

# The Value of Online Resources to North Carolina Public Library Patrons

By

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## **Executive Summary**

As public libraries balance the increasing demand for online resources with budgetary constraints, information about the value of online resources to patrons will help library administrators prioritize their efforts. This study estimates the value of library-provided online resources through an evaluation of library patrons' willingness to pay. Results indicate limited relationships between respondent-specific variables and patron willingness to pay, but several library-specific variables were found to be significantly related to patron willingness to pay. Recommendations for applying these results to public library administration are discussed.

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## **Background**

A recent report from the International City/County Management Association describes public libraries as “a new type of town square, a place for people of all ages and backgrounds to seek help, connect with others, and get access to the information they need.”<sup>i</sup> With increasing frequency, the information that our community members need is online.<sup>ii</sup> Public libraries are responding to this change by reimagining themselves in a digital future, designing online services and providing resources that reflect our cultural shift toward new media.<sup>iii</sup> Today, 84 percent of Americans have access to online media through their public libraries.<sup>iv</sup> Many public libraries form collaborative partnerships to gain affordable access to these online resources.<sup>v</sup> In North Carolina, for instance, all public libraries (and their users with home internet connections) have access to thousands of full-text articles, eBooks, eAudio books and online videos through the NC LIVE state-wide library consortium.

The future of public libraries cannot be built upon imagination and collaboration alone. Library funding has been an easy target for budget cuts, especially since public libraries are not typically regarded as a core public service.<sup>vi</sup> Furthermore, demonstrating the value of online resources acquired through a consortium can be challenging for local library administrators since they have less direct control over these resources.<sup>vii</sup> Although a number of public libraries have undertaken studies to demonstrate overall value to their communities, there is a lack of research examining the value that patrons assign to online resources (see Appendix A for literature review). Understanding how patrons value these online resources provides insights for library administrators as they prepare for the digital future.

## **Research Question**

This research examines the value of online resources to public library patrons. In this study, a library patron’s willingness to pay is used as a proxy for value. Although public libraries offer many types of online resources, this study focuses upon three popular online formats offered by all North Carolina public libraries through NC LIVE—eBooks, eAudio books, and online videos.<sup>viii</sup> The study aims to answer two specific research questions:

- 1) How much money are library patrons willing to pay to use a library-provided eBook, eAudio book, or online video?
- 2) What factors are related to library patron willingness to pay for these resources?

## ***Methodology***

An online survey was designed to gather responses from public library patrons regarding their family’s willingness to pay for eBooks, eAudio books, and online videos.<sup>ix</sup> A variety of willingness to pay studies from library science, public administration and economics literature guided the design of this survey.<sup>x</sup> Respondents were asked to select the maximum amount (between \$0 and \$5.00 or more) that they would be willing to pay to use an eBook, eAudio book or online video through the library’s website, if their library could no longer provide these services for free at the point of use. Respondents who indicated that they would pay nothing for these services were asked a follow-up question to better understand their perspectives.

The literature indicated several potentially significant factors that might be related to patron willingness to pay. With the exception of “Purpose,” each of these factors has a demonstrated relationship to willingness to pay in previous research.

- 1) Frequency of using resources<sup>xi</sup>
- 2) Satisfaction with the library’s resources<sup>xii</sup>
- 3) Purpose for using online resources<sup>xiii</sup>
- 4) Importance of library services in general<sup>xiv</sup>
- 5) Personal and family characteristics<sup>xv</sup>

These factors were broken down further into specific variables. Library-specific variables were also included in the analysis with data gathered from the State Library of North Carolina website.<sup>xvi</sup> See Appendix B for a full list of variables and how they were measured for the purposes of this study.

All 77 public libraries in North Carolina were asked to participate in the study, and 33 agreed to participate.<sup>xvii</sup> See Appendix C for full listing of participating libraries and a map displaying their locations.

The survey was open from October 31 to November 15, 2011. During this time, an invitation to take the survey appeared for patrons as they selected online resources that are provided by NC LIVE, whether they accessed the resources from home or within the library. Appendix D contains the full-text of the survey.

The survey received 471 valid responses, and the data exhibited enough variation to be useful for analysis.<sup>xviii</sup> Seventy percent of respondents visited the library in person more than once a month.<sup>xix</sup> About two-thirds of respondents were female,<sup>xx</sup> and the vast majority of respondents were white<sup>xxi</sup> and well-educated.<sup>xxii</sup> Age<sup>xxiii</sup> and income<sup>xxiv</sup> ranges demonstrated more diversity. See Appendix E for more descriptive information about respondent-specific variables.

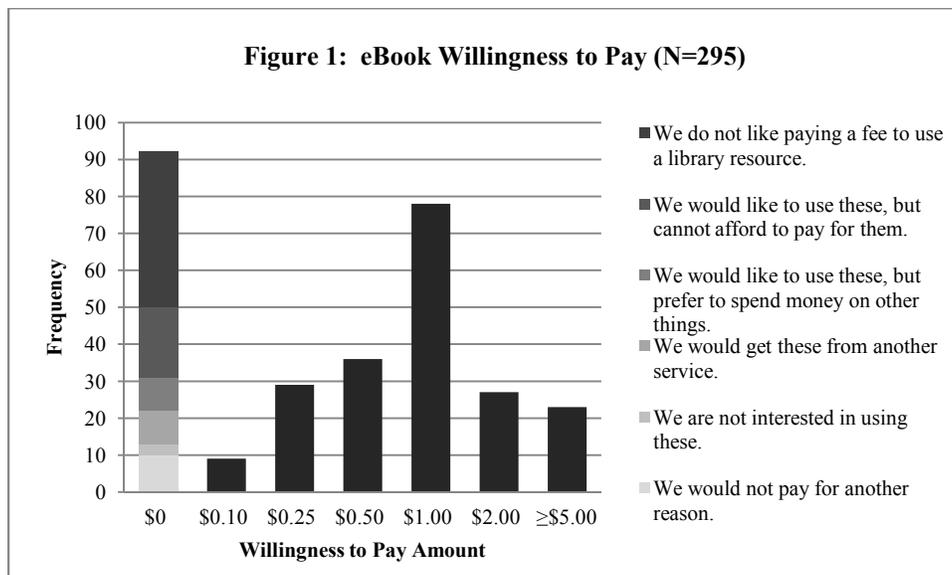
The distribution of respondents by library type (municipal=3%, county=87%, regional=10%) was roughly similar to the distribution of the North Carolina population by library type (municipal=3%, county=79%, regional=18%).<sup>xxv</sup> More than half of respondents have access to OverDrive eBooks and eAudio books through their libraries’ websites, but less than half have access to OverDrive online videos. About half of all respondents came from libraries that spend less than \$20 per capita. Most respondents (86 percent) came from libraries with service populations over 100,000.

