

Literacy in North Carolina

1998 Edition

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Estimating literacy levels has always been difficult. One obvious difficulty is that we cannot "test" our entire population; another is that relying on self-reported information yields questionable data. Studies of literacy using random sample populations give us some ideas about national literacy levels; comparing correlates of literacy identified in these studies to Census data allows us to make estimates about state and local literacy levels.

Changes in our understanding of what constitutes literacy and what kinds of literacy are needed in different contexts also make it difficult to use the information that is available. For example, 100 years ago people were said to be literate if they could sign their names. Today, our increasingly technological society places greater and more rigorous literacy demands on us. People must be able to read, write, do math, and think critically in the contexts of their work, families, and communities at levels far more advanced than even a generation ago.

National Studies

Over the years, a number of national studies have been conducted to try to draw an accurate picture of U.S. literacy levels. While different in survey design, populations studied and measures used, these studies have resulted in some striking common findings:

- reasonably consistent estimates that however literacy is defined some one-fifth -- or 20% -- of the adult population experiences significant literacy difficulty.
- reasonably consistent correlates of literacy that can be linked to other means of describing the population (e.g. census data), thus allowing rough, but probably useful, estimates to be made at state and local levels.

National Adult Literacy Survey

The Educational Testing Service, under contract from the US Department of Education, surveyed 26,000 adults across the country to profile the English literacy of adults based on their performance on a wide array of tasks that reflect the types of materials and demands adults encounter in daily life. ETS used the results from the test group to generalize about the English literacy of adults nationally. The resulting National Adult Literacy Survey (NALS), published in 1993, gives us several important contributions to

knowledge of literacy. First, NALS gave us this new, outcomes based definition of literacy:

"Literacy is using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential."

NALS applied a construct of three different literacy scales -- prose, document, quantitative:

Prose Literacy -- the knowledge and skills needed to understand and use information from texts that include editorials, news stories, poems, and fiction.

Document Literacy -- the knowledge and skills required to locate and use information contained in forms, schedules, tables, etc.

Quantitative Literacy -- the knowledge and skills required to apply arithmetic operations, either alone or sequentially, using numbers embedded in print materials.

Scores on each scale are plotted ranging from 0-500. By using these scales we can identify many literacy abilities and characteristics and show a progression in five levels of literacy across the scales. The table below gives score ranges, percentages, and numbers of adults who scored at each level of NALS.

National Adult Literacy Survey

Levels and Score Ranges	Percentages and Numbers Scoring at Each Level	Sample Prose, Document, Quantitative Tasks
Level 1 scores 0 - 225	21 - 23 % 40 - 44 million	P: Locate single piece of information stated in short text. D: Locate or enter specific information on a form. Q: Perform single, simple, specified arithmetic operation from numbers provided.
Level 2 scores 226 - 275	25 - 28% 48 - 54 million	P: Make simple inferences, integrate easily identifiable information. D: Cycle through or integrate information from parts of a document. Q: Perform single operations using easily located numbers.
Level 3 scores 276 - 325	33% 60 million	P: Make literal, inferential matches; integrate information from long, dense text with no headings. D: Integrate information from one or more documents: select appropriate information. Q: Perform multiple operations from two or more given numbers.

Level 4 scores 326 - 375	15 - 17% 30 million	P: Integrate or synthesize information from complex or lengthy passages containing conditional information. D: Perform multiple-feature matches, integrate information, make inferences through documents. Q: Perform two or more sequential operations inferred from information on numbers appearing in numerical displays.
Level 5 Scores 376-500	3 – 4% 6 – 8 million	P: Search for information in dense text with distractors, make high-level inferences, use specialized background knowledge, contrast complex information. D: Search through complex displays, make high-level inferences, use specialized knowledge. Q: Perform multiple operations sequentially, inferring features from text or background knowledge.

