Applying WCAG 2.1 Success Criteria to SUNY Webpages:

Are they WCAG 2.1 compliant?

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Abstract

In this thesis, I investigate the meaning of web accessibility, the types of disabilities that affect web use and common assistive technologies, the most widely accepted web accessibility standards in the United States and which tools/methods can be used to check for web accessibility. Additionally, I describe the State University of New York (SUNY) system and their attempts at web accessibility. By applying the WAVE Web Accessibility Evaluation Tool to selected pages in a sample of SUNY schools, I was able to determine that only ten percent of the schools reviewed were fully accessible.

Dedication

To my mom, who modeled how strong women should raise strong women.

And to my dad, who has been unwavering in his encouragement and always knew I could do anything I set my mind to.

I finally did it.

Thank you for your support.

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Introduction

From healthcare, to childcare, to education, the internet is crucial to our existence. The role of websites in higher education is to aggregate information for students that would require synthesis from a range of resources—including program discovery, application information, individual program success criteria and beyond. "[Academic] websites play an important role in providing information for prospective students (both new and transfer), current students, parents and alumni." (Bordbar, 2016) But what happens when a website is inaccessible to some users due to poor design? Sadly, this is the reality for millions of people in the United States every day.

Web accessibility laws in the United States (and some foreign countries) govern the accessibility and usability of websites. Recent developments pertaining to web accessibility have brought forth stricter federal, state and local guidelines in an effort to enforce accessible digital content for all. The State University of New York (SUNY) education system has recently adopted a system-wide accessibility policy in response to Office of Civil Rights complaints lodged against several of its institutions for inaccessible web content.

The goal of this paper is to answer the following research questions:

1. What is web accessibility?
    a. What are the most widely accepted web accessibility standards in the U.S.?
    b. What tools and/or methods can be used to check for web accessibility?
2. Do schools in the State University of New York (SUNY) system have accessible homepages?

3. Do schools in the State University of New York (SUNY) system have accessible program pages?
4. Do schools in the State University of New York (SUNY) system have accessible apply pages?

What is web accessibility?

According to w3.org, web accessibility means that websites, web tools and web technologies are designed and developed so that people with disabilities can perceive, understand, interact, navigate and contribute to them. (Henry, 2019) Wikipedia defines web accessibility as the "inclusive practice of ensuring there are no barriers that prevent interaction with—or access to—websites on the World Wide Web by people with physical disabilities, situational disabilities, and socio-economic restrictions on bandwidth and speed." ("Web Accessibility," 2021) Regardless of the definition you choose, the purpose of web accessibility is to allow equal access to all web content for all people, no matter their ability or circumstance. "A website is fully functional when it is easy to find information by all users including users with disabilities..." (Bordbar, 2016)

Disabilities That Affect Web Use

The World Wide Web Consortium (W3C) indicates that the topic of web accessibility pertains to all disabilities that can affect accessing and navigating the web (Henry, 2021), including:

- Auditory disabilities: Hearing impaired or deaf users may have difficulty hearing audio content.

- Cognitive disabilities: Users with cognitive disabilities may have difficulty with attention, memory, language and other cognitive functions, and therefore may not be able to interact or comprehend poorly designed content.
- Neurological disabilities: Neurodiverse users can suffer from seizures, migraines and other negative effects, that can be brought on by audio or visual triggers.
- Physical disabilities: Physical disabilities can affect motor function, including the ability to use a mouse or keypad.
- Speech-related disabilities: Users with speech disabilities may have difficulty producing speech and may not be able to interact with voice-recognition software.
- Visual disabilities: Users with colorblindness, low vision or total blindness have difficulty accessing visual content.

According to the Centers for Disease Control and Prevention (CDC), 61 million American adults have a disability—that is one if four, or 26 % of all adults in the United States are living with a disability. (CDC, 2019)

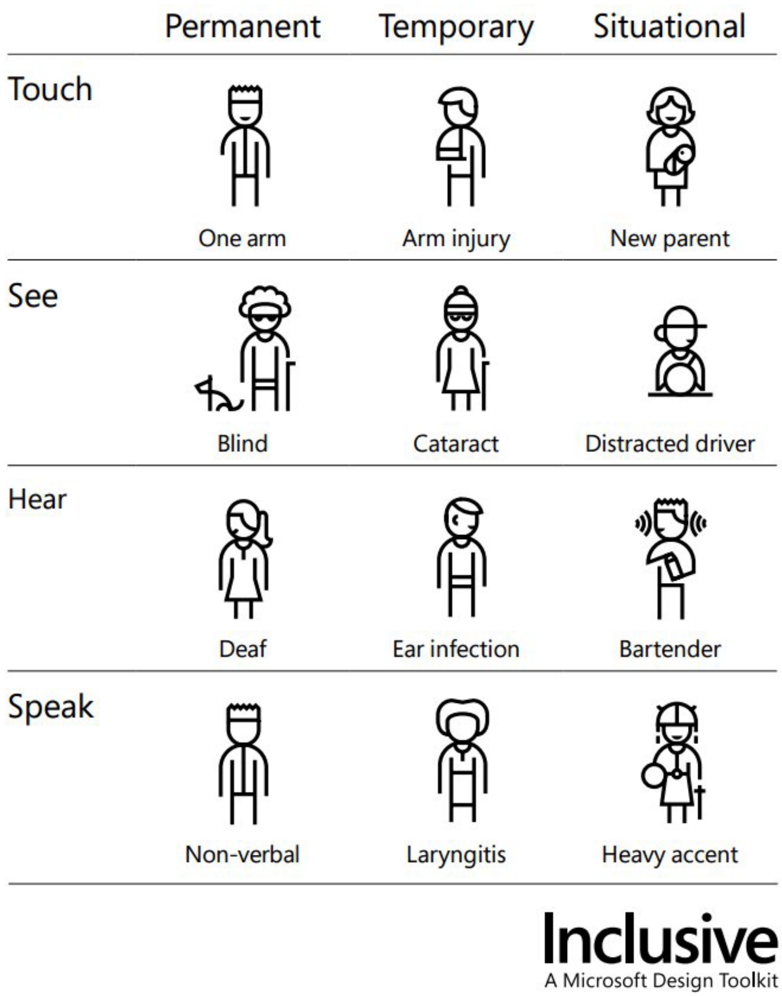
While the practice of web accessibility is commonly referred to as a way to help only people with disabilities navigate the web, it also benefits people without disabilities. Some examples of ways accessible web content can help the average user access and navigate the web are:

- Responsive web design can help users accessing the web on a small screen (i.e., cell phone or tablet) by automatically re-configuring the content to fit in the appropriate screen size.

- Adding captions to media with an audio component can help someone using a device without sound, or a user that cannot turn the sound on the device (i.e., a user in the library without headphones available).
- The ability to magnify content without loss of content or function can help someone in a highly (or dimly) lit area with poor screen visibility (i.e., someone navigating the web on a sunny day, or in a dark movie theatre). (Henry, 2021)

Figure 1 demonstrates some of the variations permanent, temporary and situational disabilities to consider when designing for accessibility (i.e., new parent holding a child and cannot use hands to navigate the web, a person who has low visibility due to a cataract surgery or someone who has a temporary auditory disability due to an ear infection).

Figure 1: Permanent, Temporary and Situational Disabilities



https://www.codemotion.com/magazine/dev-hub/designer-cxo/inclusive-design/

Types of Assistive Technology and Alternative Ways to Navigate the Web

Screen Readers

The most widely known assistive technology for navigating the web is the screen reader. Screen readers help the blind and visually impaired navigate and interact web content by conveying the content in a non-visual way (i.e., audible content). According to accessible.com, nearly 7.3 million Americans rely on a screen reader to access web content. (*What Are Screen Readers and How They Help?*, 2019) There are several different types of screen readers available on the market today. Some of the more popular screen readers for computers are JAWS and NVDA (windows) and VoiceOver (Mac). Additionally, VoiceOver is available for iOS and Android users can utilize Talkback.

It is important for web content creators to have a basic understanding of how screen readers work, so that web content can be created with this functionality in mind. Additionally, it's important to note that each screen reader will produce a slightly different experience. For example, some screen readers will not read any punctuation (i.e., +, =, *) while other screen readers may read some or all punctuation. Therefore, it is important to build content that can be accessed by all screen readers, equally.

Refreshable Braille Display

While technically considered a form of screen reader, the refreshable braille display is typically used by those who have visual and auditory disabilities. According to the American Foundation for the Blind (afb.org) the refreshable braille display provides access to information on a computer screen (or on the web) by "raising and lowering different combinations of pins in braille cells". (*Refreshable Braille Displays*, 2020) These braille cells continuously refresh as the user navigates around the screen. An example of a refreshable braille display can be seen in Figure 2.

Figure 2: Refreshable Braille Display

Source: https://www.accessiblebooksconsortium.org/news/en/2021/news_0001.html

Screen Magnifier

Screen magnifiers are typically used by those with low vision, by users on devices with small screens, or those accessing the web in a poorly (or brightly) lit area. Most computers have a built-in screen magnifier (i.e., Windows users can zoom in and out by selecting the Windows key and the + or – key). However, some users may prefer screen magnifying software, like ZoomText.

Mouth Stick/Head Stylus

The mouth stick and head stylus (also known as a head wand) are examples of assistive technologies generally used by people with uncontrolled hand movement (i.e., people with tremors or palsy) or those who have no use of their hands (i.e., quadriplegics). Just as the names suggest, the mouth stick is held in the mouth and the head stylus is worn on the head (via a fitted headband). The head and neck are then used to direct the device to the proper screen or keyboard placement. While relatively inexpensive, this type of assistive technology can be difficult to use and does require practice. Figures 3 and 4 illustrate mouth stich and head stylus use, respectively.

Figure 3: Mouth Stick Demonstration

Source: https://mouse4all.com/en/articles/mouth-sticks-for-quadriplegics/

Figure 4: Head Stylus Demonstration

Source: https://www.schoolhealth.com/adjustable-head-stylus

Brief History of Web Accessibility in the United States

1973: Rehabilitation Act of 1973.

On September 26, 1973, President Richard Nixon signed the Rehabilitation Act of 1973 into law. (Wilcher, 2018) While the law did not specifically address web accessibility, it was the first legislation to indicate that equal access for people with disabilities should be made possible by removing barriers. The Rehabilitation Act of 1973 also laid the foundation for Section 508, in later amendments to the law.

1990: Americans With Disabilities Act.

George W. Bush signed the Americans With Disabilities Act (ADA) into law on July 26, 1990. (White, 2020) This law prohibits discrimination against people with disabilities in all aspects of public life. At its inception, the ADA did not specifically address web accessibility, but would eventually pave the way for web accessibility laws in the U.S.

1998: Amendment to the Rehabilitation Act of 1973: Section 508.

In 1998 the Rehabilitation Act of 1973 was amended to add “Section 508”, which was enacted to eliminate barriers in technology for people with disabilities. (“Section 508 Amendment to the Rehabilitation Act of 1973,” 2021)

1999: Web Content Accessibility Guidelines 1.0.

