Literacy Needs Assessment Technical Report for Cuyahoga County

Prepared for:

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Literacy Needs Assessment Technical Report for Cuyahoga County
Executive Summary

Having low literacy skills could impact everything from reading a newspaper and balancing a checkbook to wise consumer decisions and job advancement. This study estimates adult literacy measures for Cuyahoga County, Ohio and its municipalities. It is also important to have a sense of how many children are at risk for developing literacy problems as adults, and these estimates are also generated. Finally, many efforts are already underway in communities across the county to try to help those who do struggle with literacy issues. The last portion of the research analyzes the distribution of literacy service providers.

Background and Methodology

Adult Literacy

The National Adult Literacy Survey (NALS) forms the basis of the adult literacy estimates in this report. However, this survey is outdated (completed in 1992) and was administered to a statewide sample that does not allow for direct estimates in Cuyahoga County. Therefore, the estimates in this report rely on a statistical model developed by Stephen Reder, which is described later.

As part of the NALS, participants were asked to complete a series of tasks in each of the three literacy dimensions – prose literacy, document literacy, and quantitative literacy. Each of these were disaggregated into five levels, with Level 1 representing the most basic literacy level and Level 5 representing the most complex. Most of the people within the Level 1 literacy range (0 to 225) are able to read to some extent; only those at the lowest range of Level 1 are not able to read at all. People with Level 1 literacy are thought to be at a severe disadvantage economically, in the sense that they are likely to be excluded from all but minimum-wage work.[1]

Individuals with Level 2 literacy (226 to 275) are thought to be at a disadvantage in terms of being able to meet the demands of 21st century life.[2] Level 3 literacy, with scores between 276 and 325, has been labeled as the minimum standard necessary for life in the 21st century by the National Governors' Association and the National Educational Goals Panel.[3] Level 4 (326 to 375) and Level 5 (376 to 500) literacy represent the two highest literacy levels.

The main criticism of the NALS is that its scoring is too severe and underestimates the literacy of an individual. Though the NALS provided a lot of information about the literacy abilities of the adult population nationwide, state and local programs wanted

[1] Comings, J., S. Reder, and A. Sum. 2001. *Building A Level Playing Field – The Need to Expand and Improve the National and State Adult Education and Literacy Systems.* National Center for the Study of Adult Learning and Literacy. Accessed online at http://gseweb.harvard.edu/~ncsall/research/op_comings2.pdf
[2] Ibid.
[3] Ibid.

more local adult literacy data. To meet this need, without the expense of conducting surveys, Stephen Reder developed a mathematical model that produced literacy estimates for the adult population for counties, congressional districts, and cities, towns, and places.[4]

Ultimately, the model that Reder developed predicted the literacy proficiencies of the adult population aged 16 and over in counties based on the aggregate characteristics of individuals in those areas. These aggregate characteristics included educational attainment, race, ability to speak English, immigrant status, weeks worked, occupation, and labor force status. Initially, Reder used the individual data collected during the NALS and aggregated those results to counties.[5] Using data from the NALS and the U.S. Census, Reder developed statistical models that predicted county-level NALS literacy proficiency.

While the method developed by Reder allows for literacy estimates to be generated for places smaller than the nation, there are several points to keep in mind. First, the model assumes that relationships modeled at the county level will also be valid for congressional districts, and cities, towns, and places. Reder notes that while there is a lack of validating information for these smaller geographic units, without local literacy surveys these estimates may be the best information that is available.[6] It is also important to keep in mind that Reder's models do not predict an individual's literacy skills. Instead, literacy proficiency estimates for areas are estimated based on the aggregate social and demographic characteristics of individuals in a particular area.

One of the goals of this research was to update literacy estimates for Cuyahoga County and its municipalities using 2000 U.S. Census data[7]. By doing this, an assumption is being made that the relationships among the variables, i.e. the degree to which each variable in the model contributes to literacy, has remained constant between 1990 and 2000. If the relationships changed between 1990 and 2000, then the predicted literacy proficiency estimates will not be accurate.

Another point to consider is that Reder's initial model calculated literacy proficiency estimates for counties, cities, towns, and places with a population greater than 5,000. There are some places in Cuyahoga County and some neighborhoods in the City of Cleveland with populations less than 5,000. While literacy proficiency estimates will be calculated for all places within Cuyahoga County, the reliability of the estimates for the smallest places needs to be considered when analyzing the results.

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[4] Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas. Accessed online at http://www.casas.org/lit/litdata/reder.pdf

[5] During the NALS, households from 417 counties throughout the country were surveyed.

[6] Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas. Accessed online at http://www.casas.org/lit/litdata/reder.pdf

[7] There were a few Census variables that differed between 1990 and 2000; namely, the variables associated with occupational categories and work limiting disabilities. Because of the changes, the exact same variable could not be incorporated in 2000, as it was in 1990, but available variables that were similar were included in the regression models.

Child Literacy

Unlike the adult literacy estimates where a pre-existing mathematical model was used to generate updated local literacy estimates, a similar mathematical model does not exist for child literacy. With the child literacy assessment, children at risk of developing literacy problems as adults are identified. To conduct the analysis, the child population is broken down into three different groups:

Early Childhood Population

Prior research has shown that children born to mothers with low levels of education are less likely to have early literacy skills and are less ready to read when they go to school. Using birth certificate data from the Ohio Department of Health from 1998 - 2002, the number of birth mothers with less than a high school degree and the percent of births to mothers with less than a high school degree were calculated.

School-Age Population

To assess the literacy of school-age children, data from the Ohio Department of Education are analyzed, specifically the Local Report Cards for 4th and 9th grade.[8] The data are presented by school building by school district by year, beginning with the 1998-1999 school year. The Report Cards contain data on Citizenship, Math, Reading, Writing, and Science proficiency.

Youth Population Aged 16-19

One of the measures used to identify youth at risk of having literacy problems is the number of dropouts. This measure is based on U.S. Census data, and dropouts are defined as the youth aged 16-19 not enrolled in school and not a high school graduate.

Literacy Providers

The final portion of the literacy assessment involves mapping the distribution of known literacy providers. The list of literacy providers was supplied by Cleveland Reads.[9] The addresses for the 196 literacy providers were geocoded, or assigned latitude and longitude along with other geographic attributes, such as the census tract, using MapMarker software. The geocoding made it possible to map the location of the literacy providers and to compare the distribution to other variables.

[8] Ohio Department of Education data were downloaded from: http://ilrc.ode.state.oh.us/Power_Users.asp

[9] After the presentation of the initial findings, the Cleveland Municipal School District, Adult and Continuing Education supplied the Center on Urban Poverty and Social Change with an additional 7 sites that provided English classes for speakers of other languages, which were not included in the Cleveland Reads list.

Results

Adult Literacy Proficiency Estimates

The three measures of adult literacy proficiency for the 2000 population were calculated using Reder's mathematical models.

Mean Literacy Proficiency

The mean literacy proficiency score for Cuyahoga County in 2000 was 273, which is at the upper end of the Level 2 scale (226 – 275). This estimate is up slightly from the mean of 270 in 1990; however, the difference between 1990 and 2000 is not statistically significant. Similarly, the City of Cleveland experienced slight increases in its mean literacy proficiency during the 1990s, from 240 to 244. Again, the differences were not statistically significant. Inner ring suburbs had a mean proficiency of 279 in 1990 and 280 in 2000, which falls into the Level 3 range (276 – 325). The mean literacy proficiency estimates for outer ring suburbs were 293 in 1990 and 295 in 2000. As with the inner ring suburbs, the outer ring suburbs also had mean proficiencies in the Level 3 range.

The 1990 mean literacy proficiency for Cuyahoga County (270) is similar to that for Ohio (275). When Cuyahoga County is compared to other counties in the metropolitan area, though, it has the lowest mean literacy proficiency. With a mean literacy proficiency of 240 (Level 2), Cleveland had the lowest mean compared to the other largest cities in Ohio. When compared to eight Northern Industrial cities, only Newark, Detroit, and Baltimore had lower mean literacy proficiencies than Cleveland.

Percent at Level 1 Literacy

The second measure of adult literacy estimated was the percent of the population aged 16 and older at Level 1 literacy. In 1990 in Cuyahoga County, 25% of the adult population, approximately 277,290 people, were at Level 1 literacy. By 2000, the percent of the population in Cuyahoga County at Level 1 literacy had declined to 15%, or approximately 162,530 adults aged 16 and over. This decrease between 1990 and 2000 represents a statistically significant difference.

After analyzing the individual factors used in the statistical modeling in more detail, the following trends were identified – more people were employed, more people were working more weeks in a year, and more people had more post-secondary education – between 2000 and 1990. The improvements in these different variables are likely the result of the prosperous economy of the 1990s. Did the literacy skills really change for individuals during this time? It is not possible to say since the statistical model does not predict an individual's literacy level. However, with improvements in the education and labor force factors, one would expect to find fewer people at the lowest literacy levels countywide.

The percent at Level 1 literacy for the City of Cleveland declined from 36 percent in 1990 to 31 percent in 2000, which represents a statistically significant decrease. The inner and outer-ring suburbs experienced slight increases in the percent at Level 1

literacy, though the changes were not statistically significant. It is likely that the small increases were capturing the demographic shift in population that occurred during the 1990s as many people moved out of Cleveland and into other suburbs in Cuyahoga County. Estimates for the percent at Level 1 literacy for each Cleveland neighborhood and suburban municipality are available in the full report.

Percent at Level 1 or Level 2 Literacy

The final measure of adult literacy calculated was the percent of the population aged 16 and over with Level 1 or Level 2 literacy. Unlike the estimates for the percent at Level 1 countywide, the percent at Level 1 or Level 2 in Cuyahoga County did not experience significant changes between 1990 and 2000. In both time periods, about half of the population had literacy skills below (what is considered to be) the minimum standard for good paying jobs with decent benefits.

The patterns within Cuyahoga County were similar to those at the county level between 1990 and 2000. For the City of Cleveland, the percent at Level 1 or Level 2 decreased from 72% to 69%. Meanwhile, in the inner-ring suburbs the decrease was from 42% to 41%, and the outer-ring suburban decrease went from 33% to 31%. None of the changes were statistically significant. Estimates for the percent at Level 1 or Level 2 literacy for each Cleveland neighborhood and suburban municipality are in the full report.

Adult Literacy Estimate Caveats

It is important to reiterate that the adult literacy estimates calculated for 2000 are based on a model that was originally constructed using county-level data collected for the nation in 1990 and 1992. Initially, then, one issue to consider is how comparable Cuyahoga County is to the nation. Second, the relationships between the literacy variables and the predictor variables were originally generated using 1992 literacy data and 1990 U.S. Census data. Without more recent literacy data to include in the model, the assumption was made that the relationships between the literacy and predictor variables remained constant between 1990 and 2000. If either of these assumptions were violated, then the literacy estimates calculated under a new set of assumptions would most likely differ from the ones calculated here.

Third, it is also important to remember that the literacy estimates are calculated using demographic indicators, and the indicators describe geographic areas, not individuals. Thus, changes in literacy estimates between 1990 and 2000 do not tell us anything about how an individual's literacy may have changed over time. Instead, the model tells us more about changes in factors that are thought to be important in predicting literacy (such as educational attainment, non-English speaking population, recent immigrants, etc.). Despite these limitations, without conducting a survey of the Cuyahoga County population that assesses an individual's literacy skills, the model estimates do provide a feasible alternative.

While the Reder synthetic estimates seem to be a common way to estimate the literacy of the adult population, an Internet and literature search uncovered four other ways that literacy has been measured in Cuyahoga County. The literacy measures in these analyses

were as follows: reading activity (as opposed to reading ability); financial literacy; workplace literacy; and health literacy. The results from these studies are presented in more detail in the full report.

Child Literacy

The child literacy in Cuyahoga County is being analyzed in terms of three different age groups, which are discussed in more detail below.

Early Childhood Population

By looking at the percent of babies born to mothers with less than a high school degree, the number of children under age 6 who are likely to experience literacy problems can be estimated. Between 1998 and 2002 in Cuyahoga County, approximately 16,600 babies, or 1 in 5 births (20%), were to mothers with less than a high school degree. In the City of Cleveland, almost 11,300 of the 35,100 births, or 1 in 3 (33%), were to mothers without a high school diploma. The percentages were lower in the inner- and outer-ring suburbs, 9% and 4%, respectively.

School-Age Population

Proficiency test data measures student performance across a variety of subject areas. In analyzing the proficiency data, the assumption is being made that the inability to pass the various tests suggests that students do not have the skills needed in a particular subject area. Whether or not this means that a student is unable to meet the challenges to function in both work and society later in life remains to be seen.

Proficiency data from the Ohio Department of Education provides the passage rate for five subjects – reading, writing, math, science, and citizenship. For both the 4th and 9th grade proficiency data analyzed for this report, the state requirement for each school is 75% passing. The results are summarized in terms of schools meeting and not meeting this state requirement.

For the 4th grade reading test in 2003-2004, 119 out of 175 public schools in Cuyahoga County (68%) did not meet the 75% state requirement. Of the 119 schools, 72, or 60%, were in the Cleveland Municipal School District. In terms of the 9th grade reading proficiency test, six out of 54 schools (11%) did not meet the state requirement in the 2002-2003 school year. Five of the six schools were located in the Cleveland Municipal School District.

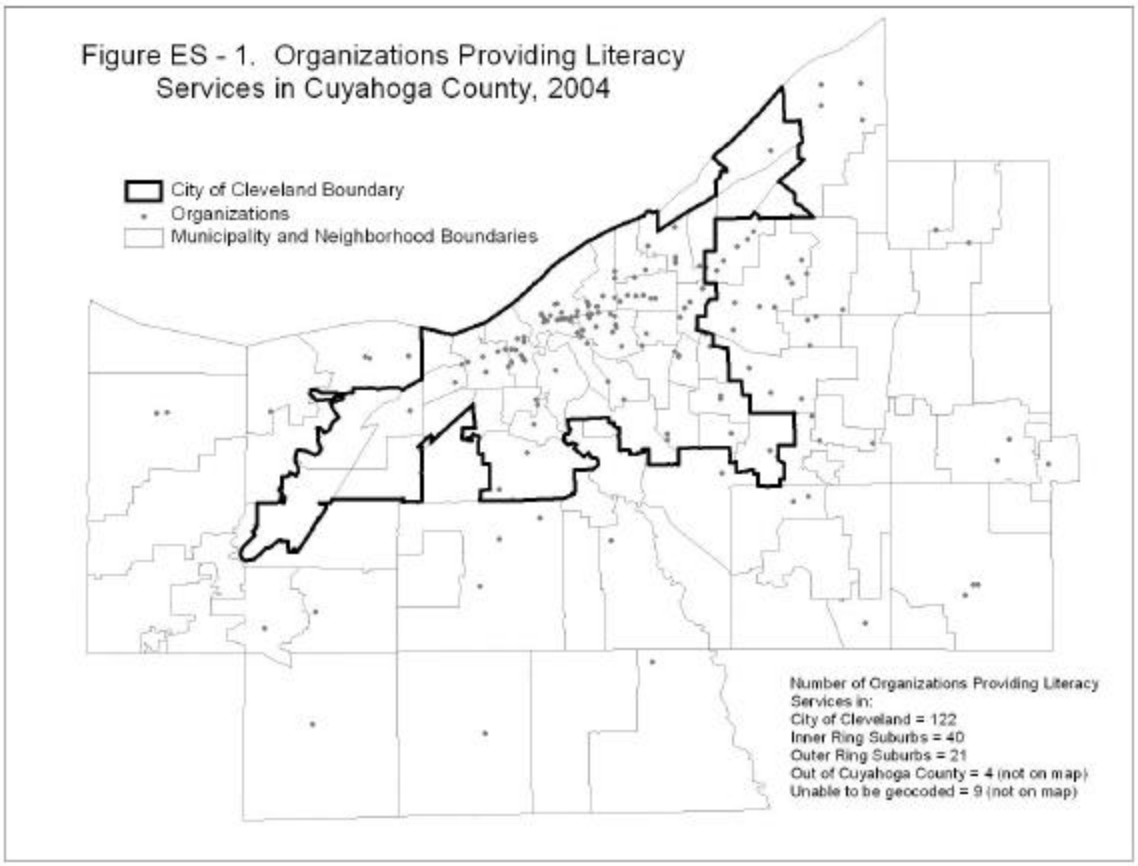
Many of the schools with the lowest percentages passing are located in Cleveland neighborhoods with the highest percentages of adults with the lowest literacy levels. This suggests a correlation between the location of the schools where children have trouble reading and the neighborhoods where adults have the lowest literacy. It is likely that difficulties with literacy span across multiple generations in many of Cleveland's neighborhoods and Cuyahoga County's municipalities.

Youth Population Aged 16-19

The final literacy indicator analyzed pertains to youth aged 16-19 and focuses on their educational attainment. In 2000, roughly 6,700 of the more than 70,000 civilian youth aged 16 to 19 living in Cuyahoga County (9.6%) could be classified as dropouts, where dropouts are defined as those civilian youth not enrolled in school and not a high school graduate. Nearly 18% of youths were categorized as dropouts in Cleveland in 2000 compared to 6% in the inner-ring suburbs and 3% in the outer-ring suburbs.

Literacy Providers

Literacy service providers are plotted in Figure ES-1.



Source: Center on Urban Poverty and Social Change analysis of the Cleveland Reads provider data (last updated September 14, 2004) and the Cleveland Municipal School District, Adult & Continuing Education list of ESOL Providers, 2004-2005 School Year

As the map illustrates, there are more organizations providing literacy services in Cleveland than in the suburbs. Of the 196 providers (183 with geocodable addresses), 122 are located in the City of Cleveland, 40 can be found in the inner ring suburbs, and 21 are in the outer ring suburbs. There are some Cleveland neighborhoods and suburban municipalities that had no literacy providers.

The distribution of literacy providers with English as a second language (ESL) services is compared to the population who speaks English not well or not at all. Two Cleveland neighborhoods, Clark-Fulton and Goodrich-Kirtland Park, were areas where the non-English speaking population was 10% or greater. In each of these neighborhoods, there were ESL service providers.

The literacy providers within 1- and 2- miles of a neighborhood's geographic center were calculated for those neighborhoods that had the most adults at Level 1 literacy. This gives a sense of how many literacy providers neighborhood residents could potentially come in contact with as they travel out of their home neighborhood. Within two miles of the Central neighborhood's centroid, or geographic center, there are 58 literacy providers. This is in contrast to the North Collinwood neighborhood where only 2 literacy providers can be found within two miles.

III. Summary and Recommendations

The purpose of this study was to assess the literacy needs in Cuyahoga County. This was accomplished by estimating the adults with low literacy and the children at risk of developing literacy problems later in life. Table ES - 1 provides estimates of adults and children with possible literacy risks using the following variables: the number of adults with Level 1 literacy, the number of births to mothers without a high school degree, the number of dropouts, and the number of schools not meeting state proficiency requirements in the neighborhood or municipality.[10]

[10] Table ES – 1 shows the Cleveland neighborhoods and the suburban municipalities with 30% or more of the adult population aged 16 and over at Level 1 literacy. Appendix K in the full report lists the data for all neighborhoods and municipalities in Cuyahoga County.

Table ES - 1. Estimate of the Number of Adults and Children with Possible Literacy Problems

Neighborhood/Municipality	Percent at Level 1 Literacy	Number at Level 1 Literacy	Number of Births to Mothers without a HS Degree	Number of Dropouts	Number of Schools Not Meeting Reading Proficiency State Requirement
Kinsman	54	1,885	387	35	3
Highland Hills	54	678	0	68	0
Fairfax	53	2,883	218	86	2
Hough	53	6,245	469	111	6
Central	50	3,794	541	103	3
Glenville	49	8,119	666	223	8
Union-Miles	49	5,229	359	187	2
Woodland Hills	49	3,810	344	130	3
Goodrich-Kirtland Park	48	1,627	125	70	1
Forest Hills	47	5,275	392	145	3
Corlett	46	5,148	275	171	4
East Cleveland	45	8,988	584	172	5
Industrial Valley	45	415	19	0	0
Mt. Pleasant	45	7,557	492	232	3
St. Clair-Superior	45	3,412	420	189	0
Lee-Miles	44	5,583	179	66	3
Euclid-Green	37	1,765	129	54	1
South Collinwood	36	3,616	293	130	3
Clark-Fulton	34	3,163	518	255	1
Warrensville Heights	34	4,041	146	79	3
Buckeye-Shaker	33	4,098	236	67	3
North Broadway	33	2,059	303	117	3
Ohio City	32	2,268	320	208	4
North Randall	31	237	4	2	0
Detroit-Shoreway	30	3,780	741	175	3
Stockyards	30	1,792	387	184	0

Source: Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models (available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas), the Ohio Department of Health's Vital Statistics Data, Census 2000 Data, and the Ohio Department of Education's Proficiency Test Data.

