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The digital divide has been affecting people throughout the world since computers and the internet were introduced. In North Carolina, public libraries have become a way for those without access to use technology. This paper analyzes the current literature on the digital divide and then looks at data that focuses on North Carolina residents. The data show that, although there are still differences in who has access, access in public libraries does not mirror the access of the general population. Those who can benefit from public library access are not always doing so. This information will help library professionals to further understand their patrons and inspire them to create a future plan for targeting the populations that need access.

#### Headings:

Digital Divide

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# THE DIGITAL DIVIDE IN NORTH CAROLINA PUBLIC LIBRARIES

by  
Kelly Potter

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Approved by

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Deborah Barreau

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## **Introduction**

Since computer technology has become prolific in the last twenty years, it is inevitable that access to this resource would involve social inequalities. With computers installed in many offices and homes, the internet quickly became one of the most powerful social forces of the 20<sup>th</sup> Century. Computer and internet access were critical issues in the Clinton Administration, when the National Telecommunications Information Administration was tasked to study access and the newly-termed 'digital divide'. Attention to this issue drove communities to focus on the digital divide in their own areas, and current rhetoric suggests that among many groups, the digital divide is closing (NTIA, 1999; NTIA, 2000). Recent studies show that although there are far fewer citizens without access, continued disparity exists in some groups (Cooper, 2004).

The Bill and Melinda Gates Foundation took the issue of the 'digital divide' and applied it to public libraries in the United States. The Gates Foundation funded several studies across the country relating to the role of public libraries in the closing of the digital divide (Gorden, 2001; Gates, 2002; Bertot, 2006). In addition to the Gates Foundation, the Pew Foundation studied the concept of public libraries and the digital divide, along with other issues pertaining to internet access in the United States. These studies have become the cornerstone of current research relating to public libraries and the digital divide (Pew, 2004). The data that is discussed in these studies is very important for library professionals to take into consideration, however, studies done on a local level are also necessary.

The data show that the digital divide still exists, although it is narrowing (NTIA, 2000). In order to provide this technology to those that have none, public libraries will be an important component to helping U.S. citizens gain access. The population in question for this study is the citizens of North Carolina. To understand the issues facing North Carolinians, there needs to be data with a centralized focus for professionals to use that information. Public libraries are often used when citizens have no other means of access. In order to study the populations that do not take advantage of free access, we need to look at several factors. Most previous research found that the people who use public libraries to access computers and the internet have no other means of access (Gates, 2004). North Carolina public libraries need to target those groups that are currently using libraries in order to keep those citizens involved in the community. In addition to current users, public libraries need to target groups that do not use these services, because these citizens would benefit the most from increased access.

For this project, the populations to be studied will be those users that take advantage of public libraries to use computers and the internet. Determining who the current users are will help to illustrate the differences between users and non users. This study will also look at citizens who have no access at home, and yet do not access computers and the internet in public libraries. It is important to target these people to increase their use of technology and give them the tools to succeed in the job market (Fairlie, 2002; Moe, 2004). The research question addressed by this study is “*What characterizes people who are using North Carolina public libraries to access computer and internet resources and who are those that are not taking advantage of these services?*”

The data directly benefit the state of North Carolina. In particular, the data being used will benefit public libraries by creating a better understanding of the populations that they need to target. Being able to characterize the people within a community is important to policy creation in local governments. Also, providing information on different methods of targeting underserved populations can help stimulate discussion and investigation by public library administrators and local government officials. Knowing the target population and knowing how to target them are a great beginning. This study will focus more on finding the target population. Once that group is characterized, information professionals can then come together to discuss the best ways to focus on these populations.

This data will focus on North Carolina, but can apply to other states that have similar issues. Further research on the topic, more specific to each general area, is always something to strive toward. Sometimes, this type of data collection is not possible and it is important to use information that is already available to researchers. This data set contains information that could be used beyond the public library sector, and will, hopefully, stimulate further research, not only in that area but in other areas that pertain to public access to technology.