On May 5, 1999, the W3C published the Web Content Accessibility Guidelines 1.0 (WCAG 1.0) as part of the Web Accessibility Initiative (WAI). WCAG 1.0 consisted of 14 guidelines (or general principles of accessible design) and 65 “checkpoints” for web accessibility. (“Web Content Accessibility Guidelines,” 2021)

2008: ADA Amendments Act of 2008.

Enacted on September 25, 2008, the ADA Amendments Act of 2008 (ADAAA) broadened the scope of what was considered a disability, to include things like cancer and epilepsy. (*ADA - Findings, Purpose, and History*, n.d.)

2008: Web Content Accessibility Guidelines 2.0.

On December 11, 2008, the W3C replaced their WCAG 1.0 guidelines with the WCAG 2.0 guidelines. WCAG 2.0 consisted of four guiding principles broken up into 12 guidelines, with 61 success criteria. (“Web Content Accessibility Guidelines,” 2021)

2018: Section 508 Update.

On January 18, 2018 Section 508 was updated to address the newest developments in technology and web design, and to include WCAG 2.1 guidelines. (White, 2020)

2018: Web Content Accessibility Guidelines 2.1.

On June 5, 2018, the W3C introduced WCAG 2.1 which added 17 new success criteria and replaced WCAG 2.0. (“Web Content Accessibility Guidelines,” 2021)

Commonly Accepted Web Accessibility Standards

While there are many sets of web accessibility compliance suggestions, there are three sets of standards that are most widely accepted:

- Web Content Accessibility Guidelines (WCAG).
- Section 508 of the Rehabilitation Act of 1973 (Section 508).
- The Americans With Disabilities Act (ADA).

Web Content Accessibility Guidelines (WCAG)

The Web Content Accessibility Guidelines (WCAG) are a universally accepted set of recommendations created as part of the Web Accessibility Initiative (WAI), published by the W3C. The purpose of WCAG (often pronounced “wik-ag”) is to provide a standard on web content accessibility and documentation on how to make web content more accessible to a variety of users. (Henry, 2021) WCAG is intended for all creators and editors of web content—including designers, content writers, developers and application specialists—and can be applied to both desktop and mobile design.

WCAG Conformance Levels and Obligations

WCAG has three levels of conformance: A, AA (“double A”) and AAA (“triple A”). With each conformance level, the success criteria become progressively more difficult to meet. For example, conformance level A is the easiest to meet and includes the most basic success criteria (i.e., adding text alternatives to non-text content.) Conformance level AA is slightly more difficult than level A, as you must complete all of level A success criteria, and the additional level AA success criteria to be considered AA-compliant. Conformance level AAA is the most difficult to meet as you must complete all of the success criteria in conformance level A, AA and AAA to be AAA-compliant. There are 30 level A success criteria, 20 level AA success criteria and 28 AAA success criteria in WCAG 2.1.

While there is no law that lists the individual websites required to be accessible by the ADA and Section 508, in general, the following groups must legally comply with web accessibility standards (and meet the universally accepted set of guidelines set forth by WCAG):

1. Any public-facing website, with an emphasis on websites that sell goods and services.
2. All state and local government websites.

It is generally acceptable to meet the current iteration of WCAG (currently 2.1) conformance level AA (which includes level A) success criteria to be considered “accessible”, however meeting the success criteria for conformance level AAA is still considered best practice. (*WCAG Levels: Level A, AA and AAA Compliance*, 2021)

Evolution of WCAG

On May 5, 1999, the W3C published WCAG 1.0. WCAG 1.0 consisted of 14 guiding principles with 65 “checkpoints” for web accessibility. (“Web Content Accessibility Guidelines,” 2021) On December 11, 2008, the W3C replaced their WCAG 1.0 guidelines with the WCAG 2.0 guidelines. WCAG 2.0 consisted of four guiding principles broken up into 12 guidelines with 61 success criteria. (“Web Content Accessibility Guidelines,” 2021) The four guiding principles newly developed in WCAG 2.0 are meant to provide the foundation for web accessibility and are as follows (*Introduction to Understanding WCAG 2.1*, n.d.):

1. Perceivable: All information must be presented to users in a way they can perceive it.
2. Operable: The user interface and all components must be operable.
3. Understandable: Users must be able to understand the information presented and understand how to use the interface.
4. Robust: Content must be robust enough to be interpreted by different types of assistive technology.

On June 5, 2018, the W3C updated the recommendation to WCAG 2.1 and added 17 new testable success criteria. (“Web Content Accessibility Guidelines,” 2021)

Table 1: Evolution of WCAG

Date	WCAG Version	Guiding Principles	Guidelines	Testable Criteria
May 5, 1999	1.0	n/a	14	65 Checkpoints
December 11, 2008	2.0	4	12	61 Success Criteria
June 5, 2008	2.1	4	12	78 Success Criteria

For the purposes of this paper, we will use WCAG 2.1 guidelines.

WCAG 2.1

WCAG 2.1 is “backwards compatible” with WCAG 2.0, meaning that all of the success criteria in WCAG 2.0 is part of WCAG 2.1, plus 17 new additions. (*The Must-Have WCAG 2.1 Checklist*, n.d.) Appendices A, B, C and D provide a snapshot of the WCAG 2.1 criteria, organized by guiding principle and guideline.

Section 508

In 1998 the Rehabilitation Act of 1973 was amended to add "Section 508" ("Section 508 Amendment to the Rehabilitation Act of 1973," 2021) and since then, Section 508 has been updated several times. Section 508 is a federal law, and its main purpose is to require federal agencies—and any agency that receives federal funding—to keep their Information and Communication Technology (ICT) accessible (including websites, PDFs, software, smartphones, etc.) to people with disabilities. (*Website Requirements for Section 508 Compliance*, 2021)

On January 18, 2018 section 508 was updated to address the newest developments in technology and web design and to include WCAG 2.1 guidelines. (White, 2020) (See Appendix E for the Section 508 full text.)

Americans With Disabilities Act (ADA)

George W. Bush signed the Americans With Disabilities Act (ADA) into law on July 26, 1990. (White, 2020) The ADA is a civil law which prohibits discrimination against people with disabilities in all aspects of public life. While Section 508 applies only to federal agencies or those receiving federal funding, the ADA applies both to the public and private sector.

Financial Penalties for Accessibility Non-Compliance

According to getadaaccessible.com, accessibility non-compliance penalties can equal fines up to $55,000 for the first violation and $110,000 for each subsequent violation. ("ADA Compliance Law and Penalties," 2018) Additionally, if the entity found to be in violation receives federal funding, those funds could be revoked.

Additional Benefits of Accessible Web Content

Aside from avoiding unwanted legal ramifications, having accessible web content has additional benefits.

1. Maintaining accessible web content is the law and can take a lot of time, planning and effort. Oftentimes, that effort does not go unrecognized. Taking the time to create accessible content can result in good PR coverage (or the avoidance of bad PR coverage).
2. As mentioned, one in four adults in the United States is living with a disability. Inaccessible content risks putting up barriers to entry for those users. Accessible content opens the doors for a wider audience (and therefore better enrollment, more sales, higher engagement, etc.).
3. Maintaining accessibility best practices like simple, consistent navigation can increase your Search Engine Optimization (SEO) score and increase your website's visibility in search engines.
4. Websites that comply with transcript guidelines also increase their chance of appearing in search engines like Google because the previously audio-only content has been translated into searchable text.

What is SUNY?

Established in 1948, the State University of New York (SUNY) system is the largest comprehensive university system in the United States. The SUNY system is comprised of 64 institutions and serves nearly 1.3 million students. SUNY offers more than 7,500-degree, certificate and continuing education programs in New York State (see Appendix F for a full list of SUNY institutions). All SUNY institutions receive state funding. (*What Is SUNY?*, 2021)

The Office for Civil Rights and SUNY

The Office for Civil Rights (OCR) is a sub-office of the U.S. Department of Education (DOE) that focuses on the enforcement of civil rights laws in schools. The OCR prohibits schools from discrimination on the basis of age, color, disability, race, etc. ("Office for Civil Rights," 2021) The OCR's self-proclaimed mission is "to ensure equal access to education and to promote educational excellence through vigorous enforcement of civil rights in our nation's schools." (*Office for Civil Rights | U.S. Department of Education*, 2021)

In 2017, 17 SUNY institutions had OCR complaints lodged against them for inaccessible web content. The table below outlines the list of OCR complaints, as reported by the DOE website. (*Office for Civil Rights Recent Resolution Search*, n.d.)

Table 2: SUNY Schools That Received OCR Complaints in 2017

SUNY Institution	Date of Complaint
Adirondack Community College	November 2, 2017
University at Albany	September 20, 2017
Binghamton University	December 4, 2017
University at Buffalo	November 13, 2017
College of Technology at Canton	October 4, 2017
College of Agriculture and Technology at Cobleskill	November 15, 2017
College of Technology at Delhi	November 17, 2017
SUNY Downstate Health Sciences University	November 17, 2017

College of Environmental Science and Forestry	August 21, 2017
State University College at Geneseo	September 26, 2017
Maritime College	October 6, 2017
Monroe Community College	November 20, 2017
State University College at New Paltz	November 2, 2017
Orange County Community College	September 26, 2017
State University College at Purchase	October 30 2017
Rockland Community College	November 21, 2017
Ulster County Community College	November 16, 2017

For details about each accessibility complaint and resolution, please see the Office for Civil Rights Recent Resolution Search Website.

SUNY-Wide Accessibility

In response to the OCR complaints filed against SUNY institutions, SUNY convened an Electronic and Information Technology Accessibility Committee (EIT Accessibility Committee) in November 2017. According to the EIT Accessibility Committee Final Report and Recommendations, the charge of the EIT Accessibility Committee is as follows:

> *Develop a systematic approach to maintaining accessible electronic environments for campus community members with disabilities. The EIT Accessibility Committee will devise a SUNY-wide policy and coordinate necessary support activities. Accordingly, the EIT Accessibility Committee will provide guidance for SUNY campuses covering*

> *technical standards, roles and responsibilities; establish protocols for new and existing content and technologies, accessible technology acquisitions, and methods for training relevant campus constituents. Policy and guidance recommendations will be presented to the SUNY Board of Trustees.* (Klopfer, 2019)

The EIT Accessibility Committee concluded their work with five recommendations. (Klopfer, 2019)

1. SUNY should adopt a system-wide Electronic and Information Technology Accessibility Policy (see the full policy in Appendix G).
2. Each campus should designate an EIT Accessibility Officer.
3. The newly appointed EIT Accessibility Offers should coordinate the development of a collaborative accessibility plan.
4. All campuses should develop an accessibility plan.
5. All campuses are strongly encouraged to use the standards developed by the EIT Accessibility Committee for accessibility compliance.

The full text of the EIT Accessibility Final Report and Recommendations can be found on the SUNY website.

Conclusion

Web accessibility is a nationwide conversation taking place in nearly every vertical but is especially present in higher education—the SUNY System is no exception, as they contend with multiple Office for Civil Rights complaints. Laws, regulations and guidelines like the Americans With Disabilities Act (ADA), Section 508 of the Rehabilitation Act of 1973 and the Web

Content Accessibility Guidelines (WCAG) create a roadmap for companies and institutions in the U.S. to remediate existing inaccessible content and create new accessible content.

Methods

Project Design

The project will consist of four phases.

