Introduction

The National Adult Literacy Survey provides the most detailed portrait ever created of the English literacy abilities of our nation’s adults. Funded by Congress through the U.S. Department of Education, National Center for Education Statistics (NCES), the survey was conducted in 1992. In 1993, NCES published a summary overview of the results, which described the literacy skills of adults in the United States and discussed differences among various groups in the population (Kirsch et al. 1993). Subsequently, NCES invited people who had served on the two advisory committees for the survey to produce a series of reports that look at the results of the survey, addressing different special topics in ways they believed would interest literacy workers, policymakers, and the general public. This report explores the relationship between formal schooling and adult literacy proficiency in a more detailed and analytical way than was possible in the initial overview.

The most pervasive result of the National Adult Literacy Survey is that level of formal schooling is strongly related to adult literacy proficiency. This may strike some as surprising, given much recent criticism of schools for failing to teach reading effectively and for failing to make school learning relevant to real-life tasks. Nonetheless, increased levels of formal schooling correlate with substantial gains in adult literacy proficiency for all groups, at all levels of education. This report investigates that relationship in several ways: by exploring how demographic characteristics such as race/ethnicity and age relate to literacy proficiency and formal schooling; by providing a picture of who drops out of school and what impact that decision has on adult literacy proficiency; by looking at those least effectively served by schools—those whose proficiencies are in the two lowest levels on the literacy scales; and by exploring how adult literacy proficiencies map out into the world of work.
The survey

The National Adult Literacy Survey avoided characterizing adults as either “literate” or “illiterate.” Instead, it profiled the literacy abilities of adults based on their performance on a wide array of tasks using the kinds of materials they actually encounter in their daily lives. The tasks assessed such literacy skills as finding information, making inferences, interpreting tables, reading maps, and making calculations.

The information was gathered by trained staff who interviewed over 13,600 adults in households across the country. The participants were randomly selected to represent the adult population of the country as a whole. An additional 1,000 adults were interviewed in each of 11 states that chose to participate in a concurrent survey designed to provide results that are comparable to the national data. Finally, 1,150 inmates in 80 federal and state prisons were surveyed. The prisons were randomly selected to represent prisons across the country, and the inmates themselves were randomly selected from each of the prisons. Overall, about 26,000 adults participated in the study.

Using an extensive background questionnaire, interviewers collected information about respondents’ demographic characteristics, educational background, reading practices, and other characteristics related to literacy. Then participants responded to a set of literacy tasks. Analyses of their responses yielded proficiency scores that profiled their skills on three literacy scales—prose, document, and quantitative. The scales were each divided into five levels that define the increasing difficulty and complexity of the tasks associated with them. Combining the results of the background questionnaires with the literacy proficiency scores produced a wealth of information about the characteristics of people with different literacy skills.

Organization of this report

This report explores the links between education and literacy in four ways. First, the report discusses the relationship between literacy skills and formal schooling across different demographic subgroups. Second, it describes the literacy proficiencies and other characteristics of individuals who did not complete high school. Third, it examines the characteristics—educational and otherwise—of individuals whose proficiency scores were in the two lowest levels on the literacy scales. Finally, it discusses the proficiencies and characteristics of respondents in the workforce and explores some of the implications for adult educators. Following are highlights from the report.

Formal Education and Adult Literacy Proficiencies

The main finding that pervades the data on education in the National Adult Literacy Survey is that literacy proficiency is strongly related to level of formal schooling. Each successive level of formal education is accompanied by a rise in average literacy proficiencies. This does not prove a causal relationship, but it suggests that high literacy abilities and high levels of education strongly reinforce one another.

Given the many criticisms of America’s schools in recent decades, the strong association of formal education and adult literacy skills deserves our attention. The suspicion that, on average, more schooling fosters higher levels of adult literacy skills carries policy implications. The following data show how the relationship between schooling and literacy plays out on the 500-point scale for prose literacy.

Adults who did not complete high school average 231 on the prose scale, those who completed high school average 270, and those with a 4-year college degree average 322 (table A).

Literacy proficiency and race/ethnicity

Literacy proficiency also relates strongly to race/ethnicity. The average prose proficiency of White adults is 286, while that of Black adults is 237 and that of Hispanic adults is 215. The data demonstrate that schooling plays a double role in shaping the English literacy proficiencies by race/ethnicity: first, some groups are able to attain more schooling than others, which, on average, correlates with higher literacy proficiencies; second, at a given level of educational attainment, groups differ in average literacy attainment. This second phenomenon may be caused by a difference in the quality of schooling experienced by different groups and by other factors that vary by race/ethnicity. For example, the correlation between racial/ethnic groups and literacy proficiency is partially explained by differences in variables such as parental education and income, which are discussed in the complete report. However, the data do not measure differential quality of schooling and other factors, such as motivation and opportunity, that might affect the acquisition of literacy skills.

Literacy proficiency and age

An interesting relationship is observed between literacy proficiency and age. Average literacy proficiencies rise with each older cohort up to those who are in their forties and then decline in the older population. The rise from the cohort in their twenties to the cohort in their forties is not due to more effective schooling in earlier decades—but indeed, there is no decline in the levels of literacy proficiency at a
given level of formal education when comparing 40-year-olds to 20-year-olds. Rather, the differences occur because many people in the cohorts of 30-year-olds and 40-year-olds have continued to get formal education as adults. This is a picture of a learning society. The continuing formal education of adults is much reduced beyond age 50, as are the initial schooling levels of Americans in those older cohorts; the literacy proficiencies of the older cohorts are lower as well. Everything seems to point toward a connection between formal education and adult literacy skills, across all groups and all ages.

**School Noncompletion and Literacy**

In general, proficiency on all three dimensions of literacy is lowest for individuals who have not graduated from high school, higher for high school graduates and GED holders, and highest for individuals who have attended post-secondary schooling. This pattern is found for Black, Hispanic, and White populations alike; for males and females alike; and for adults in all age ranges. At the same time, the average proficiencies of Hispanic adults who did not begin or did not complete high school—a group representing almost half of all Hispanic individuals sampled—are substantially below those of other school noncompleters. The primary language spoken at home as a child may provide a partial explanation. High school noncompleters who grew up in Spanish-speaking homes demonstrate lower proficiencies than noncompleters from homes in which the primary language was not Spanish, even though high school graduates who grew up in Spanish-speaking homes do not exhibit this handicap.

### School noncompletion and work

For high school graduates, higher proficiency is associated with an increased likelihood of being employed. Among high school noncompleters, however, there is little or no relationship between literacy proficiency and employment. Thus, for individuals who do not complete high school, increased literacy proficiency does not provide an advantage in obtaining part-time or full-time work.

High school noncompleters who are out of the workforce demonstrate extremely low literacy proficiencies. Among noncompleters, 78 percent of those 55 years of age or older are out of the workforce, as are 27 percent of those under 55. Smaller percentages of high school graduates in either age bracket are out of the workforce and, at the same time, their literacy proficiencies are not nearly as low.

### Heterogeneity among noncompleters

In spite of the handicap in average literacy proficiency, individuals who do not complete high school are a diverse group. They leave school for a variety of reasons and engage in a wide range of work, education, and literacy-related activities after leaving. For example, individuals who reported leaving school because of loss of interest or behavior problems or because of pregnancy have significantly higher literacy proficiencies as adults and engage in

<table>
<thead>
<tr>
<th>Education level</th>
<th>Average proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prose</td>
</tr>
<tr>
<td>Still in high school</td>
<td>271</td>
</tr>
<tr>
<td>0 to 8 years</td>
<td>177</td>
</tr>
<tr>
<td>9 to 12 years</td>
<td>231</td>
</tr>
<tr>
<td>GED</td>
<td>268</td>
</tr>
<tr>
<td>High school diploma</td>
<td>270</td>
</tr>
<tr>
<td>Some college</td>
<td>294</td>
</tr>
<tr>
<td>2-year degree</td>
<td>308</td>
</tr>
<tr>
<td>4-year degree</td>
<td>322</td>
</tr>
<tr>
<td>Graduate studies/degree</td>
<td>336</td>
</tr>
</tbody>
</table>

**Note:**

Table A.— Average proficiencies on each literacy scale, by education level: 1992

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992. (Taken from figure 2.1 on p. 17 of the complete report from which this article is excerpted.)
significant more literacy practices in comparison with individuals who dropped out for other reasons.

A small but noteworthy proportion of noncompleters enrolled in part-time or full-time educational programs after leaving school. Approximately 18 percent of noncompleters reported studying for a high school equivalency diploma and, by a conservative estimate, at least 4 percent completed the GED program. The average literacy proficiency of GED completers is equivalent to that of high school graduates. Given the generally powerful correlation between formal schooling and adult literacy skills, it is important to keep in mind the range of literacy skills among adults at a given education level, including those who did not complete high school.

**Adults Performing at the Two Lowest Literacy Levels**

Not only is there a range of literacy proficiencies among those who did not complete high school, but there is also, conversely, a range of educational attainment among those whose literacy proficiencies are at the two lowest levels in the National Adult Literacy Survey. Thus, 19 percent of those who began but did not complete high school perform at level 3 or above on the prose literacy scale, while 14 percent of those with a college degree (an associate’s degree or higher) perform at level 1 or 2 on the prose scale (table B). For policy purposes, the two-edged finding of the survey is important: educational attainment correlates strongly and regularly with literacy proficiency, yet some individuals with many years of schooling are among the group with the lowest literacy proficiencies.

Nearly half the adults in America perform at level 1 or level 2. They are diverse in terms of educational experience and social characteristics. Nonetheless, some relationships are evident, and they are relevant to discussions of literacy and education. First, although level of education does not predict literacy proficiency in individual cases, there is a strong relationship between literacy and education. For example, among respondents who went to high school but did not graduate, 80 percent perform at level 1 or 2 on the prose scale; among those who had some college but no degree, 31 percent do. There is also a relationship between literacy and race/ethnicity: among Black adults, as well as among Hispanic adults, 75 percent demonstrate prose proficiency at level 1 or 2, compared with 39 percent of White adults.

Some respondents to the National Adult Literacy Survey completed the background questionnaire but completed none of the literacy tasks, or did not complete enough to produce proficiency scores. If they had been excluded from the tables, the sample would no longer have been nationally representative; thus, procedures for estimating their probable scores were implemented. About 12 percent of the entire sample consisted of such “nonresponders.” Among those classified at level 1, however, the percentage was much higher; for example, about 41 percent of those performing at level 1 on the prose scale were nonresponders. Nonresponders were asked why they did not complete the literacy tasks; if their reply was unrelated to reading ability (e.g., they had a physical disability, or had no time, or simply refused to continue), the average scores of respondents with similar background characteristics (age, ethnicity, gender, region) were factored in when estimating their literacy proficiency. If their reason was related to literacy (e.g., they did not speak English or did not read well), then the estimate was lower. The estimates were also influenced by any literacy tasks the nonresponder did complete.