## **Literature Review**

### *Access to computers and the Internet*

The majority of research done on the digital divide has centered on universal access to computers and the internet (NTIA, 1999). The digital divide became a household term as studies were produced showing that there was a severe gap that existed among many Americans. This was the position taken during the Clinton administration when several studies were commissioned to look at who was falling behind (NTIA, 2000). These studies found that there were several groups lacking the ability to connect to the technology that would help them compete in the business world. At the time, it was becoming increasingly obvious that knowledge of computer and internet applications was giving people a great advantage when competing in the job market (Moe, 2004). In fact, although the NTIA found that more people than ever have begun to use computers and the internet, it has created and even larger gap for those who still do not use these resources (NTIA, 2004). The studies composed by the NTIA gave local communities a renewed focus on technology that helped them to connect their own populations.

By the year 2000, the government found that 51% of Americans owned computers and 41% were accessing the internet on those computers. This seems fairly small until this statistic is compared to the numbers from 1997, when 36% of Americans owned computers and only 18% were accessing the internet (NTIA, 1999). This technology was rapidly becoming a part of households across the country. There were, however, still large gaps between many groups of people. The differences found among urban and rural locations were getting smaller rapidly, but urban locations were still technologically ahead of rural ones (NTIA, 2000). Race was still an issue in 2000, with



African Americans and Hispanics lagging far behind Whites and Asians. Families tended to have access to computers more often than single individuals, both with and without children. Internet access statistics were, in fact, very similar to computer ownership statistics, although the rates of internet access were slightly lower than computer ownership (NTIA, 2000). The larger studies done by the government and private organizations gave the country a good idea of who was accessing the internet, and showed the gap closing very rapidly.

Many of the traditional indicators of social inequality follow the digital divide. For instance, income was always one of the major factors in computer ownership and internet use (Cooper, 2004). Another large disparity among the population was among age groups. The use of computers and the internet is highest among the young and then drops sharply after the age of 49 (Gates, 2002). More recent studies however, show that age may be less of a factor in who is accessing this technology, especially with the increased access within public libraries (Gates, 2002). Studies had shown that gender, for the most part, had completely leveled off in recent years, with very little difference between males and females (Cooper, 2004). Gender was always a main focus, but with the newest data available, access by gender seemed to be important only if paired with income and other socio-economic factors (Wilson, 2003).

Past data were able to show that the differences among groups of Americans ran closely along similar lines of social inequality. The divide still existed for the poor, rural, elderly, single mothers, Hispanics and African Americans (NTIA, 2000). The issue of the digital divide is still a hot topic, but state and local governments need to be able to use information like this to help their own residents. In public libraries around the country,

there is a lack of useful information available to administrators that would help them focus on under-represented populations. Discovering which groups of people are more likely to use public libraries to access computers and the internet, will help administrators in the future.

### *Library use of computers and the Internet*

Past research has shown that many people use the internet and access computers in places other than at home or at work (Gates, 2002). This opens up the public library to many opportunities. Statistics have shown that a large number of users accessing information outside of the home have lower incomes, live in rural locations and have not been previously exposed to technology. About 26% of people who use locations other than home are signing on at public libraries. Although this information is helpful, it is not enough to truly understand the characteristics of this group (Gates, 2002). Much of the previous research has shown that library users of internet and computers are typically low income, and often did not own home computers (Moore, 2002). This type of outcome would be expected during an analysis of North Carolina public libraries.

Public library access to computers and internet is a great way for people to increase their employability (Moe, 2004; Fairlie, 2004). If the people who could most benefit from that knowledge are not using it, something needs to change. Public access is now widespread among public libraries with more than 98.4% of libraries offering public access to the internet (Bertot, 2006). The focus on access to technology has become less important recently as public access is readily available in all areas of the country. In rural

areas, where infrastructure has been slower to integrate into the community, public libraries are even more important for access.

What the literature suggests is that since the 1990's, there has been less focus on closing the digital divide. Public policy has been more focused on international issues, and current literature is now focused on the successes of bringing computers and internet access to those who need it (NTIA, 2004; Moore, 2002). Recent studies still show that the same gaps found before, while smaller, still exist and need to be studied (Heuertz, 2002). As technology becomes increasingly important to success in the job market, those that do not have the skills will be left further behind. This is seen increasingly in jobs that would not have included the need for technology skills in the past.

