

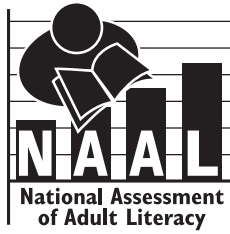
# The Health Literacy of America's Adults

## Results From the 2003 National Assessment of Adult Literacy

U.S. Department of Education  
NCES 2006-483







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September 2006

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**Suggested Citation**

Kutner, M., Greenberg, E., Jin, Y., and Paulsen, C. (2006). *The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy* (NCES 2006-483). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

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## Executive Summary

The 2003 National Assessment of Adult Literacy (NAAL) assessed the English literacy of adults in the United States. Included in the assessment were items designed to measure the health literacy of America's adults. The assessment was administered to more than 19,000 adults (ages 16 and older) in households or prisons. Unlike indirect measures of literacy, which rely on self-reports and other subjective evaluations, the assessment measured literacy directly through tasks completed by adults.

The health literacy scale and health literacy tasks were guided by the definition of health literacy used by the Institute of Medicine and *Healthy People 2010* (a set of national disease prevention and health promotion objectives led by the U.S. Department of Health and Human Services). This definition states that health literacy is:

The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions. (HHS 2000 and Institute of Medicine 2004)

These health literacy tasks represent a range of literacy activities that adults are likely to face in their daily lives. Health literacy is important for all adults. Adults may read an article in a magazine or a pamphlet in their doctor's office about preventive health practices; they may need to fill a prescription, select

Literacy Levels

Demographic Characteristics  
and Health Literacy

Overall Health, Health  
Insurance Coverage, and  
Sources of Information About  
Health Issues

and buy an over-the-counter medication, or understand health insurance forms. Parents must manage their children's health care, including getting them immunized, taking them for physicals, and having their illnesses treated. Adult children are often faced with the responsibility of managing their own parents' health care. Older adults must make decisions about Medicare supplementary insurance and prescription drug benefits. Adults without medical insurance may need to determine whether they, their children, or their parents qualify for any public programs. Adults living in older houses and apartments may need to make decisions about the dangers of lead paint or asbestos. All these activities require, or are facilitated by, the ability to read and understand written and printed information.

The health tasks for the 2003 assessment were developed to fit into the NAAL's prose, document, or quantitative scales but were distinguished from the other tasks on those scales by their health content.

- The prose literacy scale measured the knowledge and skills needed to search, comprehend, and use information from texts that were organized in sentences or paragraphs.
- The document literacy scale measured the knowledge and skills needed to search, comprehend, and use information from noncontinuous texts in various formats.
- The quantitative scale measured the knowledge and skills needed to identify and perform computations using numbers embedded in printed materials.

The NAAL health tasks included on the assessment were distributed across three domains of health and health care information and services: *clinical*, *prevention*, and *navigation of the health system*.

This report describes how health literacy varies across the population and where adults with different levels of health literacy obtain information about health issues. The analyses in this report examine differences related to literacy that are based on self-reported background characteristics among groups in 2003. This report discusses only findings that are statistically significant at the .05 level.

### Literacy Levels

The National Research Council's Board on Testing and Assessment (BOTA) Committee on Performance Levels for Adult Literacy recommended a set of performance levels for the prose, document, and quantitative scales. The Committee on Performance Levels for Adult Literacy recommended that new literacy levels be established for the 2003 assessment instead of using the same reporting levels used for the 1992 National Adult Literacy Survey (Hauser et al. 2005). Differences between the 1992 and 2003 levels are discussed by the Committee. Drawing on the committee's recommendations, the U.S. Department of Education decided to report the assessment results by using four literacy levels for each scale: *Below Basic*, *Basic*, *Intermediate*, and *Proficient*.

The health literacy tasks were analyzed together and were used to create a health literacy scale. Each health literacy task was also classified as a prose, document, or quantitative task and was included on one of those scales.

The BOTA Committee did not recommend performance levels for the health scale. Because every health literacy task was included on the prose, document, or quantitative scale in addition to the health scale, it was mapped to a performance level (*Below Basic*, *Basic*, *Intermediate*, or *Proficient*) on one of those scales. Tasks were mapped to each scale at the point on the scale where an adult would have a 67 percent

probability of doing the task correctly. Cut-points for the performance levels on the health scale were set so that each task was classified into the same category on the health scale as on the other scale (prose, document, or quantitative) with which the task was associated.

## Demographic Characteristics and Health Literacy

- The majority of adults (53 percent) had *Intermediate* health literacy. An additional 12 percent of adults had *Proficient* health literacy. Among the remaining adults, 22 percent had *Basic* health literacy, and 14 percent had *Below Basic* health literacy.
- Women had higher average health literacy than men; 16 percent of men had *Below Basic* health literacy compared with 12 percent of women.
- White and Asian/Pacific Islander adults had higher average health literacy than Black, Hispanic, American Indian/Alaska Native, and Multiracial adults. Hispanic adults had lower average health literacy than adults in any other racial/ethnic group.
- Adults who spoke only English before starting school had higher average health literacy than adults who spoke other languages alone or other languages and English.
- Adults who were ages 65 and older had lower average health literacy than adults in younger age groups. The percentage of adults in the 65 and older age group who had *Intermediate* and *Proficient* health literacy was lower than the comparable percentage of adults in other age groups.
- Starting with adults who had graduated from high school or obtained a GED, average health literacy increased with each higher level of educational attainment. Some 49 percent of adults who had never attended or did not complete

high school had *Below Basic* health literacy, compared with 15 percent of adults who ended their education with a high school diploma and 3 percent of adults with a bachelor's degree.

- Adults living below the poverty level had lower average health literacy than adults living above the poverty threshold.

## Overall Health, Health Insurance Coverage, and Sources of Information About Health Issues

- At every increasing level of self-reported overall health, adults had higher average health literacy than adults in the next lower level.
- Adults who received health insurance coverage through their employer or a family member's employer or through the military or who privately purchased health insurance had higher average health literacy than adults who received Medicare or Medicaid and adults who had no health insurance coverage. Among adults who received Medicare or Medicaid, 27 percent and 30 percent, respectively, had *Below Basic* health literacy.
- A lower percentage of adults with *Below Basic* health literacy than adults with *Basic*, *Intermediate*, or *Proficient* health literacy got information about health issues from any written sources, including newspapers, magazines, books or brochures, and the Internet. A higher percentage of adults with *Below Basic* and *Basic* health literacy than adults with *Intermediate* and *Proficient* health literacy received a lot of information about health issues from radio and television. With each increasing level of health literacy, a higher percentage of adults got information about health issues from family members, friends, or coworkers.





## Acknowledgments

The National Assessment of Adult Literacy (NAAL) is a complex project whose successful completion is due to the work of countless individuals from many organizations. We, at the American Institutes for Research (AIR), especially want to thank the staff at the National Center for Education Statistics (NCES) who have supported the project. Sheida White, the NAAL project officer, has provided substantive guidance and direction to all aspects of the assessment. Her intellectual contributions are reflected throughout the assessment, analyses, and report. Andrew Kolstad, the project's senior technical advisor and project officer of the 1992 National Adult Literacy Survey, provided both technical guidance and an institutional memory throughout the project and helped us reflect on all statistical and technical issues. Steven Gorman also played a key role in guiding all aspects of the assessment, especially those related to the statistical aspects of the assessment.

Peggy Carr, NCES Associate Commissioner for Assessment, provided the project and team members with ongoing support, recommendations, and encouragement. We are very grateful for her leadership. William Tirre and Arnold Goldstein of NCES played invaluable roles in reviewing the report and guiding it through the review process. Their efforts are very much appreciated. We also thank Marilyn Seastrom, NCES Chief Statistician, and members of the NCES/Education Statistics

Services Institute (ESSI) Technical Review Team, Kevin Bromer, LaTisha Jones, Alison Slade, Aparna Sundaram, and Jed Tank, who reviewed the report and made many suggestions that have improved the final product. Other government reviewers who provided thoughtful comments are Tom Snyder and John Wirt, from NCES, and Cheryl Keenan, Director, Division of Adult Education and Literacy in the Office of Vocational and Adult Education (OVAE), and Ricardo Hernandez of OVAE. We also want to thank Jaleh Soroui of the ESSI for her ongoing substantive contributions to the NAAL. Young Chun, Linda Shafer, and Alan Vanneman of National Assessment of Educational Progress (NAEP)-ESSI reviewed the report and provided important comments and suggestions.

Cynthia Baur, Office of Disease Prevention and Health Promotion, Office of Public Health and Science, Office of the Secretary of the Department of Health and Human Services, played a pivotal role in conceptualizing, planning, designing, and reporting on the health literacy component of NAAL. The NAAL health literacy component is based on her intellectual contributions and perseverance. Ron Pugsley, former Director of the Division of Adult Education and Literacy in the Office of Vocational and Adult Education, played a key role in the early planning stages of the health literacy report. Dan Sherman from AIR also provided invaluable guidance to the health literacy analyses and report.

Our colleagues at Westat, Inc., planned, developed, and implemented the complex sampling and weighting necessary for the successful completion of the assessment. Westat also planned and carried out all phases of the data collection, and was responsible for training and managing a group of 400 field data collection staff. This study could not have been successful without the outstanding work of the Westat project director, Martha Berlin, and the Westat team, including Michelle Amsbary, Leyla Mohadjer, and Jacquie Hogan.