1. **Phase 1: Instrument Discovery and Selection**. Phase 1 will review the top free tools used to automate webpage accessibility checks.
2. **Phase 2: SUNY Sample Institution Selection**. Phase 2 will generate a random sample of institutions using a spreadsheet and the "=RAND()" formula. Using a random sample was an intentional choice to eliminate any bias in the study, as I am a SUNY student and former SUNY employee. Additionally, larger institutions, or institutions that have been cited by the OCR may have the advantage of more resources or additional guidance on content remediation. The random selection was intended to assist in developing a diverse sample set.
3. **Phase 3**: **Audit and Documentation.** Phase three will be broken into three sections. Each section will audit a different type of webpage for each of the sample institutions. The page selection is strategic in that these pages are generally highly visited pages on any educational institution website, as they are the entryway for prospective students.
    - In Phase 3.1 I will audit each institution's website homepage.
    - In Phase 3.2 I will audit each institution's page defining their list of programs (programs page).
    - In Phase 3.3 I will audit each institution's "how to apply" or "apply" page (apply page).
4. **Phase 4: Analysis and Results.** In Phase 4, the results of the audits in Phases 3.1, 3.2 and 3.3 will be analyzed and the results of the study will be summarized.

Phase 1: Instrument Discovery and Selection

There are several free and paid options to choose from when selecting a tool to check for accessibility errors on websites. This study will focus on the free options. Some of the most popular free tools are:

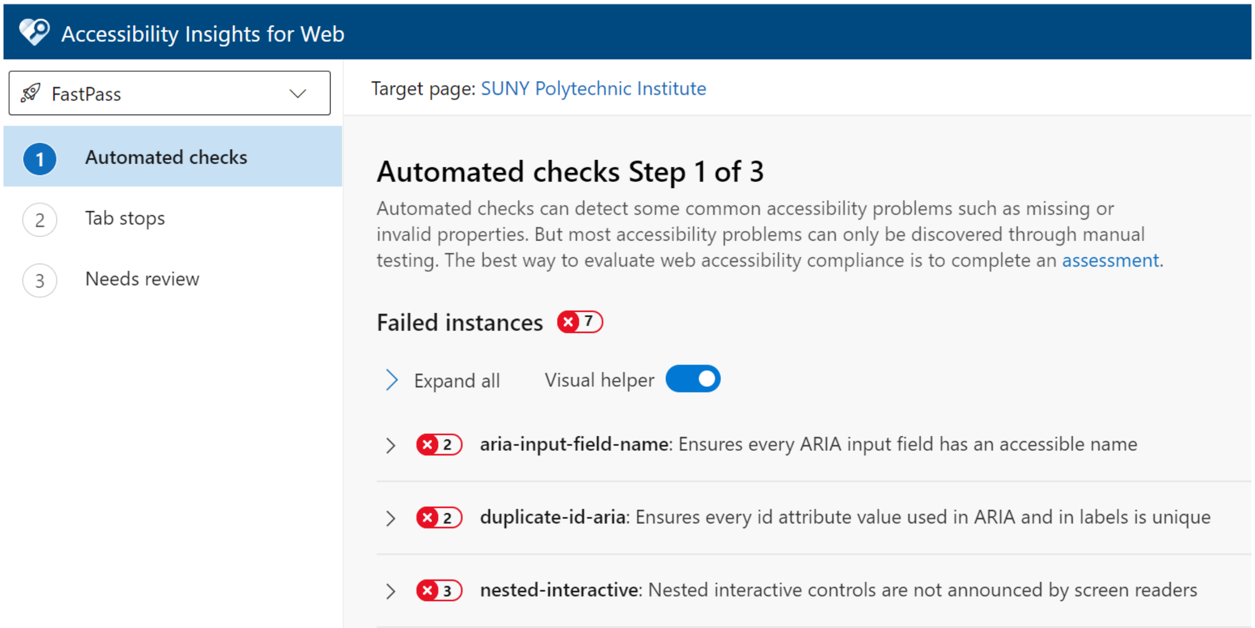
- Accessibility Insights for Web.
- AWS Web Services.
- Siteimprove Browser Extension.
- WAVE Web Accessibility Evaluation Tool.

Accessibility Insights for Web

Accessibility Insights for Web is a browser extension compatible with Chrome and Microsoft Edge. This tool offers two types of single-page searches: *FastPass* which searches for high-impact accessibility errors in "less than five minutes", and *Assessment*, which requires someone with "HTML skills" to determine if a site is WCAG 2.1 AA compliant. (Microsoft, 2021) To use the tool, add the plugin to Chrome or Microsoft Edge. Then, navigate to the webpage of choice and select the Accessibility Insights for Web plugin icon in the browser toolbar. The results of the scan will open in another window. Results can sometimes be difficult to understand, are unable to be filtered in any way (i.e., conformance level, difficulty level) and can take some time and manual effort to generate.

Figure 5 shows a screenshot of the *FastPass* search performed on the SUNY Polytechnic Institute homepage.

Figure 5: Accessibility Insights for Web; sunypoly.edu



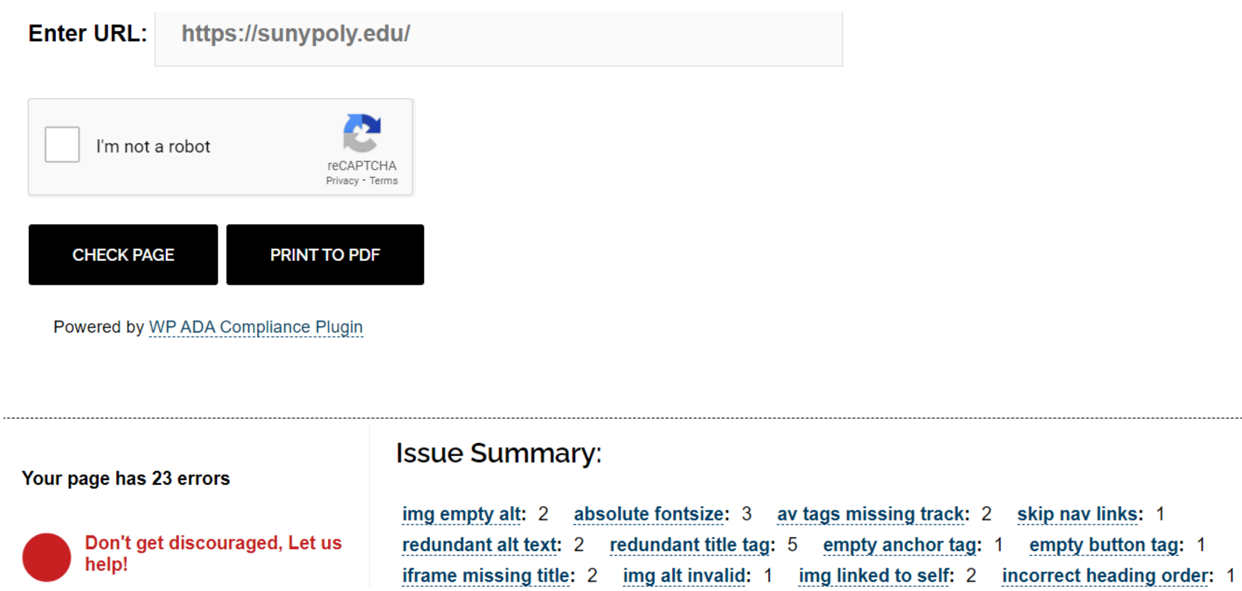
AWS Web Services

The AWS Web Services free WCAG 2.0 and Section 508 Web Accessibility Checker is a web-based, single page accessibility checker. (AlumniOnline Web Services, LLC, 2021) Users must enter the URL of the page they are interested in checking and pass the re-captcha to run the checker. Results are instant and thorough, with a summary of errors at the top (and an encouraging message). However, the checker currently only scans for WCAG 2.0 violations and therefore is not the most up-to-date tool available.

The AWS Web Services checker provides thorough explanations for why and how errors can and should be fixed. However, it is difficult to locate exactly where these errors are being found. For example, the checker may say “an absolute font size was found” but will not disclose where it was found.

Figure 6 shows a screenshot of the AWS Web Services summary performed on the SUNY Polytechnic Institute homepage.

Figure 6: AWS Web Services; sunypoly.edu



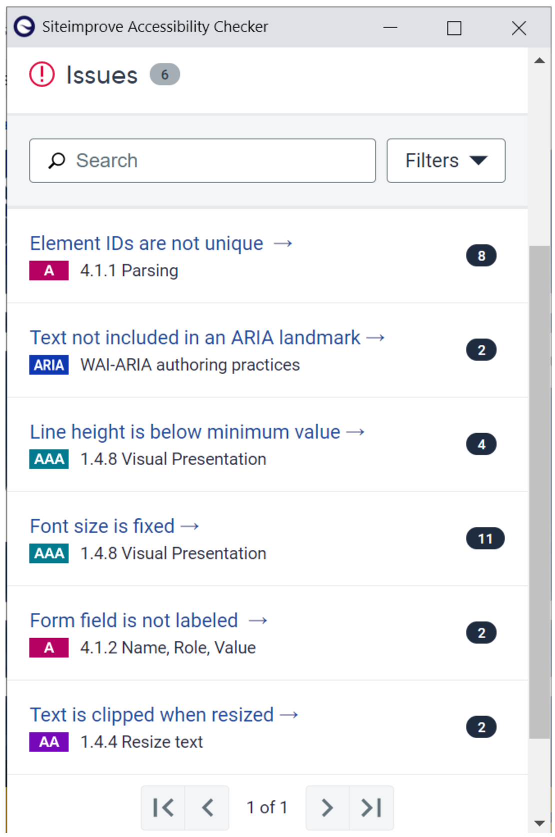
Siteimprove Browser Extension

As its name suggests, the Siteimprove Browser Extension is a downloadable browser extension for Chrome and Firefox that allows for quick, single-page accessibility testing with the click of a button. Because the entire process happens within the browser, users are also able to test password-protected pages. (*Siteimprove Browser Extensions*, n.d.) Additionally, the Siteimprove Browser Extension allows for filtering by conformance level, difficulty, responsibility and element type, and provides immediate clear, easy to understand results. Although it has many perks, the Siteimprove Browser Extension seems sub-par in its reporting, as compared to the WAVE tool, as it reports far less criteria than the WAVE tool.

To use the Siteimprove Browser Extension, download the extension to a compatible browser (Chrome or Firefox). Navigate to the webpage of choice and select the Siteimprove Browser Extension icon in the browser toolbar.

Figure 7 shows a screenshot of the Siteimprove Browser Extension search performed on the SUNY Polytechnic Institute homepage.