Factors that may be related to a library patron’s willingness to pay were evaluated using cross-tabulations for all three resources. In order to ensure high enough cell counts, respondents were collapsed into “willing to pay something” and “willing to pay nothing” categories.<sup>xxvi</sup> Respondents who selected “No opinion because we don’t use these” and respondents who exited the survey early were excluded from the analysis. Respondents who did not use these resources but did provide willingness to pay responses were included in the analysis.<sup>xxvii</sup> Willingness to pay responses were given by 55% of eBook non-users, 41% of eAudio book non-users, and 54% of online video non-users.

## Findings

### *Library Patrons' Willingness to Pay*

The variation among willingness to pay responses showed a bimodal pattern, with peaks at \$0 and \$1.00. Figure 1 summarizes the eBook willingness to pay responses. All three resources roughly follow the same distribution pattern, and willingness to pay responses are highly correlated across all three resources, indicating that people tended to provide similar valuations for eBooks, eAudio books and online videos.<sup>xxviii</sup> For each of the three resources, the majority of respondents were willing to pay an amount greater than \$0.<sup>xxix</sup> Among respondents who were willing to pay something, the most common willingness to pay response was \$1.00. Among respondents who were willing to pay nothing, the most common reason was an objection to paying a fee to use a library resource. See Appendix F for figures displaying willingness to pay responses for all three resources.



### *How Variables Relate to Willingness to Pay*

Despite the trends noted in previous literature, this study found limited relationships between respondent-specific variables and willingness to pay.

Neither the frequency of visiting the library in person, nor the frequency of using the online resources through the library's website, predicted whether or not a respondent was likely to be willing to pay to use those resources. This finding is significant because it shows that current usage of the library's resources is not necessarily linked to the valuation of the resources. In other words, these resources may be valuable to patrons who do not use them often or at all.

Neither satisfaction with using online resources (measured by selection and ease of use), nor the purpose for using online resources, predicted whether or not a respondent was likely to be willing to pay, with one exception. Respondents who said that they used online videos "to meet needs as an educator"

were statistically less likely to be willing to pay.<sup>xxx</sup> It is possible that educators feel that they should not need to use their personal resources to acquire educational content.

The importance of library services in general, whether to family or to community, did not predict whether or not a respondent was likely to be willing to pay. This dimension was included in the study to determine whether respondents’ “library love” was influencing their willingness to pay responses. However, while the vast majority of respondents rated library services as very important for their families and communities,<sup>xxxii</sup> these respondents were not significantly more likely to be willing to pay.

Personal and family characteristics (gender, education level, ethnicity, age, number of family members and income) did not predict whether or not a respondent was likely to be willing to pay. Although age, education, and income had been found to predict willingness to pay responses in previous studies,<sup>xxxiii</sup> these results show no relationship between personal and family characteristics and willingness to pay for online library resources.

Respondents who used a paid service for an eBook during the past 12 months were statistically more likely to be willing to pay something for library eBooks,<sup>xxxiii</sup> but this relationship between having paid for a resource and willingness to pay for the library resource was not statistically significant for eAudio books and online videos.

In contrast to most respondent-specific variables, library-specific variables were able to predict whether or not respondents were willing to pay. Respondents were more likely to be willing to pay if they were from libraries that do not have access to OverDrive resources, spend less than \$20 per capita on library services, and have a service population below 100,000.

**Table 1: Library-specific variables that predict willingness to pay**

Variable	Chi-Square Value	Confidence level
Not having access to OverDrive eBooks or eAudio books <sup>xxxiv</sup>	3.654 <sup>a</sup> ; 3.173 <sup>b</sup>	90%
Total library operating expenditures per capita are less than \$20 <sup>xxxv</sup>	3.854 <sup>a</sup> ; 5.165 <sup>c</sup>	95%
Library service population is below 100,000 <sup>xxxvi</sup>	5.009 <sup>a</sup> ; 4.825 <sup>b</sup> ; 7.414 <sup>c</sup>	95%

<sup>a</sup> For eBooks  
<sup>b</sup> For eAudio books  
<sup>c</sup> For online videos

The relationship between the three library-specific variables and willingness to pay has significant implications for library administrators. This finding could indicate that people who live near well-funded, highly-resourced libraries feel that they are already making a significant financial contribution through their taxes and are not willing to pay more. In contrast, people who live near smaller libraries with lower per capita funding may value the online resources more because they have access to collections that would otherwise be unaffordable for their libraries. See Table 1 for statistical output from these cross-tabulations.

## ***Limitations***

This study does not fully capture the economic impact of a library's online resources. It only captures the monetary value that a patron assigns to the hypothetical use of eBooks, eAudio books and online videos. In that sense, it provides a very conservative estimate of their value.

The scope of this study was limited to library patrons who clicked on NC LIVE-provided resources through their libraries' websites or by visiting NC LIVE's website directly. Although it is possible to determine the number of uses that occurred while the survey was open, it is not possible to determine the number of unique visitors to the NC LIVE site. Therefore, a response rate cannot be determined.

## **Recommendations**

This study suggests several recommendations for public library administrators who are facing difficult choices about the types of resources they can provide for their communities.

- 1) **Make the case for more online resources.** Libraries with lower service populations, libraries that offer fewer online resources, and libraries that spend less than \$20 per capita can demonstrate that their patrons are more willing to pay for online resources than patrons from other libraries. Libraries that meet one of these criteria should use this evidence to support their requests for funding additional online resources because the perceived value of these resources tends to be higher among their patrons.
- 2) **Use value to inform collection development decisions.** Library administrators should weigh the perceived value of online resources against the cost of providing them. This research shows that people generally value library eBooks, eAudio books and online videos at about the same level. If the cost of providing these resources differs substantially, libraries may choose to focus their collection development dollars upon the types of resources that can demonstrate the best return on investment.
- 3) **“Library love” does not equal willingness to pay.** As budgets tighten, library administrators may be tempted to consider new sources of revenue, like charging patrons fees for the use of selected resources. This research indicates that while people by-and-large think that library services are important, they are not necessarily willing to pay fees at the point of use. This conclusion is supported by the frequency of “We do not like paying a fee to use a library resource” responses, provided as a follow-up to a \$0 valuation.

