Website Builders Still Contribute To Inaccessible Web Design

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ABSTRACT

Website builders enable individuals without design or technical skills to create websites. However, it is unclear if modern websites created by website builders meet accessibility standards. We reviewed six popular website building platforms and found a lack of accessibility support. Wix provided the most comprehensive accessibility documentation and robust accessibility features. However, during an accessibility audit of 90 Wix webpages, we found many accessibility issues, raising concerns about how users are supported.

CCS CONCEPTS

• **Human-centered computing** → **Accessibility**.

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1 INTRODUCTION AND RELATED WORK

Websites continue to be inaccessible [11, 13, 14, 20]—a 2021 audit found 97.4% of 1 million home pages had at least one Web Content Accessibility Guidelines (WCAG) violation [22]. Novice web designers who use website builders likely have little accessibility training and knowledge since accessibility skills are even lacking among professionals [9, 16].

Website builders help individuals to create appealing websites without requiring design or technical knowledge. Authoring tools, such as website builders, also have the potential to support the creation of accessible web content [10, 15, 17, 18, 23]. However, a 2007 study found Apple's iWeb website builder and its preset templates had a distinct lack of accessibility conformance and features [17]. The study advocated for improved accessible web design support.

We assess whether current website builders have improved. We evaluated the documentation of six popular website builders for accessibility support. We found that Wix (wix.com) was the platform with the most explicit support for accessible web design. We then conducted accessibility audits for 30 websites (90 pages in total) created using Wix.

We found websites created by Wix had poor accessibility despite Wix offering the most accessibility support out of the six popular website builders. We expect a higher case of inaccessibility when using other website builders since they were less focused on supporting accessible web design. Future work should utilizes User-Centered Design methods to identify how to improve website builders to increase user engagement with accessibility features.

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2 UNDERSTANDING ACCESSIBILITY SUPPORT OF WEBSITE BUILDERS

We used BuiltWith's data on website builder usage in the top 1 Million websites [4] and data for 'live websites' to identify and investigate further the following popular platforms: Wix (7 million) [8] and Squarespace (2.8 million) [5], Weebly (1 million) [7], Tilda (372 thousand) [6], Artisteer (139 thousand) [2], and Carrd (22 thousand) [3].

We found that the websites/online documentation of the previously listed website builders vary in their acknowledgment of accessibility. For example, Artisteer, Carrd, and Tilda do not mention accessibility on their websites or in documentation. Although Weebly has a 'What is Accessibility?' page, it is only discoverable using the search feature, and it makes no mention that their platform has accessibility features, whereas Squarespace and Wix do.

Squarespace platform. Squarespace's website builder showed no clear references to accessibility; for example, the only way to add alt text is by adding an image caption or editing its "Filename" field—the filename is also marked as optional. It is also not very intuitive to write an alt text description of the image in a text field requesting file name. If no action is taken to add a name or description, then the image's file name and extension are used as the alt text by default. With regards to the image caption doubling as alt text, this is usually discouraged [19] because an image caption may not include the appropriate level of detail for an alt text description, and it is important we take care in how we write alt text descriptions [1]. Although Squarespace discusses accessibility in support documentation, their website builder lacks sufficient guidance, which is arguably where users will spend the most time.

Wix platform. In the Wix software, a menu option for the 'Accessibility Manager' allows users to toggle three accessibility features: enabling visual indicators, setting the Document Object Model (DOM) order of the page automatically, and turning on advanced settings. We found some or all of these features are disabled by default in certain templates. Adding alt text to images is clearer in the Wix editor because each image has a field titled "*What's in the image? Tell Google.*" However, similar to Squarespace, Wix defaults to using the image's file name when a user does not add specific alt text. Additionally, "*Learn More*" is provided as an example of button text in an informational alert, but lacks descriptive information as recommended by WCAG [12].

Although Wix seems to place more emphasis on accessibility through their accessibility articles and manager in the editor, this information is still somewhat hidden. For example, their website does not provide a link to their accessibility articles in the main menu at the top of the page, which reduces the visibility of accessibility information. Most people using website building platforms may not even notice these features or information, especially if they lack accessibility knowledge to identify their importance.

