatever its current limitations, “semantic analysis can, and indeed, should, turn to corpus methods.”³³⁸

The need is acute when the interpretive task involves questions of law. Too much rides on the resolution of legal ambiguity to resolve the matter by means “fraught with the potential for bias and error.”³³⁹ If and when the law turns on an assessment of ordinary communicative content we must at least try to define and operationalize the inquiry with greater care. We see the approach outlined here as a step in that direction.

³³⁶. GEERAERTS, *supra* note 247, at 178.

³³⁷. *Id.*

³³⁸. Glynn, *supra* note 136, at 7.

³³⁹. State v. Rasabout, 2015 UT 72 ¶ 134, 356 P.3d 1258, 1290 (Lee, Associate C.J., concurring in part and concurring in the judgment).

NEWS ARTICLES

L O N D O N, March 20.

Thursday was presented to the Court of Aldermen and Common Council, at Guildhall, a Petition from the Goldsmiths and Workers of Silver, praying the Court to give Instructions to the Members for the City to oppose the Bill for laying a Tax on Persons possessed of Plate. The Court taking the same into Consideration, resolved to petition the House of Commons against the imposing of the said Tax.

A Scheme is, we hear, on Foot to raise a general Militia, consisting of 770 Companies at 80 Men each, which with the Officers will amount to 67,000 Men, the Expence of which, to the Community, is calculated at about 175,000 l. annually. It is proposed, that this Militia shall receive their Arms, Accoutrements, and Ammunition from the Ordnance; and that the Money to be raised for this Purpose, shall make a Part of the current Services of the Year.

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Advertisement Boston Evening-Post (published as Boston Evening Post.) (Boston, Massachusetts) September 10, 1750

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arms:accoutrements x Highlight 1 of 2 highlights

All Gentlemen Volunteers, and Others,

THAT have a Mind to serve his Majesty King GEORGE the Second for a limited Time, in the Independant Companies of Rangers, now in *Nova Scotia*, may apply to Lieutenant *Alexander Callender*, at Mr. *Jonas Leonard's*, at the Sign of the *Lamb* at the South End of *Boston*, where they shall be kindly entertained, enter into present Pay, and have good Quarters, and when they join their respective Companies at *Halifax*, shall be compleatly Cloathed in blue Broad Cloth, receive **Arms, Accoutrements**, Provisions, and all other Things necessary for a Gentleman Ranger. And for their further Encouragement, his Excellency Governor CORNWALLIS has by Proclamation lately published, promised a Reward of *Five Hundred Pounds*, Old Tenor, for every *Indian Scalp* or Prisoner brought in, which Sum will be immediately paid by the Treasurer of the Province, upon the Scalp or Prisoner being produced.

N. B. Lieutenant *Callender* has obtained Leave from His Honour the Lieutenant Governor, to beat up for Rangers in any part of this Province.

Boston, September 8. 1750.

Province of the Massachusetts-Bay, } Boston, September 8. 1750.

Court of Vice-Admiralty.

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S A T U R D A Y, FEBRUARY 14, 1789

[Vol. III.]

Price Six-Pence.]

Store the corner of Front and Ferry Streets,
the immediately occupied by Mr. Deyereux
South, a Large and General Assortment of
MERCHANDIZE,
Consisting of the following Articles, viz.

Cork crows
Glimbles of all sizes
Planned and Reel spurs
Sawmill, crofs cut and
whip Jaws
Steel plated and common
hand do,
Surveyors compasses
Smoothingirons
Candlesticks and snuffers
Hair pins
A sort of watch chains &
seals
Hooks and eyes
White Chapelet needles
Needles and pins
Knitting needles
Braid curtain rings
Spectacles
Money Calcas

Scythes and sickles
Frying pans
Gridirons
Saddles and birdles
Stirruprons
Locks and hinges of all
kinds
Brass cocks
Jaws harps
Powder dishes, plates
basons and mugs of dif-
ferent fizes
Tin kettles
Tea cups and saucers
Crowley's steel
Bar iron
Nails of all kinds
Gunpowder, shot and
bar lead
Flints

Best hyfon tea
Souchong and bohea do.
Coffee
Chocolate
Loaf Sugar
Mucovado do.
Molasses
Pepper
Allpice
Nutmegs
Cinnamon
Mace
Cloves

GROCERYES.

RYES.
 Almonds
 Raisins
 Prunes
 Figs
 Madder
 Red wood
 Castile soap
 Madeira, Claret, Port,
 and Lisbon wines
 Jamaica spirits
 West India rum
 Shrub and
 Porter.

They will receive in payment for any of the above articles, cash, ginseng, peltry, bacon, beef, cattle on foot, whiskey, flour, butter, cheese, tallow, candlewick, hard soap, and vinegar. They flatter themselves they will attract the attention of the public by selling their goods cheap, and keeping a well assorted Store.

Pittsburgh, January 22, 1789

A Circular Letter from his Excellency George Washington, Commander in Chief of the Armies of the United States of America.

(Concluded from our last.)

FOR my own part, conscious of having acted while a servant of the public, in the manner I conceived best fitted to promote the real interests of my country; having, in consequence of my fixed belief, in some measure, pledged myself to the army, that their country would finally do them complete and ample justice, and not willing to conceal any instance of my official conduct from the eyes of the world, I have thought proper to transmit to your excellency the inclosed collection of papers, relative to the half pay and commutation granted by Congress to the officers of the army: from these communications, my decided sentiment will be clearly comprehended, together with the conclusive reasons which induced me at an early period, to recommend the adoption of this measure in the most earnest and serious manner. As the proceedings of Congress, the army, and myself, are open to all, and contain, in my opinion, sufficient information to remove the prejudice and errors which may have been entertained by any, I think it unnecessary to say any thing more, than just to observe, that the resolutions of Congress, now alluded to, are as undoubtedly and absolutely binding upon the United States, as the articles of confederation or legislation.

As to the idea, which I am informed, has in some instances prevailed, that the halfpay and commutation are to be regarded merely in the odious light of a pension, it ought to be exploded for ever: that provision should be viewed, as it really was, a reasonable compensation offered by Congress, at a time when they had nothing else to give to officers of the army, for services then to be performed: it was the only means to prevent a total direktion of the ser-

vice: it was a part of their hire. I may be allowed to say, it was the price of their blood, and of your independency; it is therefore more than a common debt, it is a debt of honor; it can never be considered as a pension or gratuity, nor cancelled until it is fairly discharged.

With regard to the distinction between officers and soldiers, it is sufficient that the uniform experience of every nation of the world, combined with our own, proves the utility and propriety of the discrimination. Rewards in proportion to the aid the public draws from them, are unquestionably due to all its servants. In some lines, the soldiers have perhaps generally had as ample compensation for their services, by the large bounties which have been paid them, as their officers will receive in the proposed commutation; in others, [if besides the donation of land, the payment of arrearages of clothing and wages [in which article all the component parts of the army must be put upon the same footing, we take into the estimate, the bounties many of the soldiers have received, and the gratuity of one year's full pay, which is promised to all, possibly their situation [every circumstance being duly considered] will not be deemed less eligible than that of the officers. Should a farther reward, however, be judged equitable, I will venture to assert, no man will enjoy greater satisfaction than myself, an exemption from taxes for a limited time [which has been petitioned for in some instances] or any other adequate immunity or compensation granted to the brave defenders of our country's cause: but neither the adoption or rejection of this proposition will, in any manner affect, much less militate against the act of Congress, by which they have offered five years' full pay, minus of the half pay for life, which had been before promised to the officers of the army,

been before promised to the officers of the army.

Before I conclude the subject on public justice, I cannot omit to mention the obligations this country is under to that meritorious class of veterans, the non-commissioned officers & privates, who have been discharged for inability, in consequence of the resolution of Congress, of the 3d of April, 1778, on an annual pension for life: their peculiar sufferings, their singular merits and claims on that provision need only to be known, to interest the feelings of humanity in their behalf; nothing but a punctual payment of their annual allowance can rescue them from the most complicated misery; and nothing could be a more melancholy and distressing sight, than to behold those who have shed their blood, or lost their limbs in the service of their country, without a friend, without a friend, and without the means of obtaining any of the comforts or necessities of life, compelled to beg their daily bread from door to door. Suffer me to recommend those of this description, belonging to your state, to the warm patronage of your excellency, and your legislature.

your excellency, and your signature.

It is necessary to say but a few words on the third topic which was propoised, and which regards particularly the defence of the republic. As there can be little doubt but Congress will recommend a proper peace establishment for the United States, in which a due attention will be paid to the importance of placing the militia of the union upon a regular and respectable footing; if this should be the case, I should be leav to urge the great advantage of it in the strongest terms.

The militia of country must be considered as the palladium of our security, and the first essential resort in case of hostility: it is essential, therefore, that the same system should pervade the whole; that the same formation and discipline of the militia of the continent should be absolutely uniform; and that the same species of arms, accoutrements, and military apparatus, should be introduced in every part of the United States. No one who has not learned it from experience, can conceive the difficulty, expense, and confusion which result from a country system, or the vague arrangements which have hitherto prevailed.

If, in treating of political points, a greater latitude than usual has been taken in the course of the address, the importance of the crisis, and the magnitude of the objects in discussion, must be my apology: it is; however, neither my wish nor expectation, that the preceding observations should claim any

The following BILL has been reported by a Committee, appointed for the purpose, after being read in the House, it was ordered to be printed, and it is ordered that it be laid on the table in the next Session, in order that the public sentiment may be obtained on the subject.

A BILL, more effectually to provide for the NATIONAL DEFENSE, by establishing a Uniform Militia throughout the UNITED STATES.

(Enacted from our last.)

Sec. 7. And be it further enacted, That in order to prevent any injury arising from drawing off the weakness at certain works and manufacturing establishments named, to attend the several days of periodicals as aforesaid, it shall and may lawfully for the commander in chief of each State to appoint proper officers at all furnaces for manufacturing iron, and all works for manufacturing of glass, if any such shall be within the State, whose duty it shall be to form the workmen, manufacturers, and laborers belonging to such works, into a company, or companies, in manner aforesaid, and to train, exercise, and discipline them in manner directed by law, excepting as to the place, which shall always be at the works or manufacturing, and excepting the meetings in regiment or battalion, in lieu of which they shall meet in companies at the said works and manufacturing, in manner aforesaid. And the said workmen, manufacturers, and laborers shall be excused from all other militia duty, except in times of invasion or insurrection.

Sec. 8. And be it further enacted, That there shall be an adjutant general appointed for each State, whose duty it shall be to distribute all orders from the commander in chief of the State to the several regiments, to attend all public reviews, when the commander in chief of the State shall review the militia, or any part thereof; to obey all orders from him relative to carrying into execution and perfecting the system of military discipline established by this act; to furnish blank forms of different returns that may be required, and to explain the principles on which they should be made; to receive from the several officers of the different corps, throughout the State, returns of the militia under their command, reporting the actual situation of their arms, accoutrements, and ammunition, their delinquencies, and every other thing which relates to the general advancement of good order and discipline; all which the several officers of the divisions, brigades, regiments, and battalions, are hereby required to make in the usual manner, so that the said adjutant general may be duly furnished therewith; from all which returns he shall make proper abstracts, and lay the same annually before the commander in chief of the State; and the said adjutant general shall have the rank of a lieutenant-colonel in the militia. And there shall also be appointed, in each State, a commissary of military stores, who shall have the rank of a major in the militia, with as many deputies as the State shall by law direct, whose duty it shall be to take the charge and keeping of all the ordnance and military stores of the State, subject to such orders and instructions, in the execution of his and their duty, as he or they shall, from time to time, receive from the commander in chief of the State, or other superior officer.

Sec. 9. And be it further enacted, That all officers who shall be appointed and commissioned to any of the offices as aforesaid, shall, within ten days after notice of such appointment or commission, report their acceptance of such office to the commanding officer of the regiment or brigade, or failure whereof, such neglect shall be considered as a refusal; and the said commanding officer shall, within ten days thereafter, report the same to the commanding officer of the division or brigade, who shall, from time to time, report the same, with all vacancies that may happen, to the adjutant-general, for the information of the commander in chief of the State.

Sec. 10. And be it further enacted, That every commissioned officer, who shall be convicted by a court-martial, of having refused or neglected to perform, or of having acted contrary to any of the duties of his office, shall be punished according to the nature and degree of his offence, at the discretion of the court, either by fine or removal from his office: Provided, That no fine for the first offence shall exceed dollars; and for any subsequent offence dollars; which fines shall be levied and collected by warrant, under the hand and seal of the commanding officer of the regiment or battalion, directed to any sergeant of the regiment or battalion to which the offender may belong, in the manner as the several returns mentioned to be recovered of non-commissioned officers and privates, for neglect or refusal of duty, are directed to be levied and collected. That the commanding officer of divisions and brigades may order court-martial for the trial of offences within his division or brigade, the members of which shall be warned for that duty by the brigade-major, who shall keep a roster for that purpose. That the proceedings and sentence of every court-martial, by which any officer shall be removed from office, shall be in writing, signed by the president thereof, and shall, by the president, be delivered to the commanding officer of the brigade, to be by him transmitted to the commander in chief of the State, who shall approve or disapprove of the same in orders; and that all other proceedings and sentences of brigade courts-martial, shall be delivered, by the president thereof, to the commanding officer of the brigade, who shall approve or disapprove of the same in orders. That all court-martial for the trial of general officers, shall be ordered by the commander in chief of the State, and composed of general and field officers, who shall be warned to that duty by the adjutant-general of the State, from a roster to be by him kept for that purpose. That the proceedings and sentences of such courts shall be transmitted, by the presidents thereof, to the commander in chief, who shall approve or disapprove of the same in orders: Provided, That no sentence of a court-martial, on a general officer, shall extend further than a removal from office. That all general courts-martial shall consist of at least nine commissioned officers, who shall appoint their judge-advocate, who is hereby authorized and required to administer an oath to each member of the court, which they are hereby enjoined severally to take before they proceed on business, to the

following effect: "You do swear that you will faithfully and conscientiously discharge the duties of your office, and that you will not divulge the sentence of this court, until the same shall be approved or disapproved according to law; and that you will well and truly do the duty of a judge-advocate in this court, impartially and uprightly, according to the best of your abilities."

Sec. 11. And be it further enacted, That every non-commissioned officer or private, who shall neglect to appear, when warned pursuant to law, at a company meeting or rendezvous, not having a sufficient excuse, shall forfeit and pay the sum of fifty cents; and for appearing at such meeting or rendezvous without his arms, ammunition, or accoutrements, as directed by this act, shall pay the sum of twenty-five cents; and for the like offences at a regimental or battalion meeting or rendezvous, for the first offence aforesaid he shall forfeit and pay the sum of one hundred cents, and for the last offence the sum of fifty cents. And in case of any disobedience of orders or neglect of duty while under arms or in actual service, he shall forfeit and pay such sum as shall be directed by the major vote of the officers of the company, battalion or regiment, provided the same shall not in any case amount to more than dollars; and that all fines arising from offences in company only shall be adjudged, and imposed by the commissioned officers of the company, or the major part of them, and all fines to arise from offences in battalion or regiment with respect to the non-commissioned officers and privates, shall be adjudged and imposed by the field officers of the battalion or regiment, all which fines shall be levied with cost not exceeding cents, by warrant from the colonel or commanding officer of the regiment, battalion or company, as the case may be, directed to one or more sergeants, by direct and sale of the offender's goods and chattels: And in case any delinquent shall be under arms, and live with his father or mother, master or mistress, as the case may be, shall be liable to pay the said fines with costs, and in default of payment when demanded, the said sergeant or sergeants, shall levy the same upon the goods and chattels of such father or mother, master or mistress—such fines when recovered to be paid over by the sergeant or sergeants to the officer granting such warrant.

Sec. 12. And be it further enacted, That all fines herein before mentioned, shall be paid by the officer issuing said warrant to and for the purpose, in the first instance of providing colours, and music to add for the use of the companies of light-infantry, riflemen, artillery and troops of horse; and the surplus that may remain, to be applied to the like use, for the relief of the militia aforesaid; and when the said fines shall be to a larger sum than is necessary for the said use, the remainder shall be applied to the purchasing of arms and accoutrements for the light infantry and rifle companies.

Sec. 13. And be it further enacted, That all commissioned officers shall take rank according to the date of their commissions; and when two of the same grade, bear an equal date, then their rank shall be determined by lots, to be drawn by them before the commanding officer of the brigade, regiment, battalion, company or detachment.

Sec. 14. And be it further enacted, That the commander in chief of the State, shall, on the requisition of the President of the United States, authorized thereto by the express acts of Congress, order out any proportion of the militia of the State, as required as aforesaid, to march to any part of the United States for the protection or defence of the same, provided, that they be not compelled to continue on duty out of the State without their consent, for a longer time than months at any one time. That while in actual service, in consequence of being called out, they shall receive the same pay and rations, and be subject to the same rules and regulations as the troops of the United States of America.

Sec. 15. And be it further enacted, That if any person belonging to the militia of any State, and called out into service as aforesaid, be wounded or disabled, while in actual service, in opposing or suppressing any invasion or insurrection, or in fighting against any of the enemies of the United States, he shall be taken care of and provided for at the public expense, without having regard to the rank such person may hold.

Sec. 16. And be it further enacted, That every person of the age of eighteen and under fifty years, who are exempted from personal service in the militia as aforesaid, by the second section of this act (except all ministers of religion, actually having the charge of a church or congregation, all principals, professors and other teachers of, together with the students in, universities, colleges and academies; all schoolmasters actually having the charge of a school, and all ministers employed in the service of any citizen or merchant within the United States as aforesaid) shall pay an annual tax of two dollars into the public treasury of the United States, to be applied towards the support of the civil government thereof, and to be collected in the following manner: The commissioner of the treasury in each State, shall appoint a responsible person in every county or township in the State, as collector of the said tax, to whom the commanding officer of each battalion shall cause returns to be made of the names of all the exempt persons, by virtue of the said second section of this act, within the bounds of his battalion, except as before excepted. That thereupon each of said exempt persons being notified thereof by the said collector, shall in the month of May in every year, pay to the said collector the said two dollars, and in case of failure therein, the collector shall, within two weeks thereafter, return the names of the de-

faulters to the commanding officer of the battalion, who shall thereupon cause them to be collected, and the same to be paid into the treasury of the United States. And the said collector shall, within one month after the receipt of the said tax, pay the same to the said commissioner, who shall account therefor with the Treasury of the United States, in like manner and under the same penalties and forfeitures as he accounts for the other public monies by him received; for all which services the said collector shall be entitled to retain the compensation of two and an half per centum on all the monies collected by him as aforesaid. And in case the said collector should neglect or refuse to pay over the said monies received by him as aforesaid, or any part thereof, to the said commissioner, within the time limited as aforesaid, the said collector shall forfeit and pay to the use of the United States, a sum of money equal to double the amount of the said taxes, or so much of them as shall remain unpaid; to be recovered by the said collector in his own name, with costs of suit, by action of debt or otherwise, in any court wherein the same shall be cognizable. And the secretary of the treasury shall cause an annual return of all the monies received on the said tax, to be laid before Congress, at their first session in every year.

Sec. 17. And be it further enacted, That each State shall be formed into a district or districts in such a manner as the legislature thereof shall by law direct. And that there shall be appointed by the President of the United States, an inspector for each district, who shall be a citizen of the State to which such district belongs; provided their number shall not exceed—one for New-Hampshire, two for Massachusetts, one for Rhode Island, one for Connecticut, one for New-York, one for New-Jersey, two for Pennsylvania, one for Delaware, one for Maryland, three for Virginia, two for North Carolina, one for South Carolina, and one for Georgia. And the duty of such inspectors shall be to attend the regimental or battalion meetings of the militia in their several parades, during the time of their being under arms pursuant to this act, at least once in every year, to inspect their arms, ammunition, and accoutrements; superintend their exercise and manoeuvres, and introduce a system of military discipline throughout the district, agreeably to law and such orders as he shall from time to time receive from the commander in chief of the State; to furnish the forms of the returns that may be required, and explain the principles on which they shall be made; to make returns to the President of the United States, at least once in every year, of the militia of the State, reporting therein the actual situation of the arms, accoutrements and ammunition of the several corps, and every other thing which in his judgment may relate to their government and the general advancement of good order and military discipline; a duplicate of such return and report he shall also transmit to the commander in chief of the State. And the said inspectors shall have the rank of lieutenant colonel, and shall respectively receive from the treasury of the United States, as a full compensation for all their services, the sum of dollars per annum.



ARMS.—Adjutant General Baker requests that all persons having in their possession any arms, accoutrements or ammunition belonging to the State, to return the same at once to the Adjutant General, as proper places have been provided by the State for the safe keeping of all such property.

The report of Gen. Grant mentions the remarkable fact that during the past year no fewer than 13,000 men have deserted from the army. The greater part of these desertions, we presume, occurred on the plains, where it is well known that men often enlist in westward bound regiments for the express purpose of getting cheap and safe conveyance to the mining regions. During the season, for example, more than half of the Seventh Cavalry (Custer's) decamped with their horses, arms, and accoutrements, and probably made their way to the gold regions of Colorado and Montana. A desperado, who wishes to reach the diggins, has only to enroll himself in some command bound for the Indian country, and he is pretty sure of an opportunity to make off when he has marched as far as he chooses to go. The number of recruits during the year was 34,000, so that the desertions reach the enormous ratio of nearly 40 per cent. of the enrollment.

OTHER SOURCES

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accoutrement | accouterment, *n.*

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Pronunciation: ¹ BrE [/əˈkuːtrɪm\(ə\)nt/](#), ² /əˈkuːtɪm(ə)nt/, U.S. [/əˈkudərment/](#), ³ /əˈkutrəmənt/

Forms: 1500s *accoutrement*, 1500s *accouterment*, 1500s–1600s *accoutrement* ... (Show More)

Frequency (in current use): ●●●●●
Origin: Probably of multiple origins. Probably partly a borrowing from French. Probably partly formed within English, by derivation. **Etymons:** French *accoutrement*; *ACCOUTRE* v. –WEST SUFFIX.

Etymology: Probably partly < Middle French *accoutrement*, *accoustrément*, *accoutrement*, French ... (Show More)

1.

n. In plural. Items of apparel; (more generally) additional pieces of dress or equipment, trappings; (Military) the outfit of a soldier other than weapons and garments.

 Thesaurus
 Categories

- 1550 *Campaigne Scyll.* (1979) vii. 54 The accoutrements and cleythng of this dolorus lady was ane syde mantil.
 1586 J. FERRIS *Blazon of Gentry* 29 Let al men embrodure, depaint, engrave and stampe vpon their hanginges, walles, windowes, and other domestical *accoutermentes* these glorious and commendable ensignes.
 1616 W. SHAKESPEARE *Turning of Shrew* (1623) iii. ii. 119 I can change these poore *accouterments*.
 1641 R. SANDERSON *Serm.* II. 6/1 All those other rites and accoutrements that are used in or about the publick worship.
 1699 E. WARD *London Spy* I. x. 11 Awkward and Ungainly in their Gorgeous *Accouterments*.
 1751 L. WATTS *Improvement, Mind* (1801) 365 Rich and glittering *accouterments* wherewith the Church of Rome bath surrounded her deuotions.
 1813 DICKENS *WILLIAMS Dispatches* (1838) X. 495 In order to collect the wounded and their arms and accoutrements.
 1851 C. MERIVALE *Hist. Romans under Empire III.* xxviii. 349 There was no camp filled with plate, jewels, and splendid accoutrements to be devoted to plunder.
 1902 G. S. WHITMORE *Last Maori War* i. 4 When they landed they brought on shore besides a quantity of ammunition and *accouterments*, and large stores of flour, sugar and tobacco, &c.
 2000 N. HENDERSON *Old Friends & Mod. Instances* (2001) I. 7 It was full of, easels, multi-coloured palettes, brushes—all the alluring *accouterments* of an artist's life.

(Hide quotations)

b. In singular = sense 1a. Also: an individual piece of dress or equipment.

 Thesaurus
 Categories

- 1610 J. HEALEY tr. *Epictetus Manual* (1636) lxi. 80 For if thou goest beyond thy necessary *accoutrement* therein, then first thou must haue a shooe buckled with Golde.
 1686 J. TURNER *Mem.* (1829) 59 I mist one linnen stockias, and one boothose the *accoutrement* under a boote for one leg.
 1794 S. T. COLERIDGE *Coll. Lett.* (1956) I. 66 Gaiters, a pair of Leather Breeches, Stable Jacket and Shell, Horse Cloth, Surcingle, Watring Bridle, and the long et cetera of military *accoutrement*.
 1838 *Young Lady's Equestrian Man.* 33 Every *accoutrement* for the horse, however ornamental and pictorial, beyond the mere saddle and bridle, is to be rejected, as being in bad taste.
 1953 P. GALLICO *Foolish Immortals* xxv. 189 Looking like a young god of war, his *accoutrement* jingling and rattling.
 2003 J. LETHBRIDGE *Fortress of Solitude* I. xiv. 231 He wore his jacket with doomy fear—not a bad *accoutrement*, actually, to his punk aura.

(Hide quotations)

2. The process of accoutring or being accoutred; attiring. Now rare.

 Thesaurus
 Categories

- 1616 W. SHAKESPEARE *Merry Wives of Windsor* (1623) iv. ii. 5 Not onely, in the simple office of loue, but in all the *accoutrement*, complement, and ceremony of it.
 1732 *Present State Republick Lett.* 10 xxiii. 297 In the Delivery out of the King's Wardrobe for the *Accoutrement* of Knights, particular mention is made of the Gloves.
 1850 J. LETHBRIDGE tr. K. O. Müller *Ancient Art* (new ed.) §409. 552 Youthful representations, with slight indication of *accoutrement*.
 1890 *Wilson's Photogr. Mag.* 20 Dec. 755/1 Empty would be the purse of the photographer who failed to have on hand a good supply of drums and bugles and files, et cetera, for the *accoutrement* of young masters.
 1927 A. S. ARON *Antonio de Mendoza* vii. 176 One hundred and ninety-two thousand pesos were expended on munitions, provisions, and the *accoutrement* of the men who volunteered for the enterprize.

(Hide quotations)

COMPOUNDS

accoutrement-maker *n.* now *historical*

Categories

- 1758 *London Mag.* 27 314 Mr. Eadale, *accoutrement maker* to the office of ordnance.
 1858 T. P. THOMPSON *Audi Alteram Partem* I. lxi. 241 Without sacrificing everything to the game of the war-contractor and the *accoutrement-maker*.
 2004 S. KAVON *Shunning* i. i. 53 The first involved an army *accoutrement maker* from Soho, Mr. David Greenhall, who entered the casual ward of St. James Workhouse at 9:15 pm, ate some bread and gruel, and was shown his berth.

(Hide quotations)

accoutrement shop *n.*

- 1831 *United Service Jnl.* i. 325 The crowd was so great in the Rue de Richelieu, especially about the gun-smiths and *accoutrement shops* in the vicinity of the Palais Royal.
 1915 *Harper's Mag.* Dec. 84/2 He was walking down Piccadilly, with the war-posters blazing on either side of him, past the *accoutrement-shops*.
 2002 *Time Out Edinb.* (ed. 3) 143 There's a small room looking directly on to Broughton Street as well as a nice book and *accoutrement shop* in the basement.

(Hide quotations)

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magazine, *n.*

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Pronunciation: ¹ Brit. [/ˈmæɡəˌziːn/](#), ² U.S. [/ˈmæɡəˌziːn/](#)

Forms: 1500s *magason*, 1500s *magosine*, 1500s–1600s *magasin*, 1500s–1600s *magasine* ... (Show More)

Frequency (in current use): *****

Origin: A borrowing from French. **Etymon:** French *magasin*.

Etymology: < Middle French *magasin* (1409; 1389 as *maguesin*) < Italian *magazzino* ... (Show More)

I. Senses denoting a storehouse or repository, and closely allied uses.
1.

a. A place where goods are kept in store; a storehouse for goods or merchandise; a warehouse or depot. Now *rare*.

Thesaurus »
Categories »

- 1583 J. NEWBERRY *Let. in Purchas Pilgrims* (1625) II. 1643 That the Bashaw, neither any other Officer shall meddle with the goods, but that it may be kept in a *Magosine*.
- 1588 T. HICKOCK tr. C. Federici Voy. & Trauaile f. 27 The merchants have all one house or *Magason*, and there they put all their goods of any valure.
- 1613 S. PURCHAS *Pilgrimage* VI. x. 511 Under which Porches or Galleries [of the Church] are *Magazines* or Store-houses, wherein are kept lampes, oile, mats, and other necessaries.
- 1704 DUKE OF MARLBOROUGH *Let. 20 July in H. L. Snyder Marlborough-Godolphin Corr.* (1975) I. 339 The two days we have been here has been spent in endeavoring to make a *magazin* of corn in this town, that we might not want bread.
- 1731 *Gentleman's Mag.* 1 Introd. This Consideration has induced several Gentlemen to promote a Monthly Collection to treasure up, as in a *Magazine*, the most remarkable Pieces on the Subjects abovemention'd.
- 1768 L. STORNE *Sentimental Journey* I. 73 Mons. Dessein came up with the key of the Remise in his hand, and forthwith let us into his *magazine* of chaises.
- 1793 E. BURKE *Corr.* (1844) IV. 143 No *magazine*, from the ware-houses of the East India Company to the grocer's and the baker's shop, possesses the smallest degree of safety.
- 1808 Z. M. PIKE *Acct. Exped. Sources Mississippi* III. App. 23 A public *magazine* for provisions; where every farmer brings whatever grain and produce he may have for sale.
- 1875 STANLEY in *Contemp. Rev.* 25 489 Imported..from the *magazines* of France and of Belgium, according to the last fashions of Brussels or Paris.
- 1904 *Westm. Gaz.* 24 Aug. 7/3 A later cemetery, containing larax burials, yielded bronze implements, beads, and vases like those in the palace *magazines*.
- 1986 T. M. Insular Possession iii. 12 Also to be seen are a few storage *magazines* against the walls, and..a secure treasury with heavy iron doors.

(hide quotations)

1b. A country or district rich in natural products, a centre of commerce. *Obsolete*.

Thesaurus »

- 1596 W. RALEIGH *Discoverie Guiana* (new ed.) 3 Guiana (the *Magazin* of all rich mettels).
- 1632 W. LITHGOW *Total Disc. Trav.* IV. 169 Constantinople..Aleppo..and grand Cayro..are the three *Maggazzines* of the whole Empire.
- 1640 DUBBY in *Lismore Papers* (1888) 2nd Ser. IV. 133 He conceived that the City of London was the *Magazine* of money.
- 1650 T. FULLER *Pisgah-sight of Palestine* III. 410 Timber they fetched from mount Libanus (the *magazeen* of Cedars).
- 1748 J. ADDISON *Remarks Italy* (ed. 2) 259 The great *Magazine* for all kinds of Treasure is supposed to be the Bed of the Tiber.
- 1787 *Gentleman's Mag.* 37 II. 1115/2 The Dutch islands of Curaçoa and St. Eustatius are now converted into complete *magazines* for all kinds of European goods.
- 1833 L. RITCHIE *Wanderings by Loire* 109 The..bourg of Chouzé, set down in a perfect *magazine* of fruit and vegetables, grain and wine.

(hide quotations)

This entry has been updated (OED Third Edition, March 2000; most recently modified version published online June 2022).

[Entry history](#)
[Entry profile](#)

Previous version:
OED2 (1989)

In this entry:

magazine arms
magazine article
magazine bag
magazine battery
magazine camera
magazine chest
magazine clothing
magazine cover
magazine-day
magazine door
magazine editor
magazine gun
magazine house
magazine-houss
magazine-monger
magazine paper
magazine programme
magazine rack
magazine-reader
magazine release
magazine rifle
magazine rights
magazine section
magazine ship
magazine-slot
magazine storehouse
magazine story
magazine stove
magazine table
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magazine well
magazine wind-gun
magazine work
magazine world
magazine-writer
magazine writing

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magasin, n.	1687
Magalesberg, n.	1695
magalogue, n.	1678
magar, n.1	1592
Magar, adj. and n.2	1811
magastromancer, n.	1652
magatama, n.	1676
magazine, n.	1736
magazinary, n.	1625
magazine, n.	1583
magazine, v.	1643
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magaziner, n.	1695
magazinery, n.	1821
magazinism, adj.	1794
magazinist, n.	1882
magazinist, n.	1821
magaziny, adj.	1873
magoon, n.	1971
Magdala red, n.	1875

c. A portable receptacle (usually for articles of value). Now *historical*.

Thesaurus
Categories

- 1768 L. STERNE *Sentimental Journey* II. 112 She open'd her little magazine, laid all her laces, before me.
- 1781 S. JOHNSON *Thomson in Pref. Wks. Eng. Poets* IX. 6 He had recommendations, which he had tied up carefully in his handkerchief; but, his magazine of credentials was stolen from him.
- 1861 J. G. HOLLAND *Lessons in Life* viii. 120 The great army of little men that is yearly commissioned to go forth into the world with a case of sharp knives in one hand, and a magazine of drugs in the other.
- 1969 E. H. PINTO *Treen* 334 Wooden pocket cases, to hold any number from three to six cheroots or slender cigars, were made from about 1830. The enterprising Smith family, were quick off the mark with what they described as 'magazines'.

(hide quotations)

2. *Military* (a) A building, room, or compartment (of a ship, etc.), for the storage of arms, ammunition, or other military provisions. (b) *spec.* A store for large quantities of explosives.

Thesaurus
Categories

- 1599 E. SPENSER *View State Ireland* 97 in J. Ware *Two Hist. Ireland* (1633) Then would I wish that there should bee good store of Houses and Magazines erected in all those great places of garrison, and in all great townes, as well for the victualling of Souldiers, and Shippes, as for, preventing of all times of dearth.
- 1610 H. WOTTON *Let. in L. P. Smith Life & Lett. Sir H. Wotton* (1907) I. 497 A way how to save gunpowder from all mischance of fire in their magazines.
- 1616 J. BULLOCKER *Eng. Expositor Megazine*, a storehouse for warre.
- 1647 N. NYE *Art of Gunnery* II. 72 A barrell of the best powder in the Magazine.
- 1667 J. MURTON *Paradise Lost* IV. 816 A heap of nitrous Powder, laid fit for the Tun 2000 Magazin to store Against a rumored Warr.
- 1711 A. POPE *Ess. Crit.* 39 Thus useful Arms in Magazines we place.
- 1745 J. SWIFT in *Ann. Reg.* (1759) II. 328 Here Irish wit is seen, When nothing's left, that's worth defence, We build a magazine.
- 1769 W. FALCONER *Universal Dict. Marine* sig. Eba2 Magazine, a store-house, built in the fore, or after-part of a ship's hold, to contain the gun-powder.
- 1800 DUKE OF WELLINGTON *Dispatches* (1837) I. 213 I have no power to order the repair of magazines, storerooms, &c.
- 1847 W. H. PRESIDENT *Hist. Conquest Peru* LIII. iii. 373 In another quarter they beheld one of those magazines destined for the army, filled with grain, and with articles of clothing.
- 1868 Queen's Regulations & Orders Army ¶1238 The reserve Ammunition will be kept in the Magazine.
- 1877 A. B. EDWARDS *Thousand Miles up Nile* ix. 239 To provide a safe underground magazine for gunpowder.
- 1904 R. Kipling *Traffics & Discov.* 53 The Gunner mops up a heathenish large detail for some hanky-panky in the magazines.
- 1931 *Amazing Stories* Dec. 804/1 The rayguns of the battlecraft, being of superior range, melted down the mortars of the fort at the magazine.

(hide quotations)

13. A ship which supplies provisions. Cf. *magazine ship* n. at Compounds 2. *Obsolete*.

Thesaurus
Categories

- 1624 J. SMITH *Gen. Hist. Virginia* IV. 155 Some pety Magazines came this Summer.
- 1624 J. SMITH *Gen. Hist. Virginia* v. 189 About this time arrived the *Diana* with a good supply of men and prouision, and the first Magazin enen seene in those Isles.
- 1624 J. SMITH *Gen. Hist. Virginia* v. 195 He made a large new storehouse of Cedar for the yeerely Magazines goods.
- 1624 J. SMITH *Gen. Hist. Virginia* v. 198 Constramed to buy what they wanted, and sell what they had at what price the Magazin pleased.
- [1769 W. FALCONER *Universal Dict. Marine* sig. #1 Magasins, the store-ships which attend on a fleet of men of war.]

(hide quotations)

II. That which is kept in a storehouse, and related uses.

†4.

a. *Military*. The contents of a magazine; a store. In *plural*, also with collective sense (rarely as mass noun); military stores, provisions, munitions; armaments, military equipment. *Obsolete*.

Thesaurus +
Categories +

- 1588 Narr. Def. Berghen 27 Sept. in *Ancester MSS* (Hist. MSS Comm.) (1907) 208 Sir John Wingfield sent all the said victualles to Berghen, being then besieged, to be employed as *Magasin* for that garrison.
- 1591 W. RALEIGH *Rep. Fight Isles of Açores* sig. A4 Of which [Armada] the number of souldiers, with all other their *magazines* of provisions, were put in print.
- 1613 T. OVERBURY *Observations Xvii. Prouinces* (1626) 11 They allowed neither Cannon vpon the Rampier, nor *Megazines* of powder.
- 1644 in J. RUSHWORTH *Hist. Coll.: Third Pt.* (1692) II. 650 The Kings forces marcht away with their Artillery and *Magazeen* towards Oxford.
- 1667 J. DRYDEN *Annus Mirabilis 1666* colccc. 69 And had him swiftly driv' the approaching fire From where our Naval *Magazines* were stor'd.
- 1671 J. MILTON *Samson Agonistes* 1281 Their Armonies and *Magazines*.
- 1774 T. WEST *Antiq. Furness* (1805) 48 They took most part of their arms, with a coup laden with *magazeen*, drawn by six oxen.
- 1781 E. GIBSON *Decline & Fall* III. xcii. 259 He used, with so much skill and resolution, a large *magazine* of darts and arrows, that [etc.].
- 1810 DIKE of WELLINGTON *Dispatches* (1836) VI. 23 A corps of 5000 men, had carried away a *magazine* of arms.
- 1830 E. S. N. CAMPBELL *Dict. Mil. Sci.* Base-line, in *Military Tactics*, signifies the line on which all *Magazines* and means of Supply of an Army are established.
- 1864 T. CARLYLE *Hist. Friedrich II of Prussia* IV. viii. iv. 540 Seize Saxony, and in that rich corny Country, form *Magazines*.
- 1889 'M. TWAINE' *Connecticut Yankee* xciii. 289 We placed a whole *magazine* of Greek fire on each corner of the roof.

(Hide quotations)

b. *gen.* A store of provisions, materials; a pile; a stock of clothing. *Obsolete*.

Thesaurus +

- 1615 H. CROOKE *Μακροκοσμοποιια* 61 Next under the Skin lyeth the Fat, a Stowage or *Magazine* of nourishment against a time of dearth.
- 1637 T. HEYWOOD *Londini Speculum* sig. C3 By which small mates to *Magazines* increase.
- 1641 T. HEYWOOD *Captives* (1953) II. iii. 47 That have no more left off a *Magazin*, then these wet Cloathes vpon mee.
- 1661 J. EVELYN *Famifugium To Rdr.* sig. a2 The Deformity of so frequent Wharries and *Magazines* of Wood, Coale, Boards, and other course Materials.
- 1669 J. ROSE *Eng. Vineyard* (1675) 34 A load of lime, to every ten loads of dung, will make an admirable compost, but your *magazine* will require the maturity of two, or three years.
- 1712 J. ABBOTSON *John Bull in his Senses* iv. 18 [She [sc. Usury] had amass'd vast *Magazines* of all sorts of Things.
- 1714 J. GAY *Fan* v. 13 Should you the Wardrobe's *Magazine* rehearse, And glossy Mantleons rustle in thy Verse.
- 1719 D. DEFOR *Life Robinson Crusoe* 180 A *Magazine* of Flesh, Milk, Butter and Cheese.
- 1771 O. GOLDSMITH *Hist. Eng.* III. 165 A *magazine* of coals were usually deposited there.
- 1790 T. BOWLER *Hist. Quadrupeds* (1807) 419 Each Beaver forms its bed of moss, and each family lays in its *magazine* of winter provisions.
- 1818 S. SMITH *Wks.* (1859) II. 21/1 Distillation, too, always insures a *magazine* against famine. It opens a market for grain.
- 1849 T. B. MACAULAY *Hist. Eng.* II. ix. 437 In every asylum were collected *magazines* of stolen or smuggled goods.

(Hide quotations)

5. *figurative*. In literary use or rhetorically: a store or repertoire (of resources, ideas, rhetorical weapons, etc.). Usually with *of*.

Categories +

- 1600 B. JONSON *Every Man out of his Humor* IV. i. sig. E1v What more than heavenly pulchritude is this? What *Magazine*, or treasure of blisse?
- 1610 J. HEALRY in tr. Theophrastus *Characters To Rdr.*, in tr. Epictetus *Manuall* (1616) That great *Magazine* or Storehouse of all learning M. Cassaubon.
- 1638 R. BAKER tr. J. L. G. de Balzac *New Epist.* III. 242 I take not upon me to contend with you in Compliments, who have whole *Magasins* of good words.
- 1656 A. COWLEY *Misc.* 23 in *Poems* The Lace, the Paint, and warlike things That make up all their *Magazine*.
- 1709 H. SACREVERELL *Communic. of Sin* 15 What a *Magazine* of Sin, what an Inexhaustible Fund of Debauchery, does any Author of Heresie, set up!
- 1738 G. SMITH *Curious Relations* II. 216 My Friend! the Rich are the Poor Man's *Magazine*.
- 1750 S. JOHNSON *Rambler* No. 76, ¶6 He has stored his *magazine* of malice with weapons equally sharp.
- 1795 E. BURKE *Lett. to W. Elliot* in *Wks.* VII. 348 The *magazine* of topics and common-places which I suppose he keeps by him.
- 1817 *Parl. Deb.* 1st Ser. 352 A *magazine* of petitions had been opened in Scotland.
- 1856 W. HAMILTON *Lect. Metaphysics* (1859) I. ii. 23 An individual may possess an ample *magazine* of knowledge, and still be little better than an intellectual barbarian.
- 1878 F. JOHNSON *In my Indian Garden* (ed. 2) 49 The monstrous jack that in its eccentric bulk contains a whole *magazine* of tastes and smells.
- 1918 J. WOODROFFE *Shakti & Shākta* 49 According to Shākta doctrine each man and woman contains within himself and herself a vast latent *magazine* of Power or Shakti.

(Hide quotations)

III. (Figuratively from senses 1, 2.)

6.

1a. A book providing information on a specified subject or for a specified group of people. (Frequently as part of the title.) *Obsolete*.

Thesaurus »

- 1639 R. WARD (title) Animadversions of Warre; or, a Militarie Magazine of the trvest rdes., for the Managing of Warre.
 1669 S. STURMY (title) The Mariners Magazine.
 1705 G. SHELLEY (title) The Penman's Magazine; or, a New Copy-book, of the English, French and Italian Hands.
 1719 R. HAYES (title) Negotiator's Magazine.
 1802 J. ALLEN (title) Spiritual Magazine, or Christian's Grand Treasure.

(hide quotations)

b. A periodical publication containing articles by various writers; esp. one with stories, articles on general subjects, etc., and illustrated with pictures, or a similar publication prepared for a special-interest readership.

Thesaurus »
 Categories »

The use of the word (rather than *periodical*) typically indicates that the intended audience is not specifically academic.
 Cf. quot. 1731 AT 5615P 14, with reference to the *Gentleman's Magazine*.

- 1731 (title) The Gentleman's magazine; or, Trader's monthly intelligencer.
 1742 A. POPE New Dunci. 1. 42 Hence Journals, Medleys, Mercies, Magazines, and all the Grub-street race.
 1748 LADY LEBURBOUGH Let. 28 Apr. in Lettr. to W. Shenstone (1775) 23 Nothing can be more just than the criticism upon the Play in the Magazine.
 1762 O. GOLDSMITH in Lloyd's Evening Post 8–10 Feb. 142/1 It is the life and soul of a Magazine never to be long dull upon one subject.
 1798 A. TILLOCH (title) The Philosophical Magazine.
 1819 Ld. BYRON Don Juan: Canto I cxxi. 108 All other magazines of art or science, Daily, or monthly, or three monthly.
 1823 (title) The Mechanics' Magazine.
 1837 A. MATTHEWS Tea-table Talk I. 2 A Magazine is the fancy fair of literature—a reader's veritable bazaar.
 1860 (title) Baily's Monthly Magazine of Sports and Pastimes.
 1880 J. MCCARTHY Hist. our Own Times IV. lxx. 304 He wrote largely on the subject in reviews and magazines.
 1929 R. S. LYND & H. M. LYND Middletown xvii. 241 As in its reading of books Middletown appears to read magazines primarily for the vicarious living in fictional form they contain.
 1948 E. WATSON Loved One 1 Each in his rocking-chair, each with his whisky and soda and his outdated magazine.
 1987 S. BELLOW More die of Heartbreak 85 It was no longer an impropriety, according to the women's magazines and TV, to take the initiative.
 2003 PCMag. 25 Mar. 86/2 AlterNet is an online magazine devoted to independent coverage of important issues.

(hide quotations)

c. *Broadcasting*. A regular programme comprising a variety of topical items, often dealing with a specific subject area. Formerly also: a short film released as part of a regular series of this type.

Thesaurus »
 Categories »

- 1921 A. C. LEBARBOURIA Cinema Handbk. (1922) x. 351 Paralleling all this is the filming of short features for the news and magazine films.
 1936 Radio Times 30 Oct. 88/2 'Picture Page'. A Magazine of Topical and General Interest.
 1957 B.B.C. Handbk. 153 Family affairs: a weekly magazine for mothers with children.
 1984 Broadcast 7 Dec. 47/1 The channel's weekday 07.00 to 09.00 programme band..will be given a magazine format.
 1989 Listener 4 May 41/1 The Survivors' Guide (Thursday 6.30–7 p.m.), an advice and info magazine, is the last of C4's spring youth-show launches.

(hide quotations)

IV. (In various extended uses of sense 2.)

7.

†a. An air-chamber in a wind-gun; (also) a chamber for a supply of bullets in a 'magazine wind-gun'.
Obsolete.

Thesaurus »
 Categories »

- 1677 R. HOOKS *Diary* 4 Oct. (1933) 317 Pappin shew'd wind gun...[Section] ff was a magazine for the air and might hold almost half a pint.
 1744 J. T. DESHAULIERS *Course Exper. Philos.* II. 399 The small or shooting Barrel, which receives the Bullets one at a time from the Magazine, being a serpentine Cavity, wherein the Bullets...nine or ten, are lodged.

(Hide quotations)

b. A container or (detachable) receptacle in a repeating rifle, machine-gun, etc., containing a supply of cartridges which are fed automatically to the breech.

Thesaurus »
 Categories »

- 1868 C. B. NORTON & W. J. VALENTINE *Rep. to Govt. U.S. on Munitions of War at Paris Universal Exh'ib.* 1867:28 Drop the cartridges into the outer magazine, ball foremost, to the number of seven.
 1884 H. BOND *Treat. Small Arms* 89 Magazine arms in which the cartridges are placed in a tube or magazine under the barrel.
 1890 G. A. HENRY *With Lee in Virginia* 153 Many of the men carried repeating rifles, and the magazines were filled before these were slung across the riders' shoulders.
 1915 'I HAY' *First Hundred Thousand* vii. 77 Pumpherson graciously accepted the charger of cartridges... rammed it into the magazine, adjusted the sights... and fired his first shot.
 1930 W. S. CHURCHILL *My Early Life* xv. 208 I found I had fired the whole magazine of my Mauser pistol, so I put in a new clip of ten cartridges before thinking of anything else.
 1964 H. L. PETERSEN *Encycl. Firearms* 255/1 This turret system was revived many years later as a practical magazine for the Lewis machine gun.
 1990 *Guns & Weapons* Sept.-Oct. 15/1 Remove the magazine and make sure the chamber is empty.

(Hide quotations)

c. A store of essential supplies in a machine or apparatus, or the compartment or receptacle in which these supplies are contained.

Thesaurus »
 Categories »

- 1873 J. RICHARDS *On Arrangem. Wood-working Factories* 45 Exhausting the air from the magazine by fans.
 1884 E. H. KNIGHT *Pract. Dict. Mech. Suppl.* 570/2 As in the Daniells' battery, which has a magazine of sulphate of copper crystals.
 1889 *Judge* (U.S.) 22 June 180/2 Every operator can develop and print his own negatives and refill his magazine.
 1893 C. H. BOTHAMLEY *Iford Man. Photogr.* xix. 136 Hand-cameras...in which the plate-reservoir or magazine is detachable.
 1936 E. A. POWELL *Aerial Odyssey* x. 148 The film is still in the magazine.
 1938 *Amateur Photographer* 31 Dec. 3/2 (adv.) The Hanomatic slide changer is complete with a plastic magazine holding 36 slides.
 1964 C. WILLOCK *Enormous Zoo* vi. 77 John Burton used up one magazine of film and then reloaded with terrible precision.
 1967 H. M. R. SOUTO *Technique Motion Pict. Camera* i. 13 The first mechanism has the task of drawing the unexposed film (or raw stock) from the storage chamber, called a magazine, and after exposure, driving it into a similar magazine.
 1970 E. A. D. HITCHKINS *Surv. Printing Processes* (1970) i. 7 The matrices are carried in magazines located at the front of the machine at the top.
 1989 *Which?* Apr. 186/2 The Pioneer and Technics have removable 'magazines' which can be loaded with six CDs.

(Hide quotations)

†d. A case in which a supply of cartridges is carried. *Obsolete. rare.*

Categories »

- 1892 W. W. GREENER *Breech-loader* 184 Cartridges are best carried in a magazine of solid leather.

(Hide quotations)

Compounds

C1. General *attributive*, objective, etc.
a. (In senses 1a, 2.)

magazine door *n.*

Thesaurus »

- 1646 *Mercurius Academicus* No. 12 111 Our daring and undaunted Foot..brought away two of their Gunners, with their Spunges, Ladles, and Wormes, the Key of their Magazine doore, and 16 of their Common Souldiers prisoners.
- 1761 J. CALL in R. O. Cambridge Acc't. *War in India* 167 They were employed..in making traverses before the magazine doors of the Nabob's bastion.
- 1848 G. C. FURBER *Twelve Months Volunteer* xii. 331 Near the magazine door, in which set the powder-men, are a number of shells, loaded, with their fuses driven in them.
- 1998 *Knoxville News-Sentinel* (Knoxville, Tennessee) (Nemis) 13 May 14 Maybe something went wrong as they went to close the magazine doors.

(Hide quotations)

† **magazine house** *n. Obsolete*

Thesaurus »

- 1645 in D. Robertson *S. Leith Rec.* (1911) 57 To gait the kyes of Peter Cochrans house in the links to make ane magazine house therof to lay in beer, aill, bread and uthir necessaris therein.
- 1649 W. DRUMMOND *Wks.* (1711) 185 That..the Town's Magazine-Houses, be furnished with Arms.
- 1678 in M. Wood *Extracts Rec. Burgh Edinb.* (1950) X. 334 Keeper of the merchant magazine hous or wairhous within this burgh.

(Hide quotations)

† **magazine storehouse** *n. Obsolete rare*

Thesaurus »

Categories »

- 1654 in H. Wotton *Let.* (1654) II. 91 To erect and set up..a Company, to be called The East Indian Company of Scotland, making their first Magazin Storehouse, in some parts of our Realm of Ireland.

(Hide quotations)

b. (In sense 1c.)

† **magazine bag** *n. Obsolete*

Thesaurus »

- 1653 I. WALTON *Compl. Angler* iv. 117 You must be sure you want not in your Magazin bag, the Peacocks feather. 🦚
- 1681 J. CHRISTIAN *Angler's Vade Mecum* xxxiv. 127 The Angler must always have in readiness a large Magazine Bag or Budget, plentifully furnished with the following materials.

(Hide quotations)

† **magazine chest** *n. Obsolete rare*

Categories »

- 1694 R. GIBBIN in S. Pepys *Corr.* (1926) I. 124 Your Majesty will please to..alter the present method of letting your sea-surgeons provide..their own medicines; but that it be done by a magazine chest from Apothecary's Hall.

(Hide quotations)

c. (In sense 6b.)

magazine article *n.*

Thesaurus +
Categories +

- 1820 C. BROWN *Lett.* 21 Dec. in *J. Keats Lett.* (1958) II. 365 The fellow forsooth must have the chapters somewhat converted into the usual style of magazine articles.
- 1888 *N.Y. Herald* 29 July (Farmer) The editor of the *Century Magazine* blue pencils magazine articles by the bushel.
- 1955 *Times* 5 May 15/4 There is...a key-note running through the essays and magazine articles here reprinted.
- 1993 R. HUGHES *Culture of Complaint* i. 15 One morning in 1991, a waitperson named Barbara...saw a journalist sitting on his own and perusing a magazine article.

(hide quotations)

magazine editor *n.*

Thesaurus +
Categories +

- 1837 *Ladies' Repository* 17 563 Thus is the magazine editor enabled to benefit by useful information, or by plain and moral appeals to the sentiments.
- 1942 H. HANCRAY *Murder for Pleasure* xi. 267 Some magazine editors have been experimenting with novelette-length condensations.
- 1990 *Technol. Rev.* Nov. 4/1 A magazine editor is like a conductor, encouraging one theme, discouraging another, ensuring a measure of coordination and perhaps a kind of vision.

(hide quotations)

magazine-monger *n.*

Thesaurus +
Categories +

- 1767 'CORIAT JUNKIE' *Another Traveller*! II. 124 A noted book-maker, magazine-monger, and anti-critic of the eighteenth-century.
- 1994 *Steyr GB Magazine Found in rec.guns* (Usenet newsgroup) 28 Mar. The magazine monger at our local gun shows (Eastern PA) finally had a Steyr GB magazine.

(hide quotations)

magazine rack *n.*

- 1917-18 T. EATON & Co. *Catal.* Fall-Winter 416/1 Morris Chair... Paper and magazine rack under arm.
- 1955 E. BOWEN *World of Love* ii. 42 One or two ruched taffeta cushions and a magazine rack...survived from her few attempts to bring the room into line with her ideas.
- 1990 *Gay Scotl.* Dec. 9/1 Remove all tales of lesbian love and dyke dalliances from your bookcase, the same applies for *Gay Scotland* from coffee tables, magazine racks.

(hide quotations)

magazine-reader *n.*

Thesaurus +

- 1833 J. S. MULL *Lett.* 24 Sept. in *Wks.* (1963) XII. 179 They would not be attractive to the bulk of Magazine-readers.
- 1897 W. JAMES *Will to Believe* 109 Thousands of innocent magazine readers lie paralyzed and terrified in the network of shallow negations which the leaders of opinion have thrown over their souls.
- 1992 M. MARGRETS *Classic Crafts* 10/3 Increased wealth and leisure time has given many more people the opportunity either to take up a craft or to pursue their enthusiasms as craft collectors, exhibition goers, magazine readers and bespoke home-makers.

(hide quotations)

magazine rights *n.*

Thesaurus »

Categories »

- 1909 *Westm. Gaz.* 14 July 11/2. In America 'magazine rights' did not necessarily mean publication by instalments. The term was used to distinguish magazine rights from newspaper syndicate rights.

(Hide quotations)

magazine table *n.*

Thesaurus »

- 1966 H. ROTH *Button, Button* (1967) i. 15. A small, locked safe..unnoticeable..because the top was extended to make it look like a magazine table.
 1967 A. DIMENT *Dolly Dolly Spy* xi. 145. The magazine table caught them neatly behind the naked knees and..they overbalanced.
 1988 M. BISHOP *Unicorn Mountain* (1989) iii. 25. He lay on the low-slung sofa with a Bloody Mary on the magazine table beside him.

(Hide quotations)

magazine verse *n.*

Thesaurus »

Categories »

- 1885 *Overland Monthly* 3 653/1. Two or three touch the level of possible magazine verse.
 1915 L. M. MONTGOMERY *Anne of Island* xxvii. 233. But it was very tolerable magazine verse.

(Hide quotations)

magazine world *n.*

- 1833 *Fraser's Mag.* 8 482/1. He [sc. Bulwer] came into our magazine world with an impertinent swagger.
 1964 M. MCLUHAN *Understanding Media* (1967) i. v. 65. The magazine world has discovered a hybrid that ended the supremacy of the short story.
 1991 *Atlantic* Dec. 4/2. Lemann avidly followed the magazine world's debates about 'the New Journalism' and 'the nonfiction novel'.

(Hide quotations)

magazine-writer *n.*

Thesaurus »

Categories »

- 1787 P. H. MATY tr. J. K. Riesbeck *Trav. Germany* II. xiv. 206. Reviewers, magazine-writers.
 1901 F. HARRISON *Autobiogr. Mem.* (1911) II. 203. Ah! when the dream is over—and I wake up to find myself an average magazine writer.
 1948 F. R. LEAVIS *Great Tradition* (1955) iii. 180. Conrad must here stand convicted of borrowing the arts of the magazine-writer.
 1992 *Chicago* Jan. 37/3. He meets a trader-park tart with a 24-karat heart and learns that the veneer separating a magazine writer from a blue-collar grunt is fairly thin after all.

(Hide quotations)

magazine writing *n.*

Thesaurus »

Categories »

- 1835 F. MARRYAT *Olla Podrida* xxx, in *Metrop. Mag.* Magazine writing..is the most difficult of all writing.
 1976 *National Observer* (U.S.) 11 Sept. 20/1. This colorful chap..teaches photojournalism, magazine writing, and investigative reporting at Brigham Young University in Utah.

(Hide quotations)

d. (In sense 7b.)

magazine arms *n.*

Thesaurus »
Categories »

1868 C. B. NORTON & W. J. VALENTINE *Rep. to Govt. U.S. on Munitions of War at Paris Universal Exhib.* 1867 19 These cartridges cannot with safety be used in magazine arms.

1884 H. BOND *Treat. Small Arms* 89 Magazine arms in which the cartridges are placed in a tube or magazine under the barrel.

(Hide quotations)

magazine rifle *n.*

Thesaurus »
Categories »

1867 *Rep. Artisans Visit Paris Universal Exhib.* 11. 98 Repeating or magazine rifles.

1908 *Chambers's Jnl.* Feb. 141/1 Scarlet-coated British infantrymen with magazine-rifles.

1945 C. E. BALLISTEN *Princ. Firearms* viii. 79 In some firearms, notably magazine rifles, the magazine remains in the gun at all times.

1985 *Christie's Sale Catal. Mod. & Vintage Firearms* 20 Mar. A .44-40 'Lightning' Slide-action magazine rifle.

(Hide quotations)

magazine-slot *n.*

1910 R. KIPLING *Land & Sea Tales* (1923) 178 The tiny twenty-two cartridge had dropped into the magazine-slot.

(Hide quotations)

magazine weapon *n.*

Thesaurus »
Categories »

1884 *Pall Mall Gaz.* 28 Aug. 5/1 The information as to magazine or repeating weapons is very meagre.