Results of NALS show that while the nation's literacy skills have risen dramatically in 200 years, we still have large percentages performing at the lowest levels (21-23% at Level 1, 25-28% at Level 2). These individuals tend to be less likely than more literate adults to be employed full-time, to earn high wages, or to vote. They were more likely to receive food stamps, to live in poverty, and to rely on non-print sources for information.

Adults over the age of 16 who performed at Level 1 on the three scales of the 1993 National Adult Literacy Survey have these characteristics:

Education: 62% did not complete high school, and 35% completed fewer than nine years of school.

Age: 33% were 65 years of age or older, and 13% were between 16 and 24 years of age.

Socio-economic status: 41 - 44% were living in poverty; 30% worked full-time, earning from \$230 - \$245 per week; 17-19% reported receiving food stamps.

Race: 51% were White, 20% were Black, 23% were Hispanic, and 4% were Asian/Pacific Islanders.

State Adult Literacy Surveys (SALS)

Included as part of the NALS survey population were 1,000 person samples from each of eleven states (CA, IL, IN, IA, LA, NJ, NY, OH, PA, TX, and WA) that elected to participate. These eleven states emerged from NALS with individual state literacy profiles. Three other states have conducted similar surveys. The SALS states can use their profiles to compare themselves with the nation as a whole, or with one another.

Synthetic Estimates of Adult Literacy

In 1993, Stephen Reder and other researchers at the Northwest Regional Educational Laboratories, Portland State University, developed "synthetic estimates" of literacy. They combined Census data elements known to relate to literacy (e.g. poverty, education level) and applied statistical formulas to produce estimates of literacy levels that are not available from any single source. By comparing these synthetic estimates against actual NALS performance for each of the SALS states, the researchers are able to demonstrate consistency between actual results and synthetic estimates. Thus, for states that did not participate in SALS, it is possible to estimate literacy levels using Census data.

In 1997, Reder and his associates extended the synthetic estimates to local counties, and in some cases cities. The 1997 synthetic estimates use updated Census data, slightly changing the statewide synthetic estimates and giving us more specific information about smaller units of population. We can now report literacy data for counties, cities and congressional districts. Local literacy and human service organizations can use the county and city estimates to support the need for literacy programming. They can use congressional district data to advocate for legislation supporting literacy programs.

North Carolina's Literacy Picture

North Carolina did not elect to participate as a SALS state. However, we can use the 1994 and 1997 synthetic estimates to tell us a great deal about adult literacy issues in our state. The percentages of adults in Levels 1 and 2 show the extent of literacy need. Comparing North Carolina estimates to those of other states provides a sense of how our state relates to the national picture. For the first time, we have reasonably reliable estimates of literacy levels in counties and some cities.

The percent and number of adults who would likely have scored at Levels 1-5 of NALS are shown in the table below.

**Synthetic Estimates of Adult Literacy
North Carolina, 1994 and 1997**

	1994 Estimate	1997 Estimate
Mean Proficiency	268	265
Percent in Level 1	18%	22%
Percent in Level 2	32%	30%
Percent in Levels 3-5	50%	48%
Population 16 and Above	4,970,739	5,203,230

In 1994, some 18% (approximately 894,733) of adults were estimated to perform at Level 1. In 1997, Level 1 performance was estimated at nearly 22% (approximately 1,139,507 of adults). These adults would be likely to have serious literacy difficulties and to need significant literacy instruction.

In 1994, another 32% (approximately 1,590,636) and in 1997, nearly another 30% (approximately 1,560,969) of adults would have scored in Level 2. While these adults may do very well in everyday literacy tasks, it is likely that they could still benefit from literacy instruction.

The differences in the 1994 and 1997 estimates suggest a possible shift in the Level 1 and Level 2 numbers. This may mean that the need for the most basic literacy instruction is growing.

Using the synthetic estimates, we can also compare North Carolina literacy rates with those of other states.