Summary. Overall, we found Wix to include more information and guidance on accessibility. Therefore, we chose Wix as our exemplar tool to understand further how accessibility features are being used and to gain some insights into whether the current design supports users in creating accessible websites. Wix also has 2.5x as many live websites hosted online compared to Squarespace (7 million vs 2.8 million). It would be unfair to analyze the websites created by other website builders that do not report offering accessibility features.

3 ACCESSIBILITY AUDIT

After determining that Wix was the most accessibility-focused consumer website builder we ran an accessibility audit of websites created with Wix to identify whether the support Wix offers translates to accessible websites.

3.1 Audit Materials and Procedures

We ran an accessibility audit of 30 Wix websites selected through Wix's official blog, which showcases exemplar websites created with Wix. To preserve the anonymity of the creators, we highlight just the main selection criteria. We selected 10 websites from each of the following categories to ensure content variety: blogs, eCommerce, and small business. We examined three pages from each website (homepage, a primary content page, an about/contact page); therefore, we skipped over websites that did not meet this criteria or had 404 errors when we visited the website. We audited 90 webpages in total (30 websites x 3 pages each).

We structured our audit to focus on four key accessibility guidelines from WCAG 2.1 [12]: *heading structure*, *link/button link text*, *image alternative text*, and *color contrast*. WCAG has an extensive list of instructions, but we wanted to be pragmatic and there are several reasons for our focus on four key areas: 1) People using website builders are likely to create websites predominately composed of text and images, 2) The first three guidelines are important for effective screen reader navigation and the fourth allows us to evaluate website accessibility for other vision impairments (e.g., color blindness, low vision), and 3) We derived from the first assessment that Wix either has native support or advises on how to conform to those accessibility guidelines. We want to stress this third reason—we were focused on checking for evidence of accessibility on criteria that Wix supports to not unfairly assess the websites against unsupported criteria.

We followed best practice by combining automated and manual testing [11, 21]. We used WebAIM's WAVE (wave.webaim.org) and manually checked accessibility conformance by consulting WCAG 2.1. **1) Heading structure**: we used WAVE and page source code to check for appropriate heading structures. **2) Link/button link text**: we assigned one of three grades for in-text link and button link accessibility on every page. A *Good* grade for descriptive text on all links and buttons, an *Acceptable* grade for pages with somewhat descriptive links and buttons, and *Needs Improvement* for pages without descriptive links or buttons. **3) Image alt text**: we used WAVE and the page source code to check for alt text. Decorative images without alt text passed, but images with file names or meaningless text as the alt text are inaccessible. **4) Color contrast**: we used WAVE's automated color contrast check and manually checked colors using Apple's built-in Digital Color Meter with WebAIM's Contrast Checker (https://webaim.org). We checked navigational menu items, link text, buttons, main content, etc. on each page.

3.2 Audit Analysis and Findings

The results of the audit indicated an overall lack of accessibility within websites created by Wix across our chosen four accessibility categories supported by Wix. The most common issue was color contrast, with heading structure and image alt text following closely behind. Link and button link text were relatively sufficient in accessibility, but not perfect. Additional patterns of Wix-wide accessibility issues within each category were also noted during the audit. For example, frequent default image description issues and non-descriptive log in links (see Sections 3.2.3 and 3.2.4).

3.2.1 Color Contrast. Of the 90 pages we audited for color contrast, 64 pages had elements that failed WCAG criteria, resulting in 71% of the audited pages having insufficient color contrast across all relevant elements (e.g., text on the background, text on a button). We found 77% of the audited blog pages had insufficient color contrast among the measured elements, but this rate was slightly lower for business pages (67%) and eCommerce pages (70%). Since many elements failed minimum contrast ratios (normal text contrast ratio=4.5:1; large text contrast ratio=3:1), they would by definition also fail level AAA's contrast ratios (normal text contrast ratio=7:1; large text contrast ratio=4.5:1).