1945 C. E. BALLISTEN *Princ. Firearms* i. 2 Those which require manual operation by the gunner before and after each shot to actuate the firearm are known as single-shot or magazine weapons.

(Hide quotations)

C2.

† **magazine battery** *n.* *Obsolete* a galvanic battery with a perforated container for holding crystals by which the solution was kept saturated.

Thesaurus »
Categories »

1884 E. H. KNIGHT *Pract. Dict. Mech. Suppl.* 570/2 Magazine battery, one in which a magazine contains the crystals which are supplied to the liquid as exhausted, to keep the liquid saturated.

(Hide quotations)

magazine camera *n.* now *historical* a camera in which the plates for exposure are inserted in batches.

Thesaurus +
Categories +

- 1893 *Beginner's Guide to Photogr.* (ed. 5) 130 The Magazine Camera was highly extolled..as least complicated of Reservoir Cameras.
1989 *Miller's Collectables Price Guide 1989-90* 50/3-4 A Rex magazine camera.

(Hide quotations)

magazine clothing *n.* woollen clothing to be put on before entering a powder magazine.

- 1876 G. E. VOWLE & G. DE SAINT-CLAIR-STEVENSON *Mil. Dict.* (ed. 3) 558 All persons employed in magazines..will..change their own clothes and boots for magazine clothing and dippers.

(Hide quotations)

magazine cover *n.* the (usually pictorial) cover of a magazine.

Thesaurus +
Categories +

- 1893 *Overland Monthly* 21 448/1 She objects to changes in magazine covers that make them lose the charm of the familiar.
1914 S. LOWIE *Our Mr. Wrentham* i. 2 A newsstand was heaped with the orange and green and gold of magazine covers.
1938 *Toronto Daily Star* 30 Dec. 12/6 Famous Hollywood Glamour Girls. Magazine cover models.
1951 M. McLEHAN *Metch. Bride* 120/2 The feminine images of our ads and magazine covers.
1990 *N.Y. Woman* Oct. 91/2 Brooke Shields is widely seen as..a chimera off a magazine cover.

(Hide quotations)

magazine-day *n.* *Publishing* (chiefly *historical*) the day on which a particular magazine is issued to the trade.

Thesaurus +
Categories +

- 1821 *Guardian* 4 Mar. 3/1 There is no bustle, to our minds, half so agreeable as the bustle of Paternoster-row on the last day of the month. This is Magazine-day.
1827 J. S. MILL *Lett. in Wks.* (1963) XII. 332 The review shall always be ready for publication by the 20th of the month so that it may be brought out at..the most advantageous moment between that & magazine-day.
1872 *J. FORSTER Life Dickens* I. 129 The magazine-day of that April month, I remember, fell upon a Saturday.

(Hide quotations)

magazine gun *n.* 1(a) = *magazine wind-gun n.* (*obsolete rare*); (b) a firearm provided with a 'magazine' (sense 7b).

Thesaurus +
Categories +

- 1744 J. T. DESAGULIERS *Course Exper. Philos.* II. 359 The Magazine-Gun, as he calls it.
1880 *Encycl. Brit.* XI. 284/2 The Vetterli gun..is a repeater or magazine gun.

(Hide quotations)

magazine paper *n.* now rare a magazine article.

Thesaurus +
Categories +

- 1833 *Fraser's Mag.* 8 482/4 He had written some smart magazine papers, bound up in a volume called Pelham.
1835 W. M. THACKERAY *Let.* 22 Sept. (1946) III. 471 I think it's the best magazine paper that ever was written.

(Hide quotations)

magazine programme *n.* (see sense 6c).

Thesaurus +
Categories +

- 1941 *B.B.C. Gloss. Broadcasting Terms* 18 Magazine programme, programme made up of miscellaneous items (e.g. talks, interviews, musical acts), loosely related one to the other by a compere or by other means of presentation.
1970 *Times* 23 Feb. 25/3 B.B.C. Newcastle..will have its own budget which will be sufficient to allow the production of another 30-minute weekly magazine programme.
1972 P. BLAIR *Biggest Aspidistra* III. IV. 175 Godfrey Bazely, a Midland Region broadcaster..loved the world of farming... The BBC gave him a new magazine programme aimed at farmers and their families.

(Hide quotations)

magazine release *n.* a catch which allows the magazine of a gun to be removed; frequently *attributive*.

- 1970 R. A. STYNDLER *Firearms Dict.* 150/2 Magazine release catch, on rifles and pistols, a small spring-activated knob or protrusion that, when pushed or moved, permits the magazine to be removed from the magazine housing.
1992 *Guns Illustr.* (ed. 24) 118/1 Extended beavertail grip safety; improved magazine release; skeletonized trigger and hammer.

(Hide quotations)

magazine section *n.* a section in a newspaper the contents of which resemble a magazine.

Thesaurus +
Categories +

- 1941 P. STURGES *Palm Beach Story in Four more Screenplays* (1995) 187 I mean you read things like that in the Sunday magazine section but you don't run up against them in real life.
1959 N. MAILER *Admits. for Myself* (1961) 158 Sam throws the Magazine Section away... Sam is enraged at editorial dishonesty.
1969 *Listener* 30 Jan. 148/4 Leavis did not apologise that his terms of reference should be the Robbins Report and Harold Wilson and the magazine sections of the English Sundays.
1993 *Coloradoan* (Fort Collins) 4 Sept. 110/4 Years ago, during the pre-political correctness era *The New York Times* magazine section ran a recipe..for..a Crazy Pancake.

(Hide quotations)

magazine ship *n.* now *historical* a ship which supplies provisions, or (occasionally) munitions (cf. sense 3).

Thesaurus +
Categories +

- 1617-18 S. ARGALL *Memoranda in S. M. Kingsbury Rec. Virginia Company* (1933) III. 78 Y^e most convenient times & Seasons..for y^e Magazine Ship to Set forth..towards Virg^a.
1647 *Let.* 12 Feb. in *William & Mary Q. Hist. Mag.* (1929) 9 302 The Deputy of the Sommer Islands Company..will transmit them [sc. the letters]..by their Magazine ship that they send to us everie yeare about November.
1862 *Rep. U.S. Quartermaster's Dept.* 18 Nov. 7 Other vessels of the fleet served as tenders,..ordnance and magazine ships, hospital ships, and store ships.
1963 *William & Mary Q.* 20 496 The Privy Council took up his petition and held a two-day hearing on the Company's magazine ship monopoly.

(Hide quotations)

magazine story *n.* a story written for publication in a magazine.

Thesaurus »
Categories »

- 1841 *Southern Literary Messenger* 7:664 The young gentleman or lady who cannot refrain from devouring...every silly magazine story, that chance presents.
- 1885 C. M. YONGE *Nuttie's Father* II. ii. 23 The hero of many a magazine story.
- 1932 Q. D. LEAVIS *Fiction & Reading Public* 1. iii. 47 The magazine story is almost without exception a commercial article.
- 1942 *John o' London's Weekly* 10 Apr. 6/2 The short story of today is roughly one of two kinds—what is called the Magazine Story; and the newer kind which derives from Tchekov.
- 1974 E. BOWEN *Henry & Other Heroes* ix. 186 There was a magazine story containing the grim notion that how one went about being forty was of no consequence because the whole world was headed for a youth-in.

(Hide quotations)

magazine stove *n.* now chiefly *historical* a kind of stove with a fuel-chamber which supplies the grate.

Thesaurus »
Categories »

- 1875 E. H. KNIGHT *Amer. Mech. Dict.* II. 1369/3 Magazine-stove, one in which is a fuel-chamber which supplies coal to the fire as that in the grate burns away.
- 1974 L. GAY *Compl. Bk. Heating with Wood* (1980) 81 Dr. Nott's...base-burning magazine stove was a forerunner of the modern Riteway pictured next.

(Hide quotations)

magazine well *n.* the aperture into which a magazine is loaded on an automatic firearm.

Thesaurus »
Categories »

- 1949 W. H. B. SMITH *Rifles* II. xix. 82 The magazine well, is the square-sided hole milled through the receiver from top to bottom, immediately to the rear of the breech face of the barrel.
- 1993 *Soldier of Fortune* Feb. 13/1 By the time anyone could...insert a magazine in the magazine well...the shooters would be gone down the street and around the corner.

(Hide quotations)

† **magazine wind-gun** *n.* *Obsolete rare* a type of wind-gun fitted with a magazine of bullets.

Thesaurus »
Categories »

- 1744 J. T. DESAGULIERE *Course Exper. Philos.* II. 399 An ingenious Workman call'd L. Colbe has very much improv'd it [sc. the old Wind-Gun], by making it a Magazine Wind-Gun; so that 10 Bullets are so lodg'd in a Cavity...that they may be...successively shot.

(Hide quotations)

magazine work *n.* (a) writing for magazines; (b) *Printing* setting up type for magazines.

- 1831 T. CARLYLE *Lett. 8 May in Coll. Lett. T. & J. W. Carlyle* (1976) V. 272 Magazine work is below street sweeping as a trade.
- 1891 *Labour Commission Gloss.* Magazine Work, printing work paid by the 100 lines.

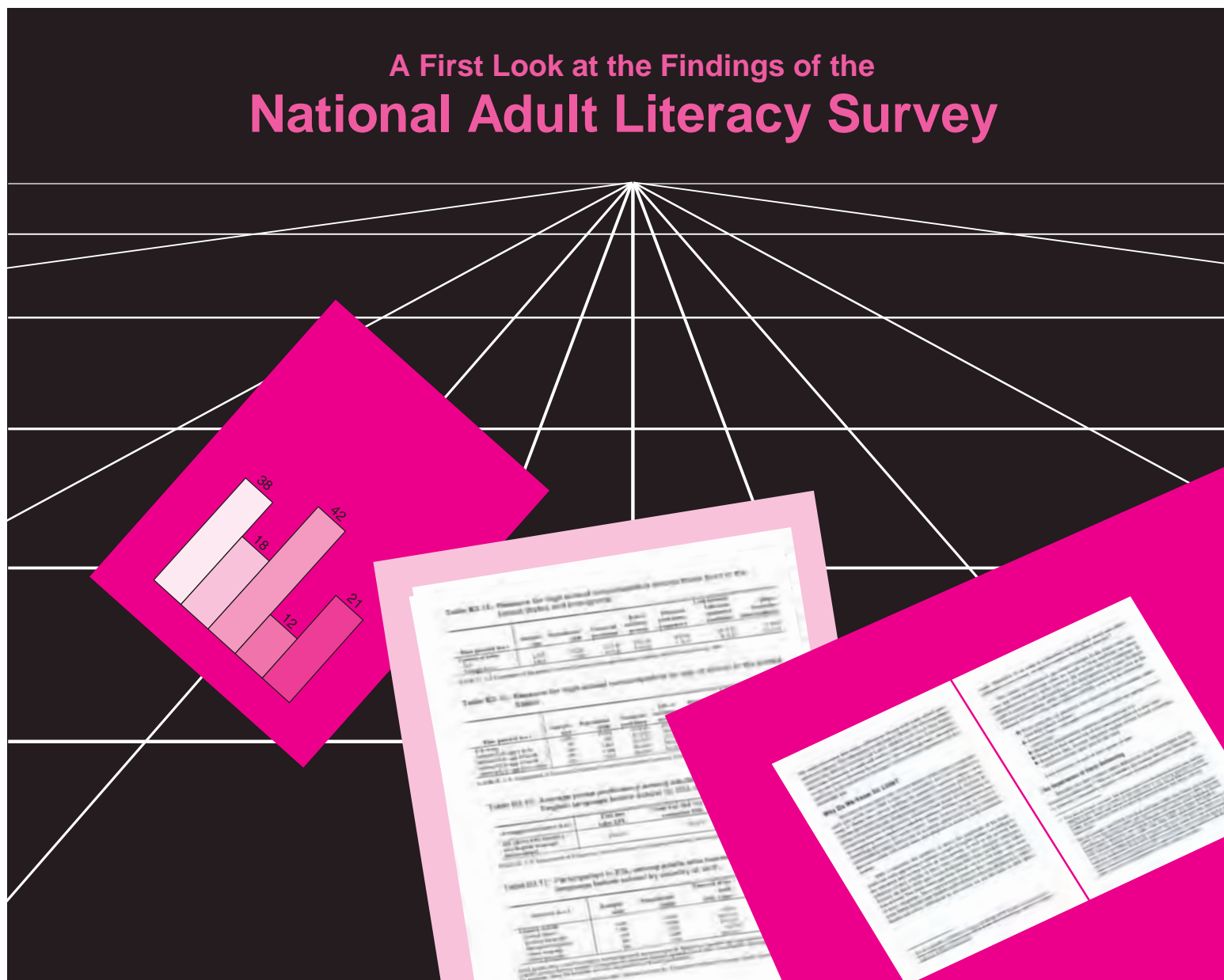
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ADULT LITERACY in America

A First Look at the Findings of the National Adult Literacy Survey



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April 2002

Third Edition

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**Irwin S. Kirsch
Ann Jungeblut
Lynn Jenkins
Andrew Kolstad**

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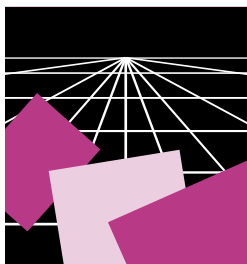
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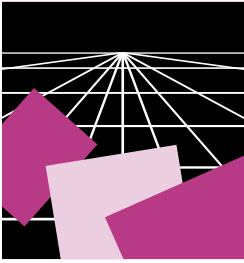
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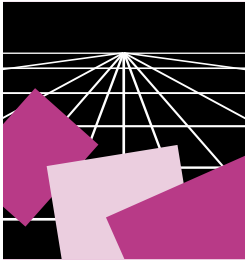
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Irwin S. Kirsch
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Lynn Jenkins
Andrew Kolstad



PREFACE

The United States has always been a mosaic of cultures, but the diversity of our population has increased by striking proportions in recent years. As Barbara Everitt Bryant, director of the Bureau of the Census, has written: “If you gave America a face in 1990, it would have shown the first sign of wrinkles [and] it would have been full of color.”¹ The median age of Americans continues to rise, growing from 30 to almost 33 years during the 1980s. It is projected that by the year 2080, nearly 25 percent of the adults in this nation will be over 65, compared with only about 12 percent today. The racial and ethnic composition of the nation also continues to change. While 3.7 million people of Asian or Pacific Islander origin were living in this country in 1980, there were 7.2 million a decade later — a change of almost 100 percent. The number of individuals of Hispanic origin also rose dramatically over this time period, from roughly 6 to 9 percent of the population, or more than 22 million people. Our increasing diversity can not only be seen but also heard: today, some 32 million individuals in the United States speak a language other than English, and these languages range from Spanish and Chinese to Yupik and Mon-Khmer.²

Given these patterns and changes, this is an opportune time to explore the literacy skills of adults in this nation. In 1988, the U.S. Congress called on the Department of Education to support a national literacy survey of America’s adults. While recent studies funded by the federal government explored the literacy of young adults and job seekers, the National Adult Literacy Survey is the first to provide accurate and detailed information on the skills of the adult population as a whole — information that, to this point, has been unavailable.

Perhaps never before have so many people from so many different sectors of society been concerned about adult literacy. Numerous reports published in

¹ B.E. Bryant. (1991). “The Changing Face of the United States.” *The World Almanac and Book of Facts, 1992*. New York, NY: Pharos Books. p. 72.

² United States Department of Commerce. (1993, April). “Number of Non-English Language Speaking Americans Up Sharply in 1980s, Census Bureau Says.” *United States Department of Commerce News*.

the last decade — including *A Nation at Risk*, *The Bottom Line*, *The Subtle Danger*, *Literacy: Profiles of America's Young Adults*, *Jump Start: The Federal Role in Adult Education*, *Workforce 2000*, *America's Choice: High Skills or Low Wages*, and *Beyond the School Doors* — have provided evidence that a large portion of our population lacks adequate literacy skills and have intensified the debate over how this problem should be addressed.

Concerns about literacy are not new. In fact, throughout our nation's history there have been periods when the literacy skills of the population were judged inadequate. Yet, the nature of these concerns has changed radically over time. In the past, the lack of ability to read and use printed materials was seen primarily as an individual problem, with implications for a person's job opportunities, educational goals, sense of fulfillment, and participation in society. Now, however, it is increasingly viewed as a national problem, with implications that reach far beyond the individual. Concerns about the human costs of limited literacy have, in a sense, been overshadowed by concerns about the economic and social costs.

Although Americans today are, on the whole, better educated and more literate than any who preceded them, many employers say they are unable to find enough workers with the reading, writing, mathematical, and other competencies required in the workplace. Changing economic, demographic, and labor-market forces may exacerbate the problem in the future. As a recent study by the American Society for Training and Development concluded, "These forces are creating a human capital deficit that threatens U.S. competitiveness and acts as a barrier to individual opportunities for all Americans."³

Whether future jobs will have greater literacy requirements than today's jobs, or whether the gap between the nation's literacy resources and its needs will widen, are open questions. The evidence to support such predictions is scarce. What many believe, however, is that our current systems of education and training are inadequate to ensure individual opportunities, improve economic productivity, or strengthen our nation's competitiveness in the global marketplace.

There is widespread agreement that we as a nation must respond to the literacy challenge, not only to preserve our economic vitality but also to ensure that every individual has a full range of opportunities for personal fulfillment and participation in society. At the historic education summit in Charlottesville, Virginia, the nation's governors — including then-Governor Clinton — met with then-President Bush to establish a set of national education goals that would guide this country into the twenty-first century. As adopted in 1990 by members of the National Governors' Association, one of the six goals states:

³ A.P. Carnevale, L.J. Gainer, A.S. Meltzer, and S.L. Holland. (1988, October). "Workplace Basics: The Skills Employers Want." *Training and Development Journal*. pp. 20-30.

By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

The following year, Congress passed the National Literacy Act of 1991, the purpose of which is “to enhance the literacy and basic skills of adults, to ensure that all adults in the United States acquire the basic skills necessary to function effectively and achieve the greatest possible opportunity in their work and in their lives, and to strengthen and coordinate adult literacy programs.”

But how should these ambitious goals be pursued? In the past, whenever the population’s skills were called into question, critics generally focused on the educational system and insisted that school reforms were necessary if the nation were to escape serious social and economic consequences. Today, however, many of those who need to improve their literacy skills have already left school. In fact, it is estimated that almost 80 percent of the work force for the year 2000 is already employed. Moreover, many of those who demonstrate limited literacy skills do not perceive that they have a problem. Clearly, then, the schools alone cannot strengthen the abilities of present and future employees, and of the population as a whole. A broad-based response seems necessary.

To initiate such a response, we need more than localized reports or anecdotal information from employers, public leaders, or the press; accurate and detailed information about our current status is essential. As reading researchers John Carroll and Jean Chall observed in their book *Toward a Literate Society*, “any national program for improving literacy skills would have to be based on the best possible information as to where the deficits are and how serious they are.”⁴ Surprisingly, though, we do lack accurate and detailed information about literacy in our nation — including how many individuals have limited skills, who they are, and the severity of their problems.

In 1988, Congress asked the U.S. Department of Education to address this need for information on the nature and extent of adult literacy. In response, the Department’s National Center for Education Statistics and Division of Adult Education and Literacy called for a national household survey of the literacy skills of adults in the United States. A contract was awarded to Educational Testing Service and a subcontract to Westat, Inc. to design and conduct the National Adult Literacy Survey, the results of which are presented in these pages.

⁴ J.B. Carroll and J.S. Chall, eds. (1975). *Toward a Literate Society: A Report from the National Academy of Education*. New York, NY: McGraw-Hill. p. 11.



During the first eight months of 1992, trained staff conducted household interviews with nearly 13,600 individuals aged 16 and older who had been randomly selected to represent the adult population in this country. In addition, approximately 1,000 adults were surveyed in each of 12 states that chose to participate in a special study designed to produce state-level results that are comparable to the national data. Finally, some 1,100 inmates from 80 federal and state prisons were interviewed to gather information on the skills of the prison population. Each individual was asked to spend about an hour responding to a series of diverse literacy tasks and providing information on his or her background, education, labor market experiences, and reading practices.

The results of the National Adult Literacy Survey comprise an enormous set of data that includes more than a million responses to the literacy tasks and background questions. More important than the size of the database, however, is the fact that it provides information that was previously unavailable — information that is essential to understanding this nation's literacy resources.

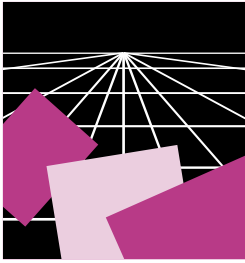
To ensure that the survey results will reach a wide audience, the committees that guided the project recommended that the findings be issued in a series of reports. This first volume in the series offers an overview of the results. Additional reports offer a more detailed look at particular issues that are explored in a general way in this report, including:

- literacy in the work force
- literacy and education
- literacy among older adults
- literacy in the prison population
- literacy and cultural diversity
- literacy practices

A final report conveys technical information about the survey design and the methods used to implement it.

Although these reports focus almost exclusively on the results of the National Adult Literacy Survey, their contents have much broader implications. The rich collection of information they contain can be used to inform policy debates, set program objectives, and reflect on our society's literacy resources and needs.

Irwin S. Kirsch
Project Director



EXECUTIVE SUMMARY

This report provides a first look at the results of the National Adult Literacy Survey, a project funded by the U.S. Department of Education and administered by Educational Testing Service, in collaboration with Westat, Inc. It provides the most detailed portrait that has ever been available on the condition of literacy in this nation — and on the unrealized potential of its citizens.

Many past studies of adult literacy have tried to count the number of “illiterates” in this nation, thereby treating literacy as a condition that individuals either do or do not have. We believe that such efforts are inherently arbitrary and misleading. They are also damaging, in that they fail to acknowledge both the complexity of the literacy problem and the range of solutions needed to address it.

The National Adult Literacy Survey (NALS) is based on a different definition of literacy, and therefore follows a different approach to measuring it. The aim of this survey is to profile the English literacy of adults in the United States based on their performance across a wide array of tasks that reflect the types of materials and demands they encounter in their daily lives.

To gather the information on adults’ literacy skills, trained staff interviewed nearly 13,600 individuals aged 16 and older during the first eight months of 1992. These participants had been randomly selected to represent the adult population in the country as a whole. In addition, about 1,000 adults were surveyed in each of 12 states that chose to participate in a special study designed to provide state-level results that are comparable to the national data. Finally, some 1,100 inmates from 80 federal and state prisons were interviewed to gather information on the proficiencies of the prison population. In total, over 26,000 adults were surveyed.

Each survey participant was asked to spend approximately an hour responding to a series of diverse literacy tasks as well as questions about his or her demographic characteristics, educational background, reading practices, and other areas related to literacy. Based on their responses to the survey tasks,



adults received proficiency scores along three scales which reflect varying degrees of skill in prose, document, and quantitative literacy. The scales are powerful tools which make it possible to explore the proportions of adults in various subpopulations of interest who demonstrated successive levels of performance.

This report describes the types and levels of literacy skills demonstrated by adults in this country and analyzes the variation in skills across major subgroups in the population. It also explores connections between literacy skills and social and economic variables such as voting, economic status, weeks worked, and earnings. Some of the major findings are highlighted here.

The Literacy Skills of America's Adults

- Twenty-one to 23 percent — or some 40 to 44 million of the 191 million adults in this country — demonstrated skills in the lowest level of prose, document, and quantitative proficiencies (Level 1). Though all adults in this level displayed limited skills, their characteristics are diverse. Many adults in this level performed simple, routine tasks involving brief and uncomplicated texts and documents. For example, they were able to total an entry on a deposit slip, locate the time or place of a meeting on a form, and identify a piece of specific information in a brief news article. Others were unable to perform these types of tasks, and some had such limited skills that they were unable to respond to much of the survey.
- Many factors help to explain why so many adults demonstrated English literacy skills in the lowest proficiency level defined (Level 1). Twenty-five percent of the respondents who performed in this level were immigrants who may have been just learning to speak English. Nearly two-thirds of those in Level 1 (62 percent) had terminated their education before completing high school. A third were age 65 or older, and 26 percent had physical, mental, or health conditions that kept them from participating fully in work, school, housework, or other activities. Nineteen percent of the respondents in Level 1 reported having visual difficulties that affect their ability to read print.
- Some 25 to 28 percent of the respondents, representing about 50 million adults nationwide, demonstrated skills in the next higher level of proficiency (Level 2) on each of the literacy scales. While their skills were more varied than those of individuals performing in Level 1, their repertoire was still quite limited. They were generally able to locate information in text, to make low-level inferences using printed materials, and to integrate easily



identifiable pieces of information. Further, they demonstrated the ability to perform quantitative tasks that involve a single operation where the numbers are either stated or can be easily found in text. For example, adults in this level were able to calculate the total cost of a purchase or determine the difference in price between two items. They could also locate a particular intersection on a street map and enter background information on a simple form.

- Individuals in Levels 1 and 2 were much less likely to respond correctly to the more challenging literacy tasks in the assessment — those requiring higher level reading and problem-solving skills. In particular, they were apt to experience considerable difficulty in performing tasks that required them to integrate or synthesize information from complex or lengthy texts or to perform quantitative tasks that involved two or more sequential operations and in which the individual had to set up the problem.
- The approximately 90 million adults who performed in Levels 1 and 2 did not necessarily perceive themselves as being “at risk.” Across the literacy scales, 66 to 75 percent of the adults in the lowest level and 93 to 97 percent in the second lowest level described themselves as being able to read or write English “well” or “very well.” Moreover, only 14 to 25 percent of the adults in Level 1 and 4 to 12 percent in Level 2 said they get a lot of help from family members or friends with everyday prose, document, and quantitative literacy tasks. It is therefore possible that their skills, while limited, allow them to meet some or most of their personal and occupational literacy needs.
- Nearly one-third of the survey participants, or about 61 million adults nationwide, demonstrated performance in Level 3 on each of the literacy scales. Respondents performing in this level on the prose and document scales were able to integrate information from relatively long or dense text or from documents. Those in the third level on the quantitative scale were able to determine the appropriate arithmetic operation based on information contained in the directive, and to identify the quantities needed to perform that operation.
- Eighteen to 21 percent of the respondents, or 34 to 40 million adults, performed in the two highest levels of prose, document, and quantitative literacy (Levels 4 and 5). These adults demonstrated proficiencies associated with the most challenging tasks in this assessment, many of which involved long and complex documents and text passages.



- The literacy proficiencies of young adults assessed in 1992 were somewhat lower, on average, than the proficiencies of young adults who participated in a 1985 literacy survey. NALS participants aged 21 to 25 had average prose, document, and quantitative scores that were 11 to 14 points lower than the scores of 21- to 25-year-olds assessed in 1985. Although other factors may also be involved, these performance discrepancies are probably due in large part to changes in the demographic composition of the population — in particular, the dramatic increase in the percentages of young Hispanic adults, many of whom were born in other countries and are learning English as a second language.
- Adults with relatively few years of education were more likely to perform in the lower literacy levels than those who completed high school or received some type of postsecondary education. For example, on each of the three literacy scales, some 75 to 80 percent of adults with 0 to 8 years of education are in Level 1, while fewer than 1 percent are in Levels 4 and 5. In contrast, among adults with a high school diploma, 16 to 20 percent are in the lowest level on each scale, while 10 to 13 percent are in the two highest levels. Only 4 percent of adults with four year college degrees are in Level 1; 44 to 50 percent are in the two highest levels.
- Older adults were more likely than middle-aged and younger adults to demonstrate limited literacy skills. For example, adults over the age of 65 have average literacy scores that range from 56 to 61 points (or more than one level) below those of adults 40 to 54 years of age. Adults aged 55 to 64 scored, on average, between middle-aged adults and those 65 years and older. These differences can be explained in part by the fact that older adults tend to have completed fewer years of schooling than adults in the younger age groups.
- Black, American Indian/Alaskan Native, Hispanic, and Asian/Pacific Islander adults were more likely than White adults to perform in the lowest two literacy levels. These performance differences are affected by many factors. For example, with the exception of Asian/Pacific Islander adults, individuals in these groups tended to have completed fewer years of schooling in this country than had White individuals. Further, many adults of Asian/Pacific Islander and Hispanic origin were born in other countries and were likely to have learned English as a second language.
- Of all the racial/ethnic groups, Hispanic adults reported the fewest years of schooling in this country (just over 10 years, on average). The average years of schooling attained by Black adults and American Indian/Alaskan Native



adults were similar, at 11.6 and 11.7 years, respectively. These groups had completed more years of schooling than Hispanic adults had, on average, but more than a year less than either White adults or those of Asian/Pacific Islander origin.

- With one exception, for each racial or ethnic group, individuals born in the United States outperformed those born abroad. The exception occurs among Black adults, where there was essentially no difference (only 3 to 7 points). Among White and Asian/Pacific Islander adults, the average differences between native-born and foreign-born individuals range from 26 to 41 points across the literacy scales. Among Hispanic adults, the differences range from 40 to 94 points in favor of the native born.
- Twelve percent of the respondents reported having a physical, mental, or other health condition that kept them from participating fully in work or other activities. These individuals were far more likely than adults in the population as a whole to demonstrate performance in the range for Levels 1 and 2. Among those who said they had vision problems, 54 percent were in Level 1 on the prose scale and another 26 percent were in Level 2.
- Men demonstrated the same average prose proficiencies as women, but their document and quantitative proficiencies were somewhat higher. Adults in the Midwest and West had higher average proficiencies than those residing in either the Northeast or South.
- Adults in prison were far more likely than those in the population as a whole to perform in the lowest two literacy levels. These incarcerated adults tended to be younger, less well educated, and to be from minority backgrounds.

Literacy and Social and Economic Characteristics

- Individuals demonstrating higher levels of literacy were more likely to be employed, work more weeks in a year, and earn higher wages than individuals demonstrating lower proficiencies. For example, while adults in Level 1 on each scale reported working an average of only 18 to 19 weeks in the year prior to the survey, those in the three highest levels reported working about twice as many weeks — between 34 and 44. Moreover, across the scales, individuals in the lowest level reported median weekly earnings of about \$230 to \$245, compared with about \$350 for individuals performing in Level 3 and \$620 to \$680 for those in Level 5.



- Adults in the lowest level on each of the literacy scales (17 to 19 percent) were far more likely than those in the two highest levels (4 percent) to report receiving food stamps. In contrast, only 23 to 27 percent of the respondents who performed in Level 1 said they received interest from a savings or bank account, compared with 70 to 85 percent in Levels 4 or 5.
- Nearly half (41 to 44 percent) of all adults in the lowest level on each literacy scale were living in poverty, compared with only 4 to 8 percent of those in the two highest proficiency levels.
- On all three literacy scales, adults in the higher levels were more likely than those in the lower levels to report voting in a recent state or national election. Slightly more than half (55 to 58 percent) of the adults in Level 1 who were eligible to vote said they voted in the past five years, compared with about 80 percent of those who performed in Level 4 and nearly 90 percent of those in Level 5.

Reflections on the Results

In reflecting on the results of the National Adult Literacy Survey, many readers will undoubtedly seek an answer to a fundamental question: Are the literacy skills of America's adults adequate? That is, are the distributions of prose, document, and quantitative proficiency observed in this survey adequate to ensure individual opportunities for all adults, to increase worker productivity, or to strengthen America's competitiveness around the world?

Because it is impossible to say precisely what literacy skills are essential for individuals to succeed in this or any other society, the results of the National Adult Literacy Survey provide no firm answers to such questions. As the authors examined the survey data and deliberated on the results with members of the advisory committees, however, several observations and concerns emerged.

Perhaps the most salient finding of this survey is that such large percentages of adults performed in the lowest levels (Levels 1 and 2) of prose, document, and quantitative literacy. In and of itself, this may not indicate a serious problem. After all, the majority of adults who demonstrated limited skills described themselves as reading or writing English well, and relatively few said they get a lot of assistance from others in performing everyday literacy tasks. Perhaps these individuals are able to meet most of the literacy demands they encounter currently at work, at home, and in their communities.

Yet, some argue that lower literacy skills mean a lower quality of life and more limited employment opportunities. As noted in a recent report from the American Society for Training and Development, “The association between skills and opportunity for individual Americans is powerful and growing. . . . Individuals with poor skills do not have much to bargain with; they are condemned to low earnings and limited choices.”¹

The data from this survey appear to support such views. On each of the literacy scales, adults whose proficiencies were within the two lowest levels were far more likely to receive food stamps and to be in poverty. Moreover, they were far less likely than their more literate peers to be employed full-time, to earn high wages, to rely on print sources (such as newspapers and magazines) for information about current events, public affairs, and government, and far less likely to vote.

Literacy is not the only factor that contributes to how we live our lives, however. Some adults who displayed limited skills reported working in professional or managerial jobs, earning high wages, and participating in various aspects of our society, for example, while others who demonstrated high levels of proficiency reported being unemployed or out of the labor force. Thus, having advanced literacy skills does not necessarily guarantee individual opportunities.

Still, literacy can be thought of as a currency in this society. Just as adults with little money have difficulty meeting their basic needs, those with limited literacy skills are likely to find it more challenging to pursue their goals — whether these involve job advancement, consumer decision making, citizenship, or other aspects of their lives. Even if adults who performed in the lowest literacy levels are not experiencing difficulties at present, they may be at risk as the nation’s economy and social fabric continue to change.

Beyond these personal consequences, what implications are there for society when so many individuals display limited skills? The answer to this question is elusive. Still, it seems apparent that a nation in which large numbers of citizens display limited literacy skills has fewer resources with which to meet its goals and objectives, whether these are social, political, civic, or economic.

If large percentages of adults had to do little more than be able to sign their name on a form or locate a single fact in a newspaper or table, then the levels of literacy seen in this survey might not warrant concern. We live in a nation, however, where both the volume and variety of written information are **growing and where increasing numbers of citizens are expected to be able to read, understand, and use these materials.**

¹ A.J. Carnevale and L.J. Gainer. (1989). *The Learning Enterprise*. Washington , DC: U.S. Department of Labor, Employment and Training Administration.

Historians remind us that during the last 200 hundred years, our nation's literacy skills have increased dramatically in response to new requirements and expanded opportunities for social and economic growth. Today we are a better educated and more literate society than at any time in our history.² Yet, there have also been periods of imbalance — times when demands seemed to surpass levels of attainment.

In recent years, our society has grown more technologically advanced and the roles of formal institutions have expanded. As this has occurred, many have argued that there is a greater need for all individuals to become more literate and for a larger proportion to develop advanced skills.³ Growing numbers of individuals are expected to be able to attend to multiple features of information in lengthy and sometimes complex displays, to compare and contrast information, to integrate information from various parts of a text or document, to generate ideas and information based on what they read, and to apply arithmetic operations sequentially to solve a problem.

The results from this and other surveys, however, indicate that many adults do not demonstrate these levels of proficiency. Further, the continuing process of demographic, social, and economic change within this country could lead to a more divided society along both racial and socioeconomic lines.

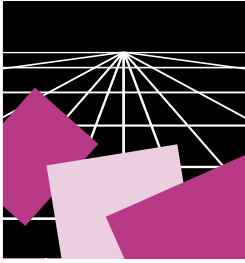
Already there is evidence of a widening division. According to the report *America's Choice: High Skills or Low Wages!*, over the past 15 years the gap in earnings between professionals and clerical workers has grown from 47 to 86 percent while the gap between white collar workers and skilled tradespeople has risen from 2 to 37 percent. At the same time, earnings for college educated males 24 to 34 years of age have increased by 10 percent while earnings for those with high school diplomas have declined by 9 percent. Moreover, the poverty rate for Black families is nearly three times that for White families.⁴ One child in five is born into poverty, and for minority populations, this rate approaches one in two.

² L.C. Stedman and C.F. Kaestle. (1991). "Literacy and Reading Performance in the United States from 1880 to the Present," in C.F. Kaestle et al., *Literacy in the United States: Readers and Reading Since 1880*. New Haven, CT: Yale University Press. T. Snyder (ed.). (1993). *120 Years of American Education: A Statistical Portrait*. Washington, DC: National Center for Education Statistics.

³ U.S. Department of Labor. (1992, April). *Learning a Living: A Blueprint for High Performance*. Washington, DC: The Secretary's Commission on Achieving Necessary Skills (SCANS). R.L. Venezky, C.F. Kaestle, and A. Sum. (1987, January). *The Subtle Danger: Reflections on the Literacy Abilities of America's Young Adults*. Princeton, NJ: Educational Testing Service.

⁴ National Center on Education and the Economy. (1990, June). *America's Choice: High Skills or Low Wages! The Report of The Commission on the Skills of the American Workforce*. p. 20.

In 1990, then-President Bush and the nation's governors, including then-Governor Clinton, adopted the goal that *all* of America's adults be literate by the year 2000. The responsibility for meeting this objective must, in the end, be shared among individuals, groups, and organizations throughout our society. Programs that serve adult learners cannot be expected to solve the literacy problem alone, and neither can the schools. Other institutions — ranging from the largest and most complex government agency, to large and small businesses, to the family — all have a role to play in ensuring that adults who need or wish to improve their literacy skills have the opportunity to do so. It is also important that individuals themselves come to realize the value of literacy in their lives and to recognize the benefits associated with having better skills. Only then will more adults in this nation develop the literacy resources they need to function in society, to achieve their goals, and to develop their knowledge and potential.



INTRODUCTION

Development is a process that increases choices. It creates an environment where people can exercise their full potential to lead productive, creative lives. . . . At the heart of development is literacy—the ability to recognize, interpret, and act on symbolic representations of our world through various forms of language and cultural expression. Facility in manipulating these symbols, whether through the written word, numbers or images, is essential to effective human development. Thus, meeting the basic learning needs of all is a major goal of sustainable and lasting improvement in the human condition.

— William H. Drapper III, *Letters of Life*

Few would deny the importance of literacy in this society or the advantages enjoyed by those with advanced skills. This shared belief in the value of literacy, though, does not imply consensus on the ways it should be defined and measured. In fact, opinions vary widely about the skills that individuals need to function successfully in their work, in their personal lives, and in society, and about the ways in which these skills should be assessed. As a result, there have been widely conflicting diagnoses of the literacy problem in this country. The National Adult Literacy Survey was initiated to fill the need for accurate and detailed information on the English literacy skills of America's adults.

In the Adult Education Amendments of 1988, the U.S. Congress called upon the Department of Education to report on the definition of literacy and on the nature and extent of literacy among adults in the nation. In response, the Department's National Center for Education Statistics (NCES) and the Division of Adult Education and Literacy planned a national household survey of adult literacy. In September 1989, NCES awarded a four-year contract to Educational Testing Service (ETS) to design and administer the survey and to analyze and report the results. A subcontract was given to Westat, Inc., for sampling and field operations.

The plan for developing and conducting the National Adult Literacy Survey (NALS) was guided by a panel of experts from business and industry, labor, government, research, and adult education. This Literacy Definition Committee worked with ETS staff to prepare a definition of literacy that would guide the development of the assessment objectives as well as the construction and selection of assessment tasks. A second panel, the Technical Review Committee, was formed to help ensure the soundness of the assessment design, the quality of the data collected, the integrity of the analyses conducted, and the appropriateness of the interpretations of the final results.

This introduction summarizes the discussions that led to the adoption of a definition of literacy for the National Adult Literacy Survey, the framework used in designing the survey instruments, the populations assessed, the survey administration, and the methods for reporting the results.

Defining and Measuring Literacy

The National Adult Literacy Survey is the third and largest assessment of adult literacy funded by the federal government and conducted by ETS. The two previous efforts included a 1985 household survey of the literacy skills of 21- to 25-year-olds, funded by the U.S. Department of Education, and a 1989-90 survey of the literacy proficiencies of job seekers, funded by the U.S. Department of Labor.¹ The definition of literacy that guided the National Adult Literacy Survey was rooted in these preceding studies.

Building on earlier work in large-scale literacy assessment, the 1985 young adult survey attempted to extend the concept of literacy, to take into account some of the criticisms of previous surveys, and to benefit from advances in educational assessment methodology. The national panel of experts that was assembled to construct a definition of literacy for this survey rejected the types of arbitrary standards — such as signing one's name, completing five years of school, or scoring at a particular grade level on a school-based measure of reading achievement — that have long been used to make judgements about adults' literacy skills. Through a consensus process, this panel drafted the following definition of literacy, which helped set the framework for the young adult survey:

Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential.

¹ I.S. Kirsch and A. Jungeblut. (1986). *Literacy: Profiles of America's Young Adults*. Princeton, NJ: Educational Testing Service. I.S. Kirsch, A. Jungeblut, and A. Campbell. (1992). *Beyond the School Doors: The Literacy Needs of Job Seekers Served by the U.S. Department of Labor*. Princeton, NJ: Educational Testing Service.

Unlike traditional definitions of literacy, which focused on decoding and comprehension, this definition encompasses a broad range of skills that adults use in accomplishing the many different types of literacy tasks associated with work, home, and community contexts. This perspective is shaping not only adult literacy assessment, but policy, as well — as seen in the National Literacy Act of 1991, which defined literacy as “an individual’s ability to read, write, and speak in English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one’s goals, and to develop one’s knowledge and potential.”

The definition of literacy from the young adult survey was adopted by the panel that guided the development of the 1989-90 survey of job seekers, and it also provided the starting point for the discussions of the NALS Literacy Definition Committee. This committee agreed that expressing the literacy proficiencies of adults in school-based terms or grade-level scores is inappropriate. In addition, while the committee recognized the importance of teamwork skills, interpersonal skills, and communication skills for functioning in various contexts, such as the work place, it decided that these areas would not be addressed in this survey.

Further, the committee endorsed the notion that literacy is neither a single skill suited to all types of texts, nor an infinite number of skills, each associated with a given type of text or material. Rather, as suggested by the results of the young adult and job-seeker surveys, an ordered set of skills appears to be called into play to accomplish diverse types of tasks. Given this perspective, the NALS committee agreed to adopt not only the definition of literacy that was used in the previous surveys, but also the three scales developed as part of those efforts:

Prose literacy — the knowledge and skills needed to understand and use information from texts that include editorials, news stories, poems, and fiction; for example, finding a piece of information in a newspaper article, interpreting instructions from a warranty, inferring a theme from a poem, or contrasting views expressed in an editorial.

Document literacy — the knowledge and skills required to locate and use information contained in materials that include job applications, payroll forms, transportation schedules, maps, tables, and graphs; for example, locating a particular intersection on a street map, using a schedule to choose the appropriate bus, or entering information on an application form.

Quantitative literacy — the knowledge and skills required to apply arithmetic operations, either alone or sequentially, using numbers



embedded in printed materials; for example, balancing a checkbook, figuring out a tip, completing an order form, or determining the amount of interest from a loan advertisement.

The literacy scales provide a useful way to organize a broad array of tasks and to report the assessment results. They represent a substantial improvement over traditional approaches to literacy assessment, which have tended to report on performance in terms of single tasks or to combine the results from diverse tasks into a single, conglomerate score. Such a score fosters the simplistic notion that “literate” and “illiterate” can be neatly distinguished from one another based on a single cutpoint on a single scale. The literacy scales, on the other hand, make it possible to profile the various types and levels of literacy among different subgroups in our society. In so doing, they help us to understand the diverse information-processing skills associated with the broad range of printed and written materials that adults read and their many purposes for reading them.

In adopting the three scales for use in this survey, the committee’s aim was not to establish a single national standard for literacy. Rather, it was to provide an interpretive scheme that would enable levels of prose, document, and quantitative performance to be identified and allow descriptions of the knowledge and skills associated with each level to be developed.

The prose, document, and quantitative scales were built initially to report on the results of the young adult survey and were augmented in the survey of job seekers. The NALS Literacy Definition Committee recommended that a new set of literacy tasks be developed to enhance the scales. These tasks would take into account the following, without losing the ability to compare the NALS results to the earlier surveys:

- continued use of open-ended simulation tasks
- continued emphasis on tasks that measure a broad range of information-processing skills and cover a wide variety of contexts
- increased emphasis on simulation tasks that require brief written and/or oral responses
- increased emphasis on tasks that ask respondents to describe how they would set up and solve a problem
- the use of a simple, four-function calculator to solve selected quantitative problems

Approximately 110 new assessment tasks were field tested, and 80 of these were selected for inclusion in the survey, in addition to 85 tasks that were administered in both the young adult and job-seeker assessments. By **administering**

a common set of simulation tasks in each of the three literacy surveys, it is possible to compare results across time and across population groups.

A large number of tasks had to be administered in NALS to ensure that the survey would provide the broadest possible coverage of the literacy domains specified. Yet, no individual could be expected to respond to the entire set of 165 simulation tasks. Accordingly, the survey was designed to give each person participating in the study a subset of the total pool of literacy tasks, while at the same time ensuring that each of the 165 tasks was administered to a nationally representative sample of adults. Literacy tasks were assigned to sections that could be completed in about 15 minutes, and these sections were then compiled into booklets, each of which could be completed in about 45 minutes. During a personal interview, each survey respondent was asked to complete one booklet.

In addition to the time allocated for the literacy tasks, approximately 20 minutes were devoted to obtaining background and personal information from respondents. Two versions of the background questionnaire were administered, one in English and one in Spanish. Major areas explored included:

background and demographics — country of birth, languages spoken or read, access to reading materials, size of household, educational attainment of parents, age, race/ethnicity, and marital status; ***education*** — highest grade completed in school, current aspirations, participation in adult education classes, and education received outside the country; ***labor market experiences*** — employment status, recent labor market experiences, and occupation; ***income*** — personal as well as household; and ***activities*** — voting behavior, hours spent watching television, frequency and content of newspaper reading, and use of literacy skills for work and leisure. These background data make it possible to gain an understanding of the ways in which personal characteristics are associated with demonstrated performance on each of the three literacy scales.²

Conducting the Survey

NALS was conducted during the first eight months of 1992 with a nationally representative sample of some 13,600 adults. More than 400 trained interviewers, some of whom were bilingual in English and Spanish, visited nearly 27,000 households to select and interview adults aged 16 and older, each of whom was asked to provide personal and background information and to complete a booklet of literacy tasks. Black and Hispanic households were

² A more detailed description of the NALS design and framework can be found in an interim report: A. Campbell, I.S. Kirsch, and A. Kolstad. (1992, October). *Assessing Literacy: The Framework for the National Adult Literacy Survey*. Washington, DC: National Center for Education Statistics.



oversampled to ensure reliable estimates of literacy proficiencies and to permit analyses of the performance of these subpopulations.

To give states an opportunity to explore the skill levels of their populations, each of the 50 states was invited to participate in a concurrent assessment. While many states expressed an interest, 11 elected to participate in the State Adult Literacy Survey. Approximately 1,000 adults aged 16 to 64 were surveyed in each of the following states:

California	Louisiana	Pennsylvania
Illinois	New Jersey	Texas
Indiana	New York	Washington
Iowa	Ohio	

To permit comparisons of the state and national results, the survey instruments administered to the state and national samples were identical and the data were gathered at the same time. Florida also participated in the state survey, but its data collection was unavoidably delayed until 1993.

Finally, more than 1,100 inmates in some 80 federal and state prisons were included in the survey. Their participation helped to provide better estimates of the literacy levels of the total population and make it possible to report on the literacy proficiencies of this important segment of society. To ensure comparability with the national survey, the simulation tasks given to the prison participants were the same as those given to the household survey population. However, to address issues of particular relevance to the prison population, a revised version of the background questionnaire was developed. This instrument drew questions from the 1991 Survey of Inmates of State Correctional Facilities sponsored by the Bureau of Justice Statistics of the U.S. Department of Justice. These included queries about current offenses, criminal history, and prison work assignments, as well as about education and labor force experiences.

Responses from the national household, the state, and prison samples were combined to yield the best possible performance estimates. Unfortunately, because of the delayed administration, the results from the Florida state survey could not be included in the national estimates. In all, more than 26,000 adults gave, on average, more than an hour of their time to complete the literacy tasks and background questionnaires. Participants who completed as much of the assessment as their skills allowed were paid \$20 for their time. The demographic characteristics of the adults who participated in NALS are presented in Table 1.

NALS**Table 1****The National Adult Literacy Survey Sample**

Total Population			
	Assessed Sample	National Population (in thousands)	Percentage of National Population
Total	26,091	191,289	100%
Sex			
Male	11,770	92,098	48
Female	14,279	98,901	52
Age			
16 to 18 years	1,237	10,424	5
19 to 24 years	3,344	24,515	13
25 to 39 years	10,050	63,278	33
40 to 54 years	6,310	43,794	23
55 to 64 years	2,924	19,503	10
65 years and older	2,214	29,735	16
Race/Ethnicity			
White	17,292	144,968	76
Black	4,963	21,192	11
Asian or Pacific Islander	438	4,116	2
American Indian or Alaskan Native	189	1,803	1
Other	83	729	0*
Hispanic/Mexican	1,776	10,235	5
Hispanic/Puerto Rican	405	2,190	1
Hispanic/Cuban	147	928	0*
Hispanic/Central or South American	424	2,608	1
Hispanic/Other	374	2,520	1

Prison Population			
	Assessed Sample	National Population (in thousands)	Percentage of National Population
Total	1,147	766	100%
Sex			
Male	1,076	723	94
Female	71	43	6
Race/Ethnicity			
White	417	266	35
Black	480	340	44
Asian or Pacific Islander	7	4	1
American Indian or Alaskan Native	27	18	2
Other	5	4	1
Hispanic groups	211	134	17

Notes: The total population includes adults living in households and those in prison. The sample sizes for subpopulations may not add up to the total sample sizes due to missing data. The race/ethnicity categories are mutually exclusive. Some estimates for small subgroups of the national population may be slightly different from 1990 Census estimates due to the sampling procedures used.

*Percentages below .5 are rounded to 0.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.



Further information on the design of the sample, the survey administration, the statistical analyses and special studies that were conducted, and the validity of the literacy scales will be available in a forthcoming technical report, to be published in 1994.

Reporting the Results

The results of the National Adult Literacy Survey are reported using three scales, each ranging from 0 to 500: a prose scale, a document scale, and a quantitative scale. The scores on each scale represent degrees of proficiency along that particular dimension of literacy. For example, a low score (below 225) on the document scale indicates that an individual has very limited skills in processing information from tables, charts, graphs, maps, and the like (even those that are brief and uncomplicated). On the other hand, a high score (above 375) indicates advanced skills in performing a variety of tasks that involve the use of complex documents.

Survey participants received proficiency scores according to their performance on the survey tasks. A relatively small proportion of the respondents answered only a part of the survey, and an imputation procedure was used to make the best possible estimates of their proficiencies. This procedure and related issues are detailed in the technical report.

Most respondents tended to obtain similar, though not identical, scores on the three literacy scales. This does not mean, however, that the underlying skills involved in prose, document, and quantitative literacy are the same. Each scale provides some unique information, especially when comparisons are made across groups defined by variables such as race/ethnicity, education, and age.

The literacy scales allow us not only to summarize results for various subpopulations, but also to determine the relative difficulty of the literacy tasks included in the survey. In other words, just as individuals received scale scores according to their performance in the assessment, the literacy tasks received specific scale values according to their difficulty, as determined by the performance of the adults who participated in the survey. Previous research has shown that the difficulty of a literacy task, and therefore its placement on the literacy scale, is determined by three factors: the *structure of the material* — for example, exposition, narrative, table, graph, map, or advertisement; the *content* of the material and/or the *context* from which it is drawn — for

example, home, work, or community; and the *nature of the task* — that is, what the individual is asked to do with the material, or his or her purpose for using it.³

The literacy tasks administered in NALS varied widely in terms of materials, content, and task requirements, and thus in terms of difficulty. This range is captured in Figure 1, which describes some of the literacy tasks and indicates their scale values.

Even a cursory review of this display reveals that tasks at the lower end of each scale differ from those at the high end. A more careful analysis of the range of tasks along each scale provides clear evidence of an ordered set of information-processing skills and strategies. On the prose scale, for example, tasks with low scale values ask readers to locate or identify information in brief, familiar, or uncomplicated materials, while those at the high end ask them to perform more demanding activities using materials that tend to be lengthy, unfamiliar, or complex. Similarly, on the document and quantitative scales, the tasks at the low end of the scale differ from those at the high end in terms of the structure of the material, the content and context of the material, and the nature of the directive.

In an attempt to capture this progression of information-processing skills and strategies, each scale was divided into five levels: *Level 1* (0 to 225), *Level 2* (226 to 275), *Level 3* (276 to 325), *Level 4* (326 to 375), and *Level 5* (376 to 500). The points and score ranges that separate these levels on each scale reflect shifts in the literacy skills and strategies required to perform increasingly complex tasks. The survey tasks were assigned to the appropriate point on the appropriate scale based on their difficulty as reflected in the performance of the nationally representative sample of adults surveyed. Analyses of the types of materials and demands that characterize each level reveal the progression of literacy demands along each scale (FIGURE 2).

While the literacy levels on each scale can be used to explore the range of literacy demands, these data do not reveal the types of literacy demands that are associated with particular contexts in this pluralistic society. That is, they do not enable us to say what specific level of prose, document, or quantitative skill is required to obtain, hold, or advance in a particular occupation, to manage a household, or to obtain legal or community services, for example. Nevertheless, the relationships among performance on the three scales and various social or economic indicators can provide valuable insights, and that is the goal of this report.

³ I.S. Kirsch and P.B. Mosenthal. (1990). "Exploring Document Literacy: Variables Underlying the Performance of Young Adults," *Reading Research Quarterly*, 25. pp. 5-30. P.B. Mosenthal and I.S. Kirsch. (1992). "Defining the Constructs of Adult Literacy," paper presented at the National Reading Conference, San Antonio, Texas.

NALS**Figure 1****Difficulty Values of Selected Tasks Along the Prose, Document, and Quantitative Literacy Scales**

	Prose	Document	Quantitative
0	149 Identify country in short article	69 Sign your name	191 Total a bank deposit entry
25	210 Locate one piece of information in sports article	151 Locate expiration date on driver's license	
	224 Underline sentence explaining action stated in short article	180 Locate time of meeting on a form	
225		214 Using pie graph, locate type of vehicle having specific sales	
	226 Underline meaning of a term given in government brochure on supplemental security income	232 Locate intersection on a street map	238 Calculate postage and fees for certified mail
	250 Locate two features of information in sports article	245 Locate eligibility from table of employee benefits	246 Determine difference in price between tickets for two shows
		259 Identify and enter background information on application for social security card	270 Calculate total costs of purchase from an order form
275	275 Interpret instructions from an appliance warranty	277 Identify information from bar graph depicting source of energy and year	278 Using calculator, calculate difference between regular and sale price from an advertisement
	280 Write a brief letter explaining error made on a credit card bill	296 Use sign out sheet to respond to call about resident	308 Using calculator, determine the discount from an oil bill if paid within 10 days
	304 Read a news article and identify a sentence that provides interpretation of a situation	314 Use bus schedule to determine appropriate bus for given set of conditions	
	316 Read lengthy article to identify two behaviors that meet a stated condition	323 Enter information given into an automobile maintenance record form	
325			
	328 State in writing an argument made in lengthy newspaper article	342 Identify the correct percentage meeting specified conditions from a table of such information	325 Plan travel arrangements for meeting using flight schedule
	347 Explain difference between two types of employee benefits	348 Use bus schedule to determine appropriate bus for given set of conditions	331 Determine correct change using information in a menu
	359 Contrast views expressed in two editorials on technologies available to make fuel-efficient cars		350 Using information stated in news article, calculate amount of money that should go to raising a child
	362 Generate unfamiliar theme from short poems		368 Using eligibility pamphlet, calculate the yearly amount a couple would receive for basic supplemental security income
	374 Compare two metaphors used in poem		
375			
	382 Compare approaches stated in narrative on growing up	379 Use table of information to determine pattern in oil exports across years	375 Calculate miles per gallon using information given on mileage record chart
	410 Summarize two ways lawyers may challenge prospective jurors	387 Using table comparing credit cards, identify the two categories used and write two differences between them	382 Determine individual and total costs on an order form for items in a catalog
	423 Interpret a brief phrase from a lengthy news article	396 Using a table depicting information about parental involvement in school survey to write a paragraph summarizing extent to which parents and teachers agree	405 Using information in news article, calculate difference in times for completing a race
500			421 Using calculator, determine the total cost of carpet to cover a room

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Description of the Prose, Document, and Quantitative Literacy Levels

	Prose	Document	Quantitative
Level 1 0-225	Most of the tasks in this level require the reader to read relatively short text to locate a single piece of information which is identical to or synonymous with the information given in the question or directive. If plausible but incorrect information is present in the text, it tends not to be located near the correct information.	Tasks in this level tend to require the reader either to locate a piece of information based on a literal match or to enter information from personal knowledge onto a document. Little, if any, distracting information is present.	Tasks in this level require readers to perform single, relatively simple arithmetic operations, such as addition. The numbers to be used are provided and the arithmetic operation to be performed is specified.
Level 2 226-275	Some tasks in this level require readers to locate a single piece of information in the text; however, several distractors or plausible but incorrect pieces of information may be present, or low-level inferences may be required. Other tasks require the reader to integrate two or more pieces of information or to compare and contrast easily identifiable information based on a criterion provided in the question or directive.	Tasks in this level are more varied than those in Level 1. Some require the readers to match a single piece of information; however, several distractors may be present, or the match may require low-level inferences. Tasks in this level may also ask the reader to cycle through information in a document or to integrate information from various parts of a document.	Tasks in this level typically require readers to perform a single operation using numbers that are either stated in the task or easily located in the material. The operation to be performed may be stated in the question or easily determined from the format of the material (for example, an order form).
Level 3 276-325	Tasks in this level tend to require readers to make literal or synonymous matches between the text and information given in the task, or to make matches that require low-level inferences. Other tasks ask readers to integrate information from dense or lengthy text that contains no organizational aids such as headings. Readers may also be asked to generate a response based on information that can be easily identified in the text. Distracting information is present, but is not located near the correct information.	Some tasks in this level require the reader to integrate multiple pieces of information from one or more documents. Others ask readers to cycle through rather complex tables or graphs which contain information that is irrelevant or inappropriate to the task.	In tasks in this level, two or more numbers are typically needed to solve the problem, and these must be found in the material. The operation(s) needed can be determined from the arithmetic relation terms used in the question or directive.
Level 4 326-375	These tasks require readers to perform multiple-feature matches and to integrate or synthesize information from complex or lengthy passages. More complex inferences are needed to perform successfully. Conditional information is frequently present in tasks at this level and must be taken into consideration by the reader.	Tasks in this level, like those at the previous levels, ask readers to perform multiple-feature matches, cycle through documents, and integrate information; however, they require a greater degree of inferencing. Many of these tasks require readers to provide numerous responses but do not designate how many responses are needed. Conditional information is also present in the document tasks at this level and must be taken into account by the reader.	These tasks tend to require readers to perform two or more sequential operations or a single operation in which the quantities are found in different types of displays, or the operations must be inferred from semantic information given or drawn from prior knowledge.
Level 5 376-500	Some tasks in this level require the reader to search for information in dense text which contains a number of plausible distractors. Others ask readers to make high-level inferences or use specialized background knowledge. Some tasks ask readers to contrast complex information.	Tasks in this level require the reader to search through complex displays that contain multiple distractors, to make high-level text-based inferences, and to use specialized knowledge.	These tasks require readers to perform multiple operations sequentially. They must disembed the features of the problem from text or rely on background knowledge to determine the quantities or operations needed.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

About This Report

This report is written in three sections. The next two sections present the results of the survey. Section I provides information on the distribution of literacy skills in the population as a whole and in an array of subgroups defined by level of education, age, race/ethnicity, country of birth, region of the country, and disability status. Section II explores how literacy levels relate to employment and earnings, poverty status, sources of income, voting behavior, and reading activities.