Combined mean proficiencies:

- ❑ In 1994, states' combined mean proficiencies ranged from 294 (AK) to 254 (DC). North Carolina ranked 38th with a combined mean proficiency of 268.
- ❑ In 1997, states' combined mean proficiencies ranged from 290 (UT) to 247 (MS). North Carolina ranked 41st with a combined mean proficiency of 265.

Level 1:

- ❑ In 1994, 20% or more adults in six states (AL, LA, MS, NY, SC, TX) and the District of Columbia were estimated to score at Level 1, exceeding the NALS percentages. In ten more states (AR, CA, FL, GA, KY, NC, RI, NY, VA, WV) between 16% and 19% of adults were estimated to score at Level 1, just below the NALS percentages.
- ❑ In 1997, 20% or more adults in eighteen states (AL, CA, FL, GA, IL, LA, MD, MS, NC, NJ, NM, NY, OR, SC, TN, TX, WA, WV), and the District of Columbia were estimated to score at Level 1. In fourteen more states (AZ, CT, DE, IN, KY, MA, MI, MO, HI, OH, OK, PA, RI, VA) between 16% and 19% of adults were estimated to score at Level 1, just below the NALS percentages.

North Carolina's place in the rankings of combined mean proficiency and the percentages of adults in Levels 1 and 2 suggests a serious literacy need throughout our state.

While the percentage of North Carolina adults in Level 1 grew from 1994 to 1997, the percentage is similar to the NALS national figures. This fact should not be used to engender complacency. Given the state's low combined mean percentage and its place among the states with 50% or more in Levels 1 and 2, North Carolina can be said to experience significant adult literacy needs.

A look at 1997 Level 1 and 2 percentages separately adds important new information. In North Carolina, 22% of adults were estimated to score at Level 1, and another 30% at Level 2. This suggests that while we have a significant basic literacy need in our state we have perhaps a greater need for literacy and basic skills at the more advanced level of applying literacy skills in a variety of contexts at home, at work, and in our communities.

Local Information: Estimating Literacy Rates for Counties and Cities

Synthetic estimates are available by state, congressional district, county, and in some cases city. The full complement of estimates can be found in two other sources, along with pertinent population statistics from the Census. One of these, *The State of Literacy in America* (1998), is a publication of the National Institute for Literacy available from NC LRC or from the Institute. The other source is the database of synthetic estimates found on the World Wide Web on a site (<http://www.casas.org/lit/litcode>) maintained by Comprehensive Adult Student Assessment System (CASAS) and on the National Institute for Literacy site (<http://www.novel.nifl.gov>). Both sites include excellent descriptive information about the development and significance of the synthetic estimates and their interpretation. They also give directions for moving to tables showing data organized in a number of useful ways. Entries include census data, synthetic estimates of literacy levels, educational achievements, etc. Links to the CASAS and NIFL sites are available from NC LRC's WWW site (<http://www.state.nc.us/NCLRC/home>).

Synthetic Estimates for North Carolina Counties and Cities

In tables below, we present synthetic estimates for North Carolina counties and cities. Included are mean literacy proficiencies and percentages of adults estimated to have scored at Levels 1, 2, and 3-5. The estimates are organized alphabetically. We have not included estimates by congressional districts due to recent changes in these districts in our state.

Exploration of the county estimates provides information about literacy needs in local areas.

Counties with the highest percentages of adults in Level 1 include Bertie, Northampton, Warren, Halifax, and Hertford. In 46 counties the percentage of adults in Level 1 is higher than the state's overall 22%.

Counties with the highest percentages of adults in Level 2 include Alleghany, Graham, Warren, Bertie, Mitchell, Montgomery, and Northampton. In 76 counties the percentage of adults in Level 2 is higher than the state's overall 30%.

Counties with the highest percentages of adults in Levels 3-5 include Orange, Wake, Dare, Watauga, and Mecklenberg. In 25 counties, the percentage of adults in Levels 3-5 is larger than the state's overall 48%.