In terms of the adult literacy estimates, the most significant improvements between 1990 and 2000 were for the estimates of the population with the lowest literacy levels. Whether or not these changes represent any real changes in literacy skills, or are instead related to changes in socio-economic or demographic indicators, remains to be seen. To gain a better understanding of the current adult population's literacy, more direct measures (such as a survey that contains a valid literacy assessment for a representative sample) could be helpful. Factors to consider when thinking of a survey include: what is the goal of the survey, how often should it be repeated, who is going to be surveyed, how many individuals should be surveyed, how should literacy be measured, and what resources are available.

The geographic distributions of adult literacy were similar to the indicators used to estimate the children at risk of literacy, regardless of the child's age. This suggests that an inter-generational strategy might be helpful in trying to reduce the number of adults and children with literacy difficulties. A potential access point for providing literacy services to the child population early in life could be through the Early Childhood Initiative. As of December 2003, over 116,000 children under age 6 were served by some component of the Early Childhood Initiative. By delivering early literacy services to the early childhood population and their families, it would be possible to promote early literacy in the child population before they reach school.

With 196 literacy providers in the area, there are already a number of opportunities for adults with low literacy levels to get assistance improving their skills. However, there are many adults with limited literacy who may not be aware of the services or may not believe that they need such assistance. If all of the adults who needed literacy services were to request them, more literacy service providers would be needed.

In conclusion, this analysis has revealed that approximately half of the adults aged 16 and over in Cuyahoga County do not have the minimum literacy skills necessary to function effectively in society. Since nearly 20% of babies are born to mothers without a high school education, and 50% of the public schools in the County do not meet the state requirement for 4th and 9th grade reading proficiency, there are also many children countywide at risk of having literacy problems as adults. Will these children also enter adulthood lacking the skills necessary to meet the demands of 21st century life? The answer to that will most likely depend on the extent to which the County's resources are utilized to promote literacy among children at risk and adults with limited literacy.

Literacy Needs Assessment Technical Report for Cuyahoga County

In the Executive Summary of Adult Literacy in Ohio, literacy was compared to currency in the sense that people with low literacy skills are expected to encounter more problems in life, just as people with less money are expected to have more difficulty meeting their basic needs.[1] Having low literacy skills could impact everything from reading a newspaper and balancing a checkbook to wise consumer decisions and job advancement.

Despite the challenges that people with low literacy skills face, the United States is thought to be better educated and more literate today than at any other time in its history.[2] In Cuyahoga County, the percent of the population without a high school degree has declined since 1970, when that was the educational attainment of nearly half of the population (46%). By 1980, one in three adults had less than a high school degree, and in 1990, the percentage decreased even further, to 26%. By 2000, fewer than one in five adults (18%) were without a high school diploma.[3]

How do literacy levels compare to the changes in educational attainment? This research will address that question by estimating adult literacy measures for Cuyahoga County and its municipalities in 2000. In addition, trends in adult literacy between 1990 and 2000 will be compared. It is also important to have a sense of how many children are at risk for developing literacy problems as adults, and these estimates will also be generated. Finally, many efforts are already underway in communities across Cuyahoga County to try to help those who do struggle with literacy issues. The last portion of the research analyzes the distribution of literacy service providers.

I. Background and Methodology

Adult Literacy

National Adult Literacy Survey

Introduction

The National Adult Literacy Survey (NALS) forms the basis of the adult literacy estimates in this report. Therefore, it is important to understand the strengths and limitations of this survey.

In the 1991 National Literacy Act, the U.S. Congress defined literacy as "…an individual's ability to read, write, and speak in English, and compute and solve problems

[1] Jenkins, L.B. and I.S. Kirsch. 1994. *Executive Summary from Adult Literacy in Ohio – Results of the National Adult Literacy Survey*. Educational Testing Service.

[2] L.C. Stedman and C.F. Kaestle. 1991. "Literacy and Reading Performance in the United States from 1880 to the Present," in C.F. Kaestle et al., *Literacy in the United States: Readers and Reading Since 1880*. New Haven, CT: Yale University Press. T. Snyder (ed.). 1993. *120 Years of American Education: A Statistical Portrait*. Washington, DC: National Center for Education Statistics.

[3] Calculations by the Center on Urban Poverty and Social Change, using The Urban Institute's Neighborhood Change Data Base.

at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and to develop one's knowledge and potential."[4] With this definition, literacy encompasses more than the ability to read, as solving problems to function in both work and society is emphasized. This view of literacy, which goes beyond reading and comprehending text, guided the 1992 National Adult Literacy Survey (NALS) conducted by the Educational Testing Service for the U.S. Department of Education.

The NALS asked approximately 13,600 randomly selected adults aged 16 and over nationwide a series of questions to capture each individual's prose, document, and quantitative literacy. The adults were surveyed in their homes for about one hour, and in addition to the literacy tasks, they were also asked to supply personal and background information (age, education, income, occupation, literacy practices, etc.).

At the same time the national survey was being conducted, a State Adult Literacy Survey (SALS), which was identical to the NALS, was taking place in twelve states that chose to participate. Roughly 1,000 additional randomly selected adults aged 16-65 in each of the twelve states were surveyed. The participating states were California, Illinois, Indiana, Iowa, Louisiana, New Jersey, New York, Ohio, Pennsylvania, Texas, and Washington; Florida participated in a state survey that was conducted at a later time than the others.[5]

National Adult Literacy Survey – Measures and Levels

As part of the survey, participants were asked to complete a series of tasks in each of the three literacy dimensions – prose literacy, document literacy, and quantitative literacy. Prose literacy refers to reading, comprehending, and using information from different written texts, such as news stories, editorials, poems, and fiction. Document literacy requires having the skills necessary to use and understand documents, such as job applications, payroll forms, maps, and transportation schedules. Quantitative literacy involves applying mathematical operations to complete tasks such as balancing a checkbook, calculating a tip, or completing an order form.

Each of the prose, document, and quantitative literacy dimensions were disaggregated into five levels, with Level 1 representing the most basic literacy level and Level 5 representing the most complex. Appendix A shows some examples of tasks associated with the prose, document, and quantitative literacy at the five different levels. Most of the people within the Level 1 literacy range (0 to 225) are able to read some; only those at the lowest range of Level 1 are not able to read at all. People with Level 1 literacy are

[4] "National Assessment of Adult Literacy -- Defining and Measuring Literacy." National Center for Education Statistics, U.S. Department of Education. Accessed online at http://nces.ed.gov/naal/defining/defining.asp

[5] An additional component of the NALS involved sampling 1,147 prison inmates who were randomly selected from 87 federal and state prisons. This portion of the survey was not designed for disaggregation; thus, it will not be discussed in more detail here.

thought to be at a severe disadvantage economically, in the sense that they are likely to be excluded from all but minimum-wage work.[6]

Between 40 and 44 million of the nation's 191 million adults, approximately 1 in 5, demonstrated Level 1 literacy skills in 1992.[7] Thirty-three percent of these individuals were aged 65 or older, and about one quarter had some kind of physical, mental or human health condition that impeded activities at work, home, or school. Nearly two out of three individuals with Level 1 skills had less than a high school education. Additionally, 29% of respondents at Level 1 self-reported being unable to read.[8]

Individuals with Level 2 literacy (226 to 275) are thought to be at a disadvantage in terms of being able to meet the demands of 21st century life.[9] Approximately 50 million adults nationwide had Level 2 literacy skills in 1992.[10] Level 3 literacy, with scores between 276 and 325, is viewed as the minimum standard for jobs that provide a good salary and benefits. The skills associated with Level 3 are often required for most post-secondary education and training programs. Level 3 literacy has been labeled as the minimum standard necessary for life in the 21st century by the National Governors' Association and the National Educational Goals Panel.[11] Almost 1 in 3 adults nationwide, or 61 million, performed at Level 3. Level 4 (326 to 375) and Level 5 (376 to 500) literacy, which represent the two highest literacy levels, can be found in approximately 18 to 21% of the adult population (34 to 40 million) nationwide.[12] The composite 1992 NALS literacy levels for both Ohio and the nation are displayed in Table 1.1.

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[6] Comings, J., S. Reder, and A. Sum. 2001. *Building A Level Playing Field – The Need to Expand and Improve the National and State Adult Education and Literacy Systems.* National Center for the Study of Adult Learning and Literacy. Accessed online at http://gseweb.harvard.edu/~ncsall/research/op_comings2.pdf

[7] *National Institute for Literacy – National Adult Literacy Survey (NALS)* Fact sheet. Accessed online at http://www.nifl.gov/nifl/facts/NALS.html

[8] Ibid.

[9] Comings, J., S. Reder, and A. Sum. 2001. *Building A Level Playing Field – The Need to Expand and Improve the National and State Adult Education and Literacy Systems.* National Center for the Study of Adult Learning and Literacy. Accessed online at http://gseweb.harvard.edu/~ncsall/research/op_comings2.pdf

[10] *National Institute for Literacy – National Adult Literacy Survey (NALS)* Fact sheet. Accessed online at http://www.nifl.gov/nifl/facts/NALS.html

[11] Comings, J., S. Reder, and A. Sum. 2001. *Building A Level Playing Field – The Need to Expand and Improve the National and State Adult Education and Literacy Systems.* National Center for the Study of Adult Learning and Literacy. Accessed online at http://gseweb.harvard.edu/~ncsall/research/op_comings2.pdf

[12] *National Institute for Literacy – National Adult Literacy Survey (NALS)* Fact sheet. Accessed online at http://www.nifl.gov/nifl/facts/NALS.html

Table 1.1. The Percent of the Adult Population in Each Literacy Level: A Comparison between Ohio and the Nation, 1992

	Nation	Ohio
Level 1	21% to 23%	16% to 18%
Level 2	25% to 28%	27% to 31%
Level 3	31% to 32%	32% to 34%
Levels 4 & 5	18% to 21%	19% to 23%

Source: National Institute for Literacy -- National Adult Literacy Survey (NALS) Fact sheet. Accessed online at http://www.nifl.gov/nifl/facts/NALS.html . The State Adult Literacy Survey: A Look at Results for Ohio. Ohio Literacy Resource Center. Accessed online at http://literacy.kent.edu/Oasis/Pubs/0700-3.htm

National Adult Literacy Survey – Methodology

The NALS was designed to assess adults' literacy ability based on their performance on tasks representative of materials and demands encountered in daily life. To gather the information on adult literacy skills, a trained staff of more than 400 surveyors interviewed nearly 13,591 individuals aged 16 and older during the first eight months of 1992. The response rate for the survey was 88%; for an interview to be considered complete, the interviewee needed to answer at least five tasks in each literacy dimension.[13]

The national survey was conducted using a four-stage stratified area sample. The four stages were as follows: the selection of primary sampling units consisting of counties or groups of counties, the selection of segments consisting of census blocks or groups of blocks, the selection of households, and the selection of age-eligible individuals.[14] African Americans and Latinos were over sampled to ensure reliable estimates and to permit performance analysis of these sub-populations. According to the National Center for Education Statistics, "full sample and replicate weights were calculated for each record in order to facilitate the calculation of unbiased estimates and their standard errors."[15] The results for each respondent were weighted in order to derive population estimates that could be used to represent the age, sex, and racial/ethnic composition of the nation's civilian population.[16]

The survey design was such that each respondent was asked to complete a subset of the total pool of 166 literacy tasks. The survey was implemented in such a way that each of the tasks was administered to a nationally representative sample of the adult population.

[13] Sum, A. 1999. *Literacy in the Labor Force: Results from the National Adult Literacy Survey -- Appendix A*. National Center for Education Statistics. Accessed online via http://nces.ed.gov

[14] Sum, A. 1999. *Literacy in the Labor Force: Results from the National Adult Literacy Survey -- Appendix B*. National Center for Education Statistics. Accessed online via http://nces.ed.gov

[15] Ibid.

[16] Sum, A. 1999. *Literacy in the Labor Force: Results from the National Adult Literacy Survey – Introduction*. National Center for Education Statistics. Accessed online via http://nces.ed.gov

Survey participants who completed as much of the assessment as their skills allowed were paid $20 for their time.[17]

The responses were scored along a scale to reinforce degrees of literacy, as opposed to classifying individuals as "literate" and "illiterate". The standard error percentage ranged across score levels from 0.4 on Level 1 to 0.2 on Level 5.[18] The scaling model used for the survey was the three-parameter logistic model derived from item response theory.[19] According to the NCES, "this is a mathematical model for estimating the probability that a particular person will respond correctly to a particular item from a single domain of items."[20] Similar to the individual scoring, each of the literacy tasks received scale values according to their difficulty; this was determined by the performance of the sample of adults who participated in the survey. The score point assigned to each task is the point at which the individuals with that proficiency score have an 80% probability of responding correctly.[21]

For Level 2 through Level 5, adults who can consistently perform the tasks in a given level at least 80% of the time are said to perform at that level. Level 1 differs from other literacy levels in that all individuals who score at Level 1 do not have an 80% probability of completing the Level 1 tasks.[22]

National Adult Literacy Survey – Criticism

The main criticism of the NALS is directly related to the 80% response probability used in scoring the assessment results. The implication of the 80% probability is that the numbers of people in the lowest literacy levels are overestimated. As stated by Andrew Kolstad, who managed the NALS at the U.S. Department of Education's National Center for Education Statistics (NCES), "Many users of this survey do not realize how sensitive the basic survey findings are to small variations in the response probability convention. If an alternative response convention were to be used to locate literacy tasks on the scale, the bounds between literacy levels would shift".[23] According to the NCES calculations,

[17] Sum, A. 1999. *Literacy in the Labor Force: Results from the National Adult Literacy Survey*. National Center for Education Statistics. Accessed online via http://nces.ed.gov

[18] Kirsch, I. 2001. *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey*, NCES 2001-457. U.S. Department of Education, National Center for Education Statistics: Washington, DC. Page 366. Accessed online at http://nces.ed.gov/naal/design/about92.asp

[19] National Center for Education Statistics. *National Assessment of Adult Literacy – Assessment Design*. Accessed online at http://nces.ed.gov/naal/design/literacy.asp

[20] Ibid.

[21] Sum, A. 1999. *Literacy in the Labor Force: Results from the National Adult Literacy Survey*. National Center for Education Statistics. Accessed online via http://nces.ed.gov

[22] Sum, A. 1999. *Literacy in the Labor Force: Results from the National Adult Literacy Survey -- Appendix A*. National Center for Education Statistics. Accessed online via http://nces.ed.gov

[23] Kirsch, I. 2001. *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey*, NCES 2001-457. U.S. Department of Education, National Center for Education Statistics: Washington, DC. Page 348. Accessed online at http://nces.ed.gov/naal/design/about92.asp

changing the response probabilities influences estimates of the proportion of adults who perform at each literacy level as illustrated in Table 1.2.[24]

Table 1.2. Response Probabilities Used to Estimate the Proportion of Adults Who Perform at Each Level

Response Probability	Level 1 Percent	Level 2 Percent	Level 3 Percent	Level 4 Percent	Level 5 Percent
85	25	30	31	13	2
75	17	24	32	21	6
65	13	19	30	26	12
55	10	15	26	29	20
45	9	11	22	29	34
35	7	8	18	27	40
25	6	6	13	23	53

Source: Kirsch, I. 2001. *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey* , NCES 2001-457. U.S. Department of Education, National Center for for Education Statistics: Washington, DC. Chapter 14. Accessed online at http://nces.ed.gov/naal/design/about92.asp

If the 1992 NALS had reported results using the lower 65% response probability convention, which corresponds to the probability convention used in the National Assessment of Educational Progress to measure the educational achievement of the nation's children, the NALS would have indicated that the two lowest levels included 32% of the adults in the U.S., as opposed to the 55% finding based on the 85% probability convention.[25] According to the NCES, the substantive argument for using a high response probability convention was that "maximum practical mastery is needed to describe readers accurately in terms of being able to do the literacy tasks."[26] According to Kolstad, "demonstrating task mastery only requires a response probability convention above 50%, not a specific value…better justification is needed than has heretofore been forthcoming for retaining the 80% criterion in future work."[27]

The use of the 80% response probability might help to explain some of the differences in perception versus performance in completing the literacy tasks. According to the NCES, most adults in Level 1 and Level 2 reported that they could read and write English "well" or "very well."[28] Yet, these are the literacy levels associated with low skills. Because the choice of probability convention has such a large impact on the results of the survey, it

[24] Kirsch, I. 2001. *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey*, NCES 2001-457. U.S. Department of Education, National Center for Education Statistics: Washington, DC. Chapter 14. Accessed online at http://nces.ed.gov/naal/design/about92.asp
[25] Ibid.
[26] Ibid, p. 369.
[27] Ibid, p. 368.
[28] Kirsch, I.S., et al. 1993. *Adult literacy in America: A first look at the results of the National Adult Literacy Survey*. National Center for Education Statistics: Washington, DC. Accessed online at http://nces.ed.gov/naal/resources/execsumm.asp

deserves both a thorough discussion and a thorough understanding. Per Kolstad, "people concerned with measuring literacy accurately need to understand what the response probability convention is and why it matters in reporting the results."[29]

Despite the criticisms of the NALS, an updated literacy assessment of the adult population was conducted by the National Center for Education Statistics with the 2003 National Assessment of Adult Literacy (NAAL). As with the 1992 NALS, states had the chance to buy a state sample. Only six states chose to participate in 2003; these states were Kentucky, Maryland, Massachusetts, Missouri, New York, and Oklahoma.

Similar to the NALS, the NAAL assessed literacy based on document, prose, and quantitative dimensions. There were also several new features of the NAAL, which included the Fluency Addition to NAAL (FAN), the Adult Literacy Supplemental Assessment (ALSA), a more detailed background questionnaire, and a health literacy assessment.

The FAN was administered to everyone taking the NAAL, and assessed reading fluency and word recognition through the use of speech-recognition software. Meanwhile, the ALSA was given only to those with the lowest literacy levels. Adults taking the ALSA were asked to identify numbers and letters, and to comprehend simple documents and prose. ALSA also measured an individual's familiarity with and ability to use everyday items; these ranged from Coca-Cola cans and pancake boxes to television guides and grocery advertisements. The health literacy assessment was possible because health-related questions were added to the survey in the NAAL, the ALSA, and the more detailed background questionnaire. Results from the NAAL are scheduled to be released in 2005.

Though the NALS provided a lot of information about the literacy abilities of the adult population nationwide, state and local programs wanted more local adult literacy data. However, many places did not have the resources needed to conduct literacy surveys similar to the NALS for counties or municipalities. To meet this need, without the expense of conducting surveys, Stephen Reder developed a mathematical model that produced literacy estimates for the adult population for counties, congressional districts, and cities, towns, and places.[30]

Reder Methodology

Ultimately, the model that Reder developed predicted the literacy proficiencies of populations in certain areas based on the aggregate characteristics of individuals in those areas. These aggregate characteristics included educational attainment, race, ability to speak English, immigrant status, weeks worked, occupation, and labor force status.

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[29] Kirsch, I. 2001. *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey*, NCES 2001-457. U.S. Department of Education, National Center for Education Statistics: Washington, DC. Page 367. Accessed online at http://nces.ed.gov/naal/design/about92.asp

[30] Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas. Accessed online at http://www.casas.org/lit/litdata/reder.pdf

Initially, Reder used the individual data collected during the NALS and aggregated those results to counties.[31]

Using the NALS data, Reder developed regression models that predicted county-level NALS literacy proficiency. The regression models predicted three different variables – the mean literacy proficiency for the county, the proportion of county scores at Level 1 literacy, and the proportion of county scores at Level 1 or Level 2 literacy. Reder determined that the regression models were most robust when counties having 50 or more respondents were included. This meant that 178 of the 417 counties would be included in the model, and the 239 counties with less than 50 NALS respondents would not be included in the analysis. Reder also concluded that a weighted least squares regression model (weighted for county size) yielded a better fit than an ordinary least squares regression model.[32] The regression models that were used in the analysis are shown in Table 1.3. The table shows the variables that were significant in predicting the three different literacy measures, as well as the regression coefficients for the significant variables.