Section III describes the levels of literacy for each scale, providing contextual information that illuminates the proficiency results presented in the first and second sections. Sample tasks are reproduced to illustrate the characteristics of specific tasks as well as to show the range of performance demands on each scale. In addition, the knowledge and skills reflected in these tasks are analyzed.

In interpreting the results herein, readers should bear in mind that the literacy tasks contained in this assessment and the adults invited to participate in the survey are samples drawn from their two respective universes. As such, they are subject to some measurable degree of uncertainty. Scientific procedures employed in the study design and the scaling of literacy tasks permit a high degree of confidence in the resulting estimates of task difficulty. Similarly, the sampling design and weighting procedures applied in this survey assure that participants' responses can be generalized to the populations of interest.

In an effort to make this report as readable as possible, numbers throughout have been rounded and presented without standard errors (or estimates about their accuracy). Where differences between various subpopulations are discussed, the comparisons are based on statistical tests that consider the magnitude of the differences (for example, the difference in average document proficiency between high school and college graduates), the size of the standard errors associated with the numbers being compared, and the number of comparisons being made. Only statistically significant differences (at the .05 level) are discussed herein. Readers who are interested in making their own comparisons are therefore advised not to use the numbers alone to compare various groups, but rather to rely on statistical tests.⁴

Throughout this report, graphs are used to communicate the results to a broad audience, as well as to provide a source of informative displays which

⁴ To determine whether the difference between two groups is statistically significant, one must estimate the degree of uncertainty (or the standard error) associated with the difference. To do so, one squares each group's standard error, sums these squared standard errors, then takes the square root of this sum. The difference between the two groups plus or minus twice the standard error of the difference is the confidence interval. If the confidence interval does not contain zero, then the difference between the two groups is said to be statistically significant.



policymakers and others may wish to use for their own purposes. More technical information is presented in the appendices at the end of the report.

The goal of this report is to provide useful information to all those who wish to understand the current status of literacy among America's adults and to strengthen existing adult literacy policies and programs. In considering the results, the reader should keep in mind that this was a survey of literacy in the English language — not literacy in any universal sense of the word. Thus, the results do not capture the literacy resources and abilities that some respondents possess in languages other than English.

A Note on Interpretations

In reviewing the information contained in this report, readers should be aware that no single factor determines what an individual's literacy proficiencies will be. All of us develop our own unique repertoire of competencies depending on a wide array of conditions and circumstances, including our family backgrounds, educational attainments, interests and aspirations, economic resources, and employment experiences. Any single survey, this one included, can focus on only some of these variables.

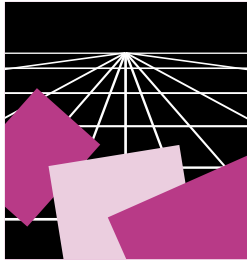
Further, while the survey results reveal certain characteristics that are related to literacy, the nature of the survey makes it impossible to determine the direction of these relationships. In other words, it is impossible to identify the extent to which literacy shapes particular aspects of our lives or is, in turn, shaped by them. For example, there is a strong relationship between educational attainment and literacy proficiencies. On the one hand, it is likely that staying in school longer does strengthen an individual's literacy skills. On the other hand, it is also true that those with more advanced skills tend to remain in school longer. Other variables, as well, are likely to play a role in the relationship between literacy and education. In interpreting such relationships in this report, the authors strive to acknowledge the many factors involved.

A final note deserves emphasis. This report describes the literacy proficiencies of various subpopulations defined by characteristics such as age, sex, race, ethnicity, and educational background. While certain groups demonstrated lower literacy skills than others on average, within every group there were some individuals who performed well and some who performed poorly. Accordingly, when one group is said to have lower average proficiencies than another, this does not imply that all adults in the first group performed worse than those in the second. Such statements are only intended to highlight general patterns of differences among various groups and therefore do not capture the variability within each group.





14 Introduction



SECTION I

The Prose, Document, and Quantitative Literacies of America's Adults

The National Adult Literacy Survey gathered information on multiple dimensions of adult literacy. This section of the report profiles the prose, document, and quantitative literacy skills of the adult population and examines the complex relationships between literacy proficiencies and various demographic and background characteristics. For example, we compare the literacy proficiencies that adults demonstrated in this assessment with their self-reported evaluations of their reading and writing skills in English. Performance results are also reported for adults in terms of their level of educational attainment, age, race/ethnicity, region, and sex. The literacy skills of the total adult population and the prison population are compared, and the results for various racial/ethnic groups are described with respect to age, country of birth, and education.¹

The results of the National Adult Literacy Survey are examined in two ways. General comparisons of literacy proficiency are made by examining the average performance of various subpopulations on each of the literacy scales. This information is interesting in and of itself, but it says little about how literacy is distributed among America's adults. To explore the range of literacy skills in the total population and in various subpopulations, the percentages of adults who performed in each level on the prose, document, and quantitative literacy scales are also presented. As described in the Introduction, five literacy levels were defined along each of the scales: **Level 1** (ranging from 0 to 225), **Level 2** (226 to 275), **Level 3** (276 to 325), **Level 4** (326 to 375), and **Level 5** (376 to 500).²

Because each literacy level encompasses a range on a given scale, the tasks in any particular level are not homogeneous, and neither are the individuals who performed in that level. Tasks in the high end of the range for a given level

¹ All subpopulations and variables discussed in this report are defined in the appendices.

² An overview of the literacy levels on each scale is provided in the Introduction. Section III describes the levels in more detail and includes examples of the types of tasks that were likely to be performed successfully by individuals in each level.



are more challenging than those in the low end, just as individuals whose proficiencies are in the high end of a level demonstrated success on a more challenging set of literacy tasks than individuals in the low end. The group of adults in Level 1 is especially heterogeneous, as it includes individuals who successfully performed only the relatively undemanding literacy tasks, those who attempted to perform these tasks but did not succeed, and those with such limited skills (or such limited English proficiency) that they did not try to respond at all. Thus, while the literacy levels are discussed as distinct units in this section, the heterogeneity of performance within each level should be kept in mind.

Results for the Total Population

Twenty-one percent of adults performed in Level 1 on the prose scale, while 23 percent performed in this level on the document scale and 22 percent were in this level on the quantitative scale (FIGURE 1.1). Translated into population terms, between 40 and 44 million adults nationwide demonstrated skills in the lowest literacy level defined.

What do these results mean? As noted earlier, there was a range of performance within Level 1. Some individuals in this level displayed the ability to read relatively short pieces of text to find a single piece of information. Some were able to enter personal information, such as their name, onto a document, or to locate the time of an event on a form. Some were able to add numbers on a bank deposit slip, or to perform other simple arithmetic operations using numbers presented to them. Other adults in Level 1, however, did not demonstrate the ability to perform even these fairly common and uncomplicated literacy tasks. There were individuals who had such limited skills that they were able to complete only part of the survey, and others who attempted to perform the literacy tasks they were given and were unsuccessful.

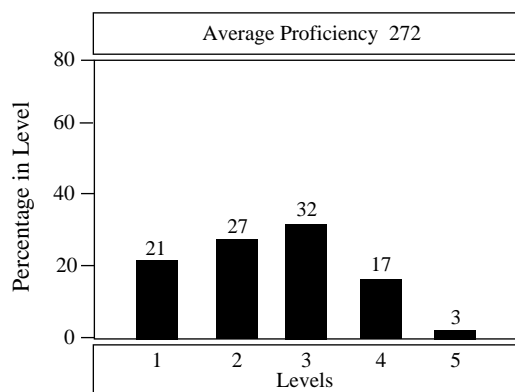
To understand these results, it is helpful to examine the characteristics of adults who demonstrated performance in Level 1. On the prose scale, for example, approximately one-quarter of the individuals who performed in this level reported that they were born in another country, and some of them were undoubtedly recent immigrants with a limited command of English (TABLE 1.1). In addition, 62 percent of the individuals in Level 1 on the prose scale said they had not completed high school; 35 percent, in fact, had finished no more than 8 years of schooling. Relatively high percentages of the respondents in this level were Black, Hispanic, or Asian/Pacific Islander, and many — approximately 33 percent — were age 65 or older. Further, 26 percent of the adults who performed in Level 1 said they had a physical, mental, or health condition that

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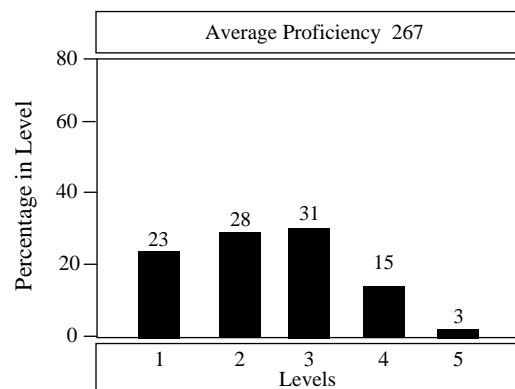
Figure 1.1

Literacy Levels and Average Literacy Proficiencies for the Total Population

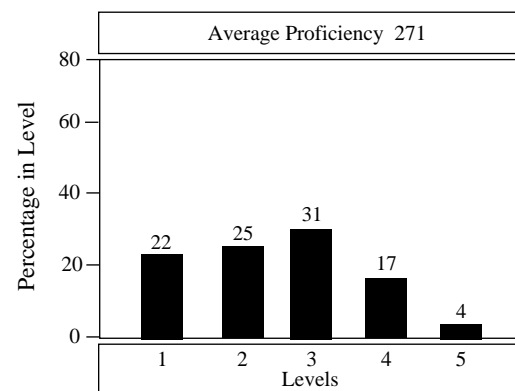
PROSE



DOCUMENT



QUANTITATIVE



Level 1 (0 to 225) Level 2 (226 to 275) Level 3 (276 to 325) Level 4 (326 to 375) Level 5 (376 to 500)

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**Percentages of Adults with Selected Characteristics, Prose Level 1
and Total Populations**

	Prose Level 1 Population	Total Population
Country of Birth		
Born in another country	25	10
Highest Level of Education Completed		
0 to 8 years	35	10
9 to 12 years	27	13
High school diploma	21	27
GED	3	4
Race/Ethnicity		
White	51	76
Black	20	11
Hispanic	23	10
Asian/Pacific Islander	4	2
Age		
16 to 24 years	13	18
65 years and older	33	16
Disability or Condition		
Any physical, mental, or health condition	26	12
Visual difficulty	19	7
Hearing difficulty	13	7
Learning disability	9	3

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

kept them from participating fully in work and other activities, and 19 percent reported having vision problems that made it difficult for them to read print. In sum, the individuals in Level 1 had a diverse set of characteristics that influenced their performance in the assessment.

Across the three literacy scales, between 25 and 28 percent of the individuals surveyed — representing as many as 54 million adults nationwide — performed in Level 2. On the prose scale, those whose proficiencies lie **within** the range for this level demonstrated the ability to make low-level **inferences** based on what they read and to compare or contrast information **that can easily be found in text**. Individuals in Level 2 on the document scale **were generally** able to locate a piece of information in a document in which **plausible but**

incorrect information was also present. Individuals in Level 2 on the quantitative scale were likely to give correct responses to a task involving a single arithmetic operation using numbers that can easily be located in printed material.

Nearly one-third of the respondents, representing some 61 million adults across the country, performed in Level 3 on each of the literacy scales. Those in this level on the prose scale demonstrated the ability to match pieces of information by making low-level inferences and to integrate information from relatively long or dense text. Those in the third level on the document scale were generally able to integrate multiple pieces of information found in documents. Adults in Level 3 on the quantitative scale demonstrated the ability to perform arithmetic operations by using two or more numbers found in printed material and by interpreting arithmetic terms included in the question.

Seventeen percent of the adults performed in Level 4 on the prose and quantitative scales, while 15 percent were in this level on the document scale. These respondents, who completed many of the more difficult assessment tasks successfully, represent from 29 to almost 33 million individuals nationwide. Looking across the scales, adults in Level 4 displayed an ability to synthesize information from lengthy or complex passages, to make inferences based on text and documents, and to perform sequential arithmetic operations using numbers found in different types of displays. To give correct responses to these types of tasks, readers were often required to make high level text-based inferences or to draw on their background knowledge.

Only 3 percent of the respondents performed in Level 5 on the prose and document scales, and 4 percent performed in this level on the quantitative scale. Some tasks at this level required readers to contrast complex information found in written materials, while others required them to make high level inferences or to search for information in dense text. On the document scale, adults performing in Level 5 showed the ability to use specialized knowledge and to search through complex displays for particular pieces of information. Respondents in the highest level on the quantitative scale demonstrated the ability to determine the features of arithmetic problems either by examining text or by using background knowledge, and then to perform the multiple arithmetic operations required. Between 6 and 8 million adults nationwide demonstrated success on these types of tasks — the most difficult of those included in the survey.

One of the questions that arises from these data is whether people with restricted skills perceived themselves as having inadequate or limited English literacy proficiency. To address this question, we identified the percentages of individuals in each level on the scales who responded “not well” or “not at all” to the questions, “How well do you read English?” and “How well do you write English?” (TABLE 1.2)



NALS**Table 1.2****Percentages of Adults Who Reported Not Being Able to Read or Write English Well, by Literacy Level**

	Total Population	Level 1	Level 2	Level 3	Level 4	Level 5
Reading						
Prose	7	29	3	1	0*	0*
Document	7	25	3	1	0*	0*
Quantitative	7	26	3	1	0*	0*
Writing						
Prose	10	34	6	2	1	0*
Document	10	30	6	3	1	0*
Quantitative	10	30	7	3	1	0*

*Percentages below .5 are rounded to 0.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

When these self-reported evaluations of English literacy are compared with the data on actual performance, an interesting contrast appears. Of the 40 to 44 million adults who performed in Level 1 on the prose scale (as shown in Figure 1.1), only 29 percent said they did not read English well and 34 percent said they did not write English well. Similarly, on the document scale, 25 percent of the adults who performed in Level 1 reported having limited reading skills and 30 percent reported having limited writing skills. On the quantitative scale, 26 percent of the respondents in Level 1 reported not being able to read well and 30 percent said they did not write well.

The gap between performance and perception continues in Level 2. On each scale, only 3 to 7 percent of the individuals in this level said they did not read or write English well. These data indicate that the overwhelming majority of adults who demonstrated low levels of literacy did not perceive that they had a problem with respect to reading or writing in English. Such a mismatch may well have a significant impact on efforts to provide education and training to adults: Those who do not believe they have a problem will be less likely to seek out such services or less willing to take advantage of services that might be available to them.

Another way to determine how adults view their ability to read and write in English is to ask how often they receive help from others in performing everyday prose, document, and quantitative literacy tasks. Such questions were included in the survey, and the responses indicate that individuals who performed in the Level 1 range on each scale were far more likely than those in the higher levels to say that they get a lot of assistance with everyday literacy tasks (TABLE 1.3). Specifically, individuals in the lowest level of prose literacy were more likely than those in the higher levels to get a lot of help in reading printed information; adults in the lowest level of document literacy were more likely to get a lot of assistance in filling out forms; and adults in the lowest level of quantitative literacy were more likely to get a lot of help in using basic arithmetic.

Overall, 9 percent of the adults surveyed said they get a lot of help from family members or friends with printed information associated with government agencies, public companies, private businesses, hospitals, and so on. Yet, a much higher percentage of respondents in Level 1 on the prose scale — 23 percent — reported getting a lot of help with these types of materials. Relatively small proportions of the adults in the other literacy levels said they receive assistance with everyday prose tasks.

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Table 1.3

Percentages of Adults Who Reported Getting A Lot of Help from Family Members or Friends With Various Types of Everyday Literacy Tasks, by Literacy Level

	Total Population	Level 1	Level 2	Level 3	Level 4	Level 5
Prose tasks: printed information	9	23	8	5	2	1
Document tasks: filling out forms	12	25	12	7	4	2
Quantitative tasks: using basic arithmetic	5	14	4	2	1	0*

*Percentages below .5 are rounded to 0.

Note: The first row presents responses for adults in each level of *prose* literacy; the second row presents responses for adults in each level of *document* literacy; and the third row presents responses for adults in each level of *quantitative* literacy.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.



Twelve percent of the total population reported getting a lot of help from family members or friends with filling out forms. Again, however, those in the lowest level of document literacy were far more likely than those in the higher levels to report getting a lot of help with these types of everyday document tasks. One-quarter of those in Level 1, 12 percent of those in Level 2, and smaller percentages of those in the higher levels said they get a lot of help with forms.

Just 5 percent of the total adult population reported getting a lot of assistance in using basic arithmetic when filling out order forms or balancing a checkbook. Yet, a much higher percentage of adults in Level 1 on the quantitative scale — 14 percent — said they receive a lot of help from family and friends on these types of quantitative tasks. Smaller proportions of adults in Levels 2 through 5 on this scale reported getting a lot of help from others in using basic arithmetic.

Two patterns are apparent in the responses to these questions. First, individuals in Level 1 on each scale were considerably more likely than those in the higher proficiency levels to say they get a lot of help from family or friends with prose, document, and quantitative literacy tasks encountered in everyday life. Second, the proportions of adults in Level 1 on each scale who said they get a lot of help with these types of tasks are lower than might be expected. Across the scales, just 14 to 25 percent of the respondents in the lowest literacy level reported getting a lot of help reading printed information, filling out forms, and using basic arithmetic.

Taken together, the data in Tables 1.1 and 1.2 indicate that most adults who performed in the lowest level on each literacy scale believed they read and write English well, and most reportedly did not get a lot of assistance from friends or family with everyday literacy tasks. Of the 40 to 44 million adults who demonstrated the most limited skills, only about 14 million or fewer said they do not read or write English well, and as few as 6 million said they get a lot of assistance with everyday prose, document, and quantitative literacy tasks.

Trends in the Literacy Skills of Young Adults

In examining the literacy proficiencies of the adult population, one of the questions that naturally arises is whether skills are improving or slipping over time. Using the NALS data, this question can be addressed by comparing the performance of 21- to 25-year-olds assessed in 1985 first with young adults in the same age group who were assessed in 1992, and second with 28- to 32-year-olds assessed in 1992, who were 21 to 25 years old in 1985. These comparisons are possible because the same definition of literacy was used in this survey and

the young adult survey and because a common set of prose, document, and quantitative literacy tasks was administered in both assessments.

Since the earlier study assessed the skills of individuals aged 21 to 25 who were living in households, the NALS data were reanalyzed to determine the proficiencies of adults in the 21 to 25 age group and those in the 28 to 32 age group who were living in households at the time of the 1992 survey. Adults in prison were excluded from the analyses to make the samples more comparable.³

These comparisons reveal that the average prose, document, and quantitative proficiencies of America's young adults were somewhat lower in 1992 than they were seven years earlier (FIGURE 1.2). While 21- to 25-year-olds assessed in 1985 demonstrated average proficiencies of about 293 on each of the literacy scales, the scores of 21- to 25-year-olds assessed in 1992 were 11 to 14 points lower: 281 on the prose and document scales and 279 on the quantitative scale. The average proficiencies of adults aged 28 to 32 who participated in the 1992 survey were also lower than those of 21- to 25-year-olds in the earlier survey, by 10 to 11 points across the three scales.

Many factors may be involved, but the discrepancies in literacy performance between the 1985 and 1992 respondents can be explained at least in part by changes in the composition of the young adult population. While the proportions of young Black adults changed little from one survey to the next (13 percent to 11 percent), and the percentages of White adults decreased (from 76 to 70 percent), the percentages of young Hispanic adults doubled, rising from 7 percent of the 1985 survey participants to 15 percent of the 21- to 25-year-old NALS participants. Many of these Hispanic individuals were born in other countries and are learning English as a second language.

When one examines the trends in literacy proficiencies within various racial or ethnic groups, different patterns are visible.⁴ Among White adults, those aged 21 to 25 who were assessed in 1992 demonstrated lower average proficiencies than adults in this same age group who participated in the 1985 survey. Performance declined from 305 to 296 on both the prose and document scales, and from 304 to 295 on the quantitative scale. In contrast, the average prose, document, and quantitative proficiencies of 28- to 32-year-olds assessed in 1992 were not significantly different from those of adults aged 21 to 25 who were assessed in 1985.

³ To further enhance the comparability of the 1985 and 1992 survey results, the 1985 data were reanalyzed using the same statistical procedures that were used in NALS. For example, respondents who completed only part of the survey were eliminated from the 1985 analyses but were included in the analyses for the current study. As a result of such adjustments, the 1985 survey results reported here are slightly different from those in previous reports. These issues and procedures are to be discussed in the technical report.

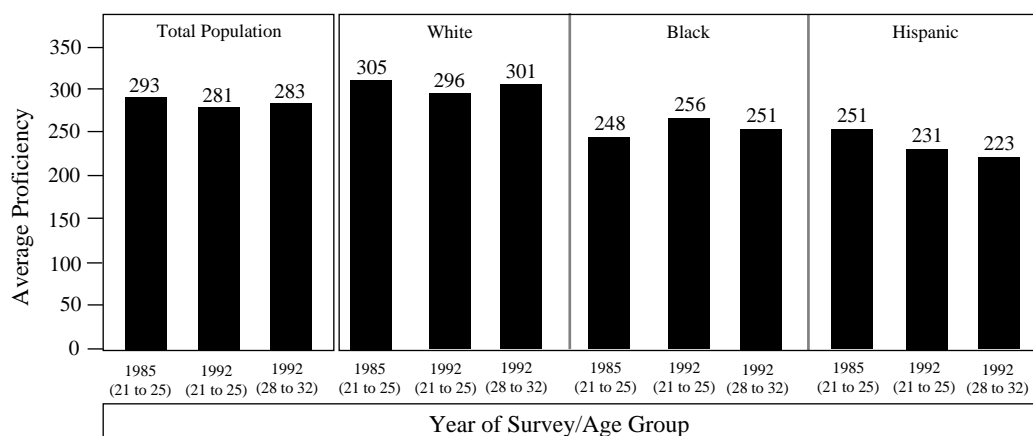
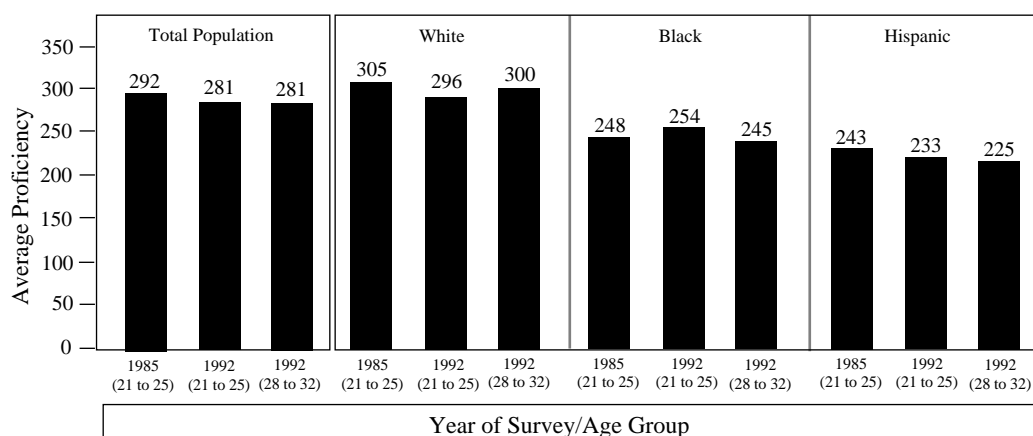
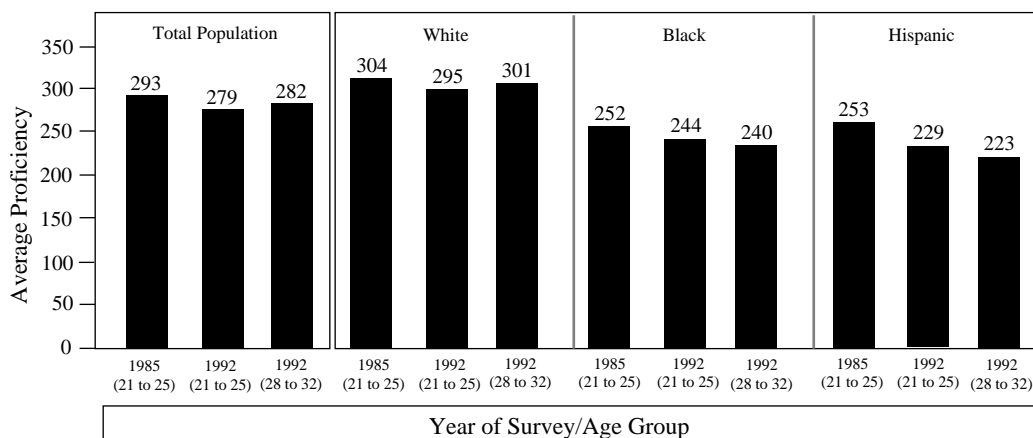
⁴ Trends in the performance of White, Black, and Hispanic adults are discussed here; the numbers of Asian/Pacific Islanders who participated in the 1985 survey were too small to permit reliable comparisons across the two surveys.



Figure 1.2

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Average Literacy Proficiencies of Young Adults, 1985 and 1992

PROSE**DOCUMENT****QUANTITATIVE**

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

The pattern for Black individuals is somewhat different. The average prose, document, and quantitative proficiencies of 21- to 25-year-old Black adults assessed in 1992 were comparable to those of young Black adults assessed in 1985. Black NALS participants in the 28 to 32 age group demonstrated similar prose and document proficiencies but lower quantitative scores (240 compared with 252) than participants in the young adult survey.

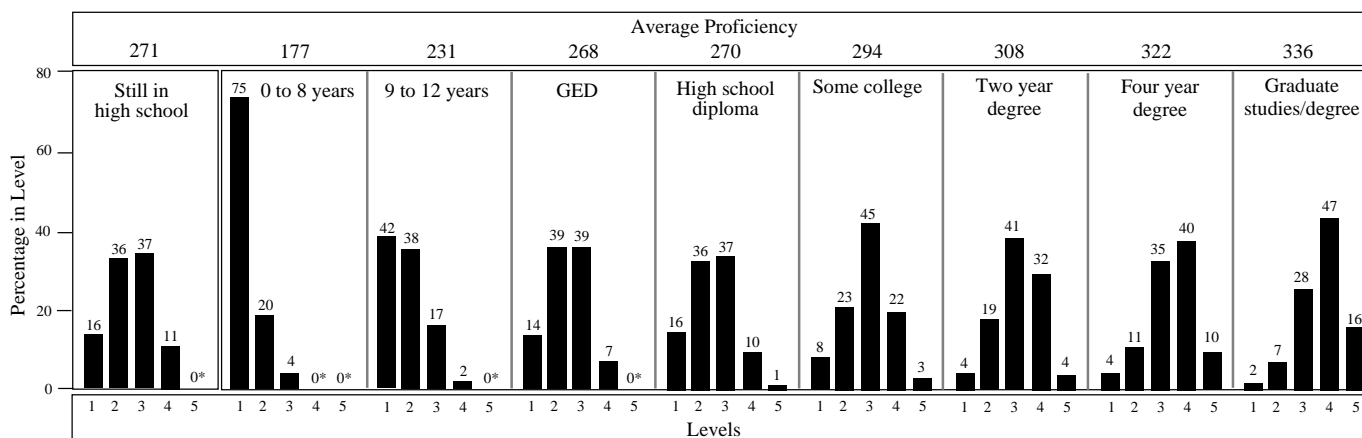
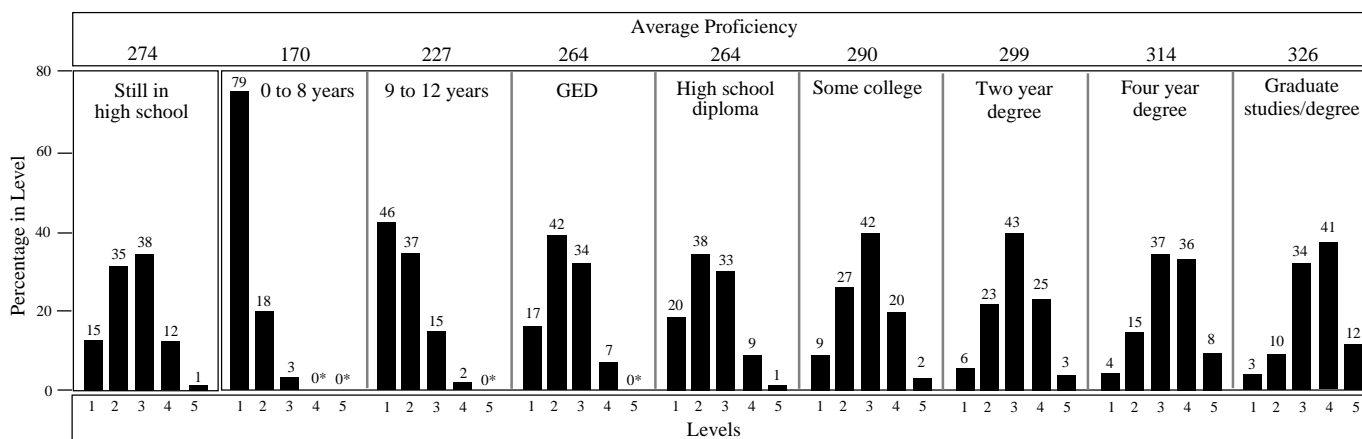
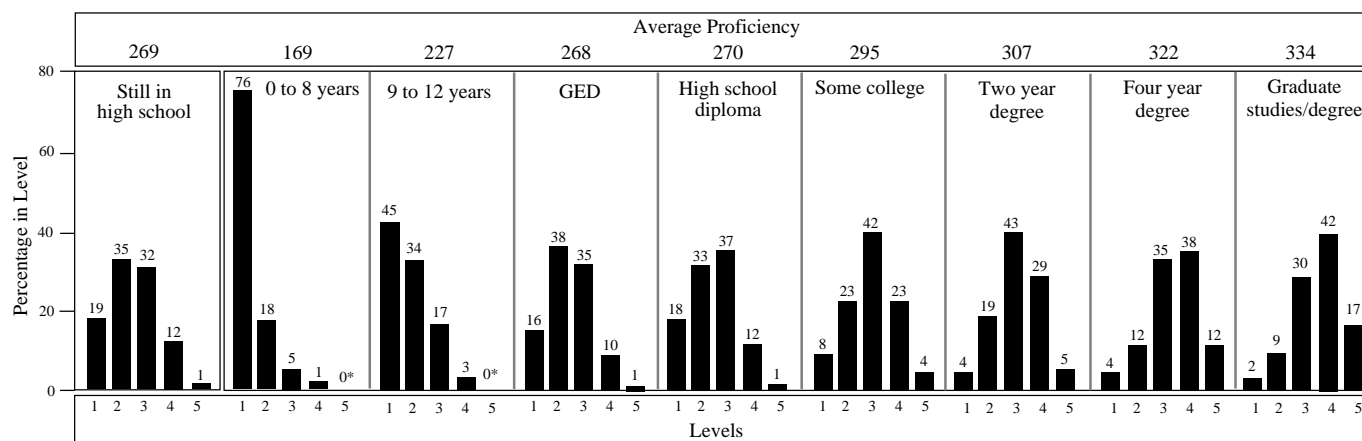
When the literacy skills of young Hispanic adults assessed in 1985 are compared with the skills of those assessed in 1992, still a different pattern is seen. Hispanic adults aged 21 to 25 who participated in the earlier assessment demonstrated an average prose score of 251, an average document score of 243, and an average quantitative score of 253. Their same-age peers who participated in the 1992 assessment demonstrated quantitative proficiencies that were 24 points lower. While their average prose and document scores were also lower, the 10- to 20-point differences did not reach statistical significance. Hispanic adults aged 28 to 32 who participated in the 1992 survey demonstrated lower average prose and quantitative proficiencies than young Hispanic adults who participated in the 1985 survey. The proficiency gap on the prose scale was 28 points, while on the quantitative scale, it was 30 points. Although large, the 18-point difference on the document scale did not reach statistical significance. Again, these performance differences between the 1985 and 1992 surveys can be explained, at least in part, by demographic changes in the young adult population over the seven-year period.

Results by Level of Education

A primary means of transmitting literacy to succeeding generations is the school system. Not surprisingly, then, among all the variables explored in the survey, the level of education attained in the United States has the strongest relationship with demonstrated literacy proficiency (FIGURE 1.3). Adults with higher levels of education demonstrated much higher average proficiencies than those with fewer years of schooling. As previously observed, however, the relationship between schooling and literacy is complex. Schooling surely increases an individual's skills, but it is also true that individuals with higher proficiencies are more likely to extend their schooling.

What is most interesting is the steady rise in average literacy proficiencies across the entire range of education levels. (Throughout this section, "level of education" refers to the highest level of education that respondents reported having completed at the time of the survey.) The average prose proficiency of adults who did not go beyond eighth grade was 177, compared with 270 for those who completed high school but went no further, 322 for those whose



NALS**Figure 1.3****Literacy Levels and Average Literacy Proficiencies, by Highest Level of Education Completed****PROSE****DOCUMENT****QUANTITATIVE**

*Percentages below .5 are rounded to 0.

Level 1 (0 to 225) **Level 2** (226 to 275) **Level 3** (276 to 325) **Level 4** (326 to 375) **Level 5** (376 to 500)

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

highest level of education was a four-year college degree, and 336 for those who had completed some graduate studies beyond the four-year degree. Similar patterns are evident on the document and quantitative scales, where those with higher levels of education also displayed more advanced literacy skills.

Stated another way, the difference in average prose proficiencies between those who completed no more than 8 years of education and those who had completed at least some graduate work is nearly 160 points. This translates to a gap of roughly three proficiency levels, representing, on average, a very large difference in literacy skills and strategies. This may mean the difference, for example, between being able to identify a piece of information in a short news article and being able to compare and contrast information in lengthy text. While adults with less than a high school education performed primarily in Level 1, those who finished secondary school performed, on average, in the high end of Level 2, those who received a college degree demonstrated average proficiencies associated with the high end of Level 3, and those who had completed some work beyond the four-year degree performed within the range of Level 4.

On the whole, the performance of high school graduates was not as strong as might be desired. On each scale, between 16 and 20 percent of adults with high school diplomas performed in Level 1, and between 33 and 38 percent performed in Level 2. Conversely, only 10 to 13 percent of high school graduates reached the two highest levels. As expected, the performance of adults with General Educational Development (GED) certificates was nearly identical to that of adults with high school diplomas. The average proficiencies and the distributions across the literacy levels were highly similar for these two groups.

Large percentages of four-year college graduates reached the higher levels on each of the literacy scales. Fifty percent were in Levels 4 or 5 on the prose and quantitative scales, while 44 percent reached those levels on the document scale. Still, the percentages who performed in the two lowest levels are quite large: 15 percent on the prose scale, 19 percent on the document scale, and 16 percent on the quantitative scale.

The relationship between education and literacy will be further explored in an upcoming special report.



Results by Parents' Level of Education

The differences in literacy proficiencies among various groups are the result of many factors, some of which can be controlled by individuals and some of which cannot. Previous work investigating the intergenerational nature of literacy has revealed the major role that parents' economic status and educational attainment play in their children's success in school. Accordingly, adults participating in the NALS were asked to indicate the highest level of education that each of their parents had completed, and the highest level of education attained by either parent was used in these analyses.

Given that parents' education is a proxy for socioeconomic status, interests, and aspirations, one would expect to find that adults whose parents completed more years of education demonstrate more advanced literacy skills than those whose parents have limited education. This pattern is, in fact, evident in the NALS results. Individuals who reported that their parents earned college degrees demonstrated higher prose, document, and quantitative proficiency scores, on average, than those whose parents had not continued this far in their education. On the prose scale, for example, adults whose parents completed a college degree had an average score of 305, while those whose parents had not finished high school had an average proficiency of 264.

The important role of parents' education in the literacy skills of their offspring is underscored when the data on respondents' educational attainment are viewed as a function of their parents' educational attainment. For example, adults with high school diplomas had an average prose score of 255 if their parents completed 0 to 8 years of education; 267 if their parents attended high school but did not receive a diploma; 275 if their parents graduated from high school; and 286 if their parents earned a four-year degree (FIGURE 1.4). These trends are similar for each scale and each level of educational attainment, although not all comparisons are statistically significant.

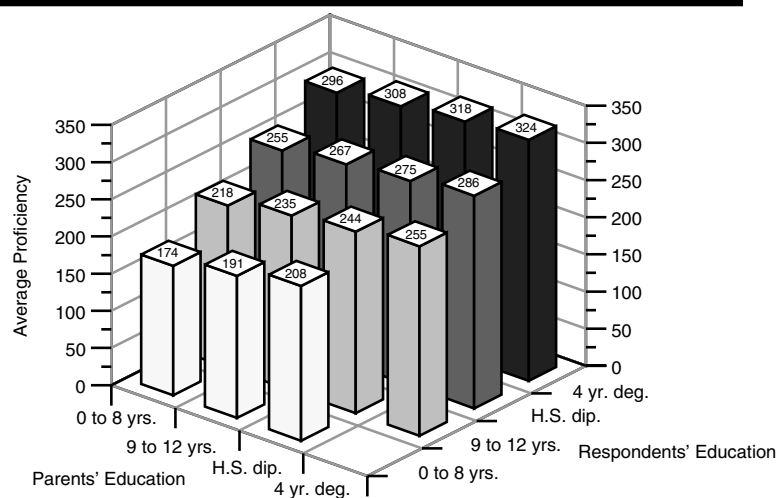
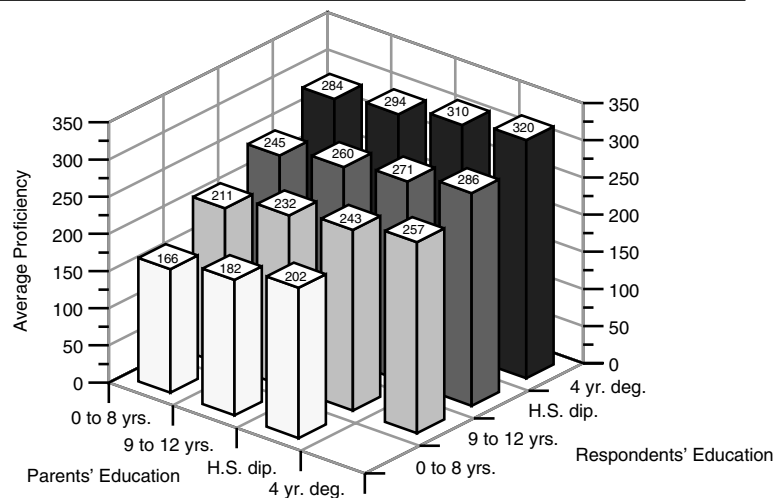
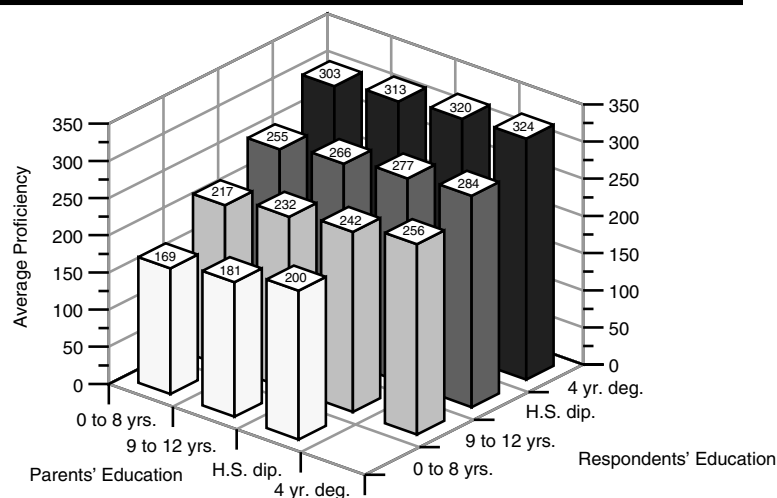
While parents' education is clearly related to adults' proficiencies, the relationship between literacy proficiency and respondents' own level of education is even stronger. Within each category of parental education, adults who had completed more years of education demonstrated higher average proficiencies than those who had completed fewer years. For example, among individuals whose parents had completed no more than eight years of education, those who had attended high school but did not earn a diploma outperformed those with 0 to 8 years of education; the average prose proficiencies of these two groups were 218 and 174, respectively. Adults who completed high school attained an average prose score of 255, while those who earned a four-year college degree had an average score of 296.



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Figure 1.4

Average Literacy Proficiencies, by Level of Education Attained by Adults and Their Parents

PROSE**DOCUMENT****QUANTITATIVE**

Notes: This figure presents results for only part of the population: those adults who represent a range of educational attainments. The numbers of adults with 0 to 8 years of education whose parents had a four year degree are too small to provide reliable proficiency estimates.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

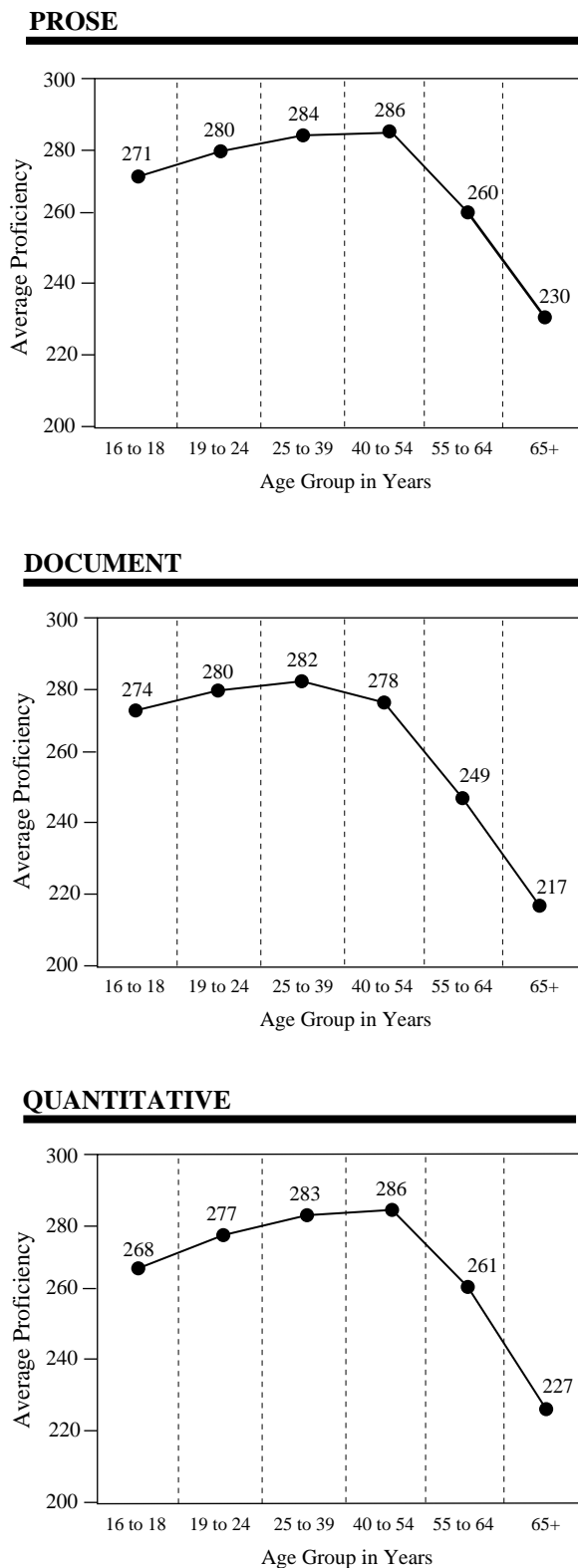
Results by Age

The variations in performance across the age groups are highly similar for the prose and quantitative scales. On both of these scales, average scores increased from the teenage years up to the middle forties, with the largest increase occurring between 16- to 18-year-olds and 19- to 24-year-olds (FIGURE 1.5). Average proficiencies then declined sharply, falling approximately 25 points between the 40 to 54 age group and the 55 to 64 age group, and another 30 points or so between that group and the oldest adults.

On the document scale, the performance of the first four age groups (16 to 18, 19 to 24, 25 to 39, and 40 to 54) seems to be more similar than is the case on the prose and quantitative scales. Again, however, there are sharp declines in performance between adults aged 40 to 54 and those aged 55 to 64, and then for individuals 65 years and older. These decreases are 29 and 32 points, respectively, while the largest difference among the younger four age groups is 6 points.

To understand these declines in performance, it is helpful to compare the educational attainments of adults in the various age groups. These data clearly show that older adults (that is, individuals between the ages of 55 and 64 and those 65 and older) completed fewer years of schooling, on average, than did adults in the younger age groups (TABLE 1.4). The one exception is for 16- to 18-year-olds, many of whom are still in school.

The differences across the age groups in years of schooling parallel the differences in literacy proficiencies. Just as average performance declines among adults in the two oldest age groups, so too do the average years of schooling. Thus, it appears that some of the decrease in literacy skills across the age cohorts can be attributed to fewer years of schooling. Different immigration patterns may also help to explain the decline, as may other factors not examined in this survey. These patterns and relationships will be explored more fully in forthcoming reports on literacy among older adults and on literacy and education.

NALS**Figure 1.5****Average Literacy Proficiencies, by Age**

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.



Average Years of Schooling, by Age

Age	Average Years of Schooling*
16 to 18 years**	10.8
19 to 24 years**	12.5
25 to 39 years	12.9
40 to 54 years	13.1
55 to 64 years	11.8
65 years and older	10.7

*in this country.

**Many adults in these age groups are still in school.

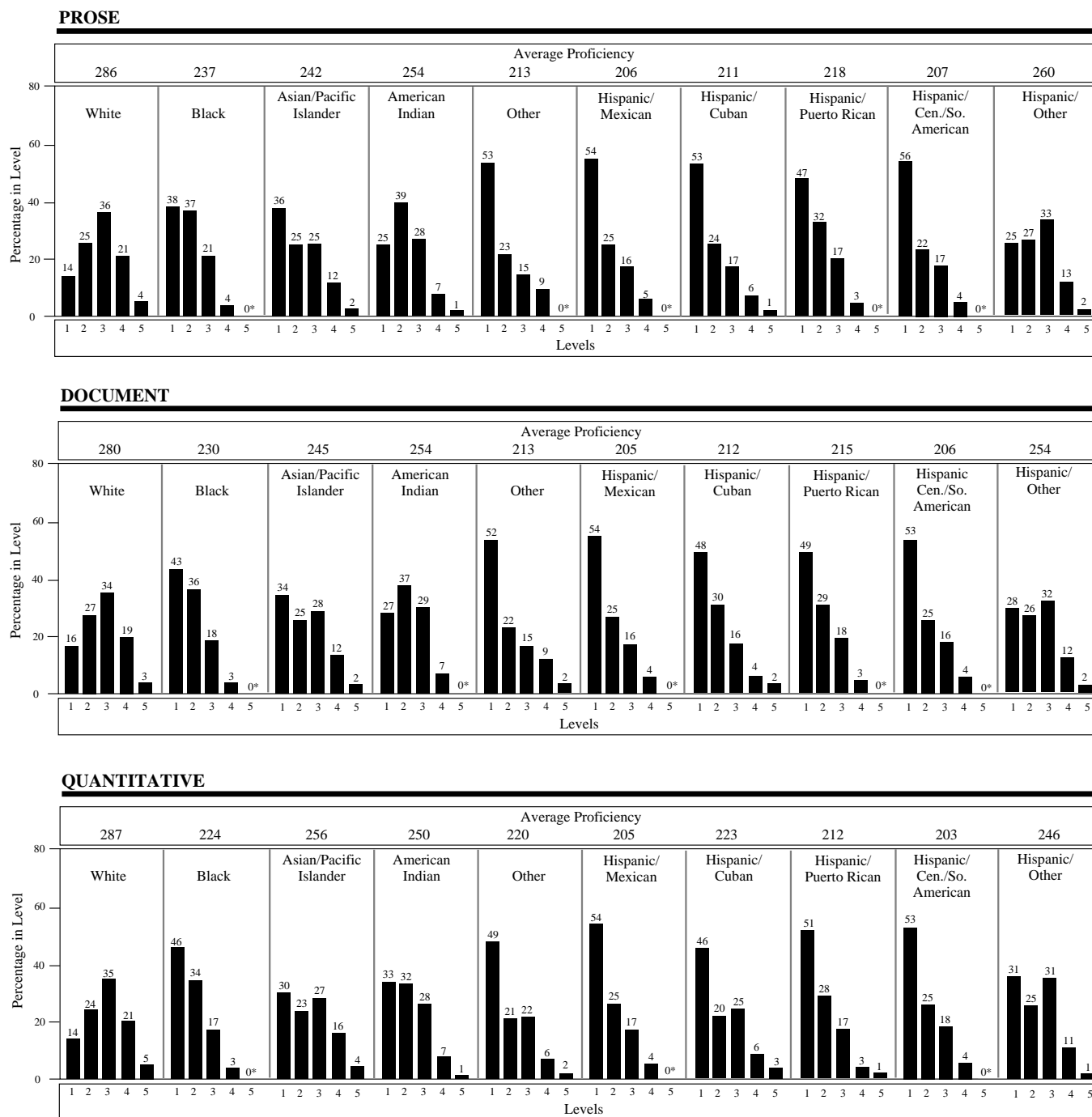
Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Results by Race/Ethnicity

Because such a large number of adults participated in this survey, it is possible to report performance results for many more racial/ethnic groups than has been possible in the past.

The average prose literacy of White adults is 26 to 80 points higher than that of any of the other nine racial/ethnic groups reported here (FIGURE 1.6). Similar patterns are evident on the document and quantitative scales. On the document scale, the average scores of White adults are between 26 and 75 points higher than those of other groups, while on quantitative scale they are from 31 to 84 points higher.

With the exception of Hispanic/Other adults, the average proficiencies of the Hispanic subpopulations are not significantly different from one another. On average, Mexican and Central/South American adults were outperformed by Black adults. In contrast, Hispanic/Other adults outperformed Black adults on the prose and document scales by more than 20 points. (On the quantitative scale, the difference is not significant.) Their performance was, on average, similar to that of Asian/Pacific Islander adults and American Indian/Alaskan Native adults.

NALS**Figure 1.6****Literacy Levels and Average Literacy Proficiencies, by Race/Ethnicity**

*Percentages below .5 are rounded to 0.

Level 1 (0 to 225) **Level 2** (226 to 275) **Level 3** (276 to 325) **Level 4** (326 to 375) **Level 5** (376 to 500)

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

When one compares the average proficiency results for White and Black adults and for White and Asian/Pacific Islander adults, one sees very different patterns across the three literacy scales. While the proficiency gap between White and Black adults *increases* across the prose, document, and quantitative scales (from 49 to 63 points), the gap between White and Asian/Pacific Islander adults *decreases* (from 44 to 31 points). On the prose scale, the average proficiencies of White and Black adults differ by 49 points, compared with a difference of 44 points between White and Asian/Pacific Islander adults. On the document scale, the proficiency gap between White and Black adults is 50 points, whereas between White and Asian/Pacific Islander adults it is 35 points. On the quantitative scale, the average proficiency of White adults is 63 points higher than that of Black adults, but only 31 points higher than that of Asian/Pacific Islander adults.

The differences in average performance between Black and Asian/Pacific Islander respondents are even more striking. The two groups performed similarly on the prose and document scales, but Asian/Pacific Islander adults outperformed Black adults by 32 points on the quantitative scale. Such differences in the patterns of performance reflect the different backgrounds and experiences of these adults. If performance were reported on a single literacy scale, such important variations across the scales would be masked.

The racial/ethnic differences in performance reflect the influence of many variables. Data on some of these variables were collected as part of the National Adult Literacy Survey, including information on educational attainment, age, and country of birth.

Educational Attainment and Racial/Ethnic Differences

Given the strength of the relationship between adults' level of education and their literacy performance, it was hypothesized that proficiency differences among the various racial/ethnic groups might be related to varying educational attainments. The average years of schooling in this country reported by respondents in different racial/ethnic groups are presented in Table 1.5. Because the numbers of adults in each of the Hispanic subpopulations are relatively small, analyses of the nine levels of educational attainment within each group result in unreliable estimates. Therefore, the five Hispanic subpopulations are combined for these analyses.

Hispanic adults reported having had the fewest years of schooling of all the groups — just over 10 years, on average. The average years of education attained by Black adults and respondents of American Indian/Alaskan Native origin are similar: 11.6 and 11.7 years, respectively. Thus, these groups had

Average Years of Schooling, by Race/Ethnicity

Race/Ethnicity	Average Years of Schooling*
White	12.8
Black	11.6
Asian or Pacific Islander	13.0
American Indian or Alaskan Native	11.7
Hispanic groups	10.2

*in this country.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

completed more years of school than Hispanic adults, on average, but at least a year less than either White or Asian/Pacific Islander adults.

While these differences in years of education may help explain some of the gaps in performance among the various racial/ethnic groups, they do not explain all of the disparities that are found. Another way to examine the relationship between years of schooling and racial/ethnic differences is to compare proficiencies across levels of educational attainment (FIGURE 1.7).

For the most part, differences in average proficiencies among minority subgroups are reduced when comparisons are made only among individuals with the same levels of education. Even when one controls for level of education, however, large differences in average performance continue to be observed (TABLE 1.6).

The average differences in prose, document, and quantitative proficiencies between White and Black adults are 49, 50, and 63 points, respectively. When level of education is taken into account, the average proficiency differences across the nine levels of education decrease to 36, 37, and 48 points, respectively. The remaining disparities in performance between White and Black adults may be the result of numerous factors. One plausible explanation is the variation in the quality of education available to these two populations. Differences in socioeconomic status are also likely to be a factor.

When comparing the differences between White and Hispanic adults, the effects of controlling for education are even greater than for White and Black adults. This reflects the larger difference between these two groups in years of

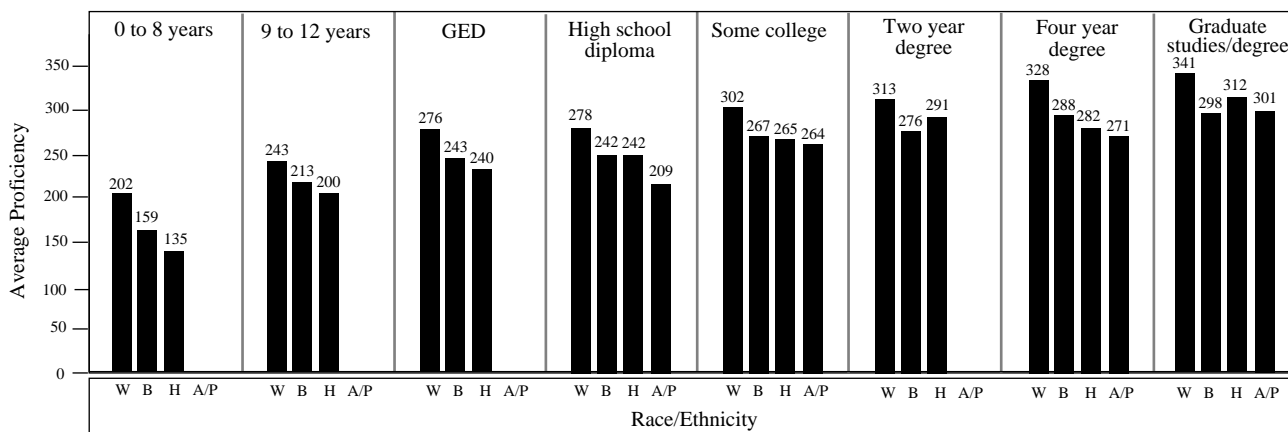


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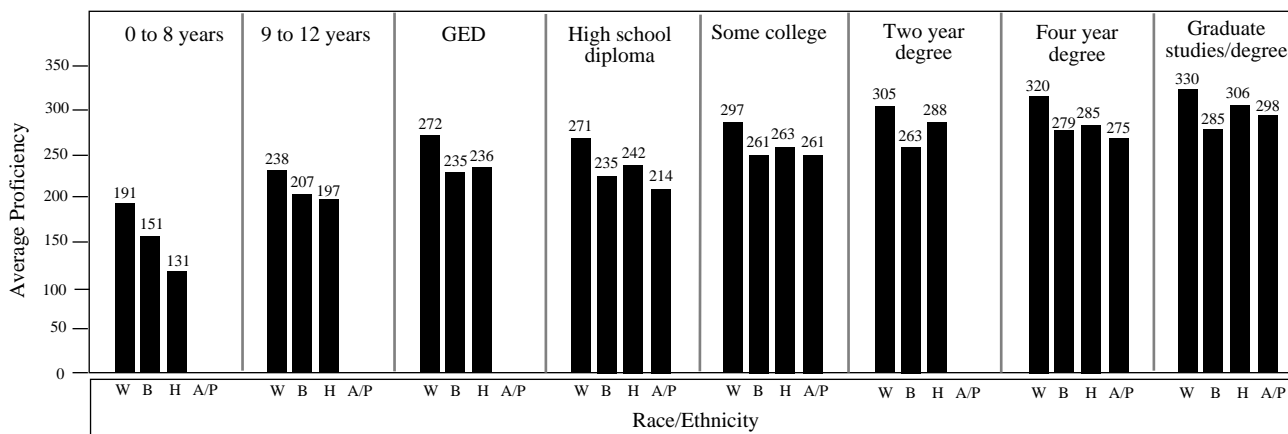
Figure 1.7

Average Literacy Proficiencies, by Highest Level of Education Completed and Race/Ethnicity

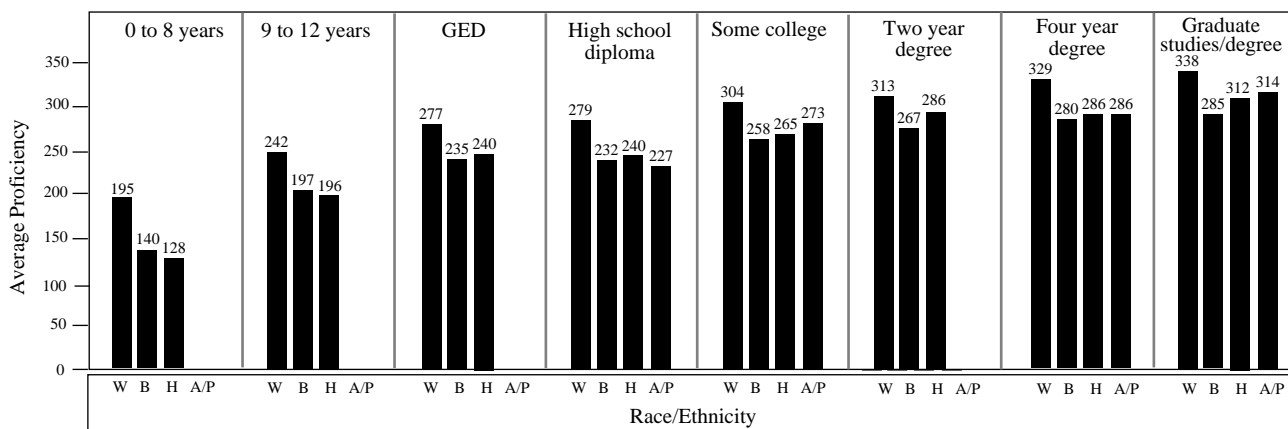
PROSE



DOCUMENT



QUANTITATIVE



Note: The numbers of Asian/Pacific Islander adults who had completed 0 to 8 years or 9 to 12 years of education, a GED, or a two year degree are too small to provide reliable proficiency estimates.

