



## Summary Report

Project Name: USWDS Digital Dashboard Analysis

Partner: Office of Customer Experience, Enterprise Digital Experience Team

Resources: [Analysis Plan](#)

Year: 2022

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## Project Background

Created in 2015, the [US Web Design System](#) (USWDS) is a set of web design standards intended to make government websites more accessible. USWDS provides principles, guidance, and code to government teams to make it easier for them to design and build accessible websites and digital services.

In December 2018, the 21st Century Integrated Digital Experience Act, or the [21st Century IDEA](#) Act, was signed into law with the goal of improving the digital experience for government customers and reinforcing existing requirements for federal public websites. The law requires that government websites made available to the public after the date of enactment comply with USWDS standards. The passing of the law served as a catalyst for the first enterprise-wide, customer-experience-based examination of GSA websites. This effort is led by the Enterprise Digital Experience (EDX) team in partnership with the cross-agency Digital Council and under the strategic leadership of the Digital Experience Executive Board.

In a prior study, the EDX team, the USWDS team, and the GSA Evaluation Division established a positive correlation between using key elements of USWDS and higher website accessibility scores. This study is an extension of that effort initially intended to determine whether there is a causal relationship between use of USWDS and increased website accessibility. However, due to insufficient data, the results are presented as a descriptive study.



## Research Question

Is there a causal relationship between a website using the USWDS and higher accessibility scores?

We hypothesized that when accounting for trends over time in which website accessibility could be improving independent of USWDS implementation, use of USWDS increases accessibility.

## Data and Analysis

We relied on data gathered from [digital dashboard.gov](https://digital.dashboard.gov). The Digital Dashboard team scans government websites every 2 weeks for various characteristics, including whether or not the site uses the USWDS standards and whether or not the site includes three accessibility elements (html tags, image descriptions, and color contrast).

We examined scans between December 28, 2017 and March 16, 2022. There are four main variables in the dataset:

1. **USWDS Use:** we defined websites as having used the USWDS when a web page scan finds HTML markup on their homepage for components (e.g., labels, naming conventions, and patterns), indicating that aspects of the USWDS are used. For this analysis, we created a dichotomous score, where 1=used USWDS and 0=did not use USWDS.
2. **HTML Accessibility:** defined as the number of html attribute issues on a webpage. Higher numbers indicate more issues.
3. **Image Accessibility:** defined as the number of images with missing text descriptions on a webpage. Higher numbers indicate more issues.
4. **Color Accessibility:** defined as the total number of color contrast issues on a webpage. Higher numbers indicate more issues.

Of the above sources, the USWDS use was captured only for GSA websites. The other three sources included data on all federal websites.

We planned to use a difference-in-difference (DID) analysis to assess whether there was a causal relationship between using the USWDS and higher accessibility scores. However, we were unable to conduct analyses as planned because of issues with data quality and insufficient overlap in data.

We ran descriptive analyses to further examine and summarize the distribution of the variables in the dataset and potential relationships between variables. This report highlights key learnings.