Figure 7: Siteimprove Browser Extension; sunypoly.edu



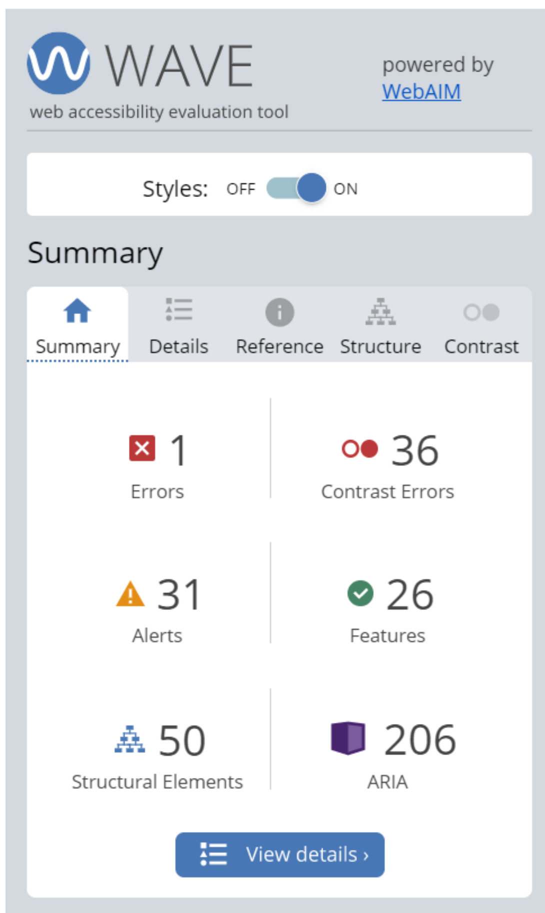
WAVE Web Accessibility Evaluation Tool

The WAVE Web Accessibility Evaluation Tool (WAVE) is a browser extension powered by WebAim. This tool is compatible with Chrome, Firefox and Microsoft Edge browsers. (*WAVE*

Browser Extensions, n.d.) Like the Siteimprove Browser Extension, to use WAVE, download the tool to the browser of choice. Then, navigate to the intended webpage and select the WAVE icon in the browser toolbar. The results will populate in the left side of the browser window and will open with a summary. Results are thorough, instant, easy to read and are sorted into categories. Additionally, alerts and errors can be easily identified on the page by selecting the instance in the WAVE tool—the error will then be focused on the browser. One potential limitation to this tool is that it provides so much data, that it may be overwhelming or distracting to new users.

Figure 8 shows a screenshot of the WAVE search performed on the [SUNY Polytechnic Institute homepage].

Figure 8: WAVE Accessibility Evaluation Tool; sunypoly.edu



Summary of Findings and Instrument Selection

Based on the information in the *Instrument Discovery* section, I have chosen to use the WAVE Web Accessibility Evaluation Tool to perform the automated webpage checks. For the purposes of this study, I found no limitations to the product. I have summarized my findings in Table 3, below.

Table 3: Summary of Instrument Findings

Instrument	Method	Pros	Cons
Accessibility Insights for Web	Browser Extension	• Checks for WCAG 2.1 AA Compliance • Easy to use browser extension	• Results take time to load • Results can be difficult to understand • Results are not filterable
AWS Web Services	In-Browser Search	• Provides thorough summary of errors and suggestions for fixing • Instant results	• Checks for only WCAG 2.0 • Can be difficult to locate errors
Siteimprove Browser Extension	Browser Extension	• Allows for filtering of findings • Instant results • Easy to use and understand	• Appears to not be as thorough as the WAVE Web Accessibility Evaluation Tool
WAVE Web Accessibility Evaluation Tool	Browser Extension	• Compatible with the most browsers • Instant results sorted into categories • Able to focus on error in browser for quick reference	• Provides a lot of extra data that users may not need, including features.

Manual Accessibility Checks

In addition to using automated tools to review webpages for accessibility, there are also a series of basic manual tests that can be performed to catch some accessibility errors. Some of these tests are:

1. Tab testing to ensure logical tab order, visually inspect tab focus and locate keyboard traps.
2. Manual check of all audio content to ensure the availability of accurate captions and transcripts, where applicable.
3. Manual check for user controls to stop automatic audio and/or visual content, where applicable.
4. Manual run through of content using a screen reader to see how the content is presented to a user.
5. Manual color contrast checks.

Manual testing will not be used in this study.

Phase 2: SUNY Sample Institution Selection

This study will utilize a random sample of 20 SUNY institutions. To generate the sample, the list of 64 institutions from Appendix G was added to a spreadsheet (in column A). The column was titled “Institution”. Column B was titled “Random Number” and the random number formula (“=RAND()”) was entered into cell B2, and carried through cell B65, to give each institution a randomized number from 0 to 1. A filter was applied to column B to select the 20 institutions with the largest number, which made up the sample. Figure 9 shows a screenshot of the spreadsheet where the random sample was generated, with the 44 lowest-numbered institutions hidden.

Figure 9: Random Sample of SUNY Institutions

Institution	Random Number
Finger Lakes Community College	0.822
Stony Brook University	0.879
Rockland Community College	0.213
Binghamton University	0.934
Jefferson Community College	0.713
Fulton-Montgomery Community College	0.244
Optometry, College of	0.984
Clinton Community College	0.917
Environmental Science and Forestry, College of	0.124
Monroe Community College	0.071
Albany, University at	0.909
Potsdam, State University College at	0.437
Buffalo, University at	0.792
Old Westbury, State University College at	0.209
Upstate Medical University	0.049
Erie Community College	0.068
Farmingdale State College	0.554
Geneseo, State University College at	0.959
Adirondack Community College	0.563
Brockport, State University College at	0.116

See Appendix H for an alphabetized list of the sample SUNY institutions.

Phase 3 Audit and Documentation:

Once the tools were chosen and the sample of SUNY schools were selected, the list of schools was alphabetized and assigned an alpha-ID (a single letter of the alphabet, A through T) for ease of reporting. The following URLs were then compiled for each institution:

- Homepage URL.

- Programs page URL. If there was not a combined undergraduate and graduate programs page, the graduate programs list was used.
- Apply page URL. If there was not a combined apply page, the graduate apply page was used.

Table 4: Sample Institution List With Assigned Alpha-ID and URLs

ID	Institution	Homepage URL	Programs Page URL	Apply Page URL
A	Adirondack Community College	sunyacc.edu	sunyacc.edu/academics/degree-programs-0	sunyacc.edu/apply
B	University at Albany	albany.edu	albany.edu/graduate/graduate-programs	albany.edu/apply-now
C	Binghamton University	binghamton.edu	binghamton.edu/grad-school/academic-programs	binghamton.edu/admissions/apply/
D	State University College at Brockport	brockport.edu	brockport.edu/academics/programs.html#f-graduate	brockport.edu/admissions_aid/apply
E	University at Buffalo	buffalo.edu	buffalo.edu/grad/explore/about/programs	buffalo.edu/ub_admissions/apply-now.html
F	Clinton Community College	clinton.edu	clinton.edu/degrees-and-programs/default.aspx	clinton.edu/Admissions/how-to-apply/default.aspx
G	College of Environmental Science and Forestry	esf.edu	esf.edu/academics	esf.edu/admission.htm
H	Erie Community College	ecc.edu	ecc.edu/academics/find-your-program	ecc.edu/admissions-and-aid/how-to-apply.html
I	Farmingdale State College	farmingdale.edu	farmingdale.edu/curriculum/index.shtml	farmingdale.edu/admissions/apply-now.shtml
J	Finger Lakes Community College	flcc.edu	flcc.edu/academics/areas.cfm	flcc.edu/apply/

K	Fulton-Montgomery Community College	fmcc.edu/why-fm	fmcc.edu/pathfinder	https://af1.fmcc.edu/
L	State University College at Geneseo	geneseo.edu	geneseo.edu/academics/majors-minors-and-degree-programs	geneseo.edu/admissions/apply
M	Jefferson Community College	sunyjefferson.edu	sunyjefferson.edu/academics/programs/index.php	sunyjefferson.edu/admissions/apply/index.php
N	Monroe Community College	monroecc.edu	monroecc.edu/academics/majors-programs/?no_cache=1	monroecc.edu/quick-links/apply/
O	State University College at Old Westbury	oldwestbury.edu	oldwestbury.edu/programs-courses	oldwestbury.edu/apply/admissions
P	College of Optometry	sunyopt.edu	sunyopt.edu/academics/programs/	https://sunyopt.edu/apply-now/
Q	State University College at Potsdam	potsdam.edu	potsdam.edu/academics/programs-study	potsdam.edu/admissions/apply
R	Rockland Community College	sunyrockland.edu	sunyrockland.edu/academics	https://banner.sunyrockland.edu/pls/prod/bwskalog.P_DispLoginNon
S	Stony Brook University	stonybrook.edu	stonybrook.edu/academics/majors-minors-and-programs/#graduatePrograms	stonybrook.edu/commcms/graduate-admissions/apply.php
T	Upstate Medical University	upstate.edu	upstate.edu/education/programs/index.php	upstate.edu/prospective/basics/about_applying.php

Phase 3.1: Homepage Audit

In Phase 3.1, the WAVE tool was applied to each homepage in the SUNY sample. To do this, the target webpage was opened in a Chrome browser window and the WAVE Chrome plugin icon was selected. The results of the WAVE checker were determined instantly and displayed in the browser. The following data was recorded for each institution:

- Number of errors. Errors are defined by WebAim as "issues that will impact certain users" and "failures to meet WCAG". (*WAVE Web Accessibility Evaluation Tool*, n.d.)
- WCAG success criteria associate with the errors.
- Number of contrast errors. WebAim defines contrast errors as instances of text that do not meet WCAG contrast requirements.
- Number of alerts. Alerts are defined by WebAim as elements that may cause issues for some users but require additional, manual review.

The table below indicates the results for the audit of each institution's homepage.

Table 5: Homepage Audit Results; SUNY Sample

ID	Homepage URL	Number of Errors	Number of Contrast Errors	Number of Alerts	Success Criteria Associated With Errors
A	sunyacc.edu	19	0	42	A 1.1.1, A 2.4.4, A 1.3.1, A 4.1.2
B	albany.edu	0	0	9	
C	binghamton.edu	0	0	9	
D	brockport.edu	0	0	13	
E	buffalo.edu	0	0	225	
F	clinton.edu	0	43	15	AA 1.4.3
G	esf.edu	0	1	24	AA 1.4.3
H	ecc.edu	1	0	41	A 2.4.4
I	farmingdale.edu	0	7	16	AA 1.4.3
J	flcc.edu	2	0	9	A 2.4.4

K	fmcc.edu/welcome/?check=yes	0	2	25	AA 1.4.3
L	geneseo.edu	0	3	19	AA 1.4.3
M	sunyjefferson.edu	0	1	6	AA 1.4.3
N	monroecc.edu	0	0	10	
O	oldwestbury.edu	2	1	12	A 1.1.1, A 2.4.4, AA 1.4.3
P	sunyopt.edu	3	0	84	A 1.1.1, A 2.4.4
Q	potsdam.edu	0	7	53	AA 1.4.3
R	sunyrockland.edu	0	32	19	AA 1.4.3
S	stonybrook.edu	1	1	141	A 1.1.1, A 2.4.4, AA 1.4.3
T	upstate.edu	0	0	18	

Phase 3.2: Program Page Audit

In Phase 3.2, the WAVE tool was applied to the programs page for each of the institutions in the SUNY sample. If the institution's programs page was separated by educational level (undergraduate and graduate) the graduate program page was used. The audit of the program pages mimicked the procedure in Phase 3.1 exactly, where the number of errors, WCAG success criteria associated with errors, number of contrast errors and number of alerts were observed and recorded. The table below indicates the results for the audit of each institution's program page.

