BENCHMARKING STATE GOVERNMENT WEBSITES

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Benchmarking State Government Websites

Individuals routinely go online to access government information and services.[1] This report reviews 400 U.S. state government websites to assess their performance on page-load speed, mobile friendliness, security, and accessibility using publicly available tools. These 400 websites provide some of the most popular government services, including for driver's licenses, taxes, vital records, elections, business registration, fishing and hunting licenses, and traffic citations. We also tested the primary website of each state government. Virtually every site—99 percent of all tested websites—failed at least one of the tests.

INTRODUCTION

Approximately one-third of U.S. adults report using an app or the Internet to access information provided by their state government in the past 12 months.[2] Indeed, state government websites are some of the most popular sites on the Internet. The state of California's primary website—ca.gov—ranks among the top 150 most popular websites in the United States.[3] Unfortunately, despite the importance of online government services, many states' government websites are failing to meet best practices. Only one, Virginia's website for hunting and fishing licenses (dgif.virginia.gov/licenses), passed all the tests. State governments clearly need to improve their websites to provide the public with easy and secure access to e-government services and information.

This report assesses four criteria: page-load speed, mobile friendliness, security, and accessibility. For page-load speed, we reviewed both desktop page-load speed and mobile page-load speed. For desktop page-load speed, 77 percent of state government websites passed the test. State government websites for registering businesses passed the desktop page-load speed test more than any other type of state government website—88 percent passed. For mobile page-load speed, 50 percent of state government websites passed the test. State government websites for fishing and hunting licenses passed the mobile page-load speed test more than any other type of state government website—62 percent passed. States can improve their page-load speed by compressing images and avoiding the use of page redirects (where one webpage redirects to another).[4]

Many state government websites did not perform well on the mobile-friendliness test—only 67 percent passed. Common problems included content not configured to fit mobile screens, and small buttons and links. State government websites for taxes passed the mobile-friendliness test more than any other state government website type—76 percent passed.

Most state websites did not score well on security. In this report, we review two security features: the use of Hypertext Transfer Protocol Secure (HTTPS), a standard protocol to encrypt communications between web browsers and websites; and Domain Name System Security (DNSSEC), a set of protocols used to verify the IP address associated with a particular domain name is authentic.[5] We

used a tool that analyzes Secure Sockets Layer (SSL) and Transport Layer Security (TLS) certificates, which are used by most HTTPS connections, to test that the websites had enabled and properly configured HTTPS.[6] Only 44 percent of the state government websites passed the HTTPS test, which means users cannot privately and securely browse most of them. State government websites for obtaining information about driver's licenses performed the best compared to other types of government websites—54 percent passed. In addition, we used a tool to determine whether the domain of each state government website used DNSSEC. We found that only 13 percent of state governments websites had properly enabled DNSSEC for their domain name. Just 4 percent of state websites passed both the HTTPS and DNSSEC tests. The low percentage of state websites enabling DNSSEC is one reason why only one website passed all the tests. Excluding the DNSSEC test, 90 percent of state government websites failed at least one other test. States can improve their security by having their web servers properly enable HTTPS and DNSSEC.

Finally, 59 percent of state websites passed the accessibility standard. State government websites providing access to vital record information passed the accessibility test more than any other type of state government website—74 percent passed. State government websites can improve their accessibility by using larger text, providing greater contrast in colors, and offering alternative text to images. The Web Content Accessibility Guidelines (WCAG) 2.1 offers an exhaustive list of best practices for accessibility.[7]

While some states have much better websites than others, every state can significantly improve the web experience they provide to the public. To provide citizens fast, secure, and accessible web experiences on both mobile and desktop devices, state policymakers should do the following:

- Mandate government websites implement security best practices
- Require government websites to be mobile friendly
- Consolidate websites to create a single face of government
- Find local partners to test accessibility of government websites
- Adopt a web analytics program

REQUIREMENTS AND BEST PRACTICES FOR STATE WEBSITES

This report uses four criteria to evaluate state government websites: page-load speed, mobile friendliness, security, and accessibility. Not all states have defined specific requirements regarding these criteria for their websites, although some states require government websites to comply with security and accessibility standards. Nonetheless, there are industry best practices for each of these criteria.

LEGISLATIVE REQUIREMENTS FOR STATE WEBSITES

State websites are subject to a myriad of legislative requirements that differ depending on the state. This report highlights several of these requirements that relate to the criteria tested in the report, but it does not provide an exhaustive list.

Several states have implemented laws based on Section 508 of the Rehabilitation Act of 1973, a federal law that mandates individuals with disabilities have access to federal government information technology. For example, California Governor Jerry Brown signed Assembly Bill No. 434 in 2017, which requires state entities to post a certification on their websites that they are compliant with the Web Content Accessibility Guidelines 2.0 Level AA—guidelines about how to make a website accessible to people with disabilities—by July 1, 2019.[8] In addition, Illinois passed the Illinois

Information Technology Act, a law that went into effect in 2007, requiring all government websites to be accessible.[9] Some states have also passed legislation that affects security requirements for state government websites, such as requiring encryption to be used when collecting credit card data or other personal information online.[10]

NONLEGISLATIVE REQUIREMENTS FOR STATE WEBSITES

While most states have not set specific legislative requirements for state government websites, many have empowered the state information technology offices to create standards and best practices for these sites.

Some state legislatures have passed laws that give state technology offices the authority to create security policies for government agencies. For example, South Carolina provides the Department of Administration the authority to create cybersecurity policies that affect state agencies.[11] In 2015, the department released its information security and privacy standards, which stated each agency must publish a privacy policy on its website explaining how it secures the personal information it collects. The department also requires each agency to encrypt confidential information before or during transmission.[12]

Similarly, in 2001, the Delaware General Assembly passed Senate Bill 215, which established the Department of Technology and Information and gave it the power to implement statewide policies for government technology.[13] The department has since required nonpublic government data transported over the Internet by state agencies to be encrypted.[14] Other state technology offices have also implemented policies to use HTTPS for online transactions involving personal information, such as when an Internet user is providing credit card information.[15] These policies can usually be found on the state government's primary website, such as with Kentucky, Vermont, and Georgia.[16] These policies do not require agencies to use HTTPS for all state government websites. We also did not find any state government policies explicitly requiring the implementation of DNSSEC.

Some state agencies have also created policies on accessibility. In June of 2017, the New Jersey Office of Information Technology released its Web Accessibility Policy, which declares state agencies should take reasonable steps to meet the standards in the WCAG 2.0 guidelines.[17] For instance, Maine's chief information officer approved the state's Web Accessibility and Usability Policy in May 2012. The policy creates accessible design standards for websites, which include not conveying information with color alone, contrasting foreground and background colors, and providing alternative text for all images.[18] Other states, such as Louisiana, encourage state websites to comply with Section 508.[19]

In addition, state technology offices offer guidelines for agencies on how to design their websites. For example, Massachusetts' Digital Services department offers a guide to help agencies decide how to best display content on their website.[20] In addition, Oregon's E-Governance Board offers website design tips on when to post online content directly on web pages in HTML rather than using PDFs, how to format content for mobile screens, and how to use contrasting colors to make viewing easier.

FEDERAL GOVERNMENT BEST PRACTICES FOR WEBSITES

The federal government offers many best practices state governments can adopt.[21]

First, federal government websites must adhere to strong security standards. In 2008, the Office of Management and Budget (OMB) began requiring all federal government agencies to deploy DNSSEC for their websites, and in 2015, began requiring all federal government websites to use HTTPS.[22]

Second, federal government websites must be accessible to people with disabilities. In 1998, Congress amended section 508 of the Rehabilitation Act of 1973 to require federal agencies to make their information technology accessible to people with disabilities.[23] The U.S. Access Board maintains the standards federal agencies must adhere to, and its most recent set of accessibility requirements for websites requires federal government websites to adhere to the WCAG 2.0 standard.[24]

Third, federal government websites must be mobile friendly.[25] Mobile-friendly websites are important for the federal government because approximately 40 percent of visits to federal websites are on mobile devices.[26] The Connected Government Act, a federal law that went into effect in January 2018, requires agencies to design websites such that they can be "navigated, viewed, and accessed on a smartphone, tablet computer, or similar mobile device."[27]

PRIVATE-SECTOR BEST PRACTICES FOR WEBSITES

The private sector also offers best practices state governments can adopt.

First, page-load speed is important because people are more likely to visit websites that load quickly in a browser—and these sites will be ranked better by search engine algorithms. While there are no set industry standards for page-load speed, more than half of mobile users will leave a page if it takes longer than three seconds to load.[28] In addition, there are best practices to optimize site speed.[29] Best practices include enabling file compression, reducing the number of embedded components on a webpage, reducing redirects, leveraging browser caching, optimizing images, and others. For example, developers can use tools to reduce the total size of the website's code (e.g., CSS, JavaScript, and HTML) by removing spaces, commas, unnecessary characters, code comments, and unused code to improve the site's speed.

Second, mobile-friendliness has become more important to private-sector web development because consumers increasingly use mobile devices for online commerce and to find important information. Google ranks mobile-friendly sites higher in its search algorithm, and the company has released guidelines and a free test to allow developers to optimize for mobile devices.[30] These best practices include implementing responsive web design, which allows the layout of a page to change based on the size and capability of a user's device, and making buttons big enough to be easily tapped with a finger.[31]

Third, while there are no set industry standards for website security, various organizations and companies have created basic security guidelines. For example, Google Chrome marks all websites that do not use HTTPS as not secure.[32] In addition, the Open Web Application Security Project—a nonprofit organization dedicated to enabling organizations to develop applications that are secure—has put out a number of resources and guidelines for businesses to develop secure websites.[33] Similarly, companies such as Microsoft have provided minimum-security guidelines for web applications.[34] These guidelines include using Secure Sockets Layer (SSL) certificates, which underpin most HTTPS connections, to transmit sensitive information between the browser and server, and using strong passwords.

Finally, there are best practices for website accessibility published by the World Wide Web Consortium (W3C), an international standards organization for the Internet, and its Web Accessibility Initiative (WAI), which develops standards to promote website accessibility. The Web Content Accessibility Guidelines (WCAG), developed by the WAI, specify how web developers should make content accessible, primarily for people with disabilities, across all devices and platforms.[35] The W3C published the WCAG 2.1 in June 2018, which build on the previous guidelines (WCAG 2.0) that were published in December 2008.[36] Like WCAG 2.0, WCAG 2.1 have three levels of conformance: A, AA, and AAA. Higher levels of conformance make sites more accessible but impose more restrictions on website design. New elements in the guidelines include how to avoid unintended activation of a touch interface, and extend their contrast requirements to graphics.[37]

METHODOLOGY

The goal of this report is to assess state government websites. In order to compare states, we assessed the government websites used to provide seven popular state e-government services: obtaining a driver's license, tax information, vital records, election information, business registration, fishing or hunting licensing, and information on traffic citations.[38] In addition, we tested the primary website associated with each state government. For example, Ohio's state government website is ohio.gov.

We used Google to identify the first webpage a user would likely encounter for each of the seven services plus the primary state government website. We input common phrases into Google's search tool that the average person would likely use when looking for information about these services. For example, we searched "how to get my driver's license in *state name*" and clicked on the first link that led to a government website. The search phrases used for all other services were:

- Primary state government site: "website of state of [state name]"
- Driver's License: "how to get my driver's license in [state name]"
- Taxes: "tax information in [state name]"
- Vital records: "[state name] vital records"
- Elections: "election information in [state name]"
- Business registration: "register my business in [state name]"
- Fishing or hunting licensing: "fishing or hunting license in [state name]"
- Traffic citations: "state trooper ticket information in [state name]"

In most cases, we analyzed the first link that led to a state government website. There were a few exceptions, however. For example, in some cases, the first link redirected to another webpage providing information about the particular service, in which case we analyzed the webpage to which we were redirected. Several webpages also had "404 errors" (i.e., page not found errors). In these cases, we repeated the search at a later date and used the new webpages that appeared first in these searches.

In total, we identified 400 U.S. state government websites. Most used a ".gov" top-level domain, but some state government websites use a ".us," ".org," or ".com" top-level domain. We assessed each using the following publicly available tools.[39] First, the report uses Google's PageSpeed Insights to measure the page-load speed of each website on both desktop and mobile browsers.[40] Second, the report uses the SEO Centro Mobile Friendly Check tool to assess whether a website is mobile friendly.[41] Third, the report uses two tools to measures security: Qualys SSL Labs' SSL Server Test tool, which inspects the security of SSL certificates web servers use to encrypt communications, and

Verisign Labs' DNSSEC Debugger tool, which assess whether a DNS server has implemented DNSSEC.[42] We refer to the SSL Server Test as the HTTPS test throughout this report. Finally, the report uses AChecker's Web Accessibility Checker to score websites on their level of accessibility based on WCAG 2.0.[43] We elaborate on each of these tools, why these factors are important, how we calculate scores, and how we established passing criterion in each corresponding section, later in this report.

To calculate an overall ranking, we converted each of the metrics (desktop page-load speed, mobile page-load speed, mobile friendliness, accessibility, HTTPS, and DNSSEC) into z-scores, which indicate how many standard deviations a value is from the mean. Using z-scores allows for comparison across metrics with different distributions. We created a single score for page-load speed by averaging the z-scores of the desktop and mobile page-load speed metrics, and a single score for security based on the average of the HTTPS and DNSSEC z-scores. We created an overall score by averaging each of the categories (page-load speed, mobile friendliness, accessibility, and security). Next, we converted the scores to a 100-point scale to make the overall scores more intuitive based on the minimum and maximum percentage of points earned by websites.

We started data collection on November 17, 2017 and finished on December 6, 2017. In addition, we began the testing of the websites and documentation of those results on December 8, 2017 and completed on January 3, 2018. For any of the websites that scored a 0 and were outliers on any of the tests, we retested them by no later than April 2018.

There are a number of limitations to our findings. First, we only tested a small subset of each state government's websites. Different government websites may perform better or worse on these tests—and even different webpages on the same website may perform differently. Second, we generally only performed each test once, so temporary problems that existed during our testing penalized a state's score. Third, we used automated tools to assess each site. These automated tools provide a good metric for an initial assessment of websites, but manual reviews can provide more complete information. Finally, we did not test for many factors that are also important for state websites, such as clear navigation, ease of use, and quality of information, nor did we test for a variety of backend security vulnerabilities, such as whether websites were running the latest security patches, using two-factor authentication, or had protections in place to remain resilient during heavy spikes in traffic or denial-of-service attacks.

FINDINGS

We evaluated state websites in four categories: page-load speed, mobile friendliness, security, and accessibility. For each category, we present in this report overall state rankings. In addition, we present results by the website type to compare performance. The categorical sections describe the findings and make relevant comparisons across website types (e.g., taxes, elections, etc.).

There are limitations to our findings. We did not analyze all state government websites. Moreover, each tool we used to test websites has some limitations. For example, Google's PageSpeed Insights, which we used to assess page-load speed, only considers the network-independent aspects of a page. Delays can also be caused by insufficient bandwidth.[44] The majority of website testing occurred between December 8, 2017 and January 3, 2018. We retested websites between January and April 2018 when we encountered errors. Consequently, websites may have been updated since we first began testing. For example, Maine's business registration website (maine.gov/portal/business/starting.html) scored better in April 2018 on page-load speed than it did in November 2017, but we used the score obtained in November 2017 to maintain consistency.

In total, we tested 400 state government websites representing seven different types of services plus the state government's primary website. The website types represent information for the following topics: driver's licenses, taxes, vital records, elections, business registration, fishing and hunting licensing, and traffic citations. We found that driver's license and business registration websites performed the best. Interestingly, the websites for fishing and hunting licensing performed the worst overall compared with the other website types.

We ranked states three ways: by overall score, category, and website type. The overall ranking for state websites is an average of the overall z-scores, which indicate how many standard deviations a value is from the mean, from each website type for each state. We calculated the categorical rankings by averaging the raw scores for each metric (i.e., desktop page-load speed, mobile page-load speed, mobile friendliness, etc.) across the eight website types (the seven services plus each state's primary website). In addition, we calculated states' overall score for each website type (e.g., taxes, licenses, etc.) by averaging the z-scores of the four tested categories (page-load speed, mobile friendliness, security, and accessibility).