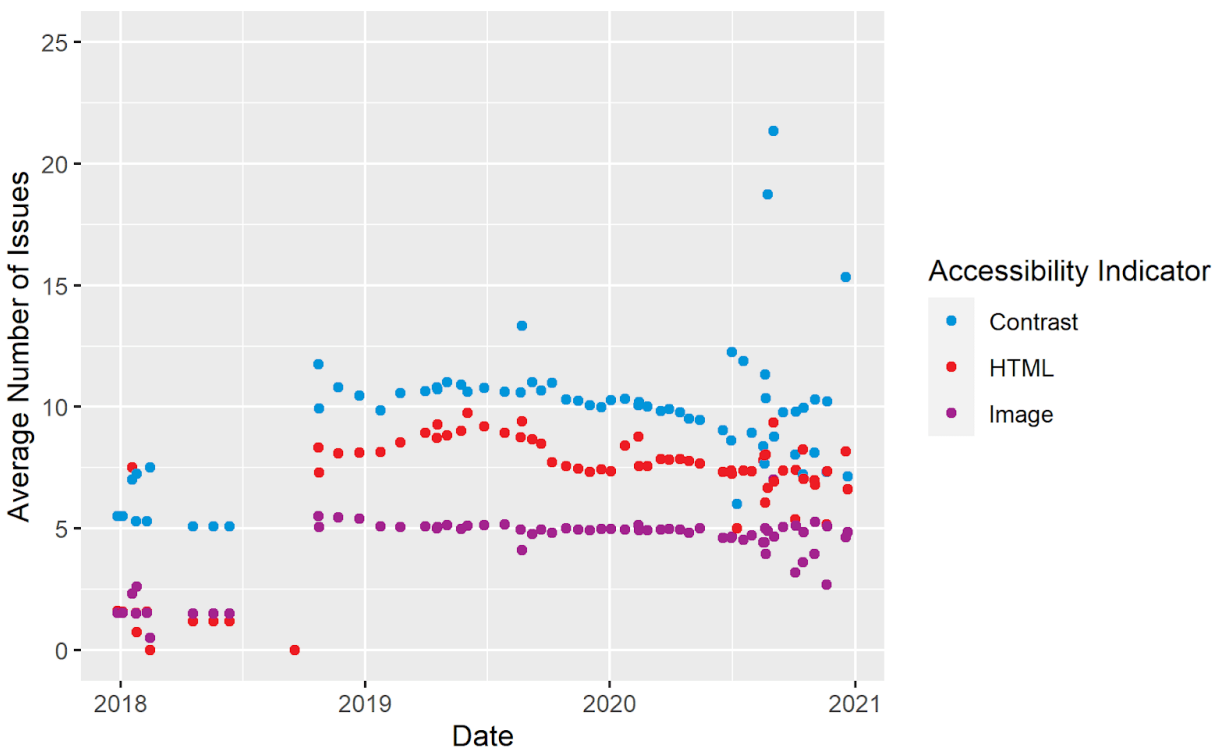
## What We Learned

### The importance of identifying metrics that are directly targeted by an intervention.

There was no reduction in image accessibility issues over time (see Figure 1). We learned through further conversations with project partners that the USWDS does not provide guidance on including alt text for images. As such, we should not expect image accessibility to be impacted by using the USWDS. This nuance in accessibility implementation suggests that future research should clearly identify metrics that align with expected mechanisms for improvement.

**There are fewer color contrast and HTML issues over time.** We hypothesized that website accessibility would improve over time given that web developers have access to better tools (e.g., web design platforms) and training. Excluding 2018, disaggregated data suggest there is a slight decrease in accessibility issues over time, especially with color contrast and HTML issues (see Figure 1). The trend in accessibility issues in 2018 is distinct from the subsequent trend in 2019 onward. This could be due to different accessibility standards at that time, changes in scanning methodology, or another unidentified explanation. The jump also highlights the importance of understanding definitional changes or changes in data collection processes over time.

**Figure 1.** Number of accessibility issues over time for all government websites



**There is an opportunity to improve processes for ensuring data quality.**

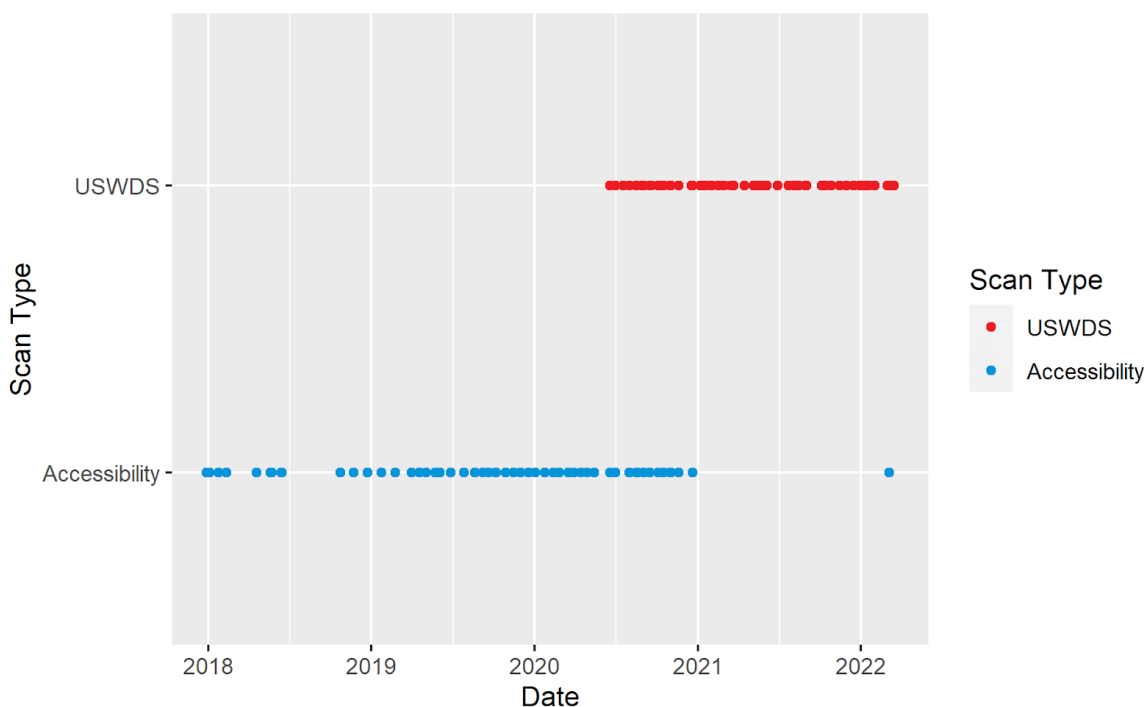
Accessibility indicators (i.e., color, html, image) have a significant number of “Null” values in the dataset as indicated by the color red in the histogram (see Figure 2). Null values likely mean the website could not be scanned (e.g., the code is unrecognizable to a scanner). We found that websites have some scans with null values and other scans with a valid score, suggesting that the issue is not a “broken” website. Between October 2018 and November 2020, there are multiple websites with the same values: image=NULL, color=1, HTML=NULL for the entire period, suggesting an issue with the scan itself. Furthermore, data suggest that website scans are not systematic—they do not occur consistently every two weeks as can be seen by the differences in total number of scans across time.

