

# HBCUs Online: Can Students With Disabilities Access Historically Black College and University Websites?

Journal of Black Studies

1–18

© The Author(s) 2019

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/0021934719847373

journals.sagepub.com/home/jbs

Z. W. Taylor<sup>1</sup> 

## Abstract

On January 18, 2018, U.S. Congress amended Section 508 of the Americans with Disabilities Act (ADA) to hold all Title IV U.S. institutions of higher education to Level AA compliance with web accessibility standards, also known as WCAG 2.0 standards. As a result, this study examined all 100 historically Black college and university (HBCU) websites and found 94 HBCU websites were in violation of ADA and were not web accessible for students with disabilities after the January 18th amendment of Section 508. Using two robust web accessibility software packages, each website was evaluated at both the Level A and Level AA threshold of ADA compliance. The average HBCU website included 62 WCAG errors, meaning the website was likely non-ADA compliant. Furthermore, a majority of errors were minor, as many pictures were missing alt text or a hyperlink was not defined. Implications for practice, research, and HBCU leadership will be addressed.

## Keywords

students with disabilities, web accessibility, HBCUs, historically Black colleges and universities, higher education, Internet

---

<sup>1</sup>The University of Texas at Austin, TX, USA

### Corresponding Author:

Z. W. Taylor, The University of Texas at Austin, 1912 Speedway, Stop D5400, Suite 348, Austin, TX 78712, USA.

Email: [zt@utexas.edu](mailto:zt@utexas.edu)

Before the widespread use of the Internet in the present day, in 1986, the U.S. Congress included Section 508 as an amendment to the original Rehabilitation Act of 1973, an act prohibiting federal discrimination on the basis of disability. In the 1986 version of Section 508, Congress required federal agencies and programs to provide electronic information in ways which could be accessed by people with a wide range of disabilities, upholding the basic tenets of the Rehabilitation Act of 1973. After technology changed and advanced during the dot-com boom, in 1998, Congress again amended the Rehabilitation Act of 1973 to require “Federal agencies to make their electronic and information technology (EIT) accessible to people with disabilities.” Under Section 508, “agencies must give disabled employees and members of the public access to information comparable to the access available to others” (U.S. General Services Administration, 2018, para. 1).

In the decades since the 1998 amendment of Section 508, countless individuals with disabilities have brought lawsuits against specific, federally supported agencies: institutions of higher education participating in federal student loan programs, also known as Title IV–participating institutions (Carlson, 2018). In these lawsuits, individuals with disabilities have alleged Title IV–participating institutions have violated Section 508 of the Rehabilitation Act of 1973, arguing that inaccessible electronic information on institutional websites is a fundamental denial of one’s ability to pursue higher education in the United States (LaGrow, 2017). Lawsuits have targeted institutions violating Section 508 in a plethora of ways, including failing to provide adequate learning software for blind students, failing to provide closed captioning of institutionally published videos, failing to facilitate accessible application and financial aid processes, and failing to provide web-accessible textbooks and course materials (Carlson, 2018).

In response, Congress again amended Section 508, officially put into effect on January 18, 2018. This amendment updated and reorganized Section 508 “in response to market trends and innovations in technology” (U.S. General Services Administration, 2018, para. 3), similar to the amendment of Section 508 in 1998. In the newest amendment, Section 508 requirements hold all Title IV–participating U.S. institutions of higher education to Level A and Level AA conformance according to Web Content Accessibility Guidelines (WCAG) 2.0 standards (U.S. Access Board, 2018).

In the years since the original Section 508 amendment in 1998, educational researchers have examined institutional websites to learn whether these websites are Americans with Disabilities Act (ADA) compliant per Section 508 guidelines. Extant research has examined web accessibility at 4-year (Bradbard, Peters, & Caneva, 2010; Hackett & Parmanto, 2005; Harper & DeWaters, 2008; Kelly, 2002) and 2-year institutions (Erickson et al., 2013;

Flowers, Bray, & Algozzine, 2011; Taylor & Bicak, 2019; Wisdom et al., 2006), with these studies finding postsecondary websites are rarely compliant with WCAG standards. However, no extant research has examined the web accessibility of historically Black college and university (HBCU) websites, although HBCUs have been found to be incredibly important institutions of higher education (Anderson, 2017; Camera, 2017; Freeman & Thomas, 2002), responsible for educating the majority of Black postsecondary students in the United States (Gasman & Samayoa, 2017; McRae, 2016).

As a result, it is important to assess the web accessibility of HBCUs, as Black postsecondary students have faced considerable minoritization in the U.S. higher education system (Quaye & Harper, 2015; Tatum, 2017). In addition, little research has addressed Black postsecondary students with disabilities in any capacity. Therefore, this study seeks to answer two questions relevant to the postsecondary access and success of Black postsecondary students with disabilities in the United States:

**Research Question 1:** Are HBCU websites accessible for students with disabilities?

**Research Question 2:** If the websites are not accessible, how can HBCU websites be improved in terms of web accessibility?