The top-10 best-performing websites we reviewed were: Virginia's fishing and hunting licenses (dgif.virginia.gov/licenses), Vermont's driver's licenses (dmv.vermont.gov/licenses/new), Idaho's elections (sos.idaho.gov/elect), Idaho's traffic violations website (icourt.idaho.gov), Virginia's business registrations (tax.virginia.gov/register-business-virginia), Georgia's driver's licenses (georgia.gov/popular-topic/drivers-licenses), Georgia's primary state government website (georgia.gov), Georgia's business registrations (georgia.gov/popular-topic/business-licenses), Virginia's vital records (vdh.virginia.gov/vital-records/) and Vermont's vital records (healthvermont.gov/stats/vital-records).

Figure 1 and Map 1 present the overall rankings of states, according to their average z-score. Virginia, Idaho, Massachusetts, Georgia, and Colorado performed the best, while Louisiana, Pennsylvania, Connecticut, Nevada, and Oregon performed the worst.

This report uses the aforementioned six different tests (e.g., desktop page-load speed, mobile page-load speed, mobile friendliness, etc.) on eight different types of websites for each state. Consequently, each state went through 48 total tests. Higher-scoring states generally passed more tests. For example, Colorado ranked fifth with a score of 77.5, with its state government websites passing 34 of the 48 tests; Maryland, which ranked 21st with a score of 71.4, passed 28 of the 48 tests; and West Virginia, which ranked 45th with a score of 63.2, passed 21 of the 48 tests. Furthermore, on average, the five best-scoring states passed 35 tests while the five worst-scoring states passed 13.

We also ranked the different website types across all states. On average, across all states, the fishing and hunting licensing websites had the worst scores, and the business registration websites has the best scores. From best to worst, the websites types ranked as follows: business registration, driver's licenses, elections, vital records, traffic citations, primary state government websites, taxes, and fishing and hunting licenses.

Table 1: Overall State Rankings and Scores

Rank	State	Score	Rank	State	Score
1	Virginia	83.0	26	North Dakota	70.3
2	Idaho	82.3	27	Arkansas	70.3
3	Massachusetts	80.2	28	Wisconsin	69.5
4	Georgia	80.1	29	Ohio	68.6
5	Colorado	77.5	30	Rhode Island	68.3
6	Missouri	77.4	31	Oklahoma	68.2
7	Michigan	75.5	32	Tennessee	68.1
8	Arizona	75.3	33	Hawaii	68.0
9	Vermont	75.1	34	Florida	66.9
10	California	75.0	35	Nebraska	66.0
11	Iowa	74.6	36	Illinois	65.8
12	North Carolina	74.0	37	Delaware	65.4
13	Kentucky	73.7	38	New Hampshire	64.7
14	New York	72.8	39	Alabama	64.7
15	Minnesota	72.7	40	New Jersey	64.5
16	Mississippi	72.4	41	Texas	64.1
17	Utah	72.2	42	New Mexico	63.7
18	Wyoming	72.2	43	Indiana	63.5
19	Kansas	71.8	44	South Dakota	63.4
20	Maine	71.7	45	West Virginia	63.2
21	Maryland	71.4	46	Oregon	61.7
22	Alaska	71.3	47	Nevada	61.4
23	Montana	71.2	48	Connecticut	58.3
24	Washington	71.1	49	Pennsylvania	51.6
25	South Carolina	70.8	50	Louisiana	49.5

Map 1: Overall State Rankings

Percentile 0 — 100
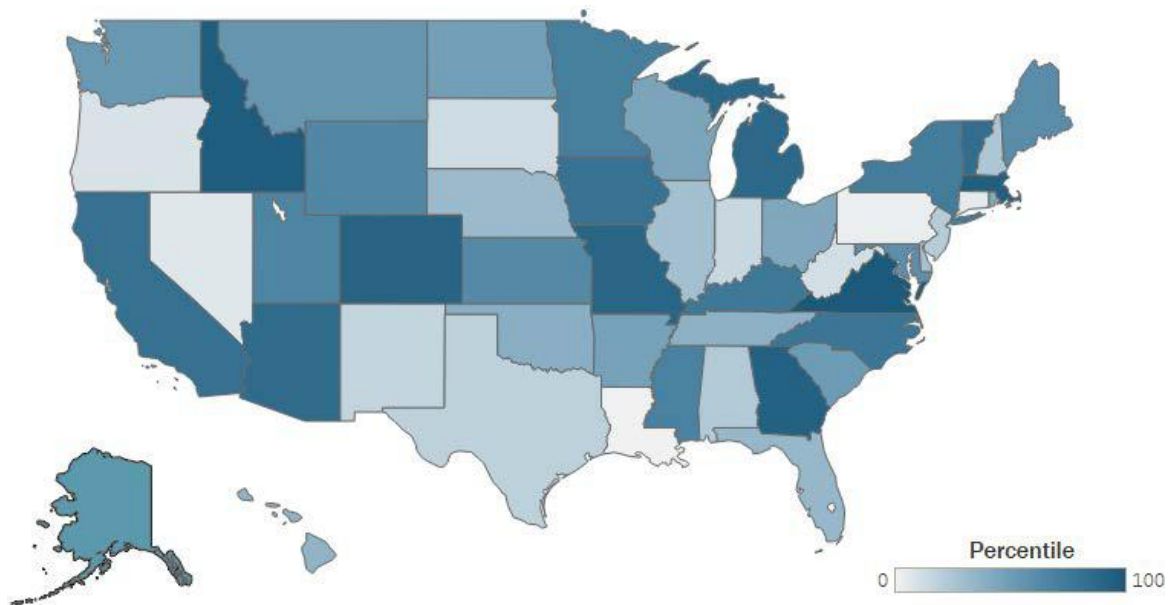
PAGE-LOAD SPEED

Page-load speed is important to Internet users. Over half of users will abandon a page if it takes longer than three seconds to load.[45] Many businesses have optimized page-load speed on their sites because slow-loading pages lead to lower sales—but government agencies do not have the same incentive.[46] For state government agencies, load times affect how quickly the public can find information about services ranging from getting a drivers' license to paying a traffic ticket.

In this report, we assess the page-load speed of state governments websites. To test their speed, we used Google's PageSpeed Insights, a tool that measures the time it takes the desktop and mobile versions of a website to load the content above the fold (i.e., the portion of a website visible without scrolling) and the full page.[47] It used 15 different criteria, including optimized file sizes for images, prioritization of visible content, and server response times, to produce desktop and mobile scores on a 0 to 100 point scale.[48]

A website passed the desktop page-load speed test with a score of 55 or higher; and it passed the mobile page-load speed test with a score of 57 or higher.[49] We chose these benchmarks based on a review of the 20 most popular nongovernment websites. Each of these cutoffs is approximately one standard deviation below the mean for the nongovernment websites.[50]

We found that 77 percent of state websites passed the desktop page-load speed test and 50 percent passed the mobile page-load speed test. All eight website types passed the desktop page-load speed test more than half of the time. Nonetheless, the primary websites for state governments performed the worst for both desktop and mobile page-load speed, passing the desktop page-load speed test 58 percent of the time. In contrast, sites for registering a business performed the best of the eight website types, with 88 percent scoring a 55 or higher.

The results were significantly worse for mobile page-load speed scores. Five of the eight website types passed the mobile page-load speed test 50 percent or less of the time. The best group was websites concerning hunting and fishing licenses, which passed the mobile page-load speed test 62 percent of the time. Only 40 percent of the primary state government websites passed the mobile page-load speed test. Table 2 presents the average score and percentage of websites that passed both tests by website type.

Table 2: Average Desktop and Mobile Page-Load Speed Scores and Passing Percentages, by Website Type

Type	Average Desktop Score	Average Mobile Score	Desktop Percentage Passed	Mobile Percentage Passed
Primary	56.5	50.4	58	40
Driver's Licenses	68.0	55.0	82	46
Taxes	61.8	52.7	68	42
Vital Records	65.4	53.7	76	42
Elections	67.1	56.6	80	60
Business Registrations	71.8	58.6	88	60
Fishing/Hunting Licenses	68.0	56.8	84	62
Traffic Citations	67.5	56.8	76	50

Figure 1 shows the overall distribution of desktop and mobile page-load speed scores for state government websites. The horizontal line represents the minimum score needed to pass the mobile page-load speed test, while the vertical line represents the threshold to pass the desktop page-load speed test. Squares in the upper right quadrant are the 49 percent of websites that passed both the desktop and mobile page-load speed standards; and the bottom left quadrant represents websites that failed both tests. Of the 400 websites tested, 22 percent failed both the desktop and mobile page-load speed tests. And only 1 percent of websites had a passing mobile but failing desktop. score. The graph demonstrates that states need to improve mobile page-load speed more than desktop page-load speed, and that a website is unlikely to have a positive mobile score but failing desktop score.

Figure 1: Desktop and Mobile Page-Load Speed Scores
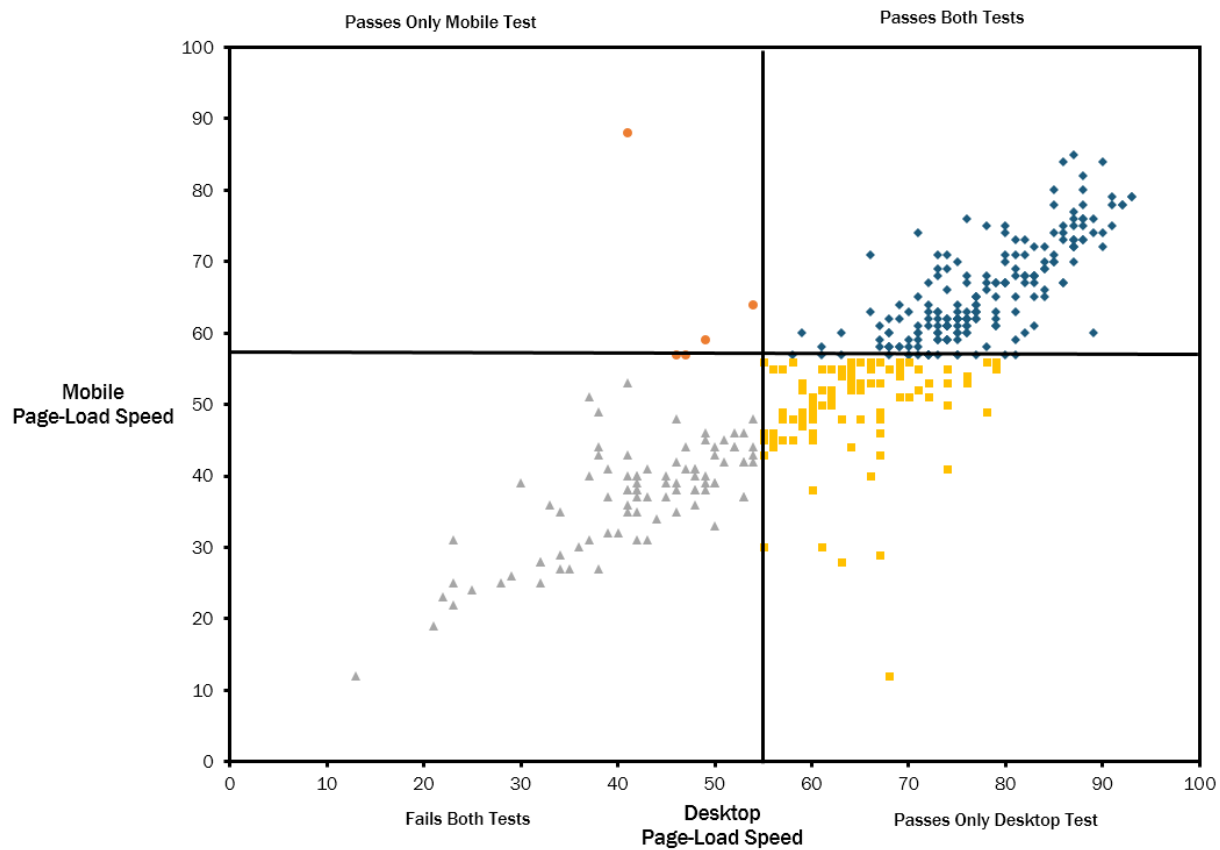
There are several ways for state government websites to improve their page-load speed. First, they can optimize their use of JavaScript, a programming language for websites, or Cascading Style Sheets (CSS), a markup language used to format webpages.[51] States can optimize their use of either by placing scripts necessary to render page content above the fold within the HTML webpage, instead of as a linked file, which causes browsers to make extra network requests. States can compress images.[52] They can also remove unnecessary characters and comments from their code.[53]

Tables 3 and 4 illustrate the average desktop and mobile page-load speed scores for each state. We ranked states by averaging their raw scores for each test for each website type.[54] Many of the websites that scored poorly on desktop page-load speed were also among the worst-performing websites for mobile page-load speed. These consistently low scores highlight a need for improvement. Maps 2 and 3 give each state a percentile ranking, with darker shadings representing better scores. Alaska ranked first in both desktop and mobile page-load speed for the eight types of websites, while Pennsylvania ranked last in both.

Table 3: Average Desktop Page-Load Speed Scores and Rank

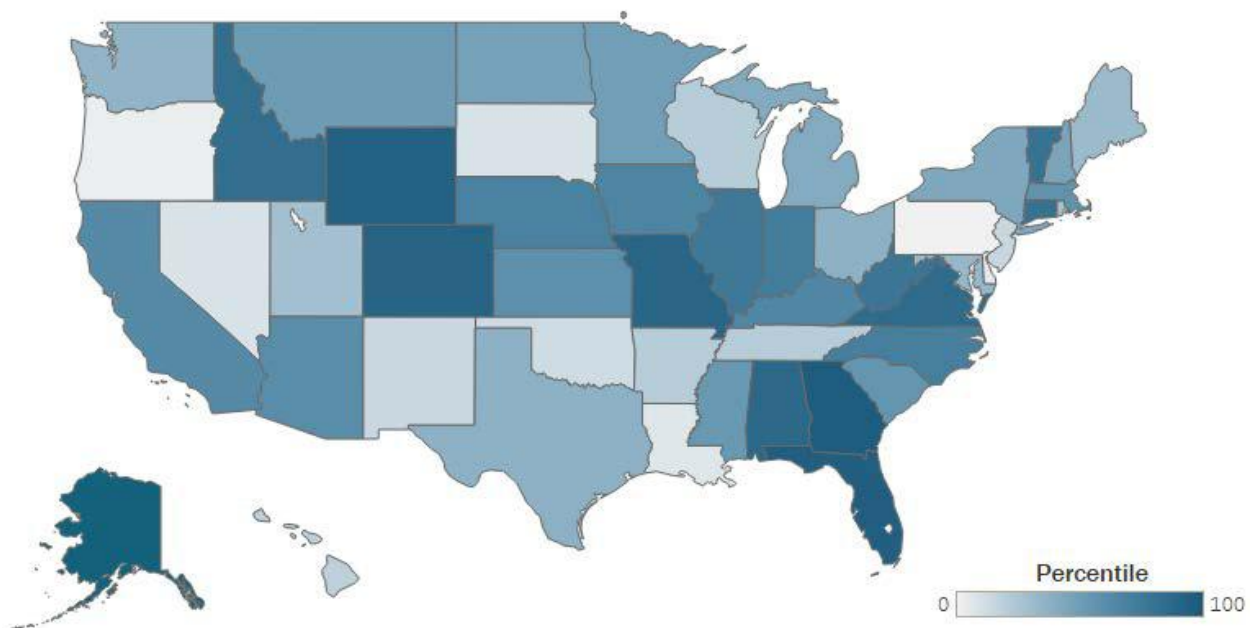| Rank	State	Score	Rank	State	Score
1	Alaska	82.8	26	Minnesota	67.3
2	Georgia	81.1	27	North Dakota	67.0
3	Florida	80.0	28	New Hampshire	66.6
4	Wyoming	78.5	29	New York	66.1
5	Colorado	78.0	30	Michigan	65.5
6	Missouri	75.0	31	Ohio	64.9
7	Alabama	74.9	31	Texas	64.9
8	Virginia	74.0	33	Washington	63.9
9	Idaho	73.8	34	Maryland	62.5
10	Connecticut	73.5	35	Maine	61.9
11	Vermont	73.5	36	Utah	60.4
12	West Virginia	72.1	37	Rhode Island	59.4
13	Illinois	71.9	38	Wisconsin	58.8
14	Indiana	71.3	38	Tennessee	58.8
15	North Carolina	69.9	38	Arkansas	58.8
16	Nebraska	69.8	41	Hawaii	57.1
17	Iowa	69.5	42	New Jersey	56.6
18	Kentucky	69.4	42	New Mexico	56.6
19	California	69.1	44	Oklahoma	55.1
20	Arizona	68.8	45	Nevada	54.3
21	Kansas	68.4	45	South Dakota	54.3
22	Massachusetts	67.9	47	Louisiana	53.1
23	South Carolina	67.8	48	Delaware	52.5
24	Mississippi	67.6	49	Oregon	47.1
25	Montana	67.4	50	Pennsylvania	38.8

