Health Accessibility in a Time of Crisis

A Review of the Accessibility of the CDC Website Homepage

Samantha Baldwin

University of Maryland, College Park

Author Note

This paper was prepared for INST 622, taught by Renee F. Hill.

Health Accessibility in a Time of Crisis

A Review of the Accessibility of the CDC Website Homepage

The novel coronavirus outbreak is a huge health crisis facing the United States and the world right now, the information about it must be accessible to all. The Centers for Disease Control and Prevention (CDC) publish constantly updated information about the virus and information about how to protect yourself. Their mission is to "protect America from health, safety and security threats, both foreign and in the U.S." (CDC, 2019). On average, the CDC saw between 75-100 million page views a month, but in March of 2020, they had over 1 billion page views (CDC, 2020). With this amount of increased traffic, it is vital to ensure that the information is available for people with disabilities. This is why I chose to evaluate the accessibility of the CDC's homepage (https://www.cdc.gov/) using web accessibility evaluation tools to determine whether it conforms to various accessibility standards and practices.

To conduct this evaluation, I used two web accessibility evaluation tools: MAUVE++ and AChecker. Both checkers use the Web Content Accessibility Guidelines 2.0 to review accessibility problems. MAUVE stands for Multiguideline Accessibility and Usability Validation Environment. It is a project of the Human Interface in Information Lab at the Institute of Information Science and Technologies—National Research Council. The system evaluates the "accessibility of websites by checking their HTML and CSS code through guidelines, which are to be specified though an XML-compliant specification language called Language for Web Guideline Definition that maintains the guidelines separated from the underlying logic" (Pulina, Broccia, Paternò, Manca & Schiavone, 2020). MAUVE++ presents the errors it finds in multiple groups: by WCAG principles, by element, and by code type. It also shows the individual errors within the sources code. AChecker, by ATutor, "is used to evaluate HTML content for

accessibility problems by entering the location of a web page, uploading an HTML file, or pasting the complete HTML source code from a Web page. AChecker produces a report of all accessibility problems for your selected guidelines" (AChecker). The report it generates identifies three categories of problems: known problems, likely problems, and potential problems. "Known problems: These are problems that have been identified with certainty as accessibility barriers…Likely problems: These are problems that have been identified as a probable barrier, but require a human to make a decision…Potential problems: These are problems that AChecker cannot identify, that require human decision" (AChecker). The problems are then sorted again by guideline and finally presented in their HTML form with recommended repairs.

The MAUVE++ accessibility checker returned an 80% accessibility percentage. It found eight guideline errors with a total of 149 occurrences and warned about two possible errors occurring 13 times. The most common errors that occurred were where Accessible Rich Internet Applications (ARIA) could have improved the operability and interpretability of the site. MAUVE++ identified 66 instances where using the aria-labelledby attribute would make the purpose of the link unambiguous (W3C, n.d.a). It also identified 69 occurrences where the programmers should have been using the aria-labelledby attribute to "provide names for user interface controls that can be read by assistive technology" (W3C, n.d.b). There were also eight problems identified which affected the perceivability of the website. There were five instances where Guideline 1.1 of WCAG 2.0 was broken and text alternatives were not provided for non-text content., four of which could have been fixed by using the title attribute to identify form controls when the label element cannot be used. The other three issues that affect the perceivability of the CDC's home page violated the adaptability principle and could have been

fixed by separating information and structure from presentation to enable different presentations. Finally, six errors violated the "understandable" success criterion. These errors make the page difficult to read and unpredictable. MAUVE++ suggests fixing these errors by using language attributes on the HTML element, using the title attribute to identify form controls when the label element cannot be used, and providing submit buttons.

