U.S. Municipalities E-Government Survey (2020-21)

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An Assessment and Ranking of Municipal Websites

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~ Executive Summary ~

The U.S. Municipalities E-Government Survey assessed the practice of digital governance in large municipalities across the United States by evaluating their websites and ranking them on a national scale. Digital governance includes both digital government (delivery of public service) and digital democracy (citizen participation in governance). Specifically, we analyzed the categories of privacy and security, usability, content of websites, services offered, and citizen and social engagement through websites established by municipal governments. The U.S. survey of municipal websites' methodology is akin to our previous research on digital governance in U.S. cities and states in 2008; and cities in 2010-2011 and worldwide in 2003, 2005, 2007, 2009, 2013-2014, 2015-2016 and 2018-2019. Like the 2018-2019 worldwide survey, this survey too, increased emphasis on citizens and social engagement.

This research centers on the largest cities in each of the 50 states in the U.S. determined by population size, including Washington D.C. Our municipal website evaluation instrument consisted of five components: (1) Privacy/Security, (2) Usability, (3) Content, (4) Service Delivery, and (5) Citizen and Social Engagement. There were 86 total measures for all five components. Each measure was coded on a scale of four-points (0, 1, 2, 3) or a dichotomy of two-points (0, 3 or 0, 1). Additionally, to develop an overall score for each municipality, each of the five categories was equally weighted to avoid skewing data in favor of a particular category (regardless of the number of questions in each category). This reflects the same methods utilized in previous surveys. To ensure reliability, each municipal website was assessed by two evaluators, and in cases where a significant variation (+ or – 10%) existed on the adjusted score between evaluators, websites were analyzed a third time.

Following the evaluation of all 51 U.S. cities, Minneapolis, Albuquerque, Boise, Milwaukee, and Providence emerged with the highest scores. Table 1-1 depicts the top 20 municipalities in digital governance in 2020-2021 and their scores in each of the five evaluation categories. Tables 1-2 to 1-6 show the top-ranked ten municipalities in each of the five categories.

Table 1. Top 20 Cities in Digital Government (2020-2021)

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
1	Minneapolis	MN	65.60	8.52	15.00	14.44	14.10	13.54
2	Albuquerque	NM	63.64	11.11	15.94	13.49	13.93	9.17
3	Boise	ID	62.57	11.11	12.19	17.30	14.26	7.71
4	Milwaukee	WI	61.27	13.33	12.50	12.54	13.93	8.96
5	Providence	RI	58.92	11.11	15.63	13.02	12.30	6.88
6	Cheyenne	WY	56.20	1.85	13.75	14.29	13.61	12.71
7	Virginia Beach	VA	55.22	8.89	12.50	14.13	12.62	7.08
8	Baltimore	MD	50.05	6.67	10.94	11.59	13.77	7.08
9	Anchorage	AK	49.99	7.78	13.44	12.70	10.66	5.42
10	Nashville	TN	49.39	8.89	13.75	12.38	10.00	4.38
11	Houston	TX	49.39	10.37	11.56	13.33	10.16	3.96
12	Chicago	IL	48.77	8.52	12.50	12.38	10.16	5.21
13	Wichita	KS	48.72	8.89	12.81	11.11	10.49	5.42
14	Louisville	KY	48.38	5.19	12.81	13.02	10.49	6.88

(continued) **Table 1. Top 20 Cities in Digital Government (2020-2021)**

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
15	New York	NY	48.29	9.63	12.50	11.90	9.67	4.58
16	Washington D.C		47.54	9.26	12.81	11.27	8.36	5.83
17	Philadelphia	PA	47.27	5.56	12.19	13.65	12.13	3.75
18	Billings	MT	46.18	9.63	10.00	10.48	10.66	5.42
19	Charlotte	NC	45.62	7.41	13.75	11.43	8.03	5.00
20	Manchester	NH	44.84	9.63	15.00	8.57	9.34	2.29

Table 2. Top 10 Cities in Privacy/Security (2020-2021)

Rank	City	State	Privacy
1	Milwaukee	WI	13.33
2	Albuquerque	NM	11.11
2	Boise	ID	11.11
2	Providence	RI	11.11
5	Houston	TX	10.37
5	Phoenix	AZ	10.37
5	Seattle	WA	10.37
5	Bridgeport	CT	10.37
9	New York	NY	9.63
9	Billings	MT	9.63

Table 3. Top 10 Cities in Usability (2020-2021)

Rank	City	State	Usability
1	Albuquerque	NM	15.94
2	Providence	RI	15.63
3	Minneapolis	MN	15.00
3	Manchester	NH	15.00
5	Portland	OR	14.38
6	Cheyenne	WY	13.75
6	Nashville	TN	13.75
6	Charlotte	NC	13.75
6	Wilmington	DE	13.75
10	Anchorage	AK	13.44

Table 4. Top 10 Cities in Content (2020-2021)

Rank	City	State	Content
1	Boise	ID	17.30
2	Minneapolis	MN	14.44
3	Cheyenne	WY	14.29
4	Virginia Beach	VA	14.13
5	Philadelphia	PA	13.65
6	Albuquerque	NM	13.49
7	Houston	TX	13.33
8	Providence	RI	13.02
8	Louisville	KY	13.02
10	Anchorage	AK	12.70

Table 5. Top 10 Cities in Service Delivery (2020-21)