Many staff at AIR made substantial contributions to the health literacy report, often under tight timelines. Stéphane Baldi and Justin Baer, senior members of the AIR NAAL team, provided invaluable substantive and technical contributions throughout the duration of the project. Bridget Boyle and Yungchen Hsu conducted analyses for the authors whenever requested. Rachel Greenberg and Elizabeth Moore provided ongoing research and technical support in developing the assessment, preparing the data and text, and shepherding the report through the revision and review process.

We are especially appreciative of the skills and contributions by Holly Baker, who edited the report through multiple revisions, and by Heather Block, who designed and redesigned the report. We are grateful for their dedication and in awe of their ability to work under often seemingly impossible time constraints. Also, Janan Musa provided the AIR team with invaluable guidance and administrative and logistical support throughout the project.

We also want to acknowledge the essential contributions of three other individuals. Archie Lapointe was an active member of the AIR team during the early stages of the NAAL, and the project greatly benefited from his experience and wisdom. Another former member of the AIR team, Eugene Johnson, who directed the assessment's psychometrics and preliminary analysis activities, played an essential role in the project. We also want to acknowledge the contributions of Richard Venezky, who provided invaluable guidance, support, and friendship, and whose memory we cherish.

Thousands of adults participated in the assessment. Their willingness to spend time answering the background questions and assessment items was essential to ensuring that meaningful data about the literacy of America's adults could be obtained. This study would not have been possible without their participation.

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## Introduction

Understanding the health literacy of America's adults is important because so many aspects of finding health care and health information, and maintaining health, depend on understanding written information. Many reports have suggested that low health literacy is associated with poor communication between patients and health care providers and with poor health outcomes, including increased hospitalization rates, less frequent screening for diseases such as cancer, and disproportionately high rates of disease and mortality (Baker et al. 1998; Berkman et al. 2004; Gordon et al. 2002; Lindau et al. 2001; Rudd et al. 1999; Williams et al. 2002). Low health literacy may also be associated with increased use of emergency rooms for primary care (Baker et al. 2004). These findings have implications for the costs of caring for patients with low health literacy.

As the Committee on Health Literacy of the Institute of Medicine wrote:

Health literacy is of concern to everyone involved in health promotion and protection, disease prevention and early screening, health care maintenance, and policy making. Health literacy skills are needed for dialogue and discussion, reading health information, interpreting charts, making decisions about participating in research studies, using medical tools for personal or family health care—such as a peak flow meter or thermometer—calculating timing or dosage of medicine, or voting on health or environment issues. (Institute of Medicine 2004, p. 31)

Health literacy is a new component of the 2003 National Assessment of Adult Literacy (NAAL). NAAL assessed the English literacy of adults (ages 16 and older) in the United States. The assessment was administered to more than 19,000 adults (ages 16 and older) in households or prisons.

This report presents the initial findings on health literacy from the assessment. Analyses presented in this report, including those in appendix E, are intended to provide a summary of the relationship between health literacy and background characteristics of adults, preventive health practices, and sources of health information used by adults.

## Defining and Measuring Literacy

### Defining Literacy

Unlike indirect measures of literacy—which rely on self-reports and other subjective evaluations of literacy and education—the 2003 adult literacy assessment measured literacy directly by tasks representing a range of literacy activities that adults are likely to face in their daily lives.

The literacy tasks in the assessment were drawn from actual texts and documents, which were either used in their original format or reproduced in the assessment booklets. Each question appeared before the materials needed to answer it, thus encouraging respondents to read with purpose.

Respondents could correctly answer many assessment questions by skimming the text or document for the information necessary to perform a given literacy task. None of the tasks were multiple choice tasks with a list of responses provided. Instead, respondents had to determine and write their answers to the questions.

The 2003 assessment used the same definition of literacy as the 1992 National Adult Literacy Survey:

Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential.

This definition acknowledges that literacy goes beyond simply being able to sound out or recognize words and understand text. A central feature of the definition is that literacy is related to achieving an objective and that adults often read for a purpose.

### Measuring Literacy

Three literacy scales—prose literacy, document literacy, and quantitative literacy—were used in the 2003 assessment:

- *Prose literacy.* The knowledge and skills needed to perform prose tasks (i.e., to search, comprehend, and use information from continuous texts). Prose examples include editorials, news stories, brochures, and instructional materials. Prose texts can be further broken down as expository, narrative, procedural, or persuasive.
- *Document literacy.* The knowledge and skills needed to perform document tasks (i.e., to search, comprehend, and use information from noncontinuous texts in various formats). Document examples include job applications, payroll forms, transportation schedules, maps, tables, and drug and food labels.
- *Quantitative literacy.* The knowledge and skills required to perform quantitative tasks (i.e., to identify and perform computations, either alone or sequentially, using numbers embedded in printed materials). Examples include balancing a checkbook, figuring out a tip, completing an order form, and determining the amount of interest on a loan from an advertisement.

In addition, the assessment included a health literacy scale that consisted of 12 prose, 12 document, and 4 quantitative NAAL items.<sup>1</sup> The health literacy items reflect the definition of health literacy as defined by the Institute of Medicine and Healthy People 2010 (a set of national disease prevention and health promotion objectives led by the U.S. Department of Health and Human Services):

The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions. (HHS 2000 and Institute of Medicine 2004)

Tasks used to measure health literacy were organized around three domains of health and health care information and services: *clinical*, *prevention*, and *navigation of the health care system*. The stimulus materials and the 28 health literacy tasks were designed to elicit respondents' skills for locating and understanding health-related information and services and to represent the three general literacy scales—prose, document, and quantitative—developed to report NAAL results.

The materials were selected to be representative of real-world health-related information, including insurance information, medicine directions, and preventive care information. The Office of Disease Prevention and Health Promotion (ODPHP) within the U.S. Department of Health and Human Services suggested materials and questions based on input from other HHS agencies and stakeholders and experts, and on information from federal health materials and other health-related assessments.

Of the 28 health literacy tasks, 3 represented the *clinical* domain, 14 represented the *prevention* domain,

and 11 items represented the *navigation of the health care system* domain. The domains are defined in the following way:

- The *clinical* domain encompasses those activities associated with the health care provider–patient interaction, clinical encounters, diagnosis and treatment of illness, and medication. Tasks from the clinical domain are filling out a patient information form for an office visit, understanding dosing instructions for medication, and following a health care provider's recommendation for a diagnostic test.
- The *prevention* domain encompasses those activities associated with maintaining and improving health, preventing disease, intervening early in emerging health problems, and engaging in self-care and self-management of illness. Examples are following guidelines for age-appropriate preventive health services, identifying signs and symptoms of health problems that should be addressed with a health professional, and understanding how eating and exercise habits decrease risks for developing serious illness.
- The *navigation of the health care system* domain encompasses those activities related to understanding how the health care system works and individual rights and responsibilities. Examples are understanding what a health insurance plan will and will not pay for, determining eligibility for public insurance or assistance programs, and being able to give informed consent for a health care service. (HHS, 2003, p. 37)

The NAAL health literacy scale did not include tasks that did not fit the definitions of prose, document, or quantitative literacy even if they were consistent with the definition of health literacy used by *Healthy People 2010*. For example, none of the NAAL health tasks required knowledge of specialized health termi-

<sup>1</sup> The NAAL health literacy scale was constructed to have a mean of 245 and a standard deviation of 55.

nology. The assessment also did not measure the ability to obtain information from nonprint sources, although questions about the use of all sources of health information—both written and oral—were included on the background questionnaire and are included in this report.

### Background Questionnaire

The 2003 National Assessment of Adult Literacy household background questionnaire was used to collect data about various demographic and background characteristics of adults. The questionnaire also included a section of questions specifically related to health status, preventive health practices, health insurance coverage, and sources of information about health issues. A summary of the questions that were used in analyses in this report is presented in appendix B on page 27.

A separate background questionnaire was developed for adults in prison. Questions about health status and sources of information about health issues were included on the prison background questionnaire. The background questionnaire for prison inmates did not include questions about health insurance or about Internet use.

### Interpreting Literacy Results

In addition to reporting average literacy scores, another way to report results is by grouping adults with similar scores into a relatively small number of categories, often referred to as performance levels. Performance levels are used to identify and characterize the relative strengths and weaknesses of adults falling within various ranges of literacy ability. Describing the adult population according to such levels allows analysts, policymakers, and others to examine and discuss the typical performance and capabilities of specified groups within the adult population.<sup>2</sup>

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<sup>2</sup> For more information on NAAL performance levels see White and Dillow (2005).

The National Research Council's Board on Testing and Assessment (BOTA) Committee on Performance Levels for Adult Literacy recommended a new set of performance levels for the prose, document, and quantitative scales for the NAAL, instead of using the same reporting levels used for the 1992 National Adult Literacy Survey.<sup>3</sup>

Drawing on the committee's recommendations, the U.S. Department of Education decided to report NAAL results for the prose, document, and quantitative scales by using four literacy levels for each scale: *Below Basic*, *Basic*, *Intermediate*, and *Proficient*. Table 1-1 summarizes the knowledge, skills, and capabilities that adults needed to demonstrate to be classified into one of the four levels on the prose, document, and quantitative scales. The items used for the health literacy scale were also classified as prose, document, and quantitative items.