Unfortunately, there is no way to be certain that these estimates did not underestimate the literacy abilities of nonresponders, so caution is required in discussing adults demonstrating proficiency at level 1. It may be that some nonresponders had literacy abilities above level 1 but wished to avoid the discomfort of having their literacy abilities tested and rated. Although the estimation procedures might underestimate some nonresponders’ literacy proficiencies, the same attitudes or anxieties that made them reluctant to complete the survey may cause them to avoid other literacy tasks in their everyday lives. Low literacy is thus a form of double jeopardy in people’s lives: it is both a technical disadvantage and a social stigma. It can both keep one from learning what one needs to know and add insult to injury by embarrassing an individual. This is a double disadvantage that policymakers and adult literacy workers need to keep in mind.

**Education for the Workplace**

The data show that many workers who perform at level 1 or 2 are laborers, in food service, in child care, and in maintenance occupations. These individuals are unlikely to succeed consistently at the literacy tasks of moderate difficulty demanded in many workplaces. In some occupational areas—service and farming/forestry, for example—a substantial minority of workers say they rarely read on the job, but most workplaces are alive with literacy activities and literacy demands; even in traditionally lower status jobs, many workers must write memoranda and reports. Workers who rarely read at home or on the job, however,
Table B.— Percentages at each level on the prose literacy scale and average prose proficiencies, by sex, race/ethnicity, education level, employment status, and literacy practices: 1992

<table>
<thead>
<tr>
<th>Percent</th>
<th>Level 1 (225 or lower)</th>
<th>Level 2 (226 to 275)</th>
<th>Level 3 (276 to 325)</th>
<th>Level 4 (326 to 375)</th>
<th>Level 5 (376 or higher)</th>
<th>Total</th>
<th>Average prose proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>21</td>
<td>27</td>
<td>32</td>
<td>17</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>22</td>
<td>26</td>
<td>31</td>
<td>18</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>20</td>
<td>28</td>
<td>33</td>
<td>17</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>Black</td>
<td>38</td>
<td>37</td>
<td>21</td>
<td>4 (#)</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>14</td>
<td>25</td>
<td>36</td>
<td>21</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>49</td>
<td>26</td>
<td>19</td>
<td>6</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Level of education</td>
<td>Still in school</td>
<td>16</td>
<td>36</td>
<td>37</td>
<td>11</td>
<td>(#)</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Less than high school</td>
<td>75</td>
<td>20</td>
<td>4 (#)</td>
<td>(#)</td>
<td>100</td>
<td>177</td>
</tr>
<tr>
<td></td>
<td>Some high school</td>
<td>42</td>
<td>38</td>
<td>17</td>
<td>2 (#)</td>
<td>100</td>
<td>231</td>
</tr>
<tr>
<td></td>
<td>GED or high school diploma</td>
<td>16</td>
<td>36</td>
<td>37</td>
<td>10</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Some college (no degree)</td>
<td>8</td>
<td>23</td>
<td>45</td>
<td>22</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>College degree (2 or more years)</td>
<td>3</td>
<td>11</td>
<td>33</td>
<td>41</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Employment status</td>
<td>Full-time</td>
<td>13</td>
<td>24</td>
<td>36</td>
<td>23</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Part-time</td>
<td>14</td>
<td>26</td>
<td>36</td>
<td>20</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>24</td>
<td>35</td>
<td>29</td>
<td>11</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Out of work</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>13</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Retired</td>
<td>41</td>
<td>32</td>
<td>21</td>
<td>5</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Frequency of personal literacy practices</td>
<td>Rarely</td>
<td>53</td>
<td>27</td>
<td>15</td>
<td>4</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>18</td>
<td>30</td>
<td>33</td>
<td>16</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>9</td>
<td>24</td>
<td>38</td>
<td>25</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Frequency of job literacy practices</td>
<td>Rarely</td>
<td>35</td>
<td>30</td>
<td>25</td>
<td>10</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>15</td>
<td>30</td>
<td>35</td>
<td>17</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>7</td>
<td>22</td>
<td>39</td>
<td>26</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>

#Too small to report.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992. (Originally published as table 4.1 on p. 77 of the complete report from which this article is excerpted.)

demonstrate the lowest proficiencies, which is cause for concern as research indicates that learning loss occurs when there is lack of practice.

**Enrollment in basic skills programs**

About 8 percent of all employees have sought basic skills training from an employer or union program, publicly sponsored classes or tutoring, or other program. Surprisingly, the percentage is about the same in all occupational groups and at all education levels. Managerial and professional workers reported that they had sought basic skills training in the same proportions as laborers or clerical workers. Also, those enrolled in basic skills training were distributed equally across all education levels.

**Where adults learn their skills**

Not surprisingly, most workers reported that basic prose reading ability was learned at school or at home, not at
work. But other literacy abilities, some respondents said, were learned mainly at work, and some interesting patterns were evident in the data. For example, people with lower education levels more often said that they learned how to manipulate documents, graphs, and tables primarily at work, perhaps because they had limited exposure to them at school or at home. People with higher education levels tended to report that they learned to write at work, suggesting either that they are asked to write more at work and thus learn from the experience or that they are offered more actual instructional opportunities to improve their writing at work.

The National Adult Literacy Survey confirms a picture of workers with widely varying literacy proficiencies and a workplace with literacy demands for most workers. The data should be helpful for those planning literacy instruction in workplace settings.

**Conclusion**

If there is one simple message about education and literacy revealed by the National Adult Literacy Survey, it is that education matters. Formal education correlates strongly with higher literacy abilities at all levels and among all groups. Such correlations do not prove that education causes higher literacy abilities, but anyone who thinks that formal education only functions to hand out credentials, or that schools are failing to make a difference in people’s actual functional skills, must reckon with these data. They show substantial literacy gains at every increasing level of formal schooling among all groups, including males and females, different racial/ethnic groups, and different age groups.

The literacy problem is complex, however, and no simple message is very helpful. The results also contain many double messages about the relationship between literacy and education. First, there are always a substantial number of individuals who defy such relationships, and policymakers must keep these exceptions in mind. There are people with a high level of educational attainment and low literacy skills, and vice versa. There are high school noncompleters with average literacy skills, and executives with minimal literacy skills. Second, the association of formal schooling with higher literacy skills is attributable partially to other factors, such as high parental education or high economic status. People with various advantages also tend to get a lot of education. Thus, the answer to the literacy problem in the United States will never be simply more education for everyone. Third, not all groups gain equal benefit from more education, whether measured in terms of literacy proficiency or other cognitive outcomes. In particular, there is a relationship not only between race/ethnicity and educational attainment, but also between race/ethnicity and literacy proficiency at a given education level. Thus, policymakers must look at how formal education operates for different groups, as well as at factors beyond the schools that influence the acquisition of literacy abilities.

In summary, the National Adult Literacy Survey reinforces traditional notions about the importance of formal schooling but shows us a world in which formal schooling is enmeshed in social, familial, and economic contexts that also influence the attainment and uses of literacy.

**Reference**

Introduction

English Literacy and Language Minorities in the United States is one report in a series of National Center for Education Statistics (NCES) publications based on the 1992 National Adult Literacy Survey. Previously released reports in this series include Adult Literacy and Education in America (Kaestle et al. 2001), Literacy of Older Adults in America (Brown et al. 1996), Literacy Behind Prison Walls (Haigler et al. 1994), and Literacy in the Labor Force (Sum 1999).

The increase in immigration to the United States in the 1970s and 1980s raised concerns among policymakers, researchers, and members of the public about how well immigrants were being integrated into the society and economy of the United States. This report addresses these concerns by providing an in-depth look at adult residents of the United States who were either born in other countries or were born in the United States but spoke a language other than English as young children. The report explores the English fluency and literacy of this population, their fluency and literacy in their native non-English languages, and their employment patterns and earnings.

Survey purpose

The 1992 National Adult Literacy Survey provides the most detailed portrait ever of the English literacy abilities of adults living in the United States. The survey sought to avoid previous characterizations of all adults as either “literate” or “illiterate.” Instead, it profiled the literacy abilities of adults based on their performance on a wide array of tasks that reflect the types of materials and demands they encounter in their daily lives (e.g., interpreting instructions from a warranty, reading maps, balancing a checkbook, or figuring out a tip).

Survey methodology

Survey data were gathered in 1992 by trained staff who interviewed about 13,600 adults residing in U.S. households. The adults were randomly selected to represent the adult population of the country as a whole. In addition, approximately 1,000 adults were interviewed in each of 11 states that chose to participate in a concurrent survey designed to provide state-level results comparable to the national data. Finally, nearly 1,150 inmates in 80 state and federal prisons were surveyed. The prisons were randomly selected to represent prisons across the country, and the inmates themselves were randomly selected from each prison. Overall, approximately 26,000 adults participated in the survey.

Interviewers administered an extensive background questionnaire that collected information about respondents’ language background, demographic characteristics, educational background, reading practices, workforce participation, and other areas related to literacy. Each survey participant also responded to a set of diverse literacy tasks. As a result of their responses to the literacy tasks, adult participants received proficiency scores on three scales that capture increasing levels of difficulty in English prose, document, and quantitative literacy. Data from the background questionnaires, along with the English literacy proficiency scores, produced a wealth of information about the characteristics of people with different literacy skills.

Major Findings

Age matters

The age at which an individual learned to speak English was related to his or her English literacy proficiency as an adult. On average, individuals who entered the United States before age 12 had English literacy proficiency as adults comparable to members of the same racial and ethnic groups who were born in the United States (table A). Virtually everyone who was born in the United States or who immigrated to the United States before age 12 was fluent in English as an adult.

Many of the differences in English literacy proficiency between various racial or ethnic groups were due to differences in language backgrounds among the groups. Asian/Pacific Islander and Hispanic adults were more likely than Whites to have been born in a country other than the United States or to have been raised in homes where a language other than English was spoken. When differences in language backgrounds of members of these racial and ethnic groups were accounted for, the English literacy proficiency of Asians/Pacific Islanders was comparable to that of Whites, and the English literacy proficiency of Hispanics was slightly lower than that of Whites (table A).
However, on average, Blacks had lower English literacy proficiency than Whites, and differences in language background did not explain the difference in English literacy proficiency between Blacks and Whites.

There were racial and ethnic group differences in fluency and literacy in languages other than English among adults raised in homes where a language other than English was spoken. Individuals who grew up in homes where Spanish or an Asian language was spoken were more likely to report that they spoke that language as adults than were respondents who grew up in a home where a European language other than Spanish was spoken.