[31] During the NALS, households from 417 counties throughout the country were surveyed.
[32] Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas. Accessed online at http://www.casas.org/lit/litdata/reder.pdf

Table 1.3. Unstandardized Coefficients for Regression Equations			
Predictor Variable	**Mean Proficiency Model**	**Proportion at Level 1 Model**	**Proportion at Level 1 or Level 2 Model**
*Education - less than high school			
Education - some high school	79.61		-0.382
Education - high school diploma/GED	104.19	-0.226	-0.632
Education - some college	123.99	-0.292	-0.787
Education - 2 year college degree	135.50		-1.062
Education - 4 year college degree	140.13		-0.798
Education - graduate school	181.57	-0.398	-1.268
*White			
Black	-48.63	0.330	0.335
Native American			
Asian/Pacific Islander			
Other Race			
Work disability	-25.36	0.297	0.267
*No work disability			
*Speaks English very well			
Speaks English well	-65.46	0.414	0.596
Speaks English not well/not at all	-60.95	0.710	
Recent immigrant	-52.60		0.487
*Not recent immigrant			
*Did not work previous year			
Worked 1-13 weeks previous year	71.15		
Worked 14-26 weeks previous year			
Worked 27-39 weeks previous year			
Worked 40-52 weeks previous year			
*Laborer			
Service			
Sales/administrative support	17.71	-0.228	
Professional/technical/managerial		-0.142	
*Not in labor force			
Unemployed		-0.222	
Employed	32.45	-0.288	-0.295
Northeast			0.028
Midwest	3.75		
South			0.026
*West			
Constant	149.13	0.431	1.183
Note: * and shaded row means not included in the regression; they represent the reference category.			
Source: Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.			

The regression models based on the NALS data were then applied to variables from the 1990 U.S. Census data to predict the three literacy proficiency measures for counties, congressional districts, and cities, towns, and places. Since NALS survey data were not available nationwide at the county level, a data source available at a broader scale that was also closely aligned with the NALS data was needed. Census data met the criteria.

In making the switch from using NALS data to Census variables to predict literacy, it was important for the NALS and Census variables to be closely aligned.[33] The literacy predictions were calculated for the adult population aged 16 and over. In order to keep standard errors among the Census predictor variables low, literacy estimates were calculated for those states, counties, cities, towns, and places that had a minimum population of 5,000 people aged 16 and over.

While the method developed by Reder allows for literacy estimates to be generated for places smaller than the nation, there are several points to keep in mind. First, the model assumes that relationships modeled at the county level will also be valid for congressional districts, and cities, towns, and places. Reder notes that while there is a lack of validating information for these smaller geographic units, without local literacy surveys these estimates may be the best information that is available.[34] It is also important to keep in mind that Reder's models do not predict an individual's literacy skills. Instead, literacy proficiency estimates for areas are estimated based on the aggregate social and demographic characteristics of individuals in a particular area.

Updating the Reder Model

One of the goals of this research was to update literacy estimates for Cuyahoga County and its municipalities using 2000 U.S. Census data[35]. To generate these new estimates, the Census 2000 data were incorporated into the regression models in Table 1.3. By doing this, an assumption is being made that the relationships among the variables, i.e. the degree to which each variable in the model contributes to literacy, has remained constant between 1990 and 2000. If the relationships changed between 1990 and 2000, then the predicted literacy proficiency estimates will not be accurate.

Another point to consider is that Reder's initial model calculated literacy proficiency estimates for counties, cities, towns, and places with a population greater than 5,000. Thus, there are some places in Cuyahoga County and some neighborhoods in the City of Cleveland with populations less than 5,000. While literacy proficiency estimates will be calculated for all places within Cuyahoga County, the reliability of the estimates for the smallest places needs to be considered when analyzing the results.

Child Literacy

Unlike the adult literacy estimates where a pre-existing mathematical model was used to generate updated literacy estimates, a similar mathematical model does not exist for child literacy. With the child literacy assessment, children at risk of developing literacy

[33] Variable alignment is discussed in more detail in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas. Accessed online at http://www.casas.org/lit/litdata/reder.pdf

[34] Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas. Accessed online at http://www.casas.org/lit/litdata/reder.pdf

[35] There were a few Census variables that differed between 1990 and 2000; namely, the variables associated with occupational categories and work limiting disabilities. Because of the changes, the exact same variable could not be incorporated in 2000, as it was in 1990, but available variables that were similar were included in the regression models.

problems as adults were identified. To conduct the analysis, the child population was broken down into three different age groups – the early childhood population (under age 6), the school-age population (specifically 4th and 9th graders), and the youth population aged 16 to 19. For each age group, a separate data source was used to assess the child population at risk of developing literacy problems. Each of these data sources are discussed in more detail below.

Early Childhood Population

Prior research has shown that children born to mothers with low levels of education are less likely to have early literacy skills and are less ready to read when they go to school. First-time kindergartners who had mothers with less than a high school degree could recognize letters only 38% of the time. This is in contrast to 86% of first-time kindergartners who had mothers with at least a bachelor's degree.[36] In addition, first-time kindergartners were more likely to display social competence (interact well with peers, be able to make friends, and join easily in play with others) as their mothers educational attainment increased.[37]

Using birth certificate data from the Ohio Department of Health, the number of birth mothers with less than a high school degree and the percent of births to mothers with less than a high school degree were calculated. To minimize the influence of any random year-to-year fluctuation present in the data, yearly data from 1998, 1999, 2000, 2001, and 2002 were combined. The birth mother's education was calculated for Cuyahoga County, inner- and outer-ring suburbs, and individually for each Cleveland neighborhood and suburban municipality.

School-Age Population

To assess the literacy of school-age children, data from the Ohio Department of Education are analyzed, specifically the Local Report Cards for 4th and 9th grade.[38] The data are presented by school building by school district by year, beginning with the 1998-1999 school year. The most recent year included for the 4th grade proficiency tests is the 2003-2004 school year, while the most recent included for the 9th grade proficiency tests is the 2002-2003 school year. The 2003-2004 data are not included for the 9th grade proficiency tests because in that year the results included 8th, 9th, and 10th graders who took the test, which differed from earlier years when the data were only for 8th and 9th graders. The Report Cards contain data on Citizenship, Math, Reading, Writing, and Science proficiency. Just as the National Adult Literacy Survey (NALS) used a broader definition for literacy than the ability to read, having proficiency result data for multiple subjects will allow for a broader literacy definition for the school-age population as well.

While the proficiency data are presented by year, making comparisons between years is not recommended, especially comparisons pre- and post- the 2002-2003 school year. The

[36] Child Trends and Center for Child Health Research. 2004. Early Child Development in Social Context: A Chartbook. Accessed online at http://www.childtrends.org/
[37] Ibid.
[38] Ohio Department of Education data were downloaded from: http://ilrc.ode.state.oh.us/Power_Users.asp

federal No Child Left Behind (NCLB) Act went into effect at this time, and the post-NCLB data include proficiency results for students (i.e. the disabled population, and the English as a Second Language population) who were not included prior to the implementation of NCLB. Even though the data cannot be compared across all years, the yearly data is still valuable in that it allows for comparisons within a year, which can be used to identify high- and low-performing schools within districts and the county. The state requirement of 75% proficient will be used to differentiate between high- and low-performing schools.

Youth Population Aged 16-19

Two different measures were used to assess the literacy of the youth population aged 16-19. The first refers to the number of dropouts, where dropouts are defined as the youth aged 16-19 not enrolled in school and not a high school graduate. This dropout measure, defined using Census data, provides a sense of the scope of students who dropped out of high school and were not enrolled in school at the time of the Census. This measure of dropouts is different from how dropouts would be defined if school district data were used.

The school district dropout data is difficult to use in that students tend to be followed from the 9th grade until they graduate, and then the dropout rates are calculated. It may be that a student moves to another district, but that move may not be captured with the school district data. The student is viewed as a dropout from the perspective of the school where the student was enrolled in 9th grade, but the student is actually enrolled in school elsewhere. Because of the data validity issues surrounding dropouts as measured from a school district perspective, alternate measures were included in the analysis.

The Census education data incorporated into the adult literacy estimates are based on the population aged 25 and older. By looking at only these two Census education variables, the educational attainment of the population 20-24 is not being captured. The Census does have a variable that considers the educational attainment of those between the ages of 18 and 24. To provide a more comprehensive analysis of educational attainment in 2000, the 18-24 data will also be included. It is important to note, though, that the 18-24 population may be enrolled in school, and this is not captured with the variable. It is unlikely that people without a high school degree have the necessary literacy skills, those associated with Level 3, that have been deemed necessary to secure jobs with decent wages and benefits.

The second measure analyzed for the population aged 16-19 refers to idle youth, defined as youth not enrolled in school and not working. While it is possible that the idle youth could have a high school degree, the fact that they are not working suggests that they may not have the skills necessary for employment. As previously mentioned, Level 3 literacy skills are viewed as the minimum necessary to compete and succeed in today's economy. While the number of idle youth does not directly relate to an individual's literacy level, one would expect to find lower literacy levels among youth who are not in school and not working.

Literacy Providers
The final portion of the literacy assessment involves mapping the distribution of known literacy providers. The list of literacy providers was supplied by Cleveland Reads.[39] The addresses for the 196 literacy providers were geocoded, or assigned latitude and longitude along with other geographic attributes, such as the census tract, using MapMarker™ software. Of the 196 addresses, four geocoded outside of Cuyahoga County and nine were unable to be geocoded because of incomplete or incorrect address information.

The geocoding made it possible to map the location of the literacy providers. In addition to the map showing the distribution of the providers, maps comparing the provider distribution to the adult population with low literacy were prepared. Another map compares the literacy providers with English as a Second Language (ESL) services to the population who speaks English not well or not at all.

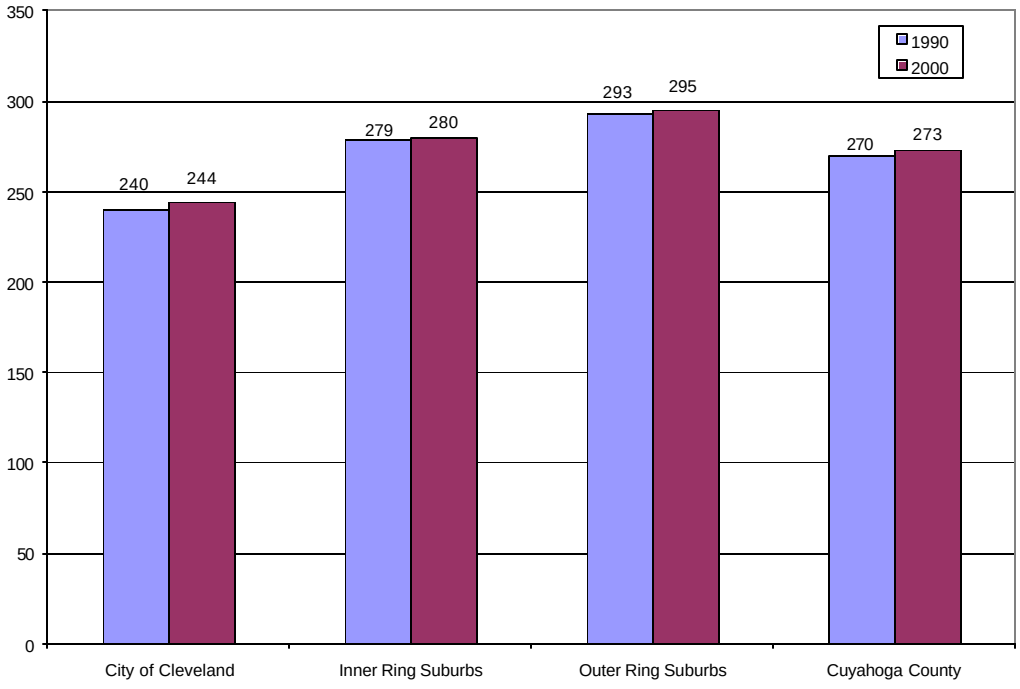
II. Results and Analysis

Adult Literacy Proficiency Estimates
Three measures of adult literacy proficiency were calculated using Reder's mathematical models. These measures for the 2000 population are the mean literacy proficiency, the percent at Level 1 literacy, and the percent at Level 1 or Level 2 literacy.

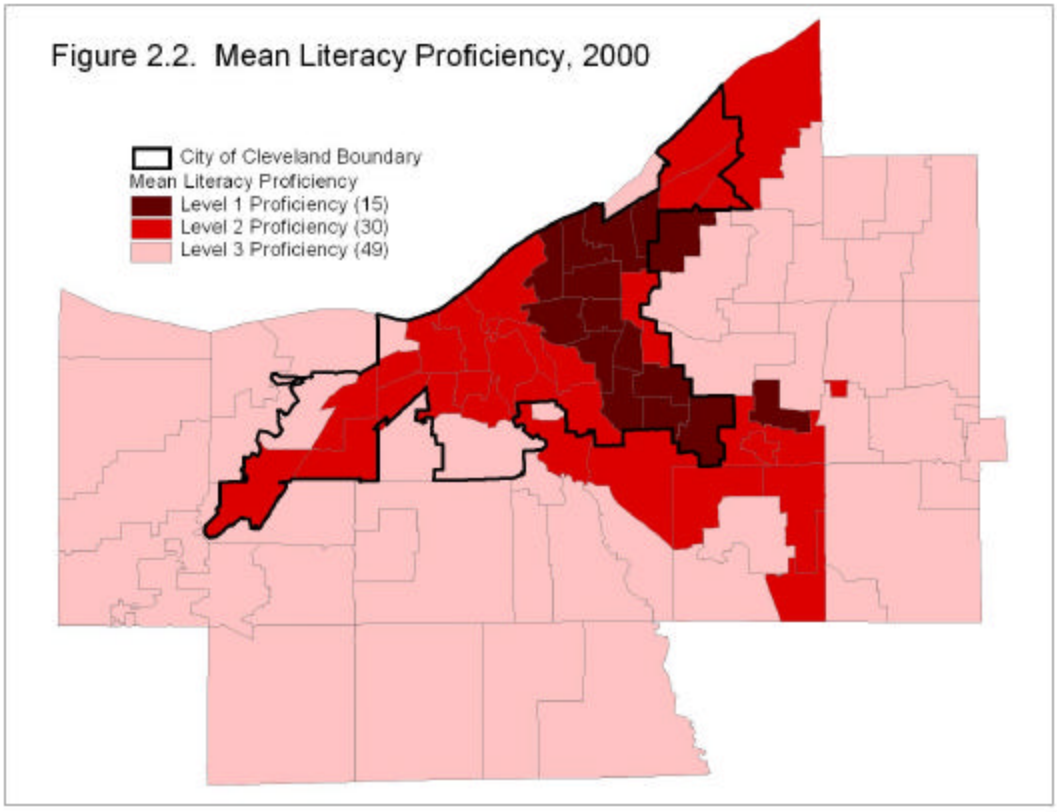
Mean Literacy Proficiency
The mean literacy proficiency score for Cuyahoga County in 2000 was 273, which is at the upper end of the Level 2 scale (226 – 275). This is up slightly from the mean of 270 in 1990; however, the difference between 1990 and 2000 is not statistically significant. Similarly, the City of Cleveland experienced slight increases in its mean literacy proficiency during the 1990s, from 240 to 244. Again, the differences were not statistically significant. Inner ring suburbs, mapped in Appendix B, had a mean proficiency of 279 in 1990 and 280 in 2000, which falls into the Level 3 range (276 – 325). The mean literacy proficiency estimates for outer ring suburbs were 293 in 1990 and 295 in 2000. As with the inner ring suburbs, the outer ring suburbs also had mean proficiencies in the Level 3 range. Figure 2.1 shows the mean proficiencies in 1990 and 2000 for the County, Cleveland, and the inner- and outer-ring suburbs; these data are mapped in Figure 2.2.

[39] After the presentation of the initial findings, the Cleveland Municipal School District, Adult and Continuing Education supplied the Center on Urban Poverty and Social Change with an additional 7 sites that provided English classes for speakers of other languages, which were not included in the Cleveland Reads list.

Figure 2.1. Mean Literacy Proficiency, 1990 vs. 2000



Source: 1990 data – Reder's Adult Literacy Estimates, accessed online at http://www.casas.org/lit/litcode/Search.cfm
2000 data – Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.



Source: Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.

Appendix C shows the mean proficiencies in 1990 and 2000 for City of Cleveland neighborhoods and Cuyahoga County municipalities. Mean proficiency estimates are presented for all neighborhoods and municipalities in 2000, regardless of population. Recall from Reder's original estimates that only those places with populations over 5,000 were considered reliable and, hence, included in his analysis. In addition, Reder's original analysis did not include estimates for neighborhoods within Cleveland.[40]

Thirteen of thirty-six Cleveland neighborhoods had 2000 mean literacy proficiency estimates within the Level 1 range (225 and under). Two Cuyahoga County municipalities, Highland Hills and East Cleveland, had Level 1 mean literacy proficiencies. Of the thirty Cleveland neighborhoods and suburban municipalities with Level 2 mean literacy proficiency estimates, twenty were City of Cleveland neighborhoods. Three Cleveland neighborhoods – Old Brooklyn, Edgewater, and Kamms Corners – joined forty-six suburban municipalities that had Level 3 mean literacy

[40] In Reder's analysis, the standard error and the 95% confidence interval were calculated for the individual Census area as opposed to the mean of all similar areas. Without Reder's original data, standard errors and confidence intervals for places not included in Reder's original analysis can not be calculated. This is noted in Appendices C, D, and E by "NA".

proficiencies. There was no municipality or neighborhood in Cuyahoga County with a mean literacy proficiency of Level 4 or Level 5.

Putting Cuyahoga County's Numbers in Context

The different mean literacy proficiency estimates for Cleveland neighborhoods and suburban municipalities in Cuyahoga County allow for within-county comparisons to be made. However, looking only at Cuyahoga County numbers doesn't allow for comparisons between Cuyahoga County and other counties, or between Cleveland and other municipalities. Since the 1990 data have not been updated for many other states, counties, and cities, the 1990 data will be used for comparison purposes.

Compared to adjacent states, Ohio's 1990 mean literacy proficiency (275) is higher than the mean in West Virginia, Kentucky, and Pennsylvania, and lower than the mean in Indiana and Michigan. Table 2.1 shows the relationship between Ohio and its neighboring states.

Table 2.1. Comparing Ohio to Other States

State	Mean Literacy Proficiency	State	Percent at Level 1	State	Percent at Level 1 or 2
West Virginia	261	Indiana	16	Indiana	43
Kentucky	262	Ohio	18	Michigan	44
Pennsylvania	271	Michigan	18	Ohio	45
Ohio	275	Pennsylvania	19	Pennsylvania	48
Indiana	277	Kentucky	19	Kentucky	54
Michigan	277	West Virginia	20	West Virginia	56

Source: Center on Urban Poverty and Social Change analysis of data from Reder's Adult Literacy Estimates, accessed online at http://www.casas.org/lit/litcode/Search.cfm

The 1990 mean literacy proficiency for Cuyahoga County (270) is similar to that for the state, and both are within Level 2. When Cuyahoga County is compared to other counties in the metropolitan area, it has the lowest mean literacy proficiency. Ashtabula County was the only other one in the metropolitan area with a Level 2 mean literacy proficiency. Geauga County had the highest mean literacy proficiency with 291 (Level 3). Table 2.2 lists the mean literacy proficiencies for the counties in the Cleveland-Akron metropolitan statistical area.

Table 2.2. Comparing Cuyahoga County to Other Counties in the Metropolitan Area

	Mean Literacy Proficiency	County	Percent at Level 1	County	Percent at Level 1 or 2
Cuyahoga	270	Geauga	11	Geauga	34
Ashtabula	271	Medina	11	Lake	36
Lorain	277	Portage	11	Medina	37
Summit	280	Lake	12	Portage	38
Medina	286	Lorain	16	Summit	42
Portage	287	Ashtabula	18	Lorain	43
Lake	288	Summit	18	Ashtabula	48
Geauga	291	Cuyahoga	25	Cuyahoga	49

Source: Center on Urban Poverty and Social Change analysis of data from Reder's Adult Literacy Estimates, accessed online at http://www.casas.org/lit/litcode/Search.cfm

With a mean literacy proficiency of 240 (Level 2), Cleveland had the lowest mean compared to the other eight largest cities in Ohio. All of the other largest cities joined Cleveland in Level 2, with the exception of Columbus, with mean literacy proficiencies in Level 3 (282). Table 2.3 lists the mean literacy proficiencies for Ohio's largest cities.

Table 2.3. Comparing Cleveland to Ohio's Other Largest Cities

City	Mean Literacy Proficiency	City	Percent at Level 1	City	Percent at Level 1 or 2
Cleveland	240	Columbus	20	Columbus	41
Youngstown	243	Toledo	22	Toledo	49
Dayton	253	Akron	24	Akron	52
Canton	260	Canton	25	Cincinnati	55
Lorain	260	Lorain	25	Lorain	55
Cincinnati	262	Cincinnati	29	Canton	57
Akron	267	Dayton	31	Dayton	62
Toledo	270	Youngstown	35	Youngstown	69
Columbus	282	Cleveland	38	Cleveland	72

Source: Center on Urban Poverty and Social Change analysis of data from Reder's Adult Literacy Estimates, accessed online at http://www.casas.org/lit/litcode/Search.cfm

When compared to eight Northern Industrial cities, only Newark, Detroit, and Baltimore had lower mean literacy proficiencies than Cleveland. With the exception of Newark, with a mean literacy in the Level 1 range (208), the other Northern Industrial cities had a mean literacy in the Level 2 range. Table 2.4 shows the mean literacy proficiencies for the selected industrial cities.