### *Gender*

Overall, women's access to computers and technology has been relatively equal to men, but current literature suggests that women are disproportionately affected by the digital divide (NTIA, 2000). When other factors join the factor of gender, it becomes much more significant. For example, low income women are far more likely to have no access than low income men. Single mothers and women in rural areas are more likely to have fewer access options (Wilson, 2003). On the surface, the gender gap may seem to have closed, but within specific areas of the population, the gender and technology gap is as wide as ever and remains a significant point of discussion.

National studies have shown that 46% of women compared with 54% of men use places other than work or home to access the internet (Harwood, 2004). Also, when broken down by gender, 30% of women listed the library as the number one place to use

the internet, where 28% of men chose a friend's house as their number one place. This may show that women are more willing to use public libraries to access computers and the internet. Specifically related to North Carolina, Wilson et al. (2003) found that female residents were more unlikely to have access to computers and the internet, especially when paired with variables such as race and geographic location. Although the gender issues have changed in recent years, it still remains a significant barrier to access to technology.

### *Age*

For quite some time, it was apparent that the older populations in the U.S. were disproportionately affected by the digital divide. It was previously thought to be an issue, not of access, but of comfort with technology. Studies done in North Carolina found that younger respondents were much more likely to be aware of public access points than older respondents, which could have significant effects on older resident's use of public libraries (Wilson, 2003). National studies have shown that around ten percent of students access computers and the internet from public libraries (DeBell, 2006). The disparity in recent studies of internet and computer use show that populations over the age of 50 are much less likely to use computers or the internet, and that although the gap is closing; it is still quite large (Harwood, 2004). As with women, age becomes a large factor when it comes to geography and income levels. It is at these levels that being poor and living in a rural location exacerbate the age factors. Seniors are becoming the fastest growing population to incorporate computers and internet into their lives (Gates, 2002). Libraries have to keep seniors in mind when targeting certain groups of people. Seniors are not the

only age group that uses public libraries to connect to the internet and it's important to look at each age group's needs when planning.

### *Race and Ethnicity*

Race has been the major factor of the digital divide since people began to study it. Current research has shown that although the gap is closing, the divide between the races and ethnicities is actually growing, with white populations still ahead of overall computer ownership and internet access, but African Americans and Hispanics are now increasing their ownership at a faster rate than any group (NTIA, 2002). This fast rate of ownership still does not make up for the fact that these groups are behind the others. Recent studies show that African Americans and Hispanics were, by far, more likely to use public libraries as their only access to this type of technology (Harwood, 2004). This coincides with the idea that African American and Hispanics are far less likely than Asian and White users to have access at home. Studies of North Carolina residents showed that race significantly influences a user's knowledge of public access points for technology (Wilson, 2003). These data suggest that public libraries may need to develop further outreach techniques to better target specific populations. Administrators that target the citizens who have less knowledge about services may be able to increase the usage of their libraries services.

### *Urban/Rural location*

Public Libraries that serve communities of less than 25,000 people make up 4/5 of the public libraries in the U.S. (Heuertz, 2003). Rural communities have historically

been slower to obtain computer and internet technology. In the 1990's, this was likely to be the case due to lack of infrastructure in place to support internet access. In recent years, the cable and internet infrastructure has become a part of rural communities and computer and internet access has become more widespread (NTIA, 2002). Despite the fact that more people in rural communities are gaining access to computer and internet technologies, rural communities still lag behind urban communities. Many similar studies have been done on geographic location and access to medical information (Mandl, 2000; Kreps, 2005; Gustafson, 2005). The studies suggest that rural residents are far less likely to have access to medical information through home or public access to the web. In North Carolina, recent studies have shown that 51% of rural residents had access to computers compared with 62% of urban residents (Wilson, 2003). This study shows that there is still a disparity among urban and rural residents of North Carolina. If rural residents of North Carolina are less likely to have home access to computers, public access becomes more important for communities to offer. Since most public libraries are located in more rural communities and rural community residents are more likely to not have computer access at home, public access at those libraries becomes even more important (Huertz, 2003).