Table 6: Programs Page Audit Results; SUNY Sample

ID	Homepage URL	Number of Errors	Number of Contrast Errors	Number of Alerts	Success Criteria Associated With Errors
A	sunyacc.edu/academics/degree-programs-0	3	0	13	A 1.1.1, A 2.4.4
B	albany.edu/graduate/graduate-programs	1	0	8	A 1.1.1, A 1.3.1, AA 2.4.6
C	binghamton.edu/grad-school/academic-programs	1	0	23	A 1.1.1, A 1.3.1
D	brockport.edu/academics/programs.html#f-graduate	0	0	3	
E	buffalo.edu/grad/explore/about/programs	0	0	9	
F	clinton.edu/degrees-and-programs/default.aspx	0	55	5	AA 1.4.3
G	esf.edu/academics	1	0	27	A 2.4.4
H	ecc.edu/academics/find-your-program	1	0	32	A 2.4.4
I	farmingdale.edu/curriculum/index.shtml	0	0	7	
J	flcc.edu/academics/areas.cfm	1	0	7	A 2.1.1, A 2.4.1
K	fmcc.edu/pathfinder	0	0	6	
L	geneseo.edu/academics/majors-minors-and-degree-programs	0	0	8	
M	sunyjefferson.edu/academics/programs/index.php	0	1	3	AA 1.4.3
N	monroecc.edu/academics/majors-programs/?no_cache=1	0	0	6	
O	oldwestbury.edu/programs-courses	2	2	2	A 1.1.1, A 2.4.4, AA 1.4.3
P	sunyopt.edu/academics/programs/	23	0	15	A 1.1.1, A 1.3.1, AA 2.4.6, A 3.3.2

Q	potsdam.edu/academics/programs-study	3	3	8	A 1.1.1, A 1.3.1, AA 2.4.6, A 3.3.2, A 1.3.1, A 4.1.2, AA 1.4.3
R	sunyrockland.edu/academics	0	30	5	AA 1.4.3
S	stonybrook.edu/academics/majors-minors-and-programs/#graduatePrograms	1	180	148	A 1.1.1, A 2.4.4, AA 1.4.3
T	upstate.edu/education/programs/index.php	0	0	4	

Phase 3.3: Apply Page Audit

In Phase 3.2, the WAVE tool was applied to the apply page for each of the institutions in the SUNY sample. If the institution's apply page was separated by educational level (undergraduate and graduate) the graduate program page was used. The audit of the apply pages mimicked the procedure in Phases 3.1 and 3.2 exactly, where the number of errors, WCAG success criteria associated with errors, number of contrast errors and number of alerts were observed and recorded. The table below indicates the results for the audit of each institution's apply page.

Table 7: Apply Page Audit Results; SUNY Sample

ID	Homepage URL	Number of Errors	Number of Contrast Errors	Number of Alerts	Success Criteria Associated With Errors
A	https://www.sunyacc.edu/apply	3	2	12	A 1.1.1, A 2.4.4, AA 1.4.3
B	https://www.albany.edu/apply-now	0	4	7	AA 1.4.3
C	https://www.binghamton.edu/admissions/apply/	0	0	8	

D	https://www.brockport.edu/admissions_aid/apply	0	0	3	
E	https://www.buffalo.edu/ub_admissions/apply-now.html	0	5	37	AA 1.4.3
F	https://www.clinton.edu/Admissions/how-to-apply/default.aspx	0	41	7	AA 1.4.3
G	https://www.esf.edu/admission.htm	1	0	16	A 1.1.1
H	https://www.ecc.edu/admissions-and-aid/how-to-apply.html	1	3	44	A 2.4.4, AA 1.4.3
I	https://www.farmingdale.edu/admissions/apply-now.shtml	0	0	12	
J	https://www.flcc.edu/apply/	0	0	9	
K	https://af1.fmcc.edu/	1	0	14	A 1.1.1, A 1.3.1
L	https://www.geneseo.edu/admissions/apply	0	0	10	
M	https://www.sunyjefferson.edu/admissions/apply/index.php	0	1	3	AA 1.4.3
N	https://www.monroecc.edu/quick-links/apply/	0	0	8	
O	https://www.oldwestbury.edu/apply/admissions	2	2	3	A 1.1.1, A 2.4.4, AA 1.4.3
P	https://sunyopt.edu/apply-now/	24	0	14	A 1.1.1, A 1.3.1, AA 2.4.6, A 3.3.2
Q	https://www.potsdam.edu/admissions/apply	0	2	5	AA 1.4.3
R	https://banner.sunyrockland.edu/pls/prod/bwskalog.P_DispLoginNon	1	1	15	A 2.1.1, AA 1.4.3
S	https://www.stonybrook.edu/commcms/graduate-admissions/apply.php	0	1	11	AA 1.4.3

T	https://www.upstate.edu/prospective/basics/about_applying.php	0	1	7	AA 1.4.3

Phase 4: Analysis and Results

The sample of 20 SUNY institutions consisted of eight (40%) institutions that received an Office for Civil Rights violation in 2017. These institutions are:

- Adirondack Community College.
- University at Albany.
- Binghamton University.
- University at Buffalo.
- College of Environmental Science and Forestry.
- College at Geneseo State University.
- Monroe Community College.
- Rockland Community College.

Homepage Analysis and Results

The WAVE Web Accessibility Evaluation Tool was applied to the homepage of each of the institutions in the sample. The summary of results follows.

Homepage Errors

Of the 20 SUNY institutions in the sample, six institutions (30%) had at least one error on their homepage. Four institutions (20%) had more than one error, and two institutions (10%) had three or more errors on their homepage. Among the 20 institutions, there were a total of 28 errors. Adirondack Community College had 19 errors—the most out of any institution in the sample.

Homepage Contrast Errors

Ten out of the 20 sample institutions (50%) had contrast errors on their homepage. Four of those institutions (20%) had only one error on their homepage. There was a total of 98 homepage contrast errors among the entire sample. Clinton Community College had the most contrast errors (43), and Rockland Community College was close behind, with 32 contrast errors.

Homepage Alerts

One hundred percent of the sample institution homepages had WAVE alerts, totaling 790 alerts. The University at Buffalo had the most alerts (225) and Stony Brook University trailed behind with 141 alerts. Only four institutions had less than 10 alerts

Homepage Success Criteria Violations

A small set of success criteria violations were found repeatedly in the homepage audit. As indicated in Table 8, there were four institutions with WCAG 1.1.1 violations, one institution with a WCAG 1.3.1 violation, six institutions with WCAG 2.4.4 violations, one institution with a WCAG 4.1.2 violation and 10 institutions with WCAG 1.4.3 violations. (See Appendices A, B C and D for WCAG success criteria definitions.)

Table 8: Homepage WCAG Success Criteria Violations; SUNY Sample

	A				AA
ID	**1.1.1**	**1.3.1**	**2.4.4**	**4.1.2**	**1.4.3**
A	**X**	**X**	**X**	**X**	
B					
C					
D					
E					
F					**X**
G					**X**
H			**X**		
I					**X**
J			**X**		
K					**X**
L					**X**
M					**X**
N					
O	**X**		**X**		**X**
P	**X**		**X**		
Q					**X**
R					**X**
S	**X**		**X**		**X**
T					

Programs Page Analysis and Results

The WAVE Web Accessibility Evaluation Tool was applied to the programs page for each of the institutions in the sample. The summary of results follows.

Programs Page Errors

Of the 20 SUNY institutions in the sample, 10 institutions (50%) had at least one error on their programs page. Four institutions (20%) had had three or more errors on their programs page. Among the 20 institutions, there were a total of 37 errors on the program's pages. The College of Optometry had the most programs page errors (23).

Programs Page Contrast Errors

Six out of the 20 sample institutions (30%) had contrast errors on their programs page. Five of those institutions had more than one error. There was a total of 271 programs page contrast errors among the entire sample. Stony Brook University had 180 contrast errors on their programs page, the most out of any institution in the sample.

Programs Page Alerts

Similar to the homepage results, 100% of the sample institution program pages had WAVE alerts. The total number WAVE alerts on the program pages were 339. One hundred forty-eight of the programs page alerts (44%) belonged to Stony Brook University. Fourteen institutions in the sample (70%) had less than 10 alerts on their program's pages.

Programs Page Success Criteria Violations

A small set of success criteria violations were found repeatedly in the program page audit. As indicated in Table 9, there were seven institutions with WCAG 1.1.1 violations, four institutions with WCAG 1.3.1 violations, one institution with a WCAG 2.1.1 violation, one institution with a WCAG 2.4.1 violation, five institutions with WCAG 2.4.4 violations, two institutions with WCAG 3.3.2 violations, one institution with a WCAG 4.1.2 violation, six institutions with WCAG 1.4.3 violations and three institutions with WCAG 2.4.6 violations. (See Appendices A, B C and D for WCAG success criteria definitions.)

Table 9: Program Page WCAG Success Criteria Violations; SUNY Sample

	A							AA	
ID	**1.1.1**	**1.3.1**	**2.1.1**	**2.4.1**	**2.4.4**	**3.3.2**	**4.1.2**	**1.4.3**	**2.4.6**
A	**X**				**X**				
B	**X**	**X**							**X**
C									
D	**X**	**X**							
E									
F								**X**	
G					**X**				
H					**X**				
I									
J			**X**	**X**					
K									
L									

M								**X**	
N									
O	**X**				**X**			**X**	
P	**X**	**X**				**X**			**X**
Q	**X**	**X**				**X**	**X**	**X**	**X**
R								**X**	
S	**X**				**X**			**X**	
T									

Apply Page Analysis and Results

The WAVE Web Accessibility Evaluation Tool was applied to the apply page for each of the institutions in the sample. The summary of results follows.

Apply Page Errors

Seven institutions in the sample (35%) had at least one error on their apply page. Three institutions (15%) had more than one error on their apply page and two institutions (10%) had three or more errors on their apply page. Among the 20 institutions, there were a total of 33 apply page errors. The College of Optometry had the most apply page errors (24).

Apply Page Contrast Errors

Eleven out of the 20 sample institutions (55%) had contrast errors on their apply page. Seven of those institutions had more than one error. There was a total of 63 contrast errors among the entire sample. Clinton Community College had 41 contrast errors, the most out of any institution in the sample.

Apply Page Alerts

Like the homepage and the programs page, 100% of the sample institution apply pages had WAVE alerts. The total number WAVE alerts on the program pages were 245. Erie Community College had 44 alerts, the most out of any institution. The University at Buffalo had 37 alerts on their apply page, a close second.

Apply Page Success Criteria Violations

A small set of success criteria violations were found repeatedly in the apply page audit. As indicated in Table 10, there were five institutions with WCAG 1.1.1 violations, two institutions with WCAG 1.3.1 violations, one institution with a WCAG 2.1.1 violation, three institutions with WCAG 2.4.4 violations, one institution with a WCAG 3.3.2 violation, 11 institutions with WCAG 1.4.3 violations and one institution with a WCAG 2.4.6 violation. (See Appendices A, B C and D for WCAG success criteria definitions.)