Table 2.4. Comparing Cleveland to Selected Northern Industrial Cities

City/State	Mean Literacy Proficiency	City/State	Percent at Level 1	City/State	Percent at Level 1 or 2
Newark, New Jersey	208	Pittsburgh, Pennsylvania	26	Milwaukee, Wisconsin	55
Detroit, Michigan	227	Milwaukee, Wisconsin	27	Pittsburgh, Pennsylvania	55
Baltimore, Maryland	237	Buffalo, New York	30	Buffalo, New York	61
Cleveland, Ohio	240	Philadelphia, Pennsylvania	34	Chicago, Illinois	63
Philadelphia, Pennsylvania	245	Chicago, Illinois	37	Philadelphia, Pennsylvania	67
Chicago, Illinois	246	Baltimore, Maryland	38	Cleveland, Ohio	72
Buffalo, New York	253	Cleveland, Ohio	38	Baltimore, Maryland	73
Milwaukee, Wisconsin	261	Detroit, Michigan	47	Detroit, Michigan	80
Pittsburgh, Pennsylvania	264	Newark, New Jersey	52	Newark, New Jersey	89

Source: Center on Urban Poverty and Social Change analysis of data from Reder's Adult Literacy Estimates, accessed online at http://www.casas.org/lit/litcode/Search.cfm

Relating mean literacy levels to educational attainment, jobs, and earnings

How do mean literacy levels relate to educational attainment, jobs, and annual earnings? To address these issues, one can consult reports generated from the 1992 NALS. Since the results from the most recent NALS (scheduled to be conducted in 2003) will not be available for some time, the 1992 data provide good baseline measures. Table 2.5 shows the mean literacy proficiencies of employed adults by major industrial group for the prose, document, and quantitative dimensions separately.

Table 2.5. Mean Literacy Proficiencies of Employed Adults by Major Industry Group, 1992

	Mean Proficiencies		
Industry Group	**Prose**	**Document**	**Quantitative**
Finance, Insurance, and Real Estate	308	301	308
Public Administration	300	295	303
Services	293	287	289
Transportation, Communications, and Utilities	290	285	292
Trade	277	274	276
Manufacturing	273	270	277
Construction, and Mining	261	261	272
Farm, Forestry, and Fishing	251	247	258

Level 2 = 226 - 275, Level 3 = 276 - 325

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992. In Literacy in the Labor Force - Results from the National Adult Literacy Survey, National Center for Education Statistics, September 1999.

Adults employed in the finance, insurance, and real estate industry had the highest mean proficiencies, which were in the Level 3 range. Other industrial groups with Level 3 means were public administration, services, transportation/communications/utilities, and trade. Adults employed in manufacturing, construction/mining, and farming/forestry/fishing industries had mean literacy proficiencies in the Level 2 range.

For both educational attainment and annual earnings, the findings are not that surprising. Mean literacy proficiencies increased as education levels increased (Table 2.6).

Table 2.6. Mean Literacy Proficiencies by Highest Level of Education Attained, 1992

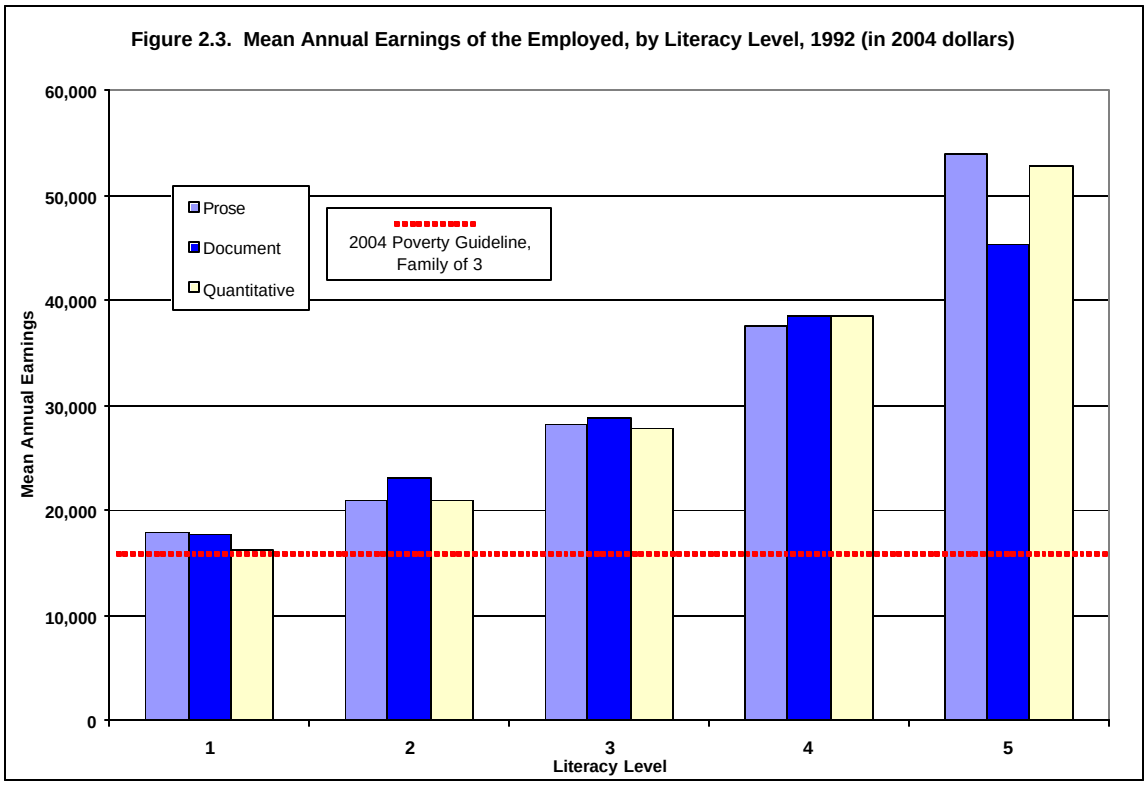
	Mean Proficiencies		
Highest Level of Education Attained	**Prose**	**Document**	**Quantitative**
0 to 8 years	177	170	169
9 to 12 years	231	227	227
GED	268	264	268
High School Diploma	270	264	270
Some Post Secondary	294	290	295
Two-Year Degree	308	299	307
Four-Year Degree	322	314	322
Postgraduate Studies/Degree	336	326	334

Level 1 = 225 and under, Level 2 = 226 - 275, Level 3 = 276 - 325, Level 4 = 326 - 375, Level 5 = above 375

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992. In Literacy in the Labor Force - Results from the National Adult Literacy Survey, National Center for Education Statistics, September 1999.

A high school diploma is associated with Level 2 literacy. A four-year degree is the typical educational attainment of those scoring in the upper range of Level 3; meanwhile, graduate studies or a graduate degree is the education associated with Level 4 literacy.

Similar to educational attainment, mean annual earnings increased as literacy levels increased. This relationship is depicted in Figure 2.3. For those with Level 1 literacy, the mean annual earnings hovered around the poverty level. This is in contrast to those with a Level 5 literacy who had mean annual earnings around $50,000 (adjusted to 2004 dollars).



Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992. In Literacy in the Labor Force – Results from the National Adult Literacy Survey, National Center for Education Statistics, September 1999. Conversion to 2004 dollars was calculated by the Center on Urban Poverty and Social Change.

Percent at Level 1 Literacy

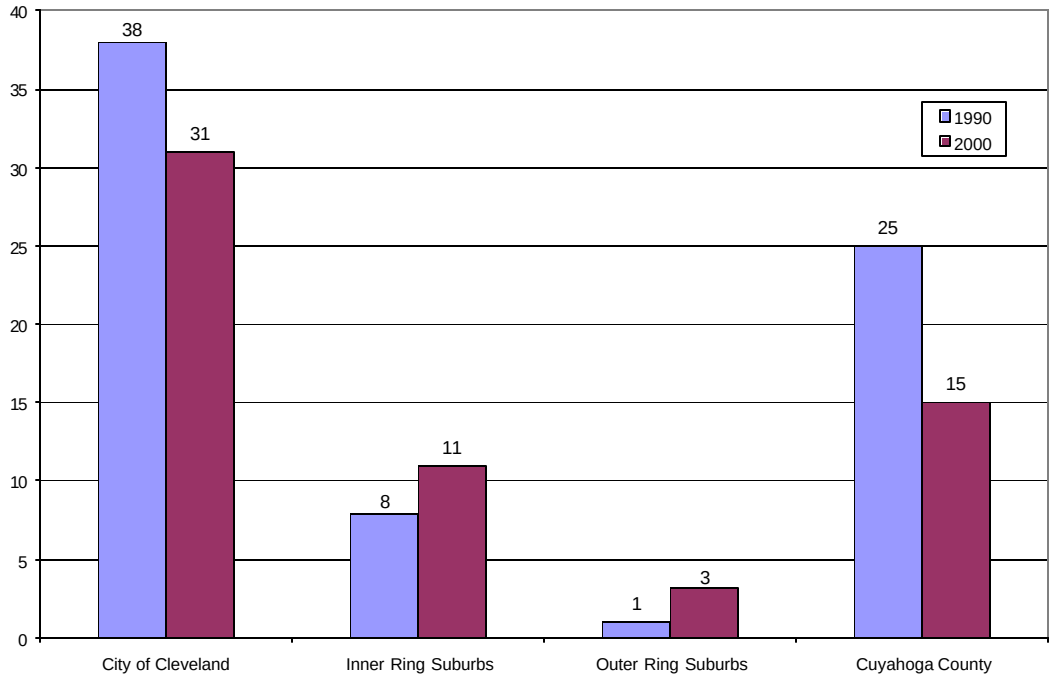
Using the Reder model, the second measure of adult literacy estimated was the percent of the population aged 16 and older at Level 1 literacy. In 1990 in Cuyahoga County, 25% of the adult population, approximately 277,290 people, were at Level 1 literacy. Cuyahoga County, with one in four people at Level 1 literacy, had proportionally more people at this lowest literacy level than the state of Ohio, where approximately one in six adults were at Level 1, and the U.S. as a whole, where one in five adults were at Level 1. Comparisons between Ohio and its neighboring states in 1990 can be found in Table 2.1, and comparisons between Cuyahoga County and other counties in the metropolitan area in 1990 can be found in Table 2.2 (shown earlier).

By 2000, the percent of the population in Cuyahoga County at Level 1 literacy had declined to 15%, or approximately 162,530 adults aged 16 and over. This decrease between 1990 and 2000 represents a statistically significant difference. After analyzing the individual factors used in the statistical modeling in more detail, the following trends were identified – more people were employed, more people were working more weeks in a year, and more people had more post-secondary education – between 1990 and 2000. The improvements in these different variables are likely the result of the good economy during the 1990s. Did the literacy skills really change for individuals during this time? It

is not possible to say since the statistical model does not predict an individual's literacy level. However, with improvements in the education and labor force factors, one would expect to find higher literacy levels countywide.

Within Cuyahoga County, the percent at Level 1 literacy for the City of Cleveland declined from 36 percent in 1990 to 31 percent in 2000, which represents a statistically significant decrease. The inner and outer-ring suburbs experienced slight increases in the percent at Level 1 literacy, though the changes were not statistically significant. It is likely that these small increases were capturing the demographic shift in population that occurred during the 1990s as many people moved out of Cleveland and into other suburbs in Cuyahoga County. Figure 2.4 depicts the differences in Level 1 literacy estimates between 1990 and 2000.

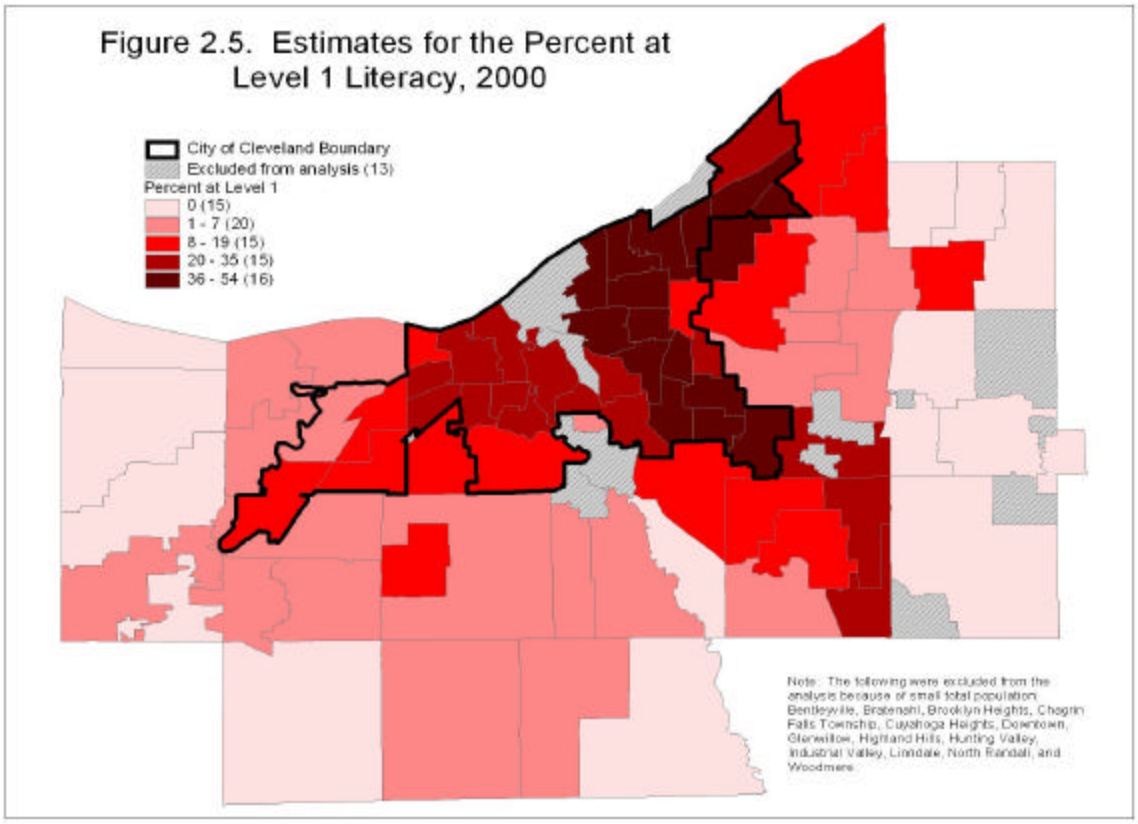
Figure 2.4. Estimates for the Percent at Level 1 Literacy, 1990 vs. 2000



Source: 1990 data – Reder's Adult Literacy Estimates, accessed online at http://www.casas.org/lit/litcode/Search.cfm
2000 data – Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.

Appendix D shows the estimates for the percent at Level 1 literacy for each Cleveland neighborhood and suburban municipality, and the data are also displayed in a map in Figure 2.5. The map illustrates that East Cleveland and City of Cleveland neighborhoods on the east-side have higher percentages of adults at Level 1 literacy. When thinking

about the distribution of the population at Level 1 literacy, the issue of the concentration of this population arose. For example, did five, ten, or sixty-five communities account for most of the people with Level 1 literacy?



Source: Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.

Table 2.7 addresses this question by listing the neighborhoods and municipalities with the highest percentages of their population at Level 1 literacy. Roughly 50% of the 162,530 people with Level 1 literacy countywide reside in 18 neighborhoods and municipalities, and almost 80% of the Level 1 population can be found in 36 of the county's 94 neighborhoods and municipalities. In other words, about half of the Level 1 population can be found in 20% of the neighborhoods and municipalities, and about 80% of those with the lowest literacy skills live in roughly 40% of Cuyahoga County's neighborhoods and municipalities.

Level 1 literacy comparisons between Cleveland and Ohio's other largest cities in 1990 are in Table 2.3 (shown earlier). Cleveland had the highest percentage at Level 1 compared to the other large Ohio cities. Table 2.4 (shown earlier), which compares Cleveland to other Northern Industrial cities in 1990, shows that only Detroit and Newark had higher percentages of the adult population at Level 1 literacy.

Table 2.7. Estimates of the Population Aged 16 and Older at Level 1 Literacy for Selected Neighborhoods and Municipalities, 2000

Neighborhood/Municipality	Percent at Level 1	Number at Level 1
Kinsman	54	1,885
Fairfax	53	2,883
Hough	53	6,245
Central	50	3,794
Glenville	49	8,119
Union-Miles	49	5,229
Woodland Hills	49	3,810
Goodrich-Kirtland Park	48	1,627
Forest Hills	47	5,275
Corlett	46	5,148
East Cleveland	45	8,988
Mt. Pleasant	45	7,557
St. Clair-Superior	45	3,412
Lee-Miles	44	5,583
Euclid-Green	37	1,765
South Collinwood	36	3,616
Clark-Fulton	34	3,163
Warrensville Heights	34	4,041
Buckeye-Shaker	33	4,098
North Broadway	33	2,059
Ohio City	32	2,268
Detroit-Shoreway	30	3,780
Stockyards	30	1,792
Tremont	28	1,654
North Collinwood	27	4,147
Bedford Heights	26	2,392
Oakwood	26	749
Cudell	25	1,937
Brooklyn Centre	23	1,502
South Broadway	20	3,167
West Boulevard	20	2,528
University	19	1,651
Maple Heights	18	3,621
Puritas-Longmead	18	2,089
Euclid	16	6,753
Richmond Heights	13	1,180

Key:
Cleveland Neighborhood
Inner Ring Suburb
Outer Ring Suburb

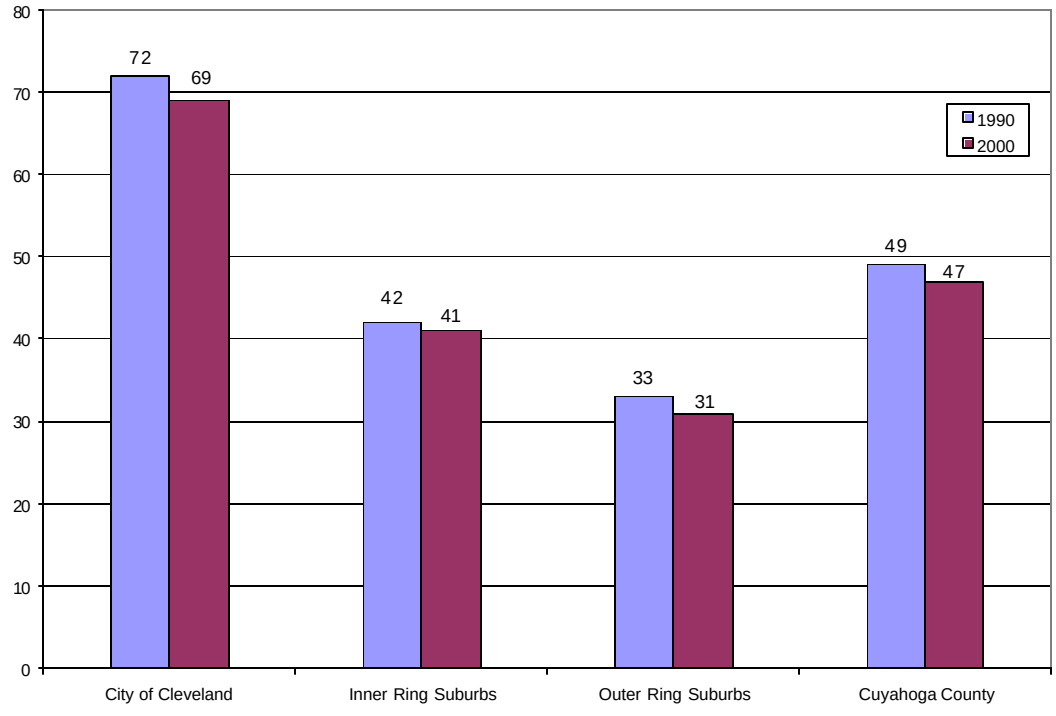
Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.