Other studies have shown that rural public libraries have fewer terminals and less access to these technologies, which may be the reason for lower levels of usage (Bertot, 2006). With more citizens in rural areas in need of access, and less access available, it may become evident that rural locations need to be a focus of funding sources in the future.

### *Income*

Income is often mentioned, along with race, as being one of the most important predictors of the digital divide. For the most part, past studies have discussed income as a barrier to acquiring computer and internet technologies (Gates, 2002). In recent years, however, these barriers have begun to diminish, as costs of computers and internet access have decreased significantly. We would expect, with the lower cost of these technologies that the gap would have closed significantly for lower income families. The gap has closed, to a certain extent, but lower income individuals are still far less likely to have access to computers and technology at home. When you combine income with gender, reports show that people using computers and the internet at public libraries often report a very low income (Moore, 2002). In North Carolina, studies found that income affects access to computers and the internet at home. (Wilson, 2003) As the prices of these technologies drop, the effects of income may disappear, but that is unlikely to happen for some time, since many people do not make enough to afford that kind of luxury, no matter how inexpensive it is.

### *Targeting underserved populations*

While many have gone to great lengths to identify those who are underserved, it is much more difficult to find suggestions for methods of targeting those individuals. Underserved populations tend to belong to many of the same groups no matter what topic is under discussion. Knowing who to target will help researchers find more unique ways of reaching these people. Workshops have been suggested in order to lower anxiety levels among patrons who might not otherwise attempt to access the information

available to them (Kreps, 2005). Another suggestion is to travel to areas to disseminate information, such as going to senior centers to discuss the possibilities with populations in their own familiar environment. This would also reduce anxieties some people may have.

The irony is that many of the discussions in literature today regarding reaching underserved populations promote the use of public libraries as an easy and great way to do this. In actuality, many of those underserved populations are not using the library to access information, and many will be left behind.

It is difficult to tell what the best ways to reach underserved populations will be. It is likely that in order to reach several types of populations of people, librarians will need to leave the confines of their libraries and do a bit of leg work to target the populations in most need of internet access. Although libraries are currently becoming more connected, lack of funding for this technology could hinder these access points from keeping pace with further demand (Bertot, 2006). Libraries need more funding in order to target the populations that need access the most, in addition to providing adequate resources to those people. Library administrators are discussing the need for more computer terminals, not less. Demand is rising, even with increased access elsewhere, and it is important to be able to characterize those users in order to get them into the libraries.



## **Research Design**

### *Data Set*

Beginning in 1999, three citizen surveys helped document home computer ownership in North Carolina. Government officials decided that the sample size was too small and that they needed county information as well. In 2001, the Rural Internet Access Authority (RIAA) planned and financed a 100-county study of home computer and internet access with random samples taken from each county. Over 12,900 people were surveyed. In order to keep their information up-to-date, the RIAA funded an additional survey completed in 2004. This survey was completed by 1,197 North Carolinians and the new questionnaire included questions about where respondents access computers and the internet.

The survey was done by telephone interviews with telephone numbers purchased from Survey Sampling, Inc. Bi-lingual interviewers were used for Hispanic respondents who did not speak English. Both of these surveys were done at East Carolina University's Survey Research Lab and were supervised by Dr. Ken Wilson.

The 2004 dataset allowed researchers to get the most current information on citizens of North Carolina. The survey asked respondents about their home computer usage, and also their computer and internet use outside of the home. One of the questions asked was if they ever used the library to access computers and the internet. This question will be the basis of the following analysis.

*Population*

The overall population used in this survey was a random telephone sample of people living in North Carolina. Researchers wanted to ensure that each county was properly represented in the samples taken in both the 2001 and 2004 survey. The point of the survey itself was to be able to provide each county government with information that was important to it. The population focus was intended to be strictly people living in North Carolina and their experiences with computers and the internet. The most recent data from 2004 will be used in this analysis. The 2004 data included the most current data on public library use in North Carolina, and although longitudinal data is a great analysis tool, the point of the study was strictly to review the most current situation.