Rank	City	State	Service
1	Boise	ID	14.26
2	Minneapolis	MN	14.10
3	Albuquerque	NM	13.93
3	Milwaukee	WI	13.93
5	Baltimore	MD	13.77
6	Cheyenne	WY	13.61
7	Virginia Beach	VA	12.62
8	Providence	RI	12.30
8	Sioux Falls	SD	12.30
10	Philadelphia	PA	12.13

Table 6. Top 10 Cities in Citizen and Social Engagement (2020-21)

Rank	City	State	Citizens and Social Engagement
1	Minneapolis	MN	13.54
2	Cheyenne	WY	12.71
3	Albuquerque	NM	9.17
4	Milwaukee	WI	8.96
5	Boise	ID	7.71
6	Virginia Beach	VA	7.08
6	Baltimore	MD	7.08
8	Providence	RI	6.88
8	Louisville	KY	6.88
10	Washington D.C		5.83

Our survey results indicate that all the 51 cities selected for the survey have developed official websites, and the average score for digital governance in these municipalities is 42.51.

Following the municipal surveys in 2008 and 2010-2011, this research is an ongoing effort to evaluate the trajectory of digital governance in large municipalities in the United States over time.

~ Section 1~

Introduction

This research replicates the U.S. survey completed in 2008 and 2010-2011 and evaluates the practice of digital governance in large municipalities across the United States. The succeeding chapters present the overall findings of the research. Chapter 2 explains the methodology that was employed during the websites evaluation and equally explains the evaluation instrument. The survey instrument consists of 86 measures and employs a rigorous approach at conducting the evaluations. Chapter 3 presents the overall findings for the 2020-2021 evaluation. The results in this chapter are further delineated into regional, time, and municipal size categories.

Chapters 4 through 8 explain the findings for each of the five evaluation categories across the selected municipality websites. The evaluation categories include Privacy and Security, Usability, Content, Services, and Citizen and Social Engagement. Chapter 4 focuses and expounds on the Privacy and Security findings while Chapter 5explains the Usability of the evaluated municipal websites. Chapter 6 presents the findings for Content, Chapter 7 explains Services, and Chapter 8 focuses Citizen and Social Engagement. Chapter 9 concludes the study and provides recommendations and a discussion of significant findings.

~ Section 2 ~

Methodology

The methodology used in this survey of US municipal websites is akin to what we have used for earlier research into digital government in the United States in 2008, 2010-2011, and worldwide in 2003, 2005, 2007, 2009, 2013-2014, 2015-2016, and 2018-2019. The worldwide survey assessed the largest cities across the globe and their sizes were determined by their population sizes. Similarly, the 2008, 2010-2011, and this current survey centered on the largest cities across the United States by population, including Washington D.C.

Our city and municipal websites evaluation instrument consisted of five components: (1) Privacy/ Security; (2) Usability; (3) Content; (4) Services; and (5) Citizen and Social Engagement. Our research applied 86 measures, and each measure was coded on a scale of four-points (0, 1, 2, 3) or a dichotomy of two-points (0, 3 or 0, 1). To develop an accurate total score for each municipality, we equally weighted each of the five categories so as not to skew the research in favor of a particular category (regardless of the number of questions in each category). The same methods were employed for the Worldwide Surveys.

The rationale for selecting the largest municipalities by population stems from e-government literature indicating a positive relationship between population and e-government capacity at the local level (Ingrams et al, 2020; Solvak et al, 2019; 2002; Moon and deLeon, 2001; Musso, et al., 2000; Weare, et al. 1999). Table 2-1 is a list of all the 51 cities selected into our research sample categorized into four regions: the Midwest, the West, the South, and the Northeast.

Table 2-1. List of 50 Cities selected by region (2020-2021)

Midwest (15)	
City	**State**
Boise	Idaho
Chicago	Illinois
Columbus	Ohio
Denver	Colorado
Des Moines	Iowa
Detroit	Michigan
Fargo	North Dakota
Indianapolis	Indiana
Jackson	Mississippi
Kansas City	Missouri
Milwaukee	Wisconsin
Minneapolis	Minnesota
Omaha	Nebraska
Sioux Falls	South Dakota
Wichita	Kansas

(continued) **Table 2-1. List of 50 Cities selected by region (2020-2021)**

West (11)	
City	**State**
Albuquerque	New Mexico
Anchorage	Alaska
Billings	Montana
Cheyenne	Wyoming
Honolulu	Hawaii
Las Vegas	Nevada
Los Angeles	California
Phoenix	Arizona
Portland	Oregon
Salt Lake City	Utah
Seattle	Washington

South (16)	
City	**State**
Atlanta	Georgia
Baltimore	Maryland
Birmingham	Alabama
Charleston	South Carolina
Charleston	West Virginia
Charlotte	North Carolina
Houston	Texas
Jacksonville	Florida
Little Rock	Arkansas
Louisville	Kentucky
Nashville	Tennessee
New Orleans	Louisiana
Oklahoma City	Oklahoma
Virginia Beach	Virginia
Washington	DC
Wilmington	Delaware

Northeast (9)	
City	**State**
Boston	Massachusetts
Bridgeport	Connecticut
Burlington	Vermont
Manchester	New Hampshire
New York	New York
Newark	New Jersey
Philadelphia	Pennsylvania
Portland	Maine
Providence	Rhode Island

Website Survey

Websites have evolved over time to become the main way that municipal and city governments interact with their citizens (Liu et al, 2016), particularly, virtually. Websites are essential for the execution of not just e-government but digital governance as well. Consequently, municipal governments offer numerous administrative functions and services to and interact with their citizens through their websites. Municipalities across the United States are increasingly developing websites to enhance e-government, particularly through functionality and performance (D'agostino, et al, 2011). However, e-government is more than just website hosting and posting one way information.