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<sup>i</sup> ICMA, 2011 (p. 1)

<sup>ii</sup> From 2007-2011, the percentage of public libraries offering eBooks grew from 38 to 67 percent (American Library Association, 2011). A recent article from the Washington Post reported that eBook checkouts grew 116 percent from 2010-2011 in the D.C. Public Library system (Davenport, 2012).

<sup>iii</sup> Joseph Janes encouraged librarians to consider how changing media would impact their services back in 2007: “Downloadable audiobooks, MP3s, YouTube, Wikipedia; the litany is by now familiar. If you're being honest with

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yourself and listen to that small but insistent voice in the back of your brain, you know something nontrivial is afoot” (Janes, 2007, p. 30).

<sup>iv</sup> Mulvihill, 2011 (p. 13)

<sup>v</sup> NC LIVE, the Wisconsin Public Library Consortium, the Blue Ridge Consortium (Virginia), and MontanaLibrary2Go are just a few examples of these collaborative efforts to bring digital resources to communities (Sze, 2012).

<sup>vi</sup> According to the ICMA (2011), “Public libraries are often viewed by local government managers as discretionary because they are not universally associated with core needs such as public safety, health, and economic development” (p. 2).

<sup>vii</sup> An eBook feasibility study from the Chief Officers of State Library Agencies (COSLA) observed that “Members of a collective buying group need continuous, local measures that tell the right story about expanded access to resources at reduced costs. Libraries need to demonstrate value to the community that paid their fair share of the load” (p. 11).

<sup>viii</sup> These three resources were chosen because they are popular materials for public library patrons, they are recognizable and familiar formats, and they are the ends to a search (as opposed to a database, which could be the means through which a patron discovers resources).

<sup>ix</sup> Although answers were gathered at the individual level, respondents were asked to consider the entire family’s use and valuation of these resources in their responses. In order to participate, respondents were required to state that they were 18 or older.

<sup>x</sup> See especially the literature review section entitled “Determining the Value of a Public Good” in Appendix A.

<sup>xi</sup> Pung et al. (2004) looked at various measures of usage among respondents, including the average number of items used during a library visit and number of library visits per year. Their study found that “84% of all non-users interviewed felt that the British Library had a value for society as a whole” (p. 88). Morris et al. (2002) asked respondents about the types of resources they had borrowed from the library, but this variable did not reveal significant differences in willingness to pay (p. 80). Steffen et al. (2009) asked respondents about many types of library services, including the number of eBook downloads, however the study does not include a discussion of how these usage trends relate to willingness to pay. Aabo (2004) asked respondents about the number of annual library visits and found evidence of a relationship between frequency of use and willingness to pay (p. 186-187).

<sup>xii</sup> Simonsen and Robbins (2003) asked citizens about their satisfaction with government-provided services and found that “a positive view of government and government services leads to a higher level of support for taxes” (p. 846). Harless and Allen (1999) also asked about library user satisfaction with reference desk service (wait time, availability of staff), but do not discuss how these measures relate to willingness to pay.

<sup>xiii</sup> The response options for determining “purpose” in this study were modeled after the options given by Steffen et al. (2009). Unfortunately, their analysis does not include information about how purpose relates to willingness to pay. Pung et al. (2004) asked respondents if the purpose for using library resources was for academic, work/business, or personal reasons. Morris et al. (2002) asked respondents their purpose for borrowing library books and found “no dramatic links between purpose and the price a borrower would be prepared to pay” (p. 80).

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<sup>xiv</sup> Pung et al. (2004) asked respondents to rate the importance of various library services but did not discuss how these ratings might be related to willingness to pay. Lee et al. (2010) asked respondents about their attitudes regarding various altruistic scenarios and found that respondents who felt good about supporting the library were likely to be willing to pay more.

<sup>xv</sup> The variables to describe personal and family characteristics were selected after consulting with public library personnel from Wake County Public Libraries, the NC LIVE staff, and faculty members at the University of North Carolina School of Government. The literature also provided several recommendations: *age* (Morris et al., 2002; Pung et al., 2004; Simonsen and Robbins, 2003; Lee et al., 2010); *gender* (Pung et al., 2004; Lee et al., 2010; Hider, 2008; Morris et al., 2002); *education* (Steffen et al., 2009; Holt et al., 1999; Aabø, 2004; Lee et al., 2010; Hider, 2008; Morris et al., 2002); *family members/parenthood* (Steffen et al., 2009; Holt et al., 1999; Hider, 2008); *race* (Holt et al., 1999); and *income* (Pung et al., 2004; Holt et al., 1999; Aabø, 2004; Lee et al., 2010; Hider, 2008). Morris et al. (2002) found that age was related to willingness to pay; Aabø (2004) found that income was related to willingness to pay; Hider (2008) found that education and income were related to willingness to pay.

<sup>xvi</sup> The library-specific variables were specific to this study, but previous research has looked at geographic characteristics. Pung et al. (2004) asked respondents to select from a variety of zones within London. Steffen et al. (2004) identified users from specific libraries. Aabø (2004) categorized respondents into “city,” “town” and “countryside” categories, and found that “rural residents and town folks have less [willingness to pay] than city dwellers (p.184).

<sup>xvii</sup> Greg Needham, Library Director at Sheppard Memorial, sent an e-mail invitation to participate in this study to all public library directors in North Carolina. NC LIVE staff members were also helpful in recruiting specific libraries.

<sup>xviii</sup> Among the 33 public libraries included in this survey, there were 16,395 eligible requests for resources between October 31 and November 15, 2011.

<sup>xix</sup> Library Visits (N=455)

<sup>xx</sup> Gender (N=384)

<sup>xxi</sup> Ethnicity (N=374)

<sup>xxii</sup> Education (N=388)

<sup>xxiii</sup> Age (N=379)

<sup>xxiv</sup> Income (N=288)

<sup>xxv</sup> State Library of North Carolina, 2009

<sup>xxvi</sup> Respondents who answered “No opinion because we don’t use these,” “I don’t know,” and respondents who skipped the question were excluded from cross-tabulations.

<sup>xxvii</sup> For eBook willingness to pay, N=295. For eAudio book willingness to pay, N=231. For online video willingness to pay, N=253.

<sup>xxviii</sup> Pearson correlation between eBook willingness to pay and eAudio book willingness to pay is .919; between eBook willingness to pay and online video willingness to pay .877; between eAudio book willingness to pay and online video willingness to pay .872.

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<sup>xxxix</sup> Because the data gathered were ordinal, it is not possible to calculate a mean willingness to pay.

<sup>xxx</sup> Online video purpose for use “To meet needs as an educator” cross-tabulated by willingness to pay for online videos (N=238), chi-square value 5.672 (95% confidence)

<sup>xxxix</sup> Library services are very important for their families, 86% (N=398); Library services are very important for their communities, 92% (N=378)

<sup>xxxii</sup> See note xv above regarding Morris et al. (2002), Aabo (2004), and Hider (2008).

<sup>xxxiii</sup> Having paid for an eBook in the past 12 months cross-tabulated by willingness to pay for eBooks (N=280), chi-square value 4.650 (95% confidence)

<sup>xxxiv</sup> This relationship between OverDrive resources and willingness to pay was not found to be significant for online videos.

<sup>xxxv</sup> This relationship between library expenditures per capita and willingness to pay was found to be significant for eBooks and online videos, but not eAudio books.

<sup>xxxvi</sup> This relationship between service population and willingness to pay was found to be significant for all three resources.

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## **Appendix A: Literature Review**

### ***The Significance of Knowing Your Worth***

Even before the Great Recession, public libraries recognized the importance of demonstrating value to their communities, lawmakers and administrators. Matthews (2011) found 27 return on investment studies from libraries in the United States between 1999 and 2008, each able to point to a specific number—a dollar amount that the library is producing in value for every dollar that it receives in funding (p. 5). Libraries rely on this dollar amount “as a way to develop quantitative support in order to politically, economically or socially influence a decision” because “traditional justifications for library funding, usually a usage or output measure such as annual circulation, [...] is not as effective as it once was” (p. 1).

In order to survive the “tug-of-war for funding” (Matthews, 2011, p. 1), public libraries must be able to show how they are adding value to their communities. Public libraries that can cite a specific dollar amount have a particularly powerful sound bite for their stakeholders. Theyer (2008) writes about the significance that this number can have for taxpayers. “Tell them in dollars and cents what their money is buying in terms of movie rentals, books purchases, computer time, programs, expert personal assistance, and other things that do cost a lot of money on the open market” (p. 45). Similarly, Kaser (2010) urges librarians to put those numbers to good use. “No matter what number you come up with, carry it around in your hip pocket just in case the budget man comes to your door asking you to prove your worth” (p. 1). Whether your audience is a library board, the state legislature or a group of citizens, having one tangible number with a dollar sign in front seems to give a significant advantage.

Calculating that tangible number, of course, is easier said than done. Matthews (2011) provides a summary of various methods for determining the value of public libraries, but

explains that because so many different methods are used to assess value, the numbers are not easily compared between libraries and across states (p. 7). Lown and Davis (2009) express a similar concern: “ROI [return on investment] metrics are estimates that are based on surveys of their own local users combined with metrics that are relevant to their own budget systems. Any attempt to compare ROI metrics across these boundaries doesn’t make sense and is not relevant” (p. 4). This lack of transferrable data puts the burden upon individual libraries or library systems to complete their own valuation studies, but the cost may be prohibitive. For instance, Elliott, Holt, Hayden and Holt (2007) make a low estimate of \$20,000 to commission a cost-benefit analysis for a public library (p. 32).

Libraries sometimes attempt to shortcut this process by using fair market value data to create library value calculators. Library value calculators, like the one that the New York Library Association posted on its website this past summer (NYLA, 2011), often use fair market value to calculate cost avoidance. They purport to show patrons how visiting the library translates into savings for their families. The fair market value of any good, however, is not an accurate measure of the consumer value of that good (K. Smith, personal interview, June 10, 2011). Fair market value may overestimate the value to consumers. If a patron borrows four eBooks through her public library’s website, a library value calculator might determine that she has saved \$60, estimating a fair market value of \$15 per eBook (Amazon Kindle Store, 2011). The problem with this calculation is that we cannot assume that she would have actually spent \$60 on eBooks. Perhaps each eBook is only worth \$5 to her. She will download the eBooks for free from the library, but she is unlikely to spend \$15 per eBook because it is not worth it to her. In this case, the market value is overestimating the value she derives from the eBook.

Similarly, fair market value may underestimate the value to consumers. If a person buys an eBook for \$15, but would have been willing to pay \$25, the market price of that eBook is less than the value that he has placed upon the eBook. The difference between the two prices is called consumer surplus—the extra amount of consumer benefit that the consumer did not have to pay for. If we use the market price to estimate value to the consumer in this case, we underestimate how much benefit this person received from the good (Mankiw, 2009, p. 139).

Another problem with using fair market value for library resources is that private goods are inherently different from public goods. The consumer's expectations and benefits may be different when using a private good rather than a public good (K. Smith, personal interview, July 12, 2011). For example, someone who purchases a book decides that it is worth to her at least the market price, and she expects that the book will belong to her after she purchases it. In contrast, when someone borrows a book from the library, she decides it is worth the time and effort it took for her to get to the library, and she expects that she must return the book after a specified time. If we use the fair market value of a book to determine the value of borrowing that book from the library, we are ignoring the important differences in consumer experience and expectations. The fair market value of a book will not accurately capture the benefits that people get from borrowing a library book because these goods are not perfectly comparable.

### ***Determining the Value of Public Good***

When we use fair market value to determine the value of a public good to consumers, we make an inaccurate estimate. This dilemma is not particular to public libraries. Public goods in general are difficult to value. City sanitation services, public transportation, public safety, parks and recreation—each of these public goods lacks an adequate market equivalent to help us determine its value. Economists have relied upon willingness to pay (i.e., contingent valuation)

studies to estimate the value of public goods in a number of contexts, such as environmental resources and local government services.

One of the most famous and influential willingness to pay studies was conducted after the Exxon Valdez oil spill in 1989, during which 11 million gallons of crude oil spilled into Prince William Sound (Carson, Mitchell, Hanemann, Kopp, Presser, & Ruud, 2003, p. 257). Researchers estimate that “250,000 seabirds, 2,800 sea otters, 300 harbor seals, 150 bald eagles, up to 22 killer whales, and billions of salmon and herring eggs died as a direct result of the spill” (Steyn, 2003, p. 305). The loss of these animals and the damage inflicted upon Alaska’s natural resources could not have been estimated by a market value because it is not possible to determine the market price of a sea otter or the Alaskan shoreline. Nonetheless, the State of Alaska and the Federal Government wanted to recoup the loss of their natural resources by collecting damages from Exxon, and they intended to pursue the matter in court (Carson et al., 2003, p. 257). In order to demonstrate the value of these natural resources, several researchers created a study to examine their value. In a paper describing their methodology for this study, Carson, Mitchell, Hanemann, Kopp, Presser, and Ruud (2003) explain why willingness to pay studies are ideal for valuing a public good: “Contingent valuation is a survey approach designed to create the missing market for public goods by determining what people would be willing to pay (WTP) for specified changes in the quantity or quality of such goods” (p. 258). Even though most Americans were likely never to use the resources directly, the study attempted to put a monetary value on the lost resources by asking people what they would be willing to pay to prevent a future oil spill. Today this study is regarded as “a reference point that may be used to assess the criticisms of [contingent valuation] and perhaps the more general debate surrounding passive use” (Carson et al., p. 259).

In another willingness to pay study, Simonsen and Robbins (2003) measured citizen willingness to pay to help solve a local government budget crisis in Waterford, Connecticut. They asked citizens of Waterford how much of a property tax increase they would tolerate to avoid an imminent budget shortfall (p. 836). Their results showed that “a positive view of government and government services leads to a higher level of support for taxes” (p. 846), but they also demonstrated that people who were dissatisfied with government services were not more likely to refuse paying increased property taxes. Simonsen and Robbins use their results to suggest that citizens behave rationally when facing difficult choices, regardless of their attitude toward the government (p. 851).

Public libraries have also used willingness to pay studies to demonstrate value to their communities, lawmakers and administrators. Researchers have conducted willingness to pay studies in public libraries throughout the world, and I will describe several of the most significant studies from this body of literature.

### United States

In the late 1990s, the St. Louis Public Library conducted a return on investment study which included a willingness to pay assessment. Not only were the authors of the study interested in determining the return on investment for St. Louis’s taxpayers, but they also wanted to “develop and test a practical, conservative methodology that large urban public libraries can use to estimate and communicate the direct return on annual taxpayer investment” (Holt, Elliott, & Moore, 1999, p. 2). The authors of the study measured direct benefits by asking library card holders about their willingness to pay for various library services, their willingness to accept the loss of library services, and the cost of their time. Their results gave them the sound bite they

wanted: “And what we have proved is that on average for every dollar the public has invested in library services, the direct benefits just to library users is \$4” (p. 11).

In 2006, the Library Research Service (a division of the Colorado State Library) worked with eight of Colorado’s public libraries to determine their return on investment. Their survey asked “typical” library users about their time and expense for traveling to the library, as well as their willingness to pay for annual use of their library cards (Steffen, Lietzau, Lance, Rybin, & Molliconi, 2009, p. 5). Return on investment was calculated for each of the eight participating libraries. On average, “for every \$1.00 spent on public libraries, \$5.00 of value was realized by our taxpayers” (p. v). The survey asked respondents about their use of many types of library services, as well as their purpose for using library resources. However, the study did not include an analysis to determine if these variables were related to willingness to pay.

### United Kingdom

Morris, Sumsion, and Hawkins (2002) questioned over 550 public library users from four public library locations when returning books. Respondents were asked about their personal characteristics, the type of book they borrowed, their purpose for using the book, their reasons for borrowing the book (instead of purchasing), their enjoyment of the book, and the price they would have paid to rent the book, if it had not been available at the library (p. 79). Using the unique concept of “reads” to determine the overall benefit of library books, Morris et al. determined “a value in excess of £815,000 per annum for those services that can be assessed in monetary terms” (p. 86). They also found that the type of resource borrowed did not reveal significant differences in willingness to pay, and found “no dramatic links between purpose and the price a borrower would be prepared to pay” (p. 80). Respondent age, however, seemed to be related to willingness to pay in this study (p. 80).

Pung, Clarke, and Patten (2004) studied the British Library using the contingent valuation method to gauge the value of their services. They asked questions regarding demographics, library use, service awareness, expenditures, substitute goods, willingness to pay for and willingness to accept various service levels (p. 92). They also asked respondents to rate the importance of various library services, but did not discuss how these ratings might be related to willingness to pay. Their results showed that “the Library generates value of around 4.4 times the level of its annual public funding of £85m” (p. 79). Their study also found that “84% of all non-users interviewed felt that the British Library had a value for society as a whole” (p. 88).

### Norway

Aabø (2004) presents the methodology and findings from her dissertation in library science, which investigated the value of Norwegian public libraries using both willingness to pay and willingness to accept methods. Overall, her results show that “the population’s valuation of public libraries seems to lie within the range of 400-2000 NOK per household [...] This in case implies that, *as an average over all households*, the benefits from public libraries are greater than the costs of producing such library services” (p. 196). Aabø also asked respondents about their number of annual library visits and found evidence of a relationship between frequency of use and willingness to pay (p. 186-187). She also found that income was related to willingness to pay and that “rural residents and town folks have less [willingness to pay] than city dwellers” (p.184).

In a different study from 2009, Aabø conducted a multivariate regression analysis to demonstrate which methodologies (cost/benefit, contingent valuation, or secondary economic) reveal the highest rates of return on investment for American public libraries (the only data set large enough for this type of analysis). Aabø concluded from her regression analysis that

“cost/benefit analysis (CBA) combined with market analogy methods or measurements of secondary economic impacts give a higher [return on investment] figure than CBA combined with contingent valuation” (p. 321). In other words, contingent valuation (i.e., willingness to pay) is a more conservative approach to determine the value of public library resources.

### Australia

Hider (2008) surveyed a random sample of Wagga Wagga, New South Wales residents about the value of their public library. He used a referendum elicitation format, asking respondents to hypothetically vote for or against a monthly charge to fund the public library (p. 446). The analysis of results included a regression model with the variables sex, education, income and price (p. 450). Price was the most significant predictor of whether or not a respondent would vote for or against the monthly charge, although education level and income were also found to be statistically significant factors (p. 450). Hider’s results ultimately showed a 1.33:1 return on investment ratio for the Wagga Wagga City Library (p. 452).

### South Korea

Although previous studies have tried to control for “warm glow,” (the feeling of goodness people derive from supporting a public good), Lee, Chung, and Jung (2010) attempt to measure the effect of warm glow in public library valuation studies. They asked public library patrons about their willingness to pay for library services, but also asked them to agree or disagree with several warm glow indicators, such as “I am willing to donate money for fundraising campaigns to promote public library services” (p. 241). They found that respondents who felt good about supporting the library were likely to be willing to pay more. They also found that the level of satisfaction with public libraries did not affect willingness to pay, while income and education levels were positively related to willingness to pay (p. 242).

Chung (2008) explains several techniques for eliminating common problems of willingness to pay studies. The dissonance minimizing technique, for example, avoids emotionally motivated high or low willingness to pay responses by giving people options to express emotion in addition to assigning a dollar value (p. 72). Another technique, called information bias minimizing, helps people become familiar with the good so that they can value it accurately. Chung's results indicate that dissonance minimizing and information bias minimizing techniques can increase the accuracy of willingness to pay amounts (p. 78).

### ***Conclusion***

These studies have contributed to my understanding of the benefits of using the willingness to pay methodology for valuing a public good. They have also provided many recommendations for designing a willingness to pay study that will be methodologically rigorous and uphold the high standards of economic research. The abundance of public library literature devoted to explaining and promoting valuation studies indicates that librarians are concerned about this topic.

While many public libraries have conducted valuation studies, there is a lack of research that focuses specifically upon the value of online resources. This research begins to address this gap in the literature, particularly for North Carolina's public libraries. By applying the methods from previous studies to this research question about the value of online public library resources, this study adds to an important conversation in the library literature.

## Appendix B: List of Variables

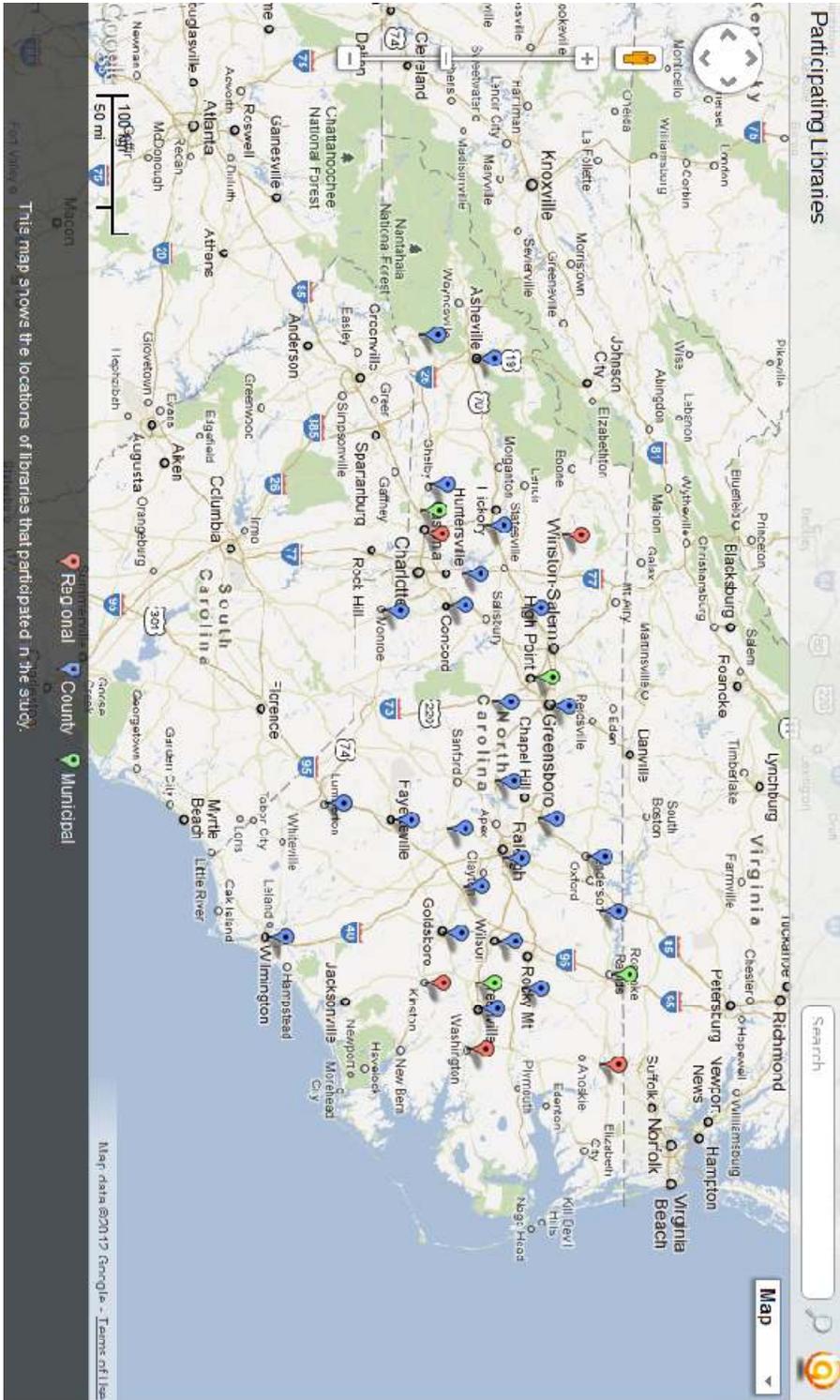
Dimension	Variable	How measured
Frequency of using resources	Frequency of visiting library in person	More than once a week Once a week More than once a month, but less than once a week Once every 1-2 months Once every 3-6 months Once Not at all I don't know
	Frequency of using online library resources	More than once a week Once a week More than once a month, but less than once a week Once every 1-2 months Once every 3-6 months Once Not at all I don't know
	Frequency of using a paid substitute (Amazon, Netflix, iTunes)	More than once a week Once a week More than once a month, but less than once a week Once every 1-2 months Once every 3-6 months Once Not at all I don't know
Satisfaction with online library services	Selection	Poor Below average Average Above average Excellent We haven't used these I don't know
	Ease of use	Very easy Somewhat easy Somewhat difficult Very difficult We haven't used these I don't know
Purpose	Purpose for using resources	To meet needs as a student For entertainment or personal interests To meet needs as an educator For job searching For current job Other We don't use these I don't know

Dimension	Variable	How measured
General importance of library services	Importance of library services for family	Not important at all Somewhat unimportant Neutral Somewhat important Very important
	Importance of library services for community	Not important at all Somewhat unimportant Neutral Somewhat important Very important
Personal and family characteristics	Age	18-24 25-34 35-44 45-54 55-64 65 years and over
	Ages and number of family members	Indicate number within specified ranges: 0-5 6-11 12-17 18-24 25-34 35-44 45-54 55-64 65 and over
	Income	Less than \$15,000 \$15,000-\$24,999 \$25,000-\$34,999 \$35,000-\$49,999 \$50,000-\$74,999 \$75,000-\$99,999 \$100,000-\$124,999 \$125,000-\$149,999 \$150,000-\$199,999 More than \$200,000 I prefer not to answer I don't know
	Education	Less than high school High school/GED Some college 2-year college degree (Associate's degree) 4-year college degree (Bachelor's degree) Master's/Doctoral/Professional degree Other I prefer not to answer
	Gender	Male Female I prefer not to answer

Dimension	Variable	How measured
Personal and family characteristics (cont.)	Ethnicity	White or Caucasian Black or African-American American Indian or Alaskan Native Asian Native Hawaiian or other Pacific Islander Latino Other I prefer not to answer
Library-specific characteristics	Access to OverDrive resources	Yes/No (Data from OverDrive.com)
	Total operating expenditures per capita	Data from State Library of North Carolina
	Legal service population	Data from State Library of North Carolina
Value	Willingness to pay	No opinion because we don't use these \$0 \$.10 \$.25 \$50 \$1.00 \$2.00 \$5.00 >\$5.00
	Explanation of \$0 valuation	We would like to use these, but cannot afford to pay for them We would like to use these, but prefer to spend money on other things We would get these from another service We are not interested in using these We do not like paying a fee to use a library resource We would not pay for another reason

## Appendix C: Participating Libraries

Library Name	Number of Respondents
Albemarle Regional Library	1
Appalachian Regional Library	14
Beaufort-Hyde-Martin Regional Library	4
Buncombe County Public Libraries	38
Cabarrus County Public Library	20
Catawba County Library	8
Chatham County Public Libraries	9
Cleveland County Library	3
Cumberland County Public Library	35
Davidson County Public Library	9
Davie County Public Library	4
Durham County	79
Edgecombe County Memorial Library	4
Farmville Public Library	0
Gaston-Lincoln Regional Library	26
Granville County Library	4
Greensboro Public	32
Harnett County Public Library	3
High Point Public	12
Kings Mountain/Mauney Memorial Library	0
Neuse Regional Library	3
New Hanover County Public Library	15
Public Library of Johnston County & Smithfield	8
Randolph County Public Library	5
Roanoke Rapids Public Library	3
Robeson County Public	3
Sheppard Memorial Library/Pitt County	15
Transylvania County Library	10
Union County Public	12
Wake County Public Libraries	67
Warren County Memorial Library	15
Wayne County Public Library	2
Wilson County Public Library	8
<b>Total</b>	<b>471</b>



## Appendix D: Survey (Full Text)

### Public Library Online Resources Survey

Hello! I am doing research on the value of public libraries' online resources. Your opinion is very important to this research!

Your answers to this survey will be kept confidential and will in no way impact the services you receive from your public library. It should take you about 5 minutes to complete.

You do not have to take this survey, and you may stop the survey at any time. By clicking "Next" you agree to take the survey.

If you have any questions about this study you may contact me at NC LIVE ([emily@nclive.org](mailto:emily@nclive.org)) or my research advisor, Dr. Willow Jacobson ([jacobson@sog.unc.edu](mailto:jacobson@sog.unc.edu)).

**1.**

**Are you over 18 years old?**

Yes

No

2.

**How often (during the past 12 months) have you, or someone in your family, visited your public library?**

- More than once a week
- Once a week
- More than once a month, but less than once a week
- Once every 1-2 months
- Once every 3-6 months
- Once
- Not at all
- I don't know.

3.

**How often (during the past 12 months) have you, or someone in your family, used your public library's website to:**

	More than once a week	Once a week	More than once a month, but less than once a week	Once every 1-2 months	Once every 3-6 months	Once	Not at all	I don't know.
Use an eBook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use an eAudio book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
View an online video	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4.

**If you have used eBooks, eAudio books, or online videos through your public library's website, how would you rate the selection of these materials?**

	Poor	Below average	Average	Above average	Excellent	We haven't used these.	I don't know.
eBooks	<input type="radio"/>	<input type="radio"/>					
eAudio books	<input type="radio"/>	<input type="radio"/>					
Online videos	<input type="radio"/>	<input type="radio"/>					

**5.**

**If you have used eBooks, eAudio books, or online videos through your public library's website, how would you rate their ease of use?**

	Very easy	Somewhat easy	Somewhat difficult	Very difficult	We haven't used these.	I don't know.
eBooks	<input type="radio"/>	<input type="radio"/>				
eAudio books	<input type="radio"/>	<input type="radio"/>				
Online videos	<input type="radio"/>	<input type="radio"/>				

**6.**

**How often (during the past 12 months) have you, or someone in your family, used a paid service (like Amazon, Netflix, or iTunes) for:**

	More than once a week	Once a week	More than once a month, but less than once a week	Once every 1-2 months	Once every 3-6 months	Once	Not at all	I don't know.
eBooks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
eAudio books	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online videos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**7.**

**Why do you, or your family, use eBooks, eAudio books and online videos, either from the library or by paying for the service? (check all that apply)**

	To meet needs as a student	For entertainment or personal interests	To meet needs as an educator	For job searching	For current job	Other	We don't use these.	I don't know.
eBooks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
eAudio books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online videos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The situation described on the following page is just imaginary, but please respond to the question as if it were real, keeping in mind you and your family's preferences.

Suppose that your public library could no longer afford to offer eBooks, eAudio books and online videos for free. Your public library will still offer these materials, but a small fee will be required each time you want to use them online.

**8.**

**What is the maximum amount that you, or your family, would be willing to pay to use an eBook through the library's website?**

- No opinion because we don't use these.
- \$0
- \$0.10
- \$0.25
- \$0.50
- \$1.00
- \$2.00
- \$5.00
- >\$5.00

**9.**

**Which statement most closely represents the reason for your answer about eBooks?**

- We would like to use these, but cannot afford to pay for them.
- We would like to use these, but prefer to spend money on other things.
- We would get these from another service.
- We are not interested in using these.
- We do not like paying a fee to use a library resource.
- We would not pay for another reason. (Please explain in space below.)

Please explain:

10.

**What is the maximum amount that you, or your family, would be willing to pay to use an eAudio book through the library's website?**

- No opinion because we don't use these.
- \$0
- \$0.10
- \$0.25
- \$0.50
- \$1.00
- \$2.00
- \$5.00
- >\$5.00

11.

**Which statement most closely represents the reason for your answer about eAudio books?**

- We would like to use these, but cannot afford to pay for them.
- We would like to use these, but prefer to spend money on other things.
- We would get these from another service.
- We are not interested in using these.
- We do not like paying a fee to use a library resource.
- We would not pay for another reason. (Please explain in space below.)

Please explain:

12.

**What is the maximum amount that you, or your family, would be willing to pay to use an online video through the library's website?**

- No opinion because we don't use these.
- \$0
- \$0.10
- \$0.25
- \$0.50
- \$1.00
- \$2.00
- \$5.00
- >\$5.00

13.

**Which statement most closely represents the reason for your answer about online videos?**

- We would like to use these, but cannot afford to pay for them.
- We would like to use these, but prefer to spend money on other things.
- We would get these from another service.
- We are not interested in using these.
- We do not like paying a fee to use a library resource.
- We would not pay for another reason. (Please explain in space below.)

Please explain:

The following questions will help us understand more about your family. Remember that all answers are confidential.

14.

**How important are public library services in general?**

	Not important at all	Somewhat unimportant	Neutral	Somewhat important	Very important	I don't know.
For you and your family	<input type="radio"/>					
For your community	<input type="radio"/>					

15.

**What is your gender?**

- Male
- Female
- I prefer not to answer.

16.

**What is the highest level of education that you have completed?**

- Less than high school
- High school/GED
- Some college
- 2-year college degree (Associate's degree)
- 4-year college degree (Bachelor's degree)
- Master's/Doctoral/Professional degree
- Other
- I prefer not to answer.

**17.**

**How would you describe yourself? (check all that apply)**

- White or Caucasian
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Latino
- Other
- I prefer not to answer.

**18.**

**What is your age?**

- 18-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 55-64 years
- 65 years and over
- I prefer not to answer.

**19.**

**Are there others in your family?**

- Yes
- No

**20.**

**What are the ages of the other people in your family?**

**If there are no other family members, you can leave the spaces blank.**

Number of family members	
0-5 years	<input type="text"/>
6-11 years	<input type="text"/>
12-17 years	<input type="text"/>
18-24 years	<input type="text"/>
25-34 years	<input type="text"/>
35-44 years	<input type="text"/>
45-54 years	<input type="text"/>
55-64 years	<input type="text"/>
65 years and over	<input type="text"/>

**21.**

**What is your family's annual income?**

- Less than \$15,000
- \$15,000-\$24,999
- \$25,000-\$34,999
- \$35,000-\$49,999
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000-\$124,999
- \$125,000-\$149,999
- \$150,000-\$199,999
- More than \$200,000
- I prefer not to answer.
- I don't know.

Thank you for participating in this survey! Your responses have been recorded. Click "Done" to close this window.

## Appendix E: Descriptive Statistics

### *Frequency of using online resources (during the past 12 months)*

- Seventy percent of respondents visited the library more than once a month (N=455).
- Forty percent of respondents have used an eBook (N=412), 30 percent have used an eAudio book (N=395), and 30 percent have used an online video (N=392) through their library’s website.
- Thirty percent of respondents have paid for an eBook (N=401), 17 percent have paid for an eAudio book (N=385), and 43 percent have paid for an online video (N=401) using services like Netflix, Amazon and iTunes.

### *Satisfaction with the library’s online resources*

- About 40 percent of eBook users (N=152), 40 percent of eAudio book users (N=127), and 35 percent of online video users (N=95) described their library’s selection as “above average” or “excellent.”
- About 80 percent of eBook users (N=146), 70 percent of eAudio book users (N=122), and 85 percent of online video users (N=97) thought that using these resources through the library’s website was “somewhat easy” or “very easy.”

### *Purpose for using online resources*

Table 2 displays the number of respondents who indicated that they use these resources, either through the library or by paying for the service, for the following purposes.

**Table 2: Number of respondents using online resources for various purposes**

<b>Purpose</b>	<b>eBooks</b>	<b>eAudio books</b>	<b>Online videos</b>
For entertainment or personal interests	181	125	177
To meet needs as a student	58	21	37
To meet needs as an educator	26	11	28
For current job	23	14	16
Other purposes	20	6	13

### *Importance of library services in general*

- Eighty-six percent of respondents said that library services are very important for their families (N=398).
- Ninety-two percent of respondents said that library services are very important for their communities (N=378).

### *Personal and family characteristics*

- Thirty-five percent of respondents are male and 65 percent are female (N=384).

- Sixty-nine percent of respondents have at least a four-year college degree (N=388).
- Eighty-three percent of respondents are white, 10 percent are black and 2.4 percent are Hispanic (N=374).
- Nearly 50 percent of respondents are between the ages of 45 and 64 (N=379).
- Eighty-five percent of respondents have at least one other family member (N=376).
- The most frequently selected income range was \$50,000 to \$74,999, with 25 percent of respondents falling into that category (N=288).

### ***Library characteristics***

- Three percent of respondents were from municipal libraries, 87 percent from county libraries, and 10 percent from regional libraries.
- Sixty-four percent of respondents have access to OverDrive eBooks, 60 percent have access to OverDrive eAudio books, and 39 percent have access to OverDrive online videos through their public library (OverDrive, 2012).
- Forty-eight percent of respondents were from libraries that spend less than \$20 per capita.
- Fourteen percent of respondents were from libraries with service populations less than 100,000.

## Appendix F: Willingness to Pay Charts