**Schooling enhances literacy**

Formal education played a fundamental role in the acquisition of English language fluency and literacy for individuals who were raised in non-English-speaking homes, regardless of whether they were immigrants or native born. In particular, among immigrants who arrived in the United States at age 12 or older, level of formal education was related to English language fluency and literacy. Immigrants who

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**Table A.— Average literacy proficiency scores by racial/ethnic group and age of arrival in United States: 1992**

<table>
<thead>
<tr>
<th>Average proficiency</th>
<th>Sample size</th>
<th>Population/1000</th>
<th>Average scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Prose</td>
</tr>
<tr>
<td>Total population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.-born</td>
<td>23,197</td>
<td>171,111</td>
<td>280</td>
</tr>
<tr>
<td>Arrived U.S. age 1 to 11</td>
<td>519</td>
<td>3,389</td>
<td>275</td>
</tr>
<tr>
<td>Arrived U.S. age 12 to 18</td>
<td>599</td>
<td>3,830</td>
<td>206</td>
</tr>
<tr>
<td>Arrived U.S. age 19 to 24</td>
<td>666</td>
<td>4,497</td>
<td>200</td>
</tr>
<tr>
<td>Arrived U.S. age 25 or older</td>
<td>1,011</td>
<td>7,790</td>
<td>193</td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.-born</td>
<td>16,693</td>
<td>139,554</td>
<td>288</td>
</tr>
<tr>
<td>Arrived U.S. age 1 to 11</td>
<td>158</td>
<td>1,201</td>
<td>300</td>
</tr>
<tr>
<td>Arrived U.S. age 12 to 18</td>
<td>82</td>
<td>646</td>
<td>265</td>
</tr>
<tr>
<td>Arrived U.S. age 19 to 24</td>
<td>117</td>
<td>1,229</td>
<td>247</td>
</tr>
<tr>
<td>Arrived U.S. age 25 or older</td>
<td>197</td>
<td>2,107</td>
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<tr>
<td>Black</td>
<td></td>
<td></td>
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<tr>
<td>U.S.-born</td>
<td>4,728</td>
<td>19,994</td>
<td>237</td>
</tr>
<tr>
<td>Arrived U.S. age 1 to 11</td>
<td>38</td>
<td>138</td>
<td>(8)</td>
</tr>
<tr>
<td>Arrived U.S. age 12 to 18</td>
<td>49</td>
<td>270</td>
<td>246</td>
</tr>
<tr>
<td>Arrived U.S. age 19 to 24</td>
<td>49</td>
<td>258</td>
<td>242</td>
</tr>
<tr>
<td>Arrived U.S. age 25 or older</td>
<td>86</td>
<td>472</td>
<td>205</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.-born</td>
<td>87</td>
<td>851</td>
<td>280</td>
</tr>
<tr>
<td>Arrived U.S. age 1 to 11</td>
<td>53</td>
<td>504</td>
<td>287</td>
</tr>
<tr>
<td>Arrived U.S. age 12 to 18</td>
<td>60</td>
<td>464</td>
<td>265</td>
</tr>
<tr>
<td>Arrived U.S. age 19 to 24</td>
<td>73</td>
<td>604</td>
<td>236</td>
</tr>
<tr>
<td>Arrived U.S. age 25 or older</td>
<td>153</td>
<td>1,505</td>
<td>206</td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>U.S.-born</td>
<td>1,481</td>
<td>8,726</td>
<td>257</td>
</tr>
<tr>
<td>Arrived U.S. age 1 to 11</td>
<td>261</td>
<td>1,490</td>
<td>251</td>
</tr>
<tr>
<td>Arrived U.S. age 12 to 18</td>
<td>397</td>
<td>2,347</td>
<td>173</td>
</tr>
<tr>
<td>Arrived U.S. age 19 to 24</td>
<td>414</td>
<td>2,298</td>
<td>163</td>
</tr>
<tr>
<td>Arrived U.S. age 25 or older</td>
<td>546</td>
<td>3,459</td>
<td>160</td>
</tr>
</tbody>
</table>

#Sample size is too small to provide a reliable estimate.

NOTE: The differences in average proficiency scores between U.S.-born individuals and those who arrived in the United States at ages 1–11 are not significant for the total population or within any of the racial/ethnic groups. Average scores are based on scales that range from 0 to 500. Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992. (Based on table 2.7 on p. 50 of the complete report from which this article is excerpted.)
arrived in the United States at age 12 or older without the benefit of a substantial amount of formal education received in their native country were the least likely to develop English language skills. Immigrants who arrived at age 12 or older with a substantial level of formal education obtained in their native country were likely to be biliterate and bilingual in English and their native language.

Immigrants who arrived in the United States at age 12 or older with low levels of formal education had very low participation rates in English as a second language and adult basic skills training classes that might have improved their English language skills. This indicates that an important population, which is not currently being served, could benefit from these classes.

**Literacy pays**

Adults living in the United States who were not fluent in English, primarily immigrants who arrived at age 12 or older with low levels of formal education, were less likely to be employed, and earned lower wages when they were employed, than individuals who were fluent and literate in English. However, fluency and literacy in English at the level of a native speaker were not necessary for successful integration into the American economy. Although individuals who learned English as their second language had lower English literacy levels—as measured by the 1992 National Adult Literacy Survey—than individuals who were raised in English-speaking homes, their average income and continuity of employment did not differ from that of native English speakers. They may have brought other skills to the workplace that compensated for their lower levels of English literacy. Additionally, the earnings differential between Hispanics and the total population of the United States disappeared when differences in Hispanics’ levels of English literacy were taken into account.

**Conclusion**

Only non-native English speakers with low levels of formal education were truly disadvantaged in the labor market by their lack of native English language skills. Most members of this disadvantaged group were not being reached by existing English as a second language and adult basic skills classes.

Other non-native English speakers and immigrants, even those with low levels of English literacy as measured by the 1992 National Adult Literacy Survey, were generally able to learn enough English to exhibit employment patterns and earnings comparable to native English speakers.

**References**


**Data source:** The NCES 1992 National Adult Literacy Survey.

**For technical information,** see the complete report:


**Author affiliations:** E. Greenberg, D. Rhodes, and T. Chan, American Institutes for Research; R.F. Macías, University of California, Los Angeles.

**For questions about content,** contact Sheida White (sheida.white@ed.gov).

**To obtain the complete report (NCES 2001–464),** visit the NCES Web Site (http://nces.ed.gov).
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State Library Agencies

State Library Agencies: Fiscal Year 2000
P. Elaine Kroe, Patricia Garner, and Cindy Sheckells

This article was originally published as the Introduction and Highlights of the E.D. Tabs report of the same name. The universe data are from the State Library Agencies (StLA) Survey.

Introduction
This report contains data on state library agencies in the 50 states and the District of Columbia for state fiscal year (FY) 2000. The data were collected through the State Library Agencies (StLA) Survey, the product of a cooperative effort between the Chief Officers of State Library Agencies (COSLA), the U.S. National Commission on Libraries and Information Science (NCLIS), the National Center for Education Statistics (NCES), and the U.S. Census Bureau. The FY 2000 survey is the seventh in a series of StLA Surveys.

Background
A state library agency is the official agency of a state that is charged by state law with the extension and development of public library services throughout the state and that has adequate authority under state law to administer state plans in accordance with the provisions of the Library Services and Technology Act (LSTA) (PL. 104–208). Beyond these two roles, state library agencies vary greatly. They are located in various departments of state government and report to different authorities. They are involved in various ways in the development and operation of electronic information networks. They provide different types of services to different types of libraries.

State library agencies are increasingly receiving broader legislative mandates affecting libraries of all types in the states (i.e., public, academic, school, and special libraries, and library systems). They provide important reference and information services to state governments and administer the state libraries and special operations such as state archives, libraries for the blind and physically handicapped, and the State Center for the Book.1 The state library agency may also function as the state's public library at large, providing library services to the general public. This report provides information on the range of roles played by state library agencies and the various combinations of fiscal, human, and informational resources invested in such work.

1The State Center for the Book, which is part of the Center for the Book program sponsored by the Library of Congress, promotes books, reading, and literacy, and is hosted or funded by the state.
Purpose of survey

The purpose of the StLA Survey is to provide state and federal policymakers, researchers, and other interested users with descriptive information about state library agencies. The data collected are useful to (1) chief officers of state library agencies; (2) policymakers in the executive and legislative branches of federal and state governments; (3) government and library administrators at the federal, state, and local levels; (4) the American Library Association and its members or customers; and (5) library and public policy researchers. Decisionmakers use this survey to obtain information about services and fiscal practices.

The survey asks each state library agency about the kinds of services it provides, its staffing practices, its collections, income and expenditures, and more. The data include services and financial assistance provided to public, academic, and school libraries, and to library systems. When added to the data collected through the NCES surveys of public, academic, and school libraries, these data help complete the national picture of library service.

Congressional authorization

The StLA Survey is conducted in compliance with the NCES mission “to collect, analyze, and disseminate statistics and other information related to education in the United States and in other nations, including … the learning and teaching environment, including data on libraries …” (P.L. 103–382, Title IV, National Education Statistics Act of 1994, Sec. 404 [a]).

Content of this article

The remainder of this article presents highlights of StLA Survey results for FY 2000.

Governance

- Nearly all state library agencies (47 states and the District of Columbia) are located in the executive branch of government. In three states (Arizona, Michigan, and Tennessee), the agency is located in the legislative branch.

- Of the state library agencies located in the executive branch, almost two-thirds (31 states) are part of a larger agency, most commonly the state department of education (12 states). Six other state library agencies have direct connections to education through their locations within departments or agencies that include education, college, university, or learning in their titles.

Allied and Other Special Operations

- State library agencies in 14 states reported having one or more allied operations. Allied operations most frequently linked with state library agencies are the state archives (10 states) and the state records management service (10 states). Expenditures for allied operations totaled $23.4 million, or 2.3 percent of total expenditures.

- State library agencies in 15 states contracted with public or academic libraries in their states to serve as resource or reference/information service centers. State library agencies in 21 states hosted or provided funding for a State Center for the Book.

Electronic Services and Information

Electronic networks, databases, and catalogs

- Almost all state library agencies (48 states and the District of Columbia) planned or monitored the development of electronic networks. State library agencies in 42 states and the District of Columbia operated electronic networks. State library agencies in 46 states and the District of Columbia supported the development of bibliographic databases via electronic networks, and state library agencies in 44 states and the District of Columbia supported the development of full text or data files via electronic networks.3

- Almost all state library agencies (49 states) provided or facilitated library access to online databases through subscription, lease, license, consortial membership, or agreement.

- State library agencies in 42 states and the District of Columbia facilitated or subsidized electronic access to the holdings of other libraries in their states through Online Computer Library Center (OCLC) participation. Over half provided access via a Web-based union catalog (30 states) or Telnet gateway (26 states).

- State library agencies in 46 states had combined expenditures for statewide database licensing of over $32.4 million.4 Of these, Texas had the highest expenditure ($3.1 million) and South Dakota the

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3The development of bibliographic databases via electronic networks and the development of full text or data files via electronic networks are both classified as “database development activities.” These activities include the creation of new databases or files as well as the conversion of existing materials into electronic format.