Answering these questions will not only inform the scholarly community but also inform HBCU leaders and communications professionals as to whether their websites are compliant with federal law and accessible for a frequently minoritized population in U.S. higher education: Black postsecondary students with disabilities.

## **A Brief Overview of Web Accessibility**

As extant research has not addressed HBCU web accessibility, this section will briefly explain the concept and standards of web accessibility for U.S. institutions of higher education participating in Title IV programs.

Web accessibility relates to the publishing of online, digital information in ways that are accessible to individuals with disabilities. These publishing efforts often include adding information to media files (metadata) to make these files readable by a wide range of assistive technologies (U.S. Access Board, 2018). U.S. Congress included WCAG 2.0 standards into the newest amendment of Section 508, setting WCAG 2.0 as the official standard of web accessibility (U.S. General Services Administration, 2018). These WCAG 2.0 standards were developed by the World Wide Web Consortium (W3C), a group of computer scientists and web accessibility experts who have

frequently updated WCAG standards as technology has changed and advanced, making WCAG 2.0 a strong standard of web accessibility (W3C, 2018b).

WCAG 2.0 details web accessibility conformance at three levels. Level A is the minimum level of conformance and satisfies all Level A standards defined by WCAG, such as captioning audio content for those hard of hearing (W3C, 2018b). A detailed list of Level A standards can be found on the WCAG 2.0 website (W3C, 2018b). Level AA is the standard level of conformance and the threshold Title IV–participating institutional websites must meet to be compliant with ADA (U.S. Access Board, 2018). Level AA standards include all Level A standards, plus an additional level of conformance, such as color contrast minimums and using unique headings and labels to allow students to differentiate between webpages (W3C, 2018b). Finally, Level AAA is the optimal level of conformance, including all Level A and Level AA standards (W3C, 2018b). Title IV–participating institutions do not need to meet Level AAA conformance, as “It is not recommended that Level AAA conformance be required as a general policy for entire sites because it is not possible to satisfy all Level AAA Success Criteria for some content” (W3C, 2018c, para. 11).

WCAG 2.0 standards are organized under four categories, requiring websites to be perceivable, operable, understandable, and robust for people with disabilities. These four categories include diverse elements of a webpage, such as audio, video, images, text, hyperlinks, buttons, toolbars, and menus (W3C, 2018b). As a result, an institution’s website can be considered ADA and WCAG 2.0 compliant if a wide variety of assistive technologies are able to read the data in the website’s markup language (e.g., HTML) and render the content accessible to a person with a disability (W3C, 2018b). For instance, a person who is blind may require an assistive technology which vocalizes text and visual elements of a website, whereas a deaf person may require an assistive technology which can caption audio files on a website.

## **Literature Review**

An early and important study of postsecondary web accessibility is Kelly’s (2002) analysis of U.K. university websites ( $n = 162$ ). In all, Kelly (2002) found only four U.K. universities were Level AA compliant per WCAG 1.0 standards, an early version of WCAG standards. Using the Bobby™ web accessibility tool, Kelly (2002) also learned many web accessibility errors were made when images were missing alt text attributes, or text that specifies what should be shown on a screen when the element cannot be shown (e.g., a screen reader technology such as Mac OS X’s Voiceover reading text to a

person who is blind). Years later in an analysis of U.S. higher education websites, Hackett and Parmanto (2005) made similar findings, as their longitudinal study from 1997 until 2002 evaluated the development of web accessibility over time. Hackett and Parmanto (2005) learned that as Internet technology evolved, institutional websites became increasingly inaccessible for people with disabilities, speaking to the inability of institutional web administrators to keep pace with rapidly changing Internet technologies. Their findings also explained why U.S. Congress has continuously amended Section 508 to reflect rapidly changing technologies and their minoritizing impact on students with disabilities (Hackett and Parmanto, 2005).

Thompson, Burgstahler, and Comden's (2003) analysis was the earliest and largest study of 4-year U.S. institutional websites. Using the most current web accessibility standards at the time, Thompson et al. (2003) applied WCAG 1.0 standards to 102 public research university websites using a web accessibility scale measured by two human evaluators. Ultimately, Thompson et al. (2003) evaluated 1,103 different webpages on 102 different websites, with one evaluator determining 182 webpages were entirely web accessible, whereas another evaluator found only 40 webpages to be entirely web accessible using the same scale. Uniquely, Thompson et al. (2003) explained human evaluators may differ in their perceptions of web accessibility, yet human judgment should be used alongside web accessibility software to provide a more holistic assessment of web accessibility of a given website.