Table 10: Apply Page WCAG Success Criteria Violations; SUNY Sample

	A					AA	
ID	**1.1.1**	**1.3.1**	**2.1.1**	**2.4.4**	**3.3.2**	**1.4.3**	**2.4.6**
A	X			X		X	
B						X	
C							
D							
E						X	
F						X	
G	X						

H				**X**		**X**	
I							
J							
K	**X**	**X**					
L							
M						**X**	
N							
O	**X**			**X**		**X**	
P	**X**	**X**			**X**		**X**
Q						**X**	
R			**X**			**X**	
S						**X**	
T						**X**	

Study Summary

Among the three audited pages for the 20 institutions in the sample, there were a total of 530 errors (including errors and contrast errors). Stony Brook University had the most errors, with 184 total. Clinton Community College and Rockland Community College (part of the 2017 Office for Civil Rights reports) were ranked second and third worst institutions in the sample, with 139 and 64 errors, respectively. The State University College at Brockport and Monroe Community College were ranked among the best institutions in the sample, with zero errors. (Monroe Community College was among the 17 institutions part of the 2017 OCR reports.) Binghamton University (also part of the 2017 OCR reports) and Upstate Medical University were also among the most accessible institutions, with only one error each. Fifty-five percent of institutions in the SUNY sample (11) had a total of five or less errors among all the pages audited. Forty-five percent of sample institutions had a total of three or less errors among all the audited pages. Only 20% of institutions in the sample (4) had zero or one error, in total.

Table 11: Total Number of Errors and Contrast Errors; SUNY Sample

ID		Total Errors and Contrast Errors	Received OCR Complaint in 2017
A	Adirondack Community College	27	Yes
B	University at Albany	5	Yes
C	Binghamton University	1	Yes
D	State University College at Brockport	0	
E	University at Buffalo	5	Yes
F	Clinton Community College	139	
G	College of Environmental Science and Forestry	3	Yes
H	Erie Community College	6	
I	Farmingdale State College	7	
J	Finger Lakes Community College	3	
K	Fulton-Montgomery Community College	3	
L	State University College at Geneseo	3	Yes
M	Jefferson Community College	3	
N	Monroe Community College	0	Yes
O	State University College at Old Westbury	11	
P	College of Optometry	50	
Q	State University College at Potsdam	15	

R	Rockland Community College	64	Yes
S	Stony Brook University	184	
T	Upstate Medical University	1	

Of the 60 total pages that were audited, WCAG success criteria AA 1.4.3 (Contrast [minimum]) was an error on 27 pages (45%). WCAG success criteria A 1.1.1 (Non-Text Content) was an error on 16 pages (27%), and WCAG success criteria A 2.4.4 (Link Purpose [In Context]) was an error on 14 pages (23%).

Table 12: WCAG Success Criteria Violation Totals; SUNY Sample

	A							AA	
ID	**1.1.1**	**1.3.1**	**2.1.1**	**2.4.1**	**2.4.4**	**3.3.2**	**4.1.2**	**1.4.3**	**2.4.6**
A	**3**	**1**			**3**		**1**	**1**	
B	**1**	**1**						**1**	**1**
C									
D	**1**	**1**							
E								**1**	
F								**3**	
G	**1**				**1**			**1**	
H					**3**			**1**	
I								**1**	
J			**1**	**1**	**1**				
K	**1**	**1**						**1**	
L								**1**	

M								**3**	
N									
O	**3**				**3**			**3**	
P	**3**	**2**			**1**	**2**			**2**
Q	**1**	**1**				**1**	**1**	**3**	**1**
R			**1**					**3**	
S	**2**				**2**			**3**	
T								**1**	
Total	**16**	**7**	**2**	**1**	**14**	**3**	**1**	**27**	**4**

Limitations

There were several limitations to this study. The first limitation is the sample size. Only 20 institutions were selected (out of 64) to be audited. An audit of every SUNY institution may have yielded better results.

A second limitation is the number of pages audited. To determine whether a site is truly accessible, the entire site should be audited. For this study, three pre-determined pages were audited.

A third limitation to this study is the limited scope of the audit. Only one tool was used to generate results and no manual checks were done to find additional errors. Additionally, only the WAVE errors and contrast errors were considered when determining how many errors were on a page. Alerts were not considered or investigated to determine whether they were errors or false positives.

Conclusion

To be considered WCAG 2.1 compliant, site content must meet all WCAG 2.1 A and AA success criteria. One single error classifies a website as inaccessible.

By applying the WAVE Web Accessibility Evaluation Tool to the sample institutions, we were able to get a sense of each site's accessibility level on the selected pages and answer the following questions:

1. Do schools in the State University of New York (SUNY) system have accessible homepages?
2. Do schools in the State University of New York (SUNY) system have accessible program pages?
3. Do schools in the State University of New York (SUNY) system have accessible apply pages?

According to the results of this study, approximately 30% of SUNY schools have accessible homepages, approximately 30% of SUNY schools have accessible programs pages and approximately 30% of SUNY schools have accessible audit pages. Only 10% of SUNY schools in this sample were 100% accessible on all three pages.

Future Research

Future studies could aim to replicate the methods using WCAG 2.2. In its current draft (released in May 2021) WCAG 2.2 extends WCAG 2.1 by adding nine new success criteria. Additionally, future work could extend the study to all pages on the websites, or compare frequently occurring violations and determine potential patterns among SUNY institutions, and consider possible universal solutions.

Additionally, future work could investigate the reasoning behind why some institutions seem to have taken much more action toward being accessible than others (could it be due to resource constraints? Lack of knowledge or understanding? Lack of caring?) In determining solutions for these errors, it is important to understand why they are happening in the first place.

Reflection

Prior to beginning this study, I was part of the remediation team that was assembled to address the OCR complaint against the University at Buffalo. As a web designer, I had a keen eye for site structure and appearance, but did not really understand the intersection between design, user experience and accessibility. With a goal of remediating thousands of webpages (and hundreds of PDFs) in just a few short years, it was important to build a large knowledgebase in a very short period.

The SUNY Polytechnic IDT thesis project afforded the opportunity to dive deep into web accessibility while gaining a solid understanding of how other institutions in the SUNY system were measuring up, and the most common types of errors that were plaguing them.

While I had hypothesized that most schools would not be fully compliant, I was surprised by a few of the outcomes. I was surprised to see that Stony Brook University was the least accessible website in the sample, as I would expect Stony Brook to have plenty of resources to pour into their accessibility efforts. Conversely, I was equally as surprised to see many of the community colleges with very few errors (Monroe Community College [0], Fulton-Montgomery Community College [3], Finger Lakes Community College [3]) as I would suspect these colleges would have fewer resources to commit to accessibility.

All in all, the results make me hopeful as most of the sample institutions in the SUNY system were, at the very least, trying. And for a cause as important at this, that’s the most I can wish for.

Appendices

Appendix A: Perceivable Principle Guidelines and Criteria, WCAG 2.1

(*Web Content Accessibility Guidelines* (*Web Content Accessibility Guidelines (WCAG) 2.1*, 2018)

	Level	**Guideline**	**Success Criteria**	**Description**	**New in 2.1**
1.1		Text Alternatives		Provide text alternatives for non-text content.	
1.1.1	A	Text Alternatives	Non-Text Content	Provide text alternatives for non-text content.	
1.2		Time-Based Media		Provide alternatives for time-based media.	
1.2.1	A	Time-Based Media	Audio-Only and Video-Only (Pre-Recorded)	Provide an alternative to video-only and audio-only content.	
1.2.2	A	Time-Based Media	Captions (Pre-Recorded)	Provide captions for videos with audio.	
1.2.3	A	Time-Based Media	Audio Description or Media Alternative (Pre-Recorded)	Provide an alternative or audio description for time-based media.	
1.2.4	AA	Time-Based Media	Captions (Live)	Provide captions for live videos.	
1.2.5	AA	Time-Based Media	Audio Description (Pre-Recorded)	Provide an audio description for video content.	

1.2.6	AAA	Time-Based Media	Sign Language (Pre-Recorded)	Provide sign language translations for videos.	
1.2.7	AAA	Time-Based Media	Extended Audio Description (Pre-Recorded)	Provide extended audio descriptions for videos.	
1.2.8	AAA	Time-Based Media	Media Alternative (Pre-Recorded)	Provide a text alternative to videos.	
1.2.9	AAA	Time-Based Media	Audio Only (Live)	Provide an equivalent alternative for live audio.	
1.3		Adaptable		Content can be presented in different ways without losing structure or meaning.	
1.3.1	A	Adaptable	Info and Relationships	Structures and relationships can be conveyed in text.	
1.3.2	A	Adaptable	Meaningful Sequence	Present content in a meaningful order.	
1.3.3	A	Adaptable	Sensory Characteristics	Use more than one sense for instructions.	
1.3.4	AA	Adaptable	Orientation	Do not constrict operation to a specific screen orientation.	Yes
1.3.5	AA	Adaptable	Identify Input Purpose	Provide common names using the HTML autocomplete list.	Yes

1.3.6	AAA	Adaptable	Identify Purpose	The purpose of user interface components can be programmatically determined.	Yes
1.4		Distinguishable		Separate foreground and background audio and visual.	
1.4.1	A	Distinguishable	Use of Color	Do not rely solely on color.	
1.4.2	A	Distinguishable	Audio Control	Do not play audio automatically.	
1.4.3	AA	Distinguishable	Contrast (Minimum)	Contrast ration between text and background is at least 4.5:1.	
1.4.4	AA	Distinguishable	Resize Text	Text can be resized to 200% without loss of content or function.	
1.4.5	AA	Distinguishable	Images of Text	Do not use images of text.	
1.4.6	AAA	Distinguishable	Contrast (Enhanced)	Contrast ration between text and background is at least 7:1.	
1.4.7	AAA	Distinguishable	Low or No Background Audio	Audio is clear for listeners to hear or background audio can be turned off.	
1.4.8	AAA	Distinguishable	Visual Presentation	Offer users a range of presentation options.	
1.4.9	AAA	Distinguishable	Images of Text (No Exception)	Don’t use images of text unless it is purely decoration.	
1.4.10	AA	Distinguishable	Reflow	Scrolling in two dimensions should not be required to	Yes

				avoid loss of functionality or content.	
1.4.11	AA	Distinguishable	Non-Text Contrast	Provide high contrast between pieces of text and their backgrounds, a ratio of 3.1 or greater.	Yes
1.4.12	AA	Distinguishable	Text Spacing	Text spacing can be overridden by the user to improve the reading experience, without loss of functionality.	Yes
1.4.13	AA	Distinguishable	Content on Hover Focus	Ensure content visible on hover or keyboard focus does not cause accessibility issues.	Yes

Appendix B: Operable Principle Guidelines and Criteria, WCAG 2.1

(*Web Content Accessibility Guidelines (WCAG) 2.1*, n.d.)