4In addition, Alaska expended $48,000 in FY 99 for statewide database licensing services that covered FY 99 and FY 2000.
lowest ($5,000). All state library agencies with such expenditures provided statewide database licensing services to public libraries in their states, and at least two-thirds provided statewide database licensing services to each of the following user groups: academic, school, and special libraries; library cooperatives; and other state agencies.

- Over two-thirds (68.0 percent) of the total expenditures for statewide database licensing were from state funds; 31.8 percent were from federal sources. Of the states reporting statewide database licensing expenditures, 16 states funded this activity with state dollars only, 16 states used federal dollars only, and 13 states used multiple funding sources.5

Internet access

- All state library agencies facilitated library access to the Internet in one or more of the following ways: training or consulting state or local library staff or state library end users in the use of the Internet; providing a subsidy to libraries for Internet participation; providing equipment to libraries to access the Internet; providing access to directories, databases, or online catalogs; and managing gopher/Web sites, file servers, bulletin boards, or listservs.

- Nearly all state library agencies (48 states) had Internet workstations available for public use, ranging in number from 2 to 4 (17 states); 5 to 9 (14 states); 10 to 19 (7 states); 20 to 29 (7 states); and 30 or more (3 states). Louisiana reported the largest number of public-use Internet terminals (53).

- State library agencies in 32 states and the District of Columbia were applicants to the Universal Service (E-rate discount) program established by the Federal Communications Commission (FCC) under the Telecommunications Act of 1996 (P.L. 104–104).6

Library Development Services

Services to public libraries

- All state library agencies provided the following types of services to public libraries: administration of Library Services and Technology Act (LSTA) grants; collection of library statistics; continuing education programs; and library planning, evaluation, and research. Nearly all state library agencies (49 to 50) provided consulting services, library legislation preparation or review, and review of technology plans for the E-rate discount program.

- Services to public libraries provided by over three-quarters of state library agencies (41 to 47) were administration of state aid, interlibrary loan referral services, literacy program support, reference referral services, state standards or guidelines, statewide public relations or library promotion campaigns, and summer reading program support. About three-quarters of state library agencies (38) provided union list development.

- Two-thirds of state library agencies (33) provided OCLC Group Access Capability (GAC).

- Twelve state library agencies reported accreditation of public libraries, and 22 reported certification of public librarians.

Services to academic libraries

- Over three-quarters of state library agencies (39 to 43) provided the following services to academic libraries: administration of LSTA grants, continuing education, and interlibrary loan referral services.

- Over two-thirds of state library agencies (36) provided reference referral services, 30 agencies provided consulting services, and 31 agencies provided union list development.

- No state library agency accredits academic libraries; only the state library agency of Washington State reported certification of academic librarians.

Services to school library media centers

- Over three-quarters of state library agencies provided continuing education (39 agencies) or interlibrary loan referral services (41 agencies) to school library media centers (LMCs).

- At least two-thirds of state library agencies provided administration of LSTA grants (35 agencies) or reference referral services (34 agencies) to LMCs, and over half of the agencies (30) provided consulting services.

- No state library agency accredits LMCs or certifies LMC librarians.

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5This tally of states by source of funds does not include Ohio. Ohio’s data were imputed due to nonresponse; the imputed data are included in the national totals but suppressed at the state level.

6Under this program, the FCC promotes affordable access to the Internet and the availability of Internet services to the public, with special attention given to schools and libraries.

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A union list is a list of titles of works, usually periodicals, in physically separate library collections. Location data indicate libraries in which a given item may be found.
Services to special libraries

- Over three-quarters of state library agencies (40 to 42) served special libraries\(^9\) through administration of LSTA grants, continuing education, and interlibrary loan referral.
- Over two-thirds of state library agencies (37) provided reference referral services to special libraries. About two-thirds provided consulting services (34 agencies) or union list development (33 agencies). Over half of state library agencies (26) provided library planning, evaluation, and research.
- Only the Nebraska state library agency accredits special libraries, and only the agencies of Indiana, Nebraska, and Washington State reported certification of librarians of special libraries.

Services to systems

- About two-thirds of state library agencies (33 to 36) provided the following services to library systems:\(^9\) administration of LSTA grants; consulting services; continuing education; interlibrary loan referral; library legislation preparation or review; and library planning, evaluation, and research.
- Over half of state library agencies (26 to 29) served library systems through administration of state aid, collection of library statistics, reference referral, state standards or guidelines, statewide public relations or library promotion campaigns, union list development, and review of technology plans for the E-rate discount program.
- Six state library agencies reported accreditation of library systems, and five reported certification of systems librarians.

Service Outlets

- State library agencies reported a total of 151 service outlets—53 main or central outlets, 77 other outlets (excluding bookmobiles), and 21 bookmobiles. The user groups receiving library services through these outlets, and the number of outlets serving them, included the general public (106 outlets); state government employees (101 outlets); blind and physically handicapped individuals (58 outlets); residents of state correctional institutions (34 outlets); and residents of other state institutions (22 outlets).\(^10\)

Collections

- The number of book and serial volumes held by state library agencies totaled 25.6 million. Three state library agencies had book and serial volumes of over 2 million each: Tennessee and New York had 2.5 million volumes each, and Michigan had 2.3 million volumes. The number of book and serial volumes held by other state library agencies were 1,000,000 to 1,999,999 (4 states); 500,000 to 999,999 (10 states); 200,000 to 499,999 (10 states); 100,000 to 199,999 (9 states); 50,000 to 99,999 (7 states); and under 50,000 (6 states). The state library agencies of Maryland and the District of Columbia do not maintain collections.\(^11\)
- The number of serial subscriptions held by state library agencies totaled over 98,000,\(^12\) with New York and Indiana holding the largest number (over 11,000 each), followed by Connecticut (over 10,000). The number of serial subscriptions held by other state library agencies were 5,000 to 9,999 (3 states); 2,000 to 4,999 (5 states); 1,000 to 1,999 (11 states); 500 to 999 (13 states); 100 to 499 (11 states); and under 100 (3 states). The state library agencies of Maryland and the District of Columbia do not maintain collections.

Staff

- The total number of budgeted full-time-equivalent (FTE) positions in state library agencies was 4,053. Librarians with American Library Association-Master of Library Science (ALA-MLS) degrees accounted for almost 1,262 of these positions, or 31.1 percent of total FTE positions; other professionals accounted for 18.8 percent of total FTE positions; and other paid staff accounted for 50.0 percent. Rhode Island reported the largest percentage (55.0 percent) of ALA-MLS librarians, and Virginia reported the smallest (12.5 percent).

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\(^9\)A special library is a library in a business firm, professional association, government agency, or other organized group; a library that is maintained by a parent organization to serve a specialized clientele; or an independent library that may provide materials or services, or both, to the public, a segment of the public, or other libraries. The scope of collections and services is limited to the subject interests of the host or parent institution. Special libraries include libraries in state institutions.

\(^10\)The number of outlets by user group may not sum to total outlets because some outlets serve multiple user groups.

\(^11\)In Maryland, Enoch Pratt Central, the central library of the Enoch Pratt Free Library, is designated by state law as the State Library Resource Center. In the District of Columbia, the Martin Luther King Memorial Library, the central library of the District of Columbia Public Library, functions as a resource center for the municipal government.

\(^12\)This is the total number of serial titles subscribed to, including duplicates.
Most of the budgeted FTE positions (56.9 percent) were in library services; 16.5 percent were in library development; 11.5 percent were in administration; and 13.1 percent were in other services such as allied operations. Over two-thirds of the library development positions were for public library development.

### Income

State library agencies reported a total income of over $1 billion in FY 2000. Most income was from state sources (84.6 percent), followed by federal sources (13.7 percent) and other sources (1.8 percent).\(^{13}\)

State library agency income from state sources totaled $872.9 million, with over two-thirds ($592.4 million) designated for state aid to libraries. In 10 states, over 75 percent of the state library agency income from state sources was designated for state aid to libraries, with Massachusetts having the largest percentage (96.8 percent). Six states (Hawaii, Idaho, New Hampshire, South Dakota, Vermont, and Wyoming) and the District of Columbia targeted no state funds for aid to libraries.\(^{14}\)

Federal income totaled $141.1 million, with 94.7 percent from LSTA grants.

### Expenditures

State library agencies reported total expenditures of over $1 billion in FY 2000. Over four-fifths (84.6 percent) of these expenditures were from state funds, followed by federal funds (14.0 percent) and funds from other sources (1.4 percent).

In six states, over 90 percent of total expenditures were from state sources. These states were Massachusetts (95.3 percent), Georgia (93.6 percent), Maryland (92.7 percent), New York (92.2 percent), and Rhode Island and Pennsylvania (91.0 percent each). The District of Columbia had the smallest percentage of expenditures from state sources (47.4 percent), followed by Utah (57.5 percent).

Financial assistance to libraries accounted for 68.6 percent of total expenditures of state library agencies, and over two-thirds of such expenditures were targeted to individual public libraries (46.9 percent) and public library systems (21.6 percent). Most of these expenditures were from state sources (87.9 percent); 11.9 percent were from federal sources.

Thirteen state library agencies reported expenditures for allied operations. These expenditures totaled $23.4 million and accounted for 2.3 percent of total expenditures of state library agencies. Of states reporting such expenditures, Virginia reported the highest expenditure ($5.1 million) and West Virginia the lowest ($12,000).\(^{15}\)

Thirty-five state library agencies had a combined total of $21.9 million in grants and contracts expenditures to assist public libraries with state or federal education reform initiatives. The area of adult literacy and family literacy accounted for 85.0 percent of such expenditures, and prekindergarten learning accounted for 15.0 percent. Expenditures were focused exclusively on prekindergarten learning projects in five states (Kentucky, Louisiana, Maryland, North Carolina, and Vermont) and exclusively on adult literacy and family literacy projects in eight states (California, Illinois, Indiana, Michigan, New Jersey, Rhode Island, West Virginia, and Wyoming).

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\(^{13}\)Federal income includes State Program income under the LSTA (PL 104–208), income from Title II of the Library Services and Construction Act (LSCA) (PL 101–254), and other federal income. Note: LSCA was superseded by LSTA, but LSCA Title II funds are still active.

\(^{14}\)The District of Columbia Public Library functions as a state library agency and is eligible for federal LSTA funds in this capacity. The state library agency of Hawaii is associated with the Hawaii State Public Library System and operates all public libraries within its jurisdiction. The state funds for aid to libraries for these two agencies are reported on the NCES Public Libraries Survey, rather than on the StLA Survey, because of the unique situation of these two state agencies, and in order to eliminate duplicative reporting of these data.

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**Data source:** NCES State Library Agencies (StLA) Survey, Fiscal Year 2000.


**Author affiliations:** P.E. Kroe, NCES; P. Garner and C. Sheckells, Governments Division, U.S. Census Bureau.

**For questions about content,** contact P. Elaine Kroe (patricia.kroe@ed.gov).

**To obtain the complete report (NCES 2002–302),** visit the NCES Web Site (http://nces.ed.gov).

Denise Glover

This article was originally published as the Executive Summary of the Statistical Analysis Report of the same name. The universe data are from the NCES Public Libraries Survey (PLS).