Years after Thompson et al.'s (2003) study, Wisdom et al. (2006) assessed the knowledge of web accessibility held by staff working in Oregon community colleges. Their study found information technology (IT) professionals and disability/student services staff members were the most knowledgeable about disability laws—including web accessibility standards—yet IT professionals and disability staff members rarely collaborated to ensure web accessibility across campus. This finding led Wisdom et al. (2006) to encourage communication between IT and disability/student services departments to collaboratively publish web-accessible websites and provide professional development for those unfamiliar with web accessibility.

After WCAG 2.0 standards were developed, Harper and DeWaters (2008) analyzed 12 four-year U.S. institutions and found only one of 12 met Level AAA standards, whereas four of the 12 institutions did not comply with Level A, Level AA, or Level AAA standards. Analyzing 2-year institutional websites, Flowers et al. (2011) learned only 23% of a sample of 253 community college homepages were accessible for students with disabilities. Erickson et al. (2013) later found less than 1% of webpages from 30 two-year institutions met Section 508 guidelines and WCAG 2.0 standards. Also using WCAG 2.0 standards, Thompson, Burgstahler, and Moore (2010) performed a longitudinal 5-year

study of 127 four-year U.S. institutions, finding that technological advances often made it difficult for institutions of higher education to achieve or maintain WCAG 2.0 compliance. The authors noticed a sharp decline in keyboard accessibility across the sample due to advances in technology, yet web accessibility training did help improve web accessibility of institutional websites. However, at the study's close, Thompson et al. (2010) reasoned there was no significant difference in the web accessibility between institutions whose professionals had received training and those who had not. Recently, Taylor and Bicak (2019) audited 325 community college websites and found all 325 websites included at least one violation of WCAG 2.0 standards outlined by ADA.

Ultimately, given the changing nature of Internet technologies (Taylor, 2018b; Taylor & Bicak, 2019; Thompson et al., 2010) and a limited amount of work focused on Black postsecondary students with disabilities, this study will fill a critical gap in the literature and assess the web accessibility of HBCU websites.

## **Method**

### *Population Identification*

Shortly after the most recent amendment of Section 508 on January 18, 2018, the Integrated Postsecondary Education Data System (IPEDS) was used to locate every HBCU and its landing page or homepage hyperlink (e.g., <https://www.spelman.edu/>). It is important to note that when the list of HBCUs was generated, there were 100 HBCUs still open. However, in Fall 2018, Concordia College in Alabama announced that it would close at the end of the Spring 2018 semester (Jaschik, 2018). Although Concordia College in Alabama has closed, this institution was kept in the study as its website information and web accessibility data were gathered before the institution closed. As a result, 100 HBCUs comprise this study's population, and a description of institutions in this study can be found in Table 1.

### *Data Collection and Analysis*

Once HBCU websites were located, Tenon™ accessibility software was used to analyze each HBCU website. Tenon™ is a robust web accessibility audit software program capable of running nearly 100 total tests of web accessibility at the Level A, Level AA, and Level AAA standards (Tenon, 2018). As Title IV-participating institutions (including all HBCUs) are not required to meet Level AAA conformance, all Level AAA errors discovered in this study were removed from the analysis. However, it was crucial to employ a robust

**Table 1.** Sectors of Historically Black Colleges and Universities in the Study (N = 100).

Sector	Institutions
Public	49
4-year	39
2-year	10
Private	51
4-year	50
2-year	1

Concordia College of Alabama announced it was closing after the Spring 2018 semester. Their website data were included in this study as Concordia was still open during this study's data collection period (January-February 2018).

web accessibility program which could assess each website's Level AAA conformance to identify exemplary and robust websites in terms of WCAG 2.0 and ADA compliance, thus informing future research and practice.

Moreover, Tenon™ was employed for its capacity to produce downloadable .csv reports which define all web accessibility errors and the HTML or website location of the error in question. Comparative analyses of web accessibility evaluation software have found Tenon™ to be an efficient, accurate, and robust web accessibility evaluation tool (Ismail, Kuppasamy, & Nengroo, 2017; Taylor, 2018b; Timbi-Sisalima, Amor, Otón, Hilera, & Aguado-Delgado, 2018), justifying the use of Tenon™ for an analysis of HBCU websites.

Once web accessibility error reports were generated, the Macintosh Terminal program was used to merge institutional IPEDS variables with Tenon's™ error reports, allowing an organization of the data by institution type and error type. Merging the data revealed the most frequent error types (Level A and Level AA) and which institutions published the least accessible and most accessible websites for students with disabilities. As a result, Table 2 in the "Findings" section of this study clearly displays the mean, median, high, low, and standard deviation of errors across the entire population and by institution type, including public 4-year, public 2-year, private 4-year, and private 2-year HBCUs. Table 3 in the "Findings" section of this study displays the most frequent error across all four categories of WCAG 2.0 web accessibility compliance, including perceivable, operable, understandable, and robust web accessibility errors. Displaying the data in this fashion will allow researchers and practitioners the ability to understand which web accessibility errors were most abundant and how Black postsecondary

**Table 2.** Descriptive Statistics of Web Accessibility Errors ( $N = 6,240^a$ ) of Homepages/Landing Pages for HBCU Websites ( $N = 100$ ), by Institution Type.