	Level	**Guideline**	**Success Criteria**	**Description**	**New in 2.1**
2.1		Keyboard Accessible		Everything can be accessed and used via keyboard.	
2.1.1	A	Keyboard Accessible	Keyboard	Everything can be accessed and used via keyboard without timing for keystrokes.	
2.1.2	A	Keyboard Accessible	No Keyboard Trap	Do not trap keyboard users.	
2.1.3	AAA	Keyboard Accessible	Keyboard (No Exception)	Everything can be accessed and used via keyboard without timing for keystrokes	
2.1.4	A	Keyboard Accessible	Character Key Shortcuts	Do not use single key shortcuts or provide a way to turn them off or change them.	Yes
2.2		Enough Time		Provide users with enough time to read and interact.	
2.2.1	A	Enough Time	Timing Adjustable	Provide user controls to time limits.	
2.2.2	A	Enough Time	Pause, Stop, Hide	Provide user controls for moving content.	
2.2.3	AAA	Enough Time	No Timing	Timing is non-essential.	

2.2.4	AAA	Enough Time	Interruptions	Interruptions can be postponed or stopped by the user.	
2.2.5	AAA	Enough Time	Re-Authenticating	Save user data when re-authenticating.	
2.2.6	AAA	Enough Time	Timeouts	Users need to be warned of the duration of any inactivity that could cause data loss.	Yes
2.3		Seizures and Physical Reactions		Do not design content that can cause seizures or other negative physical reactions.	
2.3.1	A	Seizures and Physical Reactions	Three Flashes or Below	Do not create content that flashes more than three times per second.	
2.3.2	AAA	Seizures and Physical Reactions	Three Flashes	Do not create content that flashes more than three times per second.	
2.3.3	AAA	Seizures and Physical Reactions	Animation From Interaction	Provide user controls for animation triggered by interaction.	Yes
2.4		Navigable		Provide ways to help users determine where they are.	
2.4.1	A	Navigable	Bypass Blocks	Provide a “Skip to Content” link.	
2.4.2	A	Navigable	Page Titled	Provide a clear and logical page title.	

2.4.3	A	Navigable	Focus Order	Provide a sequential focus order.	
2.4.4	A	Navigable	Link Purpose (In Context)	Be sure that link's purpose is clear from its context.	
2.4.5	AA	Navigable	Multiple Ways	Offer several ways to find pages.	
2.4.6	AA	Navigable	Headings and Labels	Use clear headings and labels.	
2.4.7	AA	Navigable	Focus Visible	Provide visible and clear keyboard focus.	
2.4.8	AAA	Navigable	Location	Let users know where they are.	
2.4.9	AAA	Navigable	Link Purpose (Link Only)	Be sure that link's purpose is clear from its context.	
2.4.10	AAA	Navigable	Section Headings	Use section headings to organize content.	
2.5		Input Modalities		Users should be able to use all functionality via various inputs (beyond the keyboard).	
2.5.1	A	Input Modalities	Pointer Gestures	Users can perform touch functions with assistive technology or one finger.	Yes
2.5.2	A	Input Modalities	Pointer Cancellation	Offer options for single-pointer functionality.	Yes
2.5.3	A	Input Modalities	Label in Name	Labels contain the text that is presented visually.	Yes

2.5.4	A	Input Modalities	Motion Actuation	Functions that are triggered by moving a device or by gesturing towards a device can also be operated via conventional components.	Yes
2.5.5	AAA	Input Modalities	Target Size	Target pointer input size is at least 44 x 44 CSS pixels.	Yes
2.5.6	AAA	Input Modalities	Concurrent Input Mechanisms	Web content does not restrict use of input modalities available on a platform, unless essential.	Yes

Appendix C: Understandable Principle Guidelines and Criteria, WCAG 2.1

(*Web Content Accessibility Guidelines (WCAG) 2.1*, n.d.)

	Level	**Guideline**	**Success Criteria**	**Description**	**New in 2.1**
3.1		Readable		All text content should be understandable.	
3.1.1	A	Readable	Language of Page	Assign a language to the page.	
3.1.2	AA	Readable	Language of Parts	Tell users when the language on a page changes.	
3.1.3	AAA	Readable	Unusual Words	Explain strange words, phrases or jargon.	
3.1.4	AAA	Readable	Abbreviations	Spell out abbreviations.	
3.1.5	AAA	Readable	Reading Level	Make content readable by users with nine years of schooling.	
3.1.6	AAA	Readable	Pronunciation	Explain any words that are hard to pronounce.	
3.2		Predictable		Design web pages that operate in predictable ways.	
3.2.1	A	Predictable	On Focus	Do not change elements when they receive focus.	
3.2.2	A	Predictable	On Input	Do not change elements when they receive input.	

3.2.3	AA	Predictable	Consistent Navigation	Create consistent menus.	
3.2.4	AA	Predictable	Consistent Identification	Create consistent buttons and icons.	
3.2.5	AAA	Predictable	Change on Request	Do not change elements until initiated by user.	
3.3		Input Assistance		Help users avoid and correct mistakes.	
3.3.1	A	Input Assistance	Error Identification	Clearly identify input errors.	
3.3.2	A	Input Assistance	Labels or Instructions	Label elements and provide instructions.	
3.3.3	AA	Input Assistance	Error Suggestion	Suggest fixes when users make errors.	
3.3.4	AA	Input Assistance	Error Prevention (Legal, Financial, Data)	Reduce the risk of input errors for sensitive data.	
3.3.5	AAA	Input Assistance	Help	Provide detailed help and instructions.	
3.3.6	AAA	Input Assistance	Error Prevention (All)	Reduce the risk of all input errors.	

Appendix D: Robust Principle Guidelines and Criteria, WCAG 2.1

(*Web Content Accessibility Guidelines (WCAG) 2.1*, n.d.)

	Level	Guideline	Success Criteria	Description	New in 2.1
4.1		Compatible		Create maximum compatibility for current and future assistive technology.	
4.1.1	A	Compatible	Parsing	Write clean and accurate code.	
4.1.2	A	Compatible	Name, Role, Value	Build all elements for accessibility.	
4.1.3	AA	Compatible	Status Changes	Distances between paragraphs, rows, words and characters must be able to be increased to a certain value.	Yes

Appendix E: Section 508 of the Rehabilitation Act - 29 U.S.C. § 798

(*Section 508 of the Rehabilitation Act*, 2013)

SECTION 508 - ELECTRONIC AND INFORMATION TECHNOLOGY

a) Requirements for Federal Departments and Agencies:

   1) Accessibility:

      A) Development, procurement, maintenance, or use of electronic and information technology: When developing, procuring, maintaining, or using electronic and information technology, each Federal department or agency, including the United States Postal Service, shall ensure, unless an undue burden would be imposed on the department or agency, that the electronic and information technology allows, regardless of the type of medium of the technology—

         (i) individuals with disabilities who are Federal employees to have access to and use of information and data that is comparable to the access to and use of the information and data by Federal employees who are not individuals with disabilities; and

         (ii) individuals with disabilities who are members of the public seeking information or services from a Federal department or agency to have access to and use of information and data that is comparable to the access to and use of the information and data by such members of the public who are not individuals with disabilities.

B) Alternative means efforts: When development, procurement, maintenance, or use of electronic and information technology that meets the standards published by the Access Board under paragraph (2) would impose an undue burden, the Federal department or agency shall provide individuals with disabilities covered by paragraph (1) with the information and data involved by an alternative means of access that allows the individual to use the information and data.

2) Electronic and information technology standards:

A) In general: Not later than 18 months after the date of enactment of the Rehabilitation Act Amendments of 1998, the Architectural and Transportation Barriers Compliance Board (referred to in this section as the `Access Board'), after consultation with the Secretary of Education, the Administrator of General Services, the Secretary of Commerce, the Chairman of the Federal Communications Commission, the Secretary of Defense, and the head of any other Federal department or agency that the Access Board determines to be appropriate, including consultation on relevant research findings, and after consultation with the electronic and information technology industry and appropriate public or nonprofit agencies or organizations, including organizations representing individuals with disabilities, shall issue and publish standards setting forth—

(i) for purposes of this section, a definition of electronic and information technology that is consistent with the definition of information technology specified in section 5002(3) of the Clinger-Cohen Act of 1996 (40 U.S.C. 1401(3)); and

(ii) the technical and functional performance criteria necessary to implement the requirements set forth in paragraph (1).

B) Review and amendment: The Access Board shall periodically review and, as appropriate, amend the standards required under subparagraph (A) to reflect technological advances or changes in electronic and information technology.

3) Incorporation of standards: Not later than 6 months after the Access Board publishes the standards required under paragraph (2), the Federal Acquisition Regulatory Council shall revise the Federal Acquisition Regulation and each Federal department or agency shall revise the Federal procurement policies and directives under the control of the department or agency to incorporate those standards. Not later than 6 months after the Access Board revises any standards required under paragraph (2), the Council shall revise the Federal Acquisition Regulation and each appropriate Federal department or agency shall revise the procurement policies and directives, as necessary, to incorporate the revisions.

4) Acquisition planning: In the event that a Federal department or agency determines that compliance with the standards issued by the Access Board under paragraph (2) relating to procurement imposes an undue burden, the documentation by the department or agency supporting the procurement shall explain why compliance creates an undue burden.

5) Exemption for national security systems: This section shall not apply to national security systems, as that term is defined in section 5142 of the Clinger-Cohen Act of 1996 (40 U.S.C. 1452).

6) Construction:

A) Equipment: In a case in which the Federal Government provides access to the public to information or data through electronic and information technology, nothing in this section shall be construed to require a Federal department or agency—

(i) to make equipment owned by the Federal Government available for access and use by individuals with disabilities covered by paragraph (1) at a location other than that where the electronic and information technology is provided to the public; or

(ii) to purchase equipment for access and use by individuals with disabilities covered by paragraph (1) at a location other than that where the electronic and information technology is provided to the public.

B) Software and peripheral devices: Except as required to comply with standards issued by the Access Board under paragraph (2), nothing in paragraph (1) requires the installation of specific accessibility-related software or the attachment of a specific accessibility-related peripheral device at a workstation of a Federal employee who is not an individual with a disability.

b) Technical Assistance: The Administrator of General Services and the Access Board shall provide technical assistance to individuals and Federal departments and agencies concerning the requirements of this section.

c) Agency Evaluations: Not later than 6 months after the date of enactment of the Rehabilitation Act Amendments of 1998, the head of each Federal department or agency shall evaluate the extent to which the electronic and information technology of the department or agency is accessible to and usable by individuals with disabilities described in subsection (a)(1), compared to the access to and use of the technology by individuals described in such subsection who are not individuals with disabilities, and submit a report containing the evaluation to the Attorney General.

d) Reports:

1) Interim report: Not later than 18 months after the date of enactment of the Rehabilitation Act Amendments of 1998, the Attorney General shall prepare and submit to the President a report containing information on and recommendations regarding the extent to which the electronic and information technology of the Federal Government is accessible to and usable by individuals with disabilities described in subsection (a)(1).
2) Biennial reports: Not later than 3 years after the date of enactment of the Rehabilitation Act Amendments of 1998, and every 2 years thereafter, the Attorney General shall prepare and submit to the President and Congress a report containing information on and recommendations regarding the state of Federal department and agency compliance with the requirements of this section, including actions regarding individual complaints under subsection (f).

e) Cooperation: Each head of a Federal department or agency (including the Access Board, the Equal Employment Opportunity Commission, and the General Services Administration) shall provide to the Attorney General such information as the Attorney General determines is necessary to conduct the evaluations under subsection (c) and prepare the reports under subsection (d).
f) Enforcement:
g) General:
    A) Complaints: Effective 2 years after the date of enactment of the Rehabilitation Act Amendments of 1998, any individual with a disability may file a complaint alleging that a Federal department or agency fails to comply with subsection (a)(1) in providing electronic and information technology.