E-government initiatives clearly extend beyond the textual listing of information to a more "intentions-based" design so that citizens can more effectively utilize web portals (Howard 2001). This involves interactive functions including (1) providing 24/7 access to government information and public meetings; (2) providing mechanisms enabling citizens to comply with state and federal rules regarding drivers licenses, business licenses, etc.; (3) providing access to special benefits like welfare funds and pensions; (4) providing a network across various government agencies to enable collaborative approaches to serving citizens; and (5) providing various channels for digital democracy and citizen participation initiatives (Pardo, 2000). Therefore, municipal websites have become a reliable data and information source to evaluate the digital governance performance of a city or municipal government.

To conduct an evaluation, it is fundamental to access a city website homepage. This research study defines a city government website homepage as the official location where information about city administration and online services are provided by the city. It is usually the landing page for users and visitors. The city website typically includes information about the city council, mayor, and executive branch. If there are separate homepages for agencies, departments or the city council, evaluators examined if these sites were linked to the menu on the main city homepage. If the website was not linked, it was excluded from the evaluation.

E-Government Survey

The E-Government Survey Instrument is the most comprehensive index for e-government research today. With 86 measures and five distinct categorical areas of e-government research, the survey instrument is more comprehensive than any other. Our instrument for evaluating city and municipal websites consists of five components: (1) Privacy/Security; (2) Usability; (3) Content; (4) Services; and (5) Citizen and Social Engagement. Table 2-2 (see next page), E-Governance Performance Measures, summarizes the 2020-2021 survey instrument. Table 2-3 (see next page) provides a description of our e-government scale and Appendix A presents an overview of the criteria.

Table 2-2. E-government Performance Measures

E-Government Category	Key Concepts	Raw Score	Weighted Score	Keywords
Privacy/Security	14	20	20	Privacy policies, authentication, encryption, data management, cookies
Usability	15	27	20	User-friendly design, branding, length of homepage, targeted audience links or channels, and site search capabilities
Content	23	54	20	Access to current accurate information, public, documents, reports, publications, and multimedia materials
Services	18	52	20	Transaction services-purchase or register, interaction between citizens, businesses, and government
Citizen and Social Engagement	16	41	20	Online civic engagement/ policy deliberation, social media applications, citizens-based performance measurement
Total	86	194	100	

The following section highlights the specific design of our survey instrument, which consists of 86 measures, of which 31 are dichotomous. For the five e-government categories, our research applies 14 to 23 measures for each category; for the non-dichotomous questions, each measure was coded on a four-point scale (0, 1, 2, 3; see Table 2-3). In addition, to avoid skewing the research and data in favor of a particular category, we weight each of the five categories equally in the final score total. This occurs regardless of the number of questions in each category, and creates an overall weighted score in each category, which calculates equal category weight. The dichotomous measures in the "Services" and "Citizen and Social Engagement" categories correspond with values on a four- point scale of "0" or "3"; dichotomous measures in "Privacy" or "Usability" correspond to ratings of "0" or "1" on the scale.

Table 2-3. E-government Scale

Scale	Description
0	Information about a given topic does not exist on the website
1	Information about a given topic exists on the website (including links to other information and e-mail addresses)
2	Downloadable items are available on the website (forms, audio, video, and the other one-way transactions, popup boxes)
3	Services, transactions, or interactions can take place completely online (credit card transactions, applications for permits, searchable databases, use of cookies, digital signatures, restricted access)

A higher value was placed on some dichotomous measures, due to the relative value of the different e-government services being evaluated. For example, evaluators using our instrument in the "services" category were given the option of scoring websites as either a "0" or "3" when assessing whether a site allowed users to access their private information online (e.g., educational records, medical records, point total of driving violations, lost property). "No access" equated to a rating of "0". The justification behind this scoring followed the logic that allowing residents or employees to access private information online was a higher-order task that required more technical competence and was clearly an online service, or "3," as defined in Table 2-3. Therefore, the existence of that service resulted in a higher rating based on the technical sophistication necessary to implement it. When assessing a site as to whether it had a privacy statement or policy, evaluators were given the choice of scoring the site as "0" or "1". For users to log in to access private information, evaluators were given the option of scoring websites as either a "0" or "3." The differential values assigned to dichotomous categories were useful in comparing the components of municipal websites with one another.

The presence or absence of a privacy policy was clearly a content issue that emphasized placing information online and corresponded with a value of "1" on the scale outlined in Table 2-3. Unlike services, it often did not require further technical prowess. However, when evaluating the presence of certain technically sophisticated privacy measures (i.e. checking for viruses or requiring users to log in to access private information) evaluators were given the option of scoring websites as either a "0" or "3." The differential values assigned to dichotomous categories were useful in comparing the components of municipal websites with one another.

To ensure reliability, each municipal website was assessed by two evaluators, and in cases where significant variation (+ or – 10%) existed on the weighted score between evaluators, websites were analyzed a third time to determine where significant differences were occurring. Furthermore, an example for each measure indicated how to score the variable to increase accuracy. Evaluators were given comprehensive written instructions for assessing websites.