Map 2: Desktop Page-Load Speed

Percentile 0 — 100

Table 4: Average Mobile Page-Load Speed Scores and Rank

Rank	State	Score	Rank	State	Score
1	Alaska	69.9	25	California	56.0
2	Georgia	67.6	27	Kentucky	55.8
3	Florida	66.0	27	New Hampshire	55.8
4	Wyoming	65.5	29	Minnesota	54.9
5	Connecticut	65.0	30	Maryland	53.8
6	Vermont	63.8	31	Texas	53.4
7	Virginia	63.0	32	Wisconsin	53.1
8	Colorado	62.3	33	New York	53.0
8	Arizona	62.3	34	Rhode Island	52.9
10	Alabama	61.9	35	Michigan	52.5
11	Illinois	60.8	36	Tennessee	50.4
12	Missouri	60.4	37	Arkansas	50.3
12	Ohio	60.4	38	Maine	50.0
14	Washington	59.9	39	Utah	49.1
15	Iowa	59.5	40	Montana	48.8
16	West Virginia	59.1	40	New Jersey	48.8
16	Kansas	59.1	42	Oklahoma	48.5
16	Mississippi	59.1	43	Hawaii	47.1
19	South Carolina	58.8	44	Louisiana	44.9
19	North Dakota	58.8	45	New Mexico	44.3
21	Nebraska	58.6	46	Delaware	44.1
22	Massachusetts	56.8	47	Nevada	42.0
23	Idaho	56.1	48	South Dakota	41.3
23	North Carolina	56.1	49	Oregon	40.9
25	Indiana	56.0	50	Pennsylvania	36.1

Map 3: Mobile Page-Load Speed
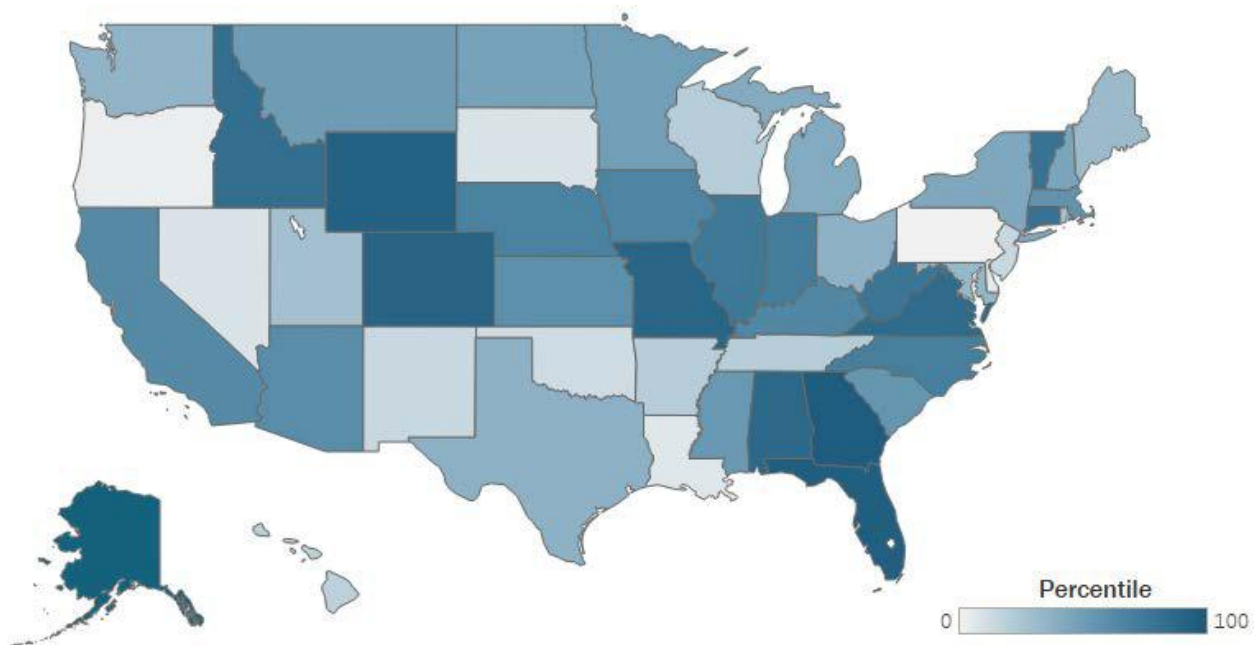
MOBILE FRIENDLINESS

While state governments lack requirements for their websites to be mobile friendly, delivering a positive mobile experience to citizens is vital because one in five U.S. citizens relies solely on their smartphone for Internet access.[55] Search engines, such as Google, also display websites that are mobile friendly higher in their search results.[56]

We tested the mobile friendliness of state government websites by using SEO Centro's Mobile Friendly Check. This publicly available tool considers five criteria to provide a score of 0 to 100. To score well, a website should provide adequate spacing between touch elements, optimize content to fit on a mobile device, not use plugins, display text large enough to read easily, and use meta tags—web elements that provide information about a webpage, such as its height.[57]

After reviewing the 20 most popular nongovernment websites, which averaged a score of 98, we determined a reasonable benchmark for a website to pass the mobile-friendliness test to be a score a 90 or above.[58] Websites that scored between 90 and 100 typically provide users positive experiences on mobile devices.[59]

We found that two-thirds of state websites passed the mobile-friendliness test. While the median score was a 96, more than a quarter (27 percent) of websites scored below a 75. This fail rate illustrates that many state websites can still make significant improvement. The worst-performing group was websites dedicated to traffic citations—only 52 percent passed. Such websites often contained links to paying tickets online, and the low pass rate may indicate the difficulty of using mobile devices to pay citations. The best website type for mobile friendliness was taxes—76 percent passed. Table 5 lists the average score and percentage of websites that passed for each website type.

Table 5: Average Mobile-Friendliness Scores and Passing Percentages, by Website Type

Type	Average Score	Percentage Passed
Primary	89.1	72
Driver's Licenses	89.6	74
Taxes	89.9	76
Vital Records	84.5	60
Elections	87.8	66
Business Registrations	88.1	70
Fishing/Hunting Licenses	86.7	64
Traffic Citations	82.4	52

Figure 2 compares the websites' scores across mobile friendliness and page-load speed. It shows that many mobile versions of state government websites need improvement in more than one area. More websites (67 percent) passed the mobile-friendliness test than the mobile page-load speed test (50 percent). The website with the best combined mobile page-load speed and mobile-friendliness scores was the Arizona government's primary website (az.gov). Louisiana's elections website (sos.la.gov/ElectionsAndVoting/GetElectionInformation/Pages/default.aspx) performed the worst over the two metrics. Only 29 percent of tested websites passed both the mobile page-load speed and mobile friendliness tests. Consequently, the vast majority of state governments need to make improvements to provide adequate mobile service to their citizens.

**Figure 2: Mobile-Friendliness and Mobile Page-Load Speed Scores**
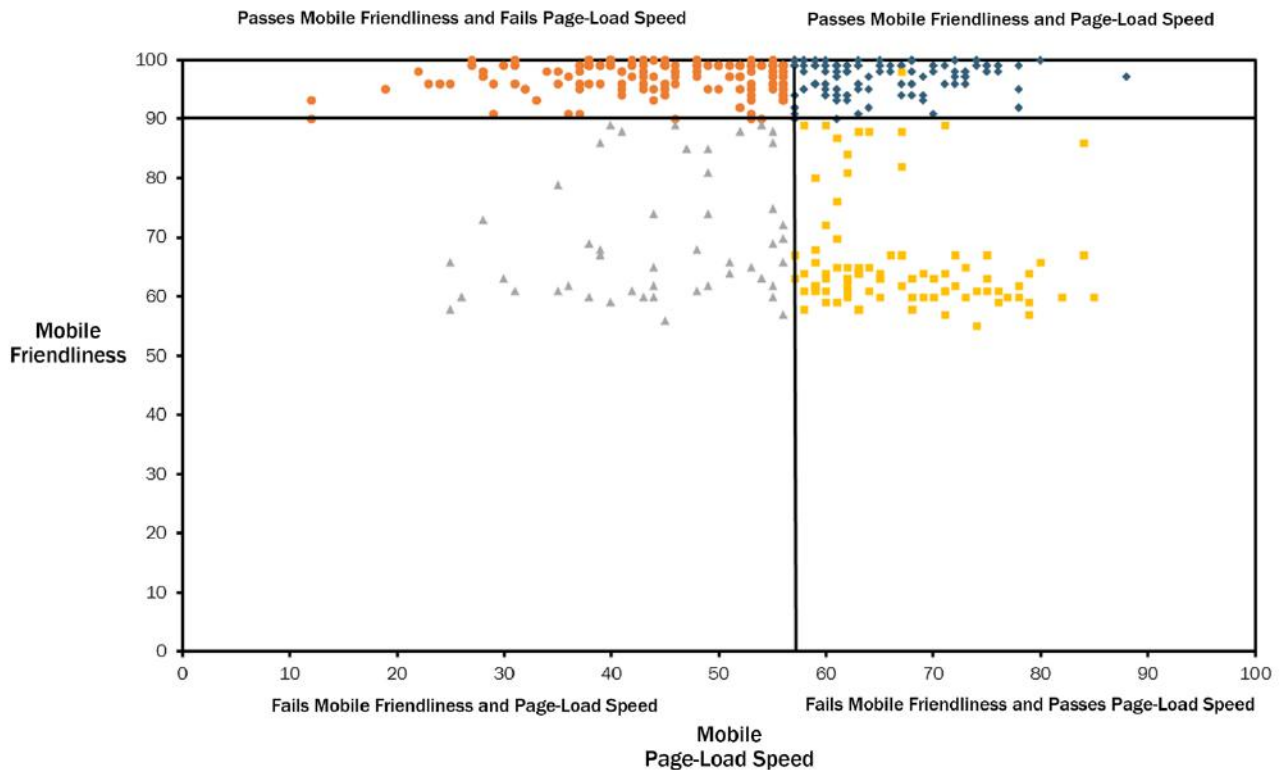
The one-third of state websites that were not mobile friendly often display content not configured to fit mobile screens, with buttons or links that are too small to be easily clicked and fonts too small to read. Each problem can be easily fixed, such as by ensuring all buttons are at least 48 CSS pixels tall and wide when tapped, and by configuring the viewport so font sizes are scaled across devices.[60] Three of Washington's websites suffered from a combination of these problems, scoring 74 and below. As a result, Washington ranked 34th in mobile friendliness despite possessing three websites with a score of 100. The ranking indicates the state has lacked consistency in developing mobile-friendly websites. The top-ranking state, Mississippi, did not have a single website fail the mobile-friendliness test. Twenty states had at least one website with a perfect score. Five states—Colorado, Hawaii, Kansas, North Carolina, and Washington—had three websites score a perfect 100 for mobile friendliness.

Table 6 highlights the mobile-friendliness ranking for each state. This ranking is an average of states' raw scores for the eight types of websites tested. Map 4 displays state scores as a percentile, with darker shadings representing a better ranking. The best overall states for mobile friendliness were Mississippi, Iowa, and Montana; the worst states were Louisiana, Nevada, and New Hampshire. Interestingly, all fifty states had at least one website with a passing score. For example, five of Louisiana's websites scored under 70, yet two passed—and its business registration site (www.revenue.louisiana.gov/Businesses/BusinessRegistration) earned a perfect score. This suggests each state already has the ability to improve the mobile friendliness of its other government websites.

Table 6: Average Mobile Friendliness Scores and Rank

Rank	State	Score	Rank	State	Score
1	Mississippi	97.0	26	Wyoming	89.5
2	Iowa	95.9	27	New York	89.4
3	Montana	95.3	27	Alabama	89.4
4	Pennsylvania	94.6	29	Delaware	89.0
5	North Carolina	94.5	30	South Carolina	88.9
6	Indiana	94.4	31	Oklahoma	87.9
7	Utah	94.1	32	Washington	86.6
8	Missouri	93.9	33	Kentucky	86.3
9	Wisconsin	93.8	34	Oregon	85.9
10	South Dakota	93.5	35	Rhode Island	83.4
11	Maine	93.4	36	Minnesota	82.4
11	Georgia	93.4	37	New Mexico	81.9
13	Maryland	93.0	37	New Jersey	81.9
14	Hawaii	92.8	37	Vermont	81.9
15	Virginia	92.5	40	Alaska	79.9
16	Kansas	92.4	41	Nebraska	79.6
17	Colorado	92.3	42	North Dakota	78.9
18	Idaho	92.0	43	Illinois	76.8
19	Massachusetts	91.6	44	Florida	74.9
19	California	91.6	45	Connecticut	74.5
21	Arkansas	91.5	46	West Virginia	74.1
21	Ohio	91.5	47	Texas	73.8
21	Michigan	91.5	48	New Hampshire	73.5
24	Arizona	91.4	49	Nevada	73.0
25	Tennessee	90.6	50	Louisiana	72.4

Map 4: Mobile Friendliness
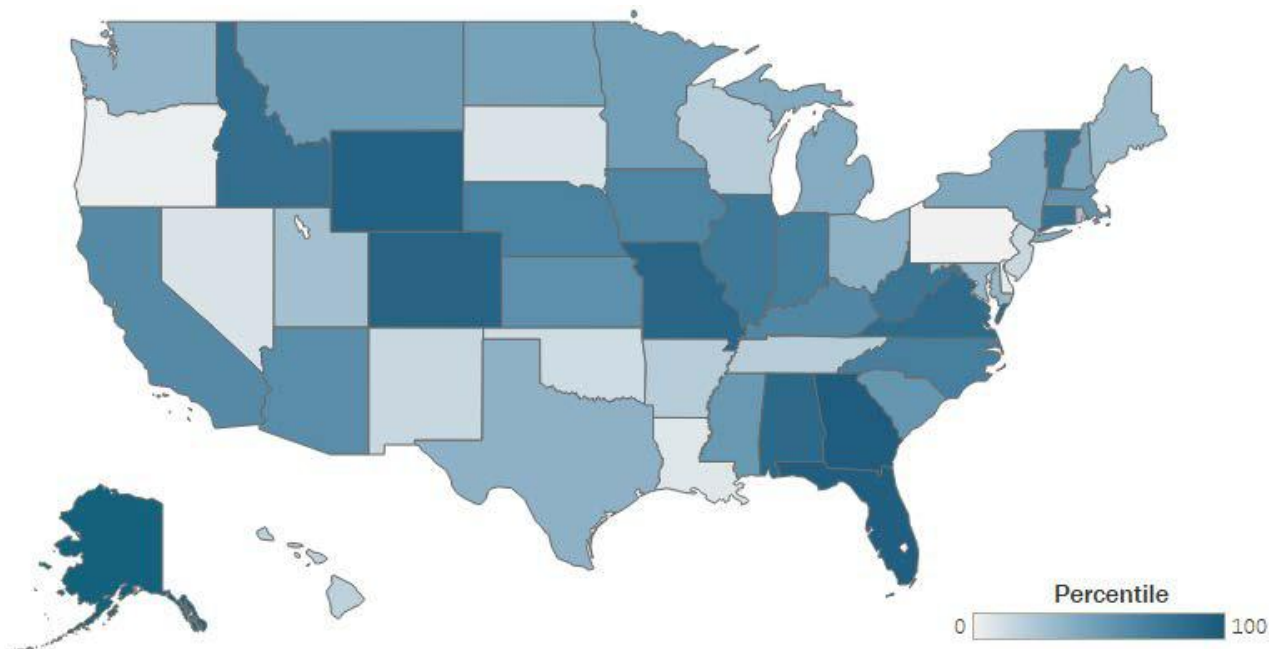
SECURITY

It is vital that citizens be able to securely interact with state government websites. Insecure websites put the sensitive data and browsing history of individuals at risk. Consequently, several states have information security standards for government websites.[61] For example, several states require sites to use secure protocols, such as HTTPS, to collect sensitive personal data.