3.2.2 Heading Structure. Only 88 of the 90 webpages were applicable for us to include in an audit focused on whether an appropriate heading structure was used because two webpages had no heading. We found that overall 58% of webpages incorrectly followed WCAG's criteria for heading structure. Of the blog pages audited, 40% had an ineffective heading structure, whereas 66% of the small business webpages had ineffective heading structure, and 69% of the eCommerce webpages had ineffective heading structure. Many webpages were missing an H1 tag, and many used somewhat random heading structures. Although Wix offers drag-and-drop headings to create a heading structure, it appeared that many users are applying the headings for aesthetic purposes (i.e., for size/style), rather than for accessibility.

3.2.3 Image Alternative Text. Among all 90 audited webpages, 55% of images across all websites inappropriately used alternative text, which meant a majority of images were inaccessible—we not only looked for whether an image had alt text but considered the overall context (i.e., decorative images do not need alt text, is the alt text sufficiently descriptive of the image, etc.). Within the 30 blog webpages (10 websites, 3 pages each), 53% of images made inappropriate use of alt text, whereas this was 60% when looking at small business websites, and 52% among the eCommerce websites.

We noticed some common image alt text details across all audited websites. File name was often used for image alt text, many social media icons have ineffective default alt text, product and gallery images often had redundant product or image titles as alt text, and nearby product images all had the same alt text, which was usually the product title. As we note in Section 2, Wix defaults to using the image's file name when a user does not add specific alt text. Our audit results also suggest that Wix users were either not aware of the need to include alt text or did not know how to assign alt text to images within the Wix interface.

3.2.4 Link and Button Link Text. Of the 83 applicable audited pages with links or buttons, 53 had *Good* link text[1], resulting in only 36% of links that could be more descriptive. The remaining seven webpages did not include any links or buttons on the page (besides the constant nav/footer elements which were counted once for each websites homepage). We found only 18% of the blog pages' link text did not meet our *Good* grade criteria (*Acceptable*=14%, *Needs Improvement*=4%), whereas the rate increased to 50% among the small business webpages (*Acceptable*=23%, *Needs Improvement*=27%), and 41% of the eCommerce webpages (*Acceptable*=20.7%, *Needs Improvement*=20.7%). On most of the blog pages, a "log in" link for leaving a comment appears towards the bottom of posts. However, the link only says "log in", which is not descriptive enough to tell a screen reader user what they are logging in to do, which would be to leave a comment. An improved link text could simply be "log in to leave a comment". This link issue appeared on all of the blog sites using the comment feature and many of the form fields used placeholder text as label text by default, suggesting these were things that were inaccessible by default rather than from the users' lack of knowledge.

4 DISCUSSION

Website builders have the potential to guide novice web designers in creating accessible websites. Modern website builders are increasing effort to offer accessibility features, unlike in the past [17]. However, through our examination of website builders and webpages created using Wix—the most popular and accessibility-focused website builder—we found that website builders are still not effective in supporting the creation of accessible websites. Website builders are targeted toward people without design and technical skills, which underscores the importance of these services to support accessible website creation. We do want to acknowledge that software goes through updates and the popularity of design tools changes, thus our study is a snapshot of the current situation. We are highlighting that although some website builders have increased their support for accessible web design since earlier work, it is not enough.

4.1 Recommendations and Future Work

Recommendation 1. Companies of website builders should promote the importance of accessibility and explain how their tools can supports building accessible websites. Accessibility topics should not be buried in documentation. A person's first encounter with website building platforms will likely be the company website, and this is an early opportunity to make website builder users aware of web accessibility.

Recommendation 2. Accessibility features should be easily discoverable and prioritized. We learned from our review of the Wix interface that the hidden accessibility features and external article support (rather than built-in tooltips or similar), likely point to Wix requiring too much effort and knowledge on the part of the user to be able to make use of any of the accessibility features offered. For example, discoverability could be improved by ensuring accessibility features are found within all relevant menus (e.g., main menu, element mini-menus), and the position in the menu should be near where the user will first begin reading through the list so that accessibility features are prioritized.