Introduction

The Public Library Trends Analysis report summarizes 5 years of public library data collected through the Public Libraries Survey (PLS), for fiscal years (FY) 1992–96. PLS is conducted annually by the National Center for Education Statistics (NCES) through the Federal-State Cooperative System for Public Library Data.

The purpose of this report is to identify and describe trends in public libraries for 24 selected variables, including library collections, services, operating income and expenditures, and staffing. The national, regional, and state data document how each of the 24 variables changed between FY 92 and FY 96. Librarians, library administrators and library boards, state library agencies, and others can use these trend data to facilitate the planning process, document the use of public funds, and identify services, collections, or resources that need additional support. The 24 selected variables that were analyzed in this report are listed in figure A.

This article presents key findings from the report in four areas: national data compared across the 5 years, regional data compared to national data across the 5 years, regions compared across the 5 years, and each region compared to the other regions for FY 96.

National Data Compared Across Years

One of the major findings of the report is that, generally, public libraries experienced small increases but no substantial changes in the size of their collections, the number and use of primary services, the amounts of their operating income or expenditures, or the size of their staff.

The only variables that showed fairly substantial increases or significant decreases over the 5-year period were

- videos per 1,000 population of legal service area, which increased an average of 16 percent annually (table A);¹
- turnover rate, which decreased an average of 1.2 percent annually (table B).²

Regional Data Compared to National Data Across Years

To compare regional data, the report used the eight geographic regions provided by the Bureau of Economic Analysis, U.S. Department of Commerce: New England, Mideast, Southeast, Southwest, Plains, Far West, Rocky Mountains, and Great Lakes.

Over the 5-year period, libraries in the New England, Mideast, Plains, and Great Lakes states generally exceeded the national average for 10 of the 14 collections, services, and staff variables,³ but for only 2 of the 10 financial variables. The two financial variables for which these four regions exceeded the national average were local operating income per capita and operating expenditures for collections per capita.

Generally, libraries in the Southeast, Southwest, and Far West states had substantially lower averages than the

¹Population of legal service area refers to the number of people in the geographic area for which a public library has been established to offer services and from which (or on behalf of which) the library derives income, plus any areas served under contract for which the library is the primary service provider.

²Turnover rate is the average total annual circulation per volume owned. This number is calculated by dividing the total annual circulation by the total number of the library’s books and serial volumes, plus audio materials and video materials.

³These variables were book/serial volumes per capita (per capita figures are based on the total unduplicated population of legal service areas in the states, not on the total population of the states), serial subscriptions per 1,000 population of legal service area, and audio and video per 1,000 population of legal service area; circulation and library visits per capita, and interlibrary loans received from and provided to other libraries per 1,000 population of legal service area; and paid full-time-equivalent (FTE) librarians with Master’s of Library Science (MLS) degrees from programs in library and information science accredited by the American Library Association (ALA) per 25,000 population of legal service area and total paid FTE staff per 25,000 population of legal service area.
Table A.— National mean for collections variables, by year, and average annual percent change: Fiscal years 1992–96

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<td>Book/serial volumes per capita</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.8</td>
<td>2.8</td>
<td>1.0</td>
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<td>Serial subscriptions per 1,000 PLSA²</td>
<td>7.1</td>
<td>7.3</td>
<td>7.2</td>
<td>7.3</td>
<td>7.3</td>
<td>0.7</td>
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<tr>
<td>Audios per 1,000 PLSA²</td>
<td>93.5</td>
<td>90.5</td>
<td>95.6</td>
<td>97.8</td>
<td>99.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Videos per 1,000 PLSA²</td>
<td>28.3</td>
<td>32.6</td>
<td>37.9</td>
<td>44.9</td>
<td>51.8</td>
<td>16.0</td>
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</table>

¹The average percent change for fiscal years 1992–96 is derived by subtracting the national mean for a variable in one year (e.g., 1992) from the national mean in the next year (1993), then dividing the difference by the mean in the first year, and computing the percentage by multiplying by 100. This number is the percent change for the 2 years (e.g., between 1992 and 1993). Once this calculation is performed for each set of years, the yearly percentages are added together, then divided by four, since there are four ranges in years: 1992–93, 1993–94, 1994–95, 1995–96.

²PLSA = Population of legal service area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Public Libraries Survey (PLS), fiscal years 1992–96. (Originally published as table 4 on p.12 of the complete report from which this article is excerpted.)
Libraries

Only libraries in the Great Lakes region had a higher average state operating income per capita than the national average, primarily because Ohio, one of the states in this region, receives almost two-thirds of its funding from state sources.

Regions Compared Across Years

Over the 5-year period, libraries in the nation as a whole generally experienced small increases in the size of their collections, number and use of services, amounts of operating income and expenditures, and size of staff. Libraries in almost every region showed either small increases or—unlike libraries in the nation as a whole—small decreases in these variables, with a few exceptions. The notable exceptions to this finding are videos per 1,000 population of legal service area, in which all regions experienced dramatic increases (table C); reference transactions per capita, in which libraries in the Mideast and Southeast experienced average annual increases of 7.0 and 8.8 percent, respectively; interlibrary loans received from and provided to other libraries per 1,000 population of legal service area, in which libraries in New England experienced substantial annual increases (averaging 24.5 and 28.7 percent, respectively); state operating income per capita, in which libraries in New England experienced a moderate annual increase (an average of 11.9 percent) and libraries in the Southwest experienced a fairly substantial annual decrease (an average of -15.3 percent); percentage distribution of income from state sources, in which libraries in New England experienced a moderate annual increase (an average of 9.2 percent) and libraries in the Southwest experienced a moderate annual decrease (an average of -9.5 percent); and percentage distribution of income from federal sources, in which libraries in New England and the Mideast experienced fairly substantial annual increases (averaging 21.7 and 17.5 percent, respectively) and libraries in the Southwest and Plains regions experienced fairly substantial annual decreases (averaging -17.5 and -9.2 percent, respectively).

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Table B.—National mean for services variables, by year, and average annual percent change: Fiscal years 1992–96

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<tbody>
<tr>
<td>Circulation per capita</td>
<td>6.4</td>
<td>6.5</td>
<td>6.3</td>
<td>6.4</td>
<td>6.5</td>
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<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
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</tr>
<tr>
<td>Reference transactions per capita</td>
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<td>1.1</td>
<td>1.1</td>
<td>1.1</td>
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<td>Interlibrary loans received per 1,000 PLSA²</td>
<td>30.0</td>
<td>33.0</td>
<td>35.3</td>
<td>38.7</td>
<td>43.4</td>
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¹The average percent change for fiscal years 1992–96 is derived by subtracting the national mean for a variable in one year (e.g., 1992) from the national mean in the next year (1993), then dividing the difference by the mean in the first year, and computing the percentage by multiplying by 100. This number is the percent change for the 2 years (e.g., between 1992 and 1993). Once this calculation is performed for each set of years, the yearly percentages are added together, then divided by four, since there are four ranges in years: 1992–93, 1993–94, 1994–95, 1995–96.
²PLSA = Population of legal service area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Public Libraries Survey (PLS), fiscal years 1992–96. (Originally published as table 6 on p.15 of the complete report from which this article is excerpted.)

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These variables were book/serial volumes per capita, serial subscriptions per 1,000 population of legal service area, and audios and videos per 1,000 population of legal service area; circulation and library visits per capita, and interlibrary loans received from and provided to other libraries per 1,000 population of legal service area; total operating income per capita, state operating income per capita, total operating expenditures per capita, operating expenditures for collections per capita, and operating expenditures for staff per capita; percentage distribution of income from state sources and other sources; and paid FTE librarians with MLS degrees from programs in library and information science accredited by the ALA per 25,000 population of legal service area and total paid FTE staff per 25,000 population of legal service area.
Table C.—Regional means for collections variables, by year, and average annual percent change: Fiscal years 1992–96

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<td>2.1</td>
<td>2.1</td>
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1The average percent change for fiscal years 1992–96 is derived by subtracting the region’s mean for a variable in one year (e.g., 1992) from the region’s mean in the next year (1993), then dividing the difference by the mean in the first year, and computing the percentage by multiplying by 100. This number is the percent change for the 2 years (e.g., between 1992 and 1993). Once this calculation is performed for each set of years, the yearly percentages are added together, then divided by four, since there are four ranges in years: 1992–93, 1993–94, 1994–95, and 1995–96.

2PLSA = Population of legal service area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Public Libraries Survey (PLS), fiscal years 1992–96. (Originally published as table 15 on p. 33 of the complete report from which this article is excerpted.)
Each Region Compared to Other Regions in FY 96

Generally, in FY 96, when compared to the other five regions, libraries in the New England, Great Lakes, and Mideast regions had higher averages for many (15 of the 24) variables of interest listed in figure A. This finding did not hold true for turnover rate, reference transactions per capita, net loan rate, local operating income per capita, state operating income per capita, and percent of income from local, state, federal, and other sources.

In FY 96, libraries in the Southeast, Southwest, and Far West, as compared to the other five regions, generally showed lower averages for many (16 of the 24) variables of interest. Variables that were exceptions to this finding include turnover rate, interlibrary loans provided to other libraries per 1,000 population of legal service area, state operating income per capita, operating expenditures for staff per capita, and percent of income from other sources.

Without further research, the reasons for these regional differences could not be determined. However, a correlation analysis is often used to describe the relationship between two variables. In this case, the correlation analysis indicated that libraries with higher circulation per capita tended to have higher total operating expenditures per capita. To a lesser degree, libraries with higher numbers of visits per capita also tended to have higher total operating expenditures per capita.


For technical information, see the complete report:

Author affiliation: D. Glover, Westat.

For questions about content, contact Adrienne Chute (adrienne.chute@ed.gov).

To obtain the complete report (NCES 2001–324), call the toll-free ED Pubs number (877–433–7827), visit the NCES Web Site (http://nces.ed.gov), or contact GPO (202–512–1800).
Projections of Education Statistics to 2011
Debra E. Gerald and William J. Hussar

Introduction
Projections of Education Statistics to 2011 is the 30th report in a series begun in 1964. This report provides revisions and extensions of projections shown in Projections of Education Statistics to 2010 (Gerald and Hussar 2000). It includes statistics on elementary and secondary schools as well as postsecondary institutions that grant associate’s or higher degrees. For the nation, the report contains data on enrollment, teachers, graduates, and expenditures for the past 14 years and projections to the year 2011. In addition, the report includes projections of public elementary and secondary school enrollment and public high school graduates to the year 2011 at the state level. These projections were produced by the National Center for Education Statistics (NCES) to provide researchers, policy analysts, and others with state-level projections developed using a consistent methodology.