In this report, we assess whether websites implemented HTTPS, a standard protocol to encrypt communications between web browsers and websites, and DNSSEC, a set of protocols used to verify that the IP address associated with a particular domain name is authentic.[62] To test whether a site correctly implements HTTPS, we used Qualys SSL Labs' SSL Server Test. The tool inspects Secure Sockets Layer (SSL) certificates that most HTTPS connections use, and scores web servers based on their certificate, protocol support, key strength, and cipher strength.[63] We determined a score of 0 to 100 points for each website by weighting the numerical values given to each criterion with the presence of any major security vulnerabilities—such as a POODLE attack—the test found. Google Chrome was used to determine whether a website enabled HTTPS when the SSL Server Test could not connect to a server. If the website did enable HTTPS, it received a score of 100. If it did not, it received a score of 78, which is the average score of all the websites that did not default to using HTTPS, but the SSL Server Test was able to test.

The benchmark for state government websites to pass the HTTPS test was a score of 90. We choose this cutoff after reviewing the average scores of the 20 most popular nongovernment websites while also considering the importance of government websites.[64] Passing websites must be able to use HTTPS, have no major security flaws, and have only minor problems with their SSL protocols. We found that only 44 percent of websites passed the HTTPS test.

There were, however, website types that performed better on the HTTPS test. While no website type averaged a passing score for the HTTPS test, half of the types had more than 50 percent of their websites pass the test. The best-performing website type for the HTTPS test was websites for obtaining information about driver's licenses—54 percent passed. The worst collective group was websites providing hunting and fishing license information—32 percent passed.

Using Verisign Labs' DNSSEC Debugger tool, we also tested websites to see whether they enabled DNSSEC protocol. DNSSEC is important because it ensures Internet users arrive at their requested website by validating the address. Without it, hackers can redirect a request to their own website to steal confidential information such as user names and passwords.[65] Verisign's tool tests whether each digital certificate is signed and thus verified. The tool provides grades for each step in the "chain of trust," with a "good," "warning," or "error" label.[66] We gave websites with only "good" or "warning" labels a score of 100 and scored websites with "error" warnings a 0.

Only 13 percent of state websites enabled DNSSEC. The primary state government website enabled DNSSEC only 16 percent of the time, yet that is still more than any other website type. Compared with the federal government, states are doing poorly on DNSSEC. Last year we found that 88 percent of the most popular federal government websites enabled DNSSEC.[67] In total, fewer than 4 percent of state websites passed both security tests. Over half (53 percent) of websites passed at least one of the HTTPS and DNSSEC tests. There was no pattern of the type of website (i.e., domain, elections website, etc.) that passed both. Table 7 presents the average score and percentage of websites that passed both tests, by website type.

Table 7: Average HTTPS and DNSSEC Scores and Passing Percentages, by Website Type

Type	Average HTTPS Score	Average DNSSEC Score	HTTPS Percentage Passed	DNSSEC Percentage Passed
Primary	85.8	16	50	16
Driver's Licenses	85.0	14	54	14
Taxes	84.3	14	40	14
Vital Records	80.2	14	36	14
Elections	84.7	12	50	12
Business Registrations	85.7	14	50	14
Fishing/Hunting Licenses	77.5	12	32	12
Traffic Citations	83.8	8	42	8

Some sites implemented HTTPS, but did not adhere to best practices. For example, many sites were not configured to use HTTP Strict Transport Security (HSTS), a web server setting that prevents users from switching to an unencrypted channel when sending data. In addition, a few sites were using outdated implementations of HTTPS that contained significant vulnerabilities. For example, the Washington State Department of Health, which maintains the vital records for the state, implements HTTPS on its website (www.doh.wa.gov/LicensesPermitsandCertificates/BirthDeathMarriageandDivorce), but its site is vulnerable to a POODLE attack—an attack that forces sites to use an outdated SSL 3.0 protocol, which has a known vulnerability attacks can exploit.[68] And Arizona's primary website (az.gov) was vulnerable to a DROWN attack—an attack that exploits a known vulnerability in the SSLv2 protocol some web servers are misconfigured to allow.[69] More common issues were a lack of perfect forward secrecy, weak Diffie-Hellman, and servers that accepted RC4 ciphers only with older protocols. Not adhering to best practices for HTTPS leaves users vulnerable to attacks. For example, perfect forward secrecy is used to create unique keys for every session between a user and a web server, ensuring that even if attackers successfully compromise one session, they are unable to decrypt the data in any of the others.[70] In addition, Diffie-Hellman allows for cryptographic keys to be shared securely between a server and web browsers, and weak implementations allow these keys to be cracked. RC4 is dangerous because it has known vulnerabilities.[71] State government websites can avoid these security issues by following security best practices when configuring their web servers.

While security is a weakness for many state government websites, some states performed better than others. To find the best and worst states for security, we averaged the z-scores of each state's HTTPS and DNSSEC scores. The best states for security were Idaho, Kentucky, and Massachusetts. The states that performed the worst over the two tests were Alabama, Pennsylvania, and Louisiana. Kentucky (six websites), Virginia (three websites), and Idaho (two websites) were the only states that had multiple websites pass each test. In total, 43 states did not pass both security tests for any of the eight types of websites we tested. Table 8 and Map 5 illustrates each state's HTTPS ranking.[72] Table 9 and Map 6 illustrate the DNSSEC rankings.[73]

Table 8: Average HTTPS Scores and Rank

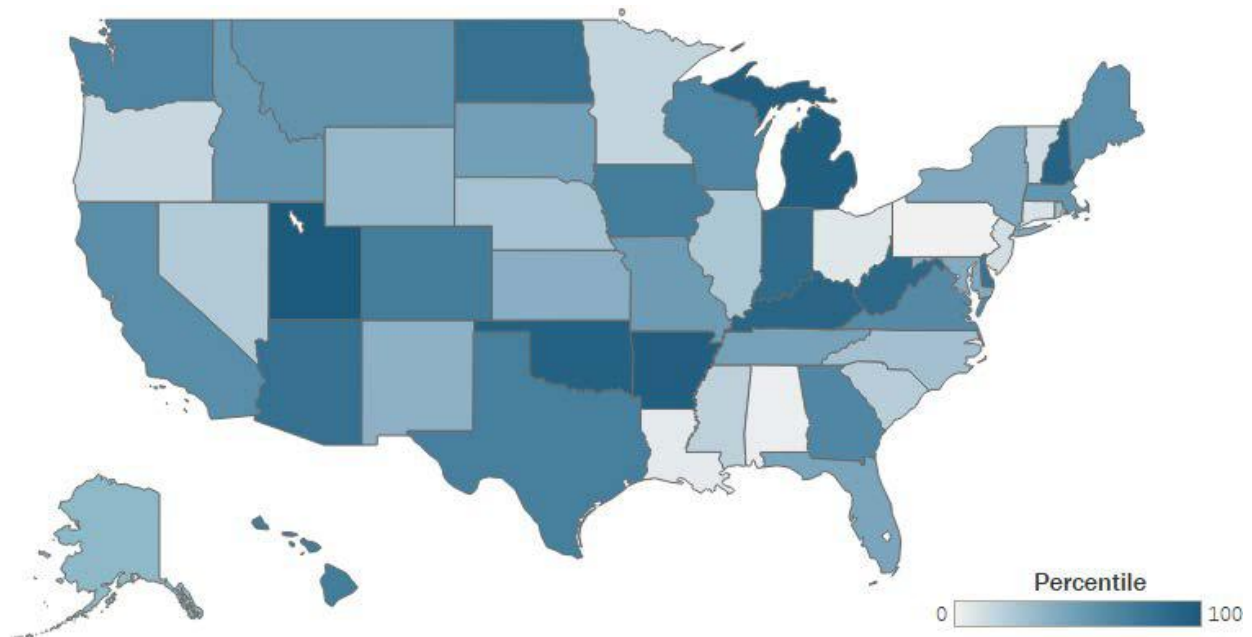| Rank	State	Score	Rank	State	Score
1	Utah	96.4	26	South Dakota	85.3
2	Arkansas	93.0	27	Tennessee	85.1
2	Michigan	93.0	28	Florida	84.4
4	Oklahoma	91.5	29	New York	84.3
5	New Hampshire	90.1	30	Maryland	83.1
6	Kentucky	89.3	31	Kansas	83.0
7	West Virginia	89.1	32	New Mexico	82.9
8	Indiana	89.0	33	Alaska	82.6
9	North Dakota	88.5	34	Wyoming	81.8
9	Arizona	88.5	35	North Carolina	81.3
11	Delaware	88.1	35	Rhode Island	81.3
12	Hawaii	87.8	37	Nebraska	80.5
12	Colorado	87.8	38	Illinois	80.1
12	Iowa	87.8	39	Nevada	79.9
15	Texas	87.5	40	South Carolina	79.4
16	Washington	87.4	41	Mississippi	78.1
16	Wisconsin	87.4	42	Minnesota	75.5
18	Georgia	87.3	43	Oregon	75.4
19	Virginia	87.0	44	Vermont	75.3
20	California	86.9	45	New Jersey	74.6
21	Maine	86.5	46	Connecticut	73.6
22	Montana	86.4	47	Ohio	73.4
23	Massachusetts	86.1	48	Louisiana	66.5
24	Idaho	85.9	49	Alabama	64.5
25	Missouri	85.4	50	Pennsylvania	64.0

Map 5: HTTPS

Percentile
0 — 100

Table 9: Average DNSSEC Scores and Rank

Rank	State	Score	Rank	State	Score
1	Idaho	100.0	10	California	0.0
2	Kentucky	87.5	10	Maine	0.0
2	Virginia	87.5	10	Montana	0.0
2	Massachusetts	87.5	10	Missouri	0.0
2	Minnesota	87.5	10	South Dakota	0.0
6	New Jersey	75.0	10	Tennessee	0.0
7	Vermont	62.5	10	Florida	0.0
8	Maryland	50.0	10	New York	0.0
9	Texas	12.5	10	Kansas	0.0
10	Utah	0.0	10	New Mexico	0.0
10	Arkansas	0.0	10	Alaska	0.0
10	Michigan	0.0	10	Wyoming	0.0
10	Oklahoma	0.0	10	North Carolina	0.0
10	New Hampshire	0.0	10	Rhode Island	0.0
10	West Virginia	0.0	10	Nebraska	0.0
10	Indiana	0.0	10	Illinois	0.0
10	North Dakota	0.0	10	Nevada	0.0
10	Arizona	0.0	10	South Carolina	0.0
10	Delaware	0.0	10	Mississippi	0.0
10	Hawaii	0.0	10	Oregon	0.0
10	Colorado	0.0	10	Connecticut	0.0
10	Iowa	0.0	10	Ohio	0.0
10	Washington	0.0	10	Louisiana	0.0
10	Wisconsin	0.0	10	Alabama	0.0
10	Georgia	0.0	10	Pennsylvania	0.0

Map 6: DNSSEC

Percentile
0 — 100
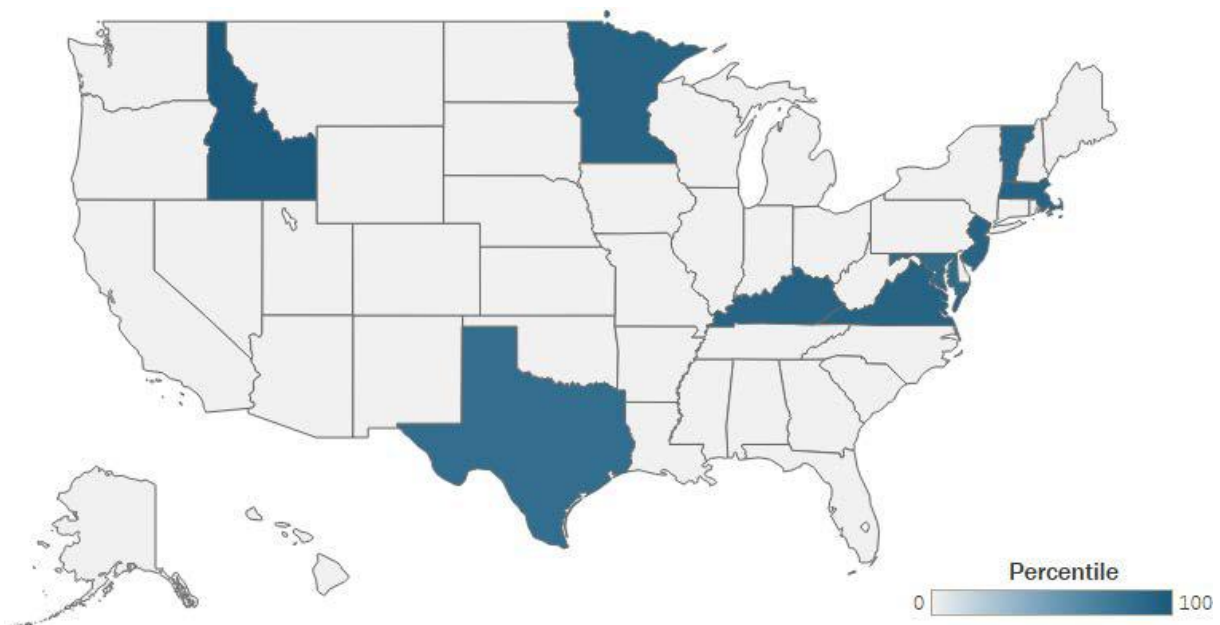
ACCESSIBILITY

Inaccessible websites make it difficult for some people with disabilities to use them, particularly the 8 million Americans who have a visual disability and the more than 4 million Americans who have a hearing disability.[74] In addition, many people in the United States use assistive technology, such as screen readers, to access websites, so websites that do not conform to accessibility guidelines can be difficult or impossible to navigate and use.[75] Several states, such as California and Idaho, have statewide accessibility standards or policies.[76] Yet many state government websites are still not accessible. There are several ways to make a website more accessible to people with disabilities, such as providing text alternatives to audio and visual content, using high-contrast colors, and avoiding the use of flashing animations that can cause seizures.[77] Clearer designs of accessible websites can also help all people navigate them more easily.[78]

We assessed the accessibility of state government websites for this report using AChecker's Web Accessibility Checker. It analyzes URLs to identify accessibility issues based on WCAG 2.0, a W3C standard.[79] Since our testing, the W3C has published the WCAG 2.1 guidelines, which builds on the previous guidelines.[80] The WCAG 2.0 standard has three levels of conformance (A, AA, AAA), and this tool tests for conformance to level AA. The tool examines websites for known problems, likely problems, and potential problems. Our report only penalizes websites if the tool detects known problems, and then we assign a score on a scale of 0 to 100. While automated accessibility tools are imperfect, and in practice should be supplemented with manual reviews, they provide a good indication of whether agencies are designing websites that adhere to accessibility guidelines. A website must score an 85 or higher to pass the accessibility test. This benchmark is based on a review of the 20 most popular nongovernment websites.[81] Passing websites are generally compliant with the WCAG 2.0 AA standard.[82]

We found that 59 percent of state government websites passed the accessibility test. In total, over 12 percent of websites received a perfect accessibility score, and the median score was a passing 87. Nine percent of websites scored a 60 or below. These low scores indicate such websites are highly inaccessible.