Recommendation 3. Website builders should play an active role in guiding the user toward making choices that improve website accessibility. There are opportunities for the system to provide alternative design suggestions, notification reminders, and warnings, throughout the design process up to publishing the website. For example, a pop-up notification could appear near where the user is working so that it is noticeable, and the immediacy would ensure the user thinks about accessibility while working rather than leaving accessibility to the end when the website is complete.

Future Work. Future work could examine these recommendations across other website builders to determine a more comprehensive baseline of how accessibility is handled by this genre of technology. It would also be useful to interview and observe people who use website builders to better understand their awareness of accessibility features, as well as any potential issues with how the features are currently implemented and used. Furthermore, it would be useful to build prototypes and evaluate how to implement such features effectively. For example, how could we ensure accessibility pop-ups are designed in a way that will not annoy the user? And, how could we present guidance in a way that is actionable and clear for users who have little knowledge of WCAG?

5 CONCLUSION

We found that, in general, website building platforms lack a clear stance on supporting website accessibility. Despite some website builders fulfilling the recommendations of prior work by offering accessibility features, we are not at a point where those features are proving effective. We found that websites created by the most accessibility-focused website builder were not accessible, suggesting that the intended users of website builders are not making use of those accessibility features. There is an opportunity for HCI researchers to understand how we can redesign those accessibility features in a way that is engaging for users of website builders to maximize creating accessible websites.

[1] A *Good* grade meant that descriptive text was used for all links and buttons overall, an *Acceptable* grade was assigned to pages that had somewhat descriptive links and buttons, and *Needs Improvement* was assigned to pages that did not have descriptive links or buttons.

REFERENCES

[1] Cynthia L. Bennett, Cole Gleason, Morgan Klaus Scheuerman, Jeffrey P. Bigham, Anhong Guo, and Alexandra To. 2021. "It's Complicated": Negotiating Accessibility and (Mis)Representation in Image Descriptions of Race, Gender, and Disability. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. Association for Computing Machinery, New York, NY, USA, Article 375, 19 pages. https://doi.org/10.1145/3411764.3445498

[2] BuiltWith. 2022. Artisteer Usage Statistics. https://trends.builtwith.com/cms/Artisteer. Accessed: 2022-01-12.

[3] BuiltWith. 2022. Carrd Usage Statistics. https://trends.builtwith.com/cms/Carrd. Accessed: 2022-01-12.

[4] BuiltWith. 2022. Simple Website Builder Usage Distribution in the Top 1 Million Sites. https://trends.builtwith.com/cms/simple-website-builder. Accessed: 2022-01-12.

[5] BuiltWith. 2022. Squarespace Usage Statistics. https://trends.builtwith.com/cms/Squarespace. Accessed: 2022-01-12.

[6] BuiltWith. 2022. Tilda Usage Statistics. https://trends.builtwith.com/cms/Tilda. Accessed: 2022-01-12.

[7] BuiltWith. 2022. Weebly Usage Statistics. https://trends.builtwith.com/cms/Weebly. Accessed: 2022-01-12.

[8] BuiltWith. 2022. Wix Usage Statistics. https://trends.builtwith.com/cms/Wix. Accessed: 2022-01-12.

[9] Michael Crabb, Michael Heron, Rhianne Jones, Mike Armstrong, Hayley Reid, and Amy Wilson. 2019. Developing Accessible Services: Understanding Current Knowledge and Areas for Future Support. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (Glasgow, Scotland Uk) *(CHI '19)*. Association for Computing Machinery, New York, NY, USA, 1–12. https://doi.org/10.1145/3290605.3300446

[10] Mardé Greeff and Paula Kotzé. 2009. A Lightweight Methodology to Improve Web Accessibility. In *Proceedings of the 2009 Annual Research Conference of the South African Institute of Computer Scientists and Information Technologists* (Vanderbijlpark, Emfuleni, South Africa) *(SAICSIT '09)*. ACM, New York, NY, USA, 30–39. https://doi.org/10.1145/1632149.1632155