I analyzed the characteristics of respondents that use the public library to access computers and the internet. Generally, people that do not access computers and the internet at home, may have access elsewhere; such as public libraries. The purpose of free access in public libraries is to make sure that those without access are able to take advantage of these resources. There should be a real concern for those people that do not use public libraries to access computers, without access elsewhere. Access is different than availability in many ways. Public libraries may have computers available for use, but it does not mean that users are able to access them. Certain things can keep citizens from that access, such as lack of transportation, time off from work or language barriers. Once groups are identified, librarians can then do further research on the access issues that affect those individuals.

In order to find trends, several different characteristics need to be examined. Age, race, gender, income, education and urban/rural location are the characteristics that will be examined to find any trends associated with public library use. The user population will have certain characteristics, and these characteristics will reveal who is currently using public libraries to access computers and, more importantly, who is not.

### *Analytic Techniques*

I used Cross Tabulations to first characterize the group of people identified to be users of public libraries. There were a total of 1,197 respondents to the survey and a total of 194 people who said that they had used the public library to access the internet. I analyzed the library users' computer ownership, gender, education, age, race, income and use of internet at school and work. After the general characteristics of library users were described, I began the process of preparing the data for tests of significance.

Recoding of the variables in question is necessary because many of the questions are categorical. Once all the variables are recoded, bivariate logistic regression revealed how likely certain groups of people are to use computers at the public library. The variables tested were race, residence, gender, income, age, children at home, PC at home and education. The results of this test show which of these variables are significantly more likely to occur.

In order to get a better idea of the user population at public libraries, analysis of users who did not own computers was done. The number was very small, only 39, so any tests of significance would be unreliable. Frequencies were run on characteristics of this group of respondents. The following variables were used: gender, education, age, race,

income, marriage status and presence of children. In addition to users without home access, non users with no home access were also analyzed. This group was slightly larger, 57 respondents, but the group was still too small to run tests of significance. The variables analyzed were gender, education, age, race, income, marital status, presence of children, and use of someone else's computer.

### *Dependent Variables*

The subjects chosen for this analysis responded 'yes' to the question "Do you use the internet at a public library?" A total of 194 respondents out of the 1,197 (6.17%) surveyed answered 'yes' to this question. The purpose of the study is to analyze the characteristics of these 194 individuals that use the public library to access computers and the internet. Simple correlations reveal that there is a positive relationship between having access to a computer at home and using computers at the public library. Significance is not the entire picture, however, and the characteristics of these individuals must be looked at. In order to do bivariate logistic regression, a "No" to the question was coded as 0 and "Yes" was coded as 1. Using logistic regression allows for the correlation of multiple variables in one model. This will also help to understand what variables may have effects on other variables. The independent variables would also be coded in this fashion.

### *Independent Variables*

This analysis will look at race, income, age, gender, geographic location and presence of a home computer. Analysis of the entire population or respondents will help

to better demonstrate who is using public libraries and, also, who is not. It will also provide a more reliable model. The respondent's race was coded as "white" being equal to 0 and "non-white" equal to 1. Non-white was classified as all respondents who reported their race to be either, African American, Hispanic, Asian or a mix of races. Among the respondents who answered "yes" to the public library inquiry, 62% were white and 38% were non-white. Income was coded as 0 being equal to individuals making \$49,999 (64.9%) or less, and 1 being coded as \$50,000 (35.1%) or more<sup>i</sup>. This cutoff was chosen because half of the choices were below and half were above. The age of the respondents who used the public library was coded into two groups; the group coded 0 were younger than 50 years old (71.1%) and the group older than 50 (28.9%) was coded as 1.