The BOTA Committee on Performance Levels for Adult Literacy was not asked to recommend performance levels for the health scale, because every health literacy task was included on the prose, document, or quantitative scale. NCES mapped each health task to the health literacy scale based on their level of difficulty as prose, document, and quantitative items (see figure 1-1). Each health task was mapped to the prose, document, or quantitative scale (depending upon which scale the task fell into) at the point on the scale (i.e., the scale score) where an adult with that scale score would have a 67 percent probability of doing the task correctly. The 67 percent probability convention was used by the BOTA Committee for the prose, document, and quantitative scales. That point on the scale was classified as to whether it fell into the *Below Basic*, *Basic*, *Intermediate*, or *Proficient* level. Cut-points for the health scale were established so that each task was classified into the

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<sup>3</sup> For a description of the process followed by the BOTA Committee on Performance Levels see Hauser et al. (2005) and White and Dillow (2005).

same level on the health scale as on the respective prose, document, or quantitative scale.

A health literacy task that was mapped to the *Proficient* level on the prose scale was also mapped to the *Proficient* level on the health scale. For example, as shown in figure 1-1, a task that requires a respondent to “evaluate information to determine which legal document is applicable to a specific health care situation” maps to 325 on the health scale, which is at

the *Proficient* level. The same task maps to 361 on the prose scale, which is also at the *Proficient* level.

Similarly, as shown in figure 1-1, a task that requires a respondent to “determine a healthy weight range for a person of a specified height, based on a graph that relates height and weight to body mass index (BMI)” mapped to 290 on the health scale. This task was also included on the document scale, where it mapped to 320, or the *Intermediate* level. The cut-points for the

**Table 1-1. Overview of the literacy levels**

Level and definition	Key abilities associated with level
<p><b>Below Basic</b> indicates no more than the most simple and concrete literacy skills.</p> <p>Score ranges for <i>Below Basic</i>:</p> <p>Prose: 0–209 Document: 0–204 Quantitative: 0–234</p>	<p>Adults at the <i>Below Basic</i> level range from being nonliterate in English to having the abilities listed below:</p> <ul style="list-style-type: none"> <li>■ locating easily identifiable information in short, commonplace <b>prose</b> texts</li> <li>■ locating easily identifiable information and following written instructions in simple <b>documents</b> (e.g., charts or forms)</li> <li>■ locating numbers and using them to perform simple <b>quantitative</b> operations (primarily addition) when the mathematical information is very concrete and familiar</li> </ul>
<p><b>Basic</b> indicates skills necessary to perform simple and everyday literacy activities.</p> <p>Score ranges for <i>Basic</i>:</p> <p>Prose: 210–264 Document: 205–249 Quantitative: 235–289</p>	<ul style="list-style-type: none"> <li>■ reading and understanding information in short, commonplace <b>prose</b> texts</li> <li>■ reading and understanding information in simple <b>documents</b></li> <li>■ locating easily identifiable <b>quantitative</b> information and using it to solve simple, one-step problems when the arithmetic operation is specified or easily inferred</li> </ul>
<p><b>Intermediate</b> indicates skills necessary to perform moderately challenging literacy activities.</p> <p>Score ranges for <i>Intermediate</i>:</p> <p>Prose: 265–339 Document: 250–334 Quantitative: 290–349</p>	<ul style="list-style-type: none"> <li>■ reading and understanding moderately dense, less commonplace <b>prose</b> texts as well as summarizing, making simple inferences, determining cause and effect, and recognizing the author’s purpose</li> <li>■ locating information in dense, complex <b>documents</b> and making simple inferences about the information</li> <li>■ locating less familiar <b>quantitative</b> information and using it to solve problems when the arithmetic operation is not specified or easily inferred</li> </ul>
<p><b>Proficient</b> indicates skills necessary to perform more complex and challenging literacy activities.</p> <p>Score ranges for <i>Proficient</i>:</p> <p>Prose: 340–500 Document: 335–500 Quantitative: 350–500</p>	<ul style="list-style-type: none"> <li>■ reading lengthy, complex, abstract <b>prose</b> texts as well as synthesizing information and making complex inferences</li> <li>■ integrating, synthesizing, and analyzing multiple pieces of information located in complex <b>documents</b></li> <li>■ locating more abstract <b>quantitative</b> information and using it to solve multi-step problems when the arithmetic operations are not easily inferred and the problems are more complex</li> </ul>

NOTE: Although the literacy levels share common names with the National Assessment of Educational Progress (NAEP) levels, they do not correspond to the NAEP levels.

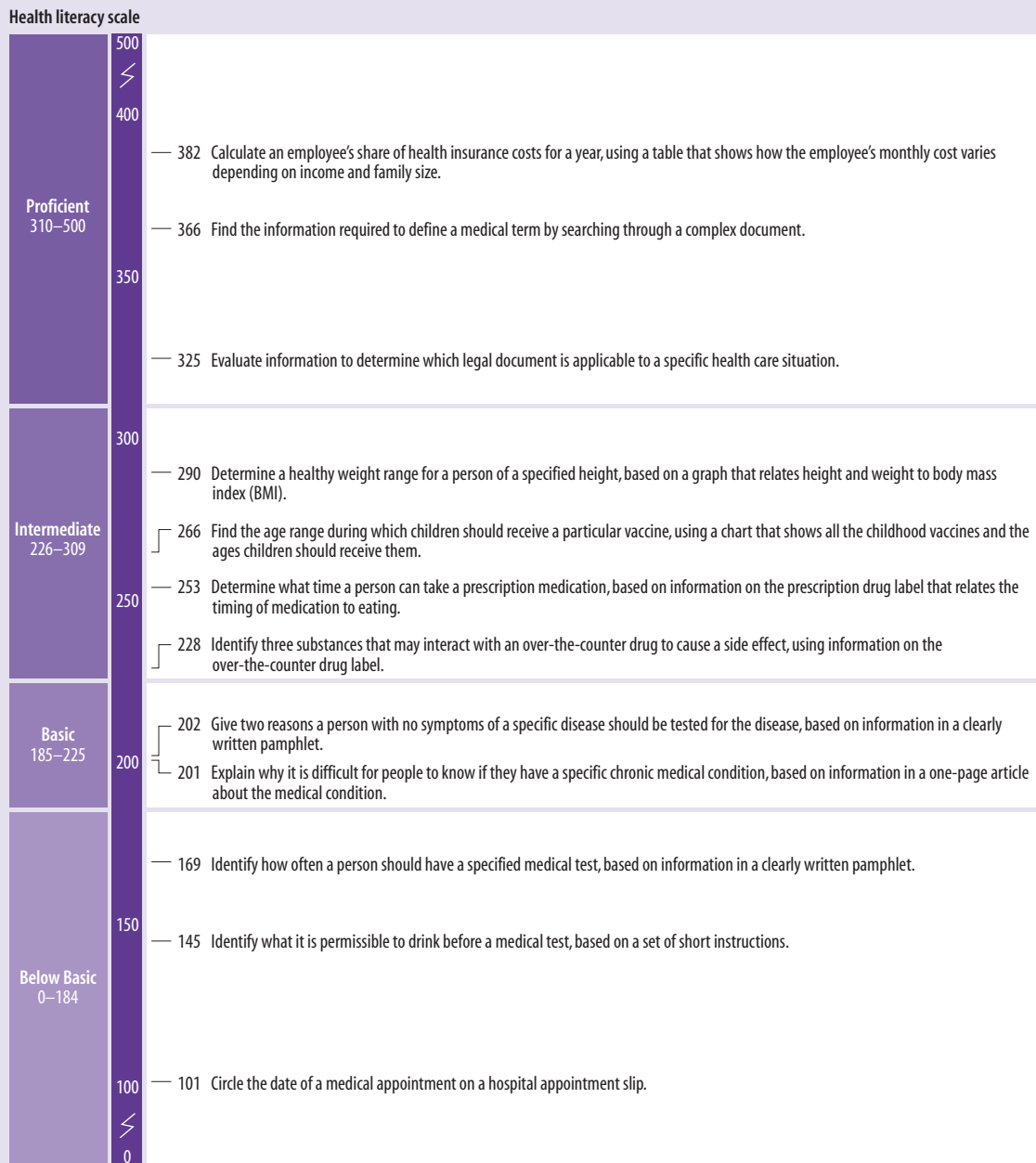
SOURCE: Hauser, R.M, Edley, C.F.Jr., Koenig, J.A., and Elliott, S.W. (Eds.). (2005). *Measuring Literacy: Performance Levels for Adults, Interim Report*. Washington, DC: National Academies Press; White, S. and Dillow, S. (2005). *Key Concepts and Features of the 2003 National Assessment of Adult Literacy* (NCES 2006-471). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

health scale were set so that the task would also map to the *Intermediate* level on the health scale.

As shown in figure 1-1, health tasks that mapped to the *Below Basic* level required locating straightforward pieces of information in short simple texts or documents.