E-Government Categories

This section details the five e-government categories of Security/Privacy, Usability, Content, Services, and Citizen and Social Engagement, and discusses the specific measures within each category that are used to evaluate websites:

- Security and Privacy relates specifically to the privacy policies and issues concerning the authentication addressed by the website.
- Usability relates to the use of traditional web pages, forms, and search tools by the website to allow ease of navigation by the user of services.
- The Content category relates to the overall access to public documents, disability access, as well as access to multimedia and time sensitive information.
- The Services category examines interactive services, services that allow users to purchase or pay for services, and the ability of users to apply or register for municipal events or services online.
- The measures for Citizen and Social Engagement examine how local governments are engaging citizens and providing mechanisms for citizens to participate in government decision-making online via surveys, social media, forums, and other e-participation mediums.

Privacy/Security

The presence of privacy policies has the potential to improve public perception and trust of government, as well as enabling greater citizen engagement with government (Fudge and Manoharan, 2013; Mutimukwe, Kolkowska, & Grönlund, 2020). In this category, we analyzed the level privacy and security present in municipal websites by focusing on two key issues: privacy policies and user authentication. In analyzing privacy policies, evaluators first determine if the privacy policy existed and was available on every page that required data. It was important that the privacy policy be accessible on each page so that users could easily access it while navigating the website.

Next, evaluators turned to the specific details within the privacy policy. Interest was paid to determining if the policy identified which agency/agencies were collecting information, and whether and what data was being collected from usage of the website. Also, of importance was if the use or sale of such data to outside third-party organizations was addressed in the policy. Evaluators then determined if the privacy policy addressed whether third party agencies or organizations were governed by the same privacy policies as the municipal website. For example, evaluators searched for evidence that the same measures applied to all organizations with access to such data. They also examined whether users of the website were given an option to decline disclosure of personal information to third parties, which included other municipal agencies, state and local government offices, or private sector businesses. Additionally, they analyzed policy statements in order to ascertain if individuals could petition for access to their personal data in order to contest inaccurate or incomplete information.

Evaluators also addressed managerial measures that limited access to data and protection of user data. This was used to access whether data was used for unauthorized purposes and what authority monitored this. This examination also entailed the use of encryption in data transmission, and whether there was a means used to store data on secure servers. In line with the growing trend in delivering transparent information, municipalities often offer citizens access to public, and sometimes private information online. This can occur via a secure server or via other forms of requests for such data. We are also particularly concerned with the impact of the digital divide if public records are available only through the internet or if municipalities insist on charging a fee for access to public records. We believe such limited access will restrict the ability of all citizens to use such services. Our analysis specifically addresses whether certain key information, such as property tax, private information, court documents, etc. were made available to website users through multiple venues to limit the digital divide.

Evaluators then assessed whether websites used digital signatures to authenticate users and whether public or private information was accessible through a restricted area that required a password and/or registration. Next, we wanted to look at whether websites monitored citizen activity, which we felt was a critical aspect of the analysis. We were concerned that public agencies might use websites to monitor citizens or create profiles based on information they access online for a number of purposes. The concern focused on analysis and transparency by the website in the use of such monitoring. The use of cookies and web beacons to authenticate and customize experiences is typical of many modern websites. This often creates a more user-friendly experience that efficiently guides users through their browsing. However, that technology can also be used to monitor internet habits and to profile a website visitor, which may limit usage and create security concerns on the part of the user. Therefore, evaluators examined municipal privacy policies to determine whether they addressed the use of these cookies or Web beacons.

Usability

The second component of our evaluation examined the Usability of municipal websites. Simply stated, we wanted to know if websites were "user friendly." Could someone without formal training easily navigate the website? (Wang & Senecal, 2007). To measure this "user friendliness" we adapted best practices and measures from other public and private sector research (Giga, 2000), and examined three types of website features: web pages, forms, and search tools.

In our evaluation of traditional web pages written using markup language (HTML), we examined issues such as branding and structure (e.g., consistent color, formatting, and default colors (e.g., blue links and purple visited links), underlined text to indicate links, and whether visited links changed color. We also checked whether the website clearly described system hardware and software requirements. Such branding and structure speak to the overall usability of the website and its graphical appeal.

One particularly important concern in the examination was the use of online forms by government websites. These forms were typically provided to users regarding a number of issues, ranging from reporting crimes to contacting the government. In measuring whether these forms facilitated ease of use, our examination focused in particular on whether field labels aligned appropriately with each filed, whether fields were accessible by key stroke (e.g., tabs), whether the cursor automatically placed itself in the first field, and whether the tab order of fields was logical. For example, after a user filled out the first name and pressed the tab key, did the cursor automatically go to the surname field? Or did the page skip to another

field such as zip (postal) code, only to return to the surname later? We also looked to see whether from-specific pages provided additional information about how to fix user errors; for example, did the user have to reenter information or did the site flag incomplete or erroneous forms before accepting them? Likewise, did the site generate a confirmation page after a form was submitted, or did it return users to the homepage?