Percent at Level 1 or Level 2 Literacy

The final measure of adult literacy calculated using Reder's model was the percent of the population aged 16 and over with Level 1 or Level 2 literacy. Unlike the estimates for the percent at Level 1 countywide, the percent at Level 1 or Level 2 in Cuyahoga County did not experience significant changes between 1990 and 2000. In 1990, roughly 543,480 people aged 16 and over (49%) were estimated to have literacy levels in the Level 1 or Level 2 range. By 2000, the percent fell to 47, or approximately 509,260 people aged 16 and older. In both time periods, about half of the population had below (what is considered to be) the minimum standard for good paying jobs with decent benefits. As was the case for the Level 1 estimates, comparisons between Ohio and its neighboring states in 1990 can be found in Table 2.1, and comparisons between Cuyahoga County and other counties in the metropolitan area can be found in Table 2.2 (shown earlier).

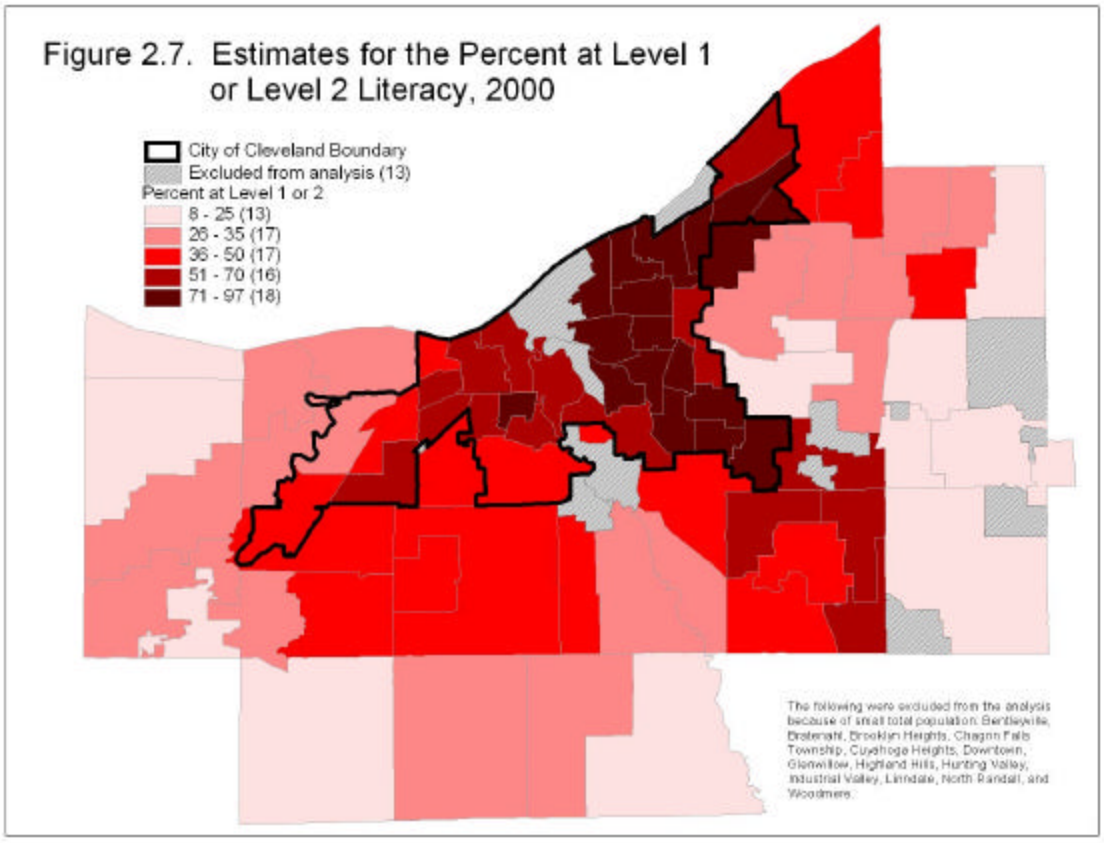
The patterns within Cuyahoga County were similar to those at the county level between 1990 and 2000. For the City of Cleveland, the percent at Level 1 or Level 2 decreased from 72% to 69%. Meanwhile, in the inner-ring suburbs the decrease was from 42% to 41%, and the outer-ring suburban decrease went from 33% to 31%. None of these changes were statistically significant. Figure 2.6 depicts the differences in Level 1 or Level 2 literacy estimates between 1990 and 2000.

Figure 2.6. Percent at Level 1 or Level 2 Literacy, 1990 vs. 2000



Source: 1990 data – Reder's Adult Literacy Estimates, accessed online at http://www.casas.org/lit/litcode/Search.cfm
2000 data – Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.

Appendix E shows the estimates for the percent at Level 1 or Level 2 literacy for each Cleveland neighborhood and suburban municipality, and the data are also displayed in a map in Figure 2.7.



Source: Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.

As with the map for the percent at Level 1 literacy, the same east-side Cleveland neighborhoods, as well as the Clark-Fulton neighborhood, have the highest percentages of the adult population at Level 1 or Level 2 literacy. As was the case for the Level 1 estimates, the question about the distribution of the Level 1 or Level 2 population and its concentration was posed.

In Table 2.8, the 55 neighborhoods and municipalities that accounted for 80% of the population at Level 1 or Level 2 literacy are listed. Unlike the Level 1 estimates where 40% of the neighborhoods and municipalities accounted for 80% of the population with the lowest literacy, the Level 1 or Level 2 population is not as concentrated. For the two lowest literacy levels, the 80% threshold was not reached until 60% of the neighborhoods and municipalities were considered. Similarly, the 50% threshold was crossed after the populations in 34 neighborhoods or municipalities (36%) were tallied.

Table 2.8. Estimates of the Population Aged 16 and Older at Level 1 or Level 2 Literacy for Selected Neighborhoods and Municipalities, 2000

Neighborhood/Municipality	Percent at Level 1 or 2	Number at Level 1 or 2
Kinsman	97	3,386
Hough	95	11,194
Central	94	7,133
Fairfax	93	5,058
Union-Miles	92	9,818
Woodland Hills	90	6,998
Glenville	89	14,747
Forest Hills	88	9,876
Corlett	86	9,625
Mt. Pleasant	85	14,275
St. Clair-Superior	85	6,445
East Cleveland	83	16,578
Goodrich-Kirtland Park	82	2,780
Lee-Miles	82	10,404
North Broadway	76	4,741
Euclid-Green	75	3,577
South Collinwood	75	7,534
Clark-Fulton	72	6,699
Stockyards	70	4,182
Warrensville Heights	69	8,200
Buckeye-Shaker	68	8,445
Detroit-Shoreway	68	8,569
Ohio City	68	4,818
Tremont	64	3,781
Cudell	63	4,881
North Collinwood	63	9,676
Brooklyn Centre	61	3,984
Oakwood	61	1,756
South Broadway	59	9,341
Bedford Heights	58	5,335
West Boulevard	56	7,077
Puritas-Longmead	55	6,382
University	55	4,780
Maple Heights	53	10,660
Euclid	50	21,104
Garfield Heights	48	11,532
Jefferson	47	7,303
Riverside	47	1,677
Brooklyn	45	4,349
Bedford	44	5,075
Mayfield Heights	44	7,329
Newburgh Heights	44	840
Old Brooklyn	44	11,970
Parma Heights	44	7,938
Brookpark	42	7,152
Richmond Heights	41	3,722
Edgewater	40	2,929
Parma	40	27,507
Seven Hills	39	3,953
Middleburg Heights	37	4,870
Walton Hills	36	741
Kamms Corners	35	5,499
Olmsted Township	35	2,968
South Euclid	34	6,212
Cleveland Heights	33	13,011

Key:
Cleveland Neighborhood
Inner Ring Suburb
Outer Ring Suburb

Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.

Level 1 or Level 2 literacy comparisons between Cleveland and Ohio's other largest cities in 1990 are shown earlier in Table 2.3. Cleveland again had the highest percentage when compared to the other large Ohio cities. Table 2.4 (shown earlier), which compares Cleveland to other Northern Industrial cities in 1990, shows that Baltimore, Detroit, and Newark had higher percentages than Cleveland for Level 1 or Level 2 literacy.

Adult Literacy Estimate Caveats

It is important to reiterate that the adult literacy estimates calculated for 2000 are based on a model that was originally constructed using county-level data collected for the nation in 1990 (Census) and 1992 (NALS). Initially, one issue to consider is how comparable Cuyahoga County is to the nation. Second, the relationships between the literacy variables and the predictor variables were originally generated using 1992 literacy data and 1990 U.S. Census data. Without more recent literacy data to include in the model, the assumption was made that the relationships between the literacy and predictor variables remained constant between 1990 and 2000. If either of these

assumptions were violated, then the literacy estimates calculated under a new set of assumptions would most likely differ from the ones calculated here.

Third, it is also important to remember that the literacy estimates are calculated using demographic indicators, and the indicators describe geographic areas, not individuals. Thus, changes in literacy estimates between 1990 and 2000 do not tell us anything about how an individual's literacy may have changed over time. Instead, the model tells us more about changes in factors that are thought to be important in predicting literacy (such as educational attainment, non-English speaking population, recent immigrants, etc.). Despite these limitations, without conducting a survey of the Cuyahoga County population that assesses an individual's literacy skills, the model estimates do provide a feasible alternative.

Other cities and states have also faced this issue of how to best capture the current literacy status of its adult population. In a 2004 Los Angeles County study of workforce literacy, the Reder model was updated to estimate the low literacy population in 2004.[41] The State of Nevada also used the Reder model to derive more recent literacy estimates.[42] Similarly, the Literacy Alliance of Greater New Orleans used the Reder model to derive local, updated literacy estimates.[43] The New Orleans Study also mentioned the importance of using census tract data to help inform decisions about where adult literacy services should be targeted.

The Census data used to update the adult estimates for Cuyahoga County in 2000 are presented at the tract level in Appendix F3 (numbers) and Appendix F4 (percentages); Appendix F1 (numbers) and Appendix F2 (percentages) contain the data for Cuyahoga County municipalities and Cleveland neighborhoods. As in Los Angeles County and Greater New Orleans, Reder's synthetic estimation was also used to calculate estimates in Oregon.[44] However, this was only one part of the analysis. The second component considered how demographic changes between 1990 and 2000, such as the aging of the adult population, the in- and out-migration of those with differing literacy proficiencies, and death rates, could impact adult literacy proficiency estimates.[45]

While the Reder synthetic estimates seem to be a common way to estimate the literacy of the adult population, an Internet and literature search uncovered four other ways that

[41] *Literacy @ Work: The L.A. Workforce Literacy Project*. A project of the City of Los Angeles, the Literacy Network of Greater Los Angeles and the United Way of Greater Los Angeles. Accessed online at www.workforceliteracy.org

[42] *Nevada Five Year State Plan for Adult Basic Education, Beginning July 1, 1999 – Ending June 30, 2004*. Accessed online at http://www.literacynet.org/nvadulted/pdfs/nvabeplan.pdf

[43] *Literacy Alliance of Greater New Orleans.* A project administered by the Lindy Boggs National Center for Community Literacy at Loyola University. Accessed online at http://www.literacyalliancegno.org/

[44] Reder, S. and B. Edmonston. 2003. *Oregon Literacy Project*. Accessed online at http://egov.oregon.gov/DAS/OPB/docs/BdUp04/Jan/Literacy.pdf

[45] For more information about the method associated with this component see Reder, S. and B. Edmonston. 2000. *Demographic Change and Literacy Development in a Decade*. National Center for Education Statistics: Washington, DC.

literacy has been measured in Cuyahoga County. The literacy measures in these analyses were as follows: reading activity (as opposed to reading ability); financial literacy; workplace literacy; and health literacy. Appendix G1 summarizes each of the studies in more detail.

Interestingly, Cleveland ranks as the 14th most literate city in the nation per the 2004 survey conducted by Jack Miller at the University of Wisconsin-Whitewater. This study measures how many people *do* read, not *if* people can read. The rankings are based on five factors, which generated 22 different variables. The five factors were educational attainment, periodicals published, newspaper circulation, library quality, and the number of booksellers. Comparisons between Cleveland and the other Ohio cities in the study (Akron, Cincinnati, Columbus, and Toledo) are shown in Appendix G2.

Child Literacy

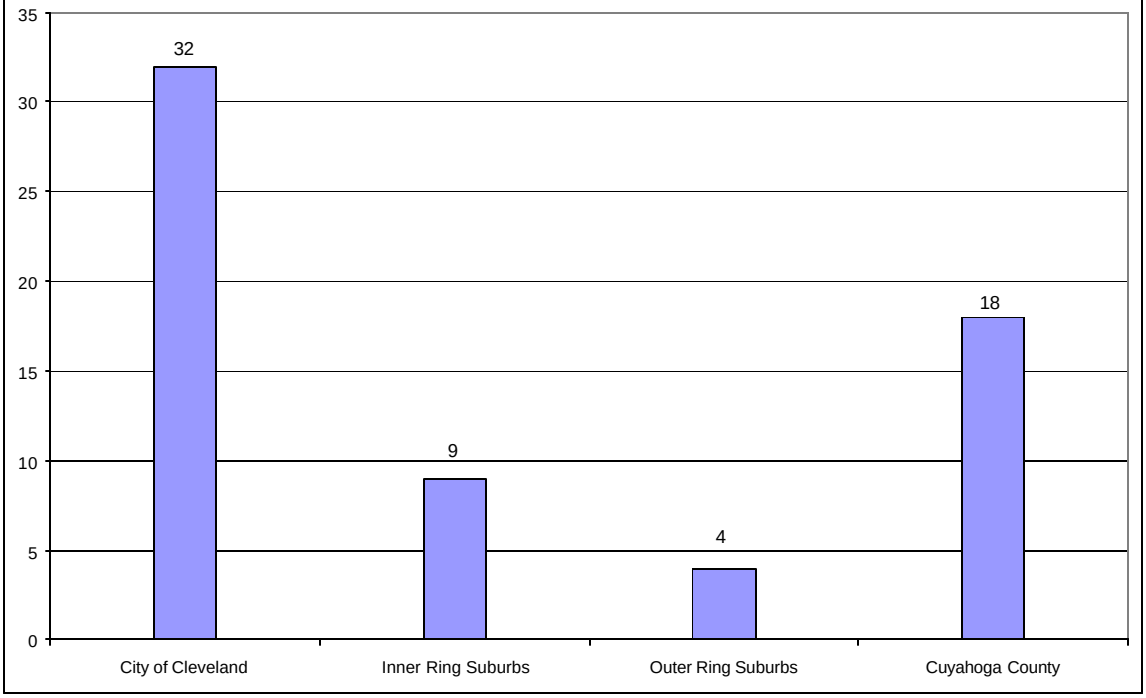
The child literacy in Cuyahoga County is being analyzed in terms of three different age groups – the early childhood population under age 6, the school-age population, specifically 4th and 9th graders, and the youth population aged 16 – 19. Results for each are discussed in more detail below.

Early Childhood Population

Prior research has shown that children born to mothers with low levels of education are less likely to have early literacy skills. By looking at the percent of babies born to mothers with less than a high school degree, the number of children under age 6 who are likely to experience literacy problems can be estimated. Between 1998 and 2002 in Cuyahoga County, approximately 16,600 babies were born to mothers with less than a high school degree. About 1 in 5 births countywide during this time period were to mothers without a high school diploma.

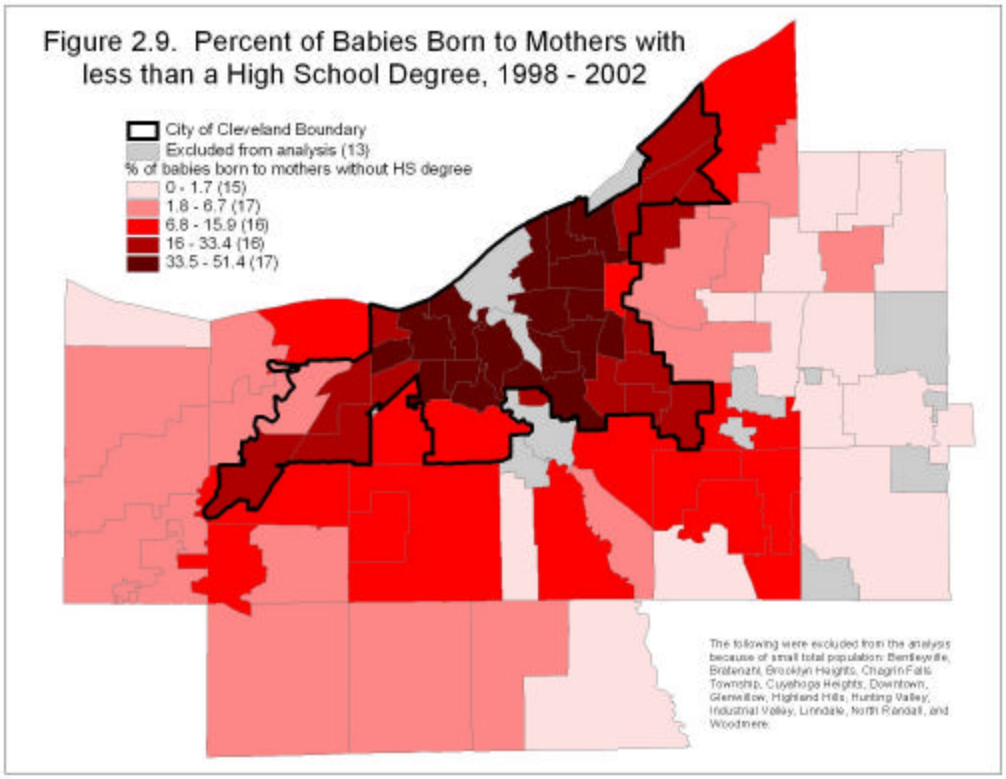
In the City of Cleveland, almost 11,300 of the 35,100 births, or 1 in 3, were to mothers without a high school diploma. The percentages were lower in the inner- and outer-ring suburbs, 9% and 4%, respectively. Figure 2.8 shows these comparisons.

Figure 2.8. Percent of Births to Mothers with less than A High School Degree, 1998 - 2002



Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Health's Vital Statistics Data, 1998 - 2002

Figure 2.9 illustrates the distribution at the neighborhood and municipality level.



Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Health's Vital Statistics Data, 1998 - 2002

Comparing the maps of the percent of adults at Level 1 literacy and the percent of babies born to mothers with less than a high school degree, it becomes apparent that the east-side neighborhoods with the highest Level 1 percentages do not represent all of the same neighborhoods with the highest percentages of babies born to mothers with low educational attainment. For example, the Tremont, Ohio City, Detroit-Shoreway, Clark-Fulton, and Stockyards neighborhoods emerge as places where the greatest percentages of babies are born to mothers without a high school diploma. There were some neighborhoods, however, with high percentages for both indicators; these include the Goodrich-Kirtland Park, Central, Hough, and Kinsman neighborhoods. Appendix H shows the distribution of births to mothers with less than a high school degree by neighborhood and municipality.

Similar to the adult literacy analysis, the concentration of the birth mother's education was evaluated across neighborhoods and municipalities. Twenty Cleveland neighborhoods accounted for approximately 50% of the births to mothers with low levels of education. Recall that for the adult Level 1 literacy estimates, it took only 18 neighborhoods and municipalities to reach the 50% threshold. Thus, the birth mother's education is only slightly less concentrated than the Level 1 literacy estimates. One

interesting distinction between the two indicators is that for the birth mother's education, only Cleveland neighborhoods were involved in reaching the 50% threshold. This was not the case for the Level 1 literacy, as both East Cleveland and Warrensville Heights were included for the adult literacy 50% threshold.

The birth mother's educational attainment reached the 80% threshold after 48 neighborhoods and municipalities were accounted for. Once again, this was not as concentrated as the adults with Level 1 literacy. Table 2.9 shows the neighborhoods and municipalities involved in reaching the 50% and 80% concentration thresholds.