Institution type	Web accessibility errors		
	Level A	Level AA	Levels A and AA*
All institutions ( $N = 100$ )			
Mean	61	1	62
Median	45	0	46
High	366	34	366
Low	0	0	0
Standard deviation	59	3	59
Public, 4-year ( $n = 39$ )			
Mean	52	<1	53
Median	36	0	36
High	297	5	297
Low	0	0	0
Standard deviation	55	1	55
Public, 2-year ( $n = 10$ )			
Mean	59	<1	60
Median	45	0	46
High	147	2	147
Low	1	0	1
Standard deviation	51	<1	51
Private, 4-year ( $n = 50$ )			
Mean	70	1	71
Median	58	0	58
High	366	34	366
Low	3	0	3
Standard deviation	63	5	64
Private, two-year ( $n = 1$ ) <sup>b</sup>			
	31	0	31

<sup>a</sup>Only Level A and Level AA errors were reported, as Section 508 only requires Title IV–participating institutions to comply with the Level A and Level AA levels of web accessibility. HBCU = Historically Black College and University.

<sup>b</sup>Shorter College was the only private, 2-year HBCU as of December 2018.

students with disabilities may be minoritized by certain types of errors if their disability requires a specific assistive technology (e.g., an assistive technology using a keyboard to input all information).

However, simply because a website includes one web accessibility error does not necessarily mean the entire website is inaccessible for students with disabilities (Erickson et al., 2013; Flowers et al., 2011; Hackett & Parmanto,



**Table 3.** Descriptive Statistics of Web Accessibility Errors ( $N = 6,240$ ) of Homepages/Landing Pages for Historically Black Colleges and Universities ( $N = 100$ ), by Error Type.

Errors, by type, all institutions	No. of errors	% of all errors
<b>Perceivable</b>		
Level A, 1.1.1, Non-text content	748	11.9
Level A, 1.3.1, Information and relationships	522	8.3
Level A, 1.3.2, Meaningful sequence	27	<1.0
<b>Operable</b>		
Level A, 2.1.1, Keyboard	270	4.3
Level A, 2.1.2, No keyboard trap	1	<1.0
Level A, 2.3.1, Three flashes or below threshold	2	<1.0
Level A, 2.4.1, Bypass blocks	64	1.0
Level A, 2.4.2, Page titled	1	<1.0
Level A, 2.4.3, Focus order	13	<1.0
Level A, 2.4.4, Link purpose (in context)	2750	44.1
Level AA, 2.4.6, Headings and labels	99	1.6
<b>Understandable</b>		
Level A, 3.1.1, Language of page	23	<1.0
<b>Robust</b>		
Level A, 4.1.1, Parsing	662	10.6
Level A, 4.1.2, Name, role, value	1058	16.9

2005; Taylor & Bicak, 2019; Thompson et al., 2010). With this in mind, each website was assessed for web accessibility using Mac OS X's Voiceover, a fully functional, robust, screen-reading assistive technology used by people with blindness, low vision, dyslexia, and many other disabilities. Voiceover has been found to be a reliable, efficient, and effective assistive technology used to add another layer of reliability beyond evaluation technologies such as Tenon™ (Edwards, 2005; Henton, 2012; Manduchi & Kurniawan, 2012).

As a result, this study is delimited to the web accessibility error reports of HBCU landing pages/homepages generated by Tenon™ coupled with a Voiceover audit of each website to assess whether a student with a disability could navigate to the undergraduate/first-year admissions webpage. These Voiceover audits utilized a binary coding strategy: (1) yes, a student with a disability could use Voiceover to navigate from the HBCU landing page/homepage to the undergraduate/first-year admissions webpage, or (2) no, the HBCU landing page/homepage was not web accessible enough to allow a student with a disability to use Voiceover to navigate to the undergraduate/first-year

application webpage. The decision was made to assess HBCU websites in this fashion for two reasons. First, Voiceover was used to assess whether a student with a disability could navigate from the landing page/homepage to the undergraduate/first-year student admissions webpage, understanding that applying for admission to an institution of higher education is a critical step in the enrollment process. Second, it would not be feasible to analyze every single webpage published on all 100 HBCU websites in this study, as several HBCU websites in this study contained tens of thousands of individual webpages. Therefore, future research could address different types of HBCU webpages, such as financial aid webpages, student affairs webpages, or Title IX webpages.

## **Findings**

Descriptive statistics of web accessibility errors of HBCU websites ( $N = 100$ ) can be found in Table 2.