Health tasks that mapped to the *Basic* level generally required finding information in texts and documents that were somewhat longer than those in the *Below Basic* level, and the information to be found was usually more complex. For example, a task that mapped to the *Basic* level required giving two reasons a person with

Figure 1-1. Difficulty of selected health literacy tasks: 2003



NOTE: The position of a question on the scale represents the average scale score attained by adults who had a 67 percent probability of successfully answering the question. Only selected questions are presented. Scale score ranges for performance levels are referenced on the figure.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

no symptoms of a specific disease should be tested for the disease by using information in a pamphlet, while a task that mapped to the *Below Basic* level required finding one piece of information—the date—on a medical appointment slip that was shorter and simpler than the text in the *Basic* task.

Health tasks that mapped to the *Intermediate* level went beyond simply searching texts and documents to find information. Most health tasks that mapped to the *Intermediate* level required adults to interpret or apply information that was presented in complex graphs, tables, or other health-related texts or documents.

Health tasks that mapped to the *Proficient* level required drawing abstract inferences, comparing or contrasting multiple pieces of information within complex texts or documents, or applying abstract or complicated information from texts or documents.

## Conducting the Survey<sup>4</sup>

The 2003 National Assessment of Adult Literacy included two samples: (1) adults ages 16 and older living in households and (2) prison inmates ages 16 and older in federal and state prisons. The assessment was administered to approximately 19,000 adults: 18,000 adults living in households and 1,200 prison inmates.

Each sample was weighted to represent its share of the total population of the United States, and the samples were combined for reporting. Household data collection was conducted from March 2003 through February 2004; prison data collection was conducted from March through July 2004. For the household sample, the screener response rate was 81 percent and the background questionnaire response rate was 77 percent. The final household sample response rate was 62 percent.<sup>4</sup> For the prison sample, 97 percent of pris-

ons that were selected for the study agreed to participate and the background questionnaire response rate for prison inmates was 91 percent. The final prison sample response rate was 88 percent.

Household interviews were conducted in respondents' homes; prison interviews usually took place in a classroom or library in the prison. Whenever possible, interviewers administered the background questionnaire and assessment in a private setting. Assessments were administered one-on-one using a computer-assisted personal interviewing (CAPI) system programmed into laptop computers. Respondents were encouraged to use whatever aids they normally used when reading and when performing quantitative tasks, including eyeglasses, magnifying glasses, rulers, and calculators.

Three percent of adults were unable to participate in the assessment because they could not communicate in either English or Spanish or because they had a mental disability that prevented them from being tested. Literacy scores for these adults could not be estimated, and they are not included in the results presented in this report, or in other NAAL reports.

An additional 3 percent of adults were routed to an alternative assessment (the Adult Literacy Supplemental Assessment, or ALSA) based upon their performance on the seven easy screening tasks at the beginning of the literacy assessment. Because they could be placed on the NAAL scale based on their responses to the seven screening tasks, ALSA participants were classified into the *Below Basic* level on each NAAL literacy scale. Results for the adults who were placed in the ALSA are included in the results presented in this report.

Additional information on ALSA, sampling, response rates, and data collection procedures is in appendix C.

<sup>4</sup> Nonresponse bias analyses are discussed on page 34 of the report. All percentages in this section are weighted. For the unweighted percentages, see tables C-1 and C-2 in appendix C.

## Interpretation of Results

The statistics presented in this report are estimates of performance based on a sample of respondents, rather than the values that could be calculated if every person in the nation answered every question on the assessment. Estimates of performance of the population and groups within the population were calculated by using sampling weights to account for the fact that the probabilities of selection were not identical for all respondents. Information about the uncertainty of each statistic that takes into account the complex sample design was estimated by using Taylor series procedures to estimate standard errors.

The analyses in this report examine differences related to literacy based on self-reported background characteristics among groups in 2003, by using standard *t* tests to determine statistical significance. Statistical significance is reported at  $p < .05$ . Differences between averages or percentages that are statistically significant are discussed by using comparative terms such as *higher* or *lower*. Differences that are not statistically significant either are not discussed or are referred to as “not statistically significant.” Failure to find a statistically significant difference should not be interpreted as meaning that the estimates are the same; rather, failure to find a difference may also be due to measurement error or sampling.

Detailed tables with estimates and standard errors for all tables and figures in this report are in appendices

D and E. Appendix C includes more information about the weights used for the sample and the procedures used to estimate standard errors and statistical significance.

## Cautions in Interpretation

The purpose of this report is to examine the relationship between health literacy and various self-reported background factors. This report is purely descriptive in nature. Readers are cautioned not to draw causal inferences based solely on the results presented here. It is important to note that many of the variables examined in this report are related to one another, and complex interactions and relationships have not been explored here.

## Organization of the Report

Chapter 2 of this report examines how health literacy varied across groups with different demographic characteristics, as well as the relationship between health literacy and highest level of educational attainment and poverty status.

Chapter 3 explores the relationship between literacy and overall health. The analyses in the chapter also examine the literacy of adults who have different types of health insurance or no health insurance. The chapter concludes with an examination of the relationship between literacy and sources of printed and nonprinted information used by adults.



## Demographic Characteristics and Health Literacy

Data from the 2003 National Assessment of Adult Literacy (NAAL) allow examinations of the relationships between demographic characteristics and literacy. Analyses from the assessment showed differences in prose, document, and quantitative literacy for adults with different demographic characteristics. For example, women had higher prose and document literacy than men, while women's average quantitative literacy was lower than men's. The average prose, document, and quantitative literacy of White adults was higher than the average literacy of adults of other races or ethnicities. Adults 65 years of age and older had the lowest average prose, document, and quantitative scores among all age groups (Kutner et al. 2005).

The relationships between health literacy and demographic characteristics of adults are examined in this chapter. Also examined are the relationships between health literacy and highest level of educational attainment and poverty. All the analyses in this chapter are based on the combined household and prison samples.

Total Population

Gender

Race and Ethnicity

Language Spoken Before Starting School

Age

Highest Level of Educational Attainment

Poverty Threshold

Summary

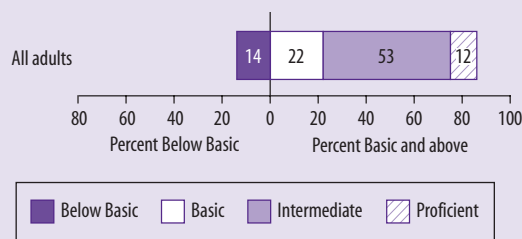
## Total Population

The majority of adults, 53 percent, had *Intermediate* health literacy (figure 2-1). An additional 22 percent of adults had *Basic* health literacy, 14 percent had *Below Basic* health literacy, and 12 percent had *Proficient* health literacy. The distribution of adults among the different health literacy levels is similar, although not identical, to the distribution of adults among the levels of the prose, document, and quantitative scales (Kutner et al. 2005).

## Gender

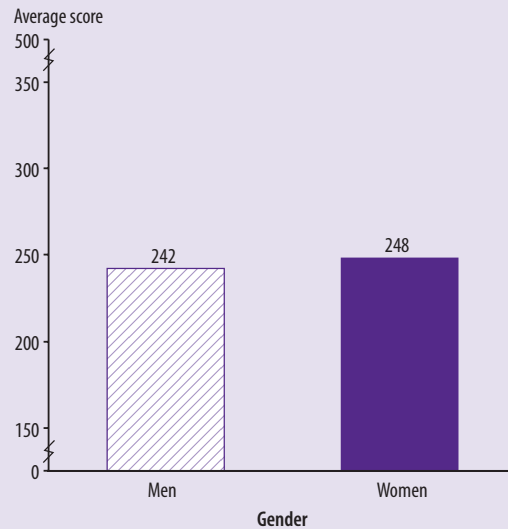
The average health literacy score for women was 248, which is 6 points higher than the average health literacy score for men (figure 2-2). A higher percentage of men than women had *Below Basic* health literacy, by a margin of 4 percentage points. The percentage of women with *Intermediate* health literacy was 4 percentage points higher than the percentage of men at the same level (figure 2-3). There were no significant differences in the percentages of men and women with *Basic* or *Proficient* health literacy.

**Figure 2-1. Percentage of adults in each health literacy level: 2003**



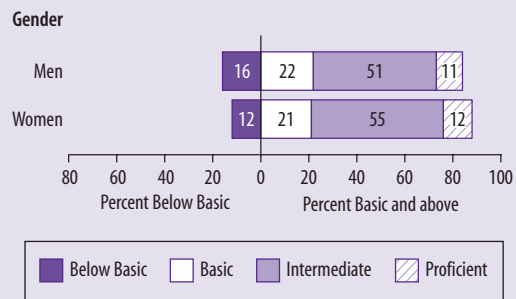
NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

**Figure 2-2. Average health literacy scores of adults, by gender: 2003**



NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

**Figure 2-3. Percentage of adults in each health literacy level, by gender: 2003**



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

## Race and Ethnicity

The average health literacy scores for different racial/ethnic groups are shown in figure 2-4. White and Asian/Pacific Islander adults had higher average health literacy than Black, Hispanic, American Indian/Alaska Native, and Multiracial adults. Hispanic adults had lower average health literacy than adults in any of the other racial/ethnic groups. There was no significant difference in average health literacy between White and Asian/Pacific Islander adults. There was also no significant difference in average health literacy between Black and American Indian/Alaska Native adults.