The year of birth was collected instead of age so that age could be ascertained at any point in time. The respondents were asked if there was a laptop or desktop computer in the home. This variable was recoded as 1 equal to an answer of "yes" and 0 equal to "no". The analysis revealed that 79.9% of the respondents who used the public library to access computers already had a computer at home. The respondent's gender was also used in the analysis, 1 being equal to male and 0 equal to female. Of the respondents who used the public library to access computers, 42.8% were male and 57.2% were female. Respondents were also asked if they lived in an incorporated town or city. A response of yes was coded as 0 and a response of no was coded as 1. These recoded variables were then put into a logistic regression analysis. The first step is to test several of the most important variables; race, age and income. After analyzing the results from that analysis, variables such as, gender, education, rural/urban location, children at home

and home computer access are added to the model. Any changes in the model will then be noted.

**Table 1**  
**Characteristics of Computer Users at Public Libraries**

<b>Owens of Home Computer</b>	79.90%	Owens	20.10% Not Owens
<b>Gender</b>	42.80%	Male	57.20% Female
<b>Highest Degree Received</b>	56.20%	Comm. College or Less	43.80% College or Greater
<b>Age</b>	28.90%	Over 50 years old	71.10% Less than 50 years old
<b>Race</b>	62%	White	38% Non White
<b>Income</b>	64.90%	≤ \$49,999	35.10% ≥ \$50,000
<b>Use Internet at School</b>	61.90%	Yes	38.10% No
<b>Use Internet at Work</b>	67.50%	Yes	32.50% No
			N = 194

## **Results**

### *Bivariate Logistic Regression Analysis*

The results of the bivariate logistic regression analysis showed (Table 2) that respondents who used the public library for accessing the internet were more likely to be white, under 50 and make less than 49,000 a year. The logistic regression model as a whole was significant at a .05 level.

The results showed that respondents who were white were significantly more likely to use the public library to access computers and the internet.<sup>ii</sup> This was the strongest relationship in the model by far and shows that there are still racial differences in the usage of computers and the internet, but there were differences that were not expected. The data showed that 68.11% of non-white respondents owned home computers, which is less than the 77.46% of white respondents who owned home computers. Non-white respondents owned home computers less than white respondents, yet it was the white respondents who were more likely to use the public library. It is possible that other factors may have affected this relationship. For example, the number of white respondents in the survey was quite large. Although this particular dataset did not question its respondents, it may be that public library users in general tend to be more often white than non-white. More research would need to be done in order to verify this.

The results also showed that respondents under the age of 50 were significantly more likely to use the public library to access computers and the internet, only when tested without control variables.<sup>iii</sup> When control variables were added, the effects of age were diminished and were no longer significant. While younger users may in fact be more willing to use this type of technology, 68.6% of respondents over 50 owned home

computers. The data also showed that 66.3% of respondents who said they did not own a personal computer were over the age of 50.

The analysis revealed that respondents with an income of less than \$49,000 were significantly more likely to use the public library to access computers and the internet.<sup>iv</sup> The data set also shows that only 63.22% of respondents who made less than \$49,000 per year had home computers compared with 92.63% of respondents who made more than \$50,000. The data show that 86.41% of the respondents who said that they did not own a computer made \$49,999 per year or less.

Race and income were the only significant variables in the model, and the explained variance was only 17.9%<sup>v</sup> so further tests would need to be done before any explanation could reasonably be made. The explained variance is so small that, although the model is significant, there are other factors here that may not have been covered in the survey. Further research would need to be done that included quantitative and qualitative data.



**Table 2**  
**Bivariate Logistic Regression Analysis of Computer Use in Public Libraries**

	Public Library Computer Use	
	Exp(B)	p Value
<b>Race</b>	.315	.000***
<b>Rural Residence</b>	.852	.447
<b>Gender</b>	1.281	.230
<b>Income</b>	2.370	.000***
<b>Age</b>	.652	.058
<b>Children at home</b>	1.261	.277
<b>PC at home</b>	.774	.352
<b>Education</b>	1.099	.662
***Sig at .001		
Exp (B) = odds ratio		
N = 1,197		

*Public Library Users without Home Access*

When studying typical users of computers in libraries, it is important to focus on looking at those users who responded that they have no access to a computer at home. These are the people who must rely on public access and who would benefit from further programs involving technology at the library. The group was not large (see Table 3), and tests of significance would be unreliable, but the characteristics of the group are intriguing. There were several categories that stood out upon analysis<sup>vi</sup>. As table 3 indicates below, library users that did not have home access were overwhelmingly single, younger, female with less than a college education, and making less than \$49,999 per year. These characteristics are important to keep in mind when library professionals are seeking to expand their access and reach more people in the community.