Across the entire population, the average HBCU website included 62 Level A and Level AA web accessibility errors, with one HBCU publishing a website with zero web accessibility errors (Savannah State University). There was also a considerable range of web accessibility across HBCU websites, as several HBCU websites included 10 or fewer errors, while one HBCU website included 366 web accessibility errors, rendering the content very inaccessible for students with disabilities. Across all institution types, public 4-year HBCU websites were the most accessible, with the average public 4-year HBCUs including 53 errors on their website, whereas the average private 4-year HBCUs included 71 errors on their website. Moreover, across all HBCU websites, Level A web accessibility errors were the most common, with the average HBCU website including 61 Level A errors, while only one HBCU website in this study included more than 30 Level AA errors (Oakwood University; 34 Level AA errors).

After the Voiceover analysis, it was discovered that only six HBCUs published websites accessible enough to allow a student with a disability to navigate from the landing page/homepage to the undergraduate/first-year admissions webpage (in alphabetical order: Clinton College, Coahoma Community College, H. Councill Trenholm State Community College, Meharry Medical College, North Carolina A&T State University, and Savannah State University). H. Councill Trenholm State Community College's website included nine Level A web accessibility errors, yet the errors were minor enough to allow Voiceover to access the information necessary to navigate from page to page. This finding demonstrates that websites with web accessibility errors can be accessible to a certain degree, depending

on the task a student wishes to perform. However, inversely, one HBCU website included 366 web accessibility errors. This website was almost entirely inaccessible for a student with a disability using Voiceover to access the online information, in violation of the ADA.

Descriptive statistics of web accessibility errors of HBCU websites ( $N = 100$ ) by error type can be found in Table 3.

Regarding web accessibility error type, the most common errors were operable Level A 2.4.4 errors (2,750 total errors, 44.1% of all errors in the study). This type of error concerns the information included in a hyperlink on a webpage and whether a user could determine where the hyperlink leads to. Per WCAG 2.0, the 2.4.4 standard means

The text of, or associated with, the link is intended to describe the purpose of the link. In cases where the link takes one to a document or a web application, the name of the document or web application would be sufficient to describe the purpose of the link. (W3C, 2018d, para. 2)

Here, many HBCU websites did not include information to allow the user to determine the purpose of a hyperlink on the HBCU landing page/homepage. This finding may explain the results of the Voiceover analysis, which found only six HBCU landing pages/homepages were accessible enough to allow a user to navigate from the landing page/homepage to the undergraduate/first-year admissions webpage.

Similarly, another common error type in this study were perceivable Level A 1.1.1 errors (748 errors, 11.9% of all errors in the study). This type of error pertains to the presence of text data in non-text items, such as pictures, videos, and other web elements. Per WCAG 2.0, the purpose of the 1.1.1 standard “is to make information conveyed by non-text content accessible through the use of a text alternative,” as “a person who cannot see a picture can have the text alternative read aloud using synthesized speech” or “a person who cannot hear an audio file can have the text alternative displayed so that he or she can read it” (W3C, 2018c, para. 1). As a result, the majority of the web accessibility errors in this study were related to missing text information in hyperlinks and non-text items, evidenced by the number of 1.1.1 and 2.4.4 errors in this study.

Robust errors were also abundant in this study, as robust Level A 4.1.1 parsing errors (662 errors, 10.6% of all errors in the study) and Level A 4.1.2 name, role, value errors (1,058 errors, 16.9% of all errors in the study) were frequently located on HBCU websites. Although the concept of web accessibility robustness is complex, robust errors (both 4.1.1 and 4.1.2 errors) relate to how informative and detailed web elements are on a webpage, as there are thousands of different assistive technologies available to students

with disabilities, and there are countless different disabilities that a student may need assistance with. Robust 4.1.1 errors likely indicate that HBCU websites did not include “complete start and end tags” within the website’s data (WC3, 2018a, para. 5), meaning that a wide range of assistive technologies would likely be unable to read the website’s data and present the correct information for the student with a disability.

Similarly, robust 4.1.2 errors relate to how web items (i.e., hyperlinks, pictures, fillable forms) are written into webpages and whether those inform how an assistive technology can interact with the item. Per WCAG 2.0, robust 4.1.2 errors can detect “whether or not a checkbox or radio button has been selected, or whether or not a collapsible tree or list node is expanded or collapsed” (WC3, 2018b, para. 4). Here, 4.1.2 errors likely indicate that a web item was not defined well enough to inform an assistive technology whether a user needs to interact with a web element in a certain way in order to proceed on the website, such as checking a box or completing a form (e.g., an application). This finding may also help explain the small number of HBCU websites robust enough to allow a user to navigate from the landing page/homepage to the undergraduate/first-year admissions webpage.

