

Literacy Behind Bars: Results From the 2003 National Assessment of Adult Literacy Prison Survey

Chapter 1: Introduction

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The skills and credentials that are acquired through formal education are important tools for navigating everyday life in the United States. Adults with low levels of education and literacy are more likely than adults with high education and literacy levels to be unemployed or to have incomes that put them below the poverty level (Kutner et al. 2007). Adults who have not obtained a high school diploma or any postsecondary education are also more likely to be incarcerated than adults with higher levels of education (Harlow 2003).

The 2003 National Assessment of Adult Literacy assessed the English literacy of incarcerated adults in the United States for the first time since 1992. The assessment was administered to approximately 1,200 inmates in state and federal prisons, as well as to approximately 18,000 adults living in households. The original motivation for the prison sample was to ensure the assessment was representative of the entire population of the United States. For the population estimates presented in other reports, the prison and household samples are combined or results are reported for the household population only. This report presents findings separately for the prison adult literacy assessment. The report presents analyses that compare the literacy of the U.S. prison population in 2003 with the literacy of the prison population in 1992. It also presents analyses that compare the literacy of the prison and household populations.

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 1992 and 2003 adult literacy assessments 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. All tasks were open-ended.

The 2003 adult literacy assessment covered the same content of the 1992 assessment, and both assessments used the same definition of literacy:

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

The definition implies that literacy goes beyond simply decoding and comprehending text. A central feature of the definition is that literacy is related to achieving an objective and adults often read for a purpose.

Measuring Literacy

As in 1992, three literacy scales—prose literacy, docu-

ment 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 or 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, or determining the amount of interest on a loan from an advertisement.

Table 1-1 shows the correlations among the prose, document, and quantitative scales for the prison population in 2003, and table 1-2 shows the same correlations for the household population in 2003. All the correlations for the prison population are between .78 and .87; all the correlations for the household population are between .86

and .89. In chapter 12 of the *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey*, Rock and Yamamoto (2001) examined the correlations among the three scales and concluded that even though the scales were highly related, there were still group differences across the scales, indicating that the scales did not all measure the same construct.

Additional information on the construction of the literacy scales is presented in Kutner et al. (2007).

Background Questionnaire

The 2003 National Assessment of Adult Literacy prison background questionnaire was used to collect demographic data on inmates and to provide contextual data on their experiences in prison that were related to literacy, including participation in classes, job training, and prison work assignments. A primary goal of the assessment was to measure literacy trends between 1992 and 2003, so many of the questions on the 2003 background questionnaire were identical to questions on the 1992 background questionnaire. The

2003 background questionnaire also included some new questions that were added in response to input from stakeholders and users of the 1992 data.

A separate background questionnaire was developed for the household study. The demographic questions were identical on the prison and household questionnaires.

Interpreting Literacy Results

The Committee on Performance Levels for Adult Literacy, appointed by National Research Council's Board on Testing and Assessment (BOTA), recommended a set of performance levels for the 2003 assessment (Hauser et al. 2005). Drawing on their recommendations, the U.S. Department of Education decided to report the assessment results using four literacy levels for each scale. Table 1-3 summarizes the knowledge, skills, and capabilities that adults needed to demonstrate to be classified into one of the four levels. Figures 1-1, 1-2, and 1-3 show the types of tasks that map

the different levels on the prose, document, and quantitative

scales. These levels are different from the levels used in 1992. The 1992 data were reanalyzed using the new levels, and those results are included in this report.

BOTA's Committee on Performance Levels for Adult

Literacy also recommended reporting the 2003 results by using a separate category: nonliterate in English. Adults were considered to be nonliterate in English if they were unable to complete a minimum number of simple literacy questions or if they were unable to communicate in English or Spanish. Adults who were classified as nonliterate in English because they could not complete a minimum number of simple literacy questions were generally able to complete the background questionnaire, which was administered orally in either English or Spanish; for reporting purposes, they were included in the *Below Basic* literacy level. Adults who were classified as nonliterate in English because they were unable to communicate in either English or Spanish could not complete the background questionnaire; they are not included in the analyses in this report that rely on background data. Adults who could not be tested because of a cognitive or mental disability are also not included in the analyses in this report, but in the absence of any information about their literacy abilities, they are not considered to be nonliterate in English.