[11] Shaun K. Kane, Jessie A. Shulman, Timothy J. Shockley, and Richard E. Ladner. 2007. A Web Accessibility Report Card for Top International University Web Sites. In *Proceedings of the 2007 International Cross-Disciplinary Conference on Web Accessibility (W4A)* (Banff, Canada) *(W4A '07)*. Association for Computing Machinery, New York, NY, USA, 148–156. https://doi.org/10.1145/1243441.1243472

[12] Andrew Kirkpatrick, Joshue O'Connor, Alastair Campbell, and Michael Cooper. 2018. Web Content Accessibility Guidelines (WCAG) 2.1. https://www.w3.org/TR/WCAG21/ Accessed: 2018-12-11.

[13] Eleanor T. Loiacono, Nicholas C. Romano, and Scott McCoy. 2009. The State of Corporate Website Accessibility. *Commun. ACM* 52, 9 (Sept. 2009), 128–132. https://doi.org/10.1145/1562164.1562197

[14] Pedro Lorca, Javier De Andrés, and Ana B. Martínez. 2018. The Relationship Between Web Content and Web Accessibility at Universities: The Influence of Social and Cultural Factors. *Social Science Computer Review* 36, 3 (2018), 311–330. https://doi.org/10.1177/0894439317710435 arXiv:https://doi.org/10.1177/0894439317710435

[15] Lourdes Moreno, Paloma Martínez, and Belén Ruiz. 2008. Guiding Accessibility Issues in the Design of Websites. In *Proceedings of the 26th Annual ACM International Conference on Design of Communication* (Lisbon, Portugal) *(SIGDOC '08)*. Association for Computing Machinery, New York, NY, USA, 65–72. https://doi.org/10.1145/1456536.1456550

[16] Rohan Patel, Pedro Breton, Catherine M. Baker, Yasmine N. El-Glaly, and Kristen Shinohara. 2020. Why Software is Not Accessible: Technology Professionals' Perspectives and Challenges. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems* (Honolulu, HI, USA) *(CHI EA '20)*. Association for Computing Machinery, New York, NY, USA, 1–9. https://doi.org/10.1145/3334480.3383103

[17] Christopher Power and Helen Petrie. 2007. Accessibility in Non-Professional Web Authoring Tools: A Missed Web 2.0 Opportunity?. In *Proceedings of the 2007 International Cross-Disciplinary Conference on Web Accessibility (W4A)* (Banff, Canada) *(W4A '07)*. Association for Computing Machinery, New York, NY, USA, 116–119. https://doi.org/10.1145/1243441.1243468

[18] Garreth W. Tigwell, David R. Flatla, and Neil D. Archibald. 2017. ACE: A Colour Palette Design Tool for Balancing Aesthetics and Accessibility. *ACM Trans. Access. Comput.* 9, 2, Article 5 (Jan. 2017), 32 pages. https://doi.org/10.1145/3014588

[19] Shari Trewin. 2019. Describing Figures. https://www.w3.org/WAI/standards-guidelines/atag/. Accessed: 2021-7-1.

[20] UsableNet. 2018. 2018 ADA Web Accessibility Recap: Lawsuit Report. https://blog.usablenet.com/2018-ada-web-accessibility-lawsuit-recap-report. Accessed: 2020-03-11.

[21] Markel Vigo, Justin Brown, and Vivienne Conway. 2013. Benchmarking Web Accessibility Evaluation Tools: Measuring the Harm of Sole Reliance on Automated Tests. In *Proceedings of the 10th International Cross-Disciplinary Conference on Web Accessibility* (Rio de Janeiro, Brazil) *(W4A '13)*. Association for Computing Machinery, New York, NY, USA, Article 1, 10 pages. https://doi.org/10.1145/2461121.2461124

[22] WebAIM. 2021. The WebAIM Million – An annual accessibility analysis of the top 1,000,000 home pages. https://webaim.org/projects/million/. Accessed: 2021-6-20.

[23] Yeliz Yesilada and Simon Harper. 2019. *Web accessibility: a foundation for research* (2 ed.). Springer.