Methodology
The NCES projections presented in this report reflect revised population projections developed by the U.S. Census Bureau based on the 1990 census, but they are not adjusted for the 1990 net undercount of 4 to 5 million. The Census Bureau’s revised population projections incorporate the 1999 intercensal population estimates as well as the latest assumptions for the fertility rate, net immigration, and the mortality rate. The population projections are not based on the 2000 census data; projections of national population data are not scheduled for release until 2002.

As detailed in the full report’s technical appendices, assumptions regarding the population and the economy are the key factors underlying the projections of education statistics. Because projections of time series depend on the validity of many assumptions, these projections are...
uncertain and usually differ from the final reported data. Therefore, this report includes three alternative projections for many of the statistical series. These alternative projections are based on different assumptions about growth paths. Although the first alternative set of projections (middle alternative) is deemed to represent the most likely projections, the low and high alternatives provide a reasonable range of outcomes.

Report structure
The report contains six chapters,* each consisting of a summary essay followed by a number of figures and tables:

<table>
<thead>
<tr>
<th>Chapter title</th>
<th>State-level projections?</th>
<th>Alternative projections?</th>
</tr>
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<tr>
<td>Enrollment in Degree-Granting Institutions</td>
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<td>Yes</td>
</tr>
<tr>
<td>High School Graduates</td>
<td>Yes (for public schools)</td>
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</tr>
<tr>
<td>Earned Degrees Conferred</td>
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</tr>
<tr>
<td>Expenditures of Public Elementary and Secondary Schools</td>
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</table>

This article presents key statistics from each chapter.

Elementary and Secondary Enrollment
Total public and private elementary and secondary enrollment grew throughout the 1990s, with projections indicating an increase of 14 percent between 1990 and 2000 (table A). This increase occurred primarily because of the rise in the number of annual births between 1977 and 1990—sometimes referred to as the baby boom echo. After a period of stability and small declines from 1991 to 1997, the number of births has begun rising again.

Slight increases in total public and private elementary and secondary enrollment are expected until 2005, followed by slight declines for most of the years between 2005 and 2011. Thus, total enrollment is projected to increase from 52.9 million in 1999 to 53.4 million in 2005. Then total enrollment is projected to decrease to 53.0 million by 2011, an overall increase of less than 1 percent from 1999.

Enrollment by grade level
Enrollment in grades K–8 increased from 34.0 million in 1990 to a projected 38.1 million in 2000 (table A), an increase of 12 percent. Enrollment in grades K–8 is projected to increase slightly to 38.2 million in 2001, and then decrease slowly through 2008 to 37.4 million. Thereafter, enrollment in grades K–8 is expected to begin increasing again, rising to 37.7 million by 2011.

Enrollment in grades 9–12 rose from 12.5 million in 1990 to a projected 14.8 million in 2000, an increase of 18 percent. In 2005, enrollment in grades 9–12 is projected to reach an all-time record of 15.8 million, surpassing the previous high of 15.7 million in 1976. Thereafter, enrollment in grades 9–12 is projected to rise to 15.9 million in 2006, before decreasing slightly to 15.3 million by 2011, resulting in an increase of 4 percent from 2000.

Public school enrollment by region and state
While enrollment in the nation’s public elementary and secondary schools is projected to rise less than 1 percent between 1999 and 2011, changes in enrollment will vary by region and by state (figure A). Over this period, public elementary and secondary school enrollment is projected to increase 8 percent in the West and 1 percent in the South. In the Northeast and the Midwest, however, public school enrollment is projected to decrease 4 percent and 3 percent, respectively.

Between 1999 and 2011, public school enrollment is projected to decrease or remain about the same in 31 states, while increasing in 19 states and the District of Columbia. All of the Midwestern states are projected to have decreases, as are all of the Northeastern states except New Jersey. However, increases are expected in all of the Western states and some of the Southern states. The largest increases are expected in Alaska (13 percent), Arizona (10 percent), Hawaii (12 percent), Idaho (17 percent), Nevada (13 percent), and New Mexico (14 percent).

Enrollment in Degree-Granting Institutions
Overall enrollment in degree-granting institutions—hereafter referred to as “college enrollment”—increased 18 percent between 1986 and 1999 and is expected to rise between 1999 and 2011. Changes in age-specific enrollment rates and college-age populations will affect enrollment levels over this period. The most important factor in the projected rise of college enrollment is the projected increase of 17 percent in the traditional college-age population of 18- to 24-year-olds from 1999 to 2011.

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*Expenditures of degree-granting institutions are excluded from this year’s report because of lack of available data for recent years.
Projections of Education Statistics to 2011

Under the middle alternative, college enrollment is projected to increase from 14.8 million in 1999 to 17.7 million in 2011 (figure B), an increase of 20 percent. A 16 percent increase is projected under the low alternative, and a 23 percent increase is projected under the high alternative. The remainder of this discussion focuses on college enrollment projections under the middle alternative.

College enrollment by sex
Women played a major role in the increase of college enrollment between 1986 and 1999. As a share of total college enrollment, women comprised 56 percent of all college students in 1999 compared with 53 percent in 1986. Between 1999 and 2011, the number of women enrolled is expected to increase 24 percent, while the number of men enrolled is expected to increase 14 percent. As a result, women are expected to increase their share of college enrollment to 58 percent during this period.

College enrollment by age
The enrollment of students who are 18 to 24 years old increased from 8.1 million in 1991 to 8.8 million in 1999,
Figure A.—Percent change in grades K–12 enrollment in public schools, by state: Fall 1999 to fall 2011

Figure B.—Enrollment in degree-granting institutions, with alternative projections: Fall 1986 to fall 2011

SOURCE: U.S. Department of Education, National Center for Education Statistics: Common Core of Data (CCD) surveys; and State Public Elementary and Secondary Enrollment Model. (Originally published as figure 7 on p. 9 of the complete report from which this article is excerpted.)

SOURCE: U.S. Department of Education, National Center for Education Statistics: “Fall Enrollment in Colleges and Universities” surveys; Integrated Postsecondary Education Data System (IPEDS) surveys; and Enrollment in Degree-Granting Institutions Model. (Originally published as figure 15 on p. 29 of the complete report from which this article is excerpted.)
an increase of 9 percent. This number is expected to increase to 10.8 million by 2011, an increase of 22 percent from 1999. As a result, the proportion of students who are 18 to 24 years old, which increased from 56 percent in 1991 to 60 percent in 1999, is projected to be 61 percent by 2011.

The enrollment of students who are 25 years and over decreased from 6.1 million in 1991 to 5.8 million in 1999, a decrease of 5 percent. This number is projected to be 6.7 million in 2011, an increase of 15 percent from 1999. The proportion of students 25 years old and over decreased from 43 percent in 1991 to 39 percent in 1999. This proportion is projected to be 38 percent by 2011.

**High School Graduates**

The number of graduates from public and private high schools is projected to increase from 2.8 million in 1998–99 to 3.1 million by 2010–11 (table B), an increase of 11 percent. This increase reflects the projected rise in the 18-year-old population.

Between 1998–99 and 2010–11, the number of graduates from public high schools is also projected to increase 11 percent. The number of public high school graduates is expected to increase 20 percent in the West, 12 percent in the South, 11 percent in the Northeast, and 2 percent in the Midwest. At the state level, 27 states and the District of Columbia are expected to show increases in the number of public high school graduates over this period. The largest increases are expected in Arizona (40 percent), Florida (28 percent), Georgia (28 percent), Nevada (75 percent), and North Carolina (28 percent).

**Earned Degrees Conferred**

Historical growth in college enrollment has led to a substantial increase in the number of earned degrees conferred. Just as the unprecedented rise in the enrollment of women contributed to the overall increase in college enrollment between 1986 and 1999, so too it boosted the number of degrees conferred between 1985–86 and 1997–98, the latest academic year for which historical data are available. Over this period, the number of degrees awarded to women rose at all levels. In 1997–98, women earned the majority of associate’s, bachelor’s, and master’s degrees, as well as more than two-fifths of doctor’s and first-professional degrees.

**Table B.**—High school graduates, by control of institution, with projections: 1985–86 to 2010–11

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<th>Year ending</th>
<th>Total</th>
<th>Public</th>
<th>Private</th>
<th>Year ending</th>
<th>Total</th>
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<td>1996⁴</td>
<td>2,518</td>
<td>2,273</td>
<td>245</td>
<td>2010</td>
<td>3,103</td>
<td>2,802</td>
<td>301</td>
</tr>
<tr>
<td>1997⁴</td>
<td>2,612</td>
<td>2,358</td>
<td>254</td>
<td>2011</td>
<td>3,063</td>
<td>2,765</td>
<td>298</td>
</tr>
<tr>
<td>1998³</td>
<td>2,704</td>
<td>2,439</td>
<td>265</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999³</td>
<td>2,762</td>
<td>2,489</td>
<td>273</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Private school numbers are estimated on the basis of past data.
²Private school numbers are from the Private School Survey.
³Private school numbers are interpolated from the previous year and following year data.

NOTE: Some data have been revised from previously published figures. Prior to 1989–90, numbers for private high school graduates were estimated by NCES. Detail may not add to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics: Key Statistics on Public Elementary and Secondary Schools and Agencies; Common Core of Data (CCD) surveys; 1985 Private School Survey; Private School Survey (PSS), 1995–96; Early Estimates of Public and Private Elementary and Secondary Education Statistics; and National High School Graduates Model. (Originally published as table 23 on p. 58 of the complete report from which this article is excerpted.)
Between 1997–98 and 2010–11, increases in the total number of earned degrees are expected to continue, along with increases in the number of degrees earned at each level. For example, the number of bachelor’s degrees is expected to increase from 1.18 million in 1997–98 to 1.39 million by 2010–11 (figure C), an increase of 18 percent. Over the same period, the number of degrees awarded to women is projected to rise at all levels. While the number of degrees awarded to men is projected to increase at the bachelor’s level, it is projected to remain steady at the associate’s, master’s, doctor’s, and first-professional levels.

Elementary and Secondary Teachers
Between 1999 and 2011, the number of teachers in elementary and secondary schools is projected to rise. The projected increase is related to the levels of enrollments and education revenue receipts from state sources per capita. The projected increase in the number of teachers is related to projected enrollment levels and, especially, to a projected increase in education revenue receipts from state sources per capita. Increases are expected in the numbers of both elementary and secondary teachers. The numbers of both public and private school teachers are projected to grow.

Under the middle alternative, the number of elementary and secondary teachers is expected to increase from 3.30 million in 1999 to 3.65 million by 2011, an increase of 10 percent. A 9 percent increase is projected under the low alternative, and an 11 percent increase is projected under the high alternative.

Expenditures of Public Elementary and Secondary Schools
Current expenditures and average annual teacher salaries in public elementary and secondary schools are both projected to increase between 1998–99 and 2010–11, with current expenditures projected to increase more rapidly.