The above information demonstrates again that literacy is linked to other social and educational characteristics. Among counties the greatest literacy needs appear in counties that are poor, rural, isolated and have the least available access to educational services. In contrast, wealthy counties with highest educational levels have the highest percentages of literate adults.

Using the County and City Estimates

Individuals desiring trustworthy estimates of literacy for North Carolina counties or cities can use the data in the tables below with some confidence. Possible uses include:

- demonstrating the extent of literacy needs in a given community,
- placing literacy within a spectrum of community issues,
- determining whether enough of a community's resources are being used to address literacy issues.

Individuals can use the tables to get a "snapshot" of literacy in a particular county or city, and to make some inferences about that county or city's standing in the state. Begin by comparing data elements (mean proficiency, percentage at Levels 1, 2, or 3-5) to state levels. Then check to see where the data elements fall within the ranges for each. This will yield a sense of how the county or city compares with others in the state. If, for example, a particular county's mean proficiency is lower than the state's, it is likely that the percentage in Levels 3-5 will also be lower. The percentage in Levels 1 and 2 are likely to be higher than the state. How significant the difference is will depend in part on how far from the state the local percentages are.

In using the estimates, individuals should remember that they are just that – estimates. The picture they provide is one of literacy broadly defined. The definitions of literacy and the kinds of tasks that characterize literacy levels show that literacy is multi-dimensional.

We recommend that users of the county and city estimates use the definitions and refer also to the CASAS Web Site. This will create a context for understanding the estimates. For example, each estimated level is accompanied by a "95% confidence level," that shows a range within which the literacy rate is likely to fall 95% of the time. The Census Predictors provide information on factors such as education level, English proficiency, race/ethnicity, and work related factors. Examining these factors will give users a fuller understanding of the inter-relationships of literacy and other social and educational factors.

(This document is an updated version of "Literacy in North Carolina," a 1995 publication of NC Literacy Resource Center. It includes more recent estimates of literacy levels for the state and newly available estimates for counties and cities.)

Synthetic Estimates of Adult Literacy North Carolina Counties

(Counties with fewer than 5,000 individuals age 16 and above are not included)

County	Mean Literacy Proficiency	Percent at Level 1	Percent at Level 2	Percent at Levels 3-5
Alamance	266	20	31	49
Alexander	260	16	37	47
Alleghany	251	21	40	39
Anson	239	33	36	31
Ashe	253	21	38	41
Avery	265	18	34	48
Beaufort	252	27	34	39
Bertie	224	42	39	19
Bladen	240	33	37	30
Brunswick	261	24	31	45
Buncombe	274	18	27	55
Burke	260	19	34	47
Cabarrus	265	18	32	50
Caldwell	257	18	37	45
Camden *				
Carteret	274	18	28	54
Caswell	236	33	38	29
Catawba	271	16	30	54
Chatham	264	22	29	49
Cherokee	258	21	36	43
Chowan	247	31	34	35
Clay	260	22	34	44
Cleveland	257	22	34	44
Columbus	245	31	36	33
Craven	265	23	29	48
Cumberland	266	24	28	48
Currituck	263	19	36	45
Dare	284	12	26	62
Davidson	265	17	34	49
Davie	267	18	32	50
Duplin	241	32	36	32
Durham	271	24	23	53
Edgecombe	235	35	37	28

County	Mean Literacy Proficiency	Percent at Level 1	Percent at Level 2	Percent at Levels 3-5
Forsyth	272	21	26	53
Franklin	248	28	36	36
Gaston	261	20	34	46
Gates	239	35	35	30
Graham	251	21	40	39
Granville	242	31	35	34
Greene	239	33	36	31
Guilford	274	21	25	54
Halifax	231	38	38	24
Harnett	254	25	34	41
Haywood	267	18	32	50
Henderson	275	18	27	55
Hertford	234	38	36	26
Hoke	238	34	38	28
Hyde *				
Iredell	265	19	31	50
Jackson	276	15	30	55
Johnston	257	23	33	44
Jones	245	32		
Lee	262	24	29	47
Lenoir	247	30	35	35
Lincoln	263	17	35	48
Macon	266	20	32	48
Madison	260	19	37	44
Martin	239	34	37	29
McDowell	260	19	35	46
Mecklenberg	278	20	22	58
Mitchell	252	21	39	40
Montgomery	244	27	39	34
Moore	267	22	27	51
Nash	255	26	33	41
New Hanover	275	20	25	55
Northampton	222	42	39	19
Onslow	270	18	31	51
Orange	293	15	18	67
Pamlico	258	28	31	41
Pasquotank	252	29	33	38