Our investigation also scrutinized each municipality's homepage to determine whether it was too long (two or more screen lengths) and/or whether it made available alternate versions of long documents, such as PDF or DOC files. Having multiple document types appeals directly to the presence of the users, whereas having a condensed homepage succinctly delivers the relevant information to the user. We also looked for targeted audience links or channels for customizing a website for specific groups such as citizens, businesses, or other public agencies. For example, did the website have such targeted audience links available on the homepage to draw attention to resources for specific groups? Other considerations included the consistent use of navigation bars and links to the homepage on every page, the availability of a site map or hyperlinked outline of the entire website, and whether duplicated link names connected to the same content. We also assessed whether the website was customizable based on user preferences.

Finally, the usability analysis addressed search tools on municipal websites to determine whether help searching the site was available or whether the search scope could be limited to specific site areas. For instance, were users able to search only in "public works" or" the mayor's office," or did the search tool always search the entire site? We also looked for advanced search features like exact phrase searching, the ability to match any and all words, and Boolean, searching capabilities (e.g., the ability to use AND/OR/NOT operators) as a well as a site's ability to sort search results by relevance or other criteria. The ability to sort such information in this manner leads to ease of use and alleviates frustrations in searching for specific information through the ability to search for information more succinctly on the website.

Content

The third category of our evaluation pertains to content. Content is extremely important and presents a dynamic concern that is critical in website development. For example, no matter how technologically advanced the website is, if the content is not current, if it is difficult to navigate, or if the information provided is incorrect, then it is not fulfilling its purpose. This shows a reluctance to embrace the key tenets of service delivery tied to e-government. Hence, when examining website content, we looked at five key areas: access to contact information (specifically, information about each agency represented on the website), public documents, access for those with disabilities, multimedia materials, and time sensitive information.

Exploring these concerns, evaluators looked for critical components that showed whether the content of the website was current. We looked not only for a schedule of agency office hours and availability, but also for online access to public documents, as well as a municipal code or charter and/or agency mission statements and the minutes of public meetings. Access to information of this sort was of critical concern as it demonstrated both up-to-date information and information that was readily available for users. We determined whether all users could access budget information and publications, whether the sites offered content in more than one language, and whether they provided access to disabled users through either "bobby compliance" (disability access for the blind, http://www.cast.org/bobby) or accommodations for deaf users via a TDD phone service. To gauge the use of multimedia, we examined each site for the availability of audio or video files of public events, speeches, or meetings. Time-sensitive information examined included the use of a municipal website for emergency management and/or as an alert mechanism (e.g., a terrorism or severe weather alert). We also checked for time-sensitive information such as job vacancies or a calendar of community events.

Services

An important aspect of e-government is the provision of public services online. Regarding services, evaluators attempted to determine the extent to which municipalities delivered services to their citizens. We subsequently divided municipal service into two different service types: those that allow citizens to interact with the municipality—which can be as basic as forms for requesting information or filing complaints—and those that allow users to register online for municipal services.

Regarding delivery of services that allow citizens to interact with their municipality, we examined whether the website provided advanced interactive services through which users can report crimes or violations, customize municipal homepages based on their needs (e.g., portal customization) and access private information like court, educational, or medical records online. The interactivity and method through which citizens could access such services was of critical importance. Evaluators determined if there was an electronic medium to utilize services, to if such services proceeded through forms that needed to be submitted in person.

In terms of enabling citizens to register online for municipal services, many municipalities allow online applications for a range of services as diverse as building permits and dog licenses. Some local governments are also using the internet for procurement, allowing potential contractors to access requests for proposals or even bid online for municipal contracts. Others are chronicling the procurement process by listing the total number of bidders online, and in some cases listing contract information for bidders. These elements were all critically impotent in our evaluation as they showcased multiple services targeted toward different audiences.

One benefit of e-government service delivery is transactional services, such as online payment of public utility bills and parking tickets that allow citizens to directly pay bills, fees, and fines on the government website. Not only do cities and municipalities worldwide allow online users to directly to file or pay local taxes or pay fines, in some cases around the world, cities even allowing users to register or purchase tickets online for events city halls or arenas. As many municipalities have developed such capacities to accept payments for municipal services and taxes on their websites. We examined all municipal websites studied to see if they have developed this capacity.

Citizen and Social Engagement

The fifth category of our instrument pertains to online citizen participation in government. This is a recent area of government study, and the number of channels through which the government can communicate with government and officials has increased, along with the proliferation of social media. The internet has proven to be a very convenient mechanism for through which citizens can interact with their governments. Furthermore, the interactions between the government and citizens can proceed thought several formal channels linked to their website (chat, discussion forums, polls, online newsletter, or email listservs, etc.), and thought social media (Facebook, Twitter, YouTube, etc.). The internet is a convenient mechanism through which citizen-users can engage their government, and therefore this became a concern for us in our evaluation. Hence, we continued to strengthen our survey instrument in this area in order to identify several ways public agencies at the local level were involving citizens in decision-making processes and gauging citizen inputs.

Evaluation proceeded through an identification of municipal use of the internet to foster civic engagement and citizen participation in government. For example, we evaluated whether municipal websites allow users to provide inline comments or feedback to individual agencies or elected officials. Data was garnered through measuring citizen interactions that utilize many forms of media. For example, some municipalities use their websites to measure government performance and publish the results of performance measurement activities online. Others use online bulletin boards or other chat capabilities to gather input on public issues. Such online bulletin boards offer citizens opportunities to post ideas, comments, or opinions without stipulation of specific discussion topics, although in some cases we found that agencies are attempting to structure online discussions around policy issues or specific agencies. We also examined whether social media outlets were available for citizens to interact with governments.