There was wide variance in pass rates based on the type of website. Websites that provide information about vital records passed the accessibility test more than any other type—74 percent of the time. Yet two types of websites passed less than half the time: taxes (48 percent), and fishing and hunting licenses (44 percent). Poor accessibility in websites for those services makes it more difficult for individuals to engage in civic life. Table 10 presents the average score and percentage of websites that passed for each type.

Table 10: Average Accessibility Scores and Passing Percentages, by Website Type

| Type	Average Score	Percentage Passed
Primary	83.0	52
Driver's Licenses	85.6	70
Taxes	79.5	48
Vital Records	87.7	74
Elections	83.9	62
Business Registration	83.7	56
Fishing/Hunting Licenses	79.5	44
Traffic Citations	83.8	66

Unfortunately, many of the states with the highest percentage of residents with disabilities performed poorly on the test. For example, West Virginia has the highest percentage of people with disabilities of any state, yet ranked 46th for its average accessibility score.[83] And none of the 10 states with the highest percentage of people with disabilities ranked in the top 10 in the accessibility rankings.[84]

Interestingly, each state had at least one website pass the test, suggesting every state has at least one accessible website they can look to as an exemplar to model for their poorer scoring websites. For example, Alabama's website for traffic citations (traffic.alacourt.gov) was one of the least accessible websites, but its website for tax information (myalabamataxes.alabama.gov) received a perfect score. States could also look at the design of Nevada's state websites to improve their own. Five of the state's websites scored 100, which was the most of any state. Table 11 lists the overall rank and scores for each state for accessibility, and Map 7 visualizes each state's percentile ranking.

Table 11: Average Accessibility Scores and Rank

Rank	State	Score	Rank	State	Score
1	Michigan	93.6	26	Tennessee	84.1
2	Georgia	93.4	27	Kansas	83.5
2	California	93.4	27	Mississippi	83.5
4	New York	92.5	29	Montana	83.3
5	Missouri	92.4	30	Alaska	83.0
6	Colorado	91.8	31	Wyoming	82.9
7	Rhode Island	91.5	31	Ohio	82.9
8	Virginia	90.8	33	Hawaii	82.8
9	Nevada	90.6	34	Delaware	81.6
10	Arizona	90.4	34	New Hampshire	81.6
11	Idaho	90.1	36	Nebraska	81.1
11	Massachusetts	90.1	37	Illinois	81.0
13	North Dakota	89.9	38	Wisconsin	80.9
14	Maine	89.5	39	Texas	79.9
15	North Carolina	88.8	40	Maryland	79.0
16	Vermont	88.6	41	Florida	78.8
17	South Carolina	87.6	42	Alabama	76.9
18	Washington	86.6	43	South Dakota	76.0
19	Iowa	85.8	44	Kentucky	75.0
19	Oregon	85.8	45	New Jersey	74.5
21	New Mexico	85.5	46	West Virginia	72.0
21	Minnesota	85.5	47	Louisiana	67.1
23	Utah	85.0	48	Connecticut	65.1
23	Oklahoma	85.0	49	Pennsylvania	63.8
25	Arkansas	84.5	50	Indiana	58.3

Map 7: Accessibility
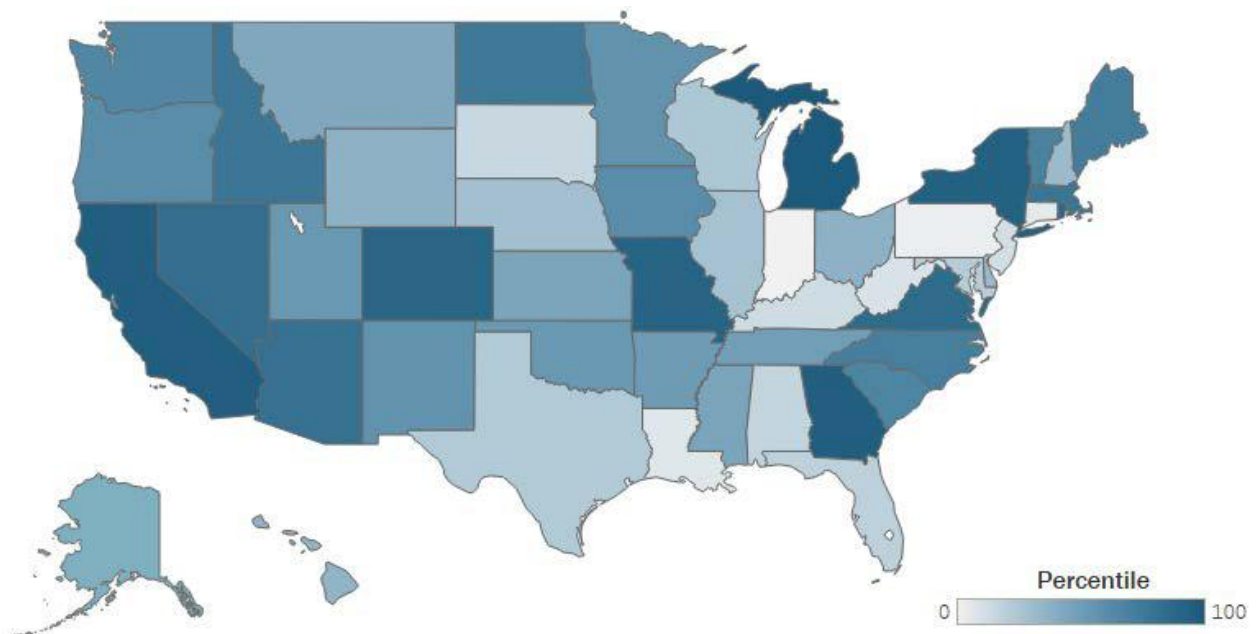
RECOMMENDATIONS

This report shows 99 percent of the state government websites we tested failed at least one test, and 63 percent failed three or more tests. There are several steps states can take to improve their websites. Specifically, states should:

- Mandate government websites implement security best practices
- Require government websites to be mobile friendly
- Consolidate websites to create a single face of government
- Find local partners to test accessibility of government websites
- Adopt a web analytics program

MANDATE GOVERNMENT WEBSITES IMPLEMENT SECURITY BEST PRACTICES

State government websites performed poorly on security. More than half of the state government websites we tested were not using HTTPS, and 87 percent had not implemented DNSSEC. Yet both are easily achievable security practices, as evidenced by both having been widely adopted on federal government websites.[85]

Websites that do not deploy these security measures put the public's privacy and security at risk. While some agencies within state governments, such as California's Department of Education, require websites to use HTTPS when collecting personal data, all states should mandate all their government websites—not just the ones that transmit personal data—implement HTTPS and DNSSEC.[86] Implementing these security measures ensures individuals can privately and securely browse government websites.[87]

REQUIRE GOVERNMENT WEBSITES TO BE MOBILE FRIENDLY

Half of state government websites failed the mobile page-load speed test and one-third failed the mobile-friendliness test. Moreover, most states have not created any requirements for state government websites to be mobile friendly. However, many people primarily access the Internet through a mobile device. For example, Massachusetts reported that out of the roughly 2.5 million page views its website Mass.gov receives a month, 37 percent come from mobile devices.[88] In particular, low-income individuals are more likely to use a mobile device, as more people earning $30,000 or less a year own a smartphone than a laptop or computer.[89] Consequently, state government agencies should review their website analytics and ensure their websites perform well for mobile users.

CONSOLIDATE WEBSITES TO CREATE A SINGLE FACE OF GOVERNMENT

Many state governments have multiple websites spread across different domains. These websites often have different appearances and functionality, and their quality varies. For example, in Illinois, the primary government website is illinois.gov. Yet, most residents must navigate to a different website, hosted on the domain cyberdriveillinois.com, to find information about obtaining a driver's license. A domain name such as this can be particularly confusing for users because it uses a ".com" instead of a ".gov" top-level domain, thereby creating uncertainty about whether it is actually an official government website.[90] This problem is aggravated by the top listings on some search engines sometimes being private-sector websites. For example, the top result for a Google search for "driver's license Louisiana" is a private sector website.[91]

To make it clear to users they are on a state government website, states should use a common style across all their websites and consolidate their content in a single website. Creating a uniform style would make it easier for users to find the content they are seeking.[92] Reducing the number of websites also decreases the technical workload across state government, such as by reducing the number of both SSL certificates to manage and domains on which to implement DNSSEC. Lastly, website consolidation offers an opportunity for state governments to review the design and content of their websites and remove old or duplicated information. States can begin the process of creating a single face of government by identifying their most popular services and integrating them with their primary website.

FIND LOCAL PARTNERS TO TEST ACCESSIBILITY OF GOVERNMENT WEBSITES

State governments should ensure their agencies' websites are accessible to all users. While some states have accessibility requirements for state government websites, and several states performed well, 26 state governments had a failing average score on the accessibility test. We found that the states that performed the best on accessibility engaged directly with people with disabilities to test and provide feedback on their sites. For example, Massachusetts partnered with the Perkins School for the Blind, the oldest such school in the United States, to test the accessibility of its websites.[93] Similarly, Georgia partnered with an accessibility lab at the Georgia Institute of Technology to perform similar accessibility testing.[94] To ensure their websites are accessible, state governments, and their commercial partners, should partner with local groups that include people with disabilities to help them test and define the accessibility of their websites.

ADOPT A WEB ANALYTICS PROGRAM

State governments should regularly assess their websites across a variety of metrics and track their performance over time. At a minimum, these metrics should include page-load speed, mobile friendliness, security, and accessibility. States can create their own tools, or use publicly available ones, to automate this testing. Ideally, the results of these tests should be publicly available via a government dashboard to increase public and internal accountability. States should develop guidelines for testing, such as which sites to include, how frequently to test, and how to evaluate the results. The leadership of agencies with sites that fall beneath a certain threshold should be both directed to develop remediation plans and held responsible for executing on those plans.

The federal government, through the General Services Administration's (GSA) Digital Analytics Program, provides some open-source code states can use to develop basic web analytics dashboards.[95] These dashboards can help stakeholders both inside and outside government understand what users are doing on government sites. Several cities and counties have begun using the code, with one Los Angeles city staffer even publishing a guide for how developers in other cities can implement the code.[96]

APPENDIX

Table 12: Primary State Government Website Overall Rankings

Rank	State	Website	Score
1	Georgia	georgia.gov	83.8
2	Minnesota	mn.gov/portal	81.3
3	Virginia	virginia.gov	81.0
4	South Carolina	sc.gov/Pages/default.aspx	78.7
5	Idaho	idaho.gov	78.0
6	Massachusetts	mass.gov	77.8
7	Missouri	mo.gov	77.7
8	Indiana	in.gov/core	77.6
9	North Carolina	nc.gov	76.1
10	Rhode Island	ri.gov	74.4
11	Colorado	colorado.gov	74.2
12	Arizona	az.gov	74.1
13	Montana	mt.gov	70.8
14	Maryland	maryland.gov/Pages/default.aspx	70.6
15	Nebraska	nebraska.gov	70.0
16	Ohio	ohio.gov	69.8
17	Alabama	alabama.gov	69.4
18	Iowa	iowa.gov	69.3
19	New York	ny.gov	69.1
20	Maine	maine.gov/portal/index.html	69.0
21	Delaware	delaware.gov	68.6
22	Hawaii	portal.ehawaii.gov	67.9
23	Oklahoma	ok.gov	67.8
24	Utah	utah.gov/index.html	66.3
25	Vermont	vermont.gov/portal	65.1

Primary State Government Website Overall Rankings Continued

Rank	State	Website	Score
26	Tennessee	tn.gov	64.7
27	West Virginia	wv.gov/Pages/default.aspx#home	64.7
28	Texas	texas.gov	64.6
29	North Dakota	nd.gov	64.5
30	Illinois	www2.illinois.gov	64.0
31	Michigan	michigan.gov	63.8
32	Mississippi	ms.gov	63.6
33	California	ca.gov	63.3
34	Wyoming	wyo.gov	62.1
35	New Mexico	newmexico.gov	62.0
36	Washington	access.wa.gov	61.8
37	Alaska	alaska.gov	61.7
38	Arkansas	arkansas.gov	61.5
39	Connecticut	portal.ct.gov	61.4
40	New Hampshire	nh.gov	60.8
41	New Jersey	nj.gov	59.5
42	Wisconsin	wisconsin.gov/Pages/Home.aspx	59.3
43	Oregon	oregon.gov/pages/index.aspx	58.9
44	Nevada	nv.gov	56.6
45	Kansas	kansas.gov/	56.6
46	Kentucky	kentucky.gov/Pages/home.aspx	54.7
47	South Dakota	sd.gov	51.5
48	Florida	myflorida.com	49.6
49	Pennsylvania	pa.gov	46.8
50	Louisiana	louisiana.gov	46.0

Table 13: Driver's License Website Overall Rankings

Rank	State	Website	Score
1	Vermont	vermont.gov/licenses/new	89.2
2	Georgia	georgia.gov/popular-topic/drivers-licenses	87.0
3	Washington	dol.wa.gov/driverslicense/gettingalicense.html	83.7
4	Missouri	dor.mo.gov/drivers	83.5
5	California	dmv.ca.gov/portal/dmv/detail/dl/dl	83.5
6	Virginia	dmv.virginia.gov/drivers/#applying.asp	82.9
7	Idaho	itd.idaho.gov/itddmv	82.0
8	Kansas	ksrevenue.org/dovobtainingdl.html	81.7
9	Wyoming	dot.state.wy.us/home/driver_license_records/new_licenses.html	81.3
10	Colorado	colorado.gov/pacific/dmv/new-colorado-0	80.7
11	Illinois	cyberdriveillinois.com/services/newresidentshowdoi.html	80.4
12	Michigan	michigan.gov/sos/0,4670,7-127-1627_8669_9040_9042_47086---,00.html	80.0
13	New York	dmv.ny.gov/driver-license/get-driver-license	79.7
14	South Carolina	scdmvonline.com/Driver-Services/Drivers-License	79.3
15	New Jersey	state.nj.us/mvc/Licenses	78.7
16	South Dakota	dps.sd.gov/driver-licensing	78.7
17	Tennessee	tn.gov/safety/topic/classd	78.1
18	Maine	maine.gov/sos/bmv/licenses/getlicense.html	78.0
19	Arkansas	dfa.arkansas.gov/offices/driverServices/Pages/FAQ's.aspx	77.8
20	North Dakota	dot.nd.gov/divisions/driverslicense/dlrequirements.htm	77.6
21	Maryland	mva.maryland.gov/drivers/apply/apply.htm	77.6
22	Alaska	doa.alaska.gov/dmv/akol/new2ak.htm	76.7
23	Kentucky	drive.ky.gov/driver-licensing/Pages/Drivers-License-and-ID-Card.aspx	76.4
24	Utah	dld.utah.gov/licensingid-cards	75.7
25	New Mexico	mvd.newmexico.gov/apply-for-new-driver-s-license.aspx	75.5