Conducting the Survey⁶

The 2003 National Assessment of Adult Literacy included two samples: (1) adults ages 16 and older living in households and (2) inmates ages 16 and older in federal and state prisons. The household sample is representative of the 21,020,000 adults in households, and the prison sample is representative of the 1,380,000 adults in prison in 2003. The sampling frame for households was based on the 2000 Census and the sampling frame for prisons was a list of all federal and state prisons provided by the Bureau of Justice

Table 1-1. Correlations among the prose, document, and quantitative scales for the prison population: 2003

	Prose	Document	Quantitative
Prose	1.0	.83	.78
Document	.83	1.0	.87
Quantitative	.78	.87	1.0

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

Table 1-2. Correlations among the prose, document, and quantitative scales for the household population: 2003

	Prose	Document	Quantitative
Prose	1.0	.86	.88
Document	.86	1.0	.89
Quantitative	.88	.89	1.0

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

Statistics. Each sample was weighted to represent its share of the total population of the United States. Household data collection was conducted from March 2003 through February 2004; prison data collection was conducted from March through July 2004. Throughout this report, the 2003–04 survey is referred to as the 2003 survey to simplify the presentation, and the 1992–93 survey is referred to as the 1992 survey. Literacy changes very slowly among adults, so we would not expect

to find significant difference between 2003 and 2004.⁷

For the prison sample, 97 percent (weighted) of prisons that were selected for the study agreed to participate, and the background questionnaire response rate among prison inmates was 91 percent (weighted). The final prison sample response rate was 88 percent (weighted). For the household sample, the screener response rate was 82 percent (weighted) and the background questionnaire response rate was

76 percent (weighted). The final household sample response rate was 62 percent (weighted).

Prison interviews usually took place in a classroom or library in the prison; household interviews were conducted in respondents' homes. 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 system (CAPI) programmed into laptop computers.

Table 1-3. Overview of the literacy levels

Level and definition	Key abilities associated with level
<p>Below Basic 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"> ■ locating easily identifiable information in short, commonplace prose texts ■ locating easily identifiable information and following written instructions in simple documents (e.g., charts or forms) ■ locating numbers and using them to perform simple quantitative operations (primarily addition) when the mathematical information is very concrete and familiar
<p>Basic 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"> ■ reading and understanding information in short, commonplace prose texts ■ reading and understanding information in simple documents ■ locating easily identifiable quantitative information and using it to solve simple, one-step problems when the arithmetic operation is specified or easily inferred
<p>Intermediate 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"> ■ reading and understanding moderately dense, less commonplace prose texts as well as summarizing, making simple inferences, determining cause and effect, and recognizing the author's purpose ■ locating information in dense, complex documents and making simple inferences about the information ■ locating less familiar quantitative information and using it to solve problems when the arithmetic operation is not specified or easily inferred
<p>Proficient 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"> ■ reading lengthy, complex, abstract prose texts as well as synthesizing information and making complex inferences ■ integrating, synthesizing, and analyzing multiple pieces of information located in complex documents ■ locating more abstract quantitative information and using it to solve multi-step problems when the arithmetic operations are not easily inferred and the problems are more complex

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.

Respondents were encouraged to use whatever aids they normally used when reading and performing quantitative tasks, including eyeglasses, magnifying glasses, rulers, and calculators. The interviewers provided calculators to respondents who wanted to use one and did not have their own.