Keyboard-related errors were also problematic in this study, as operable Level A 2.1.1 keyboard errors ( $n = 270$ ) comprised 4.3% of all errors in this study. These errors involve the level of detail present in web item and whether or not a keyboard-related assistive technology could interact with the item. Keyboard-related errors are especially important to identify and fix, as many assistive technologies feature the keyboard as the primary method of interaction with a website (Thompson et al., 2010; WC3, 2018a). However, not all critical web accessibility errors were high in number. Operable Level A 2.3.1 errors only appeared on two HBCU websites. Level A 2.3.1 errors are related to the number of bright flashes of light included in a video, as videos should be made in consideration of people with photo and light sensitivity disabilities (WC3, 2018b). In two instances in this study, HBCU websites featured a video that flashed a bright light 3 or more times per second, potentially triggering an epileptic seizure or other health emergency for a student with photosensitivity. Although small in number, web accessibility errors such as these could prove life-threatening to a Black student with a disability exploring certain HBCU websites.

## **Discussion and Implications for Research and Practice**

Although HBCUs remain a vital source of postsecondary education for Black students in the United States, this study finds many HBCU websites were not

web accessible for students with disabilities after the most recent amendment of Section 508. As a result, Black postsecondary students with disabilities may be facing an unprecedented degree of minoritization in the U.S. higher education landscape as Black students are already underrepresented on U.S. college campuses, and Black postsecondary students with disabilities are rarely researched.

Given the findings of this study, future studies should investigate websites from other institution types in the United States, including predominantly White institutions (PWIs). A comparative analysis of PWI, HBCU, Asian American and Native American Pacific Islander-serving (AANAPISI), and Hispanic-serving institution (HSI) websites may reveal how students of color with disabilities could be further minoritized from the U.S. higher education through inaccessible institutional websites. Although this study suggested many HBCU websites could be improved for students with disabilities, perhaps this struggle is shared across many other types of institutions of higher education as well.

Beyond web accessibility and the scope of this study, future research could also address the ever-changing and technological nature of the modern U.S. college experience. As course and content delivery has advanced as technology has advanced, many institutions of higher education—including HBCUs—have implemented online course fees, technology requirements, and other potentially burdensome structures for students with disabilities. If HBCUs—and all institutions of higher education—truly desire to serve the underserved and support students with disabilities, future research could address how students with disabilities navigate an increasingly technological society and higher education landscape in the United States.

In addition to educational researchers, HBCU leaders and communication professionals can learn from the results of this study and improve the web accessibility of their websites. First, HBCU leaders and communication professionals must make themselves aware of web accessibility guidelines and methods of website accessibility auditing. Given the findings presented in Table 3, many of the web accessibility issues on HBCU websites are relatively simple to fix. In many cases, a hyperlink was missing a description or a button was missing metadata to tell an assistive technology what the button was for. Simple fixes such as adding the necessary metadata (information) to a web element could be the difference between a Black student with a disability applying and reaping the benefits of a high-quality postsecondary education and a Black student with a disability being unable to apply to the HBCU and being left behind.

Second, similar to the findings of Wisdom et al. (2006), HBCU leadership should consider providing professional development for their faculty and

staff focused on web accessibility. As previously stated, many of the web accessibility errors in this study are relatively simple to fix. If HBCU leadership facilitated web accessibility professional development, departments across HBCU campuses could share the responsibility of publishing web content for students with disabilities, instead of ignoring the issue or leaving the bulk of the work to information technology professionals working for HBCUs. One of the limitations of this study was that assessing thousands upon thousands of HBCU webpages was unfeasible for one study. Because of the size of modern HBCU websites, web accessibility must be a shared responsibility among HBCU practitioners across campus. Perhaps web accessibility professional development can be the remedy for the many web accessibility errors uncovered in this study.

Moreover, HBCU leaders and communication professionals should consider a large investment—if possible—in institutional websites in general, as extant research has found HBCU websites are smaller, less popular, and less advertised than peer institutions on the Internet (Taylor, 2018a). In addition to improving web accessibility, HBCU leaders could also focus on increasing web presence and advertising to drive higher application, enrollment, and graduation numbers. HBCU websites, and their improvement, could represent a critical opportunity for HBCUs to grow and increase their impact on American society, including supporting Black students with disabilities on their path to postsecondary access, admission, and success.

Finally, HBCU leaders must continue to uphold the rich legacy and impact of HBCUs on the U.S. higher education landscape by adhering to federal law and maintaining legal compliance. As previously mentioned, one HBCU closed its doors shortly after the data collection of this study (Jaschik, 2018), and other HBCUs have struggled to maintain fiscal solvency amid budget cuts and a lack of federal and state support (Camera, 2017; Medina & Allen, 2017). Beyond supporting current and prospective Black postsecondary students with disabilities, HBCU leaders should explore methods of improving institutional websites to ensure legal compliance, and subsequently the economic health of the institution itself.