Driver's License Website Overall Rankings Continued

Rank	State	Website	Score
26	North Carolina	ncdot.gov/dmv/driver/license	75.0
27	Minnesota	dps.mn.gov/divisions/dvs/Pages/dvs-content-detail.aspx?pageID=551	74.2
28	Arizona	azdot.gov/motor-vehicles/NewtoAZ/welcome!	72.9
29	Iowa	iowadot.gov/mvd/driverslicense/new-iowa-residents	72.8
30	Nebraska	dmv.nebraska.gov/dl/driver-licensing-services	72.8
31	Florida	flhsmv.gov/ddl/firstflorida.html	72.5
32	Oklahoma	ok.gov/dps/Obtain_an_Oklahoma_Driver_License_ID_Card	72.4
33	Wisconsin	wisconsindot.gov/Pages/dmv/license-drvs/how-to-apply/get-lic.aspx	72.0
34	Hawaii	portal.ehawaii.gov/residents/newcomers-guide/getting-a-drivers-license	71.7
35	Mississippi	dps.state.ms.us/driver-services/new-drivers-license	71.4
36	Massachusetts	mass.gov/orgs/massachusetts-registry-of-motor-vehicles	71.0
37	Oregon	oregon.gov/ODOT/DMV/pages/driverid/licenseget.aspx	68.6
38	Delaware	dmv.de.gov/services/driver_services/drivers_license/dr_lic_gen_req.shtml	67.9
39	New Hampshire	nh.gov/safety/divisions/dmv/driver-licensing/index.htm	67.7
40	Nevada	dmvnv.com/nvdl.htm	66.1
41	Indiana	in.gov/bmv/2532.htm	66.0
42	Texas	dps.texas.gov/DriverLicense	64.9
43	Montana	dojmt.gov/driving/driver-licensing	64.3
44	Rhode Island	dmv.ri.gov/licenses	62.6
45	Louisiana	web01.dps.louisiana.gov/omv1.nsf/58c968bd569b099986256cdc000806eb/037c1c72e5cbc226862564ae006ccdd2?OpenDocument	61.1
46	West Virginia	transportation.wv.gov/DMV/Drivers/Pages/Drivers-Licenses.aspx	60.7
47	Ohio	bmv.ohio.gov/driver-license.aspx	58.7
48	Pennsylvania	dmv.pa.gov/driver-services/driver-licensing/pages/get-driver-license.aspx	57.4
49	Connecticut	ct.gov/dmv/cwp/view.asp?a=805&q=244776	54.1
50	Alabama	dps.alabama.gov/Home/wfContent.aspx?ID=30&PLH1=plhDriverLicense-DocumentRequirementsAndFees	49.5

Table 14: Taxes Websites Overall Rankings

Rank	State	Website	Score
1	Massachusetts	mass.gov/service-details/tax-forms-and-instructions	85.2
2	Georgia	dor.georgia.gov/georgia-tax-center-info	84.7
3	Colorado	colorado.gov/tax	83.9
4	Virginia	tax.virginia.gov	83.9
5	North Carolina	dor.state.nc.us	82.6
6	Idaho	tax.idaho.gov	81.8
7	New York	tax.ny.gov	81.2
8	Alabama	myalabamataxes.alabama.gov/_/	80.7
9	Maine	www.maine.gov/revenue	77.3
10	Washington	dor.wa.gov	76.6
11	Ohio	tax.ohio.gov	76.6
12	Tennessee	tn.gov/revenue/section/taxes	76.5
13	Vermont	tax.vermont.gov	76.2
14	New Hampshire	revenue.nh.gov	76.1
15	Missouri	dor.mo.gov	76.0
16	Mississippi	dor.ms.gov/Pages/default.aspx	75.8
17	Wyoming	revenue.wyo.gov/	75.6
18	Iowa	tax.iowa.gov	75.2
19	Texas	comptroller.texas.gov/taxes	74.4
20	Michigan	michigan.gov/taxes	73.8
21	West Virginia	tax.wv.gov/Pages/default.aspx	73.8
22	Kentucky	revenue.ky.gov/Pages/index.aspx	71.9
23	Kansas	ksrevenue.org	71.7
24	Montana	revenue.mt.gov	71.0
25	Hawaii	tax.hawaii.gov	68.8

Taxes Websites Overall Rankings Continued

Rank	State	Website	Score
26	Minnesota	revenue.state.mn.us/Pages/default.aspx	68.0
27	Oklahoma	ok.gov/tax	67.4
28	Arkansas	arkansas.gov/services/list/category/citizen-tax-center	67.3
29	South Carolina	dor.sc.gov	66.4
30	Alaska	tax.alaska.gov	66.3
31	Utah	tax.utah.gov	65.4
32	Oregon	oregon.gov/dor/Pages/index.aspx	63.9
33	California	taxes.ca.gov	63.6
34	North Dakota	nd.gov/tax	62.4
35	Delaware	revenue.delaware.gov	61.5
36	Indiana	in.gov/dor	61.2
37	New Mexico	tax.newmexico.gov	61.1
38	Wisconsin	revenue.wi.gov/Pages/home.aspx	60.7
39	Rhode Island	tax.ri.gov	60.5
40	Arizona	azdor.gov/Individual.aspx	57.7
41	Illinois	revenue.state.il.us/#&panel1-1	57.6
42	South Dakota	dor.sd.gov	56.1
43	Florida	myflorida.com/taxonomy/business/taxes	54.6
44	Nebraska	revenue.nebraska.gov	53.3
45	New Jersey	state.nj.us/treasury/taxation	52.5
46	Nevada	tax.nv.gov/	52.0
47	Connecticut	ct.gov/drs/site/default.asp	48.9
48	Pennsylvania	revenue.pa.gov/GeneralTaxInformation/Pages/default.aspx#.Wh18oVWnFpg	47.0
49	Maryland	taxes.marylandtaxes.com	45.6
50	Louisiana	rev.state.la.us	39.3

Table 15: Vital Records Websites Overall Rankings

Rank	State	Website	Score
1	Vermont	healthvermont.gov/stats/vital-records	84.7
2	Virginia	vdh.virginia.gov/vital-records	83.4
3	Georgia	dph.georgia.gov/VitalRecords	81.6
4	Massachusetts	mass.gov/orgs/registry-of-vital-records-and-statistics	78.8
5	Arkansas	healthy.arkansas.gov/programs-services/program/certificates-and-records	78.1
6	Colorado	colorado.gov/pacific/cdphe/categories/services-and-information/birth-death-and-other-vital-records	76.8
7	Iowa	idph.iowa.gov/health-statistics/vital-records	76.6
8	Utah	vitalrecords.utah.gov	75.2
9	New York	health.ny.gov/vital_records	75.1
10	Montana	dphhs.mt.gov/vitalrecords	74.7
11	Maryland	health.maryland.gov/vsa/Pages/home.aspx	74.7
12	California	cdph.ca.gov/Programs/CHSI/Pages/Vital-Records.aspx	73.4
13	South Carolina	scdhec.gov/VitalRecords/BirthCertificates	72.9
14	Wisconsin	dhs.wisconsin.gov/vitalrecords/index.htm	72.8
15	Michigan	michigan.gov/mdhhs/0,5885,7-339-71551_4645--,00.html	72.7
16	Tennessee	tn.gov/health/health-program-areas/vital-records/certificate.html	70.8
17	Washington	doh.wa.gov/LicensesPermitsandCertificates/BirthDeathMarriageandDivorce	70.4
18	Alaska	dhss.alaska.gov/dph/VitalStats/Pages/default.aspx	69.3
19	North Dakota	ndhealth.gov/vital	68.8
20	North Carolina	vitalrecords.nc.gov	68.7
21	Maine	maine.gov/dhhs/mecdc/public-health-systems/data-research/vital-records/order	68.7
22	Hawaii	health.hawaii.gov/vitalrecords	68.5
23	Idaho	healthandwelfare.idaho.gov/Health/VitalRecordsandHealthStatistics/BirthDeathMarriageDivorceCertificates/tabid/82/Default.aspx	67.0
24	Illinois	dph.illinois.gov/topics-services/birth-death-other-records	66.8
25	Mississippi	msdh.ms.gov/msdhsite/_static/31,0,109.html	66.7

Vital Records Websites Overall Rankings Continued

Rank	State	Website	Score
26	Minnesota	health.state.mn.us/divs/chs/osr	65.2
27	Wyoming	health.wyo.gov/admin/vitalstatistics	64.3
28	Delaware	dhss.delaware.gov/dph/ss/vitalstats.html	62.0
29	Kentucky	chfs.ky.gov/dph/vital	61.0
30	Alabama	alabamapublichealth.gov/vitalrecords	60.6
31	Kansas	kdheks.gov/vital	60.6
32	Nebraska	dhhs.ne.gov/publichealth/pages/vitalrecords.aspx	60.5
33	South Dakota	doh.sd.gov/records	60.2
34	Rhode Island	health.ri.gov/records	59.5
35	Arizona	azdhs.gov/licensing/vital-records/index.php	57.7
36	Oregon	oregon.gov/oha/PH/BIRTHDEATHCERTIFICATES/GETVITALRECORDS/Pages/index.aspx	57.3
37	Ohio	www.odh.ohio.gov/vs	56.7
38	Missouri	health.mo.gov/data/vitalrecords	56.1
39	New Mexico	nmhealth.org/about/erd/bvrhs/vrp	56.0
40	Florida	floridahealth.gov/certificates/certificates	55.7
41	West Virginia	wvculture.org/vrr/va_select.aspx	55.4
42	Indiana	in.gov/isdh/26754.htm	54.2
43	New Jersey	state.nj.us/health/vital	53.8
44	Louisiana	dhh.louisiana.gov/index.cfm/subhome/21	53.4
45	Texas	dshs.texas.gov/vs	53.0
46	Oklahoma	ok.gov/health/Birth_and_Death_Certificates/Birth_Certificates/index.html	52.2
47	Nevada	nv.gov/Programs/BirthDeath/Birth_and_Death_Vital_Records_-_Home	51.7
48	Pennsylvania	health.pa.gov/MyRecords/Certificates/DeathCertificates/Pages/default.aspx	51.6
49	Connecticut	ct.gov/dph/cwp/view.asp?a=3132&q=388130	50.6
50	New Hampshire	nh.gov/vital_records.aspx	50.5

Table 16: Elections Websites Overall Rankings

Rank	State	Website	Score
1	Idaho	sos.idaho.gov/elect	89.7
2	Missouri	sos.mo.gov/elections	82.9
3	Iowa	sos.iowa.gov/elections/voterinformation/index.html	82.3
4	Ohio	sos.state.oh.us/elections/#gref	82.0
5	Colorado	sos.state.co.us/pubs/elections/main.html	81.9
6	Nevada	nvsos.gov/sos/elections	81.9
7	Arizona	azsos.gov/elections	81.7
8	Michigan	michigan.gov/sos/0,4670,7-127-1633---,00.html	81.3
9	Maine	maine.gov/sos/cec/elec	80.3
10	Kentucky	elect.ky.gov/Pages/default.aspx	80.2
11	California	sos.ca.gov/elections	79.7
12	Virginia	elections.virginia.gov	79.2
13	Kansas	kssos.org/elections/elections.html	79.1
14	Florida	dos.myflorida.com/elections	79.1
15	Utah	vote.utah.gov/vote/menu/index	79.1
16	Mississippi	sos.ms.gov/Elections-Voting/Pages/default.aspx	78.5
17	Montana	sos.mt.gov/elections/vote/index	77.9
18	Maryland	elections.state.md.us	77.7
19	Washington	sos.wa.gov/elections	77.0
20	Alaska	elections.alaska.gov	76.5
21	Rhode Island	elections.state.ri.us	75.9
22	Minnesota	sos.state.mn.us/elections-voting	75.2
23	Massachusetts	sec.state.ma.us/ele	74.6
24	South Carolina	scvotes.org	74.5
25	Wyoming	soswy.state.wy.us/elections	73.4

Elections Websites Overall Rankings Continued

Rank	State	Website	Score
26	Oklahoma	ok.gov/elections	72.6
27	South Dakota	sdsos.gov/elections-voting	72.5
28	Wisconsin	elections.wi.gov/elections-voting	72.3
29	Tennessee	sos.tn.gov/elections	72.2
30	New York	elections.ny.gov	72.0
31	Connecticut	portal.ct.gov/SOTS/Common-Elements/V5-Template---Redesign/Elections--Voting--Home-Page	72.0
32	West Virginia	sos.wv.gov/ELECTIONS/Pages/default.aspx	70.9
33	Oregon	sos.oregon.gov/voting-elections/Pages/default.aspx	70.8
34	Arkansas	sos.arkansas.gov/elections/Pages/default.aspx	70.8
35	Hawaii	elections.hawaii.gov	70.2
36	Alabama	sos.alabama.gov/alabama-votes/voter/election-information/2017	68.9
37	Illinois	elections.il.gov	68.7
38	Vermont	sec.state.vt.us/elections.aspx	68.2
39	Delaware	elections.delaware.gov/index.shtml	68.0
40	New Jersey	nj.gov/state/elections/index.html	67.2
41	North Carolina	ncsbe.gov	66.2
42	Indiana	n.gov/sos/elections	66.1
43	Texas	sos.state.tx.us/elections	66.0
44	Nebraska	sos.ne.gov/elec	65.7
45	North Dakota	vip.sos.nd.gov/PortalList.aspx	64.1
46	Georgia	mvp.sos.ga.gov/MVP/mvp.do	63.0
47	New Mexico	sos.state.nm.us/Voter_Information/Voter_Registration_Information.aspx	62.8
48	Pennsylvania	dos.pa.gov/votingelections/Pages/default.aspx	54.4
49	New Hampshire	sos.nh.gov/Elections.aspx	54.0
50	Louisiana	sos.la.gov/ElectionsAndVoting/GetElectionInformation/Pages/default.aspx	39.5

Table 17: Business Registration Websites Overall Rankings

Rank	State	Website	Score
1	Virginia	tax.virginia.gov/register-business-virginia	88.3
2	Georgia	georgia.gov/popular-topic/business-licenses	87.5
3	Arizona	azsos.gov/business	85.6
4	Massachusetts	mass.gov/dor/businesses/help-and-resources/starting-and-registering-a-business	84.5
5	Iowa	tax.iowa.gov/starting-business	82.9
6	Idaho	tax.idaho.gov/i-1159.cfm	81.8
7	Alaska	commerce.alaska.gov/web/cbpl/corporations/reservingregisteringbusinessname.aspx	80.8
8	California	sos.ca.gov/business-programs/business-entities/starting-business	80.1
9	Kansas	ksrevenue.org/busregistration.html	80.1
10	Nebraska	nebraska.gov/osbr/index.cgi	80.1
11	North Carolina	nc.gov/services/starting-business-nc/business-registration	79.9
12	Montana	sos.mt.gov/business/startup/index	79.6
13	Kentucky	onestop.ky.gov/Pages/default.aspx	79.5
14	Ohio	sos.state.oh.us/businesses/information-on-starting-and-maintaining-a-business/starting-a-business/#gref	79.3
15	Minnesota	sos.state.mn.us/business-liens/start-a-business/how-to-register-your-business	79.2
16	New Hampshire	revenue.nh.gov/faq/register-business.htm	78.9
17	Florida	dos.myflorida.com/sunbiz/start-business	78.2
18	Oklahoma	sos.ok.gov/business/infoSB.aspx	78.1
19	Rhode Island	ri.gov/taxation/BAR	77.9
20	Mississippi	sos.ms.gov/BusinessServices/Pages/default.aspx	77.9
21	Michigan	michigan.gov/taxes/0,4676,7-238-43519_43521_69027_69032-155361--,00.html	77.0
22	Missouri	openforbiz.mo.gov	77.0
23	Wisconsin	revenue.wi.gov/Pages/Businesses/New-Business-home.aspx	76.3
24	Maryland	commerce.maryland.gov/start/the-process	74.9
25	Hawaii	cca.hawaii.gov/breg	74.7

Business Registration Websites Overall Rankings Continued

Rank	State	Website	Score
26	New York	businessexpress.ny.gov/app/portal/content/start_a_business	73.5
27	North Dakota	nd.gov/businessreg/register/	73.4
28	Oregon	oregon.gov/business/Pages/register.aspx	72.3
29	Colorado	colorado.gov/apps/jboss/cbe/index.xhtml	71.4
30	Delaware	corp.delaware.gov/howtoform.shtml	70.6
31	Vermont	sec.state.vt.us/corporationsbusiness-services/business-nonprofit-services/start-a-vermont-business.aspx	69.9
32	New Mexico	tax.newmexico.gov/Businesses/register-your-business.aspx	69.8
33	South Carolina	dor.sc.gov/tax/registration	69.4
34	Wyoming	soswy.state.wy.us/business/	69.0
35	Illinois	revenue.state.il.us/Businesses/register.htm	67.1
36	West Virginia	sos.wv.gov/business-licensing/Pages/default.aspx	67.0
37	Alabama	sos.alabama.gov/business-services	66.9
38	Utah	corporations.utah.gov/online_bus_reg.html	66.1
39	New Jersey	nj.gov/njbusiness/	66.0
40	Arkansas	arkansas.gov/business/	65.7
41	Washington	bls.dor.wa.gov/file.aspx	64.2
42	Indiana	in.gov/dor/3744.htm	61.7
43	Tennessee	tnbear.tn.gov/newbiz/	61.3
44	Maine	maine.gov/portal/business/starting.html	61.0
45	Texas	sos.state.tx.us/	58.1
46	Louisiana	revenue.louisiana.gov/Businesses/BusinessRegistration	56.6
47	Connecticut	ct.gov/drs/cwp/view.asp?a=1433&q=265880	55.9
48	Nevada	nv.gov/business/	55.8
49	South Dakota	sd.gov/business.aspx	55.8
50	Pennsylvania	revenue.pa.gov/FormsandPublications/FormsforBusinesses/Pages/Business-Registration-Forms.aspx#.WiGW7FWnFpg	48.5