One percent of adults in the prison sample and 3 percent of adults in the household sample 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

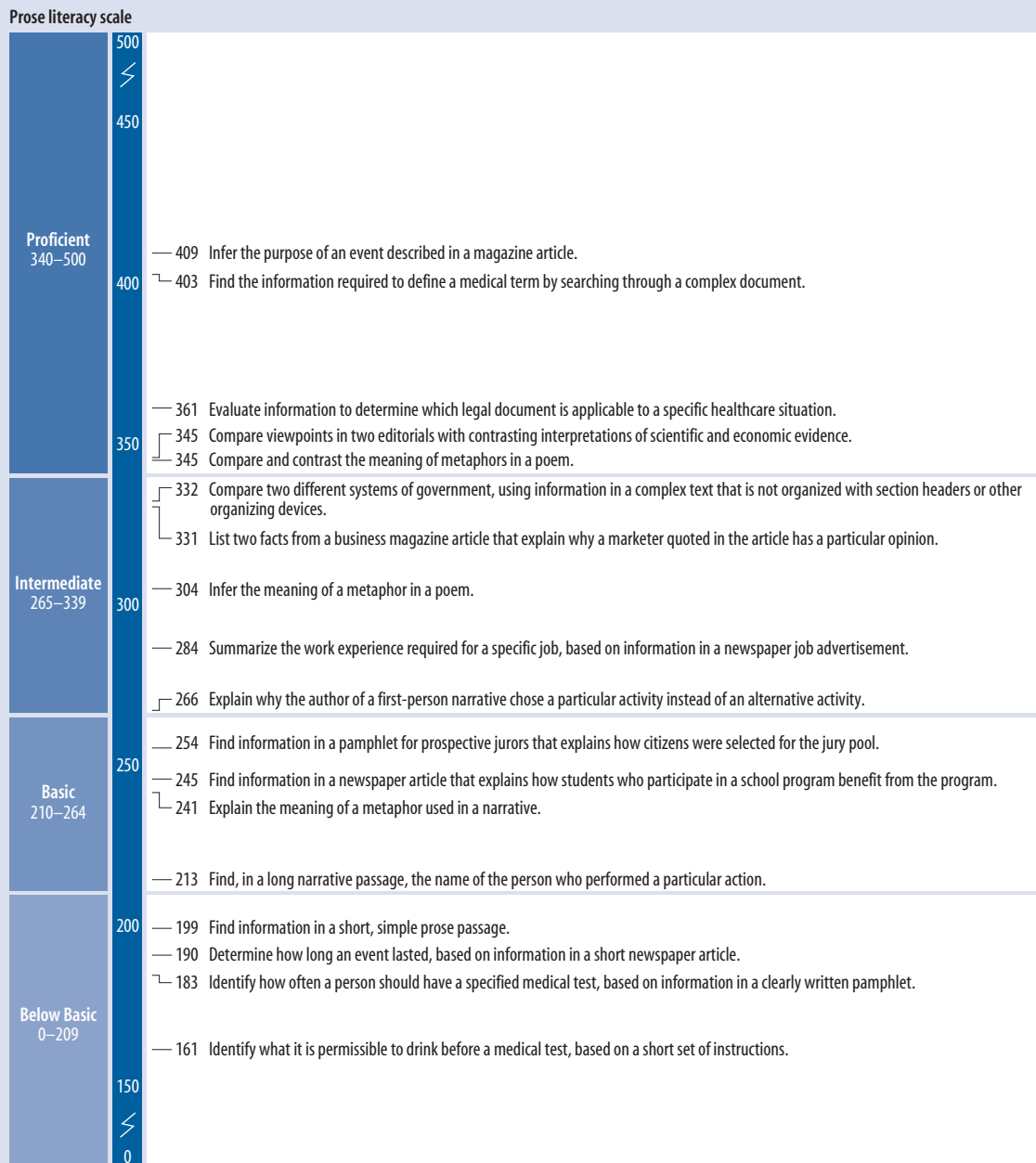
could not be estimated, and they are not included in the results presented in this report.

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

Interpretation of Results

The adult literacy scales make

Figure 1-1. Difficulty of selected prose 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.