Guideline	MAUVE++	AChecker
1.1	5	0
1.2	0	0
1.3	3	2
1.4	0	3
2.1	3	0
2.2	0	0
2.3	0	0
2.4	66	5
3.1	1	0
3.2	1	0
3.3	4	1
4.1	79	0

AChecker did not identify as many issues as MAUVE++. It identified six known problems and five likely problems with the CDC's homepage. Most of the known problems violated POUR Principle 1: Perceivable. There were two issues regarding the adaptability of the page, specifically missing labels, and three issues regarding the distinguishability of the page, specifically the ability to resize the text. AChecker also identified an issue where a label would

help users avoid and correct mistakes. All the likely problems that AChecker reported were navigability problems due to suspicious link text. The links in question, simply read “More”, which make the purpose of the links hard to determine from the link text alone.

To determine the CDC’s accessibility needs, I created the following table to compile the error data from the two web accessibility evaluation tools based on guideline violated. Based on reviews from both tools, a few problems with the CDC’s homepage stand out. Both MAUVE++ and AChecker identified issues with Web Content Accessibility Guidelines 1.3, 2.4, and 3.3. MAUVE++ also identified many violations of 4.1 which should also be noted. There are issues that need to be addressed in each of the four principles of accessibility. Currently, it appears that there are adaptability issues on the CDC’s homepage, and when “information is embedded in a particular presentation in such a way that the structure and information cannot be programmatically determined by the assistive technology, then it cannot be rendered in other formats as needed by the user” (W3C, 2016a). Clearly stating link purposes would also make the homepage more accessible to those with disabilities. “For navigation, information about the possible destinations needs to be available. Screen readers convert content to synthetic speech which, because it is audio, must be presented in linear order” (W3C, 2016c). Possibly most important is ensuring that the website is compatible with assistive technologies. “This is done both by 1)ensuring that authors do not do things that would break AT (e.g., poorly formed markup) or circumvent AT (e.g., by using unconventional markup code) and 2) exposing information in the content in standard ways that assistive technologies can recognize and interact with” (W3C, 2016b).

While it appears because it scores an 80% on MAUVE++’s accessibility checker that the CDC’s homepage has few issues, there are many that could be fixed in order to make it more

accessible to people with disabilities. During a time such as this, the CDC's programmers could benefit from routine accessibility checks while regularly updating their content. My lack of HTML knowledge made some of the reports a bit difficult to understand because I do not understand how code interacts with assistive technologies, but I was able to understand the basic WCAG 2.0 principles that the tools focused on. The tools I used were free and for someone with coding experience, these tools could guarantee accessibility to one of the leading health websites in the United States.

References

AChecker. (n.d.). *AChecker Handbook.* Retrieved from https://achecker.ca/documentation/index.php?p=checker/index.php

Centers for Disease Control and Prevention. (2019, May 13). *Mission, Role and Pledge.* Retrieved from https://www.cdc.gov/about/organization/mission.htm

Centers for Disease Control and Prevention. (2020, April). *Monthly Page Views to CDV.gov*. Retrieved from https://data.cdc.gov/Web-Metrics/Monthly-Page-Views-to-CDC-gov/rq85-buyi/data

Pulina, F., Broccia, G., Paternò, F., Manca, M., & Schiavone, A.G. (2020). *About*. Retrieved from https://mauve.isti.cnr.it/about.jsp

W3C. (2016a). *Adaptable.* Retrieved from https://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation.html

W3C. (2016b). *Compatible.* Retrieved from https://www.w3.org/TR/UNDERSTANDING-WCAG20/ensure-compat.html

W3C. (2016c). *Navigable.* Retrieved from https://www.w3.org/TR/UNDERSTANDING-WCAG20/navigation-mechanisms.html

W3C. (n.d.a). *Using aria-labelledby for link purpose.* Retrieved from https://www.w3.org/WAI/WCAG21/Techniques/aria/ARIA7

W3C. (n.d.b). *Using aria-labelledby to provide a name for user interface controls.* Retrieved from https://www.w3.org/WAI/WCAG21/Techniques/aria/ARIA16