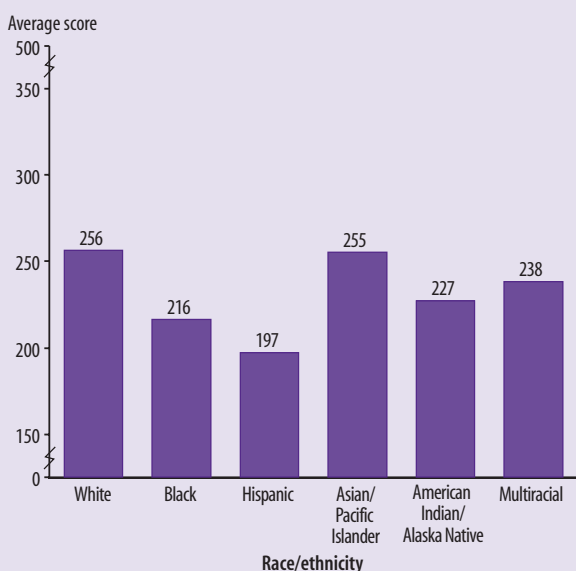
The percentages of White and Asian/Pacific Islander adults with *Proficient* health literacy were higher than

the percentages of Black, Hispanic, American Indian/Alaska Native, or Multiracial adults with *Proficient* health literacy (figure 2-5).

Fifty-eight percent of White, 52 percent of Asian/Pacific Islander, and 59 percent of Multiracial adults had *Intermediate* health literacy, compared with 41 percent of Black adults and 31 percent of Hispanic adults. Conversely, higher percentages of Black and Hispanic adults than White, Asian/Pacific Islander, or Multiracial adults had *Below Basic* health literacy.

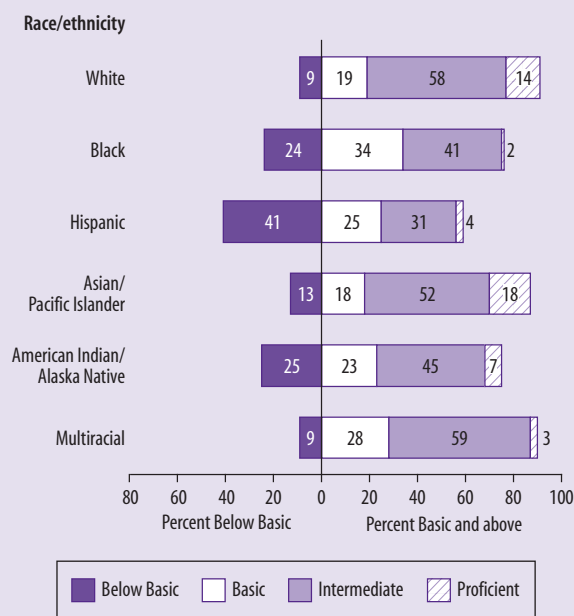
The percentages of Black, Hispanic, and Multiracial adults with *Basic* health literacy were higher than the percentages of White or Asian/Pacific Islander adults with *Basic* health literacy.

**Figure 2-4. Average health literacy scores of adults, by race/ethnicity: 2003**



NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. All adults of Hispanic origin are classified as Hispanic, regardless of race. The Asian/Pacific Islander category includes Native Hawaiians. Black includes African American, and Hispanic includes Latino.  
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

**Figure 2-5. Percentage of adults in each health literacy level, by race/ethnicity: 2003**



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. All adults of Hispanic origin are classified as Hispanic, regardless of race. The Asian/Pacific Islander category includes Native Hawaiians. Black includes African American, and Hispanic includes Latino.  
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

## Language Spoken Before Starting School

Adults who spoke only English before starting school had higher average health literacy than adults who spoke only a language other than English before starting school (table 2-1). The average health literacy score of adults who spoke only English before starting school was at the *Intermediate* level, as were the average health literacy scores of adults who spoke English and Spanish or English and another language. Adults who spoke only Spanish before starting school had the lowest average health literacy, equivalent to *Below Basic* health literacy.

## Age

Adults in the oldest age group—65 and older—had lower average health literacy than adults in younger age groups (figure 2-6). Adults ages 25 to 39 had higher average health literacy than adults in other age groups.

The percentages of adults with *Intermediate* health literacy in all age groups, except 65 and older, ranged from 53 to 58 percent. Among adults ages 65 and older, 38 percent had *Intermediate* health literacy. A higher percentage of adults ages 65 or older had *Below Basic* or *Basic* health literacy than adults in any of the younger age groups (figure 2-7). Moreover, the percentages of adults in the 65 and older age group who

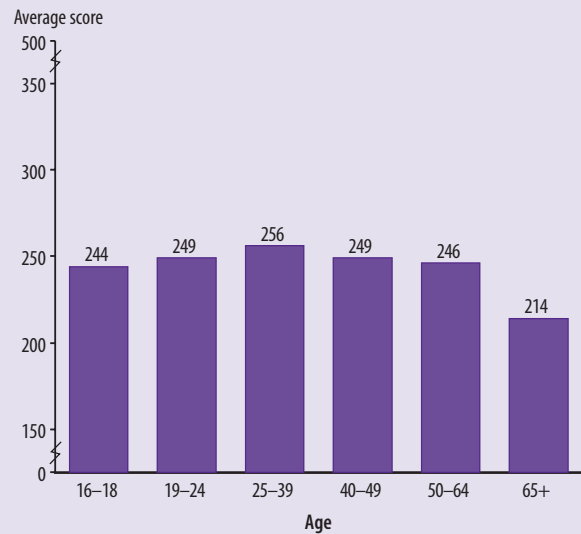
**Table 2-1. Average health literacy scores of adults, by language spoken before starting school: 2003**

Language spoken before starting school	Average
English only	251
English and Spanish	232
English and other	244
Spanish	174
Other language	229

NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this table. The English and Spanish category includes adults who spoke languages in addition to both English and Spanish. The Spanish category includes adults who spoke Spanish and additional non-English languages.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

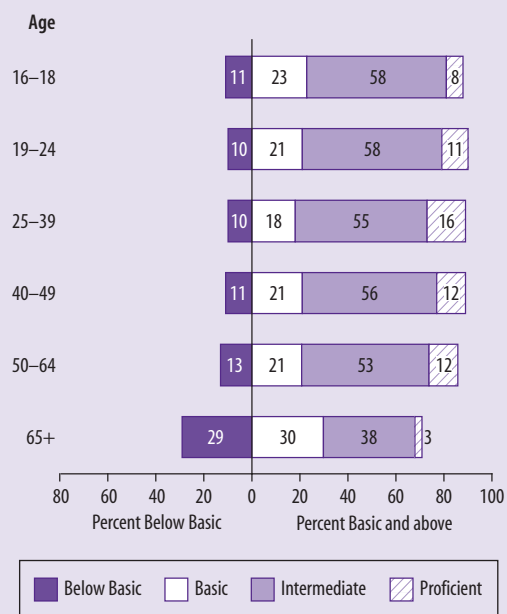
**Figure 2-6. Average health literacy scores of adults, by age: 2003**



NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

**Figure 2-7. Percentage of adults in each health literacy level, by age: 2003**



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

had *Intermediate* or *Proficient* health literacy were lower than the percentages of adults in the other age groups who had health literacy in those levels. A higher percentage of 25- to 39-year-old adults than adults in any of the other age groups had *Proficient* health literacy.

The youngest adults, adults ages 16 to 18, were less likely to have *Proficient* health literacy than adults ages 25 to 39 or adults ages 50 to 64.

## Highest Level of Educational Attainment

Starting with adults who had graduated from high school or obtained a GED, average health literacy increased with each higher level of educational attainment (figure 2-8). Adults who had not attended or completed high school, and were not currently enrolled in school, had lower average health literacy than adults with higher levels of education or adults who were currently enrolled in high school.

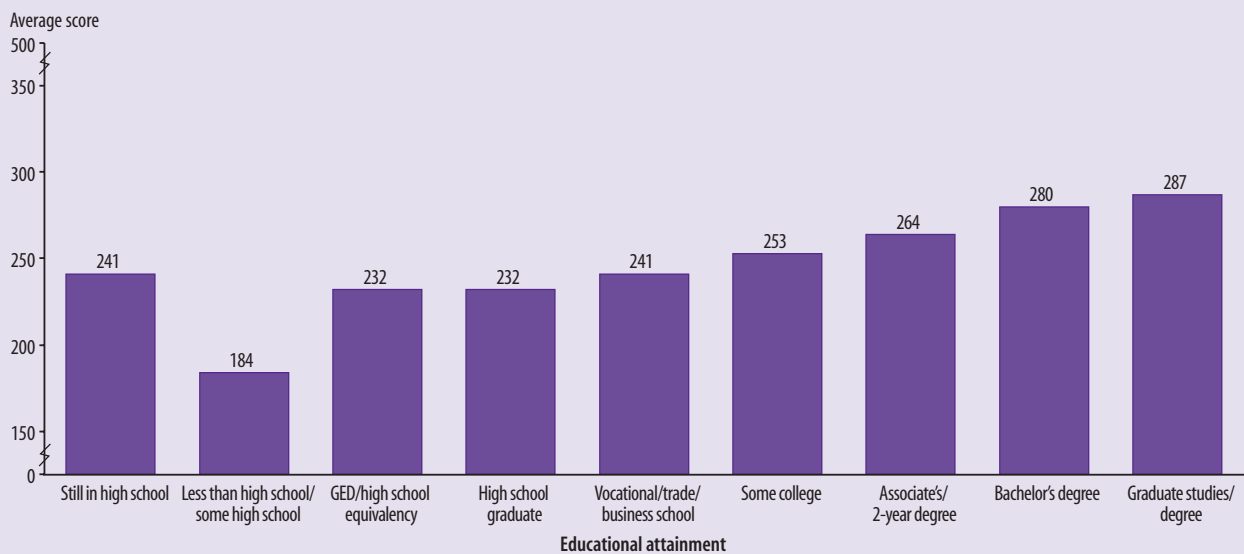
A higher percentage of adults who had not attended or completed high school had *Below Basic* health literacy than adults in any other educational group (figure 2-9).