**Figure 2.** Number of website scans and scans producing null values over time



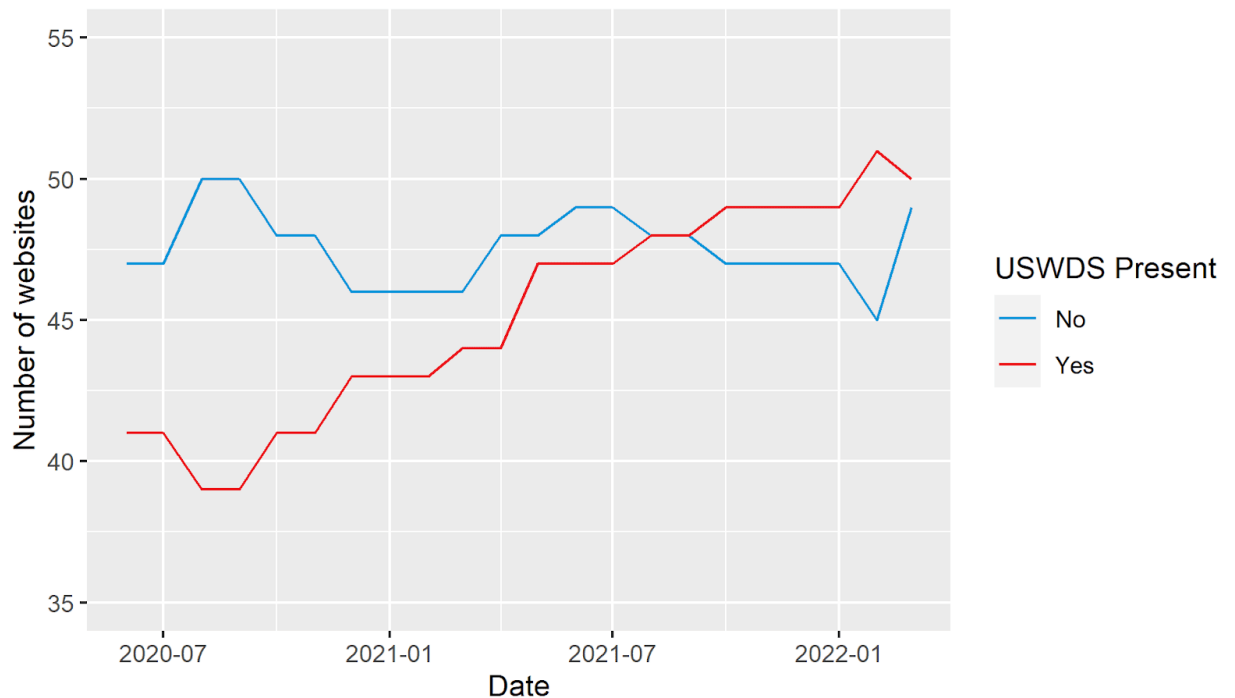
**There is an opportunity to improve data collection consistency.** There is a relatively small period of time (June - November 2020) in which there was significant overlap in complete data—where websites have both a USWDS scan and valid accessibility scores (see Figure 3). Our planned analysis requires sufficient overlap in accessibility scores and the indicator for the USWDS use.

**Figure 3:** Periods where there are complete scans for accessibility metrics and USWDS use



**More GSA websites are using USWDS over time.** We examined the data to determine if the USWDS use increased after the 21st century IDEA passed in 2018. We hypothesized that the USWDS uptake would increase as awareness of the law increased. Data suggest there was a slight increase in the number of websites using the USWDS over time (see Figure 4). In 2021, the number of websites using the USWDS surpassed the number not using the USWDS. Approximately 50 percent of GSA websites were using the USWDS by 2022. The pattern is consistent with a hypothesis that new sites are using the USWDS and older sites are staying the same, although this claim requires further investigation.

**Figure 4:** GSA websites using and not using USWDS components over time



## Recommendations

We recommend that the Digital Dashboard team 1) validate data collection procedures (e.g., reliability of scans, data merge) to ensure consistent, accurate, and complete data; and 2) be cautious when presenting and interpreting historical data to the public. We plan to conduct our planned analysis and establish whether there is a causal relationship between the use of the USWDS and higher accessibility scores when sufficient data are available. We will work closely with the EDX team to refine targeted metrics, and understand what level of data quality will be sufficient to support an analysis that is likely to detect a relevant change in website accessibility.