Once again, we found that the potential for online participation is still in the development stage: very few public agencies offer online opportunities for civic engagement. Evaluators also looked at whether local government offered current information about municipal governance online or through an online newsletter or email listserv, and whether they used internet-based polls about specific local issues to gather opinions. These mediums of communication encourage citizen activity and keep users current on issues. Likewise, we examined whether communities allowed users to participate in, and view the results of citizen satisfaction surveys online.

Table 2-4. E-Government Criteria

Privacy/ Security	
1-2. A privacy or security statement/policy3-6. Data collection 7. Option to have personal information used 8. Third party disclosures 9. Ability to review personal data records 10. Managerial measures 11. Use of encryption	12. Secure server 13. Use of “cookies” or “Web Beacons” 14. Notification of privacy policy 15. Contact or e-mail address for inquiries 16. Public information through a restricted area 17. Access to nonpublic information for employees 18. Social media policy 19. Use of digital signatures
Usability	
20-23. Homepage, page length. 24. Targeted audience 25-26. Navigation Bar 27. Site map	28-30. Font Color 31-34. Forms 35-40. Search tool 41. Update of website

Content	
42. Information about the location of offices 43. Listing of external links 44. Contact information 45. Newsletter, community updates 46. Subscription for alerts 47. Minutes of public 48. City code and regulations 49. City charter and policy priority 50. Mission statements 51. Budget information 52, 56. Documents, reports, or books (publications)	53-55. Performance measurementinformation 57. GIS capabilities 58. Emergency management or alertmechanism 59-60. Disability access 61-62. Wireless technology 63. Access in more than one language64-65. Human resources information 66. Calendar of events 67. Downloadable documents
Service	
68-70. Pay utilities, taxes, fines 71. Apply for permits 72. Service requests via social media 73. Online tracking system74-75. Apply for licenses 76. E-procurement 77. Property assessments 78. Searchable databases 79. Complaints 80-81. Bulletin board about civil applications	82. FAQ 83. Request information 84. Customize the main city homepage 85. Access private information online 86. Purchase tickets 87. Webmaster response 88. Report violations of administrative laws and regulations
Citizen and Social Engagement	
89-90. Comments or feedback 91. Newsletter 92. Online bulletin board or chat capabilities 93-95. Online discussion forum on policy issues96-97. Scheduled e-meetings for discussion	98-99. Online survey/ polls 100. Synchronous video 101-102. Citizen satisfaction survey 103-104. Online decision-making

~ Section 3 ~

Overall Results

This chapter presents the results for all the evaluated municipal websites during 2020-2021 and compares these results to those in 2010-2011. Table 3-1 provides the rankings for 51 municipal websites and their overall scores. The overall scores reflect the combined scores of each municipality's score in the five e-government component categories. The highest possible score for any one city website is 100. Minneapolis received a score of 65.60, earning the highest ranking of a city website for 2020-20211. Albuquerque had the second highest ranked municipal website with a score of 63.64 and Boise ranked third with a score of 62.57. Milwaukee and Providence complete the top five ranked municipal websites with scores of 61.27 and 58.92, respectively.

Table 3-1. Overall E-government Rankings (2020-21)

Rank	City	State	Overall
1	Minneapolis	MN	65.60
2	Albuquerque	NM	63.64
3	Boise	ID	62.57
4	Milwaukee	WI	61.27
5	Providence	RI	58.92
6	Cheyenne	WY	56.20
7	Virginia Beach	VA	55.22
8	Baltimore	MD	50.05
9	Anchorage	AK	49.99
10	Nashville	TN	49.39
11	Houston	TX	49.39
12	Chicago	IL	48.77
13	Wichita	KS	48.72
14	Louisville	KY	48.38
15	New York	NY	48.29
16	Washington D.C		47.54
17	Philadelphia	PA	47.27
18	Billings	MT	46.18
19	Charlotte	NC	45.62
20	Manchester	NH	44.84
21	Phoenix	AZ	44.71
22	Oklahoma City	OK	44.32
23	Portland	OR	44.18
24	Boston	MA	44.14
25	Kansas City	MO	43.79
26	Burlington	VT	43.59
27	Los Angeles	CA	43.37
28	Indianapolis	IN	41.35
29	Seattle	WA	40.89
30	Sioux Falls	SD	40.89
31	Bridgeport	CT	40.69

***(continued)* Table 3-1. Overall E-government Rankings (2020-21)**

Rank	City	State	Overall
32	Jacksonville	FL	40.55
33	Detroit	MI	40.52
34	Las Vegas	NV	40.16
35	Charleston	SC	38.96
36	New Orleans	LA	38.60
37	Denver	CO	38.15
38	Jackson	MS	37.98
39	Columbus	OH	37.39
40	Wilmington	DE	37.27
41	Fargo	ND	36.59
42	Portland	ME	35.90
43	Des Moines	IO	35.78
44	Little Rock	AK	35.70
45	Salt Lake City	UT	35.54
46	Honolulu	HI	34.53
47	Newark	NJ	34.33
48	Atlanta	GA	31.56
49	Birmingham	AL	29.14
50	Omaha	NE	19.77
51	Charleston	WV	19.02

The results show that two of the five top ranked cities in 2010-2011, Minneapolis and Milwaukee, remained in the top rankings for 2020-2021. Seattle dropped out of the top twenty in the rankings in 2020-2021 and Washington, DC decreased from a ranking of five in 2010-2011 to sixteen in 2020-2021. In 2020-2021, three new cities appeared in the top five cities, Albuquerque, Boise, and Providence. None of these cities were ranked in the top 20 cities in 2010-2011.