These same adults—adults who had not attended or completed high school and were not currently enrolled in school—were less likely than all other adults, except for those who had a GED or high school equivalency certificate, to have *Proficient* health literacy.

Higher percentages of adults who had taken some graduate classes or completed a graduate degree, and adults who had graduated from a 4-year college, had *Proficient* health literacy than adults with lower levels of education. However, there were no significant differences between the two highest educational groups (adults with a bachelor's degree and adults with graduate studies or a graduate degree) in the percentages of adults falling in each of the four health literacy tasks.

Four percent of adults with an associate's or 2-year degree and 3 percent of adults with a 4-year college degree or graduate studies had *Below Basic* health literacy, while 12 to 15 percent of adults who were still in high school, had obtained a high school diploma, had obtained a GED certificate, or had taken some vocational, trade, or business classes after high school had *Below Basic* health literacy.

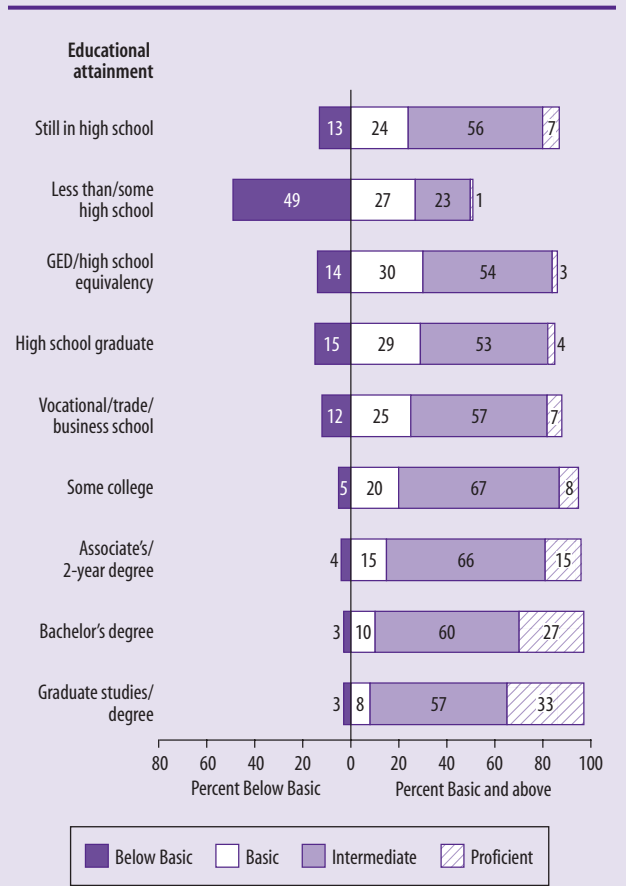
**Figure 2-8. Average health literacy scores of adults, by highest educational attainment: 2003**



NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

**Figure 2-9. Percentage of adults in each health literacy level, by highest educational attainment: 2003**



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

## Poverty Threshold

Adults living below the poverty level had an average health literacy score of 205, while adults living at the poverty level or up to 125 percent of the poverty level had an average health literacy score of 222 (table 2-2). Both of these average literacy scores are in the *Basic* health literacy level. Average health literacy was highest for adults who were above 175 percent of the poverty threshold; in this group, average health literacy was in the *Intermediate* range.<sup>5</sup>

<sup>5</sup> Analysis of average health literacy by occupation is presented in appendix E.

**Table 2-2. Average health literacy scores of adults, by poverty threshold: 2003**

Poverty threshold	Average
Below poverty threshold	205
100–125% of poverty threshold	222
126–150% of poverty threshold	224
151–175% of poverty threshold	231
Above 175% of poverty threshold	261

NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this table. Poverty thresholds are determined by the U.S. Census Bureau and are based on family income, family size, and the ages of family members. Because adults provided their income in ranges rather than by precise dollar figures, adults could not be exactly matched to a federal poverty category. The categories shown in this table represent the best matches possible based on the categorical data.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

## Summary

The majority of adults, 53 percent, had *Intermediate* health literacy. An additional 22 percent of adults had *Basic* health literacy. Fewer than 15 percent of adults had either *Below Basic* or *Proficient* health literacy. Starting with adults who had graduated from high school, or obtained a GED or high school equivalency certificate, average health literacy increased with each higher level of education. Adults living below the poverty level had lower average health literacy than adults living above the poverty threshold.

Women had higher average health literacy than men. White and Asian/Pacific Islander adults had higher average health literacy than Black, Hispanic, American Indian/Alaska Native, and Multiracial adults. Hispanic adults had lower average health literacy than adults in any of the other racial/ethnic groups. Adults who spoke only English before starting school had a higher average health literacy than adults who spoke only Spanish or another non-English language. Adults ages 65 and older had lower average health literacy than adults in younger age groups. More adults ages 65 and older also had *Below Basic* health literacy than adults in any of the younger age groups.

Self-Assessment of Overall Health

Health Insurance

Sources of Information About Health Issues

Summary

## Overall Health, Health Insurance Coverage, and Sources of Information About Health Issues

Health literacy is of interest to providers of health outreach programs for different segments of the population. These providers may include health insurance companies and people who are designing educational programs related to health maintenance and improvement. A review of medical and public health literature noted that literacy has a direct influence on patient “access to crucial information about their rights and their health care, whether it involves following instruction for care, taking medicine, comprehending disease-related information, or learning about disease prevention and health promotion” (Rudd et al. 1999).

This chapter examines the health literacy levels of different populations who may be targeted by health outreach programs, including adults with different levels of overall health and adults who have different types of health insurance coverage or no health insurance coverage at all. The analyses in the chapter also explore where adults with different levels of health literacy get information about health issues.

The analyses of the literacy of adults who received various types of health insurance are based on the household sample only. Analyses of adults who received information about health issues from the Internet are also based on the household sample only

because prison inmates generally do not have access to the Internet. All other analyses in this chapter are based on the combined household and prison samples.

This chapter focuses on the relationship between health literacy and self-reported overall health, health insurance coverage, and sources of information about health issues. As shown in chapter 2, health literacy varies across demographic groups (i.e., by sex, race/ethnicity, age, and education). Overall health, health insurance coverage, and sources of information about health issues are also likely to vary across these same demographic groups. Because of that, supplemental analyses showing the relationships between health literacy and self-reported overall health, health insurance coverage, and sources of information about health issues broken out by demographic groups are provided in appendix E.

### Self-Assessment of Overall Health

Figure 3-1 summarizes the average health literacy scores for adults with different levels of self-reported overall health. At each higher level of self-reported level of overall health, adults had higher average health literacy than adults in the next lower level. The average health literacy score of adults who reported excellent health was 262. Adults who reported they had very good health had average health literacy scores of 254; adults with self-reported good health had average health literacy scores of 234; adults with self-reported fair health had average health literacy scores of 207; and adults with self-reported poor health had average health literacy scores of 196 (figure 3-1).

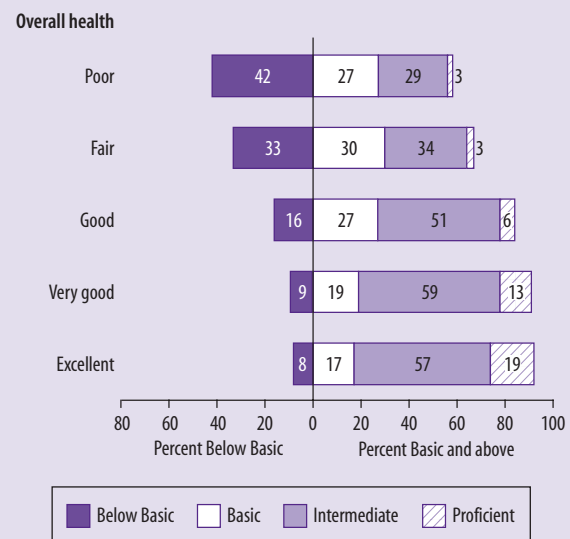
Smaller percentages of adults who reported their health was excellent or very good than adults who reported their health was poor, fair, or good had *Below Basic* health literacy (figure 3-2). Conversely, higher percentages of adults who reported their overall health

**Figure 3-1. Average health literacy scores of adults, by self-assessment of overall health: 2003**



NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure.  
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

**Figure 3-2. Percentage of adults in each health literacy level, by self-assessment of overall health: 2003**



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure.  
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.



was very good or excellent had *Intermediate* or *Proficient* health literacy than adults who said their overall health was poor, fair, or good.