Current expenditures of public schools
Under the middle alternative, current expenditures of public elementary and secondary schools are projected to increase 34 percent in constant 1999–2000 dollars, from

Figure C.— Bachelor’s degrees, by sex of recipient, with projections: 1985–86 to 2010–11

![Graph](image)
Projections of Education Statistics to 2011

$311.6 billion in 1998–99 to $418.3 billion in 2010–11 (figure D). Under the low alternative, current expenditures are projected to increase 29 percent; under the high alternative, current expenditures are projected to increase 40 percent.

**Current expenditures per pupil in public schools**
Under the middle alternative, current expenditures per pupil in fall enrollment are projected to increase 33 percent in constant 1999–2000 dollars, from $6,696 in 1998–99 to $8,875 in 2010–11.

**Teacher salaries in public schools**
The average teacher salary in constant 1999–2000 dollars is projected to reach $43,216 in 2010–11. This is a 4 percent increase from the level estimated for 2000–01.

**Reference**
The 1998 National Assessment of Educational Progress (NAEP) monitored the performance of students in U.S. schools in the subject areas of reading, writing, and civics. The purpose of this technical report is to provide details on the instrument development, sample design, data collection, and data analysis procedures for the 1998 NAEP national and state assessments. The report includes information necessary to show adherence to the testing standards jointly developed by the American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999) as well as those developed by the Educational Testing Service (1987). Detailed substantive results are not presented here but can be found in a series of NAEP reports covering the status of and trends in student performance; several other reports provide additional information on how the assessments were designed and implemented.

Overview of the NAEP Assessments and Samples in 1998

In 1998, NAEP conducted national main assessments at grades 4, 8, and 12 in reading, writing, and civics, as well as state assessments at grades 4 and 8 in reading and at grade 8 in writing. Long-term trend assessments (which were conducted in 1996 and 1999) were not included in the 1998 NAEP. To provide a context for the 1998 assessments, table A shows the NAEP assessment schedule from 1990 to 2000.

The 1998 NAEP used a complex multistage sample design involving nearly 448,000 students attending public and nonpublic schools. The NAEP subject-area reports (or “report cards”) documenting student performance in 1998 were based on analysis of results from over 113,000 students who took the national main assessments and over 304,000 students who took the state assessments (table B).

---

1In 1998, special studies of specific aspects of writing and civics also took place, but this report does not include information on the analyses conducted for these studies, and it includes only overview information on the study samples.

2Results from some students sampled by NAEP were not included in the NAEP report cards—specifically, students who participated in special studies (rather than in national main or state assessments) and certain special-needs students. See the complete report for details.
Overview of NAEP Analysis Changes Over Time

NAEP strives to maintain its links to the past and still implement innovations in measurement technology. To that end, the NAEP design includes two types of nationally representative samples: long-term trend samples and main assessment samples. Long-term trend assessments have used the same methodology and population definitions for the past 30 years, while main assessments incorporate innovations associated with new NAEP technology and address current educational issues. The national main assessment sample data are used primarily for analyses involving the current student population, but also to estimate short-term trends for a small number of recent assessments. (Some of the assessment materials administered to the national main assessment samples are

---

### Table A.—Schedule for NAEP assessments: 1990–2000

<table>
<thead>
<tr>
<th>Year</th>
<th>National</th>
<th>Long-term trend</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main¹</td>
<td></td>
<td>State²</td>
</tr>
<tr>
<td>1990</td>
<td>mathematics</td>
<td>mathematics</td>
<td>mathematics⁴ (8)</td>
</tr>
<tr>
<td></td>
<td>science</td>
<td>science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reading</td>
<td>reading</td>
<td></td>
</tr>
<tr>
<td></td>
<td>writing</td>
<td>writing</td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td>mathematics</td>
<td>mathematics</td>
<td>mathematics⁴ (4, 8)</td>
</tr>
<tr>
<td></td>
<td>reading</td>
<td>science</td>
<td>reading⁵ (4)</td>
</tr>
<tr>
<td></td>
<td>writing</td>
<td>reading</td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>geography</td>
<td>mathematics</td>
<td>reading⁵ (4)</td>
</tr>
<tr>
<td></td>
<td>U.S. history</td>
<td>science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reading</td>
<td>reading</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>mathematics</td>
<td>mathematics</td>
<td>mathematics (4, 8)</td>
</tr>
<tr>
<td></td>
<td>science</td>
<td>science</td>
<td>science (8)</td>
</tr>
<tr>
<td>1997</td>
<td>arts (8)</td>
<td>writing</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>reading</td>
<td>reading (4, 8)</td>
<td>writing (8)</td>
</tr>
<tr>
<td></td>
<td>writing</td>
<td>writing (8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>civics</td>
<td>writing</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>mathematics</td>
<td>science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reading</td>
<td>reading</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>mathematics</td>
<td>mathematics</td>
<td>mathematics (4, 8)</td>
</tr>
<tr>
<td></td>
<td>science</td>
<td>science (4, 8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reading (4)</td>
<td>writing</td>
<td></td>
</tr>
</tbody>
</table>

¹Before 1984, the main assessments were administered in the fall of one year through the spring of the next. Beginning with 1984, the main assessments were administered after the new year, although the long-term trend assessments continued with their traditional administration in fall, winter, and spring. Because the main assessments constitute the largest component of NAEP, their administration year is listed, rather than the 2 years over which the long-term trend assessments continue to be administered. Note also that the state assessments are administered at essentially the same time as the main assessments.

²In the columns for the main and state assessments, numbers in parentheses indicate the grades at which individual assessments were administered. The main assessments with no numbers in parentheses were administered at grades 4, 8, and 12.

³State assessments began in 1990 and were referred to as Trial State Assessments (TSA) through 1994.

periodically administered to state samples as well.) In continuing to use this two-tiered approach, NAEP reaffirms its commitment to continuing to study trends while at the same time implementing the latest in measurement technology and educational advances.

**Test booklets**

Many of the innovations that were implemented for the first time in 1988 were continued and enhanced in succeeding assessments. For example, a focused balanced incomplete block (focused BIB) booklet design was used in 1988. Since that time, either focused BIB or focused partially balanced incomplete block (focused PBIB) designs have been used. Variants of the focused PBIB design were used in the 1998 national main and state assessments in reading and writing, and a focused BIB design was used in the 1998 national main civics assessment. Both the BIB and PBIB designs provide for booklets of interlocking blocks of items, so that no student receives too many items, but all receive groups of items that are also presented to other students. The booklet design is focused, because each student receives blocks of cognitive items in the same subject area. The focused BIB or focused PBIB design allows for improved estimation within a particular subject area, and estimation continues to be optimized for groups rather than individuals.

**Scale score estimates**

Since 1984, NAEP has applied the plausible values approach to estimating means for demographic as well as curriculum-related subgroups. Scale score estimates are drawn from a posterior distribution that is based on an optimum weighting of two sets of information: students’ responses to cognitive questions and students’ demographic and associated educational process variables. This Bayesian procedure was developed by Mislevy (1991).

---

**Table B.—Student samples for NAEP national main and state assessments: 1998**

<table>
<thead>
<tr>
<th>Type of assessment</th>
<th>Subject area</th>
<th>Grade</th>
<th>Reporting sample size¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>National main</td>
<td>Total for reading, writing, and civics</td>
<td>Total for 4, 8, and 12</td>
<td>113,228</td>
</tr>
<tr>
<td>Reading</td>
<td>Total for 4, 8, and 12</td>
<td>4</td>
<td>7,672</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>11,051</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>12,675</td>
</tr>
<tr>
<td>Writing</td>
<td>Total for 4, 8, and 12</td>
<td>4</td>
<td>19,816</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>20,586</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>19,505</td>
</tr>
<tr>
<td>Civics</td>
<td>Total for 4, 8, and 12</td>
<td>4</td>
<td>5,948</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>8,212</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>7,763</td>
</tr>
<tr>
<td>State²</td>
<td>Total for reading and writing</td>
<td>Total for 4 and 8</td>
<td>304,156</td>
</tr>
<tr>
<td>Reading</td>
<td>Total for 4 and 8</td>
<td>4</td>
<td>206,567</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>112,138</td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td>8</td>
<td>97,589</td>
</tr>
</tbody>
</table>

¹The reporting sample size is the number of students in the sample who were administered the assessment and whose results were used in the NAEP subject-area reports. Those special-needs students who were excluded from the assessment are not included in the reporting sample. For more information, see the complete report.

²The state sample sizes include counts of students from distinct samples for each state or jurisdiction participating in the assessment.

NOTE: The 1998 assessments were administered January 5–March 27, 1998. Final makeup sessions were held March 30–April 3, 1998.

SOURCE: Based on table 1-1 on p. 9 of the complete report from which this article is excerpted.
continued to use an improvement that was first implemented in 1988 and refined for the 1994 assessments. This is a multivariate procedure that uses information from all scales within a given subject area in the estimation of the scale score distribution on any one scale in that subject area.

**Data collection period**

To shorten the timetable for reporting results, the period for national main assessment data collection was shortened beginning in 1992. In the 1990 and earlier assessments, a 5-month period was used (January through May). In 1992, 1994, 1996, and 1998, a 3-month period in the winter was used (January through March, corresponding to the period used for the winter half-sample of the 1990 national main assessment).

**IRT scaling**

A major improvement introduced in the 1992 assessment, and continued in succeeding assessments, was the use of the generalized partial-credit model for item response theory (IRT) scaling. This allowed constructed-response questions that are scored on a multipoint rating scale to be incorporated into the NAEP scale in a way that utilizes the information available in each response category.

**Organization of the Technical Report**

Part I of this report begins by summarizing the design of the 1998 national main and state assessments. Subsequent chapters then provide an overview of the objectives and frameworks for items used in the assessments, the sample selection procedures, the administration of the assessments in the field, the processing of data from the assessment instruments into computer-readable form, the professional scoring of constructed-response items, and the methods used to create a complete NAEP database.

The 1998 NAEP data analysis procedures are described in part II of the report. Following a summary of the analysis steps, individual chapters provide general discussions of the weighting and variance estimation procedures used in the national main and state assessments, an overview of NAEP scaling methodology, and information about the conventions used in significance testing and reporting NAEP results. Part II concludes with chapters that provide details of the data analysis for each subject area. These chapters describe assessment frameworks and instruments, student samples, items, booklets, scoring, differential item functioning (DIF) analysis, weights, and item analyses of the national main and state assessments.

Finally, the report’s appendices provide detailed information on a variety of procedural and statistical topics. Included are explanations of how achievement levels for the subject areas were set by the National Assessment Governing Board (NAGB) and lists of committee members who contributed to the development of objectives and items.

**References**


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For questions about content, contact Arnold Goldstein (arnold.goldstein@ed.gov).