Table 2.9. Distribution of Births to Mothers Who Did Not Have a High School Degree for Selected Neighborhoods and Municipalities, 1998 - 2002

Neighborhood/Municipality	Percent without High School Degree	Number without High School Degree	Neighborhood/Municipality	Percent without High School Degree	Number without High School Degree
Stockyards	51	387	Puritas-Longmead	25	266
Kinsman	50	387	Euclid-Green	24	129
Central	49	541	Buckeye-Shaker	23	236
Detroit-Shoreway	48	741	Riverside	22	85
Tremont	47	325	Lee-Miles	21	179
North Broadway	46	303	Newburgh Heights	21	29
Ohio City	45	320	Edgewater	20	101
St. Clair-Superior	45	420	Jefferson	19	277
Goodrich-Kirtland Park	45	125	North Collinwood	18	215
Clark-Fulton	44	518	Warrensville Heights	16	146
Fairfax	43	218	Old Brooklyn	14	348
Brooklyn Centre	39	310	University	14	39
South Broadway	38	601	Independence	14	41
Hough	38	469	Oakwood	13	20
Glenville	38	666	Garfield Heights	11	197
Cudell	37	322	Brookpark	10	98
Woodland Hills	34	344	Lakewood	10	332
Forest Hills	33	392	Maple Heights	9	132
West Boulevard	33	452	Berea	8	68
Union-Miles	32	359	Euclid	8	235
East Cleveland	32	584	Bedford Heights	7	43
Mt. Pleasant	32	492	Parma Heights	7	77
South Collinwood	30	293	Bedford	7	56
Corlett	27	275	Brooklyn	7	40

Key:
Cleveland Neighborhood
Inner Ring Suburb
Outer Ring Suburb

Source: Center on Urban Poverty and Social Change Analysis of the Ohio Department of Health's Vital Statistics Data, 1998 - 2002

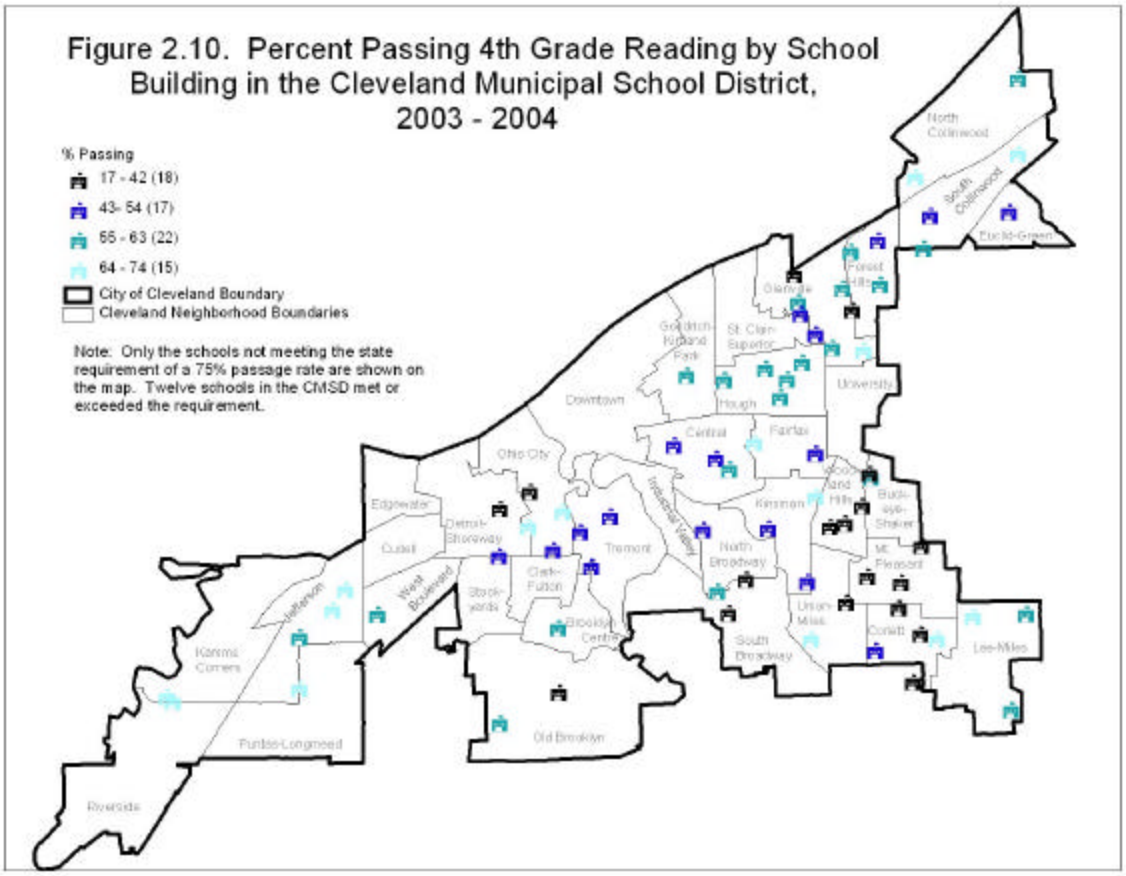
School-Age Population

For the school-age population, proficiency test data measures student performance across a variety of subject areas. In analyzing the proficiency data, the assumption is being made that the inability to pass the various tests suggests that students do not have the skills needed in a particular subject area. Whether or not this means that a student is unable to meet the challenges to function in both work and society later in life remains to be seen.

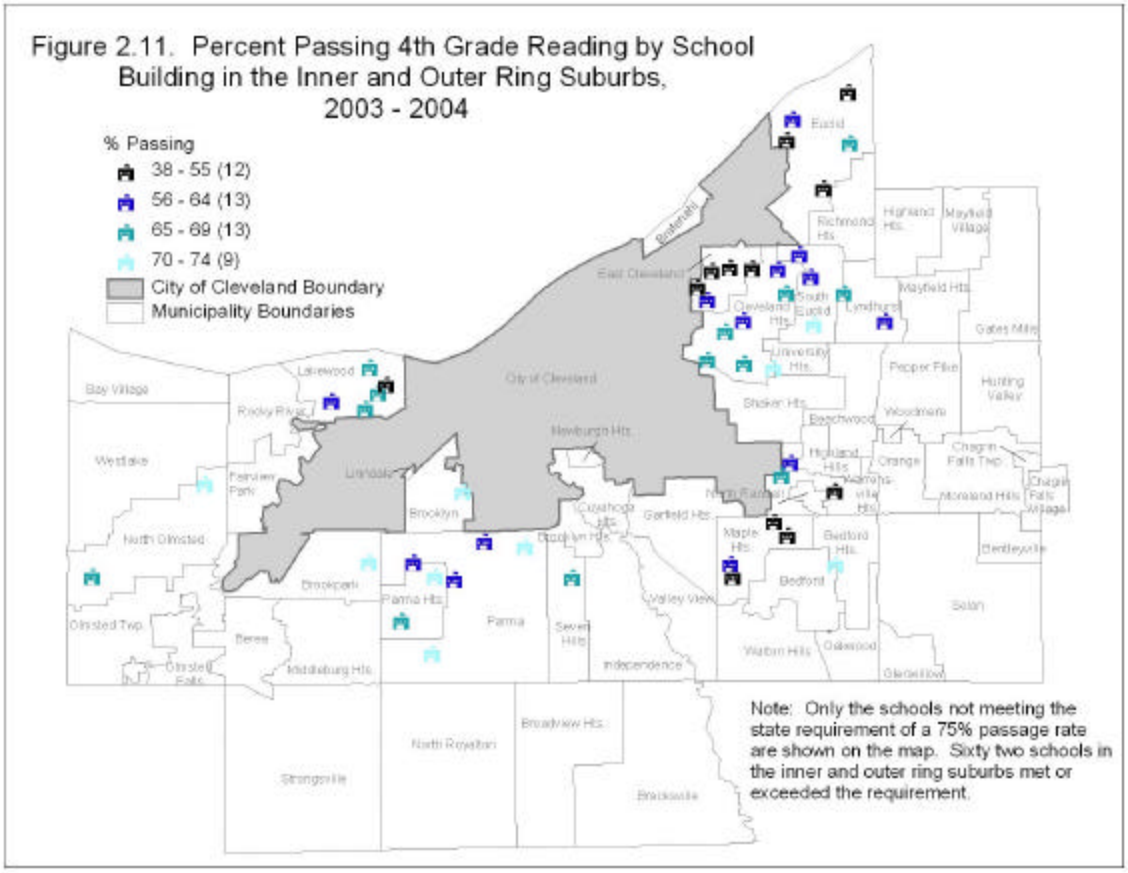
Proficiency data from the Ohio Department of Education provides the passage rate for five subjects – reading, writing, math, science, and citizenship. Appendices I1 – I5 show

the percent proficient by subject by school building for the Cleveland Municipal School District by year for the 4th grade tests, and Appendices I6 – I10 provide the same information for schools in Cuyahoga County's suburban districts. In Appendices I11 – I15 and I16 – I20, the same data are available for the 9th grade tests for the Cleveland Municipal Schools and the suburban schools, respectively.

For both the 4th and 9th grade proficiency data analyzed for this report, the state requirement for each school is 75% passing. The results are summarized in terms of schools meeting and not meeting this state requirement. For the 4th grade reading test in 2003-2004, 119 out of 175 public schools in Cuyahoga County (68%) did not meet the 75% state requirement. Of the 119 schools, 72, or 60%, were in the Cleveland Municipal School District. Figure 2.10 shows the distribution of the schools within the Cleveland Municipal School District where the state requirement for 4th grade reading was not met, and Figure 2.11 displays the same information for the suburban school buildings.



Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Education's Proficiency Test Data, 2003 - 2004



Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Education's Proficiency Test Data, 2003 - 2004

In terms of the 9th grade reading proficiency test, six out of 54 schools (11%) did not meet the state requirement in the 2002-2003 school year. Five of the six schools were located in the Cleveland Municipal School District. Table 2.10 lists those schools that did not meet the 9th grade reading requirement.

Table 2.10. Schools Not Meeting the 9th Grade Reading Proficiency Requirement

School	Neighborhood/Municipality	Percent Proficient
Jesse Owens Academy High School	Buckeye-Shaker	65.0
Max S. Hayes Vocational School	Detroit-Shoreway	67.6
Nathaniel Hawthorne	Hough	69.3
Halle High School	West Boulevard	72.0
Lincoln-West High School	Clark-Fulton	73.9
Shaw High School	East Cleveland	74.6

Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Education's Proficiency Test Data, 2002-2003

Even though a school building may have met the state requirement that does not necessarily mean that all children in the building passed the proficiency test. Table 2.11 helps to illustrate this point as it shows the distribution of the percent passing in the schools that did meet the state requirement.

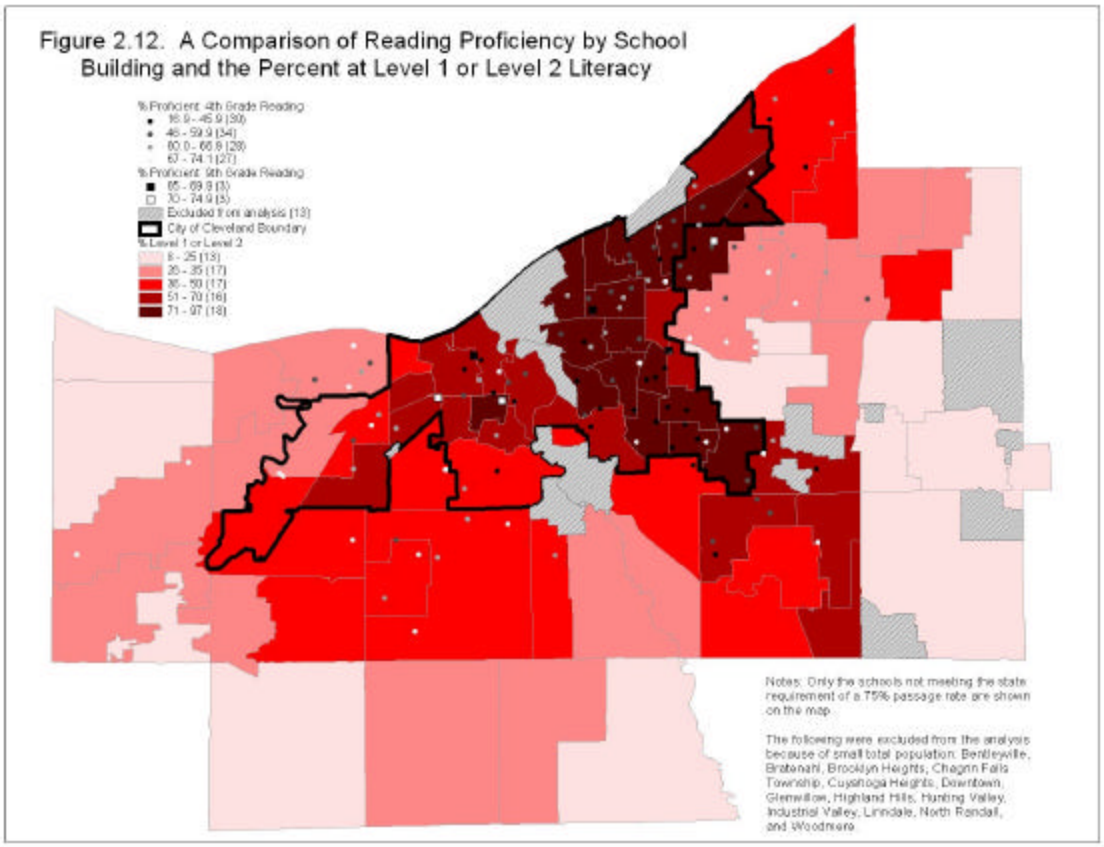
Table 2.11. Distribution of Schools Exceeding State Requirements

Percent Passing	4th Grade Reading	9th Grade Reading
75.0 - 79.9%	20	8
80.0 - 89.9%	37	13
90.0 - 99.4%	17	27

Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Education's Proficiency Data, 2003 – 2004 (4^{th} grade) and 2002 – 2003 (9^{th} grade)

For example, there were 20 schools in the 2003-2004 school year where between 75.0% and 79.9% of the students passed the 4^{th} grade proficiency test. In other words, there were between 20.1% and 25.0% of the students who did not pass the proficiency test, which may signal reading difficulties now and/or in the future.

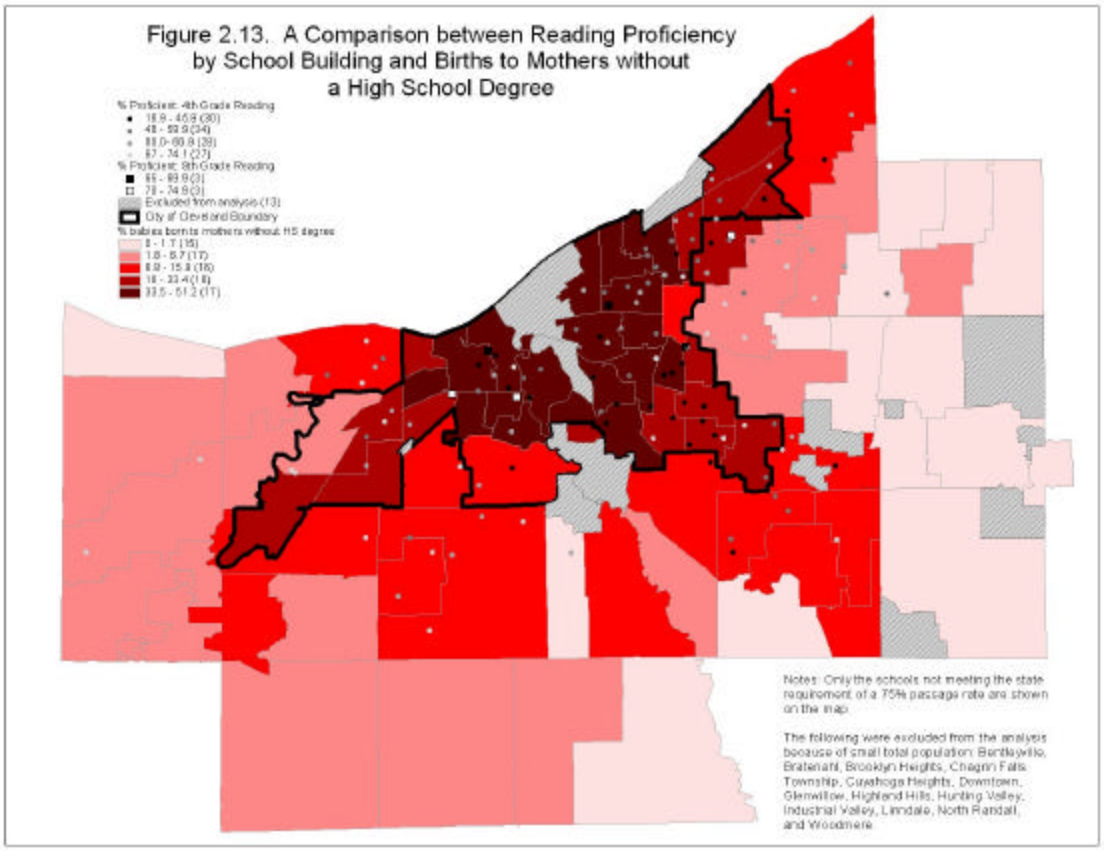
Figure 2.12 shows the distribution of schools not meeting the state requirement in 4^{th} and 9^{th} grade reading compared to the percent of the adult population at Level 1 or Level 2 literacy.



Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Education's Proficiency Test Data and Census 2000 data using Reder's mathematical models, available in Reder, S. 1997. Synthetic Estimates of Literacy Proficiency for Small Census Areas.

Not surprisingly, many of the schools with the lowest percentages passing the reading tests are located in Cleveland neighborhoods with the highest percentages of adults with the lowest literacy levels. This suggests a correlation between the location of the schools where children have trouble reading and the neighborhoods where adults have the lowest literacy.

Figure 2.13 provides a comparison between reading proficiency and births to mothers without a high school degree.



Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Education's Proficiency Test Data and the Ohio Department of Health's Vital Statistics Data

The map illustrates how the schools with the lowest percentages of students passing reading tests are located in neighborhoods with the highest percentages of babies born to mothers without a high school degree. As was the case with the previous map, neighborhoods with low percentages of children passing the proficiency test are also home to mothers with low levels of education, suggesting that difficulties with literacy span across multiple generations in many of Cleveland's neighborhoods and Cuyahoga County's municipalities.

Table 2.12 lists the schools in the Cleveland Municipal School District that passed the 4th grade reading proficiency in 2003-2004 along with selected neighborhood characteristics. The table provides some examples of high performing schools in neighborhoods with low adult literacy levels, low levels of educational attainment for mothers, and high poverty.

Table 2.12 Percent Passing 4th Grade Reading for Selected Schools in the Cleveland Municipal School District Compared to Selected Neighborhood Indicators

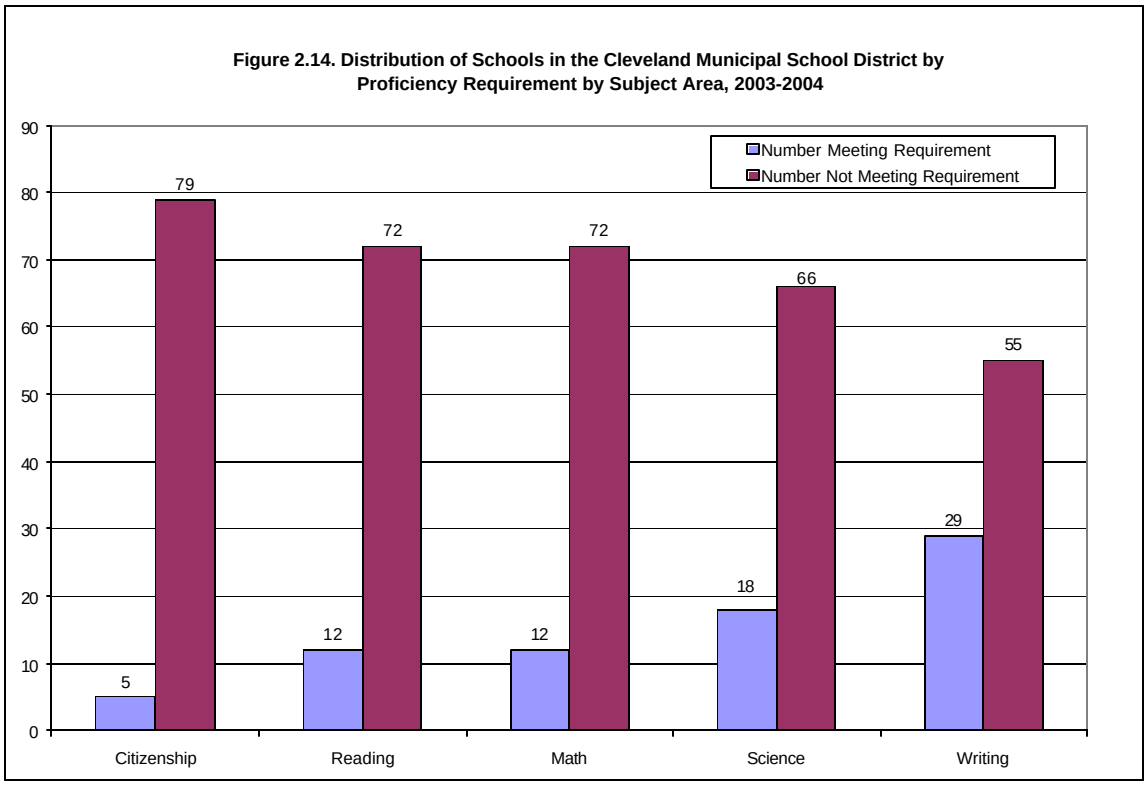
School (Neighborhood)	Percent passing, 2003-2004	Percent of Births to Mothers without a HS Degree, 1998-2002	Percent of the Population Living in Poverty, 1999	Estimates of the Percent of Adults at Level 1 or Level 2 Literacy, 2000	Number of Literacy Service Providers
Marion C. Seltzer Elementary School (Cudell)	75.8	37	29	63	2
George W. Carver Elementary School (Central)	77.1	49	65	94	16
Benjamin Franklin Elementary School (Old Brooklyn)	78.8	14	11	44	2
Almira Elementary School (West Boulevard)	81.5	33	18	56	0
Brooklawn Elementary School (Puritas-Longmead)	81.6	25	14	55	0
Watterson-Lake Elementary School (Detroit-Shoreway)	82.2	48	36	68	10
William Cullen Bryant Elementary School (Old Brooklyn)	84.8	14	11	44	2
Newton D. Baker School of Arts Elementary (Kamms Corners)	85.6	5	6	35	0
H. Barbara Booker Montessori Elementary (Detroit-Shoreway)	86.1	48	36	68	10
R. G. Jones Foreign Language Elementary (Puritas-Longmead)	87	25	14	55	0
Louisa M. Alcott Elementary School (Edgewater)	93.1	20	18	40	0
Valley View Elementary School (Kamms Corners)	95.7	5	6	35	0

Source: Center on Urban Poverty and Social Change analysis of Ohio Department of Education Proficiency Data, Ohio Department of Health Vital Statistics Data, Census 2000 Data, Cleveland Reads Literacy Provider Data, and Census 2000 data using Reder's mathematical models

George W. Carver Elementary School in the Central neighborhood, H. Barbara Booker Montessori Elementary in the Detroit-Shoreway neighborhood, and Watterson-Lake Elementary in Detroit-Shoreway provide examples of schools that have relatively high percentages of students passing the 4th grade reading tests when neighborhood factors are considered. Perhaps these schools could offer some examples of best practices that could be applied to other schools with similar neighborhood conditions but dissimilar proficiency results.

Though the focus of much of the proficiency data analysis has been on the reading tests, the data for other subjects are also available in Appendix I. It does seem, however, that results on the reading proficiency exam provide a reasonable indication of how students fared on the other tests. For example, in the Cleveland Municipal School District, 72 schools did not pass the 4th grade reading test. Of those schools, 51 did not pass any other 4th grade exam. There was only one school, Douglas Macarthur Elementary School in the Kamms Corners neighborhood, where students did not meet the state requirement in reading but did meet the state requirement for the other four tests.

Figure 2.14 compares the number of schools in the Cleveland Municipal School District that met the state requirements for the 4th grade tests against those that failed to meet the state requirements in the 2003-2004 school year. The most schools, 29, met the state requirement for the writing test, while only 5 schools met the state requirement on the citizenship test. There were two schools in the Cleveland Municipal School District – Louisa M. Alcott Elementary in the Edgewater neighborhood and Newton D. Baker School of Arts Elementary in the Kamms Corners neighborhood – that met the state requirement on each of the five 4th grade proficiency tests.

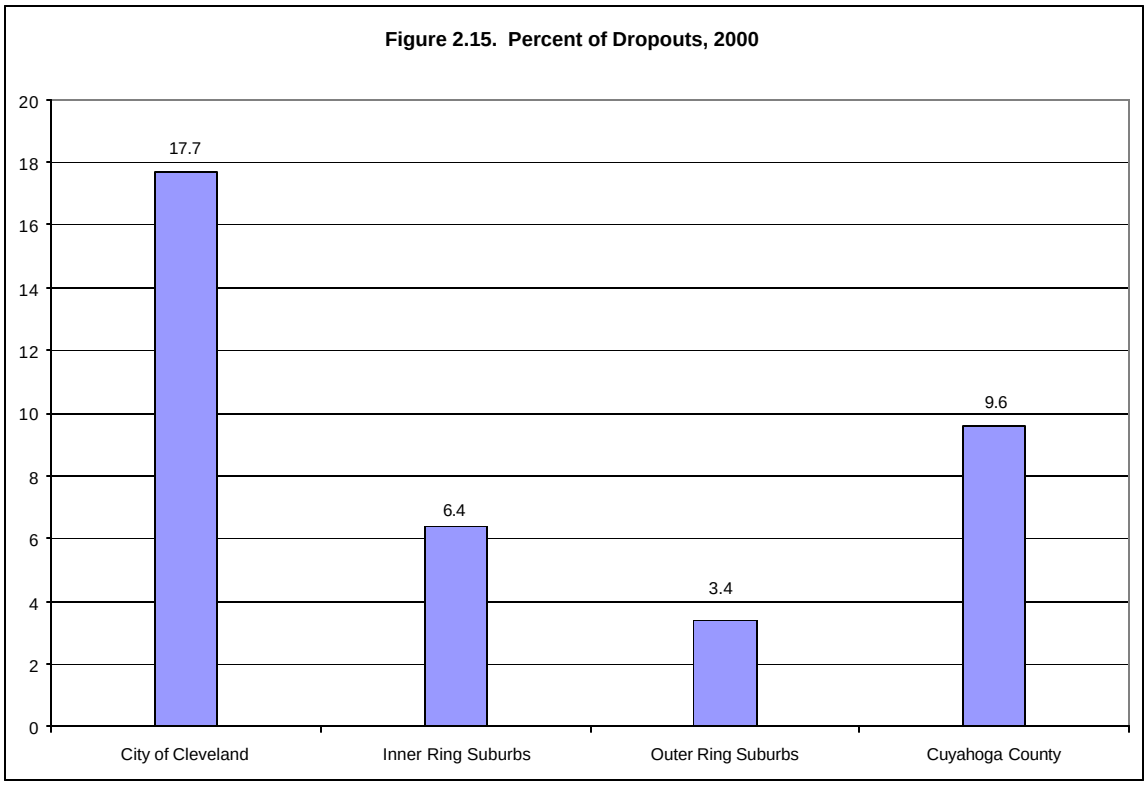


Source: Center on Urban Poverty and Social Change analysis of the Ohio Department of Education's Proficiency Test Data, 2003 - 2004

Youth Population Aged 16-19

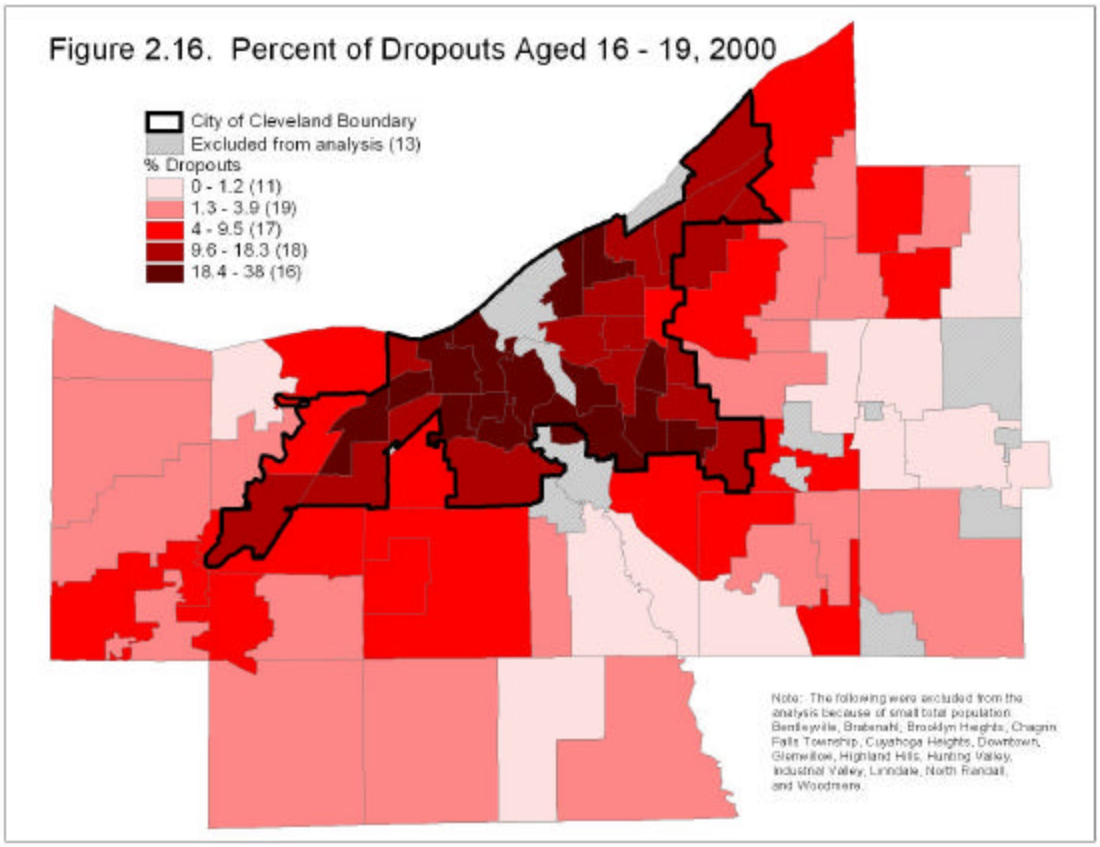
The final child literacy data analyzed pertains to youth aged 16-19 and focuses on their educational attainment and work behavior. In 2000, roughly 6,700 of the more than 70,000 civilian youth aged 16 to 19 living in Cuyahoga County (9.6%) could be classified as dropouts, where dropouts are defined as those civilian youth not enrolled in school and not a high school graduate. The number of dropouts by Cleveland neighborhood and suburban municipality is displayed in Appendix J.

Figure 2.15 shows the distribution of dropouts for Cleveland, and the inner- and outer-ring suburbs. Nearly 18% of youths were categorized as dropouts in Cleveland in 2000 compared to 6% in the inner-ring suburbs and 3% in the outer-ring suburbs.



Source: Center on Urban Poverty and Social Change analysis of Census 2000 data

Figure 2.16 maps the distribution of dropouts for neighborhoods and municipalities countywide.

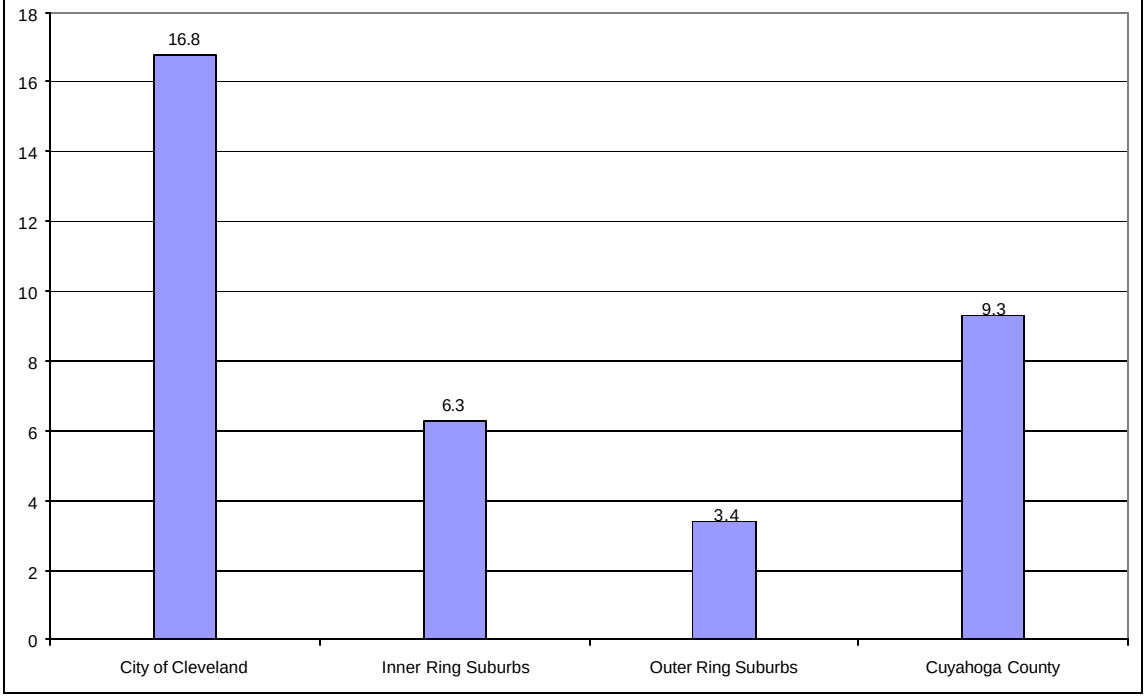


Source: Center on Urban Poverty and Social Change analysis of Census 2000 data

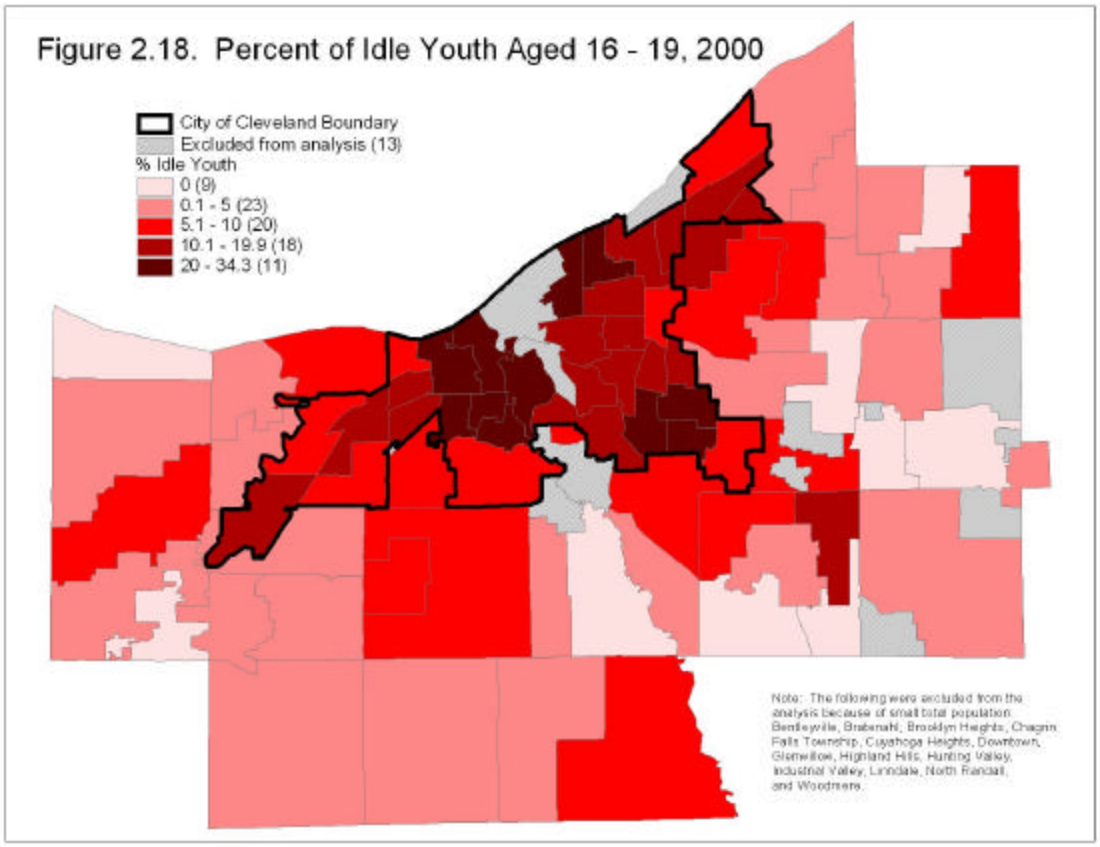
A measure of educational attainment for the population aged 18-24 is also presented in Appendix J. This additional measure provides information about the percent of youth aged 18-24 in 2000 that had less than a high school degree. While this measure looks at a different population than the dropout indicator, i.e. those aged 18-24 compared to the civilian youth aged 16-19, and there is some overlap in the age groups in the two different variables, the 18-24 measure does provide information about the educational attainment of the young adult population countywide. However, when considering these numbers it is important to keep in mind that some individuals aged 18-24 may be working toward a high school degree, and they should not be considered dropouts.

The third indicator in Appendix J is the percent of civilian youth aged 16-19 who are idle, where idle is defined as those who are not enrolled in school and not working. Similar to the countywide dropout numbers, approximately 6,500 youth, or 9.3%, met the requirements for the idle definition. Figure 2.17 shows the distribution of idle youth for Cleveland and the inner- and outer-ring suburbs, and the distribution is mapped in Figure 2.18.

Figure 2.17. Percent of Idle Youth, 2000



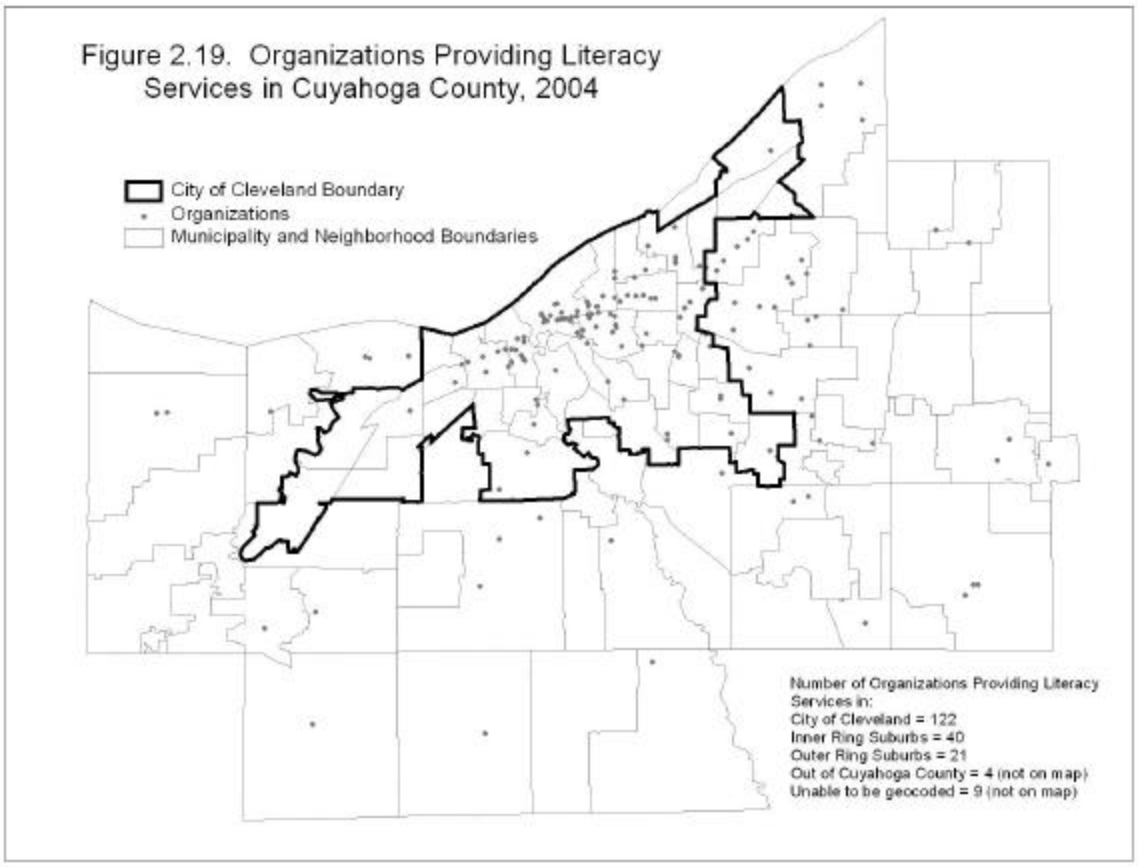
Source: Center on Urban Poverty and Social Change analysis of Census 2000 data



Source: Center on Urban Poverty and Social Change analysis of Census 2000 data

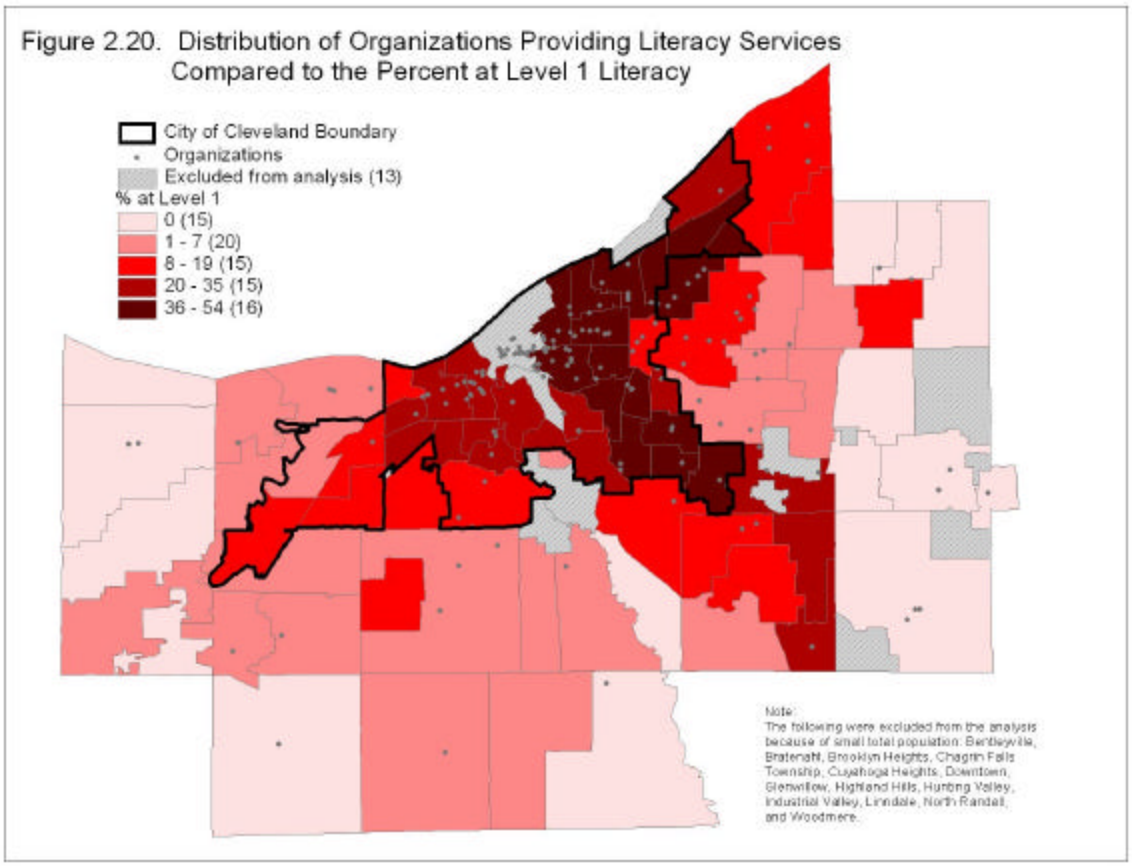
Literacy Providers

Literacy service providers are plotted in Figure 2.19. As the map illustrates, there are more organizations providing literacy services in Cleveland than in the suburbs. Of the 196 providers (183 with geocodable addresses), 122 are located in the City of Cleveland, 40 can be found in the inner ring suburbs, and 21 are in the outer ring suburbs. The Cleveland neighborhoods with the most organizations providing literacy services included Ohio City, Downtown, Central, and Hough. There were some Cleveland neighborhoods and suburban municipalities where no literacy providers were located.