County	Mean Literacy Proficiency	Percent at Level 1	Percent at Level 2	Percent at Levels 3-5
Pender	253	28	33	39
Perquimans	247	30	35	35
Person	252	25	34	41
Pitt	266	23	29	48
Polk	263	21	31	48
Randolph	263	15	37	48
Richmond	247	28	36	36
Robeson	250	27	36	37
Rockingham	251	24	36	40
Rowan	263	21	32	47
Rutherford	256	21	35	44
Sampson	247	29	35	36
Scotland	246	30	35	35
Stanly	260	20	34	46
Stokes	260	17	37	46
Surry	259	19	36	45
Swain	255	23	36	41
Transylvania	270	19	30	51
Tyrell *				
Union	267	17	32	51
Vance	240	33	37	30
Wake	287	17	19	64
Warren	223	41	40	19
Washington	238	33	37	30
Watauga	288	12	27	61
Wayne	256	26	32	42
Wilkes	255	20	38	42
Wilson	249	30	33	37
Yadkin	259	19	34	47
Yancey	257	21	35	44

* Counties marked with an asterisk (*) have populations too small to calculate reliable synthetic estimates.

**Synthetic Estimates of Adult Literacy
Selected North Carolina Cities and Towns**

City / Town	Mean Literacy Proficiency	Percent at Level 1	Percent at Level 2	Percent at Levels 3-5
Albemarle	253	26	34	40
Asheboro	260	20	34	46
Asheville	268	24	27	49
Boone	304	10	22	68
Burlington	266	22	29	49
Camp LeJeune	269	19	32	49
Carrboro	304	14	12	74
Cary	308	8	12	80
Chapel Hill	309	12	14	74
Charlotte	275	22	23	55
Concord	262	23	30	47
Durham	270	27	22	51
Eden	250	26	36	38
Elizabeth City	242	38	33	29
Fayetteville	265	28	24	48
Fort Bragg	271	19	29	52
Garner	284	15	22	63
Gastonia	256	26	32	42
Goldsboro	250	33	29	38
Graham	262	21	32	47
Greensboro	275	23	23	54
Greenville	278	21	24	55
Havelock	278	14	30	56
Henderson	231	38	38	24
Hickory	272	20	26	54
High Point	263	25	29	46
Jacksonville	272	21	25	54
Kannapolis	250	24	37	39
Kernersville	278	12	29	59
Kinston	233	40	35	25
Laurinburg	243	35	35	30
Lenoir	254	23	35	42
Lexington	246	28	35	37
Lumberton	251	30	33	37

City / Town	Mean Literacy Proficiency	Percent at Level 1	Percent at Level 2	Percent at Levels 3-5
Matthews	304	9	15	76
Mint Hill	293	10	22	68
Monroe	251	28	34	38
Morganton	259	23	31	46
New Bern	250	33	30	37
Raleigh	285	20	18	62
Reidsville	244	33	35	32
Roanoke Rapids	261	23	32	45
Rocky Mount	247	33	30	37
Salisbury	256	30	29	41
Sanford	254	30	29	41
Shelby	241	34	33	33
Statesville	254	29	30	41
Tarboro	250	29	33	38
Thomasville	249	25	36	39
Wilmington	262	28	27	45
Wilson	247	34	31	35
Winston-Salem	265	27	25	48

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