**Table 3**  
**Characteristics of Public Library Users Without Home Access**

<b>Gender</b>	35.90%	Male	64.10%	Female
<b>Highest Degree Received</b>	84.60%	Comm. College or Less	15.40%	College or Greater
<b>Age</b>	30.80%	≥ 49 years old	69.20%	≤ 48 years old
<b>Race</b>	48.70%	White	51.30%	Non White
<b>Income</b>	82.90%	≤ \$49,999	17.10%	≥ \$50,000
<b>Marriage Status</b>	74.40%	Unmarried	25.60%	Married
<b>Children at Home</b>	41.00%	Yes	59.00%	No
N = 39				

*Non-Public Library Users without Home Access*

Many of the variables I chose to look at were not significant in any way. There is still something to be gained from analyzing the respondents that said that they did not access computers at the public library, and also did not have access to computers at home. Of the respondents who used the library to access computers and the internet (see Table 4), 79.9% had a home computer, which was not expected. This would lead one to believe that the people who need to use the libraries' services are not taking advantage of them. So, to look deeper at that possibility, analysis was done on those respondents who said that they had no home computer and yet did not use the public library to access computers and the internet.

This group is small (57 respondents), but significant because this is a group that should be targeted by libraries around the state. People with no access elsewhere that are not using the services offered by local libraries are losing out on great opportunities. While this group was similar to those using the public library for access when they had

no access at home, some of the percentages are not as pronounced. However, it still shows that the majority of people who are not using the public library for internet access are white females with a community college degree or less, and making less than \$49,999 per year. The data also showed that 85.7% of the respondents without access at home or public libraries were white. While this is an important issue for further research, there may be other factors relating to the high number of white respondents without home access.

Most respondents did not have children living at home, which is not a surprise, as many studies have shown that the presence of children often means the presence of technology (NTIA, 2002) When analyzing the numbers, I thought that the number of people that used the internet at someone else's home would be higher among those respondents that did not have home access and did not use the public library. While this group may be small, they are important for libraries to target, as they are not accessing this technology anywhere else.

**Table 4**  
**Characteristics of Non Public Library Users With No Home Access**

<b>Gender</b>	42.10%	Male	57.90%	Female
<b>Highest Degree Received</b>	66.10%	Comm. College or Less	33.90%	College or Greater
<b>Age</b>	48.2%	≥ 50 years old	51.8%	≤ 49 years old
<b>Race</b>	85.70%	White	14.30%	Non White
<b>Income</b>	82.90%	≤ \$49,999	17.10%	≥ \$50,000
<b>Marriage Status</b>	55.40%	Unmarried	44.6%	Married
<b>Children at Home</b>	21.40%	Yes	78.60%	No
N = 57				

The numbers in Table 4 show that there are certain characteristics that library professionals need to be aware of. These are not definitive numbers, and more research, both quantitative and qualitative, will need to be done before different counties could really take advantage of this information. While this group of people is small, it does show certain characteristics of non users. The majority were white, with an education of a community college degree or less, and made \$49,999 or less per year. While each test was important, the current users of public libraries are vastly different from the groups that have been shown to need access the most.

### **Further Research**

Access issues change over time and it is the obligation of local governments to understand how those issues evolve. Today's situation is different than previous years, and more studies need to be done in order to determine the future issues involving access. The most successful libraries were early adopters of technology and have had several years to work through the problems that come with increased access, and have had fewer issues with funding (Bertot, 2006). Those early adopters tended to be in areas where access was available early on, in non-rural environments. Libraries will need to stay ahead of these changes in the future and ensure that local funding is increased. Libraries will also need to initiate programs to enhance awareness of their services and benefits.