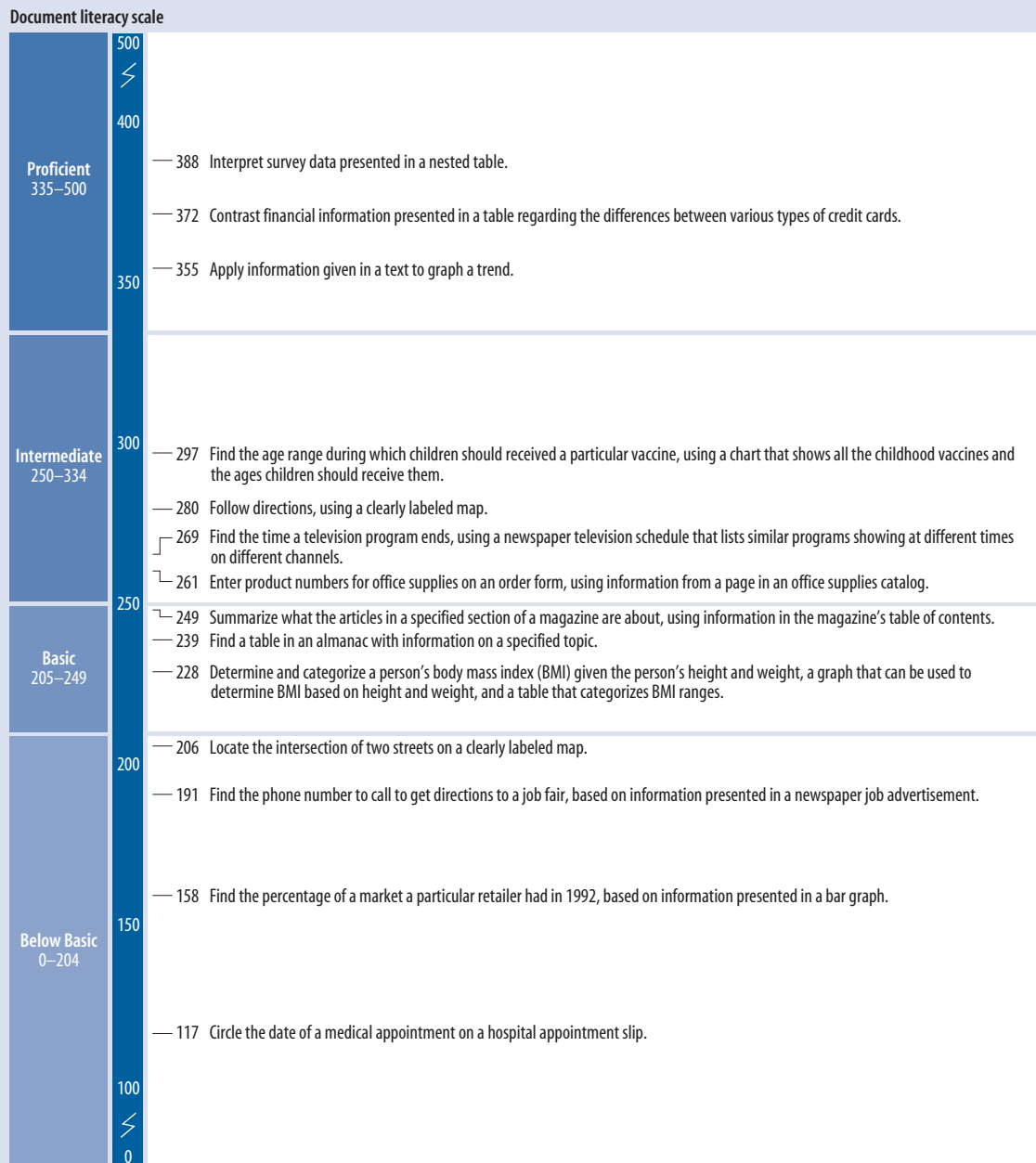
it possible to examine relationships between adults' literacy and various self-reported background factors. However, a relationship that exists between literacy and another variable does not reveal its underlying cause, which may be influenced by a number of other variables. Similarly, the assessment does

not reflect the influence of unmeasured variables. The results are most useful when they are considered in combination with other knowledge about the adult population and literacy levels in the United States, such as trends in population demographics and societal demands and expectations. Some of the

changes in population demographics are discussed in chapter 2 of this report.