The average for all regions decreased from 45.47 in 2010-2011 to 43.71 in 2020-2021. In the West and Northeast, the average score increased from 45.04 to 45.40 and 40.25 to 44.22 respectively. The Midwest and the South saw their average scores decrease from 52.10 to 43.94 and 44.49 to 41.29 respectively.

Table 3-2. Top 20 Cities in Digital Government between 2010-2011 and 2020-2021

	2010-2011			2020-2021		
Rank	**City**	**State**	**Score**	**City**	**State**	**Score**
1	Seattle	WA	71.48	Minneapolis	MN	65.60
2	St. Paul	MN	69.91	Albuquerque	NM	63.64
3	Milwaukee	WI	69.53	Boise	ID	62.57
4	Minneapolis	MN	69.23	Milwaukee	WI	61.27
5	Washington D.C.		67.45	Providence	RI	58.92
6	Portland	OR	66.16	Cheyenne	WY	56.20
7	St. Louis	MO	65.83	Virginia Beach	VA	55.22
8	Virginia Beach	VA	65.75	Baltimore	MD	50.05
9	Boston	MA	65.71	Anchorage	AK	49.99
10	Fort Smith	AR	64.19	Nashville	TN	49.39
11	Colorado Springs	CO	63.29	Houston	TX	49.39
12	Columbus	OH	62.74	Chicago	IL	48.77

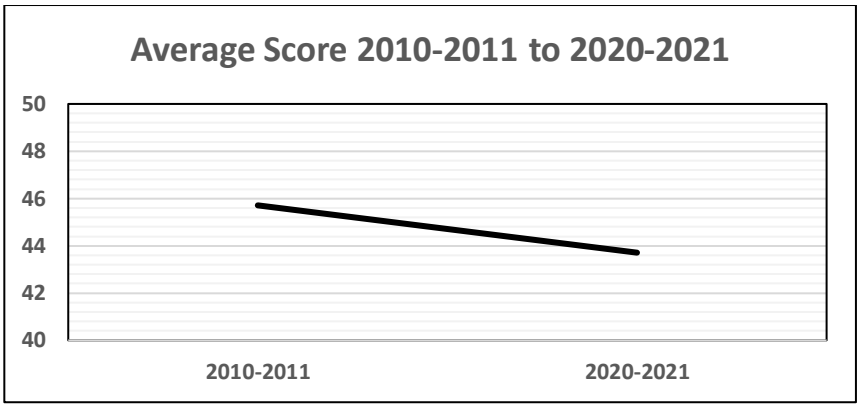
(continued) **Table 3-2. Top 20 Cities in Digital Government between 2010-2011 and 2020-2021**

	2010-2011			2020-2021		
Rank	**City**	**State**	**Score**	**City**	**State**	**Score**
13	San Diego	CA	62.12	Wichita	KS	48.72
14	Los Angeles	CA	60.42	Louisville	KY	48.38
15	Lincoln	NE	60.41	New York	NY	48.29
16	New York	NY	59.2	Washington D.C		47.54
17	Charlotte	NC	59.01	Philadelphia	PA	47.27
18	Louisville	KY	57.59	Billings	MT	46.18
19	Henderson	NV	57.55	Charlotte	NC	45.62
20	Chicago	IL	57.46	Manchester	NH	44.84

Table 3-3. Average Score by Region 2020-21

	West	Northeast	Midwest	Average	South
2010-2011	45.04	40.25	52.10	45.47	44.49
2020-2021	45.40	44.22	43.94	43.71	41.29

Fig 3-1. Average Score by Region (2020-21)



The results of the overall rankings by region are in in Tables 3-4 through 3-7. Albuquerque (West), Minneapolis (Midwest), Virginia Beach (South) and Providence (Northeast) emerged as the top ranked cities for each region in the United States. Also included in the rankings by region are the scores for each of the five e-government component categories.

The West was the highest ranked region with an average score of 45.40. The Northeast, with a score of 44.22, ranked second, followed closely by the Midwest with an average score of 43.94. Cities in the South ranked fourth with an average score of 41.29.

The overall average score for all municipalities is 43.45. The results of the overall rankings are separated by region in Tables 3-4 through 3-5. The results of the evaluation will be discussed in further detail in the following chapters.