## **Conclusion**

Kim Hunter Reed, Deputy Under Secretary of Education during the Obama Administration, said of HBCUs,

HBCUs are an integral part of our cherished American culture. These institutions have had a glorious past, and we're committed to make sure that they have a glorious future. That requires our continued focus on strong

academic preparation, expanded innovation and leadership development to strengthen overall student and campus success. (U.S. Department of Education, 2016, para. 2)

In many ways, Reed was echoing what educational research has already found: HBCUs are of the most important and most successful institutions in educating young Black Americans wishing to pursue an education and the socioeconomic benefits of a high-quality postsecondary degree (Anderson, 2017; Camera, 2017; Freeman & Thomas, 2002; Gasman & Samayoa, 2017; McRae, 2016). However, HBCU leadership must embrace the fact that American culture is thoroughly technological, and the glorious future of HBCUs must include an embrace of robust, accessible websites for Black postsecondary students with disabilities.

Reed also mentioned preparation, innovation, and leadership development as they related to the future success of HBCUs in America: These tenets could be applied to the HBCU website and its accessibility for students with disabilities. From here, HBCU leaders should embrace their heritage, adapt to ever-changing technologies, and work to improve the HBCU experience, starting with the HBCU website.

### **Declaration of Conflicting Interests**

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### **Funding**

The author received no financial support for the research, authorship, and/or publication of this article.

### **ORCID iD**

Z. W. Taylor  <https://orcid.org/0000-0002-6085-2729>

### **References**

- Anderson, M. (2017, February 28). *A look at historically black colleges and universities as Howard turns 150*. Retrieved from <http://www.pewresearch.org/fact-tank/2017/02/28/a-look-at-historically-black-colleges-and-universities-as-howard-turns-150/>
- Bradbard, D. A., Peters, C., & Caneva, Y. (2010). Web accessibility policies at land-grant universities. *The Internet and Higher Education*, 13, 258-266. doi:10.1016/j.iheduc.2010.05.007
- Camera, L. (2017, September 29). *Keeping a promise to HBCUs*. Retrieved from <https://www.usnews.com/news/the-report/articles/2017-09-29/struggling-hbcus-look-for-help-from-the-trump-administration>

- Carlson, L. L. (2018). *Higher ed accessibility lawsuits, complaints, and settlements*. Retrieved from <http://www.d.umn.edu/~lcarlson/ateam/lawsuits.html>
- Edwards, P. (2005). A new era for technology. *The Braille Forum*, 44, 9.
- Erickson, W., Trerise, S., Lee, C., VanLooy, S., Knowlton, S., & Bruyère, S. (2013). The accessibility and usability of college websites: Is your website presenting barriers to potential students? *Community College Journal of Research and Practice*, 37, 864-876. doi:10.1080/10668926.2010.484772
- Flowers, C., Bray, M., & Algozzine, R. F. (2011). Content accessibility of community college websites. *Community College Journal of Research and Practice*, 25, 475-485. doi:10.1080/10668920152407874
- Freeman, K., & Thomas, G. E. (2002). Black colleges and college choice: Characteristics of students who choose HBCUs. *The Review of Higher Education*, 25, 349-358. doi:10.1353/rhe.2002.0011
- Gasman, M., & Samayo, A. C. (2017, October 4). *Historically Black colleges and universities: Fostering familial learning environments for student success*. Retrieved from <https://www.higheredtoday.org/2017/10/04/historically-black-colleges-universities-fostering-familial-learning-environments-student-success/>
- Hackett, S., & Parmanto, B. (2005). A longitudinal evaluation of accessibility: Higher education web sites. *Internet Research*, 15, 281-294. doi:10.1108/10662240510602690
- Harper, K. A., & DeWaters, J. (2008). A quest for website accessibility in higher education institutions. *The Internet and Higher Education*, 11, 160-164. doi:10.1016/j.iheduc.2008.06.007
- Henton, C. (2012). Text-to-speech synthesis development. *The Encyclopedia of Applied Linguistics*. Retrieved from <https://onlinelibrary.wiley.com/doi/abs/10.1002/9781405198431.wbeal1207>
- Ismail, A., Kuppusamy, K. S., & Nengroo, A. S. (2017). Multi-tool accessibility assessment of government department websites: A case-study with JKGAD. *Disability and Rehabilitation: Assistive Technology*, 13, 504-516. doi:10.1080/17483107.2017.1344883
- Jaschik, S. (2018, February 23). *Small Black college will close*. Retrieved from <https://www.insidehighered.com/news/2018/02/23/concordia-alabama-historically-black-college-announces-it-will-shut-down-operations>
- Kelly, B. (2002). Web watch: An accessibility analysis of UK university entry points. *Ariadne* 33. Retrieved from <http://www.ariadne.ac.uk/issue33/web-watch>
- LaGrow, M. (2017). The Section 508 refresh and what it means for higher education. *Educause Review*. Retrieved from <https://er.educause.edu/articles/2017/12/the-section-508-refresh-and-what-it-means-for-higher-education>
- Manduchi, R., & Kurniawan, S. (2012). *Assistive technology for blindness and low vision*. Boca Raton, FL: Taylor & Francis.
- McRae, S. L. (2016). *A time for change: An examination of a historically Black college or university (HBCU) and its efforts to globalize and acculturate international students into campus life* (Doctoral dissertation). Retrieved from <http://digitalcommons.auctr.edu/cauetds/30/>