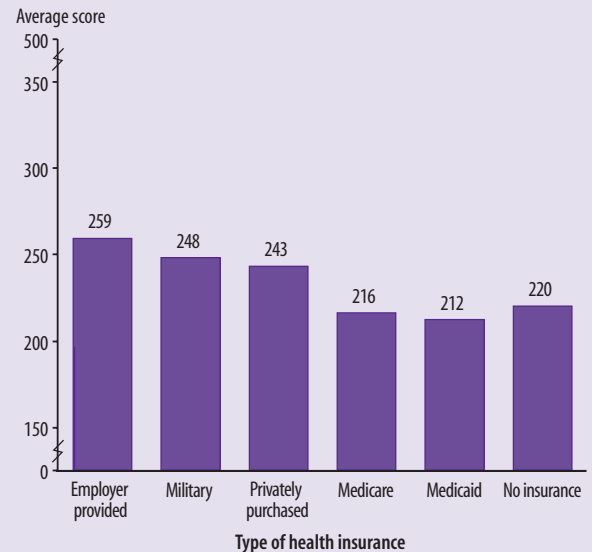
Most differences within health literacy levels in figure 3-2 are significant. However, significant differences were not detected between the percentages of adults with self-reported excellent health and very good health with *Below Basic* and *Intermediate* health literacy, between the percentages of adults with self-reported good health and poor health with *Basic* health literacy, and between the percentages of adults with self-reported fair health and poor health with *Proficient* health literacy.

## Health Insurance

Adults in the United States may receive health insurance through a variety of public and private sources. These include group insurance that is provided through an employer of the individual or a family member, military insurance for active or retired service members and their families, privately purchased individual insurance policies, or insurance through a government program. The two major government programs that provide health insurance are Medicare and Medicaid. Medicare provides coverage for most adults ages 65 and older in the United States, in addition to some younger adults with disabilities. Medicaid coverage is limited to low-income adults who also meet other criteria that vary by state.

Adults who received health insurance through an employer had higher average health literacy than adults who received health insurance through other sources or adults who had no health insurance (figure 3-3). Adults who received Medicare or Medicaid and adults who had no health insurance coverage had lower average health literacy than adults who were covered by other types of health insurance.

**Figure 3-3. Average health literacy scores of adults, by type of health insurance coverage: 2003**

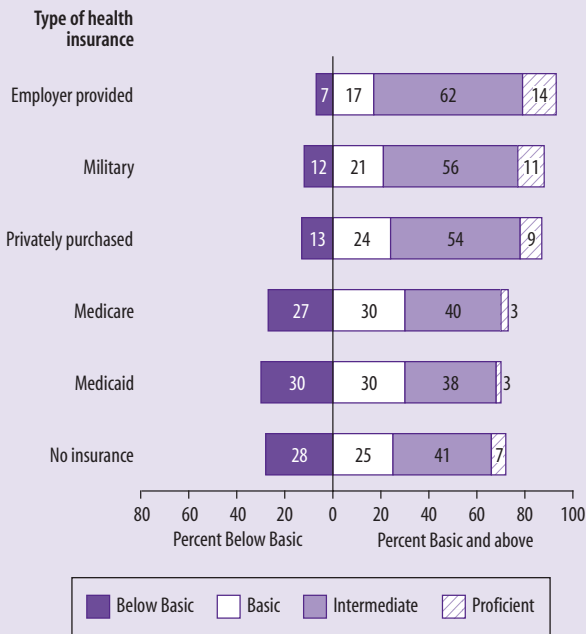


NOTE: Adults are defined as people 16 years of age and older living in households. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. Adults who reported they had more than one type of health insurance are included in each applicable category in this figure.  
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

Among adults who received Medicare or Medicaid, 27 percent and 30 percent, respectively, had *Below Basic* health literacy (figure 3-4). Twenty-eight percent of adults who had no health insurance had *Below Basic* health literacy. Among adults who received employer-provided, military, or privately purchased health insurance, the percentages with *Below Basic* health literacy were lower, 7 percent, 12 percent, and 13 percent, respectively.

Among adults who received employer-provided health insurance, 62 percent had *Intermediate* health literacy and 14 percent had *Proficient* health literacy (figure 3-4). The percentages of adults who received Medicare or Medicaid and had *Intermediate* or *Proficient* health literacy were lower than those who received other types of health insurance.

**Figure 3-4. Percentage of adults in each health literacy level, by type of health insurance coverage: 2003**



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. Adults who reported they had more than one type of health insurance are included in each applicable category in this figure.  
 SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

## Sources of Information About Health Issues

Adults may get health information in a variety of ways, including through traditional (newspapers, magazines, and books or brochures) and nontraditional (the Internet) forms of print media and through nonprint media (radio and television). Adults may also get information about health issues from conversations with family, friends, or coworkers or conversations with health care professionals.

### Printed and Written Media

Many adults receive information about health issues from such traditional printed sources as newspapers, magazines, and books or brochures. America's adults

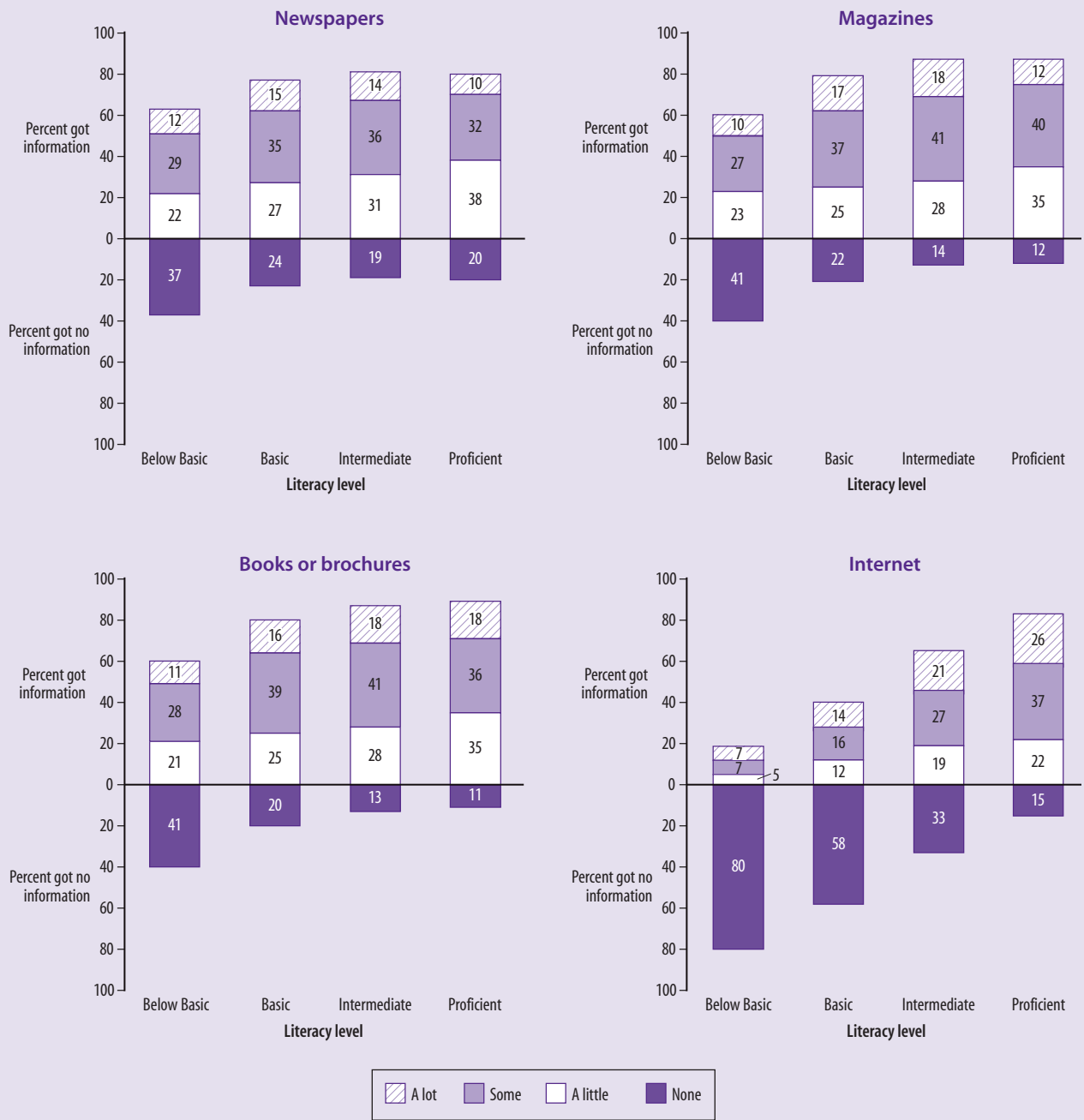
also have access to a huge amount of written health information on the Internet. A recent Harris Poll estimates that roughly 100 million adults go online to find health information (Taylor 2001). Another study found that 70 percent of consumers reported having made a health care decision on the basis of information they found online (Fox and Rainie 2000).