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

Figure 1-2. Difficulty of selected document 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.

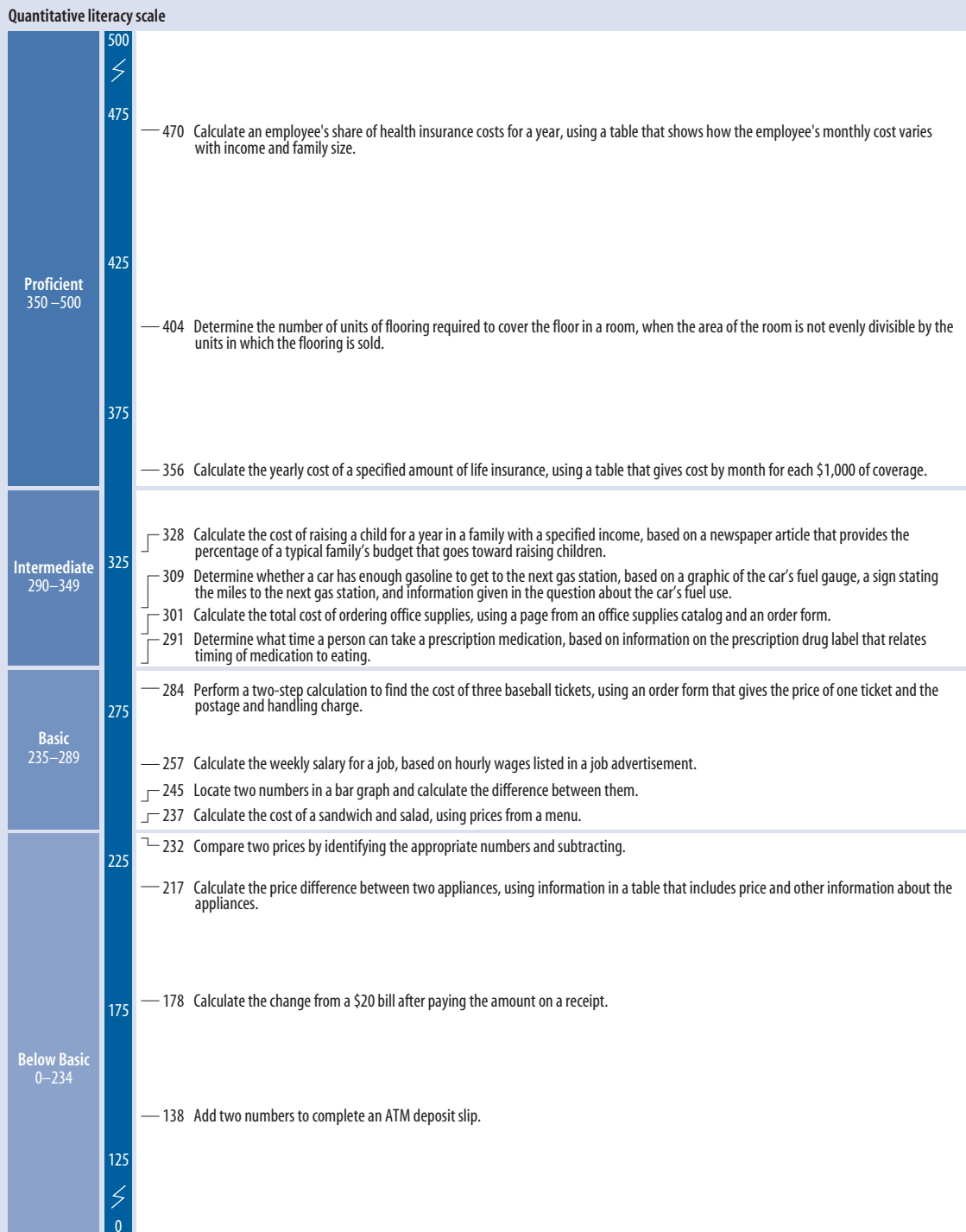
assessment. Estimates of performance of the population and groups within the population were calculated by using sampling weights to account for the

fact that the probabilities of selection were not identical for all respondents. Information about the uncertainty of each statistic that takes into account the com-

plex sample design was estimated by using Taylor series procedures to estimate standard errors (Binder 1983).