- Medina, D. A., & Allen, R. (2017, February 27). What is the future for America's historically Black colleges and universities? Retrieved from <https://www.nbcnews.com/nightly-news/what-future-america-s-historically-black-colleges-universities-n725811>
- Quaye, S. J., & Harper, S. R. (Eds.). (2015). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations* (2nd ed.). New York, NY: Routledge.
- Tatum, B. D. (2017). *Why are all the Black kids sitting together in the cafeteria?* New York, NY: Basic Books.
- Taylor, Z. W. (2018a). "Now you're competing": How historically-Black colleges and universities compete (and don't) on the Internet. *International Journal of Educational Technology in Higher Education*, 15, 28. doi:10.1186/s41239-018-0111-4
- Taylor, Z. W. (2018b). Web accessibility: Not just for tech experts anymore. *Disability Compliance for Higher Education*, 23, 5. doi:10.1002/dhe.30416
- Taylor, Z.W., & Bicak, I. (2019). Two-year institution and community college web accessibility: Updating the literature after the 2018 Section 508 amendment. *Community College Journal of Research and Practice*, 1-15. doi:10.1080/10668926.2019.1600604
- Tenon, L. L. C. (2018). *Tenon: Services*. Retrieved from <https://tenon.io/services.php#testing>
- Thompson, T., Burgstahler, S., & Comden, D. (2003). Research on web accessibility in higher education. *Information Technology and Disabilities Journal*, 9. Retrieved from <http://itd.athenpro.org/volume9/number2/thompson.html>
- Thompson, T., Burgstahler, S., & Moore, E. J. (2010). Web accessibility: A longitudinal study of college and university home pages in the northwestern United States. *Disability and Rehabilitation: Assistive Technology*, 5(2), 108–114. <https://doi.org/10.3109/17483100903387424>
- Timbi-Sisalima, C., Amor, I. M., Otón, S., Hilera, J. R., & Aguado-Delgado, J. (2018). Comparative analysis of online web accessibility evaluation tools. *Information Systems Development: Complexity in Information Systems Development*. Retrieved from <http://aisel.aisnet.org/isd2014/proceedings2016/CreativitySupport/3>
- U.S. Access Board. (2018). *Text of the standards and guidelines*. Retrieved from <https://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-ict-refresh/final-rule/text-of-the-standards-and-guidelines>
- U.S. Department of Education. (2016, October 14). *FACT SHEET: Obama administration investments in historically-Black colleges and universities*. Retrieved from <https://www.ed.gov/news/press-releases/fact-sheet-obama-administration-investments-historically-black-colleges-and-universities>
- U.S. General Services Administration. (2018). *IT accessibility laws and policies: Section 508 of the Rehabilitation Act of 1973*. Retrieved from <https://www.section508.gov/manage/laws-and-policies>

- W3C. (2018a). *Guideline 2.1: Keyboard accessible*. Retrieved from <https://www.w3.org/WAI/WCAG21/quickref/?versions=2.0#keyboard-accessible>
- W3C. (2018b). *Web content accessibility guidelines (WCAG) overview*. Retrieved from <https://www.w3.org/WAI/standards-guidelines/wcag/>
- W3C. (2018c). *Understanding success criterion 1.1.1*. Retrieved from <https://www.w3.org/TR/UNDERSTANDING-WCAG20/text-equiv-all.html>
- W3C. (2018d). *Understanding success criterion 2.4.4*. Retrieved from <https://www.w3.org/TR/UNDERSTANDING-WCAG20/navigation-mechanisms-refs.html>
- WC3. (2018a). *Understanding success criterion 4.1.1*. Retrieved from <https://www.w3.org/TR/UNDERSTANDING-WCAG20/ensure-compat-parses.html>
- WC3. (2018b). *Understanding success criterion 4.1.2*. Retrieved from <https://www.w3.org/TR/UNDERSTANDING-WCAG20/ensure-compat-rsv.html>
- Wisdom, J. R., White, N. A., Goldsmith, K. A., Bielavitz, S., Davis, C. E., & Drum, C. (2006). An assessment of web accessibility knowledge and needs at Oregon community colleges. *Community College Review*, 33, 19-37. doi:10.1177/009155210603300302

### Author Biography

**Z.W. Taylor** is a research assistant at the University of Texas, Austin. His work focuses on the readability, translation, and web accessibility of student-focused information on institutional websites. His work has been published in *Teachers College Record*, *Journal of College Student Development*, and *Journal of Student Affairs Research and Practice*, among others.