Table 18: Fishing and Hunting Licenses Website Overall Rankings

Rank	State	Website	Score
1	Virginia	dgif.virginia.gov/licenses	91.0
2	Kentucky	fw.ky.gov/licenses/pages/fees.aspx	84.1
3	Alaska	adfg.alaska.gov/index.cfm?adfg=license.main	82.9
4	Arizona	azgfd.com/license	82.4
5	Massachusetts	mass.gov/massfishhunt-licensing-and-harvest-reporting	82.0
6	Missouri	huntfish.mdc.mo.gov/permits	80.8
7	Idaho	idfg.idaho.gov/licenses	79.6
8	North Dakota	gf.nd.gov/licensing	78.6
9	Illinois	www.dnr.illinois.gov/lpr/pages/default.aspx	77.0
10	California	www.wildlife.ca.gov/licensing/online-sales	76.8
11	Texas	tpwd.texas.gov/business/licenses/online_sales	74.6
12	Arkansas	agfc.com/en/resources/licensing	74.5
13	Maine	maine.gov/ifw/hunting-trapping/licenses-permits/hunting-license.html	74.5
14	Mississippi	ms.gov/mdwfp/hunting_fishing	74.4
15	Michigan	michigan.gov/dnr/0,4570,7-153-31574---,00.html	74.3
16	Wyoming	wgfd.wyo.gov/Apply-or-Buy	73.1
17	Maryland	dnr.maryland.gov/Pages/service_hunting_license.aspx	71.7
18	Alabama	outdooralabama.com/alabama-license-information	71.5
19	New Mexico	wildlife.state.nm.us/hunting/licenses-and-permits	71.4
20	South Carolina	dnr.sc.gov/licensing.html	71.3
21	Iowa	iowadnr.gov/Hunting/Hunting-Licenses-Laws/Find-a-License-Retailer	70.9
22	Wisconsin	dnr.wi.gov/gowild/resident.html	70.5
23	Georgia	georgiawildlife.com/licenses-permits-passes	69.9
24	Florida	myfwc.com/license/recreational	69.9
25	New Hampshire	wildlife.state.nh.us/licensing	69.0

Fishing and Hunting Licenses Website Overall Rankings Continued

Rank	State	Website	Score
26	Rhode Island	dem.ri.gov/programs/managementservices/licenses/wildfees.php	68.9
27	Utah	wildlife.utah.gov/utah-licenses.html	68.7
28	Montana	fwp.mt.gov/hunting/license	68.4
29	Tennessee	tn.gov/twra/topic/twra-license-information	68.2
30	Vermont	vtfishandwildlife.com/licenses_and_lotteries/license_center	67.7
31	Minnesota	dnr.state.mn.us/licenses/fishing/index.html	67.5
32	Colorado	co.wildlifelicense.com/start.php?e4q=b49083a9-08d6-4b1f-9600-8a24192d93a6&e4p=56498699-9497-4984-89e0-1097db9efb86&e4ts=1511285771&e4c=active&e4e=snhfco3000000&e4rt=Safetynet&e4h=9f0e1d3c96f79ad58f7e8f1c51067283	67.5
33	Oklahoma	wildlifedepartment.com/forget1/OnlineSales.aspx	67.4
34	Ohio	wildlife.ohiodnr.go	67.0
35	Indiana	in.gov/dnr/fishwild/9339.htm	66.7
36	New York	dec.ny.gov/permits/365.html	66.4
37	New Jersey	njfishandwildlife.com/licenses.htm	66.2
38	North Carolina	ncwildlife.org/Licensing/Hunting-Fishing-Trapping-Licenses	65.1
39	Kansas	ksoutdoors.com/License-Permits	64.1
40	Hawaii	hunting.ehawaii.gov/hunting/license.html	63.2
41	Oregon	dfw.state.or.us/resources/licenses_regs/licenses_fees.asp	62.8
42	South Dakota	gfp.sd.gov/licenses/general-hunt-fish/license-list.aspx	62.5
43	Washington	wdfw.wa.gov/licensing	60.6
44	Louisiana	wlf.la.gov/licenses/hunting	60.3
45	Pennsylvania	pgc.pa.gov/HUNTTRAP/LICENSESANDPERMITS/Pages/default.aspx	60.0
46	West Virginia	wvdnr.gov/hunting/licensing.shtm	59.5
47	Nebraska	ngpc-home.ne.gov/ps/faces/index.xhtml	59.4
48	Nevada	ndow.org/Forms_and_Resources/License_Fees	58.7
49	Delaware	dnrec.delaware.gov/fw/Services/Pages/Rec-Lic.aspx	57.5
50	Connecticut	ct.gov/deep/cwp/view.asp?a=2696&q=322716&deepNav_GID=1630%20	50.7

Table 19: Traffic Citation Websites Overall Rankings

Rank	State	Website	Score
1	Idaho	icourt.idaho.gov	87.5
2	Massachusetts	mass.gov/how-to/pay-your-traffic-ticket	83.2
3	Georgia	dps.georgia.gov/ticketsfines	81.2
4	Arizona	azdps.gov/services/public/courts	80.3
5	Colorado	colorado.gov/pacific/csp/find-my-citation-information	79.8
6	North Carolina	ncdps.gov/Our-Organization/Law-Enforcement/State-Highway-Patrol/Traffic-Tickets	79.1
7	Utah	utcourts.gov/howto/traffic	79.1
8	Vermont	secure.vermont.gov/courts/payments	79.0
9	Connecticut	jud.ct.gov/faq/traffic.html	78.7
10	Kansas	kansashighwaypatrol.org/218/Traffic-Citations	76.6
11	Wyoming	whp.dot.state.wy.us/home/public_relations/pay_tickets.html	76.0
12	Missouri	courts.mo.gov/page.jsp?id=1886	75.7
13	Michigan	michigan.gov/som/0,4669,7-192-29701_29703-84273--FI,00.html	75.7
14	Kentucky	courts.ky.gov/payments/Pages/default.aspx	75.0
15	Washington	wsp.wa.gov/	73.8
16	Maryland	courts.state.md.us/district/selfhelp/traffic.html	73.1
17	California	ca.gov/Agencies/Courts-California/Agency-Services/Pay-Traffic-Ticket	72.9
18	North Dakota	ndcourts.gov/publicsearch/paymentprocess.htm	71.8
19	Florida	flhsmv.gov/ddl/dispute.html	71.3
20	Wisconsin	wisconsindot.gov/Pages/safety/enforcement/citation/default.aspx	71.3
21	New Jersey	portal.njcourts.gov/webe11/atswepr2/home.do	71.2
22	South Dakota	dps.sd.gov/safety-enforcement/highway-patrol	70.8
23	Delaware	courts.delaware.gov/help/traffic	70.3
24	Nevada	nvcourts.gov/Supreme/How_Do_I/Pay_a_Ticket	68.9
25	Mississippi	dps.state.ms.us/	68.5

Traffic Citation Websites Overall Rankings Continued

Rank	State	Website	Score
26	Minnesota	mncourts.gov/pay-a-fine.aspx	68.4
27	Nebraska	nebraska.gov/courts/citations/index.cgi	67.1
28	Arkansas	pay.courts.arkansas.gov/pay	66.9
29	New York	troopers.ny.gov/FAQs/Traffic_Safety/Tickets	66.2
30	Oklahoma	ok.gov/dps/ohp/dpslinks.html	66.1
31	Virginia	courts.state.va.us/caseinfo/tickets.html	65.5
32	Rhode Island	risp.ri.gov	65.4
33	New Hampshire	nh.gov/safety/divisions/dmv/financial-responsibility/online-ticket-payment/index.htm	65.4
34	Iowa	iowacourts.state.ia.us/ESAWebApp/EPayment/EPaymentSearchFrame.jsp	63.6
35	Montana	dojmt.gov/highwaypatrol	62.8
36	Maine	courts.maine.gov/maine_courts/traffic/index.shtml	62.6
37	Hawaii	courts.state.hi.us/self-help/traffic/traffic_cases	61.4
38	Texas	dps.texas.gov/HighwayPatrol/Citations	60.6
39	Ohio	statepatrol.ohio.gov	58.8
40	West Virginia	wvsp.gov/Pages/default.aspx	58.7
41	Pennsylvania	psp.pa.gov/Pages/default.aspx	57.9
42	Indiana	publicaccess.courts.in.gov/pay	57.1
43	Alabama	traffic.alacourt.gov	56.4
44	Tennessee	circuitclerk.nashville.gov/traffic/traffic/faq.asp	55.3
45	Louisiana	lsp.org/troopacitation.html	53.2
46	New Mexico	nmsp.dps.state.nm.us	53.1
47	South Carolina	scdps.gov/schp/general_counsel.asp	52.5
48	Alaska	courts.alaska.gov/trialcourts/payments.htm	52.2
49	Illinois	isp.state.il.us	44.2
50	Oregon	oregon.gov/osp/Pages/index.aspx	42.5

REFERENCES

1. Christopher G. Reddick, "Citizen interaction with e-government: From the streets to servers?" *Government Information Quarterly*, vol. 22, issue 1 (2005), pp. 38:57. DOI: https://doi.org/10.1016/j.giq.2004.10.003.

2. John B. Horrigan and Lee Rainie, "Connecting with Government or Government Data" (Pew Research Center), published April 21, 2015, http://www.pewinternet.org/2015/04/21/connecting-with-government-or-government-data/.

3. "CA.gov Traffic Statistics," (Alexa Internet, Inc.) accessed May 10, 2018, https://www.alexa.com/siteinfo/ca.gov.

4. Ilya Grigorik, "Image Optimization," Google Developers, last updated February 9, 2017, https://developers.google.com/web/ fundamentals/performance/optimizing-content-efficiency/imageoptimization; "Avoid Landing Page Redirects," Google Developers, last updated April 8, 2015, https://developers.google.com/speed/docs/insights/AvoidRedirects.

5. "DNSSEC – What Is It and Why Is It Important?" (Internet Corporation for Assigned Names and Numbers), accessed April 18, 2018, https://www.icann.org/resources/pages/dnssec-qaa-2014-01-29-en.

6. Daniel Castro, Galia Nurko, and Alan McQuinn, "Benchmarking U.S. Government Websites" (Information Technology & Innovation Foundation), November 2017, http://www2.itif.org/2017-benchmarking-us-government-websites.pdf.

7. "Web Content Accessibility Guidelines (WCAG) 2.1," (World Wide Web Consortium), accessed July 25, 2018, https://www.w3.org/TR/WCAG21/#background-on-wcag-2.

8. State Web Accessibility: Standards and Reports, Assembly Bill No. 434, 2017-2018 Session of the California State Legislature, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB434.

9. Illinois Information Technology Act, SB0511, 95th Illinois General Assembly (2007), http://www.ilga.gov/legislation/billstatus.asp?DocNum=511&GAID=9&GA=95&DocTypeID=SB&LegID=28307&SessionID=51.

10. Nevada's Security of Personal Information Law: "Security of Information maintained by Data Collectors and Other Business," Nevada Legislature, accessed July 27, 2018, https://www.leg.state.nv.us/nrs/nrs-603a.html#NRS603ASec210.

11. General Appropriations Bill, H. 3710, South Carolina Legislature (2015), https://www.scstatehouse.gov/query.php?search=DOC&searchtext=security&category=BUDGET&year=2015&version_id=7&return_page=&version_title=Appropriation%20Act&conid=8120957&result_pos=0&keyval=32188&numrows=10.

12. Department of Administration, "SCDIS-200 Information Security and Privacy Standards," State of South Carolina (2015), https://admin.sc.gov/files/SCDIS-200-InformationSecurityandPrivacyStandards.xlsx.

13. Senate Bill 215, 141st Delaware General Assembly (2001), https://legis.delaware.gov/BillDetail/12169.

14. Department of Technology and Information, "Delaware Information Security Policy," State of Delaware (2015), https://dti.delaware.gov/pdfs/pp/DelawareInformationSecurityPolicy.pdf.

15. "Security Policy," Commonwealth of Kentucky, page last updated 2015, http://kentucky.gov/policies/Pages/security.aspx; "Kentucky Information Technology Standards,"

Commonwealth of Kentucky, July 03, 2018,
https://cgp.ky.gov/sites/COTPUBDOCS/Standards/05000%20-
%20Security%20Domain_KITS_Report.pdf.

16.   "Security Policy," Commonwealth of Kentucky; "Privacy/Security," State of Georgia, last revised January
      2015, https://georgia.gov/privacysecurity; "Privacy Policy," State of Vermont, page last accessed July
      25, 2018, http://www.vermont.gov/portal/policies/privacy.php.

17.   New Jersey Office of Information Technology, "Web Accessibility Policy," State of New Jersey (2014),
      http://www.nj.gov/it/docs/web/07-12-NJOIT_web_accessibility_policy.pdf.

18.   Department of Administrative and Financial Services and Office of Information Technology, "Web
      Accessibility and Usability Policy," State of Maine (2017),
      http://www.maine.gov/oit/policies/WebAccessibilityUsabilityPolicy.pdf.

19.   "Louisiana.gov Policies," State of Louisiana, paged accessed May 16, 2018,
      http://louisiana.gov/Government/Policies/.

20.   "Choosing the Correct Content Type on Mass.gov," Commonwealth of Massachusetts, page accessed
      May 17, 2018, https://www.mass.gov/decision-tree/choosing-the-correct-content-type-on-massgov.

21.   Digital Services Playbook, U.S. Digital Services, n.d., https://playbook.cio.gov/.

22.   Karen Evans, "Memorandum for Chief Information Officers; Securing the Federal Government's Domain
      Name System Infrastructure," Office of Management and Budget, (Washington, D.C.), August 22, 2018,
      https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2008/m08-23.pdf and "The
      HTTPS-Only Standard," The HTTPS-Only Standard, accessed October 10, 2017, https://https.cio.gov/.

23.   "IT Accessibility Laws and Policy," U.S. General Services Administration, July 2018,
      https://www.section508.gov/manage/laws-and-policies.

24.   "Information and Communication Technology (ICT) Standards and Guidelines"(Architectural and
      Transportation Barriers Compliance Board), January 18, 2017, https://www.access-
      board.gov/attachments/article/1877/ict-final-rule.pdf.

25.   "H.R. 2331 - Connected Government Act," Congress.gov, https://www.congress.gov/bill/115th-
      congress/house-bill/2331.

26.   Freddie Blicher, "2016/2017 Mobile Analysis: Mobile Device Trends on Government Websites,"
      DigitalGov, August 14, 2017, https://digital.gov/2017/08/14/20162017-mobile-analysis-mobile-
      device-trends-on-government-websites/.

27.   "H.R. 2331 - Connected Government Act."

28.   Daniel An, "Find Out How You Stack Up to New Industry Benchmarks for Mobile Page Speed," *Think with*
      Google, February 2018, https://think.storage.googleapis.com/docs/mobile-page-speed-new-industry-
      benchmarks.pdf.

29.   Ibid.

30.   "Mobile Friendly Websites," Moz, accessed July 26, 2018,
      https://developers.google.com/webmasters/mobile-sites/; Jill Kocher, "SEO: Google to Make 'Mobile-
      Friendly' a Ranking Signal," Practical Ecommerce, March 15, 2015,
      http://www.practicalecommerce.com/articles/83483- SEO-Google-to-Make-Mobile-friendly-a-Ranking-

Signal; SEO PowerSuite "8 major Google ranking signals in 2017," Search Engine Land, July, 11, 2010, https://searchengineland.com/8-major-google-ranking-signals2017-278450.