B) Application: This subsection shall apply only to electronic and information technology that is procured by a Federal department or agency not less than 2 years after the date of enactment of the Rehabilitation Act Amendments of 1998.

2) Administrative complaints: Complaints filed under paragraph (1) shall be filed with the Federal department or agency alleged to be in noncompliance. The Federal department or agency receiving the complaint shall apply the complaint procedures established to implement section 504 for resolving allegations of discrimination in a federally conducted program or activity.

3) Civil actions: The remedies, procedures, and rights set forth in sections 505(a)(2) and 505(b) shall be the remedies, procedures, and rights available to any individual with a disability filing a complaint under paragraph (1).

h) Application to Other Federal Laws: This section shall not be construed to limit any right, remedy, or procedure otherwise available under any provision of Federal law (including sections 501 through 505) that provides greater or equal protection for the rights of individuals with disabilities than this section.

Appendix F: Full SUNY Campus List (Alphabetical)

(SUNY, 2021)

- Adirondack Community College
- University at Albany
- Alfred State College
- NYS College of Ceramics at Alfred University
- Binghamton University
- State University College at Brockport
- SUNY Broome Community College
- Buffalo State College
- University at Buffalo
- College of Technology at Canton
- Cayuga Community College
- Clinton Community College
- College of Agriculture and Technology at Cobleskill
- Columbia-Greene Community College
- NYS College of Agriculture and Life Sciences at Cornell University
- NYS College of Veterinary Medicine at Cornell University
- NYS College of Human Ecology at Cornell
- NYS School of Industrial and Labor Relations at Cornell
- Corning Community College
- State University College at Cortland

- College of Technology at Delhi
- SUNY Downstate Health Sciences University
- Duchess Community College
- Empire State College
- College of Environmental Science and Forestry
- Erie Community College
- Farmingdale State College
- Fashion Institute of Technology
- Finger Lakes Community College
- State University College at Fredonia
- Fulton-Montgomery Community College
- Genesee Community College
- State University College at Geneseo
- Herkimer County Community College
- Hudson Valley Community College
- Jamestown Community College
- Jefferson Community College
- Maritime College
- Mohawk Valley Community College
- Monroe Community College
- SUNY Morrisville
- Nassau Community College
- State University College at New Paltz

- Niagara County Community College
- North Country Community College
- State University College at Old Westbury
- State University College at Oneonta
- Onondaga Community College
- College of Optometry
- Orange County Community College
- State University College at Oswego
- State University College at Plattsburgh
- State University College at Potsdam
- State University College at Purchase
- Rockland Community College
- Schenectady County Community College
- Stony Brook University
- Suffolk County Community College
- Sullivan County Community College
- SUNY Polytechnic Institute
- Tompkins Cortland Community College
- Ulster County Community College
- Upstate Medical University
- Westchester Community College

Appendix G: SUNY Electronic and Information Technology (EIT) Accessibility Policy

(SUNY, 2019)

Category: Information Technology . Responsible Office: Office of Information Technology	**Policy Title:** Electronic and Information Technology (EIT) Accessibility Policy Document Number: 6901 Effective Date: June 20, 2019 This policy item applies to: Community Colleges, State-Operated Campuses, System Administration

Summary

SUNY is the nation's largest comprehensive system of public higher education, comprised of a growing number of students, faculty and staff with disabilities that may impact the ways in which they access and successfully use electronic information. This growth comes at a time when essential information and services critical to student application and registration, academic course and program completion, employee hiring and evaluation, and more, are increasingly delivered via electronic means.

This document details the State University of New York's Electronic and Information Technology (EIT) Accessibility Policy, hereafter the SUNY EIT Policy, adopted by the SUNY Trustees in June 2019.

Policy

Pursuant to the Board of Trustees' Resolution No. 2019-50, the recommendations set forth in the Final Report and Recommendations of the Electronic and Information Technology Accessibility Committee (EIT Committee) comprise the SUNY EIT Accessibility Policy and apply to SUNY State-operated campuses, community colleges, and SUNY System Administration. The adopted recommendations are listed below (please see full report in the Appendix for additional detail):

1. SUNY's Electronic and Information Technology Accessibility policy ensures appropriate campus and system-level commitment to support equal and integrated access to all of its programs, services, and activities, particularly for individuals with disabilities, especially in the realm of electronic and information technologies.
    a. EIT Accessibility must be recognized as the responsibility of all administrators, faculty, and staff.
    b. System Administration and campuses shall develop, purchase, host, and/or acquire, to the extent feasible, web pages, websites, hardware and software products and services that are accessible to persons with disabilities.
2. Each campus president and the Chancellor for System Administration shall designate an EIT Accessibility Officer no later than December 31, 2019. EIT Accessibility Officers will be responsible for issuing, updating, and enforcing any requirements, standards, or guidelines supported by SUNY policy.

3. The EIT Accessibility Officer is responsible for assuring the collaborative development of an Accessibility Plan, consistent with local shared and faculty governance processes.
4. System Administration and all campuses shall develop an Accessibility Plan to promote ongoing, inclusive access for individuals with disabilities.
    a. Each plan should serve as an accessibility action strategy that will be regularly evaluated, modified, and strengthened over time—in response to changing requirements, feedback and review of outcomes and effectiveness.
    b. Minimum core elements of each Accessibility Plan should be as follows:
        1. Authority and Responsibility: An assignment of roles, authority, responsibility and accountability for achieving policy compliance.
        2. Awareness Raising: A campaign to communicate EIT accessibility across all campus divisions and departments.
        3. Design: A comprehensive approach to engrain accessibility into the creation of web and technology resources.
        4. Procurement: A procedure to include accessibility as a requirement within purchasing processes, including centralized and decentralized purchasing activities.
        5. Monitoring Compliance: A means for monitoring compliance with any standards listed in this document.
        6. Training: A method for training all University personnel who develop, select, purchase and maintain electronic and information technologies.
5. For purposes of consistency and risk management, the Standards delineated in Section C. of the Final Report and Recommendations of the EIT Committee will guide the

framework of the EIT Accessibility Plans in order to sustain accessible electronic and information technology environments. System Administration and each campus will use these Standards as a baseline for EIT compliance and inclusion, and institutions are encouraged to exceed the required benchmarks outlined in the Standards below. These Standards address the following areas:

a. Websites and Software: Web Accessibility Standards (WAS);
b. Digital Content: Digital Content Accessibility Standards (DCAS);
c. Classroom Technology & Design: Classroom Accessibility Standards (CAS);
d. Libraries: Library Accessibility Guidelines (LAG); and
e. Procurement: Procurement Accessibility Conformance Standards (PACS).

Recognizing that technology and technical accessibility standards evolve, the Committee recommends designated EIT Accessibility Officers create communities of practice to propose necessary changes to the Standards over time.

6. System Administration and each campus will develop and adopt—via a consultative process that includes local faculty governance procedures—an EIT Accessibility Plan, to be developed no later than June 30, 2020, which includes, at a minimum, the key program elements described in item 4B above and detailed in the Final Report and Recommendations of the EIT Committee.
7. EIT Accessibility Plans shall be modified and updated over time in response to evolving technology and new requirements, user feedback, and the regular review of outcomes and effectiveness.

8. The University Provost and Chief Information Officer are jointly charged with identifying shared services or System-wide procurement opportunities in support of this work.
9. The University Provost will establish a short-term implementation committee to support campus and System Administration development and implementation of their respective Accessibility Plans and to develop a model for assessing and evaluating policy implementation.
10. Campus presidents will report annually to the Chancellor on their progress.

Definitions

The following definitions are excerpted from the final report of the EIT Committee:

- **Accessible:** In the case of a program or activity, readily usable by a particular individual, with or without alternate formats; in the case of the web and electronic resources, accessible with or without the use of assistive technology.
- **Alternate Format:** Refers to alternatives to standard print. Information presented in an accessible format (examples: electronic, audio, large print, or Braille).
- **Archived EIT:** EIT containing core administrative or academic information, official records, and similar information that are no longer available to a wide audience, but are subject to record retention plans. Note that technology components such as software applications and hardware devices are not placed in an archive status.
- **Assistive Technology:** Any item, piece of equipment, or system, whether acquired commercially, modified, or customized, that is commonly used to increase, maintain, or improve functional capabilities of individuals with disabilities.

- **Classroom Accessibility Standards:** A summary listing of all pertinent building code and classroom technology system feature that should be included when constructing / renovating SUNY classrooms. These features draw heavily from the 2010 ADA building standards on federal and state property.
- **Digital Content Accessibility Standards:** In addition to the accessibility standards codified in the Web Accessibility Standards (WAS), requirements and recommendations touch on documents, multimedia, and quality course-building that is inclusive of accessibility.
- **Electronic and information technologies (EIT):** Information technology and any equipment or interconnected system or subsystem of equipment that is used in the creation, conversion, or duplication of data or information. EIT includes, but is not limited to, information resources such as the internet and intranet websites, content delivered in digital form, search engines and databases, learning management systems, classroom technologies; web, computer, and mobile-based applications allowing for interaction between software and users; and services employing information technology and telecommunications equipment.
- **Equally Effective Alternate Access:** The alternative format communicates the same information in as timely a fashion as does the original Web page. For interactive applications and hardware devices, “equally effective” means that the user action (e.g., registration) is accomplished in a comparable time and with comparable effort on the part of the requester.
- **Exceptions:** In certain cases, meeting the accessibility standards required by these guidelines may not be feasible due to an undue burden or doing so would result in a

fundamental alteration. Such assertions may only be made by the president or designee who has budgetary authority after considering all resources available for use, and must be accompanied by written statement of the reasons why. These difficulties do not relieve University programs or services from meeting EIT accessibility obligations. Equally Effective Alternative Access must be provided upon request.

- **Existing EIT:** Any EIT purchased or adopted prior to June 2018.
- **Legacy Content:** Any digital content materials produced and published before January 2017.
- **Library Accessibility Standards:** Accessibility best practices and guidance as it pertains to critical library functions including services, collections, physical and digital environments.
- **Procurement Accessibility Conformance Standards:** Checklist for including accessibility as a requirement within the purchasing process for electronic information and technologies.
- **Web Accessibility Standards:** Baseline requirements for compliance with the international web accessibility guidelines - Web Content Accessibility Guidelines (WCAG).

Appendix H: List of Institutions to Be Reviewed for this Paper

1. Adirondack Community College
2. University at Albany
3. Binghamton University
4. State University College at Brockport
5. University at Buffalo
6. Clinton Community College
7. College of Environmental Science and Forestry
8. Erie Community College
9. Farmingdale State College
10. Finger Lakes Community College
11. Fulton-Montgomery Community College
12. State University College at Geneseo
13. Jefferson Community College
14. Monroe Community College
15. State University College at Old Westbury
16. College of Optometry
17. State University College at Potsdam
18. Rockland Community College
19. Stony Brook University
20. Upstate Medical University

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