W: White B: Black H: Hispanic groups A/P: Asian/Pacific Islander

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Differences in Average Literacy Proficiencies Between Various Racial/Ethnic Groups, Overall and by Level of Education

Differences Between:	Overall Difference	Average Difference by Level of Education*
White and Black Adults		
Prose	49	36
Document	50	37
Quantitative	63	48
White and Hispanic Adults		
Prose	71	40
Document	67	35
Quantitative	75	41
White and Asian/Pacific Islander Adults		
Prose	44	54
Document	35	45
Quantitative	31	40

*The "average difference" column reflects the weighted average of the proficiency differences between each pair of groups across the levels of education. For the White-Black and White-Hispanic comparisons, the average is based on all nine levels of education. For the White-Asian/Pacific Islander comparisons, the average is based on the four levels of education for which there are reliable estimates.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

schooling, as reported in Table 1.5. The average difference across the three scales is reduced by almost 50 percent when level of education is taken into consideration. Overall, the average differences in prose, document, and quantitative proficiencies between White and Hispanic adults are 71, 67, and 75 points, respectively. When one takes levels of education into account, however, these differences decline to 40, 35, and 41 points across the three literacy scales.

In contrast, given the similarity in the number of years of schooling completed by White and Asian/Pacific Islander adults, the differences in average performance do not change significantly when level of education is taken into account. That is, whereas the average differences in prose, document, and quantitative performance between White adults and respondents of Asian/Pacific Islander origin are 44, 35, and 31 points, respectively, the average differences are 54, 45, and 40 points on the three scales when one compares performance while controlling for level of education.



Age and Racial/Ethnic Differences

While there continue to be disparities in educational attainment among individuals with different racial/ethnic characteristics, levels of education have risen for all individuals throughout the last century. Therefore, it seems important to explore racial/ethnic group differences in various age cohorts. One might expect that the differences in average years of education among the racial/ethnic groups would be smaller for younger adults, and that the differences in average proficiencies would therefore be higher for older adults.

Figure 1.8 shows the differences in average literacy proficiencies and in average years of schooling between White adults and those in the other minority groups by age. The differences in average years of schooling between White and Black adults and between White and Hispanic adults increase across the age groups, and so it is not surprising to see that these are mirrored by rising disparities in literacy performance. For example, across the scales, the average proficiency difference between Black and White adults in the 16 to 18 age group is 36 to 47 points. The accompanying difference in years of schooling is .2 years. In contrast, in the 40 to 54 age group, the average performance gap between White and Black adults is much larger, ranging from 65 to 75 points. The corresponding difference in average years of education is 1.6 years.

Across the age groups, there are even larger differences in average literacy proficiencies and years of schooling between White adults and respondents of Hispanic origin. Among 16- to 18-year-olds, the difference in average years of schooling between these two groups is 1.1 years, and the proficiency differences range from 47 to 53 points across the scales. Among 40- to 54-year-olds, on the other hand, the difference in average years of schooling is 3.2 years, and the proficiency gap is between 84 and 89 points on each scale.

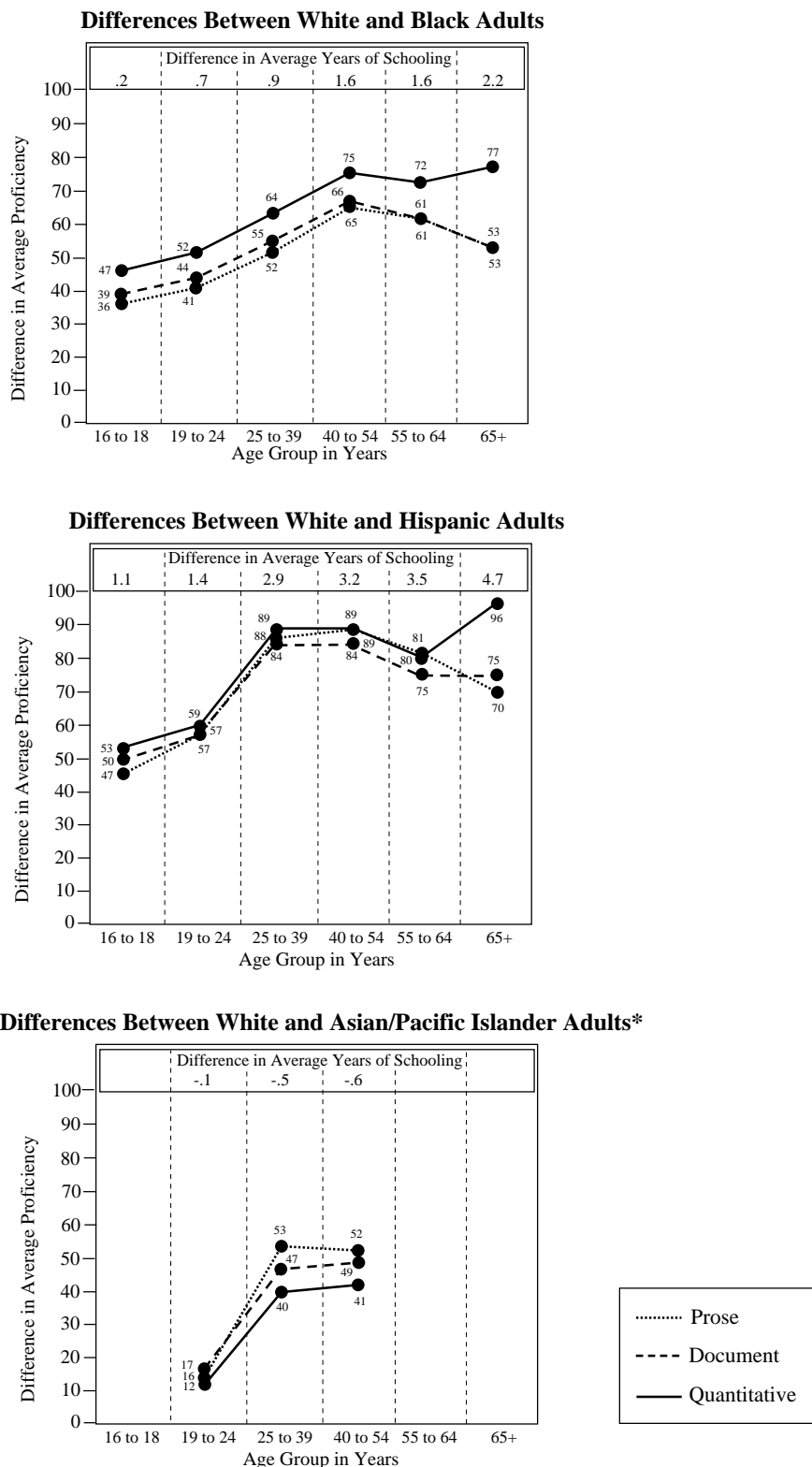
For White adults and those of Asian/Pacific Islander origin, a different pattern is evident. The numbers of Asian/Pacific Islander adults in the 16 to 18, 55 to 64, and 65 and older age groups are too small to provide reliable proficiency estimates. In the age categories for which data are available, however, White adults outperformed Asian/Pacific Islander adults, but there are no significant differences between the two groups in average years of schooling. It is noteworthy that the performance gap between White and Asian/Pacific Islander adults is relatively small in the 19 to 24 age group.

In making the comparisons between White adults and those of either Hispanic or Asian/Pacific Islander origin, it is important to remember that first language spoken and country of birth may contribute substantially to the proficiency differences that are observed.

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Figure 1.8

Differences Between Adults in Various Racial/Ethnic Groups in Average Literacy Proficiencies and Average Years of Schooling, by Age



*The number of adults of Asian/Pacific Islander origin who were in the 16 to 18, 55 to 64, and 65 and older age groups were too small to provide reliable proficiency estimates.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Country of Birth and Racial/Ethnic Differences

Many adults immigrate to the United States from places where English is not the national language. Not surprisingly, individuals born in this country tend to be more proficient in English than those born outside of this country, who are likely to have learned English as a second language. To better understand the differences in performance among various racial/ethnic groups, then, it is helpful to examine the proportion of each group that was born inside and outside the United States.

Nearly all White (96 percent) and Black (95 percent) adults and most respondents of Puerto Rican origin (80 percent) said they were born in the United States or one of its territories (TABLE 1.7). On the other hand, relatively small proportions of Asian/Pacific Islander (22 percent), Central/South American (21 percent), and Cuban (11 percent) adults were born in this country. About half of the Mexican adults and approximately 68 percent of the Hispanic/Other adults reported being born in the United States.

With one exception, individuals born in the United States tended to outperform their peers who were born abroad (FIGURE 1.9). The exception

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Table 1.7

Percentages of Adults Born in the United States and in Other Countries, by Race/Ethnicity

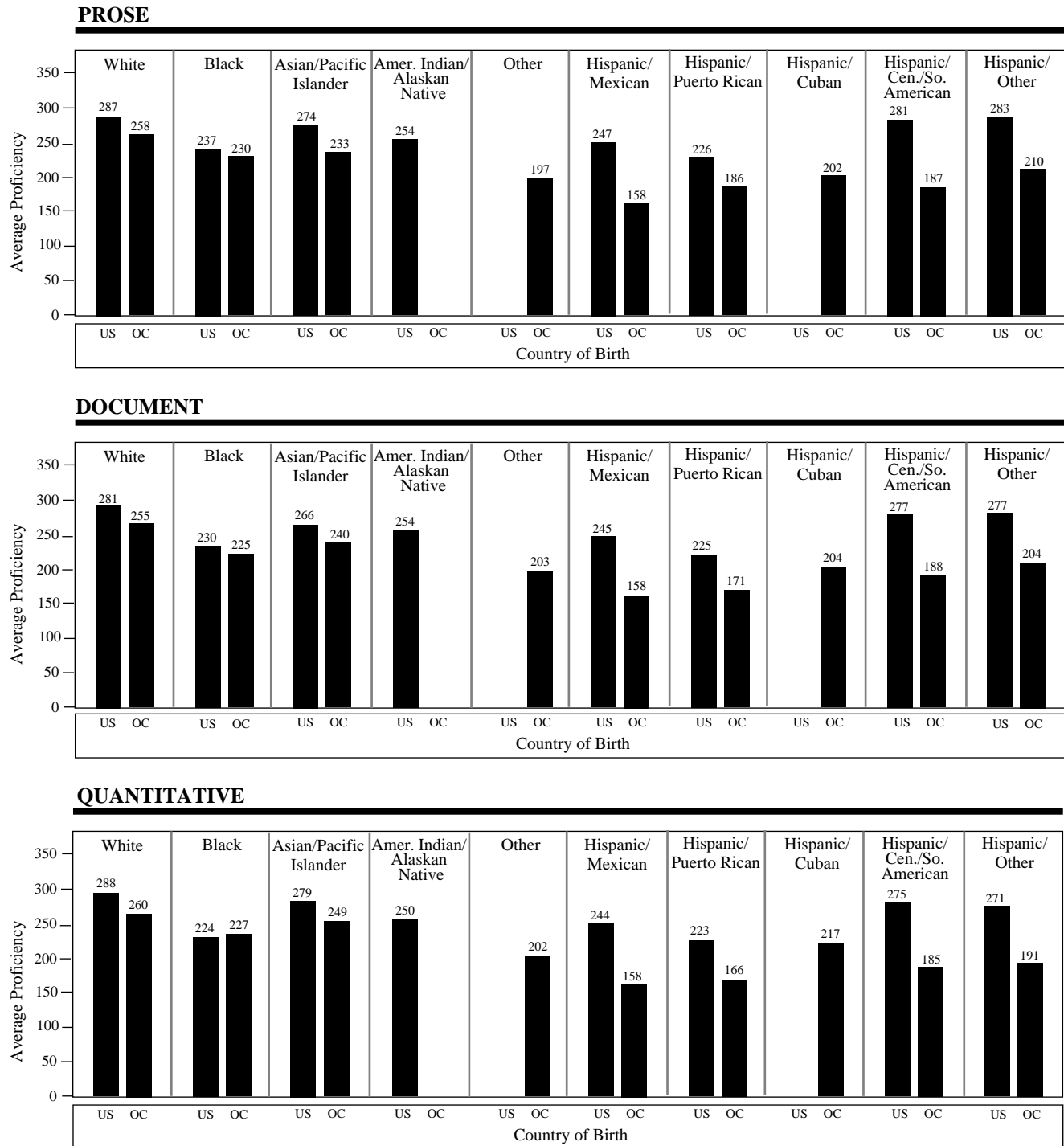
Race/Ethnicity	Born in the U.S. or a Territory	Born in Other Countries
White	96	4
Black	95	6
Asian or Pacific Islander	22	78
American Indian or Alaskan Native	100	0*
Other	24	76
Hispanic/Mexican	54	46
Hispanic/Puerto Rican	80	20
Hispanic/Cuban	11	89
Hispanic/Central or South American	21	79
Hispanic/Other	68	32

*Percentages below .5 are rounded to 0.

Note: Adults born in a U.S. territory were counted as being born in the U.S.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Average Literacy Proficiencies, by Country of Birth and Race/Ethnicity



Note: The numbers of "Other" and Hispanic/Cuban adults who were born in the United States, and of American Indian/Alaskan Native adults who were born in other countries, are too small to provide reliable proficiency estimates.

US: United States or territory OC: Other Country

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

appears among Black adults, where the differences in average performance range only from 3 to 7 points across the scales and are not significant. Across the three literacy scales, the average proficiencies of native-born Mexican, Puerto Rican, Central/South American, and Hispanic/Other adults are 40 to 94 points higher than those of their foreign-born peers. For White and Asian/Pacific Islander adults, the differences range from 26 to 41 points across the scales.

Indeed, when the differences in literacy proficiencies among various racial/ethnic groups are viewed through the lens of country of birth, the pattern of results that appears in Figure 1.6 changes substantially. When one takes country of birth into consideration, there are no significant differences between the prose and document proficiencies of native-born Central/South American or Hispanic/Other adults and the proficiencies of native-born White adults. Further, on all three scales, native-born Black and Puerto Rican individuals demonstrated about the same average proficiencies. The average scores of native-born Asian/Pacific Islander adults were similar to those of White adults, and to those of respondents who reported Central/South American and Hispanic/Other origins. Though some of the differences among these groups appear to be large, they did not reach statistical significance.

Results by Type of Illness, Disability, or Impairment

The National Adult Literacy Survey included a series of questions about illnesses and disabilities, making it possible to examine the literacy skills of adults with various types of conditions. One question asked respondents whether they had a physical, mental, or other health condition that kept them from participating fully in work, school, housework, or other activities. Two other questions asked whether they had visual or hearing difficulties. Finally, respondents were asked whether they had a learning disability, any mental or emotional condition, mental retardation, a speech disability, a physical disability, a long-term illness (for six months or more), or any other health impairment. Respondents were permitted to report each type of disability or condition they had.

Overall, 12 percent of the total population said they had a physical, mental, or other health condition that kept them from participating fully in work, housework, school, or other activities (TABLE 1.8). Between 6 and 9 percent reported vision or hearing difficulties, physical disabilities, long-term illnesses, or other health impairments, and about 3 percent reported having a learning disability. Very few individuals — 2 percent or less of the population — reported having some form of mental retardation, a mental or emotional condition, or a speech disability.

Percentages of Adults Who Reported Having a Physical, Mental, or Other Health Condition

Type of Condition	Total Population
Physical, mental, or other health condition	12
Visual difficulty	7
Hearing difficulty	7
Learning disability	3
Mental or emotional condition	2
Mental retardation	0*
Speech disability	1
Physical disability	9
Long-term illness	8
Other health impairment	6

*Percentages below .5 are rounded to 0.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

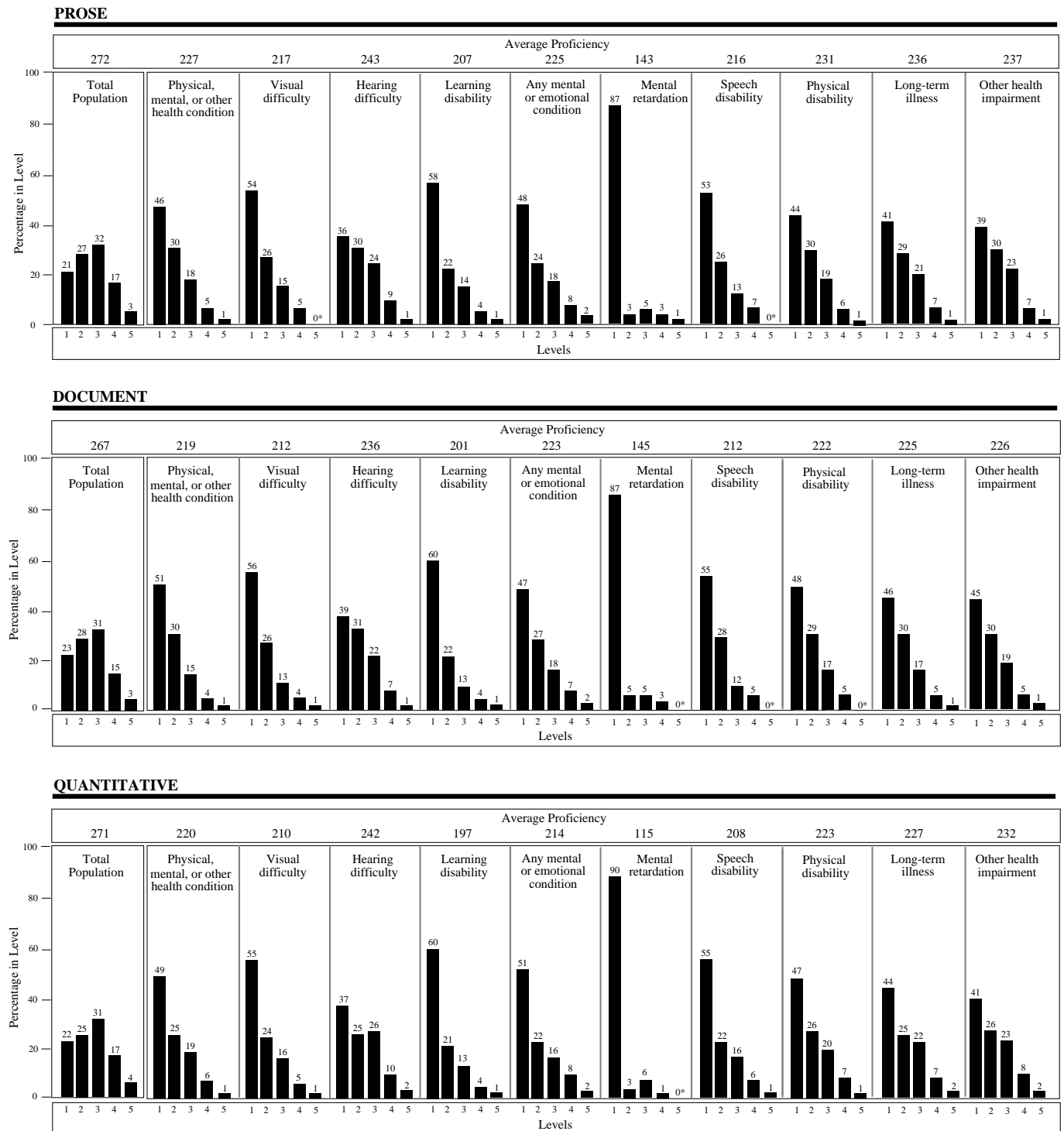
When the literacy levels and proficiencies of respondents who said they had an illness, disability, or impairment are compared with the literacy levels and proficiencies of adults in the total population, sharp contrasts are evident. Without exception, adults with any type of disability, difficulty, or illness were more likely than those in the total population to perform in the lowest literacy levels. Some conditions appear to have a stronger relationship with literacy than others, however (FIGURE 1.10).

Adults with mental retardation, for example, were about four times more likely than their peers in the total population to perform in Level 1 on the prose, document, and quantitative scales. On the prose scale, 87 percent of the respondents with mental retardation were in this level, compared with 21 percent of adults in the population as a whole.



NALS**Figure 1.10**

Literacy Levels and Average Literacy Proficiencies, by Type of Physical, Mental, or Other Health Condition, Compared with the Total Population



*Percentages below .5 are rounded to 0.

Level 1 (0 to 225) **Level 2** (226 to 275) **Level 3** (276 to 325) **Level 4** (326 to 375) **Level 5** (376 to 500)

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

The performance gaps were smaller for the other disability groups, but they were still substantial. On each scale, more than half of the individuals with vision difficulties performed in Level 1 (54 to 56 percent), for example, and another 24 to 26 percent performed in Level 2. A similar pattern appears for those who reported having speech or learning disabilities; between 53 and 60 percent of the respondents with either of these disabilities had scores in the range for Level 1 on each scale, and 21 to 28 percent performed in Level 2.

These differences in the distributions of performance across the literacy levels are echoed in the average proficiency scores. Adults who reported having mental retardation demonstrated the weakest skills of all the groups examined. On the quantitative scale, for example, their average score was 115, which lies in the low end of Level 1. Respondents with learning disabilities had an average score of 197 on this scale, while the scores of those with a speech (208) or visual difficulty (210) or a mental or emotional condition (214) were slightly higher. The average quantitative proficiency of respondents who reported having a physical, mental, or health condition that impaired their ability to participate fully in activities was 220.

Groups whose average proficiency scores were in the low end of the Level 2 range on the quantitative scale included adults who said they had a long-term illness (227). Individuals with hearing difficulties had higher average quantitative proficiencies (242), as well as higher prose and document proficiencies (243 and 236, respectively), than adults who reported other disabilities or conditions.

Finally, it is interesting to note the average performance differences between individuals who reported having certain disabilities and adults in the population as a whole. The smallest gap was between those who said they had difficulty hearing and adults in the population overall; the difference was 29 to 31 points on each literacy scale. Across the other groups, the performance gap between those who reported having a particular disability or illness and those in the total population ranged from 35 to 74 points. The only exception was among adults who reported having some form of mental retardation; here the gap ranged from 122 to 156 points across the scales.



Results by Region

Regional differences in average literacy proficiency are found on all three scales (FIGURE 1.11). Adults living in the Northeast and those living in the South performed similarly, on average. Further, the average proficiencies of adults in the Midwest and those in the West are comparable. However, adults in the Northeast and South demonstrated lower proficiencies, on average, than adults living in the Midwest and West regions of the country.

These differences may be attributable partly to regional variations in demographic characteristics such as country of birth or average years of schooling. These variables by themselves, however, do not provide a simple explanation for the proficiency differences across the regions (TABLE 1.9).

Comparing the data in Figure 1.11 and Table 1.9, it is apparent that adults residing in the West outperformed adults in the South and the Northeast regions, yet the West also had the highest percentage of individuals born outside the United States. Further, while adults living in the Midwest and the West outperformed those in the Northeast, the average number of years of schooling completed by adults in these regions was about the same. In contrast, adults in the West demonstrated higher average proficiencies than their peers in the South, and also reported significantly higher average years of schooling. It therefore appears that no single variable accounts for the regional variations in literacy proficiencies.

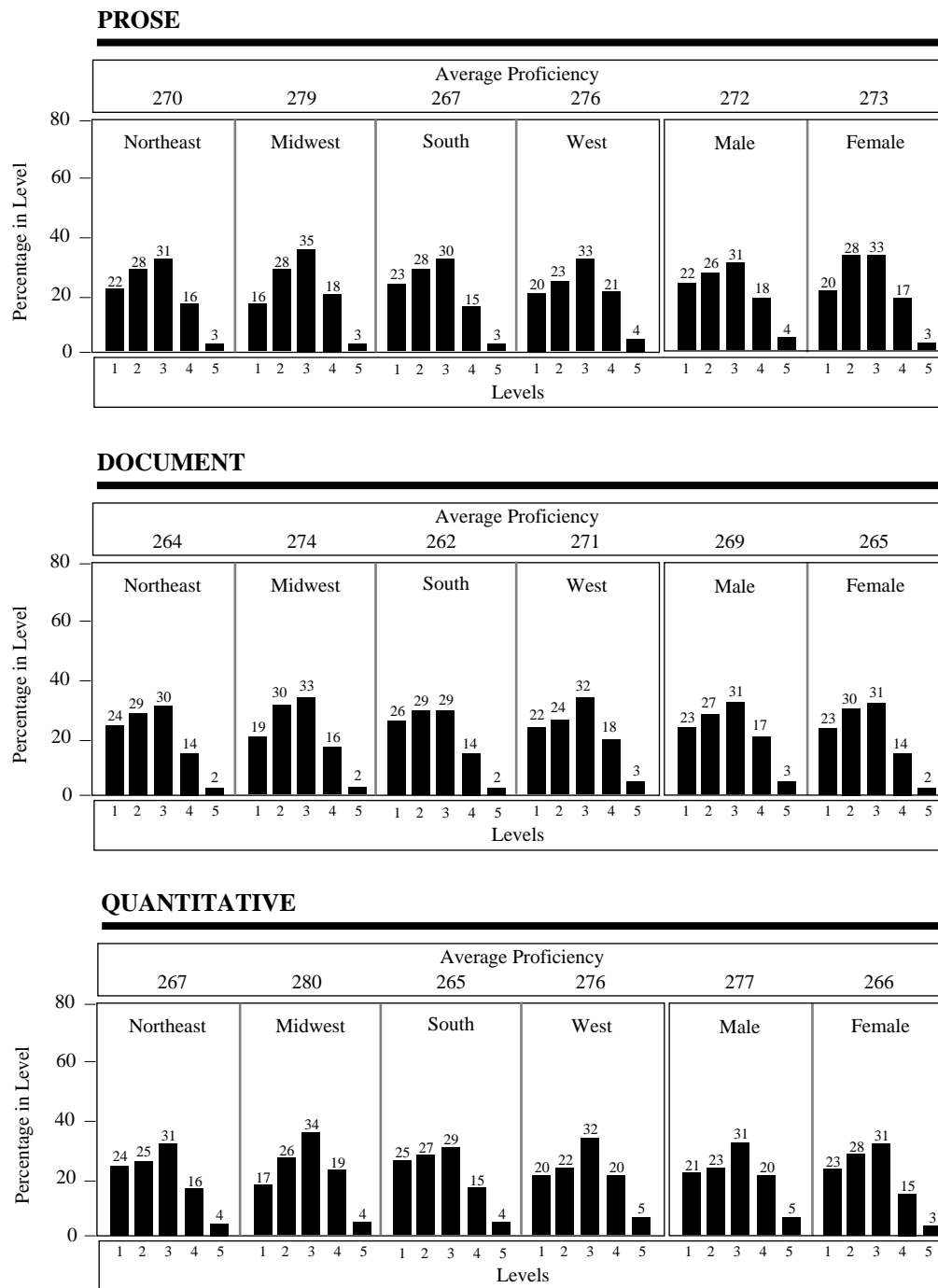
Results by Sex

The performance results for men and women differ across the three literacy scales (FIGURE 1.11). On the prose scale, the average proficiencies of women (273) and men (272) are about the same; the difference of 1 point is not significant. In contrast, men's average document (269) and quantitative proficiencies (277) are significantly higher than those of women (265 and 266). The sex differences on these scales are 4 and 11 points, respectively.

The fact that women tend to live longer than men and that literacy proficiencies tend to be lower for older adults, as seen earlier in this section, may contribute to the performance differences between the two sexes. So may other variables such as years of schooling, country of birth, and racial/ethnic background.

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Figure 1.11

Literacy Levels and Average Literacy Proficiencies, by Region and Sex

Level 1 (0 to 225) Level 2 (226 to 275) Level 3 (276 to 325) Level 4 (326 to 375) Level 5 (376 to 500)

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

NALS**Table 1.9****Percentages of Adults Born in Other Countries, and Average Years of Schooling, by Region**

	Northeast	Midwest	South	West
Percentage of adults born in other countries	14	3	7	18
Average years of schooling	12.5	12.5	12.2	12.6

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Results for the Prison Population

In addition to assessing individuals residing in households, the National Adult Literacy Survey evaluated a national sample of inmates in federal and state prisons. The survey included only those adults incarcerated in prisons both because more than half the nation's inmates are in these institutions and because prisons hold individuals for longer periods of time than do either jails or community-based facilities. Imprisoned adults make up a relatively small percentage of the total adult population in the United States, but their inclusion in this survey ensures better estimates of the literacy proficiencies of the adult population and allows for separate reporting of the literacy skills of adults in this important population.

The demographic characteristics of adults in prison were not representative of the characteristics of the total population (TABLE 1.10). The prison population tended to be both younger and less educated than adults in the nation as a whole, and most adults in prison were male. For example, males made up 48 percent of the total population but constituted 94 percent of those in prisons. In addition, only 20 percent of imprisoned adults reported having completed some postsecondary education or a college degree, while 42 percent of the adult population as a whole had gone beyond high school or a GED. Fully 80 percent of prisoners were below age 40, compared with 51 percent of the total population.

Percentages of Adults in Various Demographic Groups, Prison and Total Populations

	Prison Population	Total Population
Race/Ethnicity		
White	35	76
Black	44	11
Asian or Pacific Islander	1	2
American Indian or Alaskan Native	2	1
Other	1	0*
Hispanic groups	17	10
Sex		
Male	94	48
Female	6	52
Highest Level of Education Completed		
0 to 8 years	14	10
9 to 12 years	35	13
High school diploma	14	27
GED	17	4
Some college	16	21
College degree	4	21
Age		
16 to 18	2	5
19 to 24	21	13
25 to 39	57	33
40 to 54	17	23
55 to 64	2	10
65 and older	1	16

*Percentages below .5 are rounded to 0.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Individuals in prison were also considerably different from the total population in terms of their racial/ethnic characteristics. Adults in prisons were considerably less likely to be White (35 percent) than adults in the total population (76 percent), and less likely to be Asian/Pacific Islander (1 percent, compared with 2 percent). In contrast, adults of Hispanic origin were overrepresented in the prison population. Seventeen percent of those in prison reported being of Hispanic origin, compared with 10 percent in the population as a whole. Similarly, Black and American Indian/Alaskan Native adults were

overrepresented in the prison population. For example, Black adults made up 11 percent of the total population but accounted for about 44 percent of adults held in state and federal prisons.

Given the relationship between level of education and literacy and between race/ethnicity and literacy, it is not surprising that the prison population performed significantly worse (by 26 to 35 points) than the total population on each of the literacy scales (FIGURE 1.12).

In terms of the five literacy levels, the proportion of prisoners in Level 1 on each scale (31 to 40 percent) is larger than that of adults in the total population (21 to 23 percent). Conversely, the percentage of prisoners who demonstrated skills in Levels 4 and 5 (4 to 7 percent) is far smaller than the proportion of adults in the total population who performed in those levels (18 to 21 percent).

Summary

On each of the literacy scales, between 21 and 23 percent of the adults surveyed, representing some 40 to 44 million individuals nationwide, demonstrated proficiencies in the range for Level 1. Though all adults in this level displayed limited skills, their characteristics were quite diverse. Some of these adults succeeded in performing the less challenging assessment tasks, while others had such limited skills that they were able to respond to only a part of the survey. Many of the individuals in this level were born in other countries; had not attended school beyond the eighth grade; were elderly; or had a disability, illness, or impairment.

Across the literacy scales, some 25 and 28 percent of the adults surveyed, representing another 48 to 54 million adults nationwide, demonstrated performance in Level 2. Nearly one-third, representing some 60 million adults, performed in Level 3, and another 15 to 17 percent — or approximately 30 million — were in Level 4. Only 3 to 4 percent of the respondents performed in the highest level of prose, document, or quantitative literacy. In population terms, this represents only 6 to 8 million adults nationwide.

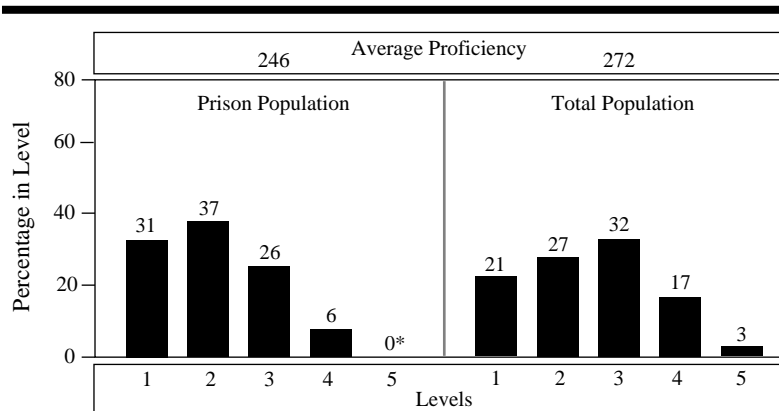
The survey results reveal an interesting contrast between individuals' demonstrated English literacy skills and their perceptions of their level of proficiency. Of the adults who performed in the lowest level on each scale, the vast majority said they were able to read or write English well. Similarly, although individuals in the lowest literacy level were more likely than those in the higher levels to say that they get a lot of help from family members and friends in performing everyday literacy tasks, the proportions who said they get such help were lower than might be expected.

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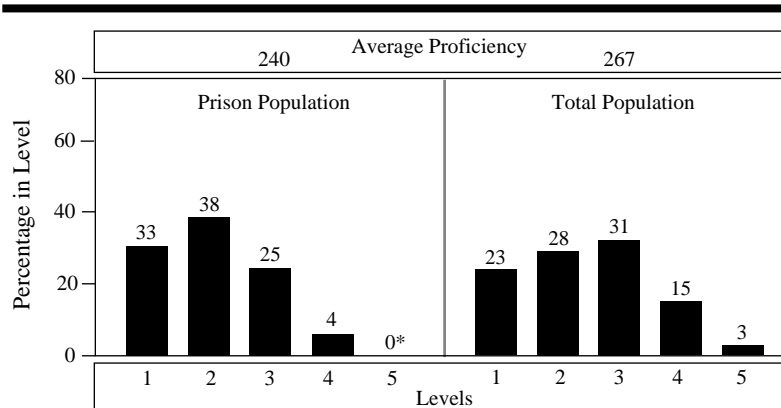
Figure 1.12

Literacy Levels and Average Literacy Proficiencies for the Prison and Total Populations

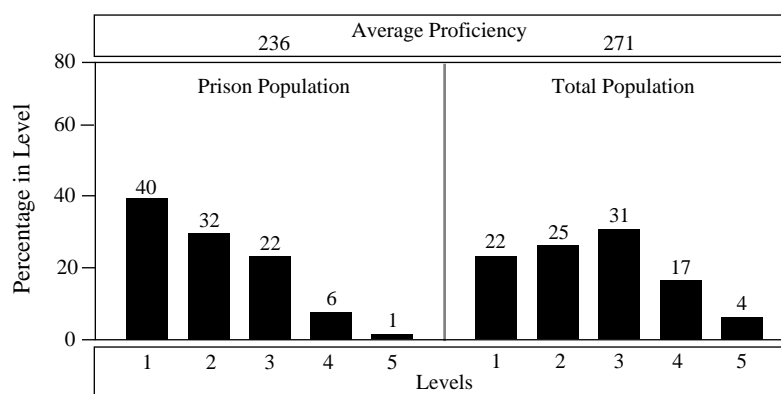
PROSE



DOCUMENT



QUANTITATIVE



*Percentages below .5 are rounded to 0.

Level 1 (0 to 225) Level 2 (226 to 275) Level 3 (276 to 325) Level 4 (326 to 375) Level 5 (376 to 500)

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

A strong relationship exists between education and literacy. Adults who had completed high school demonstrated significantly higher average prose, document, and quantitative proficiencies than those who had not, and individuals whose highest level of education was a college degree performed far better, on average, than those with high school diplomas or lower levels of education. The survey results also reveal a strong association between adults' literacy proficiencies and their parents' educational attainments, although the impact of one's own education appears to be greater.

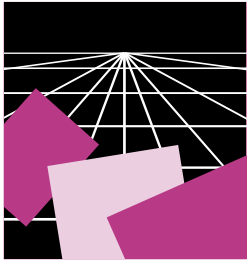
An analysis of the performance of adults in different age groups indicates that prose and quantitative literacy skills increase from the teenage years up to the middle forties, then decline sharply across the older age groups. On the document scale, the rise in proficiency scores across the younger age groups is more gradual, but still there are marked declines across the two older age groups. One variable that helps to explain the proficiency decline across the age groups is education; older adults tended to have completed fewer years of schooling than adults in all but the youngest age group.

Differences in performance are also evident across the various racial and ethnic populations studied. The average prose, document, and quantitative proficiencies of White adults, for example, were significantly higher than those of adults in all the other racial/ethnic groups examined. These differences in performance can be explained in part by differences in average years of schooling and by respondents' country of birth.

Respondents who reported having any type of physical, mental, or health condition demonstrated much more limited literacy skills than those in the population as a whole. Some conditions — such as mental retardation, learning disabilities, or vision problems — appear to have a stronger relationship with literacy than other conditions.

Adults residing in the Northeast and South demonstrated lower average skills than adults living in the Midwest and West. Further, while the average prose literacy scores of men and women were nearly identical, men outperformed women in document and quantitative literacy.

Finally, incarcerated individuals were far more likely than adults in the total population to be in the lower levels on the prose, document, and quantitative scales. The relatively weak performance of the prison population can be attributed at least in part to the demographic characteristics of incarcerated individuals, which differ substantially from the characteristics of the adult population as a whole.



SECTION II

The Connection Between Adults' Literacy Skills and Their Social and Economic Characteristics

The first section of this report provided a portrait of literacy in the United States, describing the literacy levels and proficiencies of the adult population and of many different subpopulations. In this section, the focus shifts to the connections between literacy and particular aspects of adults' lives.

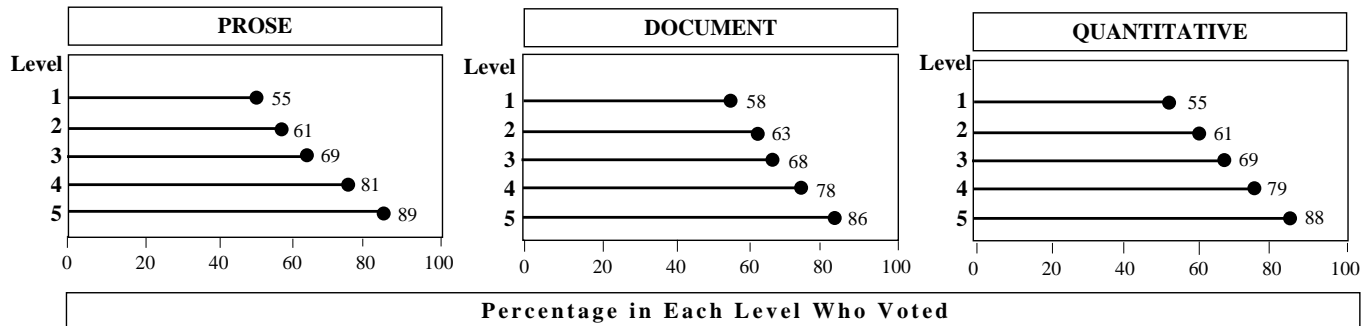
Previous studies have identified certain practices and conditions that are related to literacy.¹ Accordingly, adults participating in this survey were asked to report on their voting experience, reading practices, economic status, recent employment, and occupations. Their responses make it possible to examine how various aspects of adults' lives vary according to their literacy proficiencies — that is, to see what connections exist between literacy and an array of social and economic variables. Are those in the higher literacy levels more likely to get information from print than those in the lower levels? Are they more likely to be employed, hold certain kinds of jobs, or earn better wages? These types of questions are addressed in the pages that follow.

Literacy and Voting

One question in the survey asked respondents to indicate whether or not they had voted in a state or national election in the United States in the past five years. A clear relationship was found between literacy skills and voting practices. On all three scales, there was a significant increase across the literacy levels in the percentages of adults who reported voting in a recent state or national election (FIGURE 2.1). On the prose scale, for example, 89 percent of the individuals in Level 5 who were eligible to vote said they had voted in the past five years, compared with just over half (55 percent) of the individuals in Level 1.

¹ G. Berlin and A. Sum. (1988). *Toward a More Perfect Union*. New York, NY: Ford Foundation. Statistics Canada. (1991). *Adult Literacy in Canada: Results of a National Study*. Ottawa, Canada: Statistics Canada. I.S. Kirsch and A. Jungeblut. (1992, September). *Profiling the Literacy Proficiencies of JTPA and ES/UI Populations: Final Report to the Department of Labor*. Princeton, NJ: Educational Testing Service.



NALS**Figure 2.1****Percentages of Adults Who Voted in a National or State Election in the Past Five Years,
by Literacy Level**

Note: This figure represents the percentages of adults who voted, of those who were eligible to vote.

- Level 1** 0 to 225
Level 2 226 to 275
Level 3 276 to 325
Level 4 326 to 375
Level 5 376 to 500

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Literacy and Reading Practices

Many different types of newspapers are published in this country, ranging from long, comprehensive daily newspapers to shorter and more informal community newspapers, which tend to be published on a weekly or biweekly basis. Together these print media keep readers informed about current events in their communities, the nation, and the world.

Because the newspaper plays such an important role in disseminating information in this society, the National Adult Literacy Survey asked participants to indicate how often they read the newspaper and to identify the parts of the newspaper that they generally read. Respondents were also asked to report to what extent they relied on newspapers or magazines, radio or television, and family or friends for information about current events, public affairs, and government.

The responses indicate that newspaper reading was very common among readers in all levels of literacy, although adults in the lower levels were less likely than those in the higher levels to report that they read the newspaper every day and were more likely to say that they never read it. Finally, while virtually all adults — regardless of their literacy levels — reported getting some or a lot of information about current events from television or radio, those in the higher literacy levels were more likely than those in the lower levels to say they also get some or a lot of information from print media.

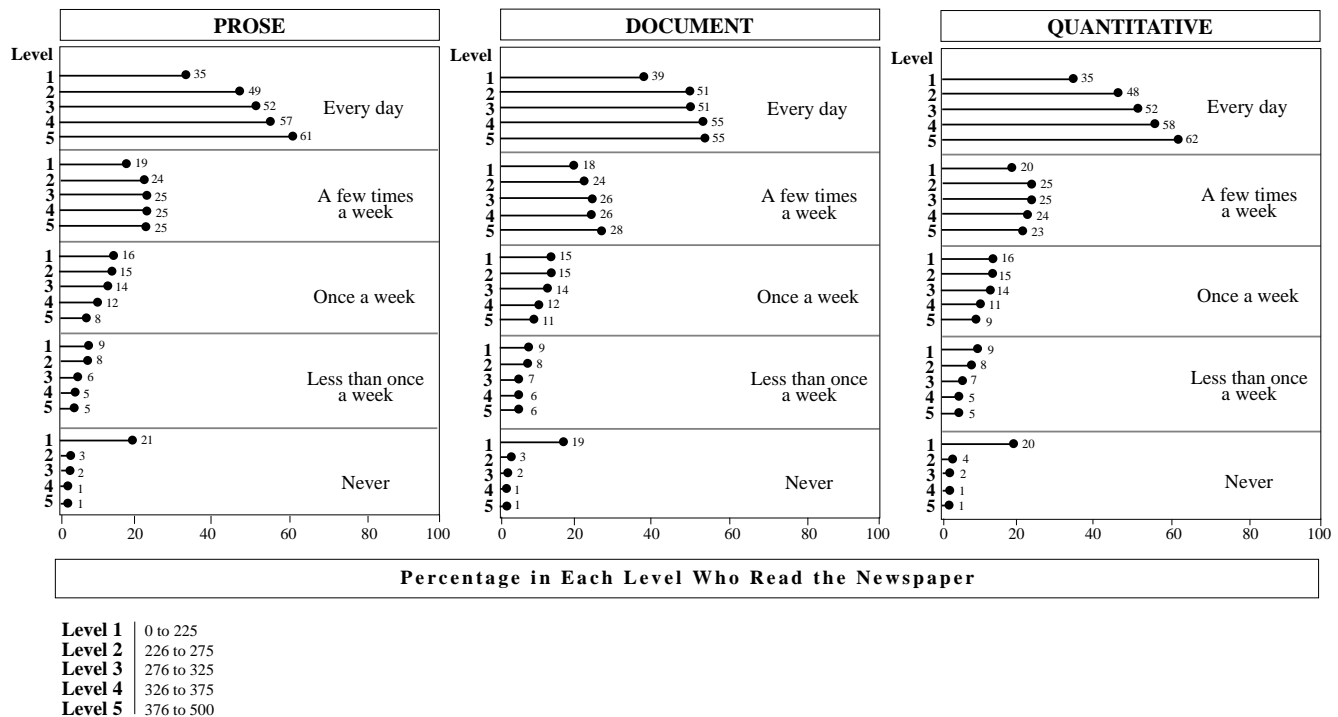
Frequency of Newspaper Reading

On all three literacy scales, adults in the lowest level were less likely than those in the higher levels to report reading the newspaper every day; 35 to 40 percent of those in Level 1, approximately half of the adults in Levels 2 and 3, and between half and two-thirds of those in Levels 4 and 5 said they read the paper this often (FIGURE 2.2). Likewise, respondents who performed in the lowest level (19 to 21 percent across the scales) were much more likely than those in the highest level (1 percent) to say they never read the newspaper.

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Figure 2.2

Percentages of Adults Who Read the Newspaper, by Literacy Level



Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Aspects of Newspaper Reading

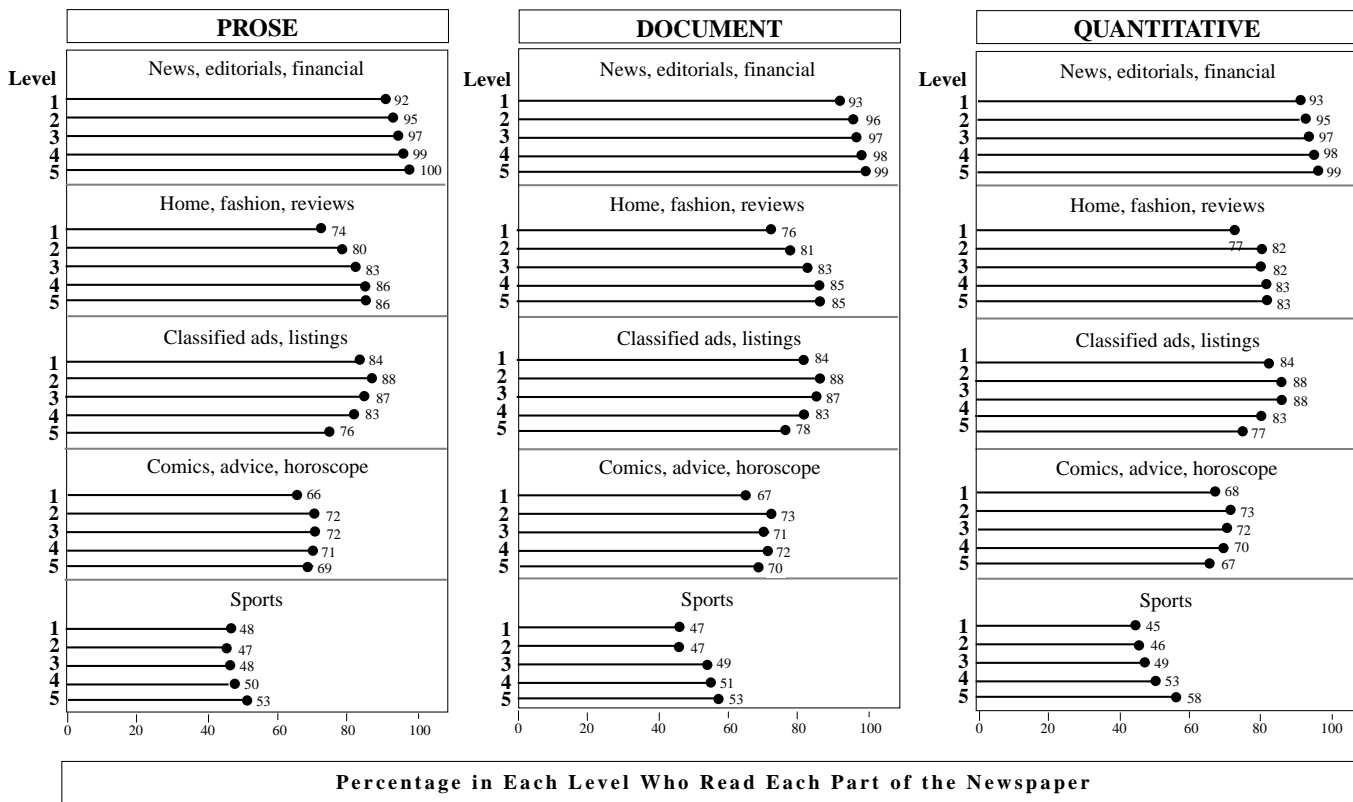
Participants were asked to indicate which parts of the newspaper they generally read, and their answers were combined with the responses to the previous question to determine what percentages of those who read the newspaper at least once a week read certain parts. The ten categories listed in the survey questionnaire, each of which reflects somewhat different literacy demands, were grouped into five categories for reporting purposes: the news, editorial, and financial pages; sports; home, fashion, health, and reviews of books, movies, and art; TV, movie, and concert listings, as well as classified ads and other advertisements; and comics, horoscopes, and advice columns.

Among adults who read the newspaper at least once a week, the vast majority — even of those who performed in Level 1 on each scale — said they generally read the news, editorial, or financial sections (FIGURE 2.3). Virtually all adults in the higher levels said they read these sections of the newspaper at least once a week.

Though many of the differences are small, there are variations across the literacy levels in the percentages of adults who reported reading other parts of the newspaper. For example, about 45 percent of the newspaper readers who performed in Level 1 on the quantitative scale said they generally look at the sports pages, compared with 58 percent of those in Level 5. Some 74 percent of the newspaper readers in Level 1 on the prose scale reported reading the home, fashion, health, or reviews sections, compared with 86 percent in Level 5. Across the levels on each scale, 76 to 88 percent said they read the classifieds and listings, and 66 to 73 percent reported reading the comics, horoscopes, or advice columns.

Another perspective on the relationship between literacy and reading practices can be gained by comparing the average proficiencies of respondents who read certain sections of the newspaper and those who do not (TABLE 2.1). On each of the literacy scales, newspaper readers who generally skip the news, editorials, or financial sections had average proficiency scores of 248 on the prose and document scales and 250 on the quantitative scale. These scores are significantly lower (by 28 to 34 points) than the scores of those who said they read these sections on a regular basis. When one reexamines the responses shown in Figure 2.3, the reason for these differences is clear. The relatively few adults (1 to 8 percent) who said they tend to skip these sections were much more likely to be in the lowest levels. As a result, on each scale, they demonstrated considerably lower average scores than the vast majority of newspaper readers who said they generally do read these sections.

Sports reporting in newspapers often includes tables, lists, and quantitative measures of performance. There are significant differences in

NALS**Figure 2.3****Among Adults Who Read the Newspaper at Least Once a Week, Percentages Who Read Certain Parts, by Literacy Level**

Level 1 0 to 225
Level 2 226 to 275
Level 3 276 to 325
Level 4 326 to 375
Level 5 376 to 500

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

average document and quantitative performance between those who choose to read the sports pages and those who do not. While on the quantitative scale the proficiency gap is 8 points, on the document scale it is only 3 points. On the prose scale, the 2-point difference between sports page readers and nonreaders is not statistically significant. Once again, these results can be better understood by reexamining the differences across the literacy levels in the percentages of newspaper readers who reported choosing the sports pages, particularly for the quantitative scale. In this dimension of literacy, readers in the lowest level (45 percent) were considerably less likely than those in the highest level (58 percent) to say they generally read this section. On the other hand, there were relatively small differences (of 5 to 6 points) across the prose



Among Adults Who Read the Newspaper at Least Once a Week, Average Literacy Proficiencies, by Newspaper Reading Practices

	Average Prose Proficiency		Average Document Proficiency		Average Quantitative Proficiency	
	Yes	No	Yes	No	Yes	No
News, editorials, financial	282	248	276	248	281	250
Home, fashion, reviews	284	267	277	264	282	271
Classified ads, listings	280	282	274	274	280	282
Comics, advice, horoscope	282	277	276	271	280	279
Sports	282	280	276	273	284	276

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

and document literacy levels in the percentages of adults who said they generally read this section.

The home, fashion, health, and reviews sections typically consist of connected prose with some illustrations and tables. Newspaper readers who performed in the higher levels on each scale were more likely to report that they read these sections, while those in the lowest level were more likely to report skipping them. The differences were greatest on the prose scale, and this is reflected in the average proficiency results: The average prose scores of newspaper readers who generally read these sections were considerably higher (284 compared with 267) than those of readers who said they tend to skip them.

Different patterns are evident for the other aspects of newspaper reading. On each scale, the percentages of newspaper readers who said they generally look at the classified ads and listings varied across the literacy levels, rising from 84 percent of those in Level 1 to 88 percent in Level 2 before declining to some three-quarters of the respondents in Level 5. Yet there are no significant differences in average prose, document, or quantitative proficiency between newspaper readers who said they generally read these sections and those who do not. In contrast, newspaper readers who reported that they generally read the comics, horoscopes, or advice columns demonstrated average prose and document proficiencies that were slightly (5 points) higher than those of

individuals who said they do not generally read these sections. As shown in Figure 2.3, though, the percentages of adults who reported reading these parts of the newspaper varied little across the levels on each literacy scale.

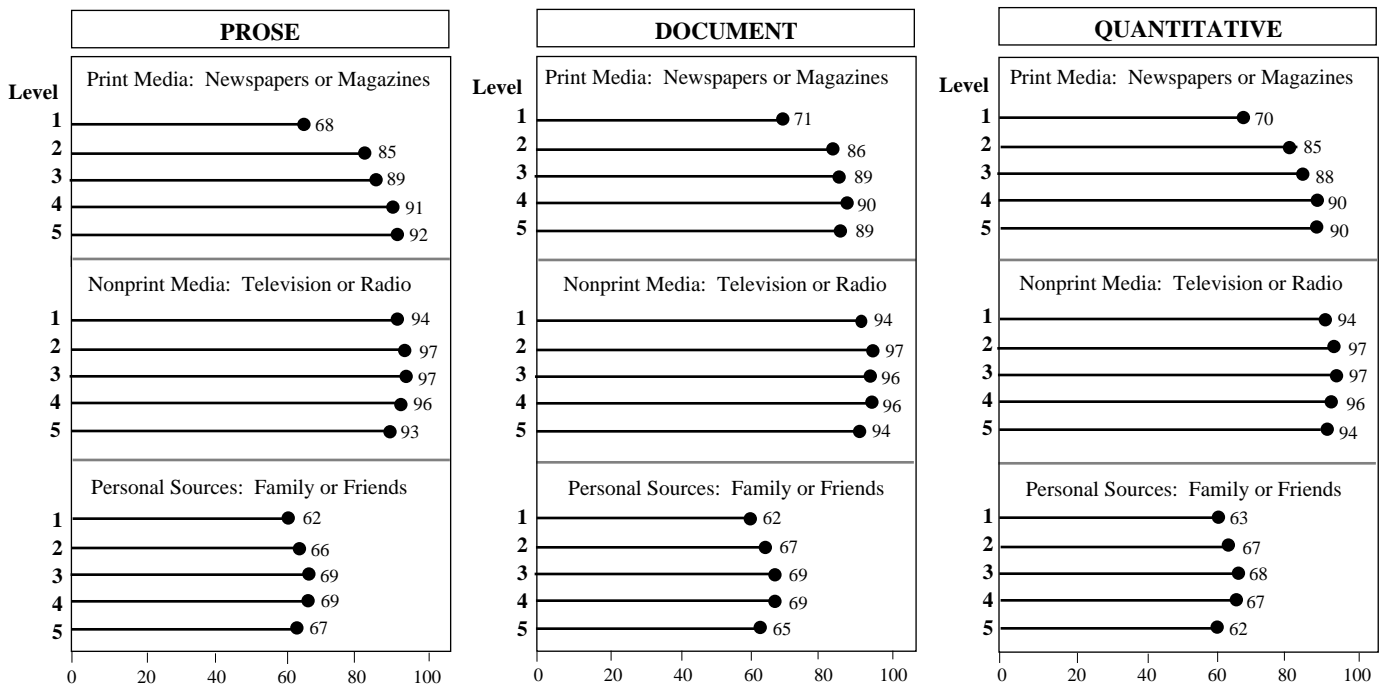
Reliance on Print and Nonprint Sources of Information

Survey participants were asked to indicate the sources from which they get information about current events, public affairs, and government. Their responses indicate that while many adults get their information from family members and friends, the overwhelming majority get either some or a lot of news from nonprint media — between 93 and 97 percent reported using radio or television to obtain information about current events, public affairs and government. (FIGURE 2.4).

NALS

Figure 2.4

Percentages of Adults Who Get Information About Current Events from Various Sources, by Literacy Level



Percentage in Each Level Who Get Information From Each Source

Level 1 | 0 to 225
Level 2 | 226 to 275
Level 3 | 276 to 325
Level 4 | 326 to 375
Level 5 | 376 to 500

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Individuals in the lower literacy levels were less likely to use print media as an information source than were adults in the higher levels. Across the scales, only 68 to 71 percent of the respondents in Level 1 said they get information from newspapers or magazines. Adults performing in the higher literacy levels, on the other hand, were more likely to get information from print media: 88 to 92 percent of those in Levels 3, 4, and 5 on the scales said they obtain information from newspapers or magazines.

While one might expect adults in the lower literacy levels to rely more heavily on friends or family for information, this hypothesis was not supported by the results. Across the levels, there are small but significant differences in the percentages of adults who said they get some or a lot of information from personal sources. For example, on the prose scale, larger percentages of adults in Levels 3 and 4 than in Levels 1 and 2 reported getting some or a lot of information on current events from friends or family. On the document and quantitative scales, the percentages of adults who reported getting information from personal sources increased from Level 1 to Level 3, then declined significantly between Levels 4 and 5.

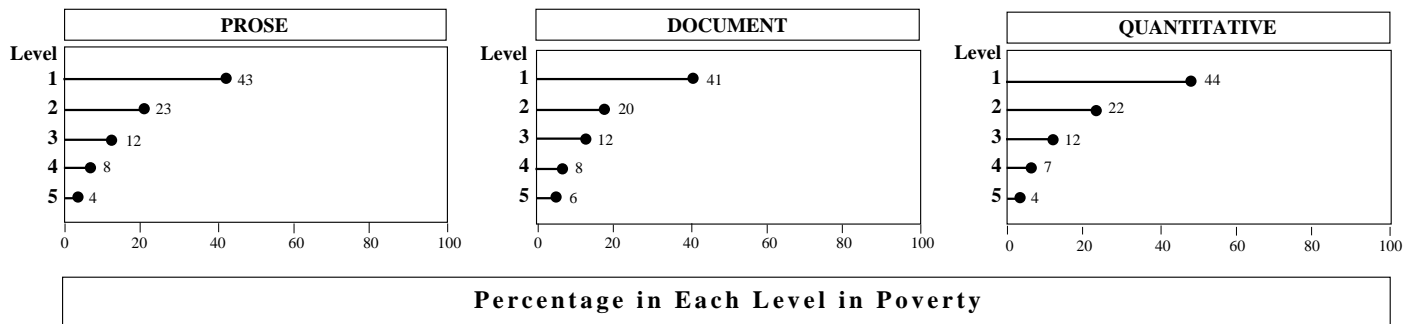
Literacy and Economic Status

To explore the connection between literacy and economic status, the National Adult Literacy Survey gathered information on respondents' income. Some of the questions requested data on wages, while others asked for information on sources of income. When the responses to these questions are examined by literacy level, strong relationships between literacy and economic status are evident. Adults in the lower literacy levels were far more likely than those in the higher levels to be in poverty and were far more likely to be on food stamps than to report receiving interest from savings.

Poverty Status

Adults who participated in the NALS were asked to indicate their personal and household income. These self-reported data were then used to divide adults into two categories — poor or near poor, and not poor — using federal poverty guidelines. Across the three scales, 41 to 44 percent of those in Level 1 were in poverty, compared with only 4 to 6 percent of the adults in the highest level (FIGURE 2.5). These results underscore literacy's strong connection to economic status.

Percentages of Adults in Poverty, by Literacy Level



Note: Adults in poverty are those who are either poor or near poor.

Level 1	0 to 225
Level 2	226 to 275
Level 3	276 to 325
Level 4	326 to 375
Level 5	376 to 500

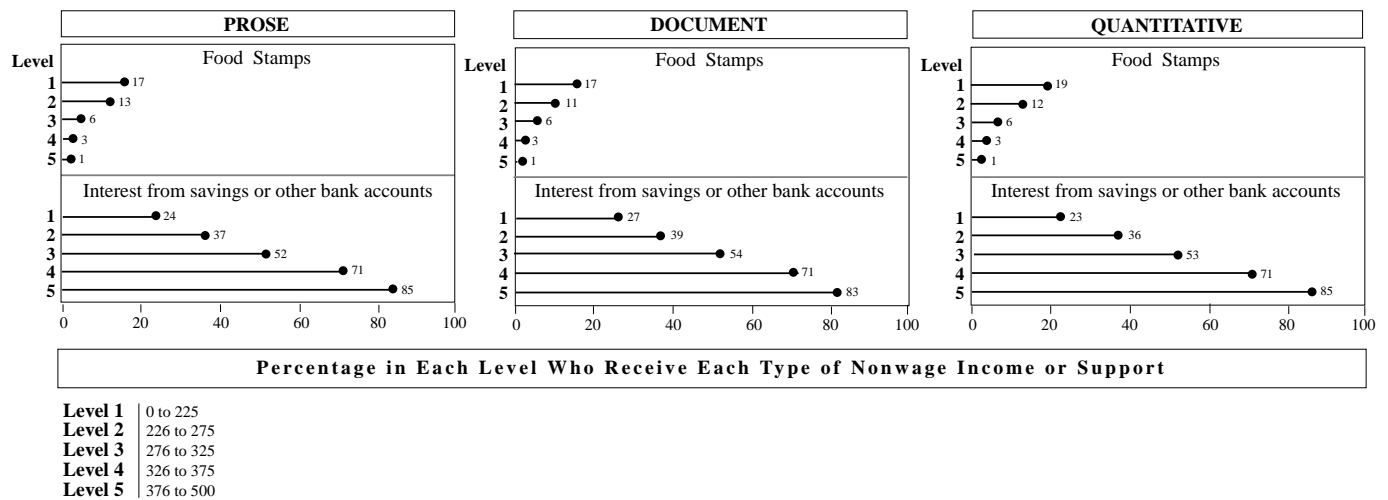
Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Sources of Nonwage Income and Support

Survey participants provided detailed information on the types of nonwage income and support they or anyone in their family had received in the year preceding the survey. Two particular types of nonwage income which reflect socioeconomic status are contrasted here. The skills of those who received food stamps are of interest, because this program is publicly funded. Further, the competencies of adults who received interest from savings or other bank accounts are of interest, because savings help to provide a buffer in the event of interruptions in earnings.

Adults who performed in Level 1 on the prose scale were far more likely than those who performed in Level 5 to report that their family received food stamps (FIGURE 2.6). Only 1 percent of those in the highest prose level received food stamps, compared with 17 percent in the lowest level. Similar patterns are seen on the document and quantitative scales.

Conversely, the percentages of adults who reported receiving interest from savings in the past year increases significantly across the five levels on each scale. For example, 85 percent of adults in Level 5 on the quantitative scale earned interest from savings, compared with only 53 percent of those in Level 3 and just 23 percent of those in Level 1.

NALS**Figure 2.6****Percentages of Adults Who Received Certain Types of Nonwage Income or Support in the Past 12 Months, by Literacy Level**

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Literacy and Employment, Earnings, and Occupations

While our nation's concern over literacy skills appropriately encompasses all areas of life, much attention in recent years has been focused on the role literacy plays in the workplace. Recent reports have called into question the adequacy of America's current education and training system to fulfill its expected role in ensuring individual opportunity, increasing productivity, and strengthening America's competitiveness in a global economy.

The NALS background questionnaire asked respondents to report on their employment status, their weekly earnings, the number of weeks they worked in the previous year, and the type of job they held, if they worked. On average, individuals in the higher levels of literacy were more likely to be employed, earn higher wages, work more weeks per year, and be in professional, technical, or managerial occupations than respondents who displayed lower levels of skill.

Employment Status

Respondents were asked to indicate what their employment situation had been during the week before the survey. When their responses are compared with the performance results, it is clear that individuals with more limited literacy skills are less likely to be employed than those who demonstrated more advanced skills. On each of the literacy scales, more than half of the adults who

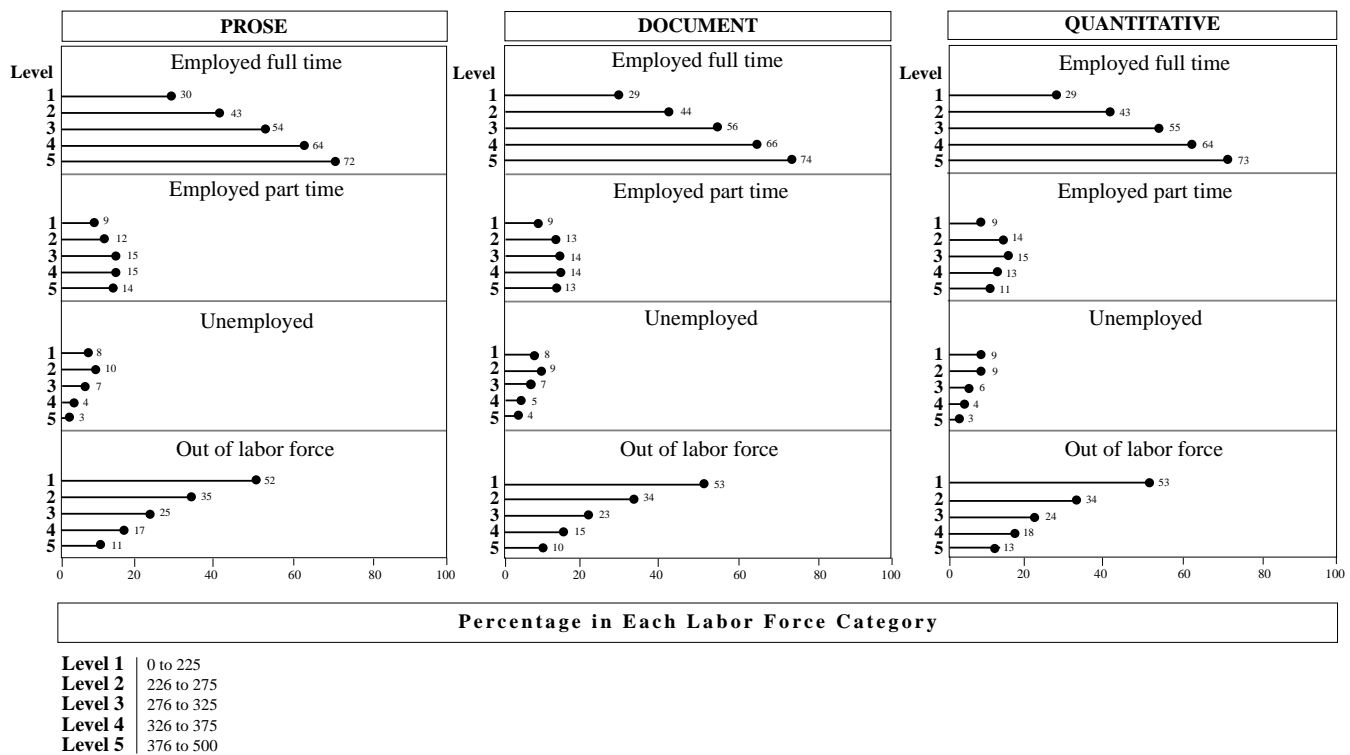
demonstrated proficiencies in Level 1 were out of the labor force — that is, not employed and not looking for work — compared with only 10 to 18 percent of the adults performing in each of the two highest levels (FIGURE 2.7). On the other hand, some 30 percent of the individuals in Level 1 and nearly 45 percent of those in Level 2 had full-time employment, compared with about 64 to 75 percent of the respondents who performed in the two highest literacy levels.

The average proficiency results offer another perspective on the connection between literacy and labor force status. As seen in Figure 2.7, adults in the highest literacy levels were far more likely than those in the lowest levels to report being employed full time. As a result, the average proficiencies of full-time employees are quite high — 288, 284, and 290, across the three literacy scales (TABLE 2.2).

NALS

Figure 2.7

Percentages of Adults In and Out of the Labor Force, by Literacy Level



Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Average Literacy Proficiencies, by Labor Force Status

	Prose	Document	Quantitative
Employed full time	288	284	290
Employed part time	284	277	280
Unemployed	260	257	256
Out of labor force	246	237	241

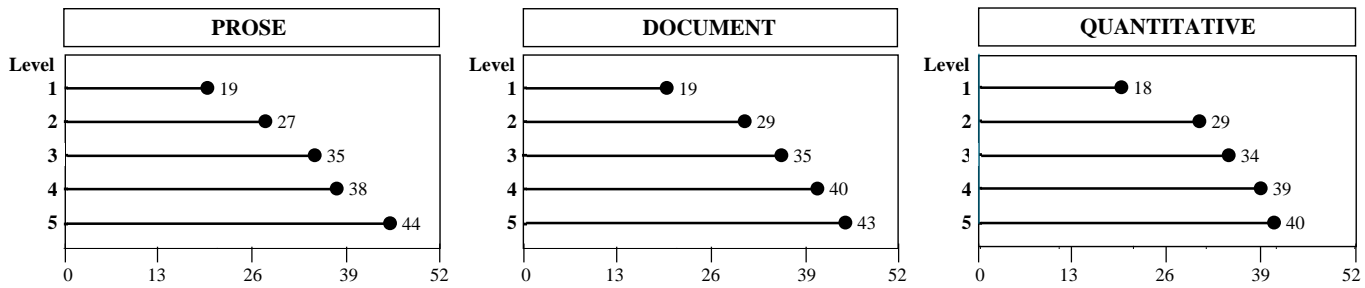
Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Working part time was more prevalent among adults in the higher literacy levels, though the differences across the levels were small. Accordingly, the average prose, document, and quantitative scores of part-time workers are only 4 to 10 points below those of adults working full time. Unemployment, on the other hand, was more prevalent among individuals who performed in the lowest literacy levels, and as a result, the average literacy proficiencies of unemployed adults are 27 to 34 points lower than those of full-time employees.

The average proficiencies of adults who were out of the labor force — 246, 237, and 241, across the three scales — were 42 to 49 points lower than those of individuals who were employed full time. These disparities can be attributed to the relatively high percentages of adults in the lower literacy levels who were out of the labor force.

Weeks Worked

All individuals who participated in the survey, regardless of their current or recent employment status, were asked how many weeks they had worked in the past 12 months. On each scale, individuals scoring in Levels 3, 4, and 5 worked more weeks in the past year than those performing in Level 2, who, in turn, worked more weeks than those in Level 1 (FIGURE 2.8).

Average Number of Weeks Worked in the Past 12 Months, by Literacy Level**Average Number of Weeks Worked by Adults in Each Level**

Level 1	0 to 225
Level 2	226 to 275
Level 3	276 to 325
Level 4	326 to 375
Level 5	376 to 500

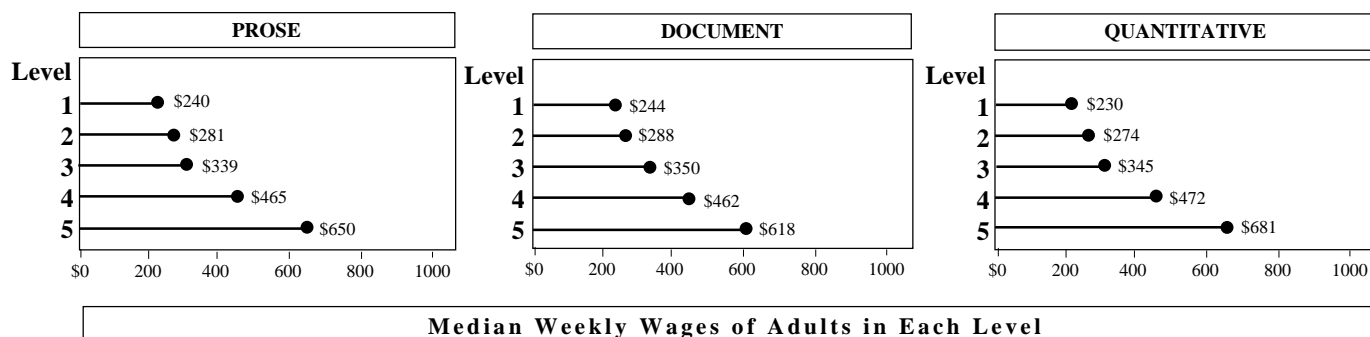
Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Clearly, the number of weeks worked increases dramatically across the literacy levels. While respondents who demonstrated proficiency in the lowest level on each scale worked, on average, only about 19 weeks a year, individuals in the three highest levels reported working about twice as many weeks — between 34 and 44.

Earnings

Individuals who were either working full time or part time or were on leave from their jobs the week before the survey were asked to report their weekly wage or salary before deductions. Given that individuals who performed in the higher levels were more likely than those in the lower levels to be in the work force and to have worked more weeks in the past year, it is not surprising that these individuals reported earning significantly more money each week (FIGURE 2.9).

On each literacy scale, the median earnings of individuals performing in Level 1 were approximately \$230 to \$240 each week. In comparison, those who performed in Level 3 reported earning \$340 to \$350 (or about \$110 more), while those in Level 4 reported earning \$462 to \$472 (or nearly \$250 more). For those who attained Level 5, the financial rewards were even greater. Individuals performing in this level on the quantitative scale, for example, had median earnings of \$681 each week — roughly \$450 more than individuals performing in Level 1 on that scale.

NALS**Figure 2.9****Median Weekly Wages, by Literacy Level**

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

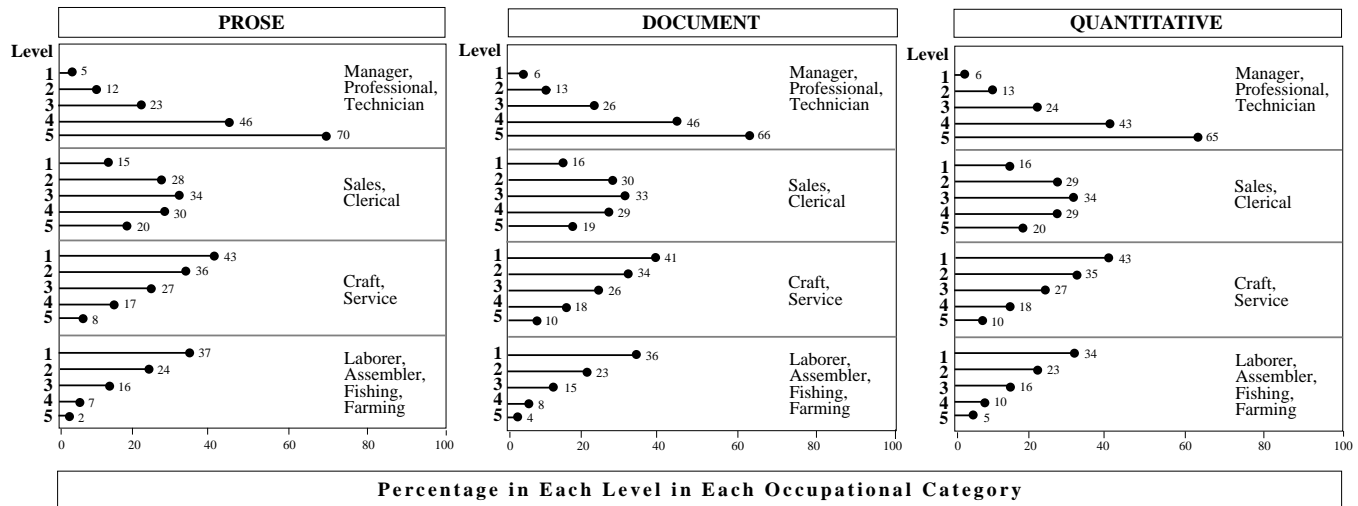
Occupations

While it would be useful to know the level of literacy skills required to find, hold, and succeed in various types of jobs, research is limited in this area. Some perspective on this question can be gained, however, by looking at the percentages of people within certain occupational categories who demonstrated various levels of literacy. Survey participants were asked to describe the type of work they performed in their current or most recent job, and this information was sorted into occupational categories using the Census Classification for Industries and Occupations. These categories were then recombined into four occupational groupings, and the percentages of respondents who worked in these categories of jobs were calculated. Twenty-four percent of the adults surveyed worked in managerial, professional, or technical jobs; 28 percent were in sales or clerical occupations; 29 percent worked in craft or service occupations; and 19 percent were in laborer, assembler, fishing, or farming jobs.

In all but the group of adults holding sales or clerical positions, the data show a strong relationship between the type of job that individuals held and their demonstrated level of literacy proficiency (FIGURE 2.10). This figure displays the percentages of adults in each literacy level who reported holding a particular type of job.

On all three literacy scales, individuals who performed in the highest levels were much more likely to report holding managerial, professional, or technical jobs than were respondents who performed in the lowest levels.

Percentages of Adults in Certain Occupational Categories, by Literacy Level



Note: Overall, 24 percent of the adults surveyed reported holding managerial, professional, or technical jobs; 28 percent reported holding sales or clerical jobs; 29 percent reported holding craft or service jobs; and 19 percent reported holding laborer, assembler, fishing or farming jobs.

Level 1	0 to 225
Level 2	226 to 275
Level 3	276 to 325
Level 4	326 to 375
Level 5	376 to 500

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

From 65 to 70 percent of those in Level 5 held these positions, compared with approximately 13 percent of the respondents performing in Level 2, and 6 percent of those performing in Level 1. Thus, the likelihood of being in a managerial, professional, or technical position declines sharply from Level 5 to Level 1. It is interesting to note, however, that small percentages of individuals in Levels 1 and 2 reported being in managerial, professional, or technical positions. While these data do not reveal what specific types of positions these individuals held, or how successful they were in negotiating the demands of these positions, it does appear that at least some individuals with limited skills are able to obtain managerial and professional jobs.

In contrast with these data, a far different pattern is evident among those holding craft or service jobs: On each scale, adults whose proficiency was in the Level 1 range were far more likely than individuals who performed in the Level 5 range to hold these types of jobs. On the quantitative scale, for example, 10 percent of those performing in Level 5 reported being in craft or service jobs, compared with approximately 18 percent in Level 4, 27 percent of those in Level 3, 35 percent in Level 2, and 43 percent of those in Level 1. A similar pattern is shown for those adults reporting laborer, assembler, fishing, or farming occupations.

The greatest variability in literacy proficiencies seems to occur among adults reporting sales or clerical jobs. The percentages of adults in these positions increase between Levels 1 and 2 and again between Levels 2 and 3, then decrease across the two highest levels.

These data show a strong relationship between one's literacy skills and one's occupation. It should be noted, however, that this relationship is likely to be quite complex. While adults with better literacy skills almost certainly have greater opportunities to obtain professional, managerial, or technical positions, it is also likely that many of these positions enable individuals to strengthen their literacy skills.

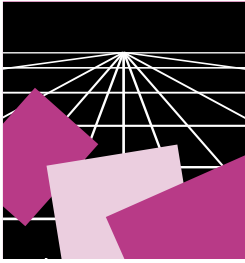
Summary

Individuals who participated in the National Adult Literacy Survey were asked to provide information on various aspects of their lives that have been found in previous research to be related to literacy. This self-reported information was used to explore the connections between literacy and various social and economic outcomes.

Newspaper reading appears to be very common among American adults, regardless of their demonstrated literacy skills. However, those who performed in the lowest literacy level were far more likely than those in the higher levels to say they never read a newspaper. Similarly, the vast majority of adults reported getting some or a lot of information about current events from television or radio, but those in the lower literacy levels were less likely than those in the higher levels to say they also get some or a lot of information from print media. In addition to these differences in reading practices by literacy level, the survey results reveal that adults with limited literacy proficiencies were far less likely to have voted in a recent state or national election than were those with more advanced competencies.

Strong relationships between literacy and economic status are also evident in the survey findings. Relatively high proportions of adults in the lower literacy levels were in poverty and received food stamps. On the other hand, relatively few reported receiving interest from savings, which helps to protect individuals from interruptions in earnings.

Further, individuals who performed in the lower levels of literacy proficiency were more likely than their more proficient counterparts to be unemployed or out of the labor force. They also tended to earn lower wages and work fewer weeks per year, and were more likely to be in craft, service, laborer, or assembler occupations than respondents who demonstrated higher levels of literacy performance.



SECTION III

Interpreting the Literacy Scales

Building on the two earlier literacy surveys conducted by Educational Testing Service (ETS), the performance results from the National Adult Literacy Survey are reported on three literacy scales — prose, document, and quantitative — rather than on a single conglomerate scale. Each of the three literacy scales ranges from 0 to 500.

The purpose of this section of the report is to give meaning to the literacy scales — or, more specifically, to interpret the numerical scores that are used to represent adults' proficiencies on these scales. Toward this end, the section begins with a brief summary of the task development process and of the way in which the literacy levels are defined. A detailed description of the prose, document, and quantitative scales is then provided. The five levels on each scale are defined, and the skills and strategies needed to successfully perform the tasks in each level are discussed. Sample tasks are presented to illustrate the types of materials and task demands that characterize the levels on each scale. The section ends with a brief summary of the probabilities of successful performance on tasks within each level for individuals who demonstrated different proficiencies.

Building the Literacy Tasks

The literacy scales make it possible not only to summarize the literacy proficiencies of the total population and of various subpopulations, but also to determine the relative difficulty of the literacy tasks administered in the survey. That is, just as an individual receives a score according to his or her performance on the assessment tasks, each task receives a value according to its difficulty as determined by the performance of the adults who participated in the survey. Previous research conducted at ETS has shown that the difficulty of a literacy task, and therefore its placement on a particular literacy scale, is determined by three factors: the structure or linguistic format of the material,

the content and/or the context from which it is selected, and the nature of the task, or what the individual is asked to do with the material.

Materials. The materials selected for inclusion in NALS reflect a variety of linguistic formats that adults encounter in their daily activities. Most of the prose materials used in the survey are expository — that is, they describe, define, or inform — since most of the prose that adults read is expository in nature; however, narratives and poetry are included, as well. The prose materials include an array of linguistic structures, ranging from texts that are highly organized both topically and visually to those that are loosely organized. They also include texts of varying lengths, from multiple-page magazine selections to short newspaper articles. All prose materials included in the survey were reproduced in their original format.

The document materials represent a wide variety of structures, which are characterized as tables, charts and graphs, forms, and maps, among other categories. Tables include matrix documents in which information is arrayed in rows and columns — for example, bus or airplane schedules, lists, or tables of numbers. Documents categorized as charts and graphs include pie charts, bar graphs, and line graphs. Forms are documents that require information to be filled in, while other structures include such materials as advertisements and coupons.

The quantitative tasks require the reader to perform arithmetic operations using numbers that are embedded in print. Since there are no materials that are unique to quantitative tasks, these tasks were based on prose materials and documents. Most quantitative tasks were, in fact, based on document structures.

Content and/or Contexts. Adults do not read printed or written materials in a vacuum. Rather, they read within a particular context or for a particular purpose. Accordingly, the NALS materials represent a variety of contexts and contents. Six such areas were identified: home and family; health and safety; community and citizenship; consumer economics; work; and leisure and recreation.

In selecting materials to represent these areas, efforts were made to include as broad a range as possible, as well as to select universally relevant contexts and contents. This was to ensure that the materials would not be so specialized as to be familiar only to certain groups. In this way, disadvantages for individuals with limited background knowledge were minimized.

Types of Tasks. After the materials were selected, tasks were developed to accompany the materials. These tasks were designed to simulate the ways in which people use various types of materials and to require different strategies for successful task completion. For both the prose and document scales, the tasks can be organized into three major categories: *locating*, *integrating*, and

generating information. In the locating tasks, readers are asked to match information that is given in a question or directive with either literal or synonymous information in the text or document. Integrating tasks require the reader to incorporate two or more pieces of information located in different parts of the text or document. Generating tasks require readers not only to process information located in different parts of the material, but also to go beyond that information by drawing on their knowledge about a subject or by making broad text-based inferences.

Quantitative tasks require readers to perform arithmetic operations — addition, subtraction, multiplication, or division — either singly or in combination. In some tasks, the type of operation that must be performed is obvious from the wording of the question, while in other tasks the readers must infer which operation is to be performed. Similarly, the numbers that are required to perform the operation can, in some cases, be easily identified, while in others, the numbers that are needed are embedded in text. Moreover, some quantitative tasks require the reader to explain how the problem would be solved rather than perform the calculation, and on some tasks the use of a simple four-function calculator is required.

Defining the Literacy Levels

The relative difficulty of the assessment tasks reflects the interactions among the various task characteristics described here. As shown in Figure 1 in the Introduction to this report, the score point assigned to each task is the point at which the individuals with that proficiency score have a high probability of responding correctly. In this survey, an 80 percent probability of correct response was the criterion used. While some tasks were at the very low end of the scale and some at the very high end, most had difficulty values in the 200 to 400 range.

By assigning scale values to both the individuals and tasks, it is possible to see how well adults with varying proficiencies performed on tasks of varying difficulty. While individuals with low proficiency tend to perform well on tasks with difficulty values equivalent to or below their level of proficiency, they are less likely to succeed on tasks with higher difficulty values. This does not mean that individuals with low proficiency can never succeed on more difficult literacy tasks — that is, on tasks whose difficulty values are higher than their proficiencies. They may do so some of the time. Rather, it means that their probability of success is not as high. In other words, the more difficult the task relative to their proficiency, the lower their likelihood of responding correctly.



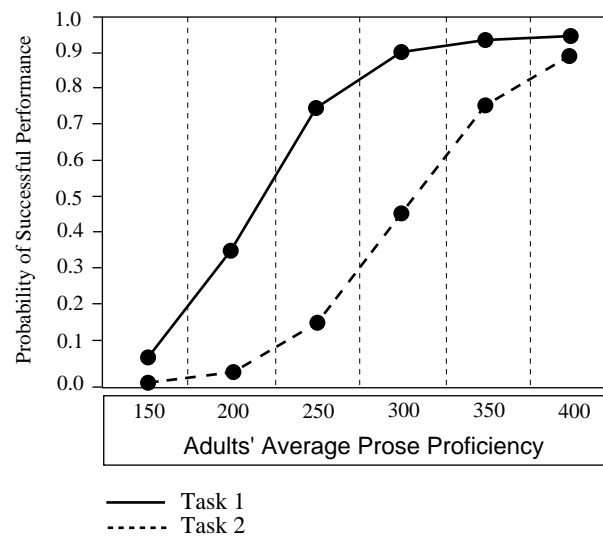
The response probabilities for two tasks on the prose scale are displayed in Figure 3.1. The difficulty of the first task is measured at the 250 point on the scale, and the second task is at the 350 point. This means that an individual would have to score at the 250 point on the prose scale to have an 80 percent chance (that is, a .8 probability) of responding correctly to Task 1. Adults scoring at the 200 point on the prose scale have only a 40 percent chance of responding correctly to this task, whereas those scoring at the 300 point and above would be expected to rarely miss this task and others like it.

In contrast, an individual would need to score at the 350 point to have an 80 percent chance of responding correctly to Task 2. While individuals performing at the 250 point would have an 80 percent chance of success on the first task, their probability of answering the more difficult second task correctly is only 20 percent. An individual scoring at the 300 point is likely to succeed on this more difficult task only half the time.

NALS

Figure 3.1

Probabilities of Successful Performance on Two Prose Tasks by Individuals at Selected Points on the Prose Scale



Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

An analogy may help clarify the information presented for the two prose tasks. The relationship between task difficulty and individual proficiency is much like the high jump event in track and field, in which an athlete tries to jump over a bar that is placed at increasing heights. Each high jumper has a height at which he or she is proficient. That is, he or she is able to clear the bar at that height with a high probability of success, and can clear the bar at lower

levels almost every time. When the bar is higher than their level of proficiency, however, they can be expected to have a much lower chance of clearing it successfully.

Once the literacy tasks are placed on their respective scales, using the criterion described here, it is possible to see how well the interactions among the task characteristics explain the placement of various tasks along the scales.¹ In investigating the progression of task characteristics across the scales, certain questions are of interest. Do tasks with similar difficulty values (that is, with difficulty values near one another on a scale) have certain shared characteristics? Do these characteristics differ in systematic ways from tasks in either higher or lower levels of difficulty? Analyses of the interactions between the materials read and the tasks based on these materials reveal that an ordered set of information-processing skills appears to be called into play to perform the range of tasks along each scale.

To capture this ordering, each scale was divided into five levels that reflect the progression of information-processing skills and strategies: *Level 1* (0 to 225), *Level 2* (226 to 275), *Level 3* (276 to 325), *Level 4* (326 to 375), and *Level 5* (376 to 500). These levels were determined not as a result of any statistical property of the scales, but rather as a result of shifts in the skills and strategies required to succeed on various tasks along the scales, from simple to complex.

The remaining pages of this section describe each scale in terms of the nature of the task demands at each of the five levels. After a brief introduction to each scale, sample tasks in each level are presented and the factors contributing to their difficulty are discussed. The aim of these discussions is to give meaning to the scales and to facilitate interpretation of the results provided in the first and second sections of this report.

Interpreting the Literacy Levels

Prose Literacy

The ability to understand and use information contained in various kinds of textual material is an important aspect of literacy. Most of the prose materials administered in this assessment were expository — that is, they inform, define, or describe — since these constitute much of the prose that adults read. Some narrative texts and poems were included, as well. The prose materials were drawn from newspapers, magazines, books, brochures, and pamphlets and reprinted in their entirety, using the typography and layout of the original source. As a result, the materials vary widely in length, density of information,

¹ I.S. Kirsch and P.B. Mosenthal. (1990). "Exploring Document Literacy: Variables Underlying the Performance of Young Adults." *Reading Research Quarterly*, 25. pp. 5-30.

and the use of structural or organizational aids such as section or paragraph headings, italic or bold face type, and bullets.

Each prose selection was accompanied by one or more questions or directives which asked the reader to perform specific tasks. These tasks represent three major aspects of information-processing: locating, integrating, and generating. Locating tasks require the reader to find information in the text based on conditions or features specified in the question or directive. The match may be literal or synonymous, or the reader may need to make a text-based inference in order to perform the task successfully. Integrating tasks ask the reader to compare or contrast two or more pieces of information from the text. In some cases the information can be found in a single paragraph, while in others it appears in different paragraphs or sections. In the generating tasks, readers must produce a written response by making text-based inferences or drawing on their own background knowledge.

In all, the prose literacy scale includes 41 tasks with difficulty values ranging from 149 to 468. It is important to remember that the locating, generating, and integrating tasks extend over a range of difficulty as a result of interactions with other variables including:

- the number of categories or features of information that the reader must process
- the number of categories or features of information in the text that can distract the reader, or that may seem plausible but are incorrect
- the degree to which information given in the question is obviously related to the information contained in the text
- the length and density of the text

The five levels of prose literacy are defined, and sample tasks provided, in the following pages.

Prose Level 1

Scale range: 0 to 225

Most of the tasks in this level require the reader to read relatively short text to locate a single piece of information which is identical to or synonymous with the information given in the question or directive. If plausible but incorrect information is present in the text, it tends not to be located near the correct information.

Average difficulty value of tasks in this level: 198

Percentage of adults performing in this level: 21%

Tasks in this level require the reader to locate and match a single piece of information in the text. Typically the match between the question or directive and the text is literal, although sometimes synonymous matches may be necessary. The text is usually brief or has organizational aids such as paragraph headings or italics that suggest where in the text the reader should search for the specified information. The word or phrase to be matched appears only once in the text.

One task in Level 1 with a difficulty value of **208** asks respondents to read a newspaper article about a marathon swimmer and to underline the sentence that tells what she ate during a swim. Only one reference to food is contained in the passage, and it does not use the word “ate.” Rather, the article says the swimmer “kept up her strength with banana and honey sandwiches, hot chocolate, lots of water and granola bars.” The reader must match the word “ate” in the directive with the only reference to foods in the article.

Underline the sentence that tells what Ms. Chanin
ate during the swim.

Swimmer completes Manhattan marathon

The Associated Press

NEW YORK—University of Maryland senior Stacy Chanin on Wednesday became the first person to swim three 28-mile laps around Manhattan.

Chanin, 23, of Virginia, climbed out of the East River at 96th Street at 9:30 p.m. She began the swim at noon on Tuesday.

A spokesman for the swimmer, Roy Brunett, said Chanin had kept up her strength with “banana and honey” sandwiches, hot chocolate, lots of water and granola bars.”

Chanin has twice circled Manhattan before and trained for the new feat by swimming about 28.4 miles a week. The Yonkers native has competed as a swimmer since she was 15 and hoped to persuade Olympic authorities to add a long-distance swimming event.

The Leukemia Society of America solicited pledges for each mile she swam.

In July 1983, Julie Ridge became the first person to swim around Manhattan twice. With her three laps, Chanin came up just short of Diana Nyad’s distance record, set on a Florida-to-Cuba swim.

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Prose Level 2

Scale range: 226 to 275

Some tasks in this level require readers to locate a single piece of information in the text; however, several distractors or plausible but incorrect pieces of information may be present, or low-level inferences may be required. Other tasks require the reader to integrate two or more pieces of information or to compare and contrast easily identifiable information based on a criterion provided in the question or directive.

Average difficulty value of tasks in this level: 259

Percentage of adults performing in this level: 27%

Like the tasks in Level 1, most of the tasks in this level ask the reader to locate information. However, these tasks place more varied demands on the reader. For example, they frequently require readers to match more than a single piece of information in the text and to discount information that only partially satisfies the question. If plausible but incomplete information is included in the text, such distractors do not appear near the sentence or paragraph that contains the correct answer. For example, a task based on the sports article reproduced earlier asks the reader to identify the age at which the marathon swimmer began to swim competitively. The article first provides the swimmer's current age of 23, which is a plausible but incorrect answer. The correct information, age 15, is found toward the end of the article.

In addition to directing the reader to locate more than a single piece of information in the text, low-level inferences based on the text may be required to respond correctly. Other tasks in Level 2 (226 to 275) require the reader to identify information that matches a given criterion. For example, in one task with a difficulty value of 275, readers were asked to identify specifically what was wrong with an appliance by choosing the most appropriate of four statements describing its malfunction.

A manufacturing company provides its customers with the following instructions for returning appliances for service:

When returning appliance for servicing, include a note telling as clearly and as specifically as possible what is wrong with the appliance.

A repair person for the company receives four appliances with the following notes attached. Circle the letter next to the note which best follows the instructions supplied by the company.

A

The clock does not run correctly on this clock radio. I tried fixing it, but I couldn't.

C

The alarm on my clock radio doesn't go off at the time I set. It rings 15-30 minutes later.

B

My clock radio is not working. It stopped working right after I used it for five days.

D

This radio is broken. Please repair and return by United Parcel Service to the address on my slip.

Readers in this level may also be asked to infer a recurring theme. One task with a difficulty value of 262 asks respondents to read a poem that uses several metaphors to represent a single, familiar concept and to identify its theme. The repetitiveness and familiarity of the allusions appear to make this “generating” task relatively easy.

Prose Level 3

Scale range: 276 to 325

Tasks in this level tend to require readers to make literal or synonymous matches between the text and information given in the task, or to make matches that require low-level inferences. Other tasks ask readers to integrate information from dense or lengthy text that contains no organizational aids such as headings. Readers may also be asked to generate a response based on information that can be easily identified in the text. Distracting information is present, but is not located near the correct information.

Average difficulty value of tasks in this level: 298

Percentage of adults performing in this level: 32%

One of the easier Level 3 tasks requires the reader to write a brief letter explaining that an error has been made on a credit card bill. This task is at 280 on the prose scale. Other tasks in this level require the reader to search fairly dense text for information. Some of the tasks ask respondents to make a literal or synonymous match on more than a single feature, while other tasks ask them to integrate multiple pieces of information from a long passage that does not contain organizational aids.

One of the more difficult Level 3 tasks (with a difficulty value of 316) requires the reader to read a magazine article about an Asian-American woman and to provide two facts that support an inference made from the text. The question directs the reader to identify what Ida Chen did to help resolve conflicts due to discrimination.

List two things that Chen became involved in or has done to help resolve conflicts due to discrimination.

IDA CHEN is the first Asian-American woman to become a judge of the Commonwealth of Pennsylvania.

She understands discrimination because she has experienced it herself.

Soft-spoken and eminently dignified, Judge Ida Chen prefers hearing about a new acquaintance rather than talking about herself. She wants to know about career plans, hopes, dreams, fears. She gives unsolicited advice as well as encouragement. She instills confidence.

Her father once hoped that she would become a professor. And she would have also made an outstanding social worker or guidance counselor. The truth is that Chen wears the caps of all these professions as a Family Court judge of the Court of Common Pleas of Philadelphia County, as a participant in public advocacy for minorities, and as a particularly sensitive, caring person.

She understands discrimination because she has experienced it herself. As an elementary school student, Chen tried to join the local Brownie troop. "You can't be a member," she was told. "Only American girls are in the Brownies."

Originally intent upon a career as a journalist, she selected Temple University because of its outstanding journalism department and affordable tuition. Independence being a personal need, she paid for her tuition by working for Temple's Department of Criminal Justice. There she had her first encounter with the legal world and it turned her career plans in a new direction — law school.

Through meticulous planning, Chen was able to earn her undergraduate degree in two and a half years and she continued to work three jobs. But when she began her first semester as a Temple law student in the fall of 1973, she was barely able to stay awake. Her teacher Lynne Abraham, now a Common Pleas Court judge herself, couldn't help but notice Chen yawning in the back of the class, and when she determined that this student was not a party animal but a workhorse, she arranged a teaching assistant's job for Chen on campus.

After graduating from Temple Law School in 1976, Chen worked for the U.S. Equal Employment Opportunity Commission where she was a litigator on behalf of plaintiffs who experienced discrimination in the workplace, and

then moved on to become the first Asian-American to serve on the Philadelphia Commission on Human Relations.

Appointed by Mayor Wilson Goode, Chen worked with community leaders to resolve racial and ethnic tensions and also made time to contribute free legal counsel to a variety of activist groups.

The "Help Wanted" section of the newspaper contained an entry that aroused Chen's curiosity — an ad for a judge's position. Her application resulted in her selection by a state judicial committee to fill a seat in the state court. And in July of 1988, she officially became a judge of the Court of Common Pleas. Running as both a Republican and Democratic candidate, her position was secured when she won her seat on the bench at last November's election.

At Family Court, Chen presides over criminal and civil cases which include adult sex crimes, domestic violence, juvenile delinquency, custody, divorce and support. Not a pretty picture.

Chen recalls her first day as judge, hearing a juvenile dependency case — "It was a horrifying experience. I broke down because the cases were so depressing," she remembers.

Outside of the courtroom, Chen has made a name for herself in resolving interracial conflicts, while glorying in her Chinese-American identity. In a 1986 incident involving the desecration of Korean street signs in a Philadelphia neighborhood, Chen called for a meeting with the leaders of that community to help resolve the conflict.

Chen's interest in community advocacy is not limited to Asian communities. She has been involved in Hispanic, Jewish and Black issues, and because of her participation in the Ethnic Affairs Committee of the Anti-Defamation League of B'nai B'rith, Chen was one of 10 women nationwide selected to take part in a mission to Israel.

With her recently won mandate to judicate in the affairs of Pennsylvania's citizens, Chen has pledged to work tirelessly to defend the rights of its people and contribute to the improvement of human welfare. She would have made a fabulous Brownie.

— Jessica Schultz

Prose Level 4

Scale range: 326 to 375

These tasks require readers to perform multiple-feature matches and to integrate or synthesize information from complex or lengthy passages. More complex inferences are needed to perform successfully. Conditional information is frequently present in tasks in this level and must be taken into consideration by the reader.

Average difficulty value of tasks in this level: 352

Percentage of adults performing in this level: 17%

A prose task with a difficulty value of 328 requires the reader to synthesize the repeated statements of an argument from a newspaper column in order to generate a theme or organizing principle. In this instance, the supporting statements are elaborated in different parts of a lengthy text.

A more challenging task (with a difficulty value of 359) directs the reader to contrast the two opposing views stated in the newspaper feature reprinted here that discusses the existence of technologies that can be used to produce more fuel-efficient cars.



Contrast Dewey's and Hanna's views about the existence of technologies that can be used to produce more fuel-efficient cars while maintaining the size of the cars.

Face-Off: Getting More Miles Per Gallon

Demand cars with better gas mileage

By Robert Dewey
Guest columnist

WASHINGTON — Warning: Automakers are resurrecting their heavy-metal dinosaurs, aka gas guzzlers.

Government reports show that average new-car mileage has declined to 28.2 miles per gallon — the 1986 level. To reverse this trend, Congress must significantly increase existing gas-mileage standards.

More than half our Nobel laureates and 700 members of the National Academy of Sciences recently called global warming “the most serious environmental threat of the 21st century.” In 1989, oil imports climbed to a near-record 46% of U.S. consumption. Increasing gas mileage is the single biggest step we can take to reduce oil imports and curb global warming. Greater efficiency also lowers our trade deficit (oil imports represent 40% of it) and decreases the need to drill in pristine areas.

Bigger engines and bigger cars mean bigger profits for automakers, who offer us the products they want us to buy. More than ever, Americans want products that have less of an environmental impact. But with only a few fuel-efficient cars to choose from, how do we find ones that meet all our needs?

Government studies show automakers have the technology to dramatically im-

prove gas mileage — while maintaining the 1987 levels of comfort, performance and size mix of vehicles. Automakers also have the ability to make their products safer. The cost of these improvements will be offset by savings at the gas pump!

Cars can average 45 mpg and light trucks 35 mpg primarily by utilizing engine and transmission technologies already on a few cars today. Further improvements are possible by using technologies like the two-stroke engine and better aerodynamics that have been developed but not used.

When the current vehicle efficiency standards were proposed in 1974, Ford wrongly predicted that they “would require either all sub-Pinto-sized vehicles or some mix of vehicles ranging from a sub-subcompact to perhaps a Maverick.” At that time, Congress required a 100% efficiency increase; raising gas mileage to 45 mpg requires only a 60% increase.

Americans want comfortable, safe and efficient cars. If automakers won’t provide them, Congress must mandate them when it considers the issue this summer.

Let’s hope lawmakers put the best interest of the environment and the nation ahead of the automakers’ lobbyists and political action committees.

Robert Dewey is a conservation analyst for the Environmental Action Foundation.

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Don’t demand end to cars people want

By Thomas H. Hanna
Guest columnist

DETROIT — Do Americans look forward to the day when they’ll have to haul groceries, shuttle the kids to and from school or take family vacations in compact and subcompact cars?

I doubt it — which is why U.S. and import carmakers oppose the 40-miles-per-gallon to 45 mpg corporate average fuel economy mandates that some are pushing in Congress, either to curb tailpipe carbon dioxide emissions because of alleged global warming or for energy conservation.

Since the mid-1970s, automakers have doubled the fleet average fuel economy of new cars to 28 mpg — and further progress will be made.

Compact and subcompact cars with mileage of 40 mpg or better are now available, yet they appeal to only 5% of U.S. car buyers.

But to achieve a U.S. fleet average of 40 mpg to 45 mpg, carmakers would have to sharply limit the availability of family-size models and dramatically trim the size and weight of most cars.

There simply are not magic technologies to meet such a standard.

Almost every car now sold in the USA

would have to be drastically downsized, and many would be obsolete.

As a result, Americans each year would be unable to buy the vehicles most suited for their needs: mid- and family-size models, luxury automobiles, mini-vans, small trucks and utility vehicles.

The fleet shift to compacts and subcompacts could also force the closing of assembly plants, supplier firms and dealerships, at a cost of thousands of U.S. jobs.

Although a growing number of scientists are skeptical of global warming, the issue deserves thorough international scientific evaluation, not premature unilateral U.S. action.

Carbon dioxide emissions from U.S. vehicles total less than 2.5% of worldwide “greenhouse” gases. Even doubling today’s corporate average fuel economy for U.S. cars — if technically possible — would cut those gases about 5%.

Whatever the motivation — alleged global warming or energy conservation — the stakes are high for millions of Americans and thousands of U.S. jobs in unrealistic corporate average fuel economy mandates.

Thomas H. Hanna is president and chief executive officer of the Motor Vehicle Manufacturers Association of the United States.

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Two other tasks in Level 4 on the prose scale require the reader to draw on background knowledge in responding to questions asked about two poems. In one they are asked to generate an unfamiliar theme from a short poem (difficulty value of 362), and in the other they are asked to compare two metaphors (value of 374).

Prose Level 5

Scale range: 376 to 500

Some tasks in this level require the reader to search for information in dense text which contains a number of plausible distractors. Others ask readers to make high-level inferences or use specialized background knowledge. Some tasks ask readers to contrast complex information.

Average difficulty value of tasks in this level: 423

Percentage of adults performing in this level: 3%

Two tasks in Level 5 require the reader to search for information in dense text containing several plausible distractors. One such task (difficulty value of 410) requires the respondent to read information about jury selection and service. The question requires the reader to interpret information to identify two ways in which prospective jurors may be challenged.



Identify and summarize the two kinds of challenges that attorneys use while selecting members of a jury.

DO YOU HAVE A QUESTION?

QUESTION: What is the new program for scheduling jurors?

ANSWER: This is a new way of organizing and scheduling jurors that is being introduced all over the country. The goals of this program are to save money, increase the number of citizens who are summoned to serve and decrease the inconvenience of serving.

The program means that instead of calling jurors for two weeks, jurors now serve only one day, or for the length of one trial if they are selected to hear a case. Jurors who are not selected to hear a case are excused at the end of the day, and their obligations to serve as jurors are fulfilled for three years. The average trial lasts two days once testimony begins.

An important part of what is called the One Day – One Trial program is the “standby” juror. This is a person called to the Courthouse if the number of cases to be tried requires more jurors than originally estimated. Once called to the Courthouse, the standby becomes a “regular” juror, and his or her service is complete at the end of one day or one trial, the same as everyone else.

Q. How was I summoned?

A. The basic source for names of eligible jurors is the Driver’s License list which is supplemented by the voter registration list. Names are chosen from these combined lists by a computer in a completely random manner.

Once in the Courthouse, jurors are selected for a trial by this same computer and random selection process.

Q. How is the Jury for a particular trial selected?

A. When a group of prospective jurors is selected, more than the number needed for a trial are called. Once this group has been seated in the courtroom, either the Judge or the attorneys ask questions. This is called *voir dire*. The purpose of questions asked during *voir dire* is to

ensure that all of the jurors who are selected to hear the case will be unbiased, objective and attentive.

In most cases, prospective jurors will be asked to raise their hands when a particular question applies to them. Examples of questions often asked are: Do you know the Plaintiff, Defendant or the attorneys in this case? Have you been involved in a case similar to this one yourself? Where the answer is yes, the jurors raising hands may be asked additional questions, as the purpose is to guarantee a fair trial for all parties. When an attorney believes that there is a legal reason to excuse a juror, he or she will challenge the juror for cause. Unless both attorneys agree that the juror should be excused, the Judge must either sustain or override the challenge.

After all challenges for cause have been ruled upon, the attorneys will select the trial jury from those who remain by exercising peremptory challenges. Unlike challenges for cause, no reason need be given for excusing a juror by peremptory challenge. Attorneys usually exercise these challenges by taking turns striking names from a list until both are satisfied with the jurors at the top of the list or until they use up the number of challenges allowed. Challenged jurors and any extra jurors will then be excused and asked to return to the jury selection room.

Jurors should not feel rejected or insulted if they are excused for cause by the Court or peremptorily challenged by one of the attorneys. The *voir dire* process and challenging of jurors is simply our judicial system’s way of guaranteeing both parties to a lawsuit a fair trial.

Q. Am I guaranteed to serve on a jury?

A. Not all jurors who are summoned actually hear a case. Sometimes all the Judges are still working on trials from the previous day, and no new jurors are chosen. Normally, however, some new cases begin every day. Sometimes jurors are challenged and not selected.

A somewhat more demanding task (difficulty value of 423) involves the magazine article on Ida Chen reproduced earlier. This more challenging task requires the reader to explain the phrase “recently won mandate” used at the end of the text. To explain this phrase, the reader needs to understand the concept of a political mandate as it applies to Ida Chen and the way she is portrayed in this article.

Document Literacy

Another important aspect of being literate in modern society is having the knowledge and skills needed to process information from documents. We often encounter tables, schedules, charts, graphs, maps, and forms in everyday life, both at home and at work. In fact, researchers have found that many of us spend more time reading documents than any other type of material.² The ability to locate and use information from documents is therefore essential.

Success in processing documents appears to depend at least in part on the ability to locate information in complex arrays and to use this information in the appropriate ways. Procedural knowledge may be needed to transfer information from one source or document to another, as is necessary in completing applications or order forms.

The NALS document literacy scale contains 81 tasks with difficulty values that range from 69 to 396 on the scale. By examining tasks associated with various proficiency levels, we can identify characteristics that appear to make certain types of document tasks more or less difficult for readers. Questions and directives associated with these tasks are basically of four types: *locating*, *cycling*, *integrating*, and *generating*. Locating tasks require the readers to match one or more features of information stated in the question to either identical or synonymous information given in the document. Cycling tasks require the reader to locate and match one or more features, but differ in that they require the reader to engage in a series of feature matches to satisfy conditions given in the question. The integrating tasks typically require the reader to compare and contrast information in adjacent parts of the document. In the generating tasks, readers must produce a written response by processing information found in the document and also making text-based inferences or drawing on their own background knowledge.

²J.T. Guthrie, M. Seifert, and I.S. Kirsch. (1986). “Effects of Education, Occupation, and Setting on Reading Practices.” *American Educational Research Journal*, 23, pp. 151-160.

As with the prose tasks, each type of question or directive extends over a range of difficulty as a result of interactions among several variables or task characteristics that include:

- the number of categories or features of information in the question that the reader has to process or match
- the number of categories or features of information in the document that can serve to distract the reader or that may seem plausible but are incorrect
- the extent to which the information asked for in the question is obviously related to the information stated in the document and
- the structure of the document

A more detailed discussion of the five levels of document literacy is provided in the following pages.

Document Level 1

Scale range: 0 to 225

Tasks in this level tend to require the reader either to locate a piece of information based on a literal match or to enter information from personal knowledge onto a document. Little, if any, distracting information is present.

Average difficulty value of tasks in this level: 195

Percentage of adults performing in this level: 23%

Some of the Level 1 tasks require the reader to match one piece of information in the directive with an identical or synonymous piece of information in the document. For example, readers may be asked to write a piece of personal background information — such as their name or age — in the appropriate place on a document. One task with a difficulty value of 69 directs individuals to look at a Social Security card and sign their name on the line marked “signature.” Tasks such as this are quite simple, since only one piece of information is required, it is known to the respondent, and there is only one logical place on the document where it may be entered.



Here is a Social Security card. Sign your name on the line that reads "signature."

Respondents were given a copy of a Social Security card to complete this task.

Other tasks in this level are slightly more complex. For example, in one task, readers were asked to complete a section of a job application by providing several pieces of information. This was more complicated than the previous task described, since respondents had to conduct a series of one-feature matches. As a result, the difficulty value of this task was higher (193).

You have gone to an employment center for help in finding a job. You know that this center handles many different kinds of jobs. Also, several of your friends who have applied here have found jobs that appeal to you.

The agent has taken your name and address and given you the rest of the form to fill out. Complete the form so the employment center can help you get a job.

Birth date _____ Age ____ Sex: Male ____ Female ____
 Height _____ Weight _____ Health _____
 Last grade completed in school _____

Kind of work wanted:

Part-time _____ Summer _____
 Full-time _____ Year-round _____

Other tasks in this level ask the reader to locate specific elements in a document that contains a variety of information. In one task, for example, respondents were given a form providing details about a meeting and asked to indicate the date and time of the meeting, which were stated in the form. The difficulty values associated with these tasks were **187** and **180**, respectively. The necessary information was referred to only once in the document.

Document Level 2

Scale range: 226 to 275

Tasks in this level are more varied than those in Level 1. Some require the reader to match a single piece of information; however, several distractors may be present, or the match may require low-level inferences. Tasks in this level may also ask the reader to cycle through information in a document or to integrate information from various parts of a document.

Average difficulty value of tasks in this level: 249

Percentage of adults performing in this level: 28%

Some tasks in Level 2 ask readers to match two pieces of information in the text. For example, one task with a difficulty value of **275** directs the respondent to look at a pay stub and to write “the gross pay for this year to date.” To perform the task successfully, respondents must match both “gross pay” and “year to date” correctly. If readers fail to match on both features, they are likely to indicate an incorrect amount.

What is the gross pay for this year to date?

HOURS				PERIOD ENDING	REGULAR	OVERTIME	GROSS	DEF. ANN.	NET PAY
REGULAR	2ND SHIFT	OVERTIME	TOTAL	03/15/85					
50:0			50:0	CURRENT	625:00		625:00		459:88
				YEAR TO DATE			4268:85		

TAX DEDUCTIONS				OTHER DEDUCTIONS					
	FED. WH	STATE WH	CITY WH	FICA	CR UNION	UNITED FD	PERS INS.	MISC.	MISC CODE
CURRENT	108:94	13:75		38:31					
YEAR TO DATE	734:98	82:50		261:67					

OTHER DEDUCTIONS					
CODE	TYPE	AMOUNT	CODE	TYPE	AMOUNT
07	DEN	4:12			

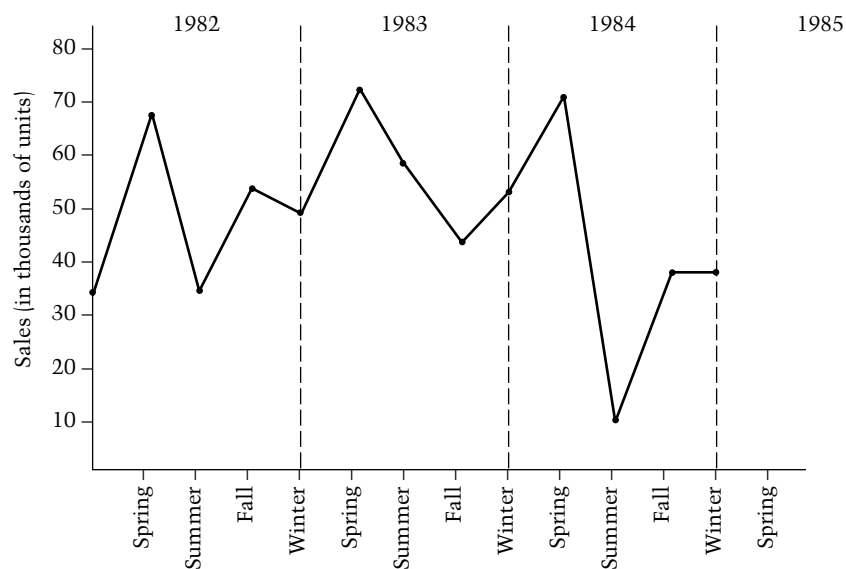
NON-NEGOTIABLE

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A second question based on this document — What is the current net pay? — was also expected to require readers to make a two-feature match. Accordingly, the difficulty values of the two items were expected to be similar. The task anchored at about the **224** point on the scale, however, and an analysis of the pay stub reveals why its difficulty was lower than that of the previous task. To succeed on the second task, the reader only needs to match on the feature “net pay.” Since the term appears only once on the pay stub and there is only one number in the column, this task requires only a one-feature match and receives a difficulty value that lies within the Level 1 range on the document scale.

Tasks in Level 2 may also require the reader to integrate information from different parts of the document by looking for similarities or differences. For example, a task with a difficulty value of **260** asks respondents to study a line graph showing a company’s seasonal sales over a three-year period, then predict the level of sales for the following year, based on the seasonal trends shown in the graph.

You are a marketing manager for a small manufacturing firm. This graph shows your company’s sales over the last three years. Given the seasonal pattern shown on the graph, predict the sales for Spring 1985 (in thousands) by putting an “x” on the graph.



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Document Level 3

Scale range: 276 to 325

Some tasks in this level require the reader to integrate multiple pieces of information from one or more documents. Others ask readers to cycle through rather complex tables or graphs which contain information that is irrelevant or inappropriate to the task.

Average difficulty value of tasks in this level: 302

Percentage of adults performing in this level: 31%

Tasks within the range for Level 3 ask the reader to locate particular features in complex displays, such as tables that contain nested information. Typically, distractor information is present in the same row or column as the correct answer. For example, the reader might be asked to use a table that summarizes appropriate uses for a variety of products, and then choose which product to use for a certain project. One such task had a difficulty value of 303. To perform this task successfully, the respondent uses a table containing nested information to determine the type of sandpaper to buy if one needs “to smooth wood in preparation for sealing and plans to buy garnet sandpaper.” This task requires matching not only on more than a single feature of information but also on features that are not always superordinate categories in the document. For example, “preparation for sealing” is subordinated or nested under the category “wood,” while the type of sandpaper is under the main heading of “garnet.” In addition, there are three other types of sandpaper that the reader might select that partially satisfy the directive.



You need to smooth wood in preparation for sealing and plan to buy garnet sandpaper. What type of sandpaper should you buy?

ABRASIVE SELECTION GUIDE																		
MATERIAL & OPERATION	PRODUCTION®					GARNET				WETORDRY®				FRE-CUT®		EMERY		
	EC	C	M	F	EF	C	M	F	EF	VF	EF	SF	UF	VF	EF	C	M	F
WOOD																		
Paint Removal																		
Heavy Stock Removal																		
Moderate Stock Removal																		
Preparation for Sealing																		
After Sealer																		
Between Coats																		
After Final Coat																		
METAL																		
Rust and Paint Removal																		
Light Stock Removal																		
Preparation for Priming																		
Finishing and Polishing																		
After Primer																		
Between Coats																		
After Final Coat																		
PLASTIC & FIBERGLASS																		
Shaping																		
Light Stock Removal																		
Finishing & Scuffing																		

EC = Extra Coarse C = Coarse M = Medium F = Fine VF = Very Fine EF = Extra Fine SF = Super Fine UF = Ultra Fine

SAFETY INFORMATION:
■ Wear approved safety goggles when sanding.

■ Use particle/dust mask or other means to prevent inhalation of sanding dust.

■ When using power tools, follow manufacturer's recommended procedures and safety instructions.

EC = Extra Coarse C = Coarse M = Medium F = Fine VF = Very Fine EF = Extra Fine SF = Super Fine UF = Ultra Fine

SAFETY INFORMATION:

■ Wear approved safety goggles when sanding.

■ Use particle/dust mask or other means to prevent inhalation of sanding dust.

■ When using power tools, follow manufacturer's recommended procedures and safety instructions.

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At the same level of difficulty (307), another task directs the reader to a stacked bar graph depicting estimated power consumption by source for four different years. The reader is asked to select an energy source that will provide more power in the year 2000 than it did in 1971. To succeed on this task, the reader must first identify the correct years and then compare each of the five pairs of energy sources given.

Document Level 4

Scale range: 326 to 375

Tasks in this level, like those in the previous levels, ask readers to perform multiple-feature matches, cycle through documents, and integrate information; however, they require a greater degree of inferencing. Many of these tasks require readers to provide numerous responses but do not designate how many responses are needed. Conditional information is also present in the document tasks in this level and must be taken into account by the reader.

Average difficulty value of tasks in this level: 340

Percentage of adults performing in this level: 15%

[illegible]

Other tasks involving this bus schedule are found in Level 3. These tasks require the reader to match on fewer features of information and do not involve the use of conditional information.

Document Level 5

Scale range: 376 to 500

Tasks in this level require the reader to search through complex displays that contain multiple distractors, to make high-level text-based inferences, and to use specialized knowledge.

Average difficulty value of tasks in this level: 391

Percentage of adults performing in this level: 3%

A task receiving a difficulty value of 396 involves reading and understanding a table depicting the results from a survey of parents and teachers evaluating parental involvement in their school. Respondents were asked to write a brief paragraph summarizing the results. This particular task requires readers to integrate the information in the table to compare and contrast the viewpoints of parents and teachers on a selected number of school issues.



Using the information in the table, write a brief paragraph summarizing the extent to which parents and teachers agreed or disagreed on the statements about issues pertaining to parental involvement at their school.

Parents and Teachers Evaluate Parental Involvement at Their School

Do you agree or disagree that . . . ?

		Level of School		
	Total	Elementary	Junior High	High School
<i>percent agreeing</i>				
Our school does a good job of encouraging parental involvement in sports, arts, and other nonsubject areas				
Parents	77	76	74	79
Teachers	77	73	77	85
Our school does a good job of encouraging parental involvement in educational areas				
Parents	73	82	71	64
Teachers	80	84	78	70
Our school only contacts parents when there is a problem with their child				
Parents	55	46	62	63
Teachers	23	18	22	33
Our school does not give parents the opportunity for any meaningful roles				
Parents	22	18	22	28
Teachers	8	8	12	7

Source: The Metropolitan Life Survey of the American Teacher, 1987

Quantitative Literacy

Since adults are often required to perform numerical operations in everyday life, the ability to perform quantitative tasks is another important aspect of literacy. These abilities may seem, at first glance, to be fundamentally different from the types of skills involved in reading prose and documents and, therefore, to extend the concept of literacy beyond its traditional limits. However, research indicates that the processing of printed information plays a critical role in affecting the difficulty of tasks along this scale.³

³ I.S. Kirsch and A. Jungeblut. (1986). *Literacy: Profiles of America's Young Adults, Final Report*. Princeton, NJ: Educational Testing Service. I.S. Kirsch, A. Jungeblut, and A. Campbell. (1992). *Beyond the School Doors: The Literacy Needs of Job Seekers Served by the U.S. Department of Labor*. Princeton, NJ: Educational Testing Service.

The NALS quantitative literacy scale contains some 43 tasks with difficulty values that range from 191 to 436. The difficulty of these tasks appears to be a function of several factors, including:

- the particular arithmetic operation called for
- the number of operations needed to perform the task
- the extent to which the numbers are embedded in printed materials and
- the extent to which an inference must be made to identify the type of operation to be performed

In general, it appears that many individuals can perform simple arithmetic operations when both the numbers and operations are made explicit. However, when the numbers to be used must be located in and extracted from different types of documents that contain similar but irrelevant information, or when the operations to be used must be inferred from printed directions, the tasks become increasingly difficult.

A detailed discussion of the five levels of quantitative literacy is provided on the following pages.

Quantitative Level 1

Scale range: 0 to 225

Tasks in this level require readers to perform single, relatively simple arithmetic operations, such as addition. The numbers to be used are provided and the arithmetic operation to be performed is specified.

Average difficulty value of tasks in this level: 206

Percentage of adults performing in this level: 22%

The least demanding task on the quantitative scale (191) requires the reader to total two numbers on a bank deposit slip. In this task, both the numbers and the arithmetic operation are judged to be easily identified and the operation involves the simple addition of two decimal numbers that are set up in column format.

You wish to use the automatic teller machine at your bank to make a deposit. Figure the total amount of the two checks being deposited. Enter the amount on the form in the space next to TOTAL.

Availability of Deposits		
Funds from deposits may not be available for immediate withdrawal. Please refer to your institution's rules governing funds availability for details.		
Crediting of deposits and payments is subject to verification and collection of actual amounts deposited or paid in accordance with the rules and regulations of your financial institution.		
PLEASE PRINT		
YOUR MAC CARD NUMBER (No PINs PLEASE)	CASH	\$
111 222 333 4	LIST CHECKS BY BANK NO.	00
YOUR FINANCIAL INSTITUTION	ENDORSE WITH NAME & ACCOUNT NUMBER	
Union Bank	557	
YOUR ACCOUNT NUMBER	19	
987 555 674	75 00	
YOUR NAME	TOTAL	
Chris Jones		
CHECK ONE DEPOSIT or PAYMENT		
DO NOT FOLD NO COINS OR PAPER CLIPS PLEASE		

DO NOT DETACH TICKET

Quantitative Level 2

Scale range: 226 to 275

Tasks in this level typically require readers to perform a single operation using numbers that are either stated in the task or easily located in the material. The operation to be performed may be stated in the question or easily determined from the format of the material (for example, an order form).

Average difficulty value of tasks in this level: 251

Percentage of adults performing in this level: 25%

In the easier tasks in Level 2, the quantities are also easy to locate. In one such task at 246 on the quantitative scale, the cost of a ticket and bus is given for each of two shows. The reader is directed to determine how much less attending one show will cost in comparison to the other.

The price of one ticket and bus for “Sleuth” costs
how much less than the price of one ticket and bus
for “On the Town”?

THEATER TRIP

A charter bus will leave from the bus stop (near the Conference Center) at 4 p.m., giving you plenty of time for dinner in New York. Return trip will start from West 45th Street directly following the plays. Both theaters are on West 45th Street. Allow about 1½ hours for the return trip.

Time: 4 p.m., Saturday, November 20

Price: “On the Town”	Ticket and bus	\$11.00
“Sleuth”	Ticket and bus	\$8.50

Limit: Two tickets per person

In a more complex set of tasks, the reader is directed to complete an order form for office supplies using a page from a catalogue. No other specific instructions as to what parts of the form should be completed are given in the directive. One task (difficulty value of 270) requires the reader to use a table on the form to locate the appropriate shipping charges based on the amount of a specified set of office supplies, to enter the correct amount on an order form, and then to calculate the total price of the supplies.

Quantitative Level 3

Scale range: 276 to 325

In tasks in this level, two or more numbers are typically needed to solve the problem, and these must be found in the material. The operation(s) needed can be determined from the arithmetic relation terms used in the question or directive.

Average difficulty value of tasks in this level: 293

Percentage of adults performing in this level: 31%

In general, tasks within the range for Level 3 ask the reader to perform a single operation of addition, subtraction, multiplication, or division. However, the operation is not stated explicitly in the directive or made clear by the format of the document. Instead, it must be inferred from the terms used in the directive. These tasks are also more difficult because the reader must locate the numbers in various parts of the document in order to perform the operation.

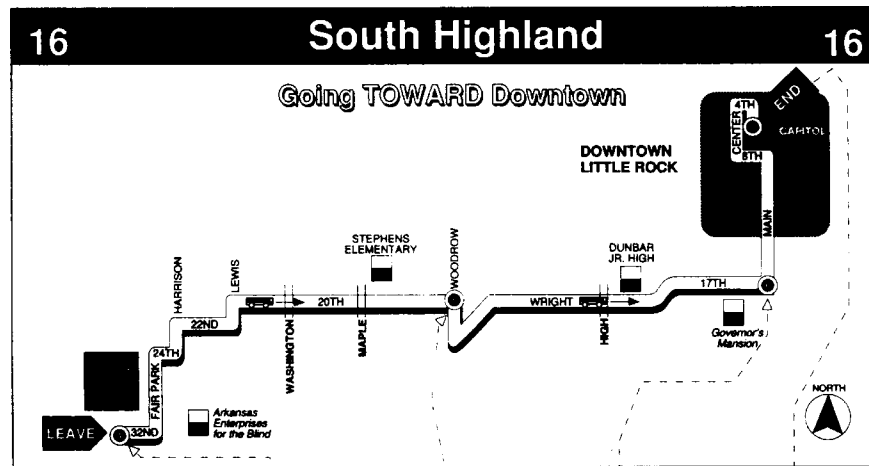
From a bar graph showing percentages of population growth for two groups across six periods, a task at the 279 point on the scale directs the reader to calculate the difference between the groups for one of the years.

A more difficult task in Level 3 (321) requires the use of a bus schedule to determine how long it takes to travel from one location to another on a Saturday. To respond correctly, the reader must match on several features of information given in the question to locate the appropriate times.



Suppose that you took the 12:45 p.m. bus from
U.A.L.R. Student Union to 17th and Main on a
Saturday. According to the schedule, how many
minutes is the bus ride?





BUS LEAVES
from
U.A.L.R.
Student Union

Bus arrives
at
20th &
Woodrow

Bus arrives
at
17th &
Main

BUS ENDS
at
Capitol &
Louisiana

WEEKDAYS

A.M.	♿	5:38	5:51	6:00	6:09
		6:11	6:25	6:35	6:45
	♿	6:41	6:55	7:05	7:15
		7:11	7:25	7:35	7:45
	♿	7:41	7:55	8:05	8:15
		8:11	8:25	8:35	8:45
	♿	8:41	8:55	9:05	9:15
		9:14	9:27	9:36	9:45
	♿	9:44	9:57	10:06	10:15
		10:14	10:27	10:36	10:45
	♿	10:44	10:57	11:06	11:15
		11:14	11:27	11:36	11:45
P.M.	♿	11:44	11:57	12:06	12:15
		12:14	12:27	12:36	12:45
	♿	12:44	12:57	1:06	1:15
		1:14	1:27	1:36	1:45
	♿	1:44	1:57	2:06	2:15
		2:14	2:27	2:36	2:45
	♿	2:44	2:57	3:06	3:15
		3:14	3:27	3:36	3:45
	♿	3:43	3:56	4:05	4:15
		4:13	4:26	4:35	4:45
	♿	4:43	4:56	5:05	5:15
		5:13	5:26	5:35	5:45
	♿	5:45	5:58	6:07	6:17
		6:11	6:22	6:30	-
	♿	6:46	6:57	7:05	-

SATURDAY

A.M.	♿	5:38	5:51	6:00	6:09
		6:45	6:57	7:06	7:15
	♿	7:45	7:57	8:06	8:15
		8:45	8:57	9:06	9:15
	♿	9:45	9:57	10:06	10:15
		10:45	10:57	11:06	11:15
	♿	11:45	11:57	12:06	12:15
		12:45	12:57	1:06	1:15
P.M.	♿	1:45	1:57	2:06	2:15
		2:45	2:57	3:06	3:15
	♿	3:45	3:57	4:06	4:15
		4:45	4:57	5:06	5:15
	♿	5:45	5:57	6:06	6:15
		6:44	6:56	7:05	-

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Quantitative Level 4

Scale range: 326 to 375

These tasks tend to require readers to perform two or more sequential operations or a single operation in which the quantities are found in different types of displays, or the operations must be inferred from semantic information given or drawn from prior knowledge.


Average difficulty value of tasks in this level: 349


Percentage of adults performing in this level: 17%

One task in this level, with a difficulty value of 332, asks the reader to estimate, based on information in a news article, how many miles per day a driver covered in a sled-dog race. The respondent must know that to calculate a “per day” rate requires the use of division.

A more difficult task (355) requires the reader to select from two unit price labels to estimate the cost per ounce of creamy peanut butter. To perform this task successfully, readers may have to draw some information from prior knowledge.

Estimate the cost per ounce of the creamy peanut butter. Write your estimate on the line provided.

Unit price		You pay
11.8¢ per oz.		1.89
rich chnky pnt bt		
10693	0  51144 09071	16 oz.

Unit price		You pay
1.59 per lb.		1.99
creamy pnt butter		
10732	0  51144 09071	20 oz.

Quantitative Level 5

Scale range: 376 to 500

These tasks require readers to perform multiple operations sequentially. They must disembed the features of the problem from text or rely on background knowledge to determine the quantities or operations needed.

Average difficulty value of tasks in this level: 411

Percentage of adults performing in this level: 4%

One of the most difficult tasks on the quantitative scale (433) requires readers to look at an advertisement for a home equity loan and then, using the information given, explain how they would calculate the total amount of interest charges associated with the loan.

You need to borrow \$10,000. Find the ad for Home Equity Loans on page 2 in the newspaper provided. Explain to the interviewer how you would compute the total amount of interest charges you would pay under this loan plan. Please tell the interviewer when you are ready to begin.

FIXED RATE • FIXED TERM**HOME
EQUITY
LOANS****14.25%****SAMPLE MONTHLY REPAYMENT SCHEDULE**

Amount Financed	Monthly Payment
\$10,000	\$156.77
\$25,000	\$391.93
\$40,000	\$627.09

120 Months 14.25% APR

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Estimating Performance Across the Literacy Levels

The literacy levels not only provide a way to explore the progression of information-processing demands across the scales; they can also be used to explore the likelihood that individuals in each level will succeed on tasks of varying difficulty.

The following graphs (Figure 3.2) display the probability that individuals performing at selected points on each scale will give a correct response to tasks with varying difficulty values. We see, for example, that a person whose prose proficiency is 150 has less than a 50 percent chance of giving a correct response to the Level 1 tasks. Individuals whose proficiency scores were at the 200 point, on the other hand, have an almost 80 percent probability of responding correctly to these tasks.

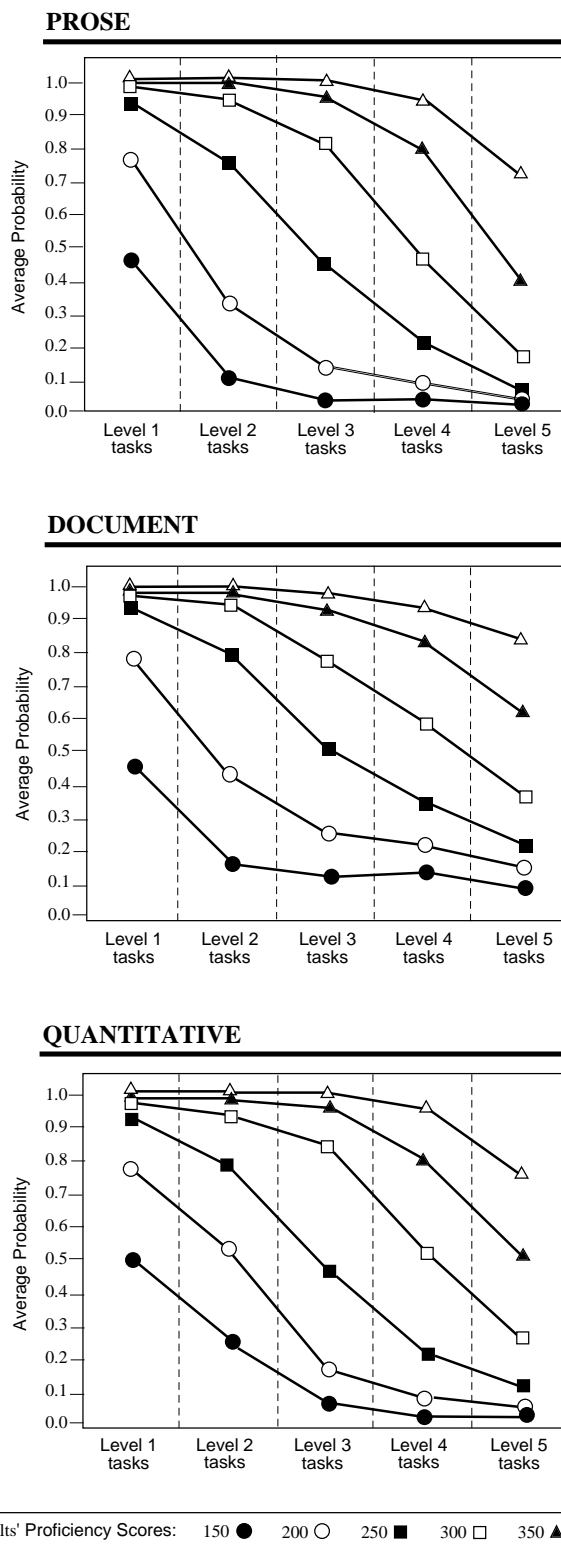
In terms of task demands, we can infer that adults performing at the 200 point on the prose scale are likely to be able to locate a single piece of information in a brief piece of text where there is no distracting information, or when any distracting information is located apart from the desired information. They are likely to have far more difficulty with the types of tasks that occur in Levels 2 through 5, however. For example, they would have only about a 30 percent chance of performing the average task in Level 2 correctly and only about a 10 percent chance of success, or less, on the more challenging tasks found in Levels 3, 4, and 5.

In contrast, readers at the 300 point on the prose scale have an 80 percent (or higher) likelihood of success on tasks in Levels 1, 2, and 3. This means that they demonstrate skill identifying information in fairly dense text without organizational aids. They can also integrate, compare, and contrast information that is easily identified in the text. On the other hand, they are likely to have difficulty with tasks that require them to make higher level inferences, to take conditional information into account, and to use specialized knowledge. The probabilities of their performing these Level 4 tasks successfully are just under 50 percent, and on the Level 5 tasks their likelihood of responding correctly falls to under 20 percent.



NALS**Figure 3.2**

Average Probabilities of Successful Performance by Individuals with Selected Proficiency Scores on the Tasks in Each Literacy Level



Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Similar interpretations can be made using the performance results on the document and quantitative scales. For example, an individual with a proficiency of 150 on the quantitative scale is estimated to have only a 50 percent chance of responding correctly to tasks in Level 1 and less than a 30 percent chance of responding to tasks in each of the other levels. Such an individual demonstrates little or no proficiency in performing the range of quantitative tasks found in this assessment. In contrast, someone with a proficiency of 300 meets or exceeds the 80 percent criterion for the average tasks in Levels 1, 2, and 3. They can be expected to encounter more difficulty with tasks in Levels 4 and 5.

Missing Responses to Literacy Tasks

In any educational, social, or political opinion survey, missing responses are always present. Sometimes missing data can be ignored when tabulating and reporting survey results. If the reasons the data are missing are related to the outcome of the study, however, the missing responses will bias the results unless some adjustment can be made to counter the bias. In this survey, there were reasons to believe that the literacy performance data were missing more often for adults with lower levels of literacy than for adults with higher levels. Field test evidence and experience with surveys indicated that adults with lower levels of literacy would be more likely than adults with higher proficiencies either to decline to respond to the survey at all or to begin the assessment but not to complete it. Ignoring the pattern of missing data would have resulted in overestimating the literacy skills of adults in the United States.

For this survey, several procedures were developed to reduce biases due to nonresponse, based on how much of the survey the respondent completed.⁴ Individuals who refused to participate in the survey before any information about them was collected were omitted from the analyses. Because they were unlikely to know that the survey intended to assess their literacy, it was assumed that their reason for refusing was not related to their level of literacy skills.

Some individuals began the interview, but stopped before they completed at least five tasks on each literacy scale.⁵ The interviewers were trained to record accurately their reasons for stopping. The reasons were subsequently

⁴For a full discussion of the procedures used in scoring, scaling, weighting, and handling nonresponse problems, see the forthcoming *Technical Report of the 1992 National Adult Literacy Survey*.

⁵Five was the minimum number of completed tasks needed for accurate proficiency estimation. No special procedures were needed to estimate the proficiencies of those who broke off the assessment after attempting five or more tasks on each scale.



classified as either related or unrelated to literacy skills. Literacy-related reasons included difficulty with reading or writing, inability to read or write in English, and mental or learning disabilities. Reasons unrelated to literacy included physical disabilities, time conflicts, and interruptions. Some adults gave no reason for stopping the assessment.

Overall, 88 percent of respondents completed the assessment (at least five tasks on each literacy scale). Twelve percent started the survey but stopped before completing five tasks. About half of these individuals, or 6 percent of the adult population, did not complete the assessment for reasons related to their literacy skills, while the other 6 percent did not complete it for reasons unrelated to literacy or for no stated reason.

The missing data were treated differently depending on whether nonrespondents' reasons were related or unrelated to their literacy skills. The missing responses of those who gave literacy-related reasons for terminating the assessment were treated as wrong answers, based on the assumption that they could not have correctly completed the literacy tasks. The missing responses of those who broke off the assessment for no stated reason or for reasons unrelated to literacy were essentially ignored, since it could not be assumed that their answers would have been either correct or incorrect. The proficiencies of such respondents were inferred from the performance of other adults with similar characteristics.

Table 3.1 shows the proficiency scores resulting from these procedures. Adults who completed the assessment had average proficiencies ranging from 279 to 285 on the three literacy scales. Because the missing responses of adults who did not complete the assessment for reasons related to literacy were treated as wrong answers, the average scores of these adults were considerably lower, ranging from 114 to 124. Nearly all adults who terminated the assessment for literacy-related reasons scored in the Level 1 range (below 225). Adults who stopped for other reasons or for unstated reasons had scores between those of the other two groups, ranging from 228 to 237. These adults were not found only in the lowest literacy level, but were distributed across the five levels.

It is likely that there were some errors in classifying nonrespondents' reasons for not completing the assessment. Some adults may have given an explanation that reflected badly on their literacy skills simply because they found completing the assessment too burdensome. Perhaps they could have performed better if they had tried harder. The assumption that such adults are unable to succeed with the literacy tasks may be too strong, and the assignment of wrong answers may underestimate their skills. Other adults may have anticipated failure in the assessment, yet concealed their lack of literacy

Table 3.1: Percentages and average proficiencies of adults on each scale, by assessment completion status

Assessment completion status	CPCT	Literacy scale		
		Prose	Document	Quantitative
		PROF (se)	PROF (se)	PROF (se)
Total	100	272 (0.6)	267 (0.7)	271 (0.7)
Completed assessment	88	285 (0.6)	279 (0.6)	284 (0.6)
Did not complete assessment				
for literacy-related reasons	6	124 (1.5)	116 (1.4)	114 (1.9)
Did not complete assessment				
for reasons unrelated to literacy	6	237 (3.0)	228 (2.8)	231 (3.6)

Notes: CPCT = column percentage; PROF = average proficiency; se = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

skills by citing other reasons for not responding, or by refusing to explain their reason. The assumption that these adults are just like others in their demographic group may also be too strong, and the failure to assign wrong answers may overestimate their skills. To some extent the errors can be expected to counterbalance one another, but the available data are insufficient to assess which kind of classification error occurred more often.

Performance in the Lowest Literacy Level

Level 1 is somewhat different from the other literacy levels. For Levels 2 through 5, adults who can consistently perform the tasks in a given level (that is, at least 80 percent of the time) are said to perform in that level. For example, adults in Level 2 have a high probability of success on the tasks in that level, and more than an 80 percent likelihood of success on the Level 1 tasks. Likewise, adults in Level 3 have a high probability of success on the tasks in that level, as well as on the tasks in Levels 1 and 2.

Level 1, on the other hand, includes adults with a wide range of literacy skills, including some who performed the Level 1 tasks consistently and others who did not. Individuals who do not have an 80 percent probability of success with Level 1 tasks are still grouped in Level 1. Thus, some but not all adults in this level met the relatively undemanding requirements of the Level 1 tasks. This section describes how many adults in Level 1 did not meet the demands of the tasks in this level.

The failure to perform correctly at least one of the literacy tasks can be taken as an indicator of not being able to meet the demands of tasks in Level 1. Table 3.2 provides information on the size of the groups that met or did not meet the relatively undemanding requirements of the Level 1 tasks.

Most adults in the lowest literacy level on each scale performed at least one literacy task correctly. Nearly three-quarters (72 percent) of adults in Level 1 on the prose scale performed at least one task correctly, as did 83 percent of those in Level 1 on the document scale and 66 percent of those in Level 1 on the quantitative scale. The difference in performance among the scales occurs because the least difficult document task had a value of 68, while the least difficult prose task had a value of 149 and the least difficult quantitative task had a value of 191.

Table 3.2: Percentages and average proficiencies on each scale of adults in Level 1

Performance	Literacy scale					
	Prose		Document		Quantitative	
	CPCT	PROF	CPCT	PROF	CPCT	PROF
Total in Level 1	100	173	100	172	100	167
At least one task correct	72	190	83	182	66	190
No tasks correct	21	113	11	94	26	110
No performance data	7	177	6	177	8	159

Notes: CPCT = column percentage; PROF = average proficiency.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

A small proportion of adults in Level 1 did not perform any literacy tasks correctly. Some of these adults completed the survey, while others did not for literacy-related or other reasons. Those who did not succeed on any literacy tasks constitute 21 percent of adults in Level 1 on the prose scale, 11 percent of adults in Level 1 on the document scale, and 26 percent of adults in Level 1 on the quantitative scale. There are wide disparities in average proficiencies between those who performed at least one task correctly (182 to 190 across the scales) and those who did not (94 to 113 across the scales).

For some adults in Level 1 (6 to 8 percent) there are no literacy performance data because they did not respond to any of the literacy tasks for reasons unrelated to their literacy skills or for unknown reasons. These persons could not be described as either meeting or failing to meet the demands of the literacy tasks, so they are distinguished as a separate group. Their proficiencies

were inferred from the performance of other adults with similar demographic backgrounds and fell in the middle range between the other two groups. Nearly all adults who correctly responded to at least one literacy task also completed the assessment. Still, some adults broke off the assessment after already having shown some initial success. Table 3.3 divides adults in Level 1 who were successful with at least one task into two groups: those who completed the assessment (at least five literacy tasks) and those who did not.

Across the scales, from 83 to 90 percent of those in Level 1 who correctly responded to at least one task also completed the assessment. Their average scores ranged from 192 to 196. The remainder (10 to 17 percent) performed at least one task correctly before breaking off the assessment. Their average scores were much lower, ranging from 132 to 153.

Table 3.3: Percentages and average proficiencies of adults in Level 1 with at least one task correct, by assessment completion status

Completion status	Literacy scale					
	Prose		Document		Quantitative	
	CPCT	PROF	CPCT	PROF	CPCT	PROF
Total in Level 1 with at least one task correct	100	190	100	182	100	190
Completed assessment	87	196	83	192	90	194
Did not complete assessment	13	153	17	132	10	153

Notes: CPCT = column percentage; PROF = average proficiency.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

The population of adults who scored in Level 1 on each scale includes not only those who demonstrated success with at least some of the tasks in Level 1 — who constituted the majority — but also those who did not succeed with any of the tasks in this level. Nearly all of those in Level 1 who did not perform any literacy tasks correctly also failed to complete the assessment (86 to 98 percent), as shown in table 3.4. Their average scores range from 93 to 107 across the scales. Most of these adults either did not start or broke off the assessment for literacy-related reasons, so that any literacy tasks that remained unanswered were treated as incorrect.

Table 3.4: Percentages and average proficiencies of adults in Level 1 with no tasks correct, by assessment completion status

Completion status	Literacy scale					
	Prose		Document		Quantitative	
	CPCT	PROF	CPCT	PROF	CPCT	PROF
Total in Level 1 with no tasks correct	100	113	100	94	100	110
Completed assessment	14	148	2	----	14	146
Did not complete assessment	86	107	98	93	86	98

Notes: CPCT = column percentage; PROF = average proficiency.

---- indicates that the cell size is too small to provide reliable proficiency estimates.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Two to 14 percent of the adults in Level 1 who did not succeed on any of the literacy tasks did, in fact, complete the assessment. Their average scores were 148 on the prose scale and 146 on the quantitative scale; too few cases were available to estimate an average document score.

The pattern of Level 1 proficiencies associated with various combinations of missing and incorrect answers shows the consequences of including, rather than excluding, adults who did not complete the assessment for literacy-related reasons. In general, the very low scores of these adults bring down the average for any group in which they are a significant component. Omitting these persons from the assessment would have resulted in inflated estimates of the literacy skills of the adult population overall and particularly of certain subgroups.

Population Diversity within the Lowest Literacy Level

Certain populations of adults were disproportionately likely not to meet the demands of the Level 1 tasks. This section describes the characteristics of adults in Level 1 who did not meet the relatively undemanding requirements of the tasks in this level. Tables 3.5P, D, and Q provide information on the demographic composition of the total adult population in this country, of adults in Level 1 on each literacy scale, and of those adults in Level 1 who did not succeed on any of the assessment tasks.

Table 3.5P: Percentages of adults in selected groups, by membership in total U.S. population, in Level 1, and in Level 1 with no tasks correct

Population group	Prose scale		Level 1 no tasks correct
	Total U.S. population CPCT	Level 1 population CPCT	
Weighted sample size (in millions)	191.3	40.0	8.2
Country of birth			
Born in another country	10	25 (1.3)	55 (2.2)
Highest level of education			
0 to 8 years	10	35 (1.6)	61 (2.3)
9 to 12 years	13	27 (1.3)	17 (1.5)
HS diploma or GED	30	24 (1.4)	14 (1.5)
Race/Ethnicity			
White	76	51 (0.6)	29 (2.3)
Black	11	20 (1.0)	15 (1.4)
Hispanic	10	23 (1.4)	49 (2.1)
Asian/Pacific Islander	2	4 (3.9)	5 (0.9)
Age			
16 to 24 years	18	13 (0.8)	10 (1.2)
65 years and older	16	33 (1.5)	28 (1.8)
Disability or condition			
Any condition	12	26 (1.0)	26 (1.7)
Visual difficulty	7	19 (1.5)	20 (1.5)
Hearing difficulty	7	13 (1.6)	13 (2.0)
Learning disability	3	9 (2.1)	15 (1.4)

Notes: CPCT = column percentage; se = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.



Table 3.5D: Percentages of adults in selected groups, by membership in total U.S. population, in Level 1, and in Level 1 with no tasks correct

Population group	Document scale		
	Total U.S. population	Level 1 population	Level 1 no tasks correct
	CPCT	CPCT	CPCT
Weighted sample size (in millions)	191.3	44.0	4.7
Country of birth			
Born in another country	10	22 (1.3)	67 (3.2)
Highest level of education			
0 to 8 years	10	33 (1.5)	65 (3.1)
9 to 12 years	13	26 (1.5)	12 (1.7)
HS diploma or GED	30	26 (1.7)	13 (2.1)
Race/Ethnicity			
White	76	54 (0.7)	21 (3.0)
Black	11	20 (0.9)	9 (1.1)
Hispanic	10	21 (1.7)	62 (3.2)
Asian/Pacific Islander	2	3 (3.2)	5 (1.6)
Age			
16 to 24 years	18	11 (0.6)	11 (1.8)
65 years and older	16	35 (1.5)	25 (2.2)
Disability or condition			
Any condition	12	26 (1.2)	22 (2.5)
Visual difficulty	7	18 (1.3)	17 (2.3)
Hearing difficulty	7	13 (2.0)	12 (2.0)
Learning disability	3	8 (2.3)	14 (1.6)

Notes: CPCT = column percentage; se = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

While 10 percent of the adult population reported that they were born in another country, from 22 to 25 percent of the individuals who performed in Level 1 on the three scales and 54 to 67 percent of those in Level 1 who did not perform any tasks correctly were foreign born. Some of these individuals were undoubtedly recent immigrants with a limited command of English.

Table 3.5Q: Percentages of adults in selected groups, by membership in total U.S. population, in Level 1, and in Level 1 with no tasks correct

Population group	Quantitative scale		
	Total U.S. population	Level 1 population	Level 1 no tasks correct
	CPCT	CPCT	CPCT
Weighted sample size (in millions)	191.3	42.0	10.6
Country of birth			
Born in another country	10	22 (1.2)	54 (2.0)
Highest level of education			
0 to 8 years	10	33 (1.6)	58 (2.5)
9 to 12 years	13	27 (1.5)	20 (1.5)
HS diploma or GED	30	25 (1.6)	13 (1.3)
Race/Ethnicity			
White	76	50 (0.5)	34 (2.2)
Black	11	23 (0.9)	19 (1.2)
Hispanic	10	22 (1.3)	40 (1.9)
Asian/Pacific Islander	2	3 (3.6)	5 (0.9)
Age			
16 to 24 years	18	14 (0.8)	10 (0.9)
65 years and older	16	32 (1.5)	32 (1.7)
Disability or condition			
Any condition	12	26 (1.2)	28 (1.4)
Visual difficulty	7	19 (1.4)	21 (1.4)
Hearing difficulty	7	12 (2.1)	13 (1.5)
Learning disability	3	8 (2.7)	15 (1.0)

Notes: CPCT = column percentage; se = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

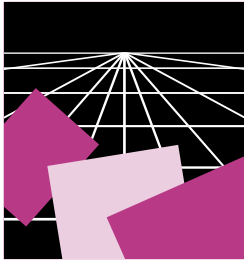
Adults who did not complete high school were also disproportionately represented at the low end of the literacy scales. While 23 percent of the adult population reported that they had not completed high school, 59 to 62 percent of adults who performed in Level 1 on the three scales and 77 to 78 percent of those in Level 1 with no tasks correct said they had not completed high school or its equivalent.

Relatively high percentages of the respondents in Level 1 were Black, Hispanic, or Asian/Pacific Islander. The largest group among those who did not perform any tasks correctly were Hispanic. Hispanics and Asian/Pacific Islanders are more likely than others to be recent immigrants with a limited command of English.

Older adults were overrepresented in the Level 1 population as well as in the population of adults who did not meet the demands of the Level 1 tasks. While 16 percent of the total U.S. population was age 65 or older, approximately one-third of the Level 1 population and 25 to 32 percent of the adults in Level 1 who performed no literacy tasks correctly were in this age group. In contrast, compared with their representation in the total U.S. population (18 percent), younger adults were underrepresented in Level 1 (11 to 14 percent) and in the subgroup of Level 1 that did not succeed on any of the literacy tasks (10 to 11 percent).

Disabilities are sometimes associated with low literacy performance. While 12 percent of the adult population reported having a physical, mental, or health condition that kept them from participating fully in work and other activities, 26 percent of adults who performed in Level 1 and 22 to 28 percent of those in Level 1 who did not succeed on any of the literacy tasks had such conditions. Further, while only 3 percent of the U.S. population reported having a learning disability, 8 to 9 percent of the adults who performed in Level 1 on the prose, document, and quantitative scales and 14 to 15 percent of those in Level 1 who did not succeed on any task had this type of disability.

These results show that adults in some population groups were disproportionately likely to perform in the lowest literacy level, and among those who performed in this level, were disproportionately likely not to succeed on any of the literacy tasks in the assessment.



APPENDIX A

Overview of Procedures

This appendix provides information about the methods and procedures used in the National Adult Literacy Survey. The forthcoming technical report will provide more extensive information about procedures. In addition, more detailed information on the development of the background questionnaires and literacy tasks can be found in *Assessing Literacy*.¹

Sampling

The National and State Adult Literacy Surveys included the following three components: a national household sample, 11 individual state household samples, and a national prison sample. The national and state household components were based on a four-stage stratified area sample with the following stages: the selection of Primary Sampling Units (PSUs) consisting of counties or groups of counties, the selection of segments consisting of census blocks or groups of blocks, the selection of households, and the selection of age-eligible individuals. One national area sample was drawn for the national component; 11 independent, state-specific area samples were drawn for the 11 states participating in the state component (i.e., California, Illinois, Indiana, Iowa, Louisiana, New Jersey, New York, Ohio, Pennsylvania, Texas, Washington.) The sample designs used for all 12 samples were similar, except for two principal differences. In the national sample, Black and Hispanic respondents were sampled at a higher rate than the remainder of the population in order to increase their representation in the sample, whereas the state samples used no oversampling. Also, the target population for the national sample consisted of adults 16 years of age or older, whereas the target population for the state samples consisted of adults 16 to 64 years of age.

¹ A. Campbell, I. Kirsch, and A. Kolstad. (1992). *Assessing Literacy: The Framework for the National Adult Literacy Survey*. Washington, DC: Government Printing Office.

The sample designs for all 12 household samples involved four stages of selection, each at a successively finer level of geographic detail. The first stage of sampling involved the selection of PSUs, which consist of counties or groups of counties. The PSUs were stratified on the basis of region, metropolitan status, percent Black, percent Hispanic, and, whenever possible, per capita income. The national component used the WESTAT 100 PSU master sample with the Honolulu, Hawaii PSU added to the sample with certainty, to make 101 PSUs in total. The national frame of PSUs was used to construct individual state frames for the state component and a sample of eight to 12 PSUs was selected within each of the given states. All PSUs were selected with probability proportional to the PSU's 1990 population.

The second stage of sampling involved the selection of segments (within the selected PSUs) which consist of census blocks or groups of census blocks. The segments were selected with probability proportional to size where the measure of size for a segment was a function of the number of year-round housing units within the segment. The oversampling of Black and Hispanic respondents for the national component was carried out at the segment level, where segments were classified as high minority (segments with more than 25 percent Black or Hispanic population) or not high minority. The measure of size for high minority segments was defined as the number of White non-Hispanic households plus three times the number of Black or Hispanic households. High minority segments were therefore oversampled at up to three times the rate of comparable, non-high minority segments. The measure of size for nonminority segments was simply the number of year-round housing units within the segment, as was the measure of size for all segments in the state components. One in 7 of the national component segments was selected at random to be included in a "no incentive" sample. Respondents from the remaining segments in the national component received a monetary incentive for participation, as did respondents in the state component. (Respondents from the "no incentive" segments are not included in the household sample of this report.)

The third stage of sampling involved the selection of households within the selected segments. Westat field staff visited all selected segments and prepared lists of all housing units within the boundaries of each segment as determined by the 1990 census block maps. The lists were used to construct the sampling frame for households. Households were selected with equal probability within each segment, except for White non-Hispanic households in high minority segments in the national component, which were subsampled so that the sampling rates for White non-Hispanic respondents would be about the same overall.

The fourth stage of sampling involved the selection of one or two adults within each selected household. A list of age-eligible household members (16 and

older for the national component, 16 to 64 for the state component) was constructed for each selected household. One person was selected at random from households with fewer than four eligible members; two persons were selected from households with four or more eligible members. The interviewers, who were instructed to list the eligible household members in descending order by age, then identified one or two household members to interview, based on computer-generated sampling messages that were attached to each questionnaire in advance.

The sample design for the prison component involved two stages of selection. The first stage of sampling involved the selection of state or federal correctional facilities with probability proportional to size, where the measure of size for a given facility was equal to the inmate population. The second stage involved the selection of inmates within each selected facility. Inmates were selected with a probability inversely proportional to their facility's inmate population (up to a maximum of 22 interviews in a facility) so that the product of the first and second stage probabilities would be constant.

Weighting

Full sample and replicate weights were calculated for each record in order to facilitate the calculation of unbiased estimates and their standard errors. The full sample and replicate weights for the household components were calculated as the product of the base weight for a record and a compositing and raking factor. Demographic variables critical to the weighting were recoded and imputed, if necessary, prior to the calculation of base weights.

The base weight was calculated as the reciprocal of the final probability of selection for a respondent, which reflected all stages of sampling. The base weight was then multiplied by a compositing factor which combined the national and state component data in an optimal manner, considering the differences in sample design, sample size, and sampling error between the two components. Twelve different compositing factors were used, one for each of the 11 participating states, and a pseudo factor (equal to one) for all national component records from outside the 11 participating states. The product of the base weight and compositing factor for a given record was the composite weight.

The composite weights were raked so that several totals calculated with the resulting full sample weights would agree with the 1990 census totals, adjusted for undercount. The cells used for the raking were defined to the finest combination of age, education level, race, and ethnicity that the data would allow. Raking adjustment factors were calculated separately for each of the 11 states and then for the remainder of the United States. The above procedures were repeated

for 60 strategically constructed subsets of the sample to create a set of replicate weights to be used for variance estimation using the jackknife method. The replication scheme was designed to produce stable estimates of standard errors for national estimates as well as for the 11 individual states.

The full sample and replicate weights for the incarcerated component were calculated as the product of the base weight for a record and a nonresponse and raking factor. The base weight was calculated as the reciprocal of the final probability of selection for a respondent, which reflected both stages of sampling. The base weights were then nonresponse adjusted to reflect both facility and inmate nonresponse. The resulting nonresponse adjusted weights were then raked to agree with independent estimates for certain subgroups of the population.

Background Questionnaires

One of the primary goals of the National Adult Literacy Survey is to relate the literacy skills of the nation's adults to a variety of demographic characteristics and explanatory variables. Accordingly, survey respondents were asked to complete background questionnaires designed to gather information on their characteristics and experiences. To ensure standardized administration, the questionnaires were read to the respondent by trained interviewers.

As recommended by the Literacy Definition Committee, the development of the background questionnaire was guided by two goals: to ensure the usefulness of the data by addressing issues of concern, and to ensure comparability with the young adult and Department of Labor (DOL) job-seeker surveys by including some of the same questions. With these goals in mind, the background questionnaire addressed the following areas:

- general and language background
- educational background and experiences
- political and social participation
- labor force participation
- literacy activities and collaboration
- demographic information

Questions in the first category asked survey participants to provide information on their country of birth, their education before coming to the United States, language(s) spoken by others at home, language(s) spoken while growing up, language(s) spoken now, participation in English as a Second

Language courses, and self-evaluated proficiency in English and other languages. This information makes it possible to interpret the performance results in light of the increasing racial/ethnic and cultural diversity in the United States.

The questions on educational background and experiences asked respondents to provide information on the highest grade or level of education they had completed; their reasons for not completing high school; whether or not they had completed a high school equivalency program; their educational aspirations; the types and duration of training they had received in addition to traditional schooling; the school, home, or work contexts in which they learned various literacy skills; and any physical, mental, or health conditions they have that may affect their literacy skills. Information on respondents' education is particularly important because level of education is known to be a predictor of performance on the prose, document, and quantitative literacy scales.

The questions on political and social participation asked participants about the sources from which they get information, their television viewing practices, their use of library services, and whether or not they had voted in a recent election. Because an informed citizenry is essential to the democratic process, information was collected on how adults keep abreast of current events and public affairs. Information on adults' use of library services is also important, because libraries promote reading and often provide literacy programs. These questions make it possible to explore connections between adults' activities and their demonstrated literacy proficiencies.

The questions on labor force participation asked participants to provide information on their employment status, weekly wages or salary, weeks of employment in the past year, annual earnings, and the industry or occupation in which they work(ed). These questions respond to concerns that the literacy skills of our present and future work force are inadequate to compete in the global economy or to cope with our increasingly technological society. The questions were based on labor force concepts widely used in economic surveys and permit the exploration of a variety of labor market activity and experience variables.

Questions on literacy activities and collaboration covered several important areas. Some of the questions focused on the types of materials that adults read, such as newspapers, magazines, books, and brief documents, making it possible to investigate the relationship between reading practices and demonstrated literacy proficiencies. Another set of questions asked respondents about the frequency of particular reading, writing, and mathematics activities. Respondents were asked to provide information on their newspaper, magazine, and book reading practices; reading, writing, and mathematics activities engaged in for personal use and for work; and assistance received from others with particular literacy tasks.

Finally, the survey collected information on respondents' race/ethnicity, age, and gender, as well as the educational attainment of their parents, their marital status, the number of people in their family who were employed full-time and part-time, sources of income other than employment, and family and personal income from all sources. This demographic information enabled researchers to analyze the characteristics of the adult population, as well as to investigate the literacy proficiencies of major subpopulations of interest, such as racial/ethnic groups, males and females, and various age cohorts.

Because some questions included in the household survey were inappropriate for the prison population, a revised version of the background questionnaire was developed for these respondents. Most of the questions in the household background questionnaire on general and language background and on literacy activities and collaboration were included. Many questions concerning education, political and social participation, labor force participation, family income, and employment status were not appropriate, however, and were omitted. In their place, relevant questions were incorporated from the 1991 Survey of Inmates of State Correctional Facilities, sponsored by the Bureau of Justice Statistics of the U.S. Department of Justice.

Literacy Assessment Booklets

The National Adult Literacy Survey measures literacy along three scales — prose, document, and quantitative — composed of literacy tasks that simulate the types of demands that adults encounter in everyday life. The literacy tasks administered in this survey included 81 new tasks as well as 85 tasks that were included in the previous young adult and job-seeker surveys. The administration of a common pool of tasks in each of the three surveys allows for valid comparisons of results across time for different populations.

The new literacy tasks developed for the survey serve to refine and extend the three existing literacy scales and provide a better balance of tasks across the three scales. The framework used to develop these tasks reflects research on the processes and strategies that respondents used to perform the literacy tasks administered in the young adult survey. In creating the new tasks, one goal was to include diverse stimulus materials and to create questions and directives that represent the broad range of skills and processes inherent in the three domains of literacy. Another goal was to create tasks that reflect the kinds of reading, writing, and computational demands that adults encounter in work, community, and home settings. Because the tasks are meant to simulate real-life literacy activities, they are open-ended — that is, individuals must produce a written or

oral response, rather than simply choose the correct response from a list of options.

The new literacy tasks were developed with attention to the following elements:

- the structure of the stimulus material — for example, exposition, narrative, table, graph, map, or advertisement
- the content represented and/or the context from which the stimulus is drawn — for example, work, home, or community
- the nature of what the individual is asked to do with the material — that is, the purpose for using the material — which in turn guides the strategies needed to complete the task successfully

These factors, operating in various combinations, affect the difficulty of a task relative to others administered in the survey.

The printed and written materials selected for the survey reflect a variety of structures and formats. Most of the prose materials are expository — that is, they describe, define, or inform — since most of the prose that adults read is expository; however, narratives and poetry are included as well. The prose selections include an array of linguistic structures, ranging from texts that are highly organized both topically and visually, to those that are loosely organized. Texts of varying lengths were chosen, ranging from full-page magazine selections to short newspaper articles. All prose materials included in the survey were reproduced in their original format.

The document materials represent a wide variety of structures, including tables, charts and graphs, forms, and maps. Tables include matrix documents in which information is arrayed in rows and columns (for example, bus or airplane schedules, lists, or tables of numbers). Documents categorized as charts and graphs include pie charts, bar graphs, and line graphs. Forms are documents that must be filled in, while other structures include advertisements and coupons.

Quantitative tasks require the reader to perform arithmetic operations using numbers that are embedded in print. Since there are no materials that are unique to quantitative tasks, they were based on prose materials and documents. Most quantitative tasks were, in fact, based on documents.

Adults do not read printed or written materials in a vacuum. Rather, they read within a particular context or for a particular purpose. Accordingly, the survey materials were chosen to represent a variety of contexts and contents. Six such areas were identified: home and family, health and safety, community and citizenship, consumer economics, work, and leisure and recreation. Efforts were

made to include as broad a range as possible and to select universally relevant contexts and contents to ensure that the materials would be familiar to all participants. In this way, the disadvantages for individuals with limited background knowledge were minimized.

After the materials were selected, accompanying tasks were developed. The tasks were designed to simulate the way in which people use various types of materials and to require different strategies for successful performance. For both the prose and document scales, the tasks can be organized into three major categories: locating, integrating, and generating information. In the *locating* tasks, readers were asked to match information given in a question or directive with either literal or synonymous information in the text or document. *Integrating* tasks asked the reader to incorporate two or more pieces of information from different parts of the text or document. *Generating* tasks required readers not only to process information located in different parts of the material, but also to draw on their knowledge about a subject or to make broad, text-based inferences.

Quantitative tasks required readers to perform one or more arithmetic operations (addition, subtraction, multiplication, or division) either singly or in combination. The type of operation to be performed was sometimes obvious from the wording of the question; in other tasks the readers had to infer which operation was to be performed. In some cases the numbers required to perform the operation could be easily identified; in others they were embedded in text. Some quantitative tasks asked the reader to explain how he or she would solve a problem, rather than to perform the actual calculation. The use of a simple, four-function calculator was required for some tasks.

Survey Design: BIB Spiralling

No individual could be expected to respond to the entire set of 166 simulation tasks administered as part of the survey. Accordingly, the survey design gave each respondent a subset of the total pool of literacy tasks, while at the same time ensuring that each of the 166 tasks was administered to a nationally representative sample of the adult population. Literacy tasks were assigned to blocks or sections that could be completed in about 15 minutes, and these blocks were then compiled into booklets so that each block appeared in each position (first, middle, and last) and each block was paired with every other block. Thirteen blocks of simulation tasks were assembled into 26 booklets, each of which could be completed in about 45 minutes. During a personal interview, each participant was asked to complete one booklet of literacy tasks and the background questionnaire, which required approximately 20 minutes.

Training the Data Collection Staff

For the national and state samples, 24 field supervisors, 24 field editors, and 421 field interviewers were recruited and trained in January and February of 1992. The 24 supervisors were trained first at a session in Bethesda, Maryland. The seven-day program included the interviewer training. Additionally, Westat provided training specific to supervisory responsibilities, including the use of Westat's Automated Survey Control System, a computer-based system for managing the data collection effort. Finally, supervisors and editors were trained to perform an item-by-item edit for each data collection instrument received from the field interviewers.

After the training offered in Bethesda, interviewers attended training sessions geographically closest to their homes, either San Francisco (January 31-February 2) or Dallas (February 7-9). Four training groups were formed at each of the two training sites. Each group was led by a Westat home office field manager. Within each of the four groups, the trainees were divided into "learning communities" with approximately 18 interviewers each. Each community was led by the field supervisor who would supervise the interviewers during the data collection phase.

The training program was modeled closely after Westat's general approach for training field staff. This approach uses a mix of techniques to present study material, focusing heavily on trainee participation and practice. The training program was standardized with verbatim scripts and a detailed agenda to ensure comparability in presentation across groups.

The key training topics were the data collection instruments — the household screener, the background questionnaire, and the interview guide and literacy exercise booklet. The majority of training time was devoted to instructions for administering these documents. In addition, sessions were used to present instructional material on gaining respondent cooperation, keeping records of nonresponse cases, editing completed work, and completing administrative forms. A bilingual field supervisor provided Spanish speaking interviewers with training on the Spanish translations of the screener and background questionnaires.

Prior to project-specific training, new interviewers attended an additional one-half day of training on general interviewing techniques. Interviewers selected to work on the prison sample received an additional day of training on interview procedures unique to that sample.

Administering the Data Collection Instruments

Data collection instruments included the screener, which was designed to enumerate household members and select survey respondents, the background questionnaire, and the literacy exercise booklets. Interviewers were given their first assignments and began work immediately after training. The interviewer was given a call record folder and screener for each sampled dwelling unit in his or her assignment. A computer-generated label attached to the front of each folder and screener provided the case identification number, address, and assigned exercise booklet number. Additionally, interviewers were provided with all other field materials necessary to conduct interviews and meet reporting requirements.

Case assignments were made by the field supervisors, who also mailed letters to households about one week before the interviewers planned to contact the household. When making contact, the interviewer first verified that the address was in the sample and the unit was, in fact, an occupied dwelling. If the unit did not meet the definition of a year-round housing unit or was vacant, or for some other reason the interviewer was unable to complete a screener at an assigned address, she or he documented the situation in a noninterview report form.

The interviewer introduced the study using an introduction printed on the front of the screener. As part of the introduction, the interviewer indicated that if someone from the household was selected for an interview, the respondent would be paid \$20 for participating. After introducing the study, the interviewer proceeded to conduct the screening interview with any household member 16 years of age or older. If the household members spoke only a language other than Spanish or English, the interviewer could obtain the services of a translator to complete the screener interview.

The screener was used to collect names, relationships, sex, age and race/ethnicity of all household members at the selected dwelling unit. For the national sample, household members aged 16 years and older were eligible for selection. For the state sample, however, household members 16 to 64 years of age were eligible. In households with three or fewer eligible household members, one was randomly selected for the interview. In households with four or more eligibles, two respondents were selected. To select respondents, interviewers first listed the names and ages (in descending age order) of all eligible household members. They then referred to a sampling table which selected one or two respondents from the household.

Once the Screener was completed and a respondent(s) selected, the interviewer proceeded to administer the background questionnaire and the exercise booklet. If the selected respondent was not available at the time the

screeners were conducted, the interviewer returned to administer the background questionnaire and exercise booklet, which were administered on the same visit.

The background questionnaire took approximately 20 minutes to administer and could be conducted in English or Spanish (using the Spanish printed version) only. In the introduction to the background questionnaire, the respondent was told that he or she would be given a check for \$20 in appreciation of the time and effort involved in completing the interview, questionnaires, and assessment. The background questionnaire was divided into six sections and collected demographic data as well as data on literacy-related behaviors. Respondents from each of the 11 participating states were asked five state-specific questions, which appeared at the end of the questionnaire.

When the background questionnaire was completed, the interviewer administered the exercise booklet, which took approximately 45 minutes. There were 26 different versions of the exercise booklet, and each version had a corresponding interview guide, which the interviewer used to facilitate the respondent's completion of tasks in the booklet.

For the prison population, the interviewer informed the selected inmate about the study using an introduction printed in the background questionnaire since there was no screener. As part of the introduction, the interviewer indicated that the inmate would receive a certificate of participation if he or she completed the survey. Because of varying prison regulations, it was not possible to pay inmates \$20 for their participation and so they received the certificate. The background questionnaire and exercise booklet were administered using the same procedures as for the household population.

Response Rates

Since there were three instruments — screener, background questionnaire, and exercise booklet — required for the administration of the survey, it was possible for a household or respondent to refuse to participate at the time of the administration of any one of these instruments. Thus, response rates were calculated for each of the three instruments. For the prison sample there were only two points at which a respondent could refuse — at the administration of either the background questionnaire or exercise booklet. The response rates presented below reflect the percentage of those who had the opportunity to participate at each stage of the survey. The response rates for the national household and prison samples are as follows.

Instrument	Response Rates	
	National	Prison
Screeners	89.1%	N/A
Background Questionnaire	81.0%	85.7%
Exercise Booklet	95.8%	96.1%

Data Collection Quality Control

Several quality control procedures relating to data collection were used. These included the interviewer field edit, a complete edit of all documents by a trained field editor, validation of 10 percent of each interviewer's close-out work, and field observation of both supervisors and interviewers.

At the interviewer training session, interviewers were instructed on procedures for performing a field edit of all data collection documents. The main purpose of this edit was to catch and correct or explain any errors or omissions in recording, to learn from mistakes so they were not repeated, and to remove stray marks and completely fill in bubbles on the documents that were to be optically scanned.

Additionally, a complete edit was performed on all documents by a trained field editor. An item-by-item review was performed on each document, and each error was fully documented on an edit form. The supervisor reviewed the results of the edit with the interviewer during his or her weekly telephone conference.

Validation is the quality control procedure used to verify that an interview was conducted and it took place at the correct address and according to specified procedures, or that nonresponse statuses (e.g., refusals, vacancies, language problems) were accurately reported by the interviewers. Interviewers knew that their work would be validated but did not know to what extent or which cases. A 10 percent subsample of dwelling units were selected and flagged in the supervisor's log and in the automated survey control system (ASCS). The supervisors performed validation interviews by telephone if a phone number was available. Otherwise, validation was performed in person by the supervisor or by another interviewer.

Field observations of both supervisors and interviewers were performed by Westat field management staff. One purpose of the interviewer observation was to provide home office staff with an opportunity to observe effectively both performance of field procedures and respondents' reactions to the survey. Another purpose was to provide feedback to weak interviewers when there was concern about their skills and/or performance. In addition to in-person observations, interviewers were required to tape record one complete interview

and assessment. The field supervisor selected the particular case in advance and listened to the tape to “observe” each interviewer.

Finally, nine of the 24 supervisors were visited by field management staff and evaluated on their editing, coding, office organization, ability to maintain up-to-date records on production data, and supervision of interviewers.

Scoring the Literacy Exercise Booklets

As the first shipments of exercise booklets were received at ETS, copies were made of actual responses to the tasks. These sample responses were then scored by various staff, including the test developer and scoring supervisor, using either the scoring guides developed for the young adult tasks or guides prepared during the development of the new tasks. As the sample responses were scored, adjustments were made to the scoring guides for the new tasks to reflect the kinds of answers that the respondents were providing.

The sample papers comprised the training sets used to train a group of readers who would score the exercise booklets. The purposes of the training were to familiarize the readers with the scoring guides and to ensure a high level of agreement among the readers. Each task and its scoring guide were explained and sample responses representative of the score points in the guide were discussed. The readers then scored and discussed an additional 10 to 30 responses. After group training had been completed, all the readers scored all the tasks in over a hundred booklets to give them practice in scoring actual booklets, as well as an opportunity to score more responses on a practice basis. A follow-up session was then held to discuss responses on which readers disagreed. The entire training process was completed in about four weeks.

Twenty percent of all the exercise booklets were subjected to a reader reliability check, which entailed a scoring by a second reader. To prevent the second reader from being influenced by the first reader's scores, the first reader masked the scores in every fifth booklet that he or she scored. These booklets were then passed on for a second reader to score. When the second reader had scored every item, the first reader's scores were unmasked. If there was a discrepancy between the two scores for any response, the scoring supervisor reviewed the response and discussed it with the readers involved.

The statistic used to report inter-reader reliability is the percentage of exact agreement — that is, the percentage of times the two readers agreed exactly in their scores. There was a high degree of reader reliability across all the tasks in the survey, ranging from a low of 88.1 percent to a high of 99.9 percent with an average agreement of 97 percent. For 133 out of 166 open-ended tasks, the agreement was above 95 percent.

Data Entry

The background questionnaire was designed to be read by a computerized scanning device. For most questions, field personnel filled in ovals next to the respondent's answers. Open-ended items in the background questionnaire were coded and the ovals filled in by ETS staff before they were shipped to the scanning department. Responses on the screener were transferred to scannable documents by ETS personnel when the check-in process was complete, and the screener documents were batched and sent to the scanning department on a regular basis. Exercise booklet scores were transferred to scannable documents by the readers who scored the items, and these were also batched and sent to the scanning department at regular intervals. The scanned data from screeners, background questionnaires, and exercise booklets were transmitted to magnetic tape, which was then sent to the ETS computer center. As each of the different instruments were processed, the data were transferred to a database on the main computer for editing.

Editing and Quality Control

Editing included an assessment of the internal logic and consistency of the data received. For example, data were examined for nonexistent housing locations or booklets, illogical or inconsistent responses, and multiple responses. Where indicated, an error listing was generated and sent back to the processing area, where the original document was retrieved and the discrepancies were corrected. If resolution of a conflict in the data was not possible, the information was left in the form in which it was received. Wherever possible, however, conflicts were resolved. For example, in the infrequent cases in which field personnel provided more than one response to a single-response noncognitive item, specific guidelines were developed to incorporate these responses consistently and accurately. The background questionnaires were also checked to make sure that the skip patterns had been followed and all data errors were resolved. In addition, a random set of booklets was selected to provide an additional check on the accuracy of transferring information from booklets and answer sheets to the database.

Scaling

The results from the National Adult Literacy Survey are reported on three scales established by the NAEP 1985 Young Adult Literacy Survey: prose literacy, document literacy, and quantitative literacy. With scaling methods, the

performance of a sample of examinees can be summarized on a series of subscales even when different respondents have been administered different items. Conventional scoring methods are not suited for assessments like the national survey. Statistics based on the number of correct responses, such as proportion of correct responses, are inappropriate for examinees who receive different sets of items. Moreover, item-by-item reporting ignores similarities of subgroup comparisons that are common across items. Finally, using average percent correct to estimate means of proficiencies of examinees within subpopulations does not provide any other information about the distribution of skills among the examinees.

The limitations of conventional scoring methods can be overcome by the use of item response theory (IRT) scaling. When several items require similar skills, the response patterns should have some uniformity. Such uniformity can be used to characterize both examinees and items in terms of a common scale attached to the skills, even when all examinees do not take identical sets of items. Comparisons of items and examinees can then be made in reference to a scale, rather than to percent correct. IRT scaling also allows distributions of groups of examinees to be compared.

Scaling was carried out separately for each of the three domains of literacy (prose, document, and quantitative). The NAEP reading scale, used in the young adult survey, was dropped because of its lack of relevance to the current NAEP reading scale. The scaling model used for the national survey is the three-parameter logistic (3PL) model from item response theory.² It is a mathematical model for estimating the probability that a particular person will respond correctly to a particular item from a single domain of items. This probability is given as a function of a parameter characterizing the proficiency of that person, and three parameters characterizing the properties of that item.

Overview of Linking the National Adult Literacy Survey (NALS) Scales to the Young Adult Literacy Survey (YALS) Scales

Prose, document, and quantitative literacy results for the National Adult Literacy Survey are reported on scales that were established in the Young Adult Literacy Survey. For each scale, a number of new items unique to the national survey were added to the item pool that was administered in the original young adult survey. The NALS scales are linked to the YALS scales based upon the commonality of the two assessments, namely, the original young adult survey

² A. Birnbaum. (1968). "Some Latent Trait Models." In F.M. Lord and M.R. Novick, *Statistical Theories of Mental Test Scores*. Reading, MA: Addison-Wesley. F.M. Lord. (1980). *Applications of Item Response Theory to Practical Testing Problems*. Hillsdale, NJ: Erlbaum.

common items. Fifty-one percent of the items administered in the national survey were common to young adult survey. The composition of the item pool is presented in table A.1.

A unidimensional IRT model like the three-parameter logistic model employed in this study assumes that performance on all the items in a domain can, for the most part, be accounted for by a single (unobservable) proficiency variable. Subsequent IRT linking and scaling analyses treat each scale separately, that is, a unique proficiency is assumed for each scale. As a result, the linking of corresponding scales was carried out for each pair of scales separately. The three steps used to link the scales are listed below.

1. Establish provisional IRT scales through common item parameter calibration based on a pooling of the NALS and YALS items.
2. Estimate distribution of proficiencies on the provisional IRT scales using “plausible value” methodology.
3. Align the NALS scale to the YALS scale by a linear transformation based upon the commonality of proficiency distribution of the YALS sample.

NALS

Table A.1

Composition of the Item Pool for the National Adult Literacy Survey

SCALE	Number of Items		NALS total
	YALS items	New item	
Prose	14	27	41
Document	56	25	81
Quantitative	15	28	43
Total	85	81	165

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Statistical Procedures

The statistical comparisons in this report were based on the t statistic. Generally, whether or not a difference is considered significant is determined by calculating a t value for the difference between a pair of means, or proportions, and comparing this value to published tables of values at certain

critical levels, called *alpha levels*. The alpha level is an a priori statement of the probability of inferring that a difference exists when, in fact, it does not.

In order to make proper inferences and interpretations from the statistics, several points must be kept in mind. First, comparisons resulting in large t statistics may appear to merit special note. This is not always the case, because the size of the t statistic depends not only on the observed differences in means or the percentage being compared, but also on the standard error of the difference. Thus, a small difference between two groups with a much smaller standard error could result in a large t statistic, but this small difference is not necessarily noteworthy. Second, when multiple statistical comparisons are made on the same data, it becomes increasingly likely that an indication of a population difference is erroneous. Even when there is no difference in the population, at an alpha level of .05, there is still a 5 percent chance of concluding that an observed t value representing one comparison in the sample is large enough to be statistically significant. As the number of comparisons increases, the risk of making such an error in inference also increases.

To guard against errors of inference based upon multiple comparisons, the Bonferroni procedure to correct significance tests for multiple contrasts was used. This method corrects the significance (or alpha) level for the total number of contrasts made with a particular classification variable. For each classification variable, there are $(K*(K-1)/2)$ possible contrasts (or nonredundant pairwise comparisons), where K is the number of categories. The Bonferroni procedure divides the alpha level for a single t test (for example, .05) by the number of possible pairwise comparisons in order to give a new alpha that is corrected for the fact that multiple contrasts are being made.

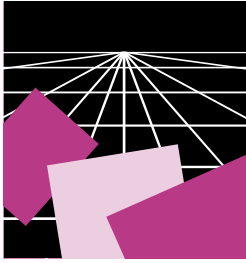
The formula used to compute the t statistic is as follows:

$$t = \frac{P_1 - P_2}{\sqrt{se_1^2 + se_2^2}}$$

where P_1 and P_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.



130 Appendix A



APPENDIX B

Definitions of All Subpopulations and Variables Reported

[In Order of Appearance]

Total Population

The total population includes adults aged 16 and older who participated in the national household survey, the state surveys, and the survey of prisoners.

1985 Young Adult Literacy Survey Population

A national household survey of the literacy skills of young adults (aged 21 to 25) was conducted in 1985. Because the NALS also assessed young adults and readministered a set of tasks, it is possible to compare the literacy skills of individuals assessed in 1985 and those assessed in 1992 – including not only 21- to 25-year-olds but also 28- to 32-year-olds, who were 21 to 25 years of age in 1985.

English Literacy

Respondents were asked two questions about their English literacy skills. One question asked how well they read English, and the other asked how well they write it. Four response options were given: very well, well, not well, and not at all. Adults who answered “very well” or “well” to either question were counted as reporting that they read or write English well. All others were counted as reporting that they do not read or write English well.

Help with Everyday Literacy Tasks

Respondents were asked how much help they get from family members or friends with various types of everyday literacy tasks. Four response options were given: a lot, some, a little, and none. The percentages of adults in each level who reported getting a lot of help with printed information, filling out forms, and using basic arithmetic were analyzed.

Highest Level of Education Completed

Respondents were asked to indicate the highest level of education they completed in this country. The following options were given:

- Still in high school
- Less than high school
- Some high school
- GED or high school equivalency
- High school graduate
- Vocational, trade, or business school after high school
- College: less than 2 years
- College: associate's degree (A.A.)

College: 2 or more years, no degree
 College graduate (B.S. or B.A.)
 Postgraduate, no degree
 Postgraduate degree (M.S., M.A., Ph.D., M.D., etc.)

In one education variable (Education 1), GED recipients and high school graduates were separate groups and the following four groups were created: adults who had completed some postsecondary education but who had not earned a degree, individuals who had earned a two year degree, individuals who had earned a four year degree, and individuals who had completed some graduate work or received a graduate degree. In a second variable (Education 2), GED recipients and high school graduates were combined into one category, and adults who had completed some education beyond high school were divided into two categories: those who had not received a degree and those who had.

Parents' Level of Education

Respondents were asked to indicate the highest level of education completed by their mother (or stepmother or female guardian) and by their father (or stepfather or male guardian). The analyses in this report are based on the highest level of education attained by either parent.

Age

Respondents were asked to report their date of birth, and this information was used to calculate their age. One age variable (Age 1) included the following categories: 16 to 18, 19 to 24, 25 to 39, 40 to 54, 55 to 64, and 65 and older. A second variable (Age 2) included these categories: 16 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, and 65 and older.

Average Years of Schooling

Responses to the question on the highest level of education completed were used to calculate the average number of years of schooling completed. Individuals who were still in school were left out of this analysis. Adults who had not graduated from high school were asked to indicate exactly how many years of schooling they had completed (0 through 12). Individuals who did not provide this information were assigned a value equal to the average number of years of schooling completed by those who did provide this information. For adults in the category "0 to 8 years of education," the average number of years of schooling was 6.10. For adults in the category "9 to 12 years of education," the average number of years of schooling was 10.11. The remaining adults were assigned values representing the number of years of schooling completed, as follows:

GED, high school equivalency	12
High school graduate	12
Vocational, trade, or business school	13
College: less than 2 years	13
College: associate's degree (A.A.)	14
College: 2 or more years, no degree	14.5
College graduate (B.S. or B.A.)	16
Postgraduate, no degree	17
Postgraduate degree	18

Using these values, the average number of years of schooling was calculated for various reporting groups (such as age and race/ethnicity).

Race/Ethnicity

Respondents were asked two questions about their race and ethnicity. One question asked them to indicate which of the following best describes them. The interviewer recorded the races of respondents who refused to answer the question.

White	Pacific Islander
Black (African American)	Asian
American Indian	Other
Alaskan Native	

The other question asked respondents to indicate whether they were of Spanish or Hispanic origin or descent. Those who responded “yes” were asked to identify which of the following groups best describes their Hispanic origin:

Mexicano, Mexican, Mexican American, Chicano
 Puerto Rican
 Cuban
 Central/South American
 Other Spanish/Hispanic

Adults of Pacific Islander origin were grouped with those of Asian origin, and Alaskan Natives were grouped with American Indians, due to small sample sizes. All other racial/ethnic groups are reported separately. In some analyses, however, the Hispanic subpopulations are combined to provide reliable estimates.

Country of Birth

Respondents were asked to indicate whether they were born in the United States (50 states or Washington, D.C.), a U.S. territory, or another country. Based on their responses, they were divided into two groups: adults born in this country, and those born in another country. Adults who reported they were born in a U.S. territory were counted as being born in the U.S.

Type of Physical, Mental, or Other Health Condition

Respondents were asked to identify whether they had any of the following:

- a physical, mental, or other health condition that keeps them from participating fully in work, school, housework, or other activities
- difficulty seeing the words or letters in ordinary newspaper print even when wearing glasses or contact lenses, if they usually wear them
- difficulty hearing what is said in a normal conversation with another person even when using a hearing aid, if they usually wear one
- a learning disability
- any mental or emotional condition
- mental retardation
- a speech disability
- a physical disability
- a long-term illness (6 months or more)
- any other health impairment

Respondents were able to indicate each physical, mental, or health condition they had. Thus, these categories are not mutually exclusive.

Region

Census definitions of regions are used in the National Adult Literacy Survey. The four regions analyzed are the Northeast, Midwest, South, and West. The states in each region are identified below.

Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania

Midwest: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas

West: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii

Sex

The interviewers recorded the sex of each respondent.

Prison Population

The incarcerated sample includes only those individuals who were in state or federal prisons at the time of the survey. Those held in local jails, community-based facilities, or other types of institutions were not surveyed.

Voting

The survey asked whether respondents had voted in a national or state election in the past five years. Some participants reported being ineligible to vote, and they were excluded from the analyses. The results reported herein reflect the percentages of adults who voted, of those who were eligible to vote.

Frequency of Newspaper Reading

Respondents were asked how often they read a newspaper in English: every day, a few times a week, once a week, less than once a week, or never.

Newspaper Reading Practices

Respondents were given a list of different parts of the newspaper and asked to identify which parts they generally read. Their responses were grouped as follows:

news, editorial pages, financial news and stock listings
home, fashion, and health sections, and book, movie, or art reviews
classified ads, other ads, and TV, movie, or concert listings
comics, horoscope or advice columns
sports

The responses to this question and the prior question on the frequency of newspaper reading were then combined, to determine the percentage of adults who read the newspaper at least one a week who read various parts.

Sources of Information

Respondents were asked how much information about current events, public affairs, and the government they usually get from newspapers, magazines, radio, television, and family members, friends, or coworkers. The responses to these questions were used to construct a new variable that reflects the extent to which adults get information from different sources:

Print media: Adults who get “some” or “a lot” of information from either newspapers or magazines, and those who do not

Nonprint media: Adults who get “some” or “a lot” of information from either television or radio, and those who do not

Personal sources: Adults who get “some” or “a lot” of information from family, friends, or coworkers, and those who do not

Poverty Status

Respondents were asked to report the number of persons living in their household as well as their family’s total income from all sources during the previous calendar year. Their responses to these two questions were used to construct the poverty status variable. Based on the 1991 poverty income thresholds of the federal government, the following criteria were used to identify respondents who were poor or near poor:

Respondents whose family size was:	And whose annual household income was at or below:
1	\$ 8,665
2	\$11,081
3	\$13,575
4	\$17,405
5	\$20,570
6	\$23,234
7	\$26,322
8	\$29,506
9	\$34,927

Sources of Nonwage Income and Support

Respondents were asked to indicate which of the following types of income and support they or anyone in their family received during the past 12 months: Social Security, Supplemental Security Income, retirement payments, Aid to Families with Dependent Children, food stamps, interest from savings or other bank accounts, dividend income, and income from other sources. Each source was treated as a separate variable, and respondents were divided into two groups: those who had received this type of income or support, and those who had not. This report analyzes results for adults who reported receiving food stamps or interest from savings.

Employment Status

Respondents were asked what they were doing the week before the survey:

- 1) working at a full-time job for pay or profit (35 hours or more)
- 2) working two or more part-time jobs for pay, totaling 35 or more hours
- 3) working for pay or profit part time (1 to 35 hours)
- 4) unemployed, laid off, or looking for work
- 5) with a job but not at work
- 6) with a job but on family leave (maternity or paternity leave)
- 7) in school
- 8) keeping house
- 9) retired
- 10) doing volunteer work

Respondents were then divided into four groups: adults working full time (or working two or more part-time jobs); those working part time; those unemployed, laid off, or looking for work; and those out of the labor force. Adults in categories 1 and 2 above were counted as being employed full time; those in category 3 were counted as being employed part time; those in category 4 were counted as unemployed; those in categories 5 and 6 were counted as being not at work; and those in categories 7 through 10 were counted as being out of the labor force.

Weeks Worked

All respondents, including those who were unemployed or out of the labor force the week before the survey, were asked to indicate how many weeks they worked for pay or profit during the past 12 months, including paid leave (such as vacation and sick leave).

Weekly Wages

Respondents who were employed either full time or part time or were on leave the week before the survey were asked to report their average wage or salary (including tips and commissions) before deductions. They reported their wage or salary per hour, day, week, two-week period, month, year, or other unit of time, and these data were used to calculate their weekly wages.

Occupational Categories

Respondents were asked two questions about their current or most recent job, whether full time or part time. The first question asked them to identify the type of business or industry in which they worked – for example, television manufacturing, retail shoe store, or farm. The second question asked them to indicate their occupation, or the name of their job – for example, electrical engineer, stock clerk, typist, or farmer. Their responses were used to create four occupational categories: management, professional, and technical; sales and clerical; craft and service; and labor, assembly, fishing, and farming.

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**TABLE 1.1A**
**Average Prose Proficiency and Literacy Levels
by Total Population, Gender, Census Region, and Race/Ethnicity**

DEMOGRAPHIC SUBPOPULATIONS	PROSE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total Population								
Total	26,091	191,289	21 (0.4)	27 (0.6)	32 (0.7)	17 (0.4)	3 (0.2)	272 (0.6)
Gender								
Male	11,770	92,088	22 (0.6)	26 (0.9)	31 (1.2)	18 (0.5)	4 (0.3)	272 (0.9)
Female	14,279	98,901	20 (0.5)	28 (0.7)	33 (0.7)	17 (0.5)	3 (0.2)	273 (0.8)
Census Region								
Northeast	5,425	39,834	22 (0.8)	28 (1.5)	31 (1.1)	16 (0.7)	3 (0.3)	270 (1.1)
Midwest	7,494	45,318	16 (0.8)	28 (1.0)	35 (1.2)	18 (0.7)	3 (0.3)	279 (1.1)
South	7,886	65,854	23 (1.1)	28 (1.1)	30 (0.9)	15 (1.1)	3 (0.3)	267 (1.9)
West	5,286	40,282	20 (1.2)	23 (1.5)	33 (1.5)	21 (1.1)	4 (0.5)	276 (1.8)
Race/Ethnicity								
Black	4,983	21,192	38 (1.1)	37 (1.3)	21 (1.0)	4 (0.5)	0† (0.1)	237 (1.4)
Hispanic/Mexicano	1,776	10,235	54 (1.9)	25 (1.6)	16 (1.3)	5 (0.8)	0† (0.3)	206 (3.3)
Hispanic/ Puerto Rican	405	2,190	47 (5.0)	32 (5.5)	17 (3.6)	3 (1.7)	0† (0.3)	218 (6.1)
Hispanic/Cuban	147	928	53 (6.7)	24 (7.0)	17 (4.2)	6 (4.7)	1 (2.1)	211 (8.7)
Hispanic/ Central/South	424	2,608	56 (3.8)	22 (3.4)	17 (3.9)	4 (1.5)	0† (0.3)	207 (5.8)
Hispanic/Other	374	2,520	25 (3.2)	27 (5.9)	33 (5.2)	13 (3.4)	2 (1.6)	260 (5.3)
Asian/ Pacific Islander	438	4,116	36 (4.4)	25 (3.8)	25 (3.1)	12 (1.9)	2 (0.7)	242 (6.7)
American Indian/ Alaskan Native	189	1,803	25 (5.9)†	39 (7.1)†	28 (7.3)†	7 (2.9)†	1 (1.5)†	254 (4.1)†
White	17,292	144,968	14 (0.4)	25 (0.6)	36 (0.8)	21 (0.5)	4 (0.3)	286 (0.7)
Other	83	729	53 (9.9)	23 (7.0)	15 (10.7)	9 (4.5)	0† (0.4)	213 (17.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.1B**
**Average Document Proficiency and Literacy Levels
by Total Population, Gender, Census Region, and Race/Ethnicity**

DEMOGRAPHIC SUBPOPULATIONS	DOCUMENT SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total Population								
Total	26,091	191,269	23 (0.4)	28 (0.5)	31 (0.5)	15 (0.4)	3 (0.2)	267 (0.7)
Gender								
Male	11,770	92,098	23 (0.6)	27 (0.5)	31 (0.8)	17 (0.5)	3 (0.2)	269 (0.9)
Female	14,279	98,901	23 (0.6)	30 (0.7)	31 (0.6)	14 (0.5)	2 (0.2)	265 (0.9)
Census Region								
Northeast	5,425	39,834	24 (0.9)	29 (1.1)	30 (1.1)	14 (1.0)	2 (0.3)	264 (1.2)
Midwest	7,494	45,318	19 (0.8)	30 (1.1)	33 (1.3)	16 (0.9)	2 (0.3)	274 (1.3)
South	7,886	65,854	26 (1.2)	29 (0.8)	29 (1.0)	14 (0.7)	2 (0.3)	262 (1.9)
West	5,286	40,282	22 (1.0)	24 (1.3)	32 (1.2)	18 (1.1)	3 (0.4)	271 (1.6)
Race/Ethnicity								
Black	4,963	21,192	43 (1.0)	36 (1.2)	18 (0.9)	3 (0.4)	0 [†] (0.1)	230 (1.2)
Hispanic/Mexicano	1,776	10,235	54 (2.1)	25 (1.9)	16 (1.6)	4 (0.8)	0 [†] (0.2)	205 (3.5)
Hispanic/ Puerto Rican	405	2,190	49 (3.8)	29 (5.1)	18 (2.6)	3 (1.1)	0 [†] (0.3)	215 (6.6)
Hispanic/Cuban	147	928	48 (8.1)	30 (6.2)	16 (4.3)	4 (3.9)	2 (1.2)	212 (11.3)
Hispanic/ Central/South	424	2,608	53 (3.9)	25 (3.8)	16 (3.6)	4 (1.5)	0 [†] (0.5)	206 (5.5)
Hispanic/Other	374	2,520	28 (3.0)	26 (3.6)	32 (4.4)	12 (4.4)	2 (1.8)	254 (5.3)
Asian/ Pacific Islander	438	4,116	34 (3.5)	25 (3.6)	28 (3.7)	12 (2.3)	2 (0.9)	245 (5.6)
American Indian/ Alaskan Native	189	1,803	27 (4.1) [‡]	37 (5.0) [‡]	29 (5.7) [‡]	7 (3.3) [‡]	0 [†] (0.5) [‡]	254 (4.9) [‡]
White	17,292	144,968	16 (0.5)	27 (0.6)	34 (0.7)	19 (0.5)	3 (0.2)	280 (0.8)
Other	83	729	52 (10.4)	22 (7.6)	15 (6.0)	9 (4.3)	2 (1.8)	213 (15.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

[†] Percentages less than 0.5 are rounded to zero.

[‡] Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.1C**
**Average Quantitative Proficiency and Literacy Levels
by Total Population, Gender, Census Region, and Race/Ethnicity**

DEMOGRAPHIC SUBPOPULATIONS	QUANTITATIVE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total Population								
Total	26,091	191,289	22 (0.5)	25 (0.6)	31 (0.6)	17 (0.3)	4 (0.2)	271 (0.7)
Gender								
Male	11,770	92,098	21 (0.7)	23 (0.5)	31 (0.6)	20 (0.4)	5 (0.3)	277 (0.9)
Female	14,279	98,901	23 (0.5)	28 (0.9)	31 (1.0)	15 (0.6)	3 (0.3)	266 (0.9)
Census Region								
Northeast	5,425	39,834	24 (0.8)	25 (0.8)	31 (0.8)	16 (0.6)	4 (0.4)	267 (1.2)
Midwest	7,494	45,318	17 (1.0)	26 (1.5)	34 (1.4)	19 (0.9)	4 (0.3)	280 (1.7)
South	7,896	65,854	25 (1.0)	27 (1.0)	29 (1.1)	15 (0.8)	4 (0.3)	265 (2.0)
West	5,286	40,282	20 (1.0)	22 (0.9)	32 (1.0)	20 (1.0)	5 (0.4)	276 (1.8)
Race/Ethnicity								
Black	4,963	21,192	46 (1.0)	34 (1.1)	17 (1.0)	3 (0.4)	0† (0.1)	224 (1.4)
Hispanic/Mexicano	1,776	10,235	54 (1.7)	25 (2.0)	17 (2.0)	4 (0.8)	0† (0.2)	205 (3.6)
Hispanic/ Puerto Rican	405	2,190	51 (3.3)	28 (4.8)	17 (3.2)	3 (1.3)	1 (0.4)	212 (7.2)
Hispanic/Cuban	147	928	46 (6.4)	20 (6.1)	25 (5.2)	6 (5.6)	3 (2.5)	223 (12.9)
Hispanic/ Central/South	424	2,608	53 (3.7)	25 (4.1)	18 (2.8)	4 (1.5)	0† (0.4)	203 (5.7)
Hispanic/Other	374	2,520	31 (3.0)	25 (4.6)	31 (3.1)	11 (4.7)	1 (0.7)	246 (6.9)
Asian/ Pacific Islander	438	4,118	30 (3.9)	23 (3.4)	27 (3.0)	16 (2.4)	4 (1.7)	256 (6.7)
American Indian/ Alaskan Native	189	1,803	33 (5.6)†	32 (6.1)†	28 (5.9)†	7 (2.9)†	1 (1.0)†	250 (5.1)†
White	17,292	144,968	14 (0.5)	24 (0.6)	35 (0.7)	21 (0.4)	5 (0.2)	287 (0.8)
Other	83	729	49 (8.5)	21 (7.4)	22 (10.1)	6 (4.1)	2 (2.3)	220 (13.1)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.2A****Average Prose Proficiency and Literacy Levels by Education Level and Age**

EDUCATION LEVEL AND AGE SUBPOPULATIONS	PROSE SCALE		Level 1 225 or lower	Level 2 225 to 275	Level 3 275 to 325	Level 4 325 to 375	Level 5 375 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Education Level 1								
Still in high school	973	8,268	16 (1.8)	36 (2.2)	37 (2.6)	11 (1.9)	0† (0.5)	271 (2.0)
0 to 8 years	2,187	18,356	75 (1.7)	20 (1.4)	4 (0.9)	0† (0.3)	0† (0.0)	177 (2.6)
9 to 12 years	3,311	24,982	42 (1.4)	38 (1.1)	17 (1.0)	2 (0.4)	0† (0.1)	231 (1.5)
GED	1,082	7,224	14 (1.6)	39 (2.5)	39 (2.8)	7 (1.2)	0† (0.6)	266 (1.8)
High school	6,107	51,290	16 (0.8)	36 (1.3)	37 (1.7)	10 (0.9)	1 (0.2)	270 (1.1)
Some college (no degree)	6,587	39,634	8 (0.5)	23 (0.8)	45 (0.9)	22 (0.8)	3 (0.3)	294 (1.0)
2 year college degree	1,033	6,831	4 (1.1)	19 (2.3)	41 (2.9)	32 (2.5)	4 (0.9)	308 (2.4)
4 year college degree	2,534	17,604	4 (0.7)	11 (1.2)	35 (2.0)	40 (1.5)	10 (1.3)	322 (1.6)
Graduate studies/degree	2,263	16,306	2 (0.4)	7 (1.0)	28 (1.4)	47 (1.8)	16 (1.1)	336 (1.4)
Education Level 2								
Still in high school	973	8,268	16 (1.8)	36 (2.2)	37 (2.6)	11 (1.9)	0† (0.5)	271 (2.0)
0 to 8 years	2,187	18,356	75 (1.7)	20 (1.4)	4 (0.9)	0† (0.3)	0† (0.0)	177 (2.6)
9 to 12 years	3,311	24,982	42 (1.4)	38 (1.1)	17 (1.0)	2 (0.4)	0† (0.1)	231 (1.5)
GED/high school diploma	7,189	58,514	16 (0.7)	36 (1.1)	37 (1.4)	10 (0.8)	1 (0.2)	270 (1.0)
Some college (no degree)	6,587	39,634	8 (0.5)	23 (0.8)	45 (0.9)	22 (0.8)	3 (0.3)	294 (1.0)
College degree (2 or more years)	5,820	40,941	3 (0.4)	11 (0.8)	33 (1.2)	41 (1.2)	12 (0.7)	325 (1.1)
Age 1								
16 to 18 years	1,237	10,424	16 (1.3)	35 (1.9)	38 (2.4)	11 (1.7)	1 (0.4)	271 (1.8)
19 to 24 years	3,344	24,515	14 (1.1)	29 (1.7)	37 (1.8)	18 (1.3)	2 (0.4)	290 (1.3)
25 to 39 years	10,050	63,278	15 (0.5)	24 (0.7)	34 (0.8)	22 (0.8)	5 (0.4)	284 (0.9)
40 to 54 years	8,310	43,794	15 (0.7)	23 (1.0)	34 (1.4)	22 (0.9)	5 (0.4)	286 (1.4)
55 to 64 years	2,824	19,503	26 (1.5)	31 (1.3)	30 (1.5)	12 (1.1)	1 (0.3)	260 (1.8)
65 years and older	2,214	29,735	44 (1.6)	32 (1.6)	19 (1.3)	5 (0.9)	1 (0.3)	230 (2.1)
Age 2								
16 to 24 years	4,581	34,938	15 (0.9)	31 (1.4)	37 (1.4)	16 (1.1)	2 (0.3)	278 (1.0)
25 to 34 years	6,701	41,326	16 (0.7)	25 (1.0)	34 (0.8)	21 (0.8)	4 (0.4)	282 (1.2)
35 to 44 years	5,930	39,755	14 (0.6)	21 (1.0)	35 (1.2)	24 (0.8)	6 (0.5)	289 (1.3)
45 to 54 years	3,729	25,992	16 (0.9)	25 (1.3)	34 (1.6)	21 (1.0)	5 (0.5)	282 (1.7)
55 to 64 years	2,924	19,503	26 (1.5)	31 (1.3)	30 (1.5)	12 (1.1)	1 (0.3)	260 (1.8)
65 years and older	2,214	29,735	44 (1.6)	32 (1.6)	19 (1.3)	5 (0.9)	1 (0.3)	230 (2.1)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.2B****Average Document Proficiency and Literacy Levels
by Education Level and Age**

EDUCATION LEVEL AND AGE SUBPOPULATIONS	DOCUMENT SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Education Level 1								
Still in high school	973	8,268	15 (1.5)	35 (2.3)	38 (2.6)	12 (1.5)	1 (0.6)	274 (1.9)
0 to 8 years	2,167	18,366	79 (1.7)	18 (1.6)	3 (0.8)	0 [†] (0.1)	0 [†] (0.0)	170 (2.4)
9 to 12 years	3,311	24,982	46 (1.7)	37 (1.6)	15 (1.3)	2 (0.4)	0 [†] (0.1)	227 (1.6)
GED	1,062	7,224	17 (2.0)	42 (2.7)	34 (2.3)	7 (1.1)	0 [†] (0.5)	264 (2.2)
High school	8,107	51,290	20 (0.8)	38 (1.0)	33 (1.1)	9 (0.6)	1 (0.2)	264 (1.1)
Some college (no degree)	6,567	39,634	9 (0.4)	27 (0.8)	42 (1.0)	20 (0.8)	2 (0.4)	290 (0.9)
2 year college degree	1,038	6,831	6 (1.4)	23 (2.0)	43 (2.6)	25 (2.7)	3 (0.9)	299 (2.6)
4 year college degree	2,534	17,804	4 (0.5)	15 (1.3)	37 (1.5)	36 (1.2)	8 (1.2)	314 (1.4)
Graduate studies/degree	2,253	16,906	3 (0.6)	10 (0.9)	34 (1.8)	41 (1.9)	12 (1.1)	326 (1.8)
Education Level 2								
Still in high school	973	8,268	15 (1.5)	35 (2.3)	38 (2.6)	12 (1.5)	1 (0.6)	274 (1.9)
0 to 8 years	2,167	18,366	79 (1.7)	18 (1.6)	3 (0.8)	0 [†] (0.1)	0 [†] (0.0)	170 (2.4)
9 to 12 years	3,311	24,982	46 (1.7)	37 (1.6)	15 (1.3)	2 (0.4)	0 [†] (0.1)	227 (1.6)
GED/high school diploma	7,168	58,514	19 (0.8)	36 (0.9)	33 (1.0)	9 (0.5)	0 [†] (0.2)	264 (1.0)
Some college (no degree)	6,567	39,634	9 (0.4)	27 (0.8)	42 (1.0)	20 (0.8)	2 (0.4)	290 (0.9)
College degree (2 or more years)	5,820	40,941	4 (0.5)	14 (0.8)	37 (0.8)	36 (1.2)	9 (0.8)	316 (0.9)
Age 1								
16 to 18 years	1,237	10,424	15 (1.4)	34 (2.2)	38 (2.6)	12 (1.9)	1 (0.5)	274 (1.8)
19 to 24 years	3,344	24,515	14 (1.0)	29 (1.4)	37 (1.8)	18 (1.1)	2 (0.4)	280 (1.3)
25 to 39 years	10,050	63,278	16 (0.6)	25 (0.7)	35 (0.6)	21 (0.8)	4 (0.4)	282 (1.0)
40 to 54 years	8,310	43,794	17 (0.8)	27 (0.9)	33 (1.0)	19 (1.0)	3 (0.5)	278 (1.3)
55 to 64 years	2,924	19,503	30 (1.4)	34 (1.4)	26 (1.3)	8 (0.8)	1 (0.3)	249 (1.9)
65 years and older	2,214	29,735	53 (1.5)	32 (1.2)	13 (1.0)	2 (0.5)	0 [†] (0.1)	217 (2.1)
Age 2								
16 to 24 years	4,561	34,938	14 (0.7)	30 (1.2)	37 (1.5)	16 (1.1)	2 (0.3)	278 (1.1)
25 to 34 years	6,701	41,326	16 (0.7)	25 (0.7)	35 (0.8)	21 (0.9)	4 (0.3)	281 (1.2)
35 to 44 years	5,930	39,755	15 (0.8)	24 (1.0)	35 (1.1)	22 (1.1)	5 (0.5)	283 (1.4)
45 to 54 years	3,729	25,992	18 (1.1)	29 (0.8)	33 (1.4)	17 (0.8)	3 (0.6)	273 (1.4)
55 to 64 years	2,924	19,503	30 (1.4)	34 (1.4)	26 (1.3)	8 (0.8)	1 (0.3)	249 (1.9)
65 years and older	2,214	29,735	53 (1.5)	32 (1.2)	13 (1.0)	2 (0.5)	0 [†] (0.1)	217 (2.1)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data);
RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to
be within 2 standard errors of the true population value with 95% confidence).

[†] Percentages less than 0.5 are rounded to zero.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.



TABLE 1.2C

Average Quantitative Proficiency and Literacy Levels by Education Level and Age

EDUCATION LEVEL AND AGE SUBPOPULATIONS	QUANTITATIVE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGTT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Education Level 1								
Still in high school	973	8,268	19 (1.7)	35 (3.0)	32 (2.3)	12 (2.0)	1 (0.9)	269 (2.2)
0 to 8 years	2,167	18,368	76 (2.0)	18 (1.8)	5 (1.1)	1 (0.3)	0† (0.2)	169 (3.1)
9 to 12 years	3,311	24,982	45 (1.6)	34 (1.6)	17 (1.3)	3 (0.6)	0† (0.1)	227 (1.7)
GED	1,082	7,224	16 (2.0)	38 (2.5)	35 (2.5)	10 (1.4)	1 (0.5)	268 (2.7)
High school	6,107	51,290	18 (0.8)	33 (1.1)	37 (1.1)	12 (0.5)	1 (0.2)	270 (1.1)
Some college (no degree)	6,587	39,634	8 (0.6)	23 (1.2)	42 (1.4)	23 (1.3)	4 (0.4)	295 (1.4)
2 year college degree	1,033	8,631	4 (0.8)	19 (2.0)	43 (2.0)	29 (2.7)	5 (1.3)	307 (2.8)
4 year college degree	2,534	17,804	4 (0.5)	12 (1.0)	35 (1.4)	38 (1.4)	12 (1.1)	322 (1.2)
Graduate studies/degree	2,253	18,306	2 (0.5)	9 (0.8)	30 (1.4)	42 (1.7)	17 (1.4)	334 (1.3)
Education Level 2								
Still in high school	973	8,268	19 (1.7)	35 (3.0)	32 (2.3)	12 (2.0)	1 (0.9)	269 (2.2)
0 to 8 years	2,167	18,368	76 (2.0)	18 (1.8)	5 (1.1)	1 (0.3)	0† (0.2)	169 (3.1)
9 to 12 years	3,311	24,982	45 (1.6)	34 (1.6)	17 (1.3)	3 (0.6)	0† (0.1)	227 (1.7)
GED/high school diploma	7,189	58,514	18 (0.7)	34 (1.1)	36 (1.0)	11 (0.5)	1 (0.2)	270 (1.0)
Some college (no degree)	6,587	39,634	8 (0.6)	23 (1.2)	42 (1.4)	23 (1.3)	4 (0.4)	295 (1.4)
College degree (2 or more years)	5,820	40,941	3 (0.3)	12 (0.6)	34 (1.0)	38 (1.0)	13 (0.7)	324 (1.0)
Age 1								
16 to 18 years	1,237	10,424	20 (1.7)	35 (2.6)	33 (1.9)	12 (1.5)	1 (0.5)	268 (1.8)
19 to 24 years	3,344	24,515	16 (1.1)	28 (1.4)	37 (1.4)	16 (1.0)	2 (0.5)	277 (1.6)
25 to 39 years	10,050	63,278	17 (0.6)	23 (0.7)	33 (0.6)	21 (0.6)	5 (0.4)	283 (0.9)
40 to 54 years	6,310	43,794	16 (0.9)	22 (1.0)	33 (1.1)	23 (1.1)	6 (0.4)	286 (1.2)
55 to 64 years	2,924	19,503	25 (1.5)	30 (1.9)	30 (1.8)	13 (1.2)	2 (0.6)	261 (2.0)
65 years and older	2,214	29,735	45 (1.6)	26 (1.2)	20 (1.2)	7 (0.7)	2 (0.4)	227 (2.6)
Age 2								
16 to 24 years	4,581	34,939	17 (0.9)	30 (1.1)	36 (1.0)	15 (0.9)	2 (0.4)	274 (1.1)
25 to 34 years	6,701	41,326	17 (0.7)	24 (0.7)	34 (0.8)	20 (0.8)	5 (0.5)	281 (1.1)
35 to 44 years	5,930	39,755	15 (0.8)	21 (1.1)	33 (1.0)	25 (0.7)	6 (0.5)	288 (1.4)
45 to 54 years	3,729	25,992	17 (1.1)	24 (1.2)	33 (1.2)	21 (1.4)	5 (0.5)	262 (1.6)
55 to 64 years	2,924	19,503	25 (1.5)	30 (1.9)	30 (1.8)	13 (1.2)	2 (0.6)	261 (2.0)
65 years and older	2,214	29,735	45 (1.6)	26 (1.2)	20 (1.2)	7 (0.7)	2 (0.4)	227 (2.6)

n = sample size; WGTT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data);
RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to
be within 2 standard errors of the true population value with 95% confidence)

† Percentages less than 0.5 are rounded to zero.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.3A****Characteristics of Respondents
by Prose Literacy Levels**

DEMOGRAPHIC SUBPOPULATIONS	PROSE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Country of Birth								
Born in the USA	23,378	172,162	75 (0.6)	92 (0.6)	95 (0.6)	96 (0.4)	97 (1.0)	279 (0.7)
Born in another country or territory	2,715	19,127	25 (1.3)	8 (0.9)	5 (1.0)	4 (0.7)	3 (1.0)	212 (2.4)
Education Level 1								
Still in high school	973	8,268	3 (1.5)	6 (1.9)	5 (2.0)	3 (1.4)	1 (0.6)	271 (2.0)
0 to 8 years	2,187	18,356	35 (1.8)	7 (1.3)	1 (0.7)	0† (0.3)	0† (0.0)	177 (2.6)
9 to 12 years	3,311	24,982	27 (1.3)	19 (1.0)	7 (1.0)	2 (0.4)	0† (0.3)	231 (1.5)
GED	1,082	7,224	3 (1.4)	6 (1.8)	5 (2.4)	2 (1.1)	1 (0.7)	268 (1.8)
High school	6,107	51,290	21 (0.8)	36 (1.3)	31 (1.2)	16 (1.0)	4 (1.0)	270 (1.1)
Some college (no degree)	6,587	39,634	8 (0.5)	18 (0.8)	29 (0.9)	26 (0.8)	17 (0.9)	294 (1.0)
2 year college degree	1,033	6,831	1 (0.8)	3 (1.8)	5 (2.2)	7 (2.4)	4 (0.9)	308 (2.4)
4 year college degree	2,534	17,804	2 (0.6)	4 (1.1)	10 (1.2)	22 (1.3)	30 (2.5)	322 (1.6)
Graduate studies/degree	2,253	16,306	1 (0.4)	2 (0.8)	8 (1.2)	23 (1.3)	43 (3.0)	336 (1.4)
Race/Ethnicity								
Black	4,963	21,192	20 (1.0)	15 (1.2)	7 (0.8)	2 (0.4)	1 (0.4)	237 (1.4)
Hispanic	3,126	18,481	23 (1.4)	9 (1.3)	6 (1.1)	3 (0.6)	2 (0.8)	215 (2.2)
Asian/Pacific Islander	438	4,116	4 (3.9)	2 (2.6)	2 (2.7)	1 (1.6)	1 (0.6)	242 (6.7)
American Indian/ Alaskan Native	189	1,803	1 (4.5)†	1 (3.7)†	1 (4.1)†	0† (1.9)†	0† (0.9)†	254 (4.1)†
White	17,292	144,968	51 (0.6)	72 (0.9)	84 (0.7)	92 (0.6)	96 (1.4)	286 (0.7)
Other	83	729	1 (8.9)	0† (5.6)	0† (9.1)	0† (3.7)	0† (0.2)	213 (17.5)
Age 2								
16 to 24 years	4,581	34,939	13 (0.8)	21 (1.3)	21 (1.1)	17 (1.1)	10 (0.9)	278 (1.0)
25 to 34 years	6,701	41,326	16 (0.7)	20 (1.0)	23 (0.8)	26 (1.0)	27 (1.5)	282 (1.2)
35 to 44 years	5,930	39,755	14 (0.6)	16 (0.9)	23 (0.9)	29 (0.9)	36 (1.3)	289 (1.3)
45 to 54 years	3,729	25,992	11 (0.8)	13 (1.1)	14 (1.3)	16 (0.9)	19 (1.0)	282 (1.7)
55 to 64 years	2,924	19,503	13 (1.4)	12 (1.2)	10 (1.1)	7 (0.9)	4 (0.7)	260 (1.9)
65 years and older	2,214	29,735	33 (1.5)	18 (1.5)	9 (1.1)	4 (0.8)	4 (1.1)	230 (2.1)
Any Physical, Mental, Health Condition								
Yes	2,806	22,205	26 (1.0)	13 (1.2)	7 (1.1)	3 (0.7)	2 (0.8)	227 (1.6)
No	23,256	168,879	74 (0.5)	87 (0.7)	93 (0.7)	97 (0.6)	98 (0.8)	278 (0.6)
Visual Difficulty								
Yes	1,801	14,296	19 (1.5)	7 (1.3)	3 (1.1)	2 (1.1)	1 (0.5)	217 (2.4)
No	24,260	176,764	81 (0.4)	93 (0.6)	97 (0.5)	98 (0.5)	99 (0.5)	277 (0.6)
Hearing Difficulty								
Yes	1,611	14,202	13 (1.6)	8 (1.6)	6 (1.2)	4 (0.9)	2 (0.8)	243 (2.6)
No	24,417	176,618	87 (0.4)	92 (0.7)	94 (0.6)	96 (0.6)	98 (0.8)	275 (0.6)
Learning Disability								
Yes	875	5,820	9 (2.1)	2 (2.0)	1 (1.4)	1 (1.1)	1 (0.6)	207 (3.7)
No	25,171	185,190	91 (0.4)	98 (0.6)	99 (0.5)	99 (0.4)	99 (0.4)	275 (0.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

‡ Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.3B****Characteristics of Respondents
by Document Literacy Levels**

DEMOGRAPHIC SUBPOPULATIONS	DOCUMENT SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Country of Birth								
Born in the USA	23,376	172,182	78 (0.5)	92 (0.4)	94 (0.5)	96 (0.5)	97 (0.4)	273 (0.7)
Born in another country or territory	2,715	19,127	22 (1.3)	8 (1.0)	6 (1.0)	4 (0.7)	3 (0.4)	212 (2.3)
Education Level 1								
Still in high school	973	8,268	3 (1.3)	5 (2.0)	5 (2.0)	3 (1.2)	2 (0.9)	274 (1.9)
0 to 8 years	2,167	18,356	33 (1.5)	6 (1.5)	1 (0.6)	0† (0.1)	0† (0.0)	170 (2.4)
9 to 12 years	3,911	24,982	26 (1.5)	17 (1.3)	6 (1.1)	2 (0.4)	1 (0.3)	227 (1.6)
GED	1,062	7,224	3 (1.7)	6 (1.9)	4 (2.1)	2 (0.9)	1 (0.7)	264 (2.2)
High school	6,107	51,290	23 (0.8)	36 (0.9)	29 (0.9)	15 (0.7)	5 (1.5)	264 (1.1)
Some college (no degree)	6,587	39,634	8 (0.5)	20 (0.8)	28 (0.9)	27 (0.9)	20 (1.7)	290 (0.9)
2 year college degree	1,033	6,831	1 (1.3)	3 (1.7)	5 (2.1)	6 (2.1)	5 (1.0)	299 (2.6)
4 year college degree	2,534	17,804	2 (0.4)	5 (1.1)	11 (1.2)	22 (1.0)	28 (2.8)	314 (1.4)
Graduate studies/degree	2,253	16,306	1 (0.4)	3 (0.7)	9 (1.1)	23 (1.4)	39 (3.7)	326 (1.8)
Race/Ethnicity								
Black	4,963	21,192	20 (0.9)	14 (1.0)	6 (0.8)	2 (0.3)	1 (0.2)	230 (1.2)
Hispanic	3,126	18,481	21 (1.7)	9 (1.3)	6 (1.1)	3 (0.7)	2 (0.9)	213 (2.5)
Asian/Pacific Islander	438	4,116	3 (3.2)	2 (2.4)	2 (2.8)	2 (2.0)	1 (0.8)	245 (5.6)
American Indian/ Alaskan Native	189	1,803	1 (4.0)†	1 (4.2)†	1 (5.1)†	0† (3.0)†	0† (0.3)†	254 (4.9)†
White	17,292	144,968	54 (0.7)	73 (0.7)	85 (0.7)	92 (0.5)	95 (0.9)	280 (0.8)
Other	83	729	1 (9.7)	0† (5.8)	0† (5.5)	0† (4.1)	0† (0.4)	213 (15.5)
Age 2								
16 to 24 years	4,581	34,939	11 (0.6)	20 (1.0)	22 (1.0)	19 (1.3)	14 (0.9)	278 (1.1)
25 to 34 years	6,701	41,326	15 (0.7)	19 (0.7)	24 (0.7)	29 (1.0)	30 (1.6)	281 (1.2)
35 to 44 years	5,930	39,755	14 (0.8)	18 (1.0)	23 (1.1)	29 (1.1)	36 (1.6)	283 (1.4)
45 to 54 years	3,729	25,992	11 (1.0)	14 (0.8)	14 (1.0)	15 (0.7)	15 (2.3)	273 (1.4)
55 to 64 years	2,924	19,503	13 (1.3)	12 (1.1)	9 (1.1)	5 (0.7)	4 (0.9)	249 (1.9)
65 years and older	2,214	29,735	35 (1.5)	17 (1.2)	7 (0.9)	2 (0.5)	2 (0.6)	217 (2.1)
Any Physical, Mental, Health Condition								
Yes	2,806	22,205	26 (1.2)	12 (1.1)	6 (0.7)	3 (0.6)	2 (0.8)	219 (1.9)
No	23,256	168,879	74 (0.5)	88 (0.5)	94 (0.5)	97 (0.4)	98 (0.8)	273 (0.6)
Visual Difficulty								
Yes	1,801	14,296	18 (1.3)	7 (1.3)	3 (1.1)	2 (0.7)	2 (0.5)	212 (2.6)
No	24,260	176,764	82 (0.5)	93 (0.6)	97 (0.6)	98 (0.4)	98 (0.5)	271 (0.6)
Hearing Difficulty								
Yes	1,611	14,202	13 (2.0)	8 (1.7)	5 (1.2)	4 (0.8)	2 (0.7)	236 (2.8)
No	24,417	178,618	87 (0.5)	92 (0.5)	95 (0.5)	96 (0.5)	98 (0.7)	269 (0.6)
Learning Disability								
Yes	875	5,820	8 (2.3)	2 (2.2)	1 (1.1)	1 (0.8)	2 (1.0)	201 (4.0)
No	25,171	185,190	92 (0.4)	98 (0.5)	99 (0.4)	99 (0.4)	98 (0.7)	269 (0.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

‡ Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.3C****Characteristics of Respondents
by Quantitative Literacy Levels**

DEMOGRAPHIC SUBPOPULATIONS	QUANTITATIVE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)		CPCT (SE)		CPCT (SE)	
			CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Country of Birth								
Born in the USA	23,376	172,162	78 (0.5)	91 (0.6)	94 (0.5)	95 (0.4)	96 (1.1)	278 (0.8)
Born in another country or territory	2,715	19,127	22 (1.2)	9 (1.0)	6 (0.9)	5 (0.6)	4 (1.1)	214 (2.8)
Education Level 1								
Still in high school	973	8,268	4 (1.4)	6 (2.2)	4 (2.0)	3 (1.4)	1 (1.0)	269 (2.2)
0 to 8 years	2,167	18,356	33 (1.6)	7 (1.3)	2 (0.8)	0† (0.2)	1 (0.3)	169 (3.1)
9 to 12 years	3,311	24,982	27 (1.5)	17 (1.3)	7 (1.0)	2 (0.6)	1 (0.2)	227 (1.7)
GED	1,062	7,224	3 (1.6)	6 (2.1)	4 (2.1)	2 (1.2)	1 (0.5)	268 (2.7)
High school Some college (no degree)	6,107	51,290	22 (0.9)	35 (1.1)	31 (1.1)	18 (0.6)	7 (0.9)	270 (1.1)
2 year college degree	6,587	39,634	8 (0.6)	19 (1.1)	28 (1.0)	28 (1.3)	20 (1.2)	295 (1.4)
4 year college degree	1,033	6,831	1 (0.7)	3 (1.6)	5 (1.6)	6 (2.2)	5 (1.2)	307 (2.8)
Graduate studies/degree	2,534	17,804	2 (0.5)	4 (0.8)	10 (1.2)	20 (1.1)	28 (1.5)	322 (1.2)
	2,253	16,306	1 (0.4)	3 (0.7)	8 (1.2)	21 (1.5)	38 (2.1)	334 (1.3)
Race/Ethnicity								
Black	4,963	21,192	23 (0.9)	15 (0.8)	6 (0.8)	2 (0.4)	1 (0.1)	224 (1.4)
Hispanic	3,126	18,481	22 (1.3)	10 (1.1)	6 (1.0)	3 (0.8)	2 (0.4)	212 (2.5)
Asian/Pacific Islander	438	4,116	3 (3.6)	2 (2.9)	2 (2.8)	2 (2.0)	2 (1.5)	256 (6.7)
American Indian/ Alaskan Native	189	1,803	1 (5.0) [‡]	1 (5.4) [‡]	1 (3.4) [‡]	0† (1.4) [‡]	0† (0.8) [‡]	250 (5.1) [‡]
White	17,292	144,968	50 (0.5)	72 (0.6)	85 (0.6)	93 (0.6)	95 (0.8)	287 (0.8)
Other	83	729	1 (7.5)	0† (6.6)	0† (9.1)	0† (2.3)	0† (0.6)	220 (13.1)
Age 2								
16 to 24 years	4,581	34,939	14 (0.8)	22 (0.9)	21 (0.8)	16 (0.9)	9 (1.7)	274 (1.1)
25 to 34 years	6,701	41,326	17 (0.7)	21 (0.7)	23 (0.7)	25 (0.8)	26 (1.6)	281 (1.1)
35 to 44 years	5,930	39,755	14 (0.7)	17 (1.0)	22 (0.8)	29 (0.7)	33 (0.7)	288 (1.4)
45 to 54 years	3,729	25,992	11 (1.0)	13 (0.9)	14 (0.9)	16 (1.3)	19 (1.3)	282 (1.6)
55 to 64 years	2,924	19,503	12 (1.3)	12 (1.2)	10 (1.4)	8 (0.9)	6 (1.0)	261 (2.0)
65 years and older	2,214	29,735	32 (1.5)	16 (1.1)	10 (1.1)	6 (0.7)	7 (0.9)	227 (2.6)
Any Physical, Mental, Health Condition								
Yes	2,806	22,205	26 (1.2)	12 (0.9)	7 (1.0)	4 (0.7)	3 (0.7)	220 (2.4)
No	23,256	168,879	74 (0.5)	88 (0.5)	93 (0.5)	96 (0.3)	97 (0.7)	278 (0.6)
Visual Difficulty								
Yes	1,801	14,296	19 (1.4)	7 (1.3)	4 (1.2)	2 (0.7)	2 (0.6)	210 (2.7)
No	24,260	176,764	81 (0.5)	93 (0.5)	96 (0.5)	98 (0.5)	98 (0.5)	276 (0.7)
Hearing Difficulty								
Yes	1,611	14,202	12 (2.1)	7 (1.7)	6 (1.7)	4 (1.1)	4 (1.0)	242 (3.6)
No	24,417	176,618	88 (0.5)	93 (0.5)	94 (0.5)	96 (0.6)	96 (1.0)	274 (0.7)
Learning Disability								
Yes	875	5,820	8 (2.7)	3 (2.3)	1 (1.3)	1 (1.1)	1 (0.5)	197 (4.2)
No	25,171	185,190	92 (0.4)	97 (0.4)	99 (0.4)	99 (0.3)	99 (0.3)	274 (0.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

‡ Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

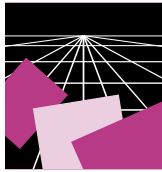


TABLE 1.4A

**Average Prose Proficiency and Literacy Levels
Incarcerated Sample by Total, Education Level, and Age**

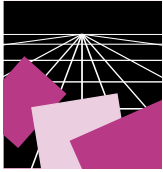
DEMOGRAPHIC SUBPOPULATIONS	PROSE SCALE							
			Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
<u>Total Population</u>								
Total	1,147	766	31 (1.7)	37 (2.0)	26 (1.6)	6 (0.8)	0†(0.2)	246 (1.9)
<u>Education Level</u>								
0 to 8 years	157	107	66 (4.2)	24 (3.8)	10 (4.0)	1 (0.6)	0†(0.0)	196 (5.0)
9 to 12 years	385	271	41 (3.1)	44 (3.5)	14 (2.4)	1 (0.6)	0†(0.0)	230 (3.0)
GED	183	130	10 (3.1)	44 (4.9)	39 (5.6)	6 (3.0)	0†(0.3)	270 (4.3)
High school	154	107	25 (5.3)	39 (5.0)	32 (6.0)	5 (2.0)	0†(0.0)	255 (5.0)
Some college (no degree)	211	120	10 (2.2)	28 (4.2)	42 (4.4)	18 (4.4)	2 (1.4)	285 (4.2)
2 year college degree	27	15	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
4 year college degree	17	9	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Graduate studies/degree	9	5	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
<u>Age</u>								
16 to 18 years	19	12	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
19 to 24 years	262	162	27 (3.3)	42 (4.6)	26 (4.1)	6 (2.1)	0†(0.2)	252 (3.6)
25 to 39 years	641	438	32 (2.0)	36 (2.4)	26 (2.5)	5 (0.9)	0†(0.4)	245 (2.5)
40 to 54 years	192	132	32 (4.0)	36 (4.0)	24 (3.3)	8 (2.6)	0†(0.5)	241 (5.8)
55 to 64 years	20	13	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
65 years and older	10	7	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

[†] Percentages less than 0.5 are rounded to zero.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.4B**
**Average Document Proficiency and Literacy Levels
Incarcerated Sample by Total, Education Level, and Age**

DEMOGRAPHIC SUBPOPULATIONS	DOCUMENT SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total Population								
Total	1,147	766	33 (2.1)	38 (2.1)	25 (1.5)	4 (0.9)	0 [†] (0.2)	240 (2.2)
Education Level								
0 to 8 years	157	107	69 (3.6)	23 (4.1)	7 (2.6)	1 (0.5)	0 [†] (0.0)	176 (6.1)
9 to 12 years	385	271	41 (3.0)	43 (3.9)	14 (2.7)	2 (1.0)	0 [†] (0.0)	230 (2.8)
GED	163	130	16 (3.3)	47 (6.2)	32 (5.0)	4 (2.7)	0 [†] (0.3)	263 (4.3)
High school	154	107	27 (4.9)	37 (5.7)	32 (4.7)	4 (2.4)	0 [†] (0.0)	251 (5.6)
Some college (no degree)	211	120	12 (2.5)	30 (3.5)	45 (4.5)	13 (3.4)	1 (1.0)	280 (3.7)
2 year college degree	27	15	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
4 year college degree	17	9	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Graduate studies/degree	9	5	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Age								
16 to 18 years	19	12	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
19 to 24 years	262	182	26 (3.4)	41 (5.0)	27 (4.3)	5 (2.2)	0 [†] (0.2)	251 (3.6)
25 to 39 years	641	438	33 (2.7)	37 (2.7)	25 (2.4)	4 (1.3)	0 [†] (0.2)	240 (3.2)
40 to 54 years	192	132	38 (5.3)	37 (4.5)	19 (3.1)	6 (1.9)	0 [†] (0.4)	230 (6.3)
55 to 64 years	20	13	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
65 years and older	10	7	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

[†] Percentages less than 0.5 are rounded to zero.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.



TABLE 1.4C

Average Quantitative Proficiency and Literacy Levels Incarcerated Sample by Total, Education Level, and Age

DEMOGRAPHIC SUBPOPULATIONS	QUANTITATIVE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total								
Total	1,147	766	40 (1.9)	32 (2.2)	22 (1.9)	6 (1.0)	1 (0.4)	236 (3.1)
Education Level								
0 to 8 years	157	107	70 (5.1)	21 (3.5)	7 (2.6)	2 (1.4)	0† (0.4)	182 (8.4)
9 to 12 years	385	271	51 (2.8)	34 (3.4)	13 (2.1)	2 (0.9)	0† (0.3)	219 (3.5)
GED	183	130	21 (5.2)	40 (5.6)	32 (5.7)	7 (2.5)	0† (1.4)	263 (4.6)
High school	154	107	36 (5.0)	32 (5.8)	26 (4.3)	6 (3.0)	0† (0.3)	244 (6.7)
Some college (no degree)	211	120	15 (3.0)	31 (4.7)	36 (4.8)	15 (3.5)	3 (1.2)	276 (3.6)
2 year college degree	27	15	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
4 year college degree	17	9	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Graduate studies/degree	9	5	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Age								
16 to 18 years	19	12	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
19 to 24 years	262	162	39 (3.8)	33 (3.4)	22 (4.5)	5 (1.5)	1 (1.3)	241 (4.4)
25 to 39 years	641	438	40 (2.0)	32 (2.5)	22 (2.4)	6 (1.3)	1 (0.4)	236 (3.5)
40 to 54 years	192	132	40 (4.6)	30 (4.5)	23 (3.4)	6 (1.6)	1 (0.9)	232 (7.3)
55 to 64 years	20	13	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
65 years and older	10	7	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

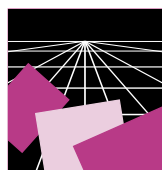
**TABLE 1.5**
**Average Proficiency on Each Literacy Scale
for the 1985 YALS and 1992 NALS Populations**

TOTAL AND RACE/ETHNICITY BY RESPONDENTS' AGE	AVERAGE PROFICIENCY		Prose	Document	Quantitative
	n	WGT N (/1,000)	CPCT (SE) PROF (SE)	CPCT (SE) PROF (SE)	CPCT (SE) PROF (SE)
1985 Age 21-25					
Total Population	3,618	21,158	100 (0.0) 293 (2.3)	100 (0.0) 292 (2.2)	100 (0.0) 293 (2.0)
White	2,016	16,115	76 (1.6) 305 (1.9)	76 (1.6) 305 (1.9)	76 (1.6) 304 (1.8)
Black	991	2,801	13 (1.1) 248 (2.6) ¹	13 (1.1) 248 (2.6) ¹	13 (1.1) 252 (2.5) ¹
Hispanic	478	1,481	7 (1.0) 251 (8.1) ¹	7 (1.0) 243 (9.4) ¹	7 (1.0) 253 (8.9) ¹
Other	133	761	4 (0.6) 289 (8.0) ¹	4 (0.6) 285 (6.1) ¹	4 (0.6) 286 (7.2) ¹
1992 Age 21-25					
Total Population	2,690	20,300	100 (0.0) 281 (1.7)	100 (0.0) 281 (1.7)	100 (0.0) 279 (1.8)
White	1,654	14,252	70 (1.2) 296 (2.1)	70 (1.2) 296 (1.9)	70 (1.2) 295 (2.3)
Black	494	2,226	11 (0.7) 256 (2.5) ¹	11 (0.7) 254 (3.2) ¹	11 (0.7) 244 (3.1) ¹
Hispanic	445	2,974	15 (1.0) 231 (5.3)	15 (1.0) 233 (5.7)	15 (1.0) 229 (5.5)
Other	97	848	4 (0.7) 278 (6.5) ¹	4 (0.7) 277 (6.2) ¹	4 (0.7) 278 (6.9) ¹
1992 Age 26-32					
Total Population	3,265	21,215	100 (0.0) 283 (1.9)	100 (0.0) 281 (1.8)	100 (0.0) 282 (1.7)
White	2,069	15,017	71 (1.2) 301 (1.7)	71 (1.2) 300 (1.5)	71 (1.2) 301 (1.6)
Black	628	2,609	12 (0.5) 251 (2.5)	12 (0.5) 245 (2.5)	12 (0.5) 240 (2.5)
Hispanic	468	2,749	13 (0.7) 223 (5.2)	13 (0.7) 225 (4.9)	13 (0.7) 223 (5.1)
Other	100	838	4 (0.7) 253 (11.0) ¹	4 (0.7) 257 (9.1) ¹	4 (0.7) 264 (7.9) ¹

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

¹ Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.6**
**Average Proficiency on Each Literacy Scale
Respondents' Education Level by Parents' Education Level**

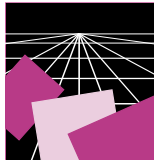
RESPONDENTS' EDUCATION LEVEL	PARENTS' EDUCATION LEVEL		0 to 8 years	9 to 12 years	High school	4 years college (degree)
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
0 to 8 years	1,412	11,983				
Prose			77 (1.6) 174 (2.8)	8 (1.0) 191 (7.4)!	13 (1.4) 208 (7.7)!	2 (0.5) *** (****)
Document			77 (1.6) 166 (2.9)	8 (1.0) 182 (7.4)!	13 (1.4) 202 (7.0)!	2 (0.5) *** (****)
Quantitative			77 (1.6) 169 (3.8)	8 (1.0) 181 (7.8)!	13 (1.4) 200 (8.5)!	2 (0.5) *** (****)
9 to 12 years	2,245	16,932				
Prose			46 (1.4) 218 (2.1)	19 (1.1) 235 (3.5)	30 (1.5) 244 (2.7)	5 (0.7) 255 (7.1)!
Document			46 (1.4) 211 (2.3)	19 (1.1) 232 (4.3)	30 (1.5) 243 (2.8)	5 (0.7) 257 (7.0)!
Quantitative			46 (1.4) 217 (2.8)	19 (1.1) 232 (4.6)	30 (1.5) 242 (3.2)	5 (0.7) 256 (6.6)!
High school	4,577	37,485				
Prose			28 (1.0) 255 (2.5)	15 (0.7) 267 (3.1)	48 (1.0) 275 (1.7)	9 (0.6) 286 (3.5)
Document			28 (1.0) 245 (2.5)	15 (0.7) 260 (2.3)	48 (1.0) 271 (1.6)	9 (0.6) 286 (4.4)
Quantitative			28 (1.0) 255 (2.5)	15 (0.7) 266 (3.4)	48 (1.0) 277 (1.8)	9 (0.6) 284 (3.5)
4 year college degree	1,487	10,683				
Prose			14 (1.1) 296 (4.1)!	7 (0.9) 308 (5.9)!	43 (2.0) 318 (2.2)	35 (1.7) 324 (2.3)
Document			14 (1.1) 284 (4.0)!	7 (0.9) 294 (6.9)!	43 (2.0) 310 (2.2)	35 (1.7) 320 (2.4)
Quantitative			14 (1.1) 303 (4.8)!	7 (0.9) 313 (7.1)!	43 (2.0) 320 (2.2)	35 (1.7) 324 (2.4)
Total Population	17,266	126,380				
Prose			31 (0.6) 233 (1.5)	13 (0.4) 264 (1.7)	41 (0.6) 284 (0.9)	16 (0.4) 305 (1.4)
Document			31 (0.6) 225 (1.6)	13 (0.4) 258 (1.7)	41 (0.6) 279 (0.7)	16 (0.4) 302 (1.5)
Quantitative			31 (0.6) 233 (1.7)	13 (0.4) 264 (2.0)	41 (0.6) 284 (0.9)	16 (0.4) 304 (1.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.7**
**Average Proficiency on Each Literacy Scale
Education Level by Race/Ethnicity**

EDUCATION LEVEL	RACE/ ETHNICITY						
		Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	White	Other
	WGT N n (1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Still in high school	873 8,298						
Prose		18 (1.5) 247 (3.9)	13 (1.1) 246 (6.7) [†]	2 (0.7) ***	1 (0.6) ***	67 (1.9) 283 (2.2)	1 (0.5) ***
Document		16 (1.5) 248 (3.9)	13 (1.1) 248 (6.1) [†]	2 (0.7) ***	1 (0.8) ***	67 (1.9) 286 (2.3)	1 (0.5) ***
Quantitative		16 (1.5) 234 (4.7)	13 (1.1) 241 (6.5) [†]	2 (0.7) ***	1 (0.6) ***	67 (1.9) 283 (2.4)	1 (0.5) ***
0 to 8 years	2,167 18,268						
Prose		13 (0.8) 159 (3.9)	25 (0.9) 136 (3.6)	2 (0.6) ***	1 (0.3) ***	57 (1.6) 202 (3.1)	1 (0.3) ***
Document		13 (0.8) 151 (2.8)	25 (0.9) 131 (3.6)	2 (0.6) ***	1 (0.3) ***	57 (1.6) 191 (3.1)	1 (0.3) ***
Quantitative		13 (0.8) 140 (4.0)	25 (0.9) 128 (3.7)	2 (0.6) ***	1 (0.3) ***	57 (1.6) 195 (3.8)	1 (0.3) ***
8 to 12 years	3,311 24,980						
Prose		18 (0.6) 213 (2.3)	13 (0.7) 200 (4.8)	1 (0.3) ***	1 (0.4) ***	66 (1.1) 243 (1.6)	0 [†] (0.1) ***
Document		18 (0.6) 207 (2.2)	13 (0.7) 197 (4.8)	1 (0.3) ***	1 (0.4) ***	66 (1.1) 238 (1.9)	0 [†] (0.1) ***
Quantitative		18 (0.6) 197 (2.9)	13 (0.7) 196 (5.4)	1 (0.3) ***	1 (0.4) ***	66 (1.1) 242 (2.1)	0 [†] (0.1) ***
GED	1,062 7,224						
Prose		10 (1.1) 243 (4.1) [†]	12 (1.3) 240 (6.8) [†]	1 (0.3) ***	3 (1.1) ***	74 (2.1) 270 (2.0)	1 (0.4) ***
Document		10 (1.1) 235 (4.2) [†]	12 (1.3) 236 (6.4) [†]	1 (0.3) ***	3 (1.1) ***	74 (2.1) 272 (2.2)	1 (0.4) ***
Quantitative		10 (1.1) 235 (4.5) [†]	12 (1.3) 240 (7.8) [†]	1 (0.3) ***	3 (1.1) ***	74 (2.1) 277 (3.1)	1 (0.4) ***
High school diploma	8,107 51,290						
Prose		11 (0.4) 242 (1.6)	7 (0.4) 242 (4.4)	1 (0.2) 208 (16.0) [†]	1 (0.3) ***	79 (0.8) 278 (1.2)	0 [†] (0.1) ***
Document		11 (0.4) 235 (1.7)	7 (0.4) 242 (4.9)	1 (0.2) 214 (13.2) [†]	1 (0.3) ***	79 (0.8) 271 (1.2)	0 [†] (0.1) ***
Quantitative		11 (0.4) 232 (2.0)	7 (0.4) 240 (4.8)	1 (0.2) 227 (12.5) [†]	1 (0.3) ***	79 (0.8) 279 (1.2)	0 [†] (0.1) ***
Some college (no degree)	6,687 30,634						
Prose		10 (0.5) 267 (1.9)	8 (0.3) 265 (3.5)	2 (0.2) 264 (8.3) [†]	1 (0.4) ***	78 (0.8) 302 (1.2)	0 [†] (0.1) ***
Document		10 (0.5) 261 (2.2)	8 (0.3) 263 (3.4)	2 (0.2) 261 (10.2) [†]	1 (0.4) ***	78 (0.8) 297 (1.0)	0 [†] (0.1) ***
Quantitative		10 (0.5) 258 (2.2)	8 (0.3) 265 (3.5)	2 (0.2) 273 (7.7) [†]	1 (0.4) ***	78 (0.8) 304 (1.5)	0 [†] (0.1) ***
2 year college degree	1,005 6,831						
Prose		8 (1.1) 276 (4.8) [†]	6 (0.7) 291 (6.5) [†]	2 (0.6) ***	1 (0.5) ***	83 (1.3) 313 (2.6)	0 [†] (0.1) ***
Document		8 (1.1) 263 (4.8) [†]	6 (0.7) 288 (6.0) [†]	2 (0.6) ***	1 (0.5) ***	83 (1.3) 305 (2.8)	0 [†] (0.1) ***
Quantitative		8 (1.1) 267 (3.5) [†]	6 (0.7) 286 (7.6) [†]	2 (0.6) ***	1 (0.5) ***	83 (1.3) 313 (2.9)	0 [†] (0.1) ***
4 year college degree	2,634 17,804						
Prose		6 (0.5) 288 (3.3) [†]	4 (0.6) 282 (8.2) [†]	4 (0.6) 271 (8.9) [†]	0 [†] (0.1) ***	85 (0.7) 328 (1.7)	0 [†] (0.0) ***
Document		6 (0.5) 279 (4.1) [†]	4 (0.6) 285 (7.3) [†]	4 (0.6) 275 (8.6) [†]	0 [†] (0.1) ***	85 (0.7) 320 (1.5)	0 [†] (0.0) ***
Quantitative		6 (0.5) 280 (3.1) [†]	4 (0.6) 286 (8.6) [†]	4 (0.6) 286 (9.2) [†]	0 [†] (0.1) ***	85 (0.7) 329 (1.4)	0 [†] (0.0) ***
Graduate studies/degree	2,353 16,308						
Prose		6 (0.5) 296 (5.2) [†]	3 (0.6) 312 (9.2) [†]	4 (0.6) 301 (5.7) [†]	0 [†] (0.1) ***	88 (0.9) 341 (1.4)	0 [†] (0.1) ***
Document		6 (0.5) 285 (5.2) [†]	3 (0.6) 306 (10.3) [†]	4 (0.6) 298 (6.2) [†]	0 [†] (0.1) ***	88 (0.9) 330 (1.9)	0 [†] (0.1) ***
Quantitative		6 (0.5) 286 (4.9) [†]	3 (0.6) 312 (9.1) [†]	4 (0.6) 314 (7.4) [†]	0 [†] (0.1) ***	88 (0.9) 338 (1.4)	0 [†] (0.1) ***

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data);
RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

[†] Percentages less than 0.5 are rounded to zero.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

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Compendium_Baron

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**TABLE 1.8****Average Proficiency on Each Literacy Scale
Age by Race/Ethnicity**

AGE	RACE/ ETHNICITY						
		Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	White	Other
		WGT N n	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
18 to 18 years	1,237 10,424						
Prose		16 (1.3) 248 (3.6)	13 (1.1) 237 (6.7)	2 (0.6) *** (****)	2 (0.7) *** (****)	66 (1.8) 264 (2.0)	1 (0.4) *** (****)
Document		16 (1.3) 248 (3.7)	13 (1.1) 237 (5.7)	2 (0.6) *** (****)	2 (0.7) *** (****)	66 (1.8) 287 (2.2)	1 (0.4) *** (****)
Quantitative		16 (1.3) 236 (4.0)	13 (1.1) 230 (5.9)	2 (0.6) *** (****)	2 (0.7) *** (****)	66 (1.8) 283 (2.0)	1 (0.4) *** (****)
19 to 24 years	3,344 24,515						
Prose		13 (0.6) 254 (1.7)	15 (0.8) 236 (4.9)	3 (0.5) 279 (8.6)†	1 (0.5) *** (****)	66 (1.3) 295 (1.5)	0† (0.2) *** (****)
Document		13 (0.6) 251 (1.9)	15 (0.8) 236 (5.4)	3 (0.5) 278 (8.4)†	1 (0.5) *** (****)	66 (1.3) 295 (1.4)	0† (0.2) *** (****)
Quantitative		13 (0.6) 241 (2.0)	15 (0.8) 234 (5.1)	3 (0.5) 281 (8.3)†	1 (0.5) *** (****)	66 (1.3) 293 (1.9)	0† (0.2) *** (****)
25 to 29 years	10,050 63,278						
Prose		12 (0.3) 251 (2.0)	12 (0.4) 215 (3.5)	2 (0.3) 250 (5.8)†	1 (0.4) 270 (8.7)†	72 (0.8) 303 (0.9)	0† (0.1) *** (****)
Document		12 (0.3) 245 (1.9)	12 (0.4) 216 (3.7)	2 (0.3) 253 (4.8)†	1 (0.4) 268 (8.6)†	72 (0.8) 300 (1.0)	0† (0.1) *** (****)
Quantitative		12 (0.3) 239 (1.9)	12 (0.4) 214 (3.7)	2 (0.3) 263 (5.3)†	1 (0.4) 263 (6.7)†	72 (0.8) 303 (0.9)	0† (0.1) *** (****)
40 to 54 years	6,310 43,794						
Prose		10 (0.3) 235 (2.3)	7 (0.4) 211 (4.5)†	2 (0.2) 248 (7.8)†	1 (0.2) *** (****)	80 (0.5) 300 (1.6)	0† (0.1) *** (****)
Document		10 (0.3) 226 (2.0)	7 (0.4) 206 (4.4)†	2 (0.2) 243 (8.1)†	1 (0.2) *** (****)	80 (0.5) 292 (1.4)	0† (0.1) *** (****)
Quantitative		10 (0.3) 226 (2.6)	7 (0.4) 212 (5.0)†	2 (0.2) 260 (7.4)†	1 (0.2) *** (****)	80 (0.5) 301 (1.4)	0† (0.1) *** (****)
55 to 64 years	2,924 19,503						
Prose		10 (0.5) 212 (4.0)†	8 (0.7) 192 (7.4)†	1 (0.3) *** (****)	1 (0.4) *** (****)	80 (1.1) 273 (2.1)	0† (0.2) *** (****)
Document		10 (0.5) 201 (3.9)†	8 (0.7) 187 (8.2)†	1 (0.3) *** (****)	1 (0.4) *** (****)	80 (1.1) 282 (2.1)	0† (0.2) *** (****)
Quantitative		10 (0.5) 203 (3.9)†	8 (0.7) 195 (8.9)†	1 (0.3) *** (****)	1 (0.4) *** (****)	80 (1.1) 275 (2.3)	0† (0.2) *** (****)
65 years and older	2,214 29,735						
Prose		8 (0.6) 187 (4.5)	5 (0.5) 170 (8.8)†	2 (0.4) *** (****)	1 (0.2) *** (****)	85 (1.0) 240 (2.1)	0† (0.1) *** (****)
Document		8 (0.6) 173 (3.0)	5 (0.5) 151 (6.8)†	2 (0.4) *** (****)	1 (0.2) *** (****)	85 (1.0) 226 (2.1)	0† (0.1) *** (****)
Quantitative		8 (0.6) 163 (5.6)	5 (0.5) 144 (9.8)†	2 (0.4) *** (****)	1 (0.2) *** (****)	85 (1.0) 240 (2.5)	0† (0.1) *** (****)

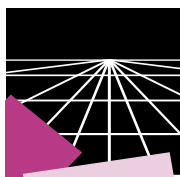
n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = raw percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

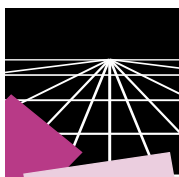
! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.9A****Average Years of Schooling by Age, Race/Ethnicity, and Census Region**

DEMOGRAPHIC SUBPOPULATIONS	Average Years of Schooling*	
	(SE)	
Age		
16 to 18 years	10.8	(0.1)
19 to 24 years	12.5	(0.0)
25 to 39 years	12.9	(0.0)
40 to 54 years	13.1	(0.1)
55 to 64 years	11.8	(0.1)
65 years and older	10.7	(0.1)
Race/Ethnicity		
Black	11.6	(0.1)
Hispanic	10.2	(0.1)
Asian/Pacific Islander	13.0	(0.3)
American Indian/ Alaskan Native	11.7	(0.2)
White	12.8	(0.0)
Age by Race/Ethnicity		
16 to 18 years		
White	11.0	(0.2)
Black	10.8	(0.2)
Hispanic	9.9	(0.3)
Asian/Pacific Islander	11.3	(0.9)
19 to 24 years		
White	12.8	(0.0)
Black	12.1	(0.1)
Hispanic	11.4	(0.2)
Asian/Pacific Islander	12.9	(0.3)
25 to 39 years		
White	13.4	(0.0)
Black	12.5	(0.1)
Hispanic	10.5	(0.2)
Asian/Pacific Islander	13.9	(0.3)
40 to 54 years		
White	13.5	(0.1)
Black	11.9	(0.1)
Hispanic	10.3	(0.3)
Asian/Pacific Islander	14.1	(0.5)
55 to 64 years		
White	12.3	(0.1)
Black	10.7	(0.3)
Hispanic	8.8	(0.4)
Asian/Pacific Islander	13.3	(0.9)
65 years and older		
White	11.2	(0.1)
Black	9.0	(0.2)
Hispanic	6.5	(0.4)
Asian/Pacific Islander	8.7	(1.3)



**TABLE 1.9A (continued)****Average Years of Schooling by Age, Race/Ethnicity, and Census Region**

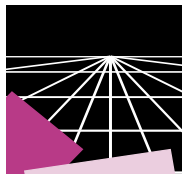
DEMOGRAPHIC SUBPOPULATIONS		Average Years of Schooling*	
		(SE)	
Census Region			
Northeast		12.5	(0.1)
Midwest		12.5	(0.1)
South		12.2	(0.1)
West		12.6	(0.1)

*in this country.

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.9B**
**Difference in Average Proficiencies and in
Average Years of Schooling, by Race/Ethnicity and Age**

DEMOGRAPHIC SUBPOPULATIONS	Difference in Average Prose Proficiency	Difference in Average Document Proficiency	Difference in Average Quantitative Proficiency	Difference in Average Years of Schooling
	(SE)	(SE)	(SE)	(SE)
<u>White and Black Adults</u>				
16 to 18 years	36 (4.1)	39 (4.3)	47 (4.5)	.2 (0.3)
19 to 24 years	41 (2.3)	44 (2.4)	52 (2.8)	.7 (0.1)
25 to 39 years	52 (2.2)	55 (2.1)	64 (2.1)	.9 (0.1)
40 to 54 years	65 (2.8)	66 (2.4)	75 (3.0)	1.6 (0.1)
55 to 64 years	61 (4.5)	61 (4.4)	72 (4.5)	1.6 (0.3)
65 years and older	53 (5.0)	53 (3.7)	77 (6.1)	2.2 (0.2)
<u>White and Hispanic Adults</u>				
16 to 18 years	47 (7.0)	50 (6.1)	53 (6.2)	1.1 (0.4)
19 to 24 years	57 (5.1)	57 (5.6)	59 (5.4)	1.4 (0.2)
25 to 39 years	88 (3.6)	84 (3.8)	89 (3.8)	2.9 (0.2)
40 to 54 years	89 (4.8)	84 (4.6)	89 (5.2)	3.2 (0.3)
55 to 64 years	81 (7.7)	75 (8.5)	80 (9.2)	3.5 (0.4)
65 years and older	70 (9.0)	75 (6.9)	96 (9.9)	4.7 (0.4)
<u>White and Asian/ Pacific Islander Adults</u>				
19 to 24 years	16 (8.7)	17 (8.5)	12 (8.5)	-0.1 (0.3)
25 to 39 years	53 (3.6)	47 (4.9)	40 (5.4)	-0.5 (0.3)
40 to 54 years	52 (8.0)	49 (8.2)	41 (7.5)	-0.6 (0.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 1.10**
**Average Proficiency on Each Literacy Scale
Race/Ethnicity by Country of Birth**

RACE/ETHNICITY	COUNTRY OF BIRTH		Born in the USA or US Territory	Born in Another Country
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
<u>Black</u>	4,963	21,192		
Prose			95 (0.5) 237 (1.4)	6 (0.5) 230 (6.4)
Document			95 (0.5) 230 (1.2)	6 (0.5) 225 (8.7)
Quantitative			95 (0.5) 224 (1.4)	6 (0.5) 227 (7.1)
<u>Hispanic/Mexicano</u>	1,776	10,235		
Prose			54 (2.2) 247 (3.2)	46 (2.2) 158 (3.7)
Document			54 (2.2) 245 (3.0)	46 (2.2) 158 (4.3)
Quantitative			54 (2.2) 244 (3.1)	46 (2.2) 158 (4.5)
<u>Hispanic/Puerto Rican</u>	405	2,190		
Prose			80 (2.9) 226 (6.9)	20 (2.9) 186 (10.3)!
Document			80 (2.9) 225 (6.7)	20 (2.9) 171 (12.4)!
Quantitative			80 (2.9) 223 (6.6)	20 (2.9) 166 (16.0)!
<u>Hispanic/Cuban</u>	147	928		
Prose			11 (2.8) *** (****)	89 (2.8) 202 (10.9)
Document			11 (2.8) *** (****)	89 (2.8) 204 (13.0)
Quantitative			11 (2.8) *** (****)	89 (2.8) 217 (14.6)
<u>Hispanic/Central/South</u>	424	2,608		
Prose			21 (3.1) 281 (6.3)!	79 (3.1) 187 (6.0)
Document			21 (3.1) 277 (5.0)!	79 (3.1) 188 (5.9)
Quantitative			21 (3.1) 275 (5.1)!	79 (3.1) 185 (6.4)
<u>Hispanic/Other</u>	374	2,520		
Prose			68 (5.5) 283 (7.7)	32 (5.5) 210 (10.5)!
Document			68 (5.5) 277 (7.5)	32 (5.5) 204 (11.1)!
Quantitative			68 (5.5) 271 (8.2)	32 (5.5) 191 (13.1)!

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: Educational Testing Service, National Adult Literacy Survey, 1992.

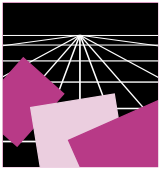


TABLE 1.10 (continued)

**Average Proficiency on Each Literacy Scale
Race/Ethnicity by Country of Birth**

RACE/ETHNICITY	COUNTRY OF BIRTH		Born in the USA or US Territory	Born in Another Country
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
<u>Asian/Pacific Islander</u>	438	4,116		
Prose			22 (2.5) 274 (11.2)!	78 (2.5) 233 (7.2)
Document			22 (2.5) 266 (12.4)!	78 (2.5) 240 (5.4)
Quantitative			22 (2.5) 279 (10.0)!	78 (2.5) 249 (7.9)
<u>American Indian/Alaskan Native</u>	189	1,803		
Prose			100 (0.4) 254 (4.1)!	0† (0.4) *** (****)
Document			100 (0.4) 254 (5.0)!	0† (0.4) *** (****)
Quantitative			100 (0.4) 250 (5.1)!	0† (0.4) *** (****)
<u>White</u>	17,292	144,968		
Prose			96 (0.2) 287 (0.8)	4 (0.2) 258 (4.3)
Document			96 (0.2) 281 (0.9)	4 (0.2) 255 (3.3)
Quantitative			96 (0.2) 288 (0.8)	4 (0.2) 260 (4.2)
<u>Other</u>	83	729		
Prose			24 (7.8) *** (****)	76 (7.8) 197 (16.3)
Document			24 (7.8) *** (****)	76 (7.8) 203 (15.5)
Quantitative			24 (7.8) *** (****)	76 (7.8) 202 (12.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: Educational Testing Service, National Adult Literacy Survey, 1992.



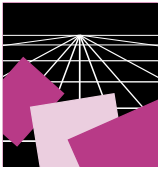
TABLE 1.11

Average Proficiency on Each Literacy Scale Census Region by Country of Birth

CENSUS REGION	COUNTRY OF BIRTH		Born in the USA or US Territory	Born in Another Country
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
<u>Northeast</u>	5,425	39,834		
Prose			86 (0.7) 279 (1.3)	14 (0.7) 213 (3.3)
Document			86 (0.7) 272 (1.4)	14 (0.7) 210 (3.4)
Quantitative			86 (0.7) 276 (1.3)	14 (0.7) 211 (4.5)
<u>Midwest</u>	7,494	45,318		
Prose			97 (0.3) 281 (1.1)	3 (0.3) 223 (7.9)
Document			97 (0.3) 275 (1.3)	3 (0.3) 227 (8.5)
Quantitative			97 (0.3) 281 (1.7)	3 (0.3) 229 (9.3)
<u>South</u>	7,886	65,854		
Prose			93 (0.5) 271 (2.1)	7 (0.5) 219 (4.2)
Document			93 (0.5) 265 (2.1)	7 (0.5) 219 (4.5)
Quantitative			93 (0.5) 269 (2.2)	7 (0.5) 224 (4.5)
<u>West</u>	5,286	40,282		
Prose			82 (0.9) 292 (1.9)	18 (0.9) 204 (5.0)
Document			82 (0.9) 285 (1.7)	18 (0.9) 204 (4.9)
Quantitative			82 (0.9) 290 (1.9)	18 (0.9) 208 (5.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

Source: Educational Testing Service, National Adult Literacy Survey, 1992.

**TABLE 1.12A**
**Average Prose Proficiency and Literacy Levels
by Type of Physical, Mental, or Health Condition**

DISABILITIES	PROSE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
<u>Physical, Mental, Health Condition</u>								
Yes	2,806	22,205	46 (1.1)	30 (1.6)	18 (1.5)	5 (0.9)	1 (0.2)	227 (1.6)
<u>Visual Difficulty</u>								
Yes	1,801	14,296	54 (1.6)	26 (1.4)	15 (1.6)	5 (1.3)	0†(0.2)	217 (2.4)
<u>Hearing Difficulty</u>								
Yes	1,611	14,202	36 (1.9)	30 (2.0)	24 (1.9)	9 (1.4)	1 (0.4)	243 (2.6)
<u>Learning Disability</u>								
Yes	875	5,820	58 (2.4)	22 (2.4)	14 (1.6)	4 (1.1)	1 (0.6)	207 (3.7)
<u>Mental or Emotional Condition</u>								
Yes	597	3,631	48 (3.2)	24 (2.7)	18 (2.3)	8 (1.8)	2 (0.9)	225 (4.8)
<u>Mental Retardation</u>								
Yes	63	370	87 (6.0)	3 (4.4)	5 (4.1)	3 (3.2)	1 (1.7)	143 (13.6)
<u>Speech Disability</u>								
Yes	383	2,767	53 (4.0)	26 (3.8)	13 (2.7)	7 (2.4)	0†(0.4)	216 (6.6)
<u>Physical Disability</u>								
Yes	2,129	17,144	44 (1.3)	30 (1.5)	19 (1.6)	6 (1.0)	1 (0.2)	231 (1.8)
<u>Long-term Illness 6 months or more</u>								
Yes	1,880	14,627	41 (1.5)	29 (1.3)	21 (1.4)	7 (1.1)	1 (0.4)	236 (2.4)
<u>Any Other Health Impairment</u>								
Yes	1,509	12,058	39 (2.1)	30 (2.7)	23 (2.2)	7 (1.2)	1 (0.3)	237 (2.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to 0.

Source: Educational Testing Service, National Adult Literacy Survey, 1992.

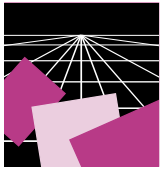
**TABLE 1.12B**
**Average Document Proficiency and Literacy Levels
by Type of Physical, Mental, or Health Condition**

DISABILITIES	DOCUMENT SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
<u>Physical, Mental, Health Condition</u>								
Yes	2,806	22,205	51 (1.3)	30 (1.2)	15 (0.9)	4 (0.6)	1 (0.2)	219 (1.9)
<u>Visual Difficulty</u>								
Yes	1,801	14,296	56 (1.5)	26 (2.1)	13 (1.8)	4 (0.8)	1 (0.3)	212 (2.6)
<u>Hearing Difficulty</u>								
Yes	1,611	14,202	39 (2.1)	31 (1.9)	22 (1.6)	7 (1.1)	1 (0.4)	236 (2.8)
<u>Learning Disability</u>								
Yes	875	5,820	60 (2.6)	22 (2.9)	13 (1.3)	4 (1.0)	1 (0.9)	201 (4.0)
<u>Mental or Emotional Condition</u>								
Yes	597	3,631	47 (3.2)	27 (2.8)	18 (2.1)	7 (1.9)	2 (0.7)	223 (4.7)
<u>Mental Retardation</u>								
Yes	63	370	87 (6.3)	5 (4.9)	5 (3.1)	3 (2.6)	0† (0.7)	145 (13.5)
<u>Speech Disability</u>								
Yes	383	2,767	55 (4.1)	28 (4.0)	12 (2.6)	5 (1.9)	0† (0.4)	212 (5.7)
<u>Physical Disability</u>								
Yes	2,129	17,144	48 (1.4)	29 (1.5)	17 (1.4)	5 (0.7)	0† (0.1)	222 (2.1)
<u>Long-term Illness 6 months or more</u>								
Yes	1,880	14,627	46 (1.7)	30 (2.2)	17 (1.6)	5 (0.8)	1 (0.3)	225 (2.2)
<u>Any Other Health Impairment</u>								
Yes	1,509	12,058	45 (2.0)	30 (2.2)	19 (1.8)	5 (1.1)	1 (0.2)	226 (2.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to 0.

Source: Educational Testing Service, National Adult Literacy Survey, 1992.

**TABLE 1.12C**
**Average Quantitative Proficiency and Literacy Levels
by Type of Physical, Mental, or Health Condition**

DISABILITIES	QUANTITATIVE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
<u>Physical, Mental, Health Condition</u>								
Yes	2,806	22,205	49 (1.2)	25 (1.1)	19 (1.2)	6 (0.7)	1 (0.4)	220 (2.4)
<u>Visual Difficulty</u>								
Yes	1,801	14,296	55 (1.7)	24 (1.7)	16 (1.6)	5 (1.1)	1 (0.4)	210 (2.7)
<u>Hearing Difficulty</u>								
Yes	1,611	14,202	37 (2.3)	25 (1.9)	26 (2.0)	10 (1.6)	2 (0.6)	242 (3.6)
<u>Learning Disability</u>								
Yes	875	5,820	60 (2.9)	21 (2.5)	13 (1.4)	4 (1.3)	1 (0.6)	197 (4.2)
<u>Mental or Emotional Condition</u>								
Yes	597	3,631	51 (3.2)	22 (2.6)	16 (2.5)	8 (1.9)	2 (1.3)	214 (5.7)
<u>Mental Retardation</u>								
Yes	63	370	90 (4.2)	3 (3.7)	6 (4.8)	1 (0.9)	0† (1.6)	115 (14.1)
<u>Speech Disability</u>								
Yes	383	2,767	55 (3.2)	22 (3.3)	16 (2.6)	6 (2.3)	1 (0.9)	208 (7.2)
<u>Physical Disability</u>								
Yes	2,129	17,144	47 (1.7)	26 (1.6)	20 (1.2)	7 (0.8)	1 (0.3)	223 (2.4)
<u>Long-term Illness 6 months or more</u>								
Yes	1,880	14,627	44 (1.5)	25 (1.4)	22 (1.7)	7 (0.8)	2 (0.4)	227 (2.7)
<u>Any Other Health Impairment</u>								
Yes	1,509	12,058	41 (1.8)	26 (1.7)	23 (1.9)	8 (1.1)	2 (0.7)	232 (3.2)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to 0.

Source: Educational Testing Service, National Adult Literacy Survey, 1992.

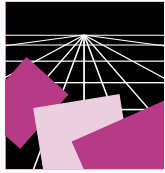


TABLE 2.1A

Newspaper Reading Practices, Help from Others, and English Literacy by Prose Literacy Levels

NEWSPAPER READING PRACTICES, HELP FROM OTHERS, ENGLISH LITERACY	PROSE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Newspaper Reading								
Every day	12,157	93,536	35 (0.5)	49 (0.9)	52 (0.7)	57 (1.2)	61 (3.1)	285 (0.7)
A few times a week	6,482	45,127	19 (0.8)	24 (1.1)	25 (1.0)	25 (1.2)	25 (3.1)	280 (1.2)
Once a week	3,675	27,075	16 (0.9)	15 (1.0)	14 (1.2)	12 (1.0)	8 (1.3)	267 (1.4)
Less than once a week	2,076	13,923	9 (1.5)	8 (1.4)	6 (1.6)	5 (1.1)	5 (1.0)	259 (2.3)
Never	1,686	11,511	21 (1.5)	3 (1.2)	2 (0.9)	1 (0.6)	1 (0.2)	174 (2.8)
Read News, Editorials								
No	870	6,574	8 (2.4)	5 (2.6)	3 (1.9)	1 (1.1)	0† (0.3)	248 (2.7)
Yes	21,444	159,164	92 (0.5)	95 (0.6)	97 (0.5)	99 (0.4)	100 (0.3)	282 (0.6)
Read Sports								
No	11,841	85,383	52 (0.7)	53 (1.2)	52 (1.2)	50 (1.1)	47 (2.4)	280 (0.8)
Yes	10,673	80,355	48 (0.7)	47 (1.3)	48 (1.2)	50 (1.1)	53 (2.4)	282 (0.8)
Read Home, Fashion								
No	3,788	30,892	26 (1.0)	20 (1.3)	17 (1.3)	14 (0.9)	14 (0.7)	267 (1.6)
Yes	18,526	134,846	74 (0.7)	80 (0.7)	83 (0.6)	86 (0.7)	86 (0.7)	284 (0.5)
Read Ads, Listings								
No	2,918	23,564	16 (1.1)	12 (1.3)	13 (1.2)	17 (1.1)	24 (1.9)	282 (1.7)
Yes	19,396	142,174	84 (0.7)	88 (0.6)	87 (0.8)	83 (0.6)	76 (1.8)	280 (0.6)
Read Comics, Advice								
No	6,300	48,452	34 (1.1)	28 (1.0)	28 (1.1)	29 (0.7)	31 (1.7)	277 (1.3)
Yes	16,014	117,286	66 (1.0)	72 (0.8)	72 (0.8)	71 (0.5)	69 (1.7)	282 (0.6)
English Reading Ability								
Very well/well	24,135	177,713	71 (0.4)	97 (0.6)	99 (0.5)	100 (0.4)	100 (0.2)	282 (0.5)
Not well/not at all	1,906	13,214	29 (1.5)	3 (1.2)	1 (0.7)	0† (0.2)	0† (0.0)	150 (2.6)
English Writing Ability								
Very well/well	23,455	172,519	66 (0.4)	94 (0.6)	98 (0.5)	99 (0.4)	100 (0.2)	283 (0.6)
Not well/not at all	2,544	18,129	34 (1.4)	6 (1.1)	2 (0.8)	1 (0.2)	0† (0.1)	174 (2.4)
Help With Forms								
A lot	2,763	23,034	27 (1.4)	12 (1.2)	8 (1.2)	4 (0.6)	2 (0.5)	221 (2.2)
Some/None	23,294	168,062	73 (0.4)	88 (0.6)	92 (0.5)	96 (0.4)	98 (0.5)	280 (0.6)
Help With Information								
A lot	2,230	17,123	23 (1.4)	8 (1.2)	5 (1.3)	2 (0.6)	1 (0.4)	210 (2.5)
Some/None	23,790	173,731	77 (0.4)	92 (0.6)	95 (0.5)	98 (0.4)	99 (0.4)	279 (0.6)
Help With Basic Math								
A lot	1,219	9,293	15 (1.8)	4 (1.8)	2 (1.1)	1 (0.7)	0† (0.2)	192 (3.2)
Some/None	24,635	181,761	85 (0.4)	96 (0.7)	98 (0.5)	99 (0.4)	100 (0.2)	277 (0.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

† Percentages less than 0.5 are rounded to zero.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

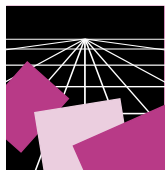


TABLE 2.1B

Newspaper Reading Practices, Help from Others, and English Literacy by Document Literacy Levels

NEWSPAPER READING PRACTICES, HELP FROM OTHERS, ENGLISH LITERACY	DOCUMENT SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Newspaper Reading								
Every day	12,157	93,536	39 (0.6)	51 (0.8)	51 (0.9)	55 (1.4)	55 (1.8)	276 (0.8)
A few times a week	6,482	45,127	18 (0.6)	24 (0.8)	26 (0.9)	26 (1.2)	28 (2.3)	277 (1.2)
Once a week	3,875	27,075	15 (1.1)	15 (0.9)	14 (1.2)	12 (0.9)	11 (1.4)	265 (1.4)
Less than once a week	2,076	13,923	9 (1.5)	8 (1.2)	7 (1.6)	6 (1.4)	6 (1.2)	257 (2.2)
Never	1,686	11,511	19 (1.5)	3 (1.2)	2 (1.0)	1 (0.4)	1 (0.4)	170 (2.9)
Read News, Editorials								
No	870	6,574	7 (1.9)	4 (2.4)	3 (2.2)	2 (0.9)	1 (0.5)	248 (3.1)
Yes	21,444	158,164	93 (0.5)	96 (0.5)	97 (0.5)	98 (0.6)	99 (0.4)	276 (0.6)
Read Sports								
No	11,641	85,383	53 (0.9)	53 (0.7)	51 (0.8)	49 (1.4)	47 (0.9)	273 (0.9)
Yes	10,673	80,355	47 (1.0)	47 (0.8)	49 (0.9)	51 (1.4)	53 (0.9)	276 (1.0)
Read Home, Fashion								
No	3,788	30,892	24 (1.1)	19 (1.1)	17 (1.3)	15 (1.1)	15 (1.1)	264 (1.6)
Yes	18,526	134,846	76 (0.6)	81 (0.8)	83 (0.6)	85 (1.0)	85 (1.0)	277 (0.6)
Read Ads, Listings								
No	2,918	23,564	16 (1.1)	12 (1.1)	13 (1.2)	17 (1.1)	22 (1.8)	274 (1.7)
Yes	19,396	142,174	84 (0.5)	88 (0.6)	87 (0.7)	83 (0.7)	78 (1.7)	274 (0.6)
Read Comics, Advice								
No	6,300	48,452	33 (0.9)	27 (0.7)	29 (1.1)	28 (1.1)	30 (2.2)	271 (1.2)
Yes	16,014	117,286	67 (0.7)	73 (0.6)	71 (0.8)	72 (0.9)	70 (2.2)	276 (0.7)
English Reading Ability								
Very well/well	24,136	177,713	75 (0.4)	97 (0.5)	99 (0.5)	100 (0.4)	100 (0.1)	276 (0.6)
Not well/not at all	1,906	13,214	25 (1.3)	3 (1.0)	1 (0.6)	0 [†] (0.4)	0 [†] (0.0)	151 (2.6)
English Writing Ability								
Very well/well	23,455	172,519	70 (0.4)	94 (0.4)	97 (0.5)	99 (0.4)	100 (0.3)	277 (0.6)
Not well/not at all	2,544	18,129	30 (1.6)	6 (1.3)	3 (0.7)	1 (0.2)	0 [†] (0.3)	175 (2.4)
Help With Forms								
A lot	2,763	23,034	25 (1.3)	12 (1.4)	7 (0.8)	4 (0.7)	2 (0.4)	217 (2.0)
Some/None	23,294	168,062	75 (0.5)	88 (0.6)	93 (0.5)	96 (0.5)	98 (0.4)	274 (0.6)
Help With Information								
A lot	2,230	17,123	21 (1.3)	8 (1.2)	5 (0.9)	2 (0.6)	1 (0.4)	206 (2.3)
Some/None	23,780	173,731	79 (0.5)	92 (0.4)	95 (0.4)	98 (0.5)	99 (0.4)	273 (0.6)
Help With Basic Math								
A lot	1,219	9,293	14 (1.4)	4 (1.2)	2 (1.1)	1 (0.5)	0 [†] (0.2)	187 (2.9)
Some/None	24,835	181,781	86 (0.5)	96 (0.4)	98 (0.4)	99 (0.4)	100 (0.2)	271 (0.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

[†] Percentages less than 0.5 are rounded to zero.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.



TABLE 2.1C

Newspaper Reading Practices, Help from Others, and English Literacy by Quantitative Literacy Levels

NEWSPAPER READING PRACTICES, HELP FROM OTHERS, ENGLISH LITERACY	QUANTITATIVE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Newspaper Reading								
Every day	12,157	93,536	35 (0.6)	48 (0.8)	52 (0.8)	58 (0.8)	62 (2.0)	285 (0.9)
A few times a week	6,482	45,127	20 (0.6)	25 (1.0)	25 (0.8)	24 (0.8)	23 (1.7)	278 (1.2)
Once a week	3,675	27,075	16 (1.1)	15 (0.9)	14 (0.9)	11 (0.8)	9 (0.9)	266 (1.5)
Less than once a week	2,076	13,923	9 (1.4)	8 (1.5)	7 (1.2)	5 (1.0)	5 (1.0)	258 (2.4)
Never	1,686	11,511	20 (1.5)	4 (1.3)	2 (0.9)	1 (0.7)	1 (0.3)	163 (2.9)
Read News, Editorials								
No	870	6,574	7 (1.8)	5 (1.7)	3 (1.8)	2 (1.1)	1 (0.6)	250 (2.8)
Yes	21,444	159,164	93 (0.4)	95 (0.4)	97 (0.5)	98 (0.4)	99 (0.5)	281 (0.7)
Read Sports								
No	11,641	85,383	55 (0.7)	54 (0.9)	51 (0.7)	47 (1.0)	42 (2.2)	276 (1.0)
Yes	10,673	80,355	45 (0.7)	46 (0.8)	49 (0.8)	53 (1.0)	58 (2.2)	284 (0.9)
Read Home, Fashion								
No	3,788	30,892	23 (1.2)	18 (0.9)	18 (1.3)	17 (1.1)	17 (1.3)	271 (1.7)
Yes	18,526	134,846	77 (0.6)	82 (0.7)	82 (0.5)	83 (0.8)	83 (1.3)	282 (0.7)
Read Ads, Listings								
No	2,918	23,594	16 (1.0)	12 (1.2)	12 (0.9)	17 (1.0)	23 (1.6)	282 (1.9)
Yes	19,396	142,174	84 (0.6)	88 (0.7)	88 (0.5)	83 (0.5)	77 (1.5)	280 (0.7)
Read Comics, Advice								
No	6,300	48,452	32 (0.7)	27 (0.8)	28 (0.9)	30 (0.9)	33 (1.6)	279 (1.1)
Yes	16,014	117,286	68 (0.5)	73 (0.6)	72 (0.5)	70 (0.9)	67 (1.5)	280 (0.7)
English Reading Ability								
Very well/well	24,135	177,713	74 (0.4)	97 (0.5)	99 (0.5)	100 (0.3)	100 (0.2)	281 (0.6)
Not well/not at all	1,906	13,214	26 (1.5)	3 (0.9)	1 (0.9)	0 [†] (0.3)	0 [†] (0.1)	148 (2.6)
English Writing Ability								
Very well/well	23,455	172,519	70 (0.4)	93 (0.5)	97 (0.5)	99 (0.3)	100 (0.2)	282 (0.7)
Not well/not at all	2,544	18,129	30 (1.4)	7 (1.1)	3 (0.9)	1 (0.4)	0 [†] (0.2)	173 (2.7)
Help With Forms								
A lot	2,763	23,034	26 (1.6)	12 (1.6)	7 (0.9)	4 (0.7)	2 (0.2)	216 (2.3)
Some/None	23,294	168,062	74 (0.5)	88 (0.9)	93 (0.6)	96 (0.5)	98 (0.2)	279 (0.7)
Help With Information								
A lot	2,230	17,123	22 (1.5)	8 (1.3)	5 (0.9)	3 (0.8)	1 (0.5)	201 (2.8)
Some/None	23,790	173,731	78 (0.4)	92 (0.6)	95 (0.5)	97 (0.5)	99 (0.5)	278 (0.6)
Help With Basic Math								
A lot	1,219	9,293	14 (1.7)	4 (1.4)	2 (1.3)	1 (0.6)	0 [†] (0.2)	181 (3.2)
Some/None	24,835	181,761	86 (0.4)	96 (0.4)	98 (0.4)	99 (0.3)	100 (0.3)	276 (0.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

[†] Percentages less than 0.5 are rounded to zero.

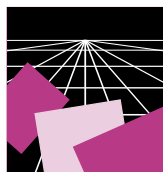
Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 2.2A****Labor Status, Sources of Information, Voting, and Occupation
by Prose Literacy Levels**

LABOR STATUS, INFORMATION, VOTING AND OCCUPATION	PROSE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Labor Force Status								
Full-time employed	12,466	89,723	30 (0.9)	43 (0.9)	54 (0.9)	64 (1.2)	72 (1.9)	268 (0.9)
Part-time employed	3,051	23,600	9 (0.7)	12 (1.4)	15 (1.4)	15 (1.1)	14 (0.9)	284 (1.4)
Unemployed	1,942	13,557	8 (1.1)	10 (1.4)	7 (1.7)	4 (1.2)	3 (0.7)	260 (2.1)
Out of labor force	6,721	58,202	52 (0.9)	35 (1.0)	25 (1.0)	17 (1.1)	11 (1.7)	246 (1.1)
Info. from Newspapers or Magazines								
A lot or some	20,842	159,870	68 (0.4)	85 (0.8)	89 (0.7)	91 (0.5)	92 (1.3)	280 (0.5)
A little or none	4,086	30,549	32 (1.2)	15 (1.1)	11 (1.1)	9 (0.8)	8 (1.3)	234 (1.7)
Info. from Radio or Television								
A lot or some	23,955	182,599	94 (0.4)	97 (0.6)	97 (0.5)	96 (0.5)	93 (1.7)	273 (0.6)
A little or none	973	7,822	6 (2.1)	3 (1.7)	3 (1.8)	4 (1.9)	7 (2.0)	257 (4.0)
Info. from Family								
A lot or some	16,710	126,593	62 (0.7)	66 (0.7)	69 (0.7)	69 (0.6)	67 (1.8)	275 (0.8)
A little or none	8,191	63,633	38 (0.8)	34 (0.8)	31 (0.7)	31 (0.7)	33 (1.9)	268 (1.2)
Voted in the Past Five Years								
Yes	15,484	117,379	55 (0.6)	61 (0.9)	69 (0.6)	81 (0.8)	89 (1.2)	285 (0.7)
No	7,616	58,510	45 (0.8)	39 (1.1)	31 (0.7)	19 (0.8)	11 (1.2)	257 (1.0)
Most Recent Occupation								
Prof/Managers	5,461	35,599	5 (0.5)	12 (0.9)	23 (0.8)	46 (1.1)	70 (2.6)	322 (1.0)
Sales	6,544	41,713	15 (0.6)	28 (0.9)	34 (0.9)	30 (1.0)	20 (2.1)	293 (1.1)
Craft	5,614	42,187	43 (1.0)	36 (1.1)	27 (1.0)	17 (0.8)	8 (1.4)	264 (1.1)
Laborer	3,479	27,671	37 (1.3)	24 (1.3)	16 (1.1)	7 (0.7)	2 (0.5)	249 (1.8)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 2.2B****Labor Status, Sources of Information, Voting, and Occupation by Document Literacy Levels**

LABOR STATUS, INFORMATION, VOTING AND OCCUPATION	DOCUMENT SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Labor Force Status								
Full-time employed	12,466	89,723	29 (0.8)	44 (0.6)	56 (0.7)	66 (1.0)	74 (1.0)	284 (0.9)
Part-time employed	3,051	23,600	9 (0.8)	13 (1.1)	14 (1.3)	14 (1.0)	13 (0.7)	277 (1.3)
Unemployed	1,942	13,557	8 (1.1)	9 (1.3)	7 (1.3)	5 (0.9)	4 (0.9)	257 (1.8)
Out of labor force	6,721	58,202	53 (1.1)	34 (0.8)	23 (0.8)	15 (0.8)	10 (0.5)	237 (1.3)
Info. from Newspapers or Magazines								
A lot or some	20,842	159,870	71 (0.5)	86 (0.5)	89 (0.5)	90 (0.5)	89 (0.9)	274 (0.6)
A little or none	4,086	30,549	29 (1.2)	14 (0.8)	11 (0.9)	10 (0.7)	11 (0.9)	232 (1.8)
Info. from Radio or Television								
A lot or some	23,955	182,599	94 (0.4)	97 (0.4)	96 (0.5)	96 (0.4)	94 (1.2)	268 (0.7)
A little or none	973	7,822	6 (2.2)	3 (2.0)	4 (1.8)	4 (1.2)	6 (1.3)	252 (3.4)
Info. from Family								
A lot or some	16,710	126,593	62 (0.6)	67 (0.8)	69 (0.9)	69 (0.5)	65 (2.2)	269 (0.9)
A little or none	8,191	63,633	38 (0.7)	33 (0.9)	31 (0.9)	31 (0.5)	35 (2.2)	263 (1.1)
Voted in the Past Five Years								
Yes	15,484	117,379	58 (0.6)	63 (0.6)	68 (0.6)	78 (0.7)	86 (1.8)	277 (0.8)
No	7,616	58,510	42 (0.6)	37 (0.8)	32 (0.7)	22 (0.7)	14 (1.8)	255 (1.0)
Most Recent Occupation								
Prof/Managers	5,461	35,599	6 (0.8)	13 (0.8)	26 (1.1)	46 (1.3)	66 (2.1)	315 (1.0)
Sales	6,544	41,713	16 (0.7)	30 (0.8)	33 (1.2)	29 (1.4)	19 (1.2)	287 (1.0)
Craft	5,614	42,187	41 (0.7)	34 (1.0)	26 (1.1)	18 (1.0)	10 (1.2)	262 (1.2)
Laborer	3,479	27,671	36 (1.5)	23 (1.3)	15 (1.2)	8 (0.6)	4 (0.9)	247 (1.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.



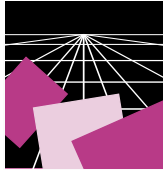
TABLE 2.2C

Labor Status, Sources of Information, Voting, and Occupation by Quantitative Literacy Levels

NEWSPAPER READING, INFORMATION, VOTING AND OCCUPATION	QUANTITATIVE SCALE		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Labor Force Status								
Full-time employed	12,466	89,723	29 (0.7)	43 (0.9)	55 (1.0)	64 (1.1)	73 (1.0)	290 (0.9)
Part-time employed	3,051	23,600	9 (0.9)	14 (1.2)	15 (1.4)	13 (1.1)	11 (0.8)	280 (1.5)
Unemployed	1,942	13,557	9 (1.2)	9 (1.4)	6 (1.5)	4 (1.0)	3 (0.5)	256 (1.9)
Out of labor force	8,721	58,202	53 (1.0)	34 (0.8)	24 (0.8)	18 (1.1)	13 (1.4)	241 (1.6)
Info. from Newspapers or Magazines								
A lot or some	20,842	159,870	70 (0.5)	85 (0.5)	88 (0.5)	90 (0.5)	90 (1.3)	279 (0.6)
A little or none	4,096	30,549	30 (1.1)	15 (1.0)	12 (1.3)	10 (0.8)	10 (1.3)	231 (2.1)
Info. from Radio or Television								
A lot or some	23,955	182,599	94 (0.5)	97 (0.5)	97 (0.4)	96 (0.3)	94 (0.9)	272 (0.7)
A little or none	973	7,822	6 (1.9)	3 (1.7)	3 (1.9)	4 (1.7)	6 (1.2)	257 (4.2)
Info. from Family								
A lot or some	16,710	126,593	63 (0.7)	67 (0.8)	68 (0.8)	67 (0.9)	62 (1.2)	273 (1.0)
A little or none	8,191	63,633	37 (0.9)	33 (0.8)	32 (0.8)	33 (1.0)	38 (1.2)	269 (1.3)
Voted in the Past Five Years								
Yes	15,484	117,379	55 (0.5)	61 (0.6)	69 (0.6)	79 (0.6)	88 (1.6)	284 (1.0)
No	7,616	58,510	45 (0.7)	39 (0.8)	31 (0.8)	21 (0.5)	12 (1.6)	255 (1.1)
Most Recent Occupation								
Prof/Managers	5,461	35,599	6 (0.6)	13 (0.9)	24 (1.0)	43 (0.8)	65 (1.5)	322 (1.0)
Sales	6,544	41,713	16 (0.6)	29 (0.8)	34 (1.2)	29 (1.3)	20 (0.8)	292 (1.1)
Craft	5,614	42,187	43 (1.1)	35 (1.0)	27 (1.1)	18 (0.8)	10 (1.7)	264 (1.3)
Laborer	3,479	27,671	34 (1.4)	23 (1.4)	16 (1.3)	10 (1.3)	5 (0.7)	253 (2.0)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

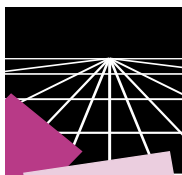
Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

**TABLE 2.3**
**Average Proficiency on Each Literacy Scale and Literacy Levels
by Poverty Level and Sources of Nonwage Income**

SUBPOPULATIONS BASED ON POVERTY LEVEL AND NONWAGE INCOME SOURCES	LITERACY LEVELS		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Overall Proficiency
	n	WGT N (/1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Prose								
Poverty Level								
Not poor	14,868	113,929	57 (0.4)	77 (0.8)	88 (0.6)	92 (0.5)	96 (0.8)	290 (0.7)
Poor/near poor	3,968	26,353	43 (1.3)	23 (1.2)	12 (0.7)	8 (0.9)	4 (0.8)	239 (2.2)
Food Stamps								
No	21,754	171,115	83 (0.6)	87 (0.6)	94 (0.5)	97 (0.5)	99 (0.8)	276 (0.6)
Yes	3,001	17,953	17 (1.4)	13 (1.2)	6 (1.1)	3 (0.7)	1 (0.9)	236 (1.8)
Interest from Savings								
No	13,871	100,702	76 (0.7)	63 (1.0)	48 (0.8)	29 (0.8)	15 (1.8)	251 (0.9)
Yes	10,884	88,365	24 (0.5)	37 (1.0)	52 (0.9)	71 (0.9)	85 (1.9)	297 (0.7)
Document								
Poverty Level								
Not poor	14,868	113,929	59 (0.7)	80 (0.8)	88 (0.7)	92 (0.6)	94 (1.4)	284 (0.8)
Poor/near poor	3,968	26,353	41 (1.5)	20 (1.3)	12 (0.9)	8 (0.9)	6 (1.4)	234 (2.3)
Food Stamps								
No	21,754	171,115	83 (0.5)	89 (0.4)	94 (0.5)	97 (0.4)	99 (0.6)	271 (0.8)
Yes	3,001	17,953	17 (1.4)	11 (1.3)	6 (1.1)	3 (0.6)	1 (0.6)	232 (1.9)
Interest from Savings								
No	13,871	100,702	73 (0.7)	61 (0.7)	46 (0.6)	29 (0.7)	17 (0.9)	247 (0.9)
Yes	10,884	88,365	27 (0.6)	39 (0.8)	54 (0.7)	71 (0.8)	83 (1.0)	289 (0.9)
Quantitative								
Poverty Level								
Not poor	14,868	113,929	56 (0.7)	78 (1.0)	88 (0.6)	93 (0.6)	96 (1.1)	291 (0.7)
Poor/near poor	3,968	26,353	44 (1.3)	22 (1.3)	12 (1.0)	7 (1.0)	4 (1.1)	233 (2.4)
Food Stamps								
No	21,754	171,115	81 (0.6)	88 (0.6)	94 (0.5)	97 (0.4)	99 (0.6)	276 (0.7)
Yes	3,001	17,953	19 (1.2)	12 (1.2)	6 (1.1)	3 (0.6)	1 (0.7)	228 (1.9)
Interest from Savings								
No	13,871	100,702	77 (0.7)	64 (0.7)	47 (0.7)	29 (1.1)	15 (1.2)	248 (1.0)
Yes	10,884	88,365	23 (0.6)	36 (0.7)	53 (0.7)	71 (1.2)	85 (1.2)	298 (0.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.


**TABLE 2.4**
**Median Weekly Wages and Average Weeks Worked
in the Past 12 Months, by Literacy Levels**

WAGES AND WEEKS WORKED	LITERACY LEVEL		Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher
	n	WGT N (/1,000)	(SE)	(SE)	(SE)	(SE)	(SE)
Weekly Wages	14,927	108,672					
Prose			240 (2.2)	281 (4.8)	339 (16.9)	465 (19.0)	650 (61.5)
Document			244 (5.2)	288 (8.9)	350 (0.6)	462 (28.7)	618 (34.6)
Quantitative			230 (10.5)	274 (11.4)	345 (3.8)	472 (14.9)	681 (49.5)
Weeks Worked	24,944	190,523					
Prose			19 (0.5)	27 (0.4)	35 (0.4)	38 (0.4)	44 (0.7)
Document			19 (0.5)	29 (0.3)	35 (0.4)	40 (0.4)	43 (0.8)
Quantitative			18 (0.5)	29 (0.4)	34 (0.4)	39 (0.4)	40 (0.8)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); (SE) = standard error of the estimate (the reported sample estimate can be said to be within 2 standard errors of the true population value with 95% confidence).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.


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