Targeting specific groups is an important step to reaching those without access to computers and technology. The data revealed that those who are currently using public libraries for access, already access computers elsewhere. Few of the users had no other access, so it is apparent that this is the group that needs to be targeted. In addition to this group, respondents who did not use public libraries at all and did not own home computers need to be targeted. The number was small and therefore hard to test, but further research on this group should be done. Local libraries and local governments can begin to concentrate their efforts on analyzing what can be done to increase usage of these free services. This issue has become a major one in the United States in recent years, and it is important to take the issue to the local levels and show those in authority that the problem still exists. It is also important that further research include a large proportion of non white respondents. While this dataset included representatives of each group, there were far more white respondents. The Hispanic population in North Carolina

has grown, and the need for more research on this growing group is needed.<sup>vii</sup> This group can be difficult to research because of language barriers, but an effort needs to be made in order to respond to the needs of this group in the future.

It is apparent that many people are not utilizing the access that is available to them. More research needs to be done in order to determine why this group of respondents did not choose to use library services. On-site research that looks at library computer users would provide a more robust view of the current situation. Why people are using the computers at the public library is just as important as knowing who is using the services. Additional case studies need to be done that would target public libraries of varying sizes in different communities across North Carolina. These studies would identify what services are being used and what services would be used that are not currently being offered.

The data set used in this analysis included over 1,000 respondents. However, the research focus allowed for the analysis of only a small group within that respondent pool. The reliability of this data is, therefore, lower than it would have been with a larger sample of respondents. The explained variance of my model can only mean that there are other factors involved in choosing to use the public library to access this technology. The study itself is unlikely to be generalized outside of the state of North Carolina and in many cases; there were not enough respondents for a county-by-county analysis of public library use. Combining the 2001 and 2004 data would give a respondent population that is larger and possibly more reliable, but the currency of the study would be somewhat unreliable.

## **Conclusion**

The literature clearly shows that, although the digital divide is closing and more people are accessing technology, there are still several groups of people that need to be reached. The decreasing cost of technology is allowing more people to access computers and the internet at home today. While this opens the possibility of having technology in the home, it is not a guarantee. This particular data set did not reveal any differences in location, but the small number of respondents may have affected the outcome.

It is important for any state that endeavors to stay competitive in the marketplace today to have an educated population. Some would say that North Carolina is doing very well in that area, but many forget that outside the large cities are very rural areas and, in many cases, those rural areas have more than 20% of its residents living at or below the poverty level. For these citizens of North Carolina, there are few other options for accessing and learning about technology than at a public library. People everywhere need to be reached and the primary focus should be the completion of a comprehensive plan for each library's own unique situation. The plan should specifically target those citizens that are not utilizing services and should also focus on providing assistance to those individuals to bring them to a level of computer literacy.

When an issue is not in the forefront of the minds of decision makers, complacency tends to be the result. More research needs to be given to those in charge of local governments to show them that, although the digital divide may be closing, there are still many people left on the edge. Researchers need to focus on spending time in the environments that citizens use in order to gain a better understanding of their needs. These are the citizens that need to be reached and, research like this, along with follow-

up research involving case studies, would assist the state government in understanding that this is still an important issue to spend time and money on.



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<sup>i</sup> Logistic regression necessitates the need for coding into two groups,. Where separation was not obvious, patterns of other studies were followed.

<sup>ii</sup> Significance at .001

<sup>iii</sup> Significant at .05

<sup>iv</sup> Significance at .05

<sup>v</sup> R Square = .179

<sup>vi</sup> The survey did inquire as to other places of access, such as work, school, friends computer, community center, however these were not used in the analysis because so few respondents replied that they used these facilities, and almost none of the people who said they used public libraries said that they also used other methods of access.

<sup>vii</sup> The race variable within the dataset included Hispanic as an option, along with white, African American, Asian and more than one race represented. Because of that, I have included Hispanics in the dataset, but did so among the non-white group.