The analyses in this report

Figure 1-3. Difficulty of selected quantitative 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.

examine differences related to literacy based on self-reported background characteristics among groups in 2003, as well as changes within groups between 1992 and 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.”

Because the sample size was small for some groups in the prison population, such as women and Hispanics, standard errors were larger for estimates relating to those groups and differences that look large were not necessarily statistically significant. The fact that a difference was not statistically significant does not necessarily mean there was no difference. Rather, it means we cannot be 95 percent certain that the differences we see in the sample would hold for the population as a whole.

For most of the analyses in this report, results are presented for all three scales: prose, document, and quantitative. However, for some of the analyses for which one or two of the scales were more conceptually related to the background variable being discussed than were others, results are presented for a subset of the scales only.

Detailed tables with estimates and standard errors for all tables and figures in this report are in appendix D. Appendix C includes more information about the weights used for the sample and the procedures used to estimate standard errors and statistical significance.

Organization of the Report

Chapter 2 of the report presents

the prose, document, and quantitative literacy of the prison population of the United States as a whole and discusses how the literacy of the prison population changed between 1992 and 2003. The chapter also examines how literacy varies across groups of prison inmates with different characteristics, including race/ethnicity, gender, educational attainment, age, language spoken before starting school, and parents' educational attainment.

Chapter 3 compares the literacy of adults in the prison and household populations in 2003. In addition to comparing the populations as a whole, the chapter examines how literacy differs between adults in the prison and household populations in groups with selected characteristics, including race/ethnicity, gender, educational attainment, age, language spoken before starting school, and parents' educational attainment.

Chapter 4 examines the relationship between literacy and education and job training, including traditional academic education, vocational education, and skill certification.

Chapter 5 discusses the relationship between literacy and experiences in prison other than education. Topics in chapter 5 are prison work assignments, library use, computer use, and reading frequency.

Chapter 6 looks at the relationship between literacy, criminal history, and current offense. The results presented in chapter 6 compare how the relationship between literacy, type of offense, expected length of incarceration, expected date of release, and previous criminal history has changed since 1992.

References

Binder, D.A. (1983). On the Variance of Asymptotically Normal Estimates for Complex Surveys.

International Statistical Review, 51(3), 279-92.

Harlow, C. (2003). *Education and Correctional Populations*. U.S. Department of Justice. Washington, DC: Bureau of Justice Statistics.

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.

Kutner, M., Greenberg, E., Jin, Y., Boyle, B., Hsu, Y., and Dunleavy, E. (2007). *Literacy in Everyday Life: Results From the 2003 National Assessment of Adult Literacy* (NCES 2007-480). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Rock, D., and Yamamoto, K. (2001). Construct Validity of the Adult Literacy Scales. In U.S. Department of Education. National Center for Education Statistics. *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey*, NCES 2001-457, by I. Kirsch, K. Yamamoto, N. Norris, D. Rock, A. Jungeblut, P. O'Reilly, M. Berlin, L. Mohadjer, J. Waksberg, H. Goskel, J. Burke, S. Rieger, J. Green, M. Klein, A. Campbell, L. Jenkins, A. Kolstad, P. Mosenthal, and S. Baldi.

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Endnotes

6 Nonresponse bias analyses are discussed on page 102 of this report. All percentages in this section are weighted. For unweighted percentages, see tables C-1 and C-2 in appendix C.

7 The 1992 adult literacy prison data collection took place in 1993, but results for that survey have been reported using the date of 1992.