31. Pete LePage, "Responsive Web Design Basics," Google Developers, accessed May 21, 2018, https://developers.google.com/web/fundamentals/design-and-ux/responsive/.

32. Russel Brandom, "Chrome Will Mark All HTTP Sites as 'Not Secure' Starting in July," *The Verge*, February 8, 2018, https://www.theverge.com/2018/2/8/16991254/chrome-not-secure-marked-http-encryption-ssl.

33. "Welcome to OWASP," Open Web Application Security Project, last modified December 8, 2016, accessed October 10, 2017, https://www.owasp.org/index.php/Main_Page.

34. "Basic Security Practices for Web Applications," Microsoft, accessed October 10, 2017, https://msdn.microsoft.com/en-us/library/zdh19h94.aspx.

35. Ben Caldwell et al., eds., "Web Content Accessibility Guidelines (WCAG) 2.0" (W3C, December 11, 2008), https://www.w3.org/TR/WCAG20/.

36. "W3C Web Standard Defines Accessibility for Next Generation" (World Wide Web Consortium), accessed July 25, 2018, https://www.w3.org/2008/12/wcag20-pressrelease.html.

37. "Web Content Accessibility Guidelines (WCAG) 2.1" (World Wide Web Consortium), accessed July 25, 2018, https://www.w3.org/TR/WCAG21/#background-on-wcag-2.

38. To identify the most popular services used by residents of each state, we reviewed a variety of published studies and leaned heavily on ones published by the Urban Institute and Accenture. The studies we consulted are: "Digital Government: "Good Enough for Government" is Not Good Enough" (consulting report, Accenture Consulting, last updated September 12, 2016), https://www.accenture.com/t20160912T095949__w__/us-en/_acnmedia/PDF-30/Accenture-Digital-Citizen-Experience-Pulse-Survey-POV.pdf.; Tracy Gordon and John Iselin, "What Everyone Should Know About Their State's Budget" (Urban Institute), last modified January 2017, http://apps.urban.org/features/what-drives-state-spending/; Emma Dudley et. al, "Implementing a citizen-centric approach to delivering government services," McKinsey & Company, July 2015, https://www.mckinsey.com/industries/public-sector/our-insights/implementing-a-citizen-centric-approach-to-delivering-government-services; "Policy Basics: Where Do Our State Tax Dollars Go?," Center on Budget and Policy Priorities, updated July 25, 2018, https://www.cbpp.org/research/state-budget-and-tax/policy-basics-where-do-our-state-tax-dollars-go; "Driving into Digital" (consulting report, Deloitte Digital, 2015), https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-state-diving-into-digital-03092015.pdf.

39. "PageSpeed Insights," Google Developers, accessed December 8, 2017, https://developers.google.com/speed/pagespeed/insights/; The mobile friendliness test uses this tool: "Mobile Friendly Check," SEO Centro, accessed September 22, 2017,https://search.google.com/search-console/mobile-friendly; The security tests uses these two tools: "SSL Server Test," Qualys SSL Labs, accessed December 8, 2017, https://www.ssllabs.com/ssltest/index.html; "DNSSEC Analyzer," Verisign, accessed December 8, 2017, http://dnssec-debugger.verisignlabs.com/; The accessibility test uses this tool: "Web Accessibility Checker," AChecker, accessed December 8, 2017, http://achecker.ca/checker/.

40. Ibid.

41. Ibid.

42. Ibid.

43. Ibid.

44.   Alan Zeichick, "Are Slow Website Load Times Costing You Money and Pageviews?" GoDaddy, January 5, 2016, https:// https://www.godaddy.com/garage/are-slow-website-load-times-costing-you-money-and-pageviews/.

45.   Daniel An, "Find Out How You Stack Up to New Industry Benchmarks for Mobile Page Speed," Think with Google, February, 2018, https://www.thinkwithgoogle.com/marketing-resources/data-measurement/mobile-page-speed-new-industry-benchmarks/.

46.   "The Performance of Web Applications" (Aberdeen Group), November 2008, http://www.aberdeen.com/research/5136/ra-performance-web-application/content.aspx.

47.   "About PageSpeed Insights," Google Developers, last updated January 9, 2018 https://developers.google.com/speed/docs/insights/about?hl=en-US&utm_source=PSI&utm_medium=incoming-link&utm_campaign=PSI.

48.   "PageSpeed Insights Rules," Google Developers, last updated January 9, 2018 https://developers.google.com/speed/docs/insights/rules.

49.   We chose these thresholds based on our review of the page-load speed of the 20 most popular nongovernment domains from the Majestic Million, which is a free online service that ranks the most popular websites in the world based on how many unique IP addresses refer to a particular domain. The cutoffs for both desktop and mobile page-load speed are one standard deviation below the mean for nongovernment websites from initial "Benchmarking U.S. Government Websites" report published in 2017 by ITIF. We chose to maintain this cutoff because it allows us to make comparisons between reports.

50.   These top 20 nongovernment websites include google.com, facebook.com, youtube.com, twitter.com, Microsoft.com, Wikipedia.org, linkedin.com, plus.google.com, apple.com, Instagram.com, wordpress.org, wordpress.com, blogpost.com, vimeo.com, maps.google.com, pinterest.com, yahoo.com, amazon.com, and tumblr.com. This data was gathered on October 3, 2017. See Daniel Castro and Alan McQuinn, "Benchmarking U.S. Government Websites," Information Technology and Innovation Foundation, (Washington, DC: March 2017), http://www2.itif.org/2017-benchmarking-government-websites.pdf.

51.   "CSS File Format," TechTarget Network, last updated July 2010, http://whatis.techtarget.com/fileformat/CSS-Cascading-Style-SheetMIME; "JavaScript Can Change HTML Content," W3Schools, accessed February 24, 2017, http://www.w3schools.com/js/js_intro.asp.

52.   Daniel Castro and Alan McQuinn, "Benchmarking U.S. Government Websites."

53.   "Reduce the Size of the Above-the-Fold Content," Google Developers, last updated April 8, 2015, https://developers.google.com/speed/docs/insights/PrioritizeVisibleContent.

54.   In the tables, we display both the average desktop and mobile page-load speed scores. These scores are on a 0 to 100-point scale.

55.   "Mobile Fact Sheet" (Pew Research Center), accessed July 9, 2018, http://www.pewinternet.org/fact-sheet/mobile/.

56.   "Make Sure Your Site's Ready for Mobile-friendly Google Search Results," Google, accessed April 2, 2018, https://support.google.com/adsense/answer/6196932?hl=en.

57.   "Size Tap Targets Appropriately," Google Developers, last updated April 8, 2015, https://developers.google.com/speed/docs/insights/SizeTapTargetsAppropriately; https://developers.google.com/web/fundamentals/design-and-ui/responsive/#size-content-to-the-

viewport; "Avoid Plugins," Google Developers, last updated April 8, 2015, https://developers.google.com/speed/docs/insights/AvoidPlugins.

58. We chose these thresholds based on our review of the mobile friendliness of the 20 most popular nongovernment domains from the Majestic Million, which averaged a score of 95. The cutoffs are the same as the ones in the initial "Benchmarking U.S. Government Websites" report published in 2017 by ITIF. We chose to maintain this cutoff because it allows us to make comparisons between reports; These top 20 nongovernment websites include google.com, facebook.com, youtube.com, twitter.com, Microsoft.com, Wikipedia.org, linkedin.com, plus.google.com, apple.com, Instagram.com, wordpress.org, wordpress.com, blogpost.com, vimeo.com, maps.google.com, pinterest.com, yahoo.com, amazon.com, and tumblr.com. This data was gathered on October 3, 2017.

59. Castro, Nurko, and McQuinn, "Benchmarking U.S. Government Websites."

60. Meggin Kearney, Dave Gash, and Rob Dodson, "Accessible Styles," Google Developers, last updated July 2, 2018, https://developers.google.com/web/fundamentals/accessibility/accessible-styles#multi-device_responsive_design; Pete LePage, "Responsive Web Design Basics," Google Developers, last updated July 2, 2018, https://developers.google.com/web/fundamentals/design-and-ux/responsive/.

61. "Security Policy," Commonwealth of Kentucky; "Privacy/Security," State of Georgia; "Privacy Policy," State of Vermont.

62. "The HTTPS-Only Standard,"; "DNSSEC – What Is It and Why Is It Important?" (Internet Corporation for Assigned Names and Numbers), accessed April 18, 2018, https://www.icann.org/resources/pages/dnssec-2014-01-29-en.

63. "SSL Server Test," Qualys SSL Labs, accessed December 8, 2017, https://www.ssllabs.com/ssltest/index.html.

64. We chose these thresholds based on our review of the mobile friendliness of the 20 most popular nongovernment domains from the Majestic Million, which averaged a score of 95. The cutoffs are the same as the ones in the initial "Benchmarking U.S. Government Websites" report published in 2017 by ITIF. We chose to maintain this cutoff because it allows us to make comparisons between reports; These top 20 nongovernment websites include google.com, facebook.com, youtube.com, twitter.com, Microsoft.com, Wikipedia.org, linkedin.com, plus.google.com, apple.com, Instagram.com, wordpress.org, wordpress.com, blogpost.com, vimeo.com, maps.google.com, pinterest.com, yahoo.com, amazon.com, and tumblr.com. This data was gathered on October 3, 2017.

65. "DNSSEC – What Is It and Why Is It Important?" (Internet Corporation for Assigned Names and Numbers), accessed April 18, 2018, https://www.icann.org/resources/pages/dnssec-qaa-2014-01-29-en.

66. "DNSSEC Analyzer," Verisign, accessed December 8, 2017, http://dnssec-debugger.verisignlabs.com/.

67. Castro, Nurko, and McQuinn, "Benchmarking U.S. Government Websites."

68. "SSL 3.0 Protocol Vulnerability and POODLE Attack," United States Computer Emergency Readiness Team, page last updated September 30, 2016, https://www.us-cert.gov/ncas/alerts/TA14-290A.

69. Sarah Madden and Christian Dressen, "The DROWN Attack," page last updated July 1, 2016, https://drownattack.com/.

70. Andy Greenberg, "Hacker Lexicon: What Is Perfect Forward Secrecy?" *Wired*, November 28, 2016, https://www.wired.com/2016/11/what-is-perfect-forward-secrecy/.

71. "Weak Diffie-Hellman and the Logjam Attack," Weak DH, May 20, 2015, https://weakdh.org/; Ivan Ristic, "SSL Labs R4C Deprecation Plan," Qualys Blog, April 23, 2015, https://blog.qualys.com/ssllabs/2015/04/23/ssllabs-rc4-deprecation-plan.

72. The state rankings were calculated by averaging the HTTPS scores each state received for the eight types of websites tested.

73. The state rankings were calculated by averaging the DNSSEC scores each state received for the eight types of websites tested.

74. "Statistical Facts About Blindness in the United States," National Federation of the Blind, page last updated June 2018, https://nfb.org/blindness statistics; Tom Harrington, "Deaf Statistics," Gallaudet University, page last updated February 2014. http://libguides.gallaudet.edu/c.php?g=773916&p=5552995.

75. Rick Williams and Steven Brownlow, "The Click-Away Pound Report 2016," Freeney Williams Ltd and Click Away Surveys Ltd, December 1, 2016, http://www.clickawaypound.com/downloads/cap16final2711.docx/.

76. "State Accessibility Standards," California Department of Technology, accessed April 4, 2018,https://webtools.ca.gov/web-content/web-accessibility/state-accessibility-standards; "Accessibility," State of Idaho, accessed July 6, 2018, https://www.idaho.gov/about-us/accessibility/.

77. "How does accessible web design benefit all web users?," University of Washington, page last updated January 24, 2013, https://www.washington.edu/doit/how-does-accessible-web-design-benefit-all-web-users.

78. "Benefits of Accessible Design," U.S. General Services Administration, page last updated May 4, 2017, https://www.section508.gov/content/benefits-accessible-design.

79. "AChecker Web Service API," AChecker, accessed December 8, 2017, https://achecker.ca/documentation/web_service_api.php.

80. "Web Content Accessibility Guidelines (WCAG) 2.1," *World Wide Web* Consortium, accessed July 25, 2018, https://www.w3.org/TR/WCAG21/#background-on-wcag-2.

81. We chose these thresholds based on our review of the accessibility of the 20 most popular nongovernment domains from the Majestic Million, which averaged a score of 85. The cutoffs are the same as the ones in the "Benchmarking U.S. Government Websites" report published in March 2017 by ITIF. We chose to maintain this cutoff because it allows us to make comparisons between reports. These top 20 nongovernment websites include google.com, facebook.com, youtube.com, twitter.com, Microsoft.com, Wikipedia.org, linkedin.com, plus.google.com, apple.com, Instagram.com, wordpress.org, wordpress.com, blogpost.com, vimeo.com, maps.google.com, pinterest.com, yahoo.com, amazon.com, and tumblr.com. This data was gathered on October 3, 2017.

82. McQuinn and Castro, "Benchmarking U.S. Government Websites."

83. Lewis Kraus, "2016 Disability Statistics Annual Report," University of New Hampshire, January, 2017, https://disabilitycompendium.org/sites/default/files/user-uploads/2016_AnnualReport.pdf.

84. Kraus, "2016 Disability Statistics Annual Report."

85. Clay Johnson III, "Policies for Federal Agency Public Websites" (memorandum, Office of Management and Budget, Washington, DC, December 17, 2004), https://www.obamawhitehouse.gov/sites/default/files/omb/memoranda/fy2005/m05-04.pdf;

Donovan, Shelanski, and Scott, "Policies for Federal Agency Public Websites and Digital Services."; "The HTTPS-Only Standard," The HTTPS-Only Standard, accessed October 10, 2017, https://https.cio.gov/.

86. "Information Security Standards," California Department of Education, page last reviewed April 2, 2018, https://www.cde.ca.gov/re/di/ws/infosecurity.asp.

87. "The HTTPS-Only Standard," The HTTPS-Only Standard, https://https.cio.gov/.

88. Executive Office of Technology Services and Security (EOTSS), Common Wealth of Massachusetts, emailed to ITIF on June 1, 2018.

89. Monica Anderson, "Digital Divide Persists Even as Lower-Income Americans Make Gains in Tech Adoption," Pew Research Center, March 22, 2017, http://www.pewresearch.org/fact-tank/2017/03/22/digital-divide-persists-even-as-lower-income-americans-make-gains-in-tech-adoption/.

90. Executive Office of Technology Services and Security (EOTSS), Common Wealth of Massachusetts, phone interview with ITIF on June 1, 2018.

91. We searched the phrase "driver's license Louisiana" on June 7, 2018; "Applying for a New License (Drivers 18+) in Louisiana," DMV.ORG, accessed June 7, 2018, https://www.dmv.org/la-louisiana/apply-license.php.

92. Executive Office of Technology Services and Security (EOTSS), phone interview with ITIF on June 1, 2018.

93. Ibid.; "Perkins School for the Blind's Legacy," Perkins School for the Blind, accessed August 20, 2018, http://www.perkins.org/history/legacy.

94. Digital Services, Georgia Technology Authority, phone interview with ITIF on June 11, 2018.

95. "DAP: Digital Analytics Program," DigitalGov, accessed June 1, 2018, https://www.digitalgov.gov/services/dap/.

96. Ben Miller, "SeamlessDocs Project Offers Free Web Analytics Dashboard to State, Local Government," Government Technology, March 17, 2017, http://www.govtech.com/pcio/articles/SeamlessDocs-Project-Offers-Free-Web-Analytics-Dashboard-to-State-Local-Government.html.

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ABOUT ITIF

The Information Technology and Innovation Foundation (ITIF) is a nonprofit, nonpartisan research and educational institute focusing on the intersection of technological innovation and public policy. Recognized as the world's leading science and technology think tank, ITIF's mission is to formulate and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress.