

Assessing Web Designers' Perception of Web Accessibility

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ABSTRACT

People with disabilities continue to be at a disadvantage in terms of opportunities on the Web. Federal laws and state policies help govern website design for federal and state agencies, but their impact thus far is unclear. This paper addresses the issue of web accessibility. A survey was developed and administered to web designers to discover their knowledge, attitudes, and actions taken regarding making pages accessible. The results of these studies are presented in this paper.

INTRODUCTION

The World Wide Web is an integral part of the fabric of our society. Using the Internet has become a way of life for many people around the world, especially in the United States. Prior to being required by law, many buildings were not constructed with handicap access. Today, in the United States, architects must design buildings that are handicap accessible. Just like the buildings of old, most web sites have not been built with user accessibility in mind. Will laws and regulations be needed to force web designers to create accessible web pages? A website is accessible if "anyone using any kind of Web browsing technology is able to visit any site and get a full and complete understanding of the information contained there, as well as have the full and complete ability to interact with the site." (Letourneau, 2003)

According to the 2000 Census, the number of Americans (age five and over) with a disability is 49.7 million, a ratio of nearly one in five people (US Census, 2002). The Internet has had a powerful impact upon the disabled community. According to the National Organization on Disability, the following statement shows the effect the Internet has had on those with disabilities:

"While the Internet has significantly increased the opportunities for social participation for both people with and without disabilities, it has had a much more dramatic impact on quality of life for people with disabilities. 42% of Americans with disabilities online say the Internet has significantly increased their ability to reach out to people who have similar interests and/or experiences, compared to 30% of non-disabled online Americans. And 52% of Americans with disabilities online say the Internet has helped them to be better informed about the world around them, compared to 39% of non-disabled Americans online." (nod.org, 2002)

Anyone can become disabled. Most people experience some temporary or permanent disability -- a broken arm, stroke, hearing loss (to name a few), can render someone disabled. Furthermore, everyday circumstances can mimic a disability, forcing someone to rely on the same solutions used by those with disabilities. For example, if your mouse stops functioning, you must rely on your keyboard -- the same way someone who is blind or quadriplegic might. Accessing a web page in a noisy environment increases the importance of audio transcripts or captions just as these transcripts or captions are important to someone with a hearing impairment.

This paper addresses the issue of web accessibility. A survey was developed and administered to web designers to discover their knowledge, attitudes, and actions taken regarding making pages accessible. The results of these studies are presented in this paper and compared against the following hypothesis.

HYPOTHESIS

This research will test the following hypothesis:

Null Hypothesis (H_0): Web designers will ensure their web pages follow the WCAG if there is a policy governing the accessibility of their pages.

Alternative Hypothesis (H_1): Web designers will not ensure their web pages follow the WCAG if there is a policy governing the accessibility of their pages.

Research in this field can lead to improved and more realistic policies and guidelines. This study on accessibility builds awareness and increases the understanding of the magnitude of this problem.

SURVEY OF WEB DESIGNERS

Web designers/developers were anonymously surveyed in April, 2006 to determine their knowledge of issues surrounding web accessibility, the degree to which their organization encourages the design of accessible web pages, and what metrics are in place to ensure that sites are accessible.

Research Methodology

A survey was developed consisting of twenty-two questions to determine perceptions of web accessibility for web designers/developers. The link to this online survey was sent to two mailing lists (highedweb-l@geneseo.edu and uwebd@listserv.itd.umich.edu) on April 17, 2006. The survey was also sent to a few web designers in Rochester, NY.

Results

There were a total of 161 responses to the survey; 53.42 percent were male, 45.34 percent were female, and 1.24 percent did not answer the gender question. The education level of the respondents was mostly college educated, with 93.79 percent being college graduates, and 32.3 percent of the total with graduate degrees. The age ranges are shown in Figure 1. The respondents were asked what percent of their job was devoted to design and development of web pages. Nearly 30 percent said that 96-100 percent of their job is web design/development. 18.63 percent said that it was 81-95 percent of their job. 16.15 percent responded that it was 61-80 percent of their job. 11.80 percent responded with 41-60 percent of their job, 13.66 percent said it was 21-40 percent of their job, and the remaining 10 percent said it was less than 20 percent of their job. Nearly thirty-seven percent of the respondents have had formal training specifically on web accessibility.

Because of the specific mailing lists that the survey was sent to, not surprisingly, 93.17 percent of the respondents were from educational institutions. When asked whether any websites they design are subject to a web accessibility policy, 49.07 percent responded "yes", 36.65 percent responded "no", 13.66 percent were "not sure" and 1 person did not answer the question. Unfortunately, data was not gathered to determine if the individuals were from public or private schools which would have been a better measure of whether they are subject to state policies on web accessibility, as public universities would be more likely to have to follow state policies.

When asked if their organization had a policy with respect to web accessibility, the responses are shown in Figure 2.

Figure 1. Age ranges of survey respondents

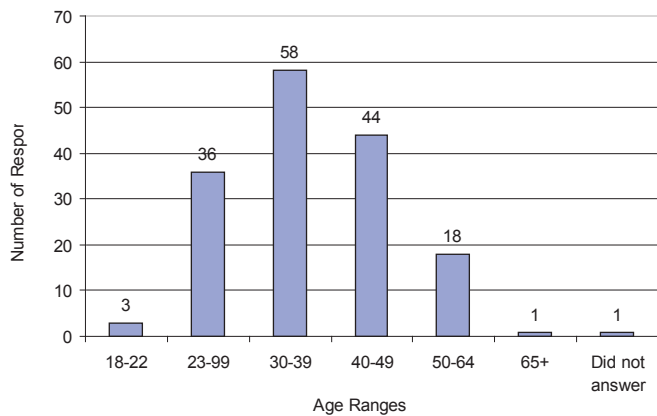
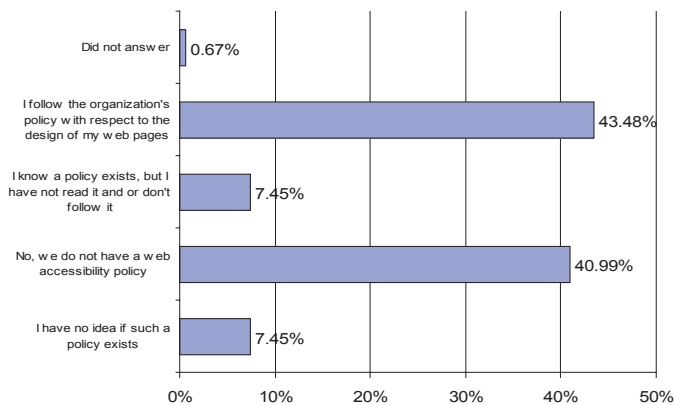


Figure 2. Does your organization have a policy?



An interesting analysis is comparing those who said their web sites are subject to a web accessibility policy (49.07 percent) with answers to questions related to the actual design of their pages and how important the guidelines are to them. When asked, "How familiar are you with the World Wide Web Consortium's (W3Cs) Web Content Accessibility Guidelines (WCAG)?" the answer choices and percentage of respondents are shown below:

How familiar are respondents with the W3Cs WCAG?

- 0.62% I've never heard of them
- 15.53% I have heard of them, but don't really know the particular details
- 11.18% I'm aware of the guideline specifics but don't use them to guide my website design
- 47.83% I use them regularly but not consistently to guide my website design
- 24.84% I always ensure my web pages adhere to the guidelines

In summary from the last two questions analyzed, around 49 percent of the designers/developers surveyed have a policy governing their web pages; yet, only 25 percent always ensure their pages adhere to the Web Content Accessibility Guidelines or their policy.

Respondents were asked which software they used to evaluate their pages for accessibility. The most popular answers were: 62% used Bobby, 51% used browser toolbars, 35% used Lynx, 30% used JAWS, and less than 18% used any other software.

Bobby and the web browser toolbars were by far the most widely used. The browser toolbars are free and easy to use. They give quick feedback to designers because they can be easily docked in the browser window. Bobby is well known and reputable. Nearly eight percent of respondents reported that they have not used any of the software that is available to check for accessibility. When asked *what percentage of their pages* they check with at least one of the programs listed in the previous question, their answers were that only 13.04 percent of respondents check 100 percent of their pages. Roughly 20 percent check between 76-99 percent of their pages. Nearly ten percent of the respondents do not check any of their pages. This number differs from the amount of people that have not used any of the accessibility software which was eight percent.

Questions were asked that do not directly correspond to checking for accessibility, but relate to the topic. These questions related to whether the designers/developers check their pages on multiple browsers, if they check their pages on multiple platforms, and if they use ALT tags with their images. Surprisingly, only 44.10 percent of respondents check 100 percent of their pages on two or more browsers. This might be a result of the volume of pages they are responsible for, or that multiple pages are built on the same basic template or design and/or coding. Almost 30 percent of respondents checked 76-99 percent of their pages with multiple browsers. When asked which browsers they routinely check their pages with, the two most common were Internet Explorer (99 percent of respondents) and Mozilla Firefox (96 percent of respondents). Thirty-two percent of respondents check 100 percent of their pages on multiple platforms (e.g., Windows and Macintosh).

With respect to including ALT tags for images, 47.2 percent use ALT tags with all of their images and nearly 40 percent responded that they use ALT tags with 76-99 percent of their images. As seen in the degradation process, this may be that they do not use ALT tags on images that are used for design only and do not include content.

Question 4 of the survey asked respondents if they had ever viewed any of their web pages using assistive technologies. The results are presented in Figure 3.

When asked what percentage of content of their web pages were displayed requiring browser plug-ins, such as Flash or Shockwave, less than 37 percent of the respondents used these technologies to display any of their content. Only one person responded that 100 percent of their content used these technologies, and one other person said that 76-99 percent of their content used plug-ins. In the same line of questioning, respondents were asked: "What percentage of your pages do you ensure are usable when scripts, applets, or other programmable objects are turned off or not supported?" Only 9.32 percent responded that they do not use these technologies. Twenty-two percent of the respondents checked all of their pages to ensure they are usable without these technologies.

Question 13 asked about their perceptions regarding the importance of ensuring their web pages are accessible according to the W3C's Web Content Accessibility Guidelines, 57.14 responded with the answer "I try to make my pages accessible, but don't always have the time." Full responses to this question are shown in Figure 4.

Figure 3. Assistive technologies used to view Web pages

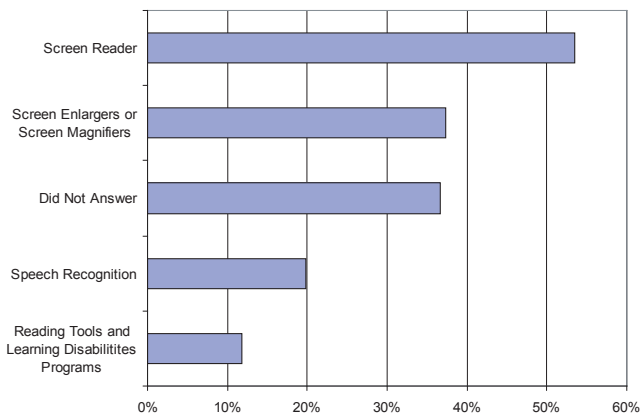
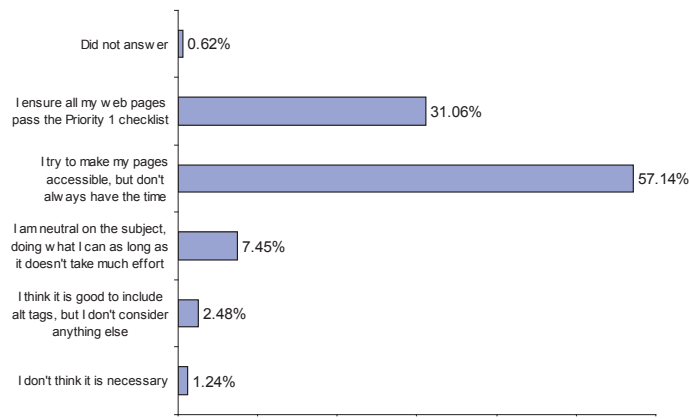


Figure 4. Perceptions about importance of accessible pages



Finally, an important open-ended question was asked: “If you currently don’t ensure your web pages are accessible, what factors would influence you to make your web pages accessible?” This question provoked fifty-nine responses. Many people answered that *time* was a major factor influencing whether they make pages accessible or not. Some people pointed out that the checklists are not easy to figure out. One person stated, “Wading through W3C verbosity is a pain.” Others stated that organization policies are not in place for this and that customers expect results quickly or they will go elsewhere. There needs to be “an increasing awareness of how important it is for our target audience.” Some individuals stated that they have or are moving to a content management system where their template will be developed that is accessible and then the content developers will not have to worry about this issue because it will be built into the template.

Many responses pointed to the fact that there does not seem to be a great development tool that adheres to the standards. They point to, “ease of use, better tools, cheaper tools, ease of checking, better software, additional resources, WYSIWYG editors that build-in fool-proof accessibility,” and more. Dreamweaver and other software solutions are moving to build many more accessible standards into the software, like automatically creating a cascading style sheet in the background when using different fonts and font styles. Many features still require users to take the initiative to use them. For example, when inserting a picture in Dreamweaver, there is a box for the developer to add an ALT tag. However, there is not a warning or any action that occurs to alert the user if they do not use one.

Lastly, many people stated that there is not a clear message about web accessibility from their supervisors. They stated that they would put more effort into it if their supervisors told them they had to. One person wrote, “Support from management for making accessibility a priority – having their support is the only way it could happen. Without it, my time will continue to be taken up maintaining the old, less-accessible design. I *want* all my pages to be accessible, but don’t have the time.”

Accepting/Rejecting the Null Hypothesis

The Null Hypothesis (H_0) was: Web designers will ensure their web pages follow the WCAG if there is a policy governing the accessibility of their pages. The

Alternative Hypothesis (H_1) was: Web designers will not ensure their web pages follow the WCAG if there is a policy governing the accessibility of their pages. As stated in the results, almost 49 percent of the web designers surveyed have a policy governing their pages, but only around 25 percent of them always ensure their pages adhere to the guidelines. Therefore, the null hypothesis is rejected.

SUMMARY AND RECOMMENDATIONS

Evidence shows that web pages governed by an organizational or state policy are more likely to be accessible than those that are not. Standards and legislation are having a positive impact on accessibility. However, a policy in no way guarantees that the sites are accessible. Of the web designers surveyed, all of them had heard of the Web Content Accessibility Guidelines (WCAG), but responses varied as to the extent to which they follow them or try to make their pages accessible. Many still feel the tools are inadequate, and the time and resources are insufficient. Based on this research, the following recommendations are suggested for executives in any organization:

- Create a policy for web accessibility and strongly encourage and support designers/developers in making pages accessible
- Regularly assess usability and accessibility of company websites
- Devote adequate resources – time, training, and software tools
- Educate employees, clients, and other stakeholders about this topic

One goal when creating websites should be universal design and access. This will only be achieved through education and increased awareness about this very important issue. If brick-and-mortar companies had signs on their doors stating that only certain people were allowed to enter, this would be apparent to them that this was wrong. The same awareness and understanding needs to be considered on the web.

It is a myth, at best, to believe accessible pages have to be plain or boring. Almost all accessibility guidelines deal with adding to the page, not subtracting (e.g., if you have an image, add an ALT tag). Designers/developers should strive to develop high quality pages visually, with all content intact and usable when viewed in Lynx. In addition, search engines are like blind users. An accessible page may even help a company get to the top of the Google list! Just as we have seen with buildings that have been modified for accessibility, everyone has benefited from elevators, ramps, curb cuts, and other accommodations. There are so many more reasons to create accessible pages. It cannot be stated enough that by making the web more accessible, everyone wins.

REFERENCES

- Letourneau, C. (2003) Accessible Web design - a definition. Retrieved November 2005 from <http://www.starlingweb.com/webac.htm>.
- nod.org (May 15, 2002) What is the Technology Gap? Retrieved January 2006 from <http://www.nod.org/index.cfm?fuseaction=page.viewPage&pageID=1430&nodeID=1&FeatureID=771&redirected=1&CFID=1881143&CFTOKEN=22827025>.
- US Census (2002). Retrieved January 2006 from <http://www.census.gov/Press-Release/www/2002/cb02ff11.html>.
- W3.org (May 1999). Web Content Accessibility Guidelines 1.0 W3C Recommendation. Retrieved January 1, 2006 from <http://www.w3.org/TR/WAI-WEBCONTENT/>.

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