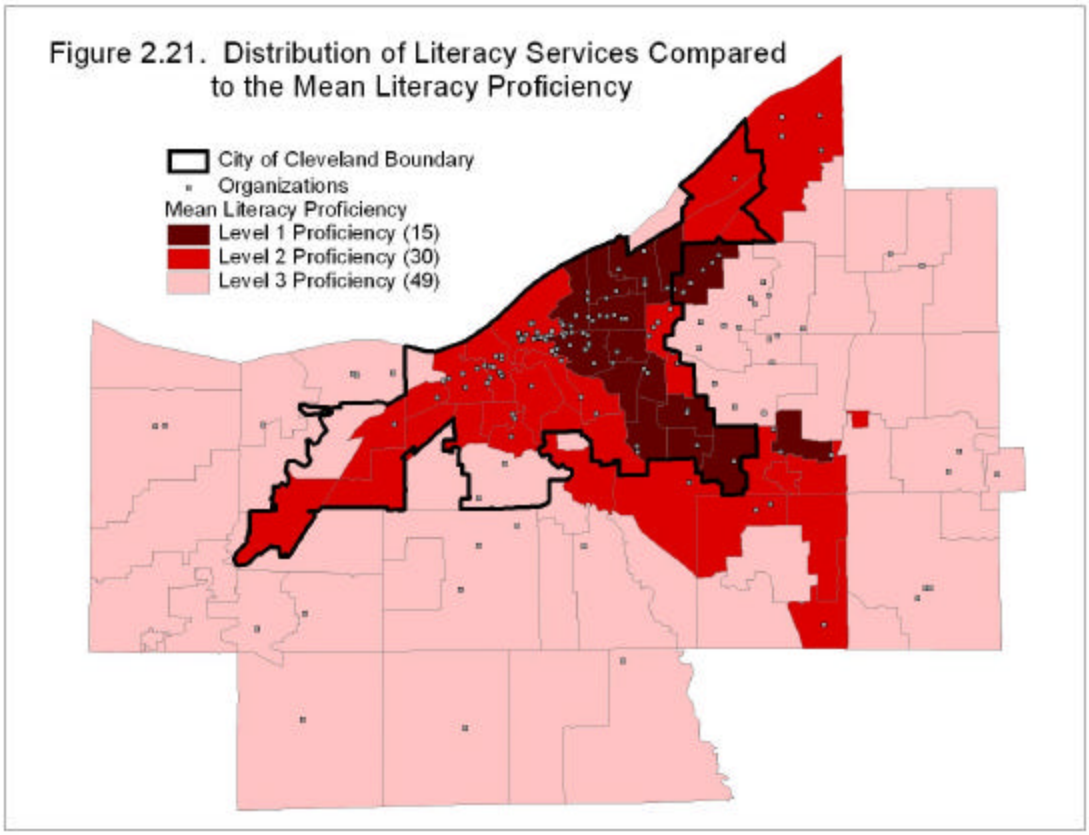
Source: Center on Urban Poverty and Social Change analysis of the Cleveland Reads provider data (last updated September 14, 2004) and the Cleveland Municipal School District, Adult & Continuing Education list of ESOL providers, 2004-2005 School Year

The distribution of organizations providing literacy services compared to the percent of adults at Level 1 literacy is illustrated in Figure 2.20. With such a map, the question as to whether or not literacy services are located in the neighborhoods where they are the most needed can be addressed. The answer to such a question, though, really depends on the neighborhood. For instance, some of the neighborhoods and municipalities with the lowest estimated adult literacy, such as Central, Hough, and East Cleveland, are home to several literacy providers. Other neighborhoods with low estimated adult literacy levels, such as Kinsman, Mt. Pleasant, or South Collinwood, have only a few, if any, literacy providers.



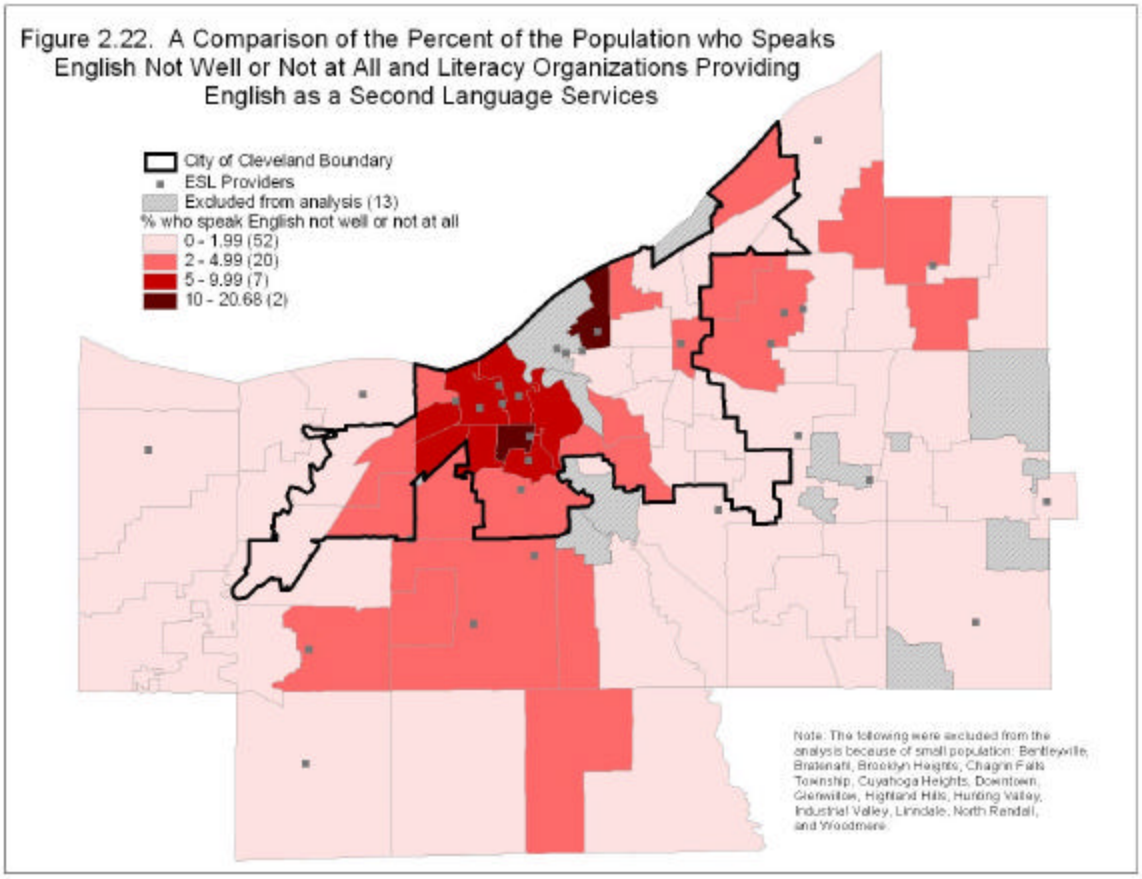
Source: Center on Urban Poverty and Social Change analysis of the Cleveland Reads provider data (last updated September 14, 2004), the Cleveland Municipal School District, Adult & Continuing Education list of ESOL providers, 2004-2005 School Year, and the Census 2000 data using Reder's mathematical models

Figure 2.21, comparing the literacy provider distribution to mean literacy proficiency levels, shows a similar pattern in that there are neighborhoods with low adult literacy and few literacy service providers.



Source: Center on Urban Poverty and Social Change analysis of the Cleveland Reads provider data (last updated September 14, 2004), the Cleveland Municipal School District, Adult & Continuing Education list of ESOL providers, 2004-2005 School Year, and the Census 2000 data using Reder's mathematical models

In Figure 2.22, the distribution of literacy providers with English as Second Language (ESL) services is compared to the population who speaks English not well or not at all. Two Cleveland neighborhoods, Clark-Fulton and Goodrich-Kirtland Park, were areas where the non-English speaking population was 10% or greater. In each of these neighborhoods, there were ESL service providers. However, there were some neighborhoods with ESL providers that had low percentages of the non-English speaking population. In order to get a more detailed look at the distribution of the non-English speaking population within neighborhoods, the data were analyzed at the census tract level.



Source: Center on Urban Poverty and Social Change analysis of the Cleveland Reads provider data (last updated September 14, 2004), the Cleveland Municipal School District, Adult & Continuing Education list of ESOL providers, 2004-2005 School Year, and Census 2000 data

In Table 2.13, the census tracts with ten percent or more of the population speaking English not well or not at all are presented and compared to the percent foreign-born, and the languages spoken at home. These variables, analyzed in concert, provide details about who the non-English speaking population is. For example, in the Clark-Fulton neighborhood, many of those not speaking English well speak Spanish; while in the Goodrich-Kirtland Park neighborhood, Asian languages are spoken among the non-English speaking population.

Table 2.13. Census Tracts with Ten Percent or More of the Population Speaking English Not Well or Not at All, 2000

Census Tract	Neighborhood	Number of People Who Speak English Not Well or Not at All	Percent of the Population Who Speaks English Not Well or Not at All	Percent of the Non-English Speaking Population who Speaks: Spanish	Other Indo-European Languages	Asian Languages	Other Languages	Number of ESL Service Providers in the Census Tract	Percent of the Population Foreign-Born
1028	Clark-Fulton	174	10	96	4	0	0	0	3.2
1031	Detroit-Shoreway	85	10	38	42	20	0	1	12.8
1055	Brooklyn Centre	142	10	64	29	0	7	1	8.4
1019	Detroit-Shoreway	129	10	57	37	5	0	0	10.8
1038	Ohio City	143	10	100	0	0	0	0	8.6
1017	Cudell	197	10	56	6	29	9	1	9.2
1041	Tremont	109	10	89	11	0	0	0	4.9
1408	Cleveland Heights	316	12	0	97	0	3	2	19.7
1039	Ohio City	210	12	100	0	0	0	1	3.1
1029	Clark-Fulton	203	13	87	13	0	0	0	8.1
1049	Clark-Fulton	306	13	92	8	0	0	0	5.6
1513	East Cleveland	334	16	0	100	0	0	0	20.0
1046	Clark-Fulton	111	16	91	9	0	0	1	2.6
1084	Goodrich-Kirtland Park	218	21	17	0	83	0	1	23.9
1082	Goodrich-Kirtland Park	77	22	14	31	55	0	0	27.4
1075	Goodrich-Kirtland Park	42	28	14	0	86	0	0	42.5
1083	Goodrich-Kirtland Park	316	37	20	0	80	0	0	48.3

Source: Center on Urban Poverty and Social Change analysis of Census 2000 data, Cleveland Reads Literacy Provider Data (last updated September 14, 2004), and the Cleveland Municipal School District, Adult & Continuing Education list of ESOL providers, 2004-2005 School Year

For those neighborhoods with the most adults at Level 1 literacy, the number of literacy providers within 1- and 2-mile distance buffers were calculated (Table 2.14).

Table 2.14. Estimates of the Population Aged 16 and Older at Level 1 Literacy Compared to the Distribution of Literacy Service Providers for Selected Neighborhoods and Municipalities

		Number of Providers		
Neighborhood/Municipality	Number at Level 1 Literacy	In the Neighborhood	Within 1 Mile of the Neighborhood Centroid	Within 2 Miles of the Neighborhood Centroid
East Cleveland	8,988	6	4	13
Glenville	8,119	6	6	20
Mt. Pleasant	7,557	3	3	10
Euclid	6,753	6	3	5
Hough	6,245	8	10	41
Lee-Miles	5,583	1	2	9
Forest Hills	5,275	1	2	14
Union-Miles	5,229	2	2	9
Corlett	5,148	1	1	9
Cleveland Heights	4,731	6	3	17
North Collinwood	4,147	1	1	2
Parma	4,126	3	1	2
Buckeye-Shaker	4,098	2	2	14
Warrensville Heights	4,041	2	1	8
Woodland Hills	3,810	3	4	16
Central	3,794	16	19	58
Detroit-Shoreway	3,780	10	12	24
Maple Heights	3,621	2	0	1
South Collinwood	3,616	0	1	4
St. Clair-Superior	3,412	3	5	21
South Broadway	3,167	0	1	4
Clark-Fulton	3,163	1	3	22

Key:
Cleveland Neighborhood
Inner Ring Suburb
Outer Ring Suburb

Source: Center on Urban Poverty and Social Change analysis of Census 2000 data using Reder's mathematical models, Cleveland Reads Literacy Provider Data (last updated September 14, 2004), and the Cleveland Municipal School District, Adult & Continuing Education list of ESOL providers, 2004-2005 School Year

This table gives a sense of how many literacy providers neighborhood residents could potentially come in contact with as they travel out of their home neighborhood. As the table demonstrates, there is a wide range in values. For example, 58 literacy providers are located within two miles of the Central neighborhood's centroid, or geographic center. This is in contrast to the North Collinwood neighborhood and the suburb of Parma, where only 2 literacy providers can be found within two miles.

III. Summary and Recommendations

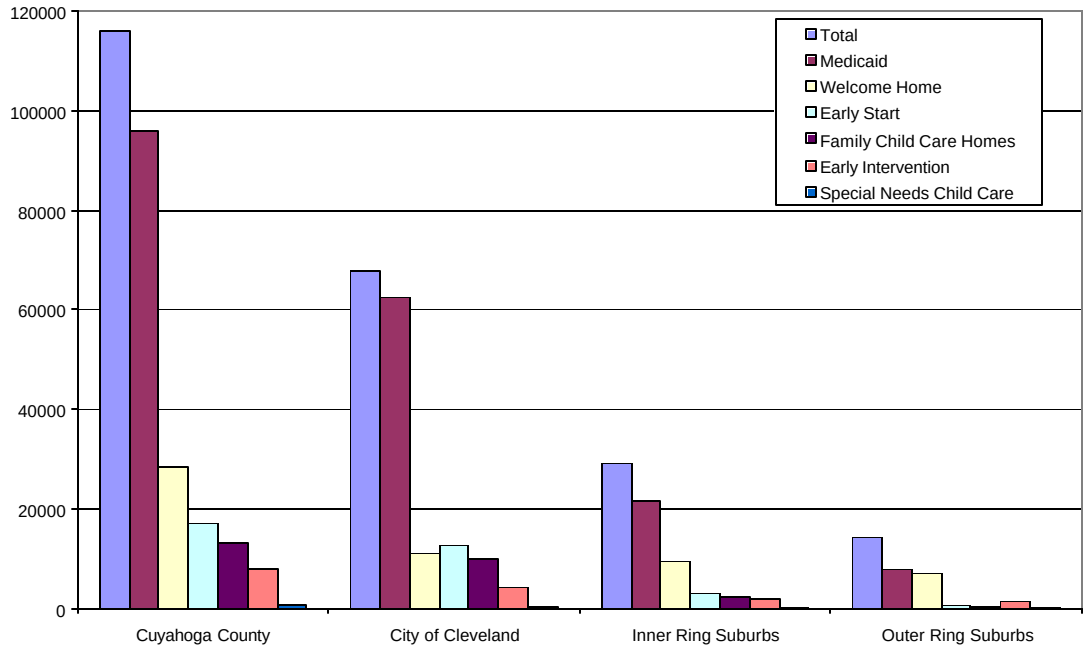
The purpose of this study was to assess the literacy needs in Cuyahoga County. This was accomplished by estimating the adults with low literacy and the children at risk of developing literacy problems later in life. Appendix K provides estimates of adults and children with possible literacy risks using the following variables: the number of adults with Level 1 literacy, the number of births to mothers without a high school degree, the

number of dropouts, and the number of schools not meeting state proficiency requirements in the neighborhood.

In terms of the adult literacy estimates, the most significant improvements were for the estimates of the population with the lowest literacy levels. Whether or not these changes represent any real changes in literacy skills, or are instead related to changes in socio-economic or demographic indicators, remains to be seen. To gain a better understanding of the current adult population's literacy, more direct measures, such as a survey (that contains a valid literacy assessment for a representative sample), could be helpful. Factors to consider when thinking of a survey include: what is the goal of the survey, how often should it be repeated, who is going to be surveyed, how many individuals should be surveyed, how should literacy be measured, and what resources are available.

The geographic distributions of adult literacy were similar to the indicators used to estimate the children at risk of literacy, regardless of the child's age. This suggests that an inter-generational strategy might be helpful in trying to reduce the number of adults and children with literacy difficulties. A potential access point for providing literacy services to the child population early in life could be through the Early Childhood Initiative. As of December 2003, over 116,000 children under age 6 were served by some component of the Early Childhood Initiative. Figure 3.1 shows the distribution of the type of ECI service by County, Cleveland, and inner- and outer-ring suburbs. By delivering literacy services to the early childhood population and their families, it would be possible to promote early literacy in the child population before they reach school.

Figure 3.1. Number of Children Served by ECI Program, July 1999 - December 2003



Source: Center on Urban Poverty and Social Change analysis of its Early Childhood Initiative Register Database

With 196 literacy providers in the area, there are already a number of opportunities for people with low literacy levels to get assistance improving their skills. However, just because the providers exist does not mean that they are being effectively utilized. Perhaps, the literacy providers are not located in convenient places, or maybe the classes are not being taught at times that are convenient in terms of work or child care. Or, it could be that people do not know about the literacy programs that are available, or maybe people do know and are not interested in attending. If all of the adults who needed literacy services were to request them, more literacy service providers would be needed. Jack Miller's study revealed that Ohio, and Cleveland in particular, has a highly-ranked public library system. However, if the library system is not being utilized to its fullest extent, then its high ranking is really of limited value for those with low levels of literacy.

In conclusion, this analysis has revealed that approximately half of the adults aged 16 and over in Cuyahoga County do not have the minimum literacy skills necessary to function effectively in society. Since nearly 20% of babies are born to mothers without a high school education, and 50% of the public schools in the County do not meet the state requirement for 4th and 9th grade reading proficiency, there are also many children countywide at risk of having literacy problems as adults. Will these children also enter adulthood lacking the skills necessary to meet the demands of 21st century life? The answer to that will most likely depend on the extent to which the County's resources are utilized to promote literacy among children at risk and adults with limited literacy.