Lower percentages of adults with *Below Basic* health literacy than adults with *Basic*, *Intermediate*, or *Proficient* health literacy reported that they got information about health issues from any written sources, including newspapers, magazines, books or brochures, and the Internet (figure 3-5). Twenty percent of adults with *Below Basic* health literacy got information about health issues from the Internet, compared with 42 percent of adults with *Basic* health literacy, 67 percent of adults with *Intermediate* health literacy, and 85 percent of adults with *Proficient* health literacy. Lower percentages of adults with *Below Basic*, *Basic*, or *Intermediate* health literacy got information about health issues from the Internet than from other written sources (figure 3-5).

A higher percentage of adults with *Proficient* health literacy than adults with lower levels of health literacy got a lot of information about health issues from the Internet. Higher percentages of adults with *Basic* or *Intermediate* health literacy than adults with either lower (*Below Basic*) or higher (*Proficient*) health literacy got a lot of information about health issues from newspapers and magazines. Higher percentages of adults with *Basic*, *Intermediate*, or *Proficient* health literacy than adults with *Below Basic* health literacy got a lot of information about health issues from books or brochures.

Higher percentages of adults with *Proficient* health literacy got information about health issues from books or brochures than from newspapers or the Internet. Additionally, higher percentages of adults

**Figure 3-5. Percentage of adults who got information about health issues from printed and written media: newspapers, magazines, books or brochures, and the Internet, by health literacy level: 2003**



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. Prison inmates are not included in the Internet category because they do not have access to the Internet.  
 SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

with *Proficient* health literacy got information about health issues from the Internet than from newspapers.

### Nonprint Media

Higher percentages of adults with *Below Basic* or *Basic* health literacy than adults with *Intermediate* health literacy received a lot of information about health issues from radio and television. Adults with *Proficient* health literacy were least likely to receive a lot of information about health issues from those same nonprint media sources (figure 3-6).

### Personal Contacts

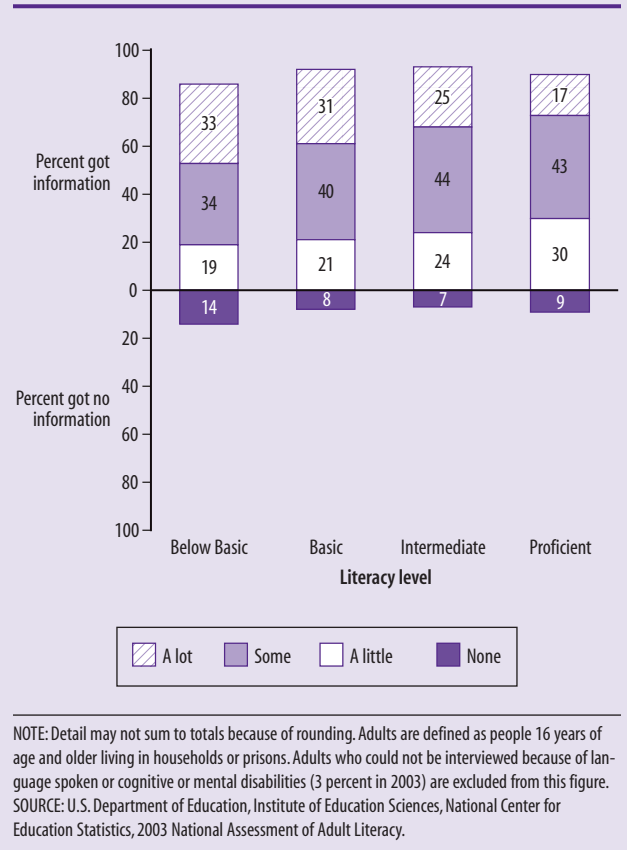
With each higher level of health literacy, a higher percentage of adults got information about health issues from family members, friends, or coworkers (or, in the case of prison inmates, from family members, friends, other inmates, or staff) (figure 3-7).

Higher percentages of adults with *Intermediate* or *Proficient* health literacy than adults with *Basic* health literacy got any information about health issues from health care professionals, including doctors, nurses, therapists, and psychologists. A higher percentage of adults with *Basic* health literacy than adults with *Below Basic* health literacy got any information about these issues from health care professionals.

### Summary

At every higher self-reported level of overall health (poor, fair, good, very good, excellent), adults had higher average health literacy than adults in the next lower level. Smaller percentages of adults who reported that their overall health was very good or excellent had *Below Basic* health literacy than other adults.

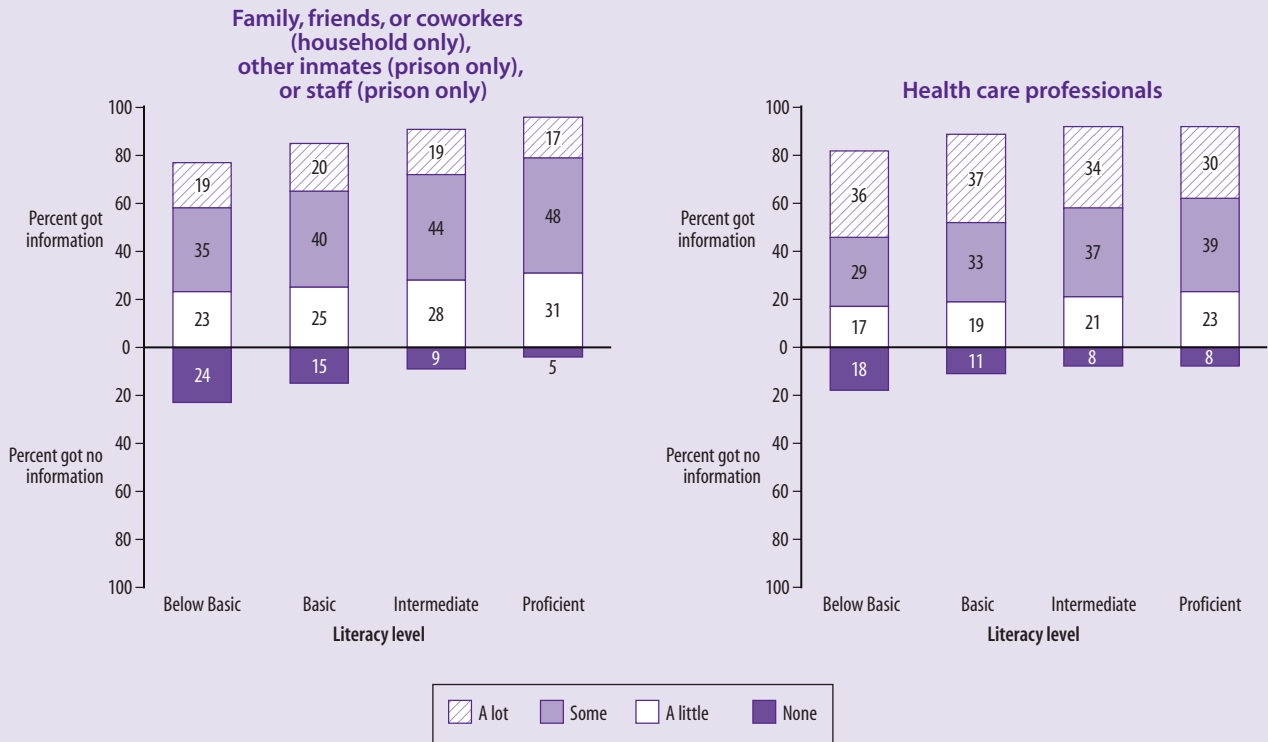
**Figure 3-6. Percentage of adults who got information about health issues from nonprint media: radio and television, by health literacy level: 2003**



Adults who received Medicare or Medicaid or who had no health insurance had lower average health literacy than adults who received insurance through an employer or the military or adults who purchased private insurance. Among adults who received Medicare and Medicaid, 27 percent and 30 percent, respectively, had *Below Basic* health literacy.

A lower percentage of adults with *Below Basic* health literacy than adults with *Basic*, *Intermediate*, or *Proficient* health literacy reported that they got information about health issues from any written sources, including newspapers, magazines, books or brochures, and

**Figure 3-7. Percentage of adults who got information about health issues from personal contacts: family, friends, or coworkers; or health care professionals, by health literacy level: 2003**



NOTE: Detail may not sum to totals because of rounding. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. Adults living in households were asked about getting information from “family members, friends, or coworkers”; prison inmates were asked about getting information from “family members, friends, other inmates, or staff.”

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

the Internet. A higher percentage of adults with *Proficient* health literacy than adults with lower levels of health literacy got a lot of information about health issues from the Internet. A lower percentage of adults with *Below Basic*, *Basic*, and *Intermediate* health literacy got information about health issues from the Internet than from other written sources.

A lower percentage of adults with *Proficient* health literacy than adults with *Intermediate* health literacy

received a lot of information about health issues from radio or television, and a lower percentage of adults with *Intermediate* health literacy than adults with *Basic* or *Below Basic* health literacy received a lot of information about health issues from radio or television.

With each higher level of health literacy, the percentage of adults who got information about health issues from personal contacts other than health care professionals was higher.