To obtain the complete report (NCES 2001–509), call the toll-free ED Pubs number (877–433–7827), visit the NCES Web Site (http://nces.ed.gov), or contact GPO (202–512–1800).
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**Other Publications**


*Charlotte Solomon, Laura Jerry, and Anthony Lutkus*

For over 30 years, the National Assessment of Educational Progress (NAEP) has been the only ongoing national indicator of what American students know and can do in major academic subjects. In the 1990s, NAEP assessments began collecting state-level as well as national results. The NAEP 2000 Science Assessment collected state-level results for fourth- and eighth-graders who attended public schools in states and other jurisdictions that volunteered to participate. The 1996 assessment collected state-level science results for eighth-graders only.

This series of reports provides each participating jurisdiction with an overview of its results from the 2000 and 1996 science assessments. Each jurisdiction receives its own customized report, which presents results for public school students in that jurisdiction, along with national and regional results for comparison. For the 2000 science assessment, each state report also presents a second set of results that includes the performance of special-needs students who were permitted accommodations in the test administration. In addition, the report includes information about the assessment content, the sample of students assessed, and the way results are reported.

**Author affiliations:** C. Solomon, L. Jerry, and A. Lutkus, Educational Testing Service.

**For questions about content,** contact Holly Spurlock (holly.spurlock@ed.gov).

**To obtain a state report (NCES 2002-453),** visit the NCES Web Site (http://nces.ed.gov).
Paving the Way to Postsecondary Education: K-12 Intervention Programs for Underrepresented Youth

Patricia Gándara with Deborah Bial

This report is a product of the National Postsecondary Education Cooperative (NPEC). NPEC is authorized by Congress and supported by NCES for the purpose of promoting the quality, comparability, and utility of postsecondary education data and information that support policymaking. The report describes K–12 intervention programs designed to increase rates of college-going for groups historically underrepresented in postsecondary education and identifies the data and information necessary for evaluating these programs.

Author affiliation: P. Gándara, University of California, Davis.

For questions about content, contact Nancy B. Borkow (nancy.borkow@ed.gov).
To obtain this publication (NCES 2001–205), call the toll-free ED Pubs number (877–433–7827) or visit the NCES Web Site (http://nces.ed.gov).


Lena McDowell and John Sietsema

This directory provides a complete listing of agencies responsible for providing free public elementary/secondary instruction or education support services in the 50 states, District of Columbia, five outlying areas, Department of Defense Dependents Schools (overseas), and Bureau of Indian Affairs schools. The agencies are organized by state or jurisdiction and, within each state or jurisdiction, by agency type. Seven types of agencies are listed: regular school districts, supervisory union components, supervisory union administrative centers, regional educational service agencies (RESAs), state-operated agencies, federally operated agencies, and other agencies.

For each agency, the directory provides the following information, as reported for the school day closest to October 1, 1998: agency name, mailing address, and phone number; name of county; metropolitan status code; grade span; student membership (number of students enrolled); number of regular high school graduates (for the 1997–98 school year); number of students with Individualized Education Programs (IEPs); number of teachers; and number of schools. This information is collected through the NCES Common Core of Data (CCD) and comes primarily from the CCD’s 1998–99 “Local Education Agency Universe Survey.” Preceding the information on individual agencies are several tables that provide summary information, such as numbers and percentages of agencies by type, size, and state.

Author affiliations: L. McDowell and J. Sietsema, NCES.
For questions about content, contact Lena McDowell (lena.mcdowell@ed.gov) or John Sietsema (john.sietsema@ed.gov).
To obtain this publication (NCES 2001–303), call the toll-free ED Pubs number (877–433–7827) or visit the NCES Web Site (http://nces.ed.gov), or contact GPO (202–512–1800).

Selected Papers in School Finance: 2000–01

William J. Fowler, Jr. (editor)

This publication is the latest in the Selected Papers in School Finance series, for which NCES commissions papers that address issues of interest to the education finance community. The papers are intended to promote the exchange of ideas and to raise awareness of new techniques for working with school finance data.

The four papers in this publication reflect the NCES tradition of commissioning papers on various measurement issues facing the education finance community. The following specific issues are addressed: understanding how teacher compensation has changed over time; conceptual and methodological approaches for making inflation and geographic cost adjustments in education; tools of the trade for assessing the financial condition of public school districts; and attempting to devise a synthesis of two divergent approaches to school-level financial reporting.

Editor affiliation: W.J. Fowler, Jr., NCES.
For questions about content, contact William J. Fowler, Jr. (william.fowler@ed.gov).
To obtain this publication (NCES 2001–378), call the toll-free ED Pubs number (877–433–7827) or visit the NCES Web Site (http://nces.ed.gov).
Mini-Digest of Education Statistics: 2000
Charlene Hoffman

The Mini-Digest of Education Statistics: 2000 (the eighth edition) is a pocket-sized compilation of statistical information covering American education from kindergarten through graduate school. It presents brief text summaries and short tables that serve as a convenient reference for materials found in much greater detail in the complete Digest of Education Statistics.

The Mini-Digest includes sections on elementary/secondary and postsecondary enrollments, teachers and staff, educational outcomes, and finance. The data are from numerous sources, especially the results of surveys and activities carried out by NCES. Current and past-year data are included, as well as projections for elementary/secondary enrollment through 2010.

Author affiliation: C. Hoffman, NCES.
For questions about content, contact Charlene Hoffman (charlene.hoffman@ed.gov).
To obtain this publication (NCES 2001–046), call the toll-free ED Pubs number (877–433–7827) or visit the NCES Web Site (http://nces.ed.gov).

11th Federal Forecasters Conference: Papers and Proceedings
Debra E. Gerald (editor)

The 11th Federal Forecasters Conference, held September 14, 2000, in Washington, DC, provided a forum where forecasters from different federal agencies and other organizations could meet and discuss various aspects of forecasting in the United States. The theme of the conference was “Forecasting, Policy, and the Internet.”

One hundred and eighty forecasters attended the day-long conference. A variety of papers were presented on topics related to agriculture, the economy, health, labor, population, and forecasting software. These papers are included in these proceedings.

Editor affiliation: D.E. Gerald, NCES.
For questions about content, contact Debra E. Gerald (debra.gerald@ed.gov).
To obtain this publication (NCES 2001–036), call the toll-free ED Pubs number (877–433–7827).

The Condition of Education 2001 in Brief
John Wirt and Andrea Livingston

The 2001 edition of The Condition of Education, a congressionally mandated NCES annual report, presents 59 indicators of the status and progress of education in the United States. The Condition of Education 2001 in Brief is a convenient reference brochure that contains abbreviated versions of 27 indicators from the full-length report, including graphics as well as descriptive text.

Like the report from which it is excerpted, The Condition of Education 2001 in Brief contains sections on participation in education, learner outcomes, student effort and academic progress, the quality of school environments, the context of postsecondary education, and societal support for learning. It presents data from many NCES studies as well as other sources, both government and private.
Training and Funding Opportunities

Training

This summer, NCES will be offering training seminars on the analysis of the following NCES databases:

- Early Childhood Longitudinal Study (ECLS) (May 20–23);
- National Assessment of Educational Progress (NAEP) (June 17–20);
- National Education Longitudinal Study of 1988 Eighth-Graders (NELS:88) (May 28–31);
- National Household Education Surveys Program (NHES) (July 29–August 1);
- Program for International Student Assessment (PISA) (July 29–August 1);
- Schools and Staffing Survey (SASS) (June 24–27); and
- Education finance data from the Common Core of Data (CCD), ECLS, and SASS (May 28–31).

These seminars are designed for researchers in academic communities who are interested in quantitative studies. Each seminar is 4 days long and covers several topics, including the nature and contents of the database, statistical and technical methods for using the database, and computer software for accessing and analyzing the data. Seminar activities include lectures, illustrations, demonstrations, and hands-on practice. At the end of each seminar, participants are expected to make a brief presentation describing their analyses and findings.

For more information, contact Samuel Peng (samuel.peng@ed.gov).

The AERA Grants Program

Jointly funded by the National Science Foundation (NSF), NCES, and the Office of Educational Research and Improvement (OERI), this training and research program is administered by the American Educational Research Association (AERA). The program has four major elements: a research grants program, a dissertation grants program, a fellows program, and a training institute. The program is intended to enhance the capability of the U.S. research community to use large-scale data sets, specifically those of the NSF and NCES, to conduct studies that are relevant to educational policy and practice, and to strengthen communications between the educational research community and government staff.

Applications for this program may be submitted at any time. The application review board meets three times per year. The following are examples of grants recently awarded under the program:

Research Grants

- Mark Beasley, St. John’s University—Effects of Educational Opportunity on the Intraschool Distribution of Eighth-Grade Mathematics Achievement in the U.S. and Korea: Multilevel Analyses of TIMSS
- Douglas Downey, Ohio State University—When the Time Is Right: Delayed Entry to Kindergarten and Its Consequences for Stratification
- Ithel Jones, Florida State University—Social and Academic Effects of Varying Types of Preschool Experiences
- Lois Joy, Smith College—Gender Differences in the Transition From College to Work: Salaries, Occupations, and Job Changes in the Skilled Job Market

Dissertation Grants

- Nora Gordon, Harvard University—Tracking Title I: From Revenues to Inputs to Outcomes
- Jenifer Hamil-Luker, University of North Carolina, Chapel Hill—Differential Participation in and Returns to Education Over the Life Course
The NAEP Secondary Analysis Grant Program

The NAEP Secondary Analysis Grant Program was developed to encourage education researchers to conduct secondary analysis studies using data from the National Assessment of Educational Progress (NAEP) and the NAEP High School Transcript Studies. This program is open to all public or private organizations and consortia of organizations. The program is typically announced annually, in the late fall, in the Federal Register. Grants awarded under this program run from 12 to 18 months and awards range from $15,000 to $100,000. The following grants were awarded for fiscal year 2001:

- David Grissmer, Rand Corporation—Analyzing State NAEP Data to Address Educational Policy Issues in K–12 Education
- Lawrence Rudner, LMP Associates, Inc.—Scoring Content Essays Using Bayesian Networks
- Robert Lissitz, University of Maryland—Science Achievement in Social Contexts: An Alternative Method for Analysis of Data From NAEP
- Richard Niemi, University of Rochester—Components of Knowledge in the NAEP 1998 Civics Main and Trend Assessments
- Daniel Sherman, American Institutes for Research—Application of Small Area Estimation Methods to NAEP
- Claudia Gentile, Educational Testing Service—Evaluating the “Creative” in Creative Writing
- Matthew Schultz, ACT, Inc.—Describing Achievement Levels With Multiple Domain Scores

For more information, contact Edith McArthur (edith.mcArthur@ed.gov) or visit the AERA Grants Program Web Site (http://www.aera.net/grantsprogram).
Index by Topic and Keyword

Early Childhood Education

Elementary and Secondary Education

Achievement, Student
- Civics

Highlights of U.S. Results From the International IEA Civic Education Study (CivEd) (NCES 2001–107) Issue 2, p. 108


What Democracy Means to Ninth-Graders: U.S. Results From the International IEA Civic Education Study (NCES 2001–096) Issue 2, p. 89

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