Table 3-4. Results of Evaluation of Cities in the Northeast (2020-2021)

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
1	Providence	RI	58.92	11.11	15.63	13.02	12.30	6.88
2	New York	NY	48.29	9.63	12.50	11.90	9.67	4.58
3	Philadelphia	PA	47.27	5.56	12.19	13.65	12.13	3.75
4	Manchester	NH	44.84	9.63	15.00	8.57	9.34	2.29
5	Boston	ME	44.14	7.78	10.94	12.38	7.21	5.83
6	Burlington	VT	43.59	6.67	11.25	12.38	10.16	3.13
7	Bridgeport	CT	40.69	10.37	9.06	10.32	8.85	2.08
8	Portland	ME	35.90	4.81	9.69	11.43	7.05	2.92
9	Newark	NJ	34.33	0.00	12.50	9.52	9.18	3.13

Table 3-5. Overall Results of Cities in the South (2020-21)

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
1	Virginia Beach	VA	55.22	8.89	12.50	14.13	12.62	7.08
2	Baltimore	MD	50.05	6.67	10.94	11.59	13.77	7.08
3	Nashville	TN	49.39	8.89	13.75	12.38	10.00	4.38
4	Houston	TX	49.39	10.37	11.56	13.33	10.16	3.96
5	Louisville	KY	48.38	5.19	12.81	13.02	10.49	6.88
6	Washington D.C.		47.54	9.26	12.81	11.27	8.36	5.83
7	Charlotte	NC	45.62	7.41	13.75	11.43	8.03	5.00
8	Oklahoma City	OK	44.32	4.81	12.81	11.75	10.98	3.96
9	Jacksonville	FL	40.55	4.44	13.44	10.16	9.18	3.33
10	Charleston	SC	38.96	4.81	11.88	11.59	6.72	3.96
11	New Orleans	LA	38.60	7.41	11.88	7.94	7.21	4.17
12	Wilmington	DE	37.27	1.48	13.75	10.32	9.02	2.71
13	Little Rock	AK	35.70	7.41	11.25	10.00	4.75	2.29
14	Atlanta	GA	31.56	2.59	10.31	6.98	10.00	1.67
15	Birmingham	AL	29.14	2.96	11.56	7.46	5.90	1.25
16	Charleston	WV	19.02	0.00	7.50	6.83	3.44	1.25

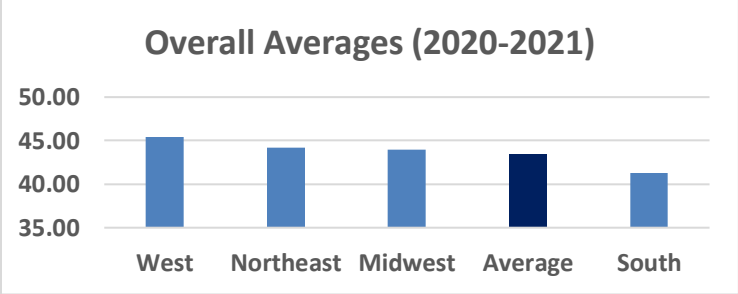
Table 3-6. Overall Results of Cities in the Midwest (2020-21)

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
1	Minneapolis	MN	65.60	8.52	15.00	14.44	14.10	13.54
2	Boise	ID	62.57	11.11	12.19	17.30	14.26	7.71
3	Milwaukee	WI	61.27	13.33	12.50	12.54	13.93	8.96
4	Chicago	IL	48.77	8.52	12.50	12.38	10.16	5.21
5	Wichita	KS	48.72	8.89	12.81	11.11	10.49	5.42
6	Kansas City	MO	43.79	7.78	12.81	9.84	8.36	5.00
7	Indianapolis	IN	41.35	9.26	9.69	9.84	9.02	3.54
8	Sioux Falls	SD	40.89	4.44	10.63	8.73	12.30	4.79
9	Detroit	MI	40.52	4.81	10.94	11.27	7.87	5.63
10	Denver	CO	38.15	7.04	9.69	8.73	8.52	4.17
11	Jackson	MS	37.98	2.22	11.56	11.27	9.18	3.75
12	Columbus	OH	37.39	7.04	10.00	7.78	8.20	4.38
13	Fargo	ND	36.59	4.44	11.56	8.89	8.36	3.33
14	Des Moines	IO	35.78	6.30	10.00	9.68	4.59	5.21
15	Omaha	NE	19.77	0.00	7.81	6.19	4.10	1.67

Table 3-7. Overall Results of Cities in the West (2020-21)

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
1	Albuquerque	NM	63.64	11.11	15.94	13.49	13.93	9.17
2	Cheyenne	WY	56.20	1.85	13.75	14.29	13.61	12.71
3	Anchorage	AK	49.99	7.78	13.44	12.70	10.66	5.42
4	Billings	MT	46.18	9.63	10.00	10.48	10.66	5.42
5	Phoenix	AZ	44.71	10.37	9.38	10.63	10.16	4.17
6	Portland	OR	44.18	7.78	14.38	11.75	8.20	2.08
7	Los Angeles	CA	43.37	8.89	11.25	10.00	8.85	4.38
8	Seattle	WA	40.89	10.37	8.44	9.21	10.16	2.71
9	Las Vegas	NV	40.16	6.30	10.94	9.68	8.03	5.21
10	Salt Lake City	UT	35.54	5.19	9.38	9.37	7.87	3.75
11	Honolulu	HI	34.53	3.70	10.63	9.21	7.87	3.13

Figure 3-2 Average Score by Region (2020-2021)



Tables 3-8 through Table 3-11 show the evaluation scores for cities divided into three groups: cities with populations of more than 1,000,000, cities with populations between 500,000 and 1,000,000, and cities with populations less than 500,000. The overall evaluation scores are shown for each city as well as the scores for each evaluation group. The results of arranging the data by size of city shows that the larger the city, the higher the average evaluation score in each group. Cities of more than1,000,000 had an average evaluation score of 46.97, those with populations of between 500,000 and 1,000,000 had an average score of 43.72, and those with populations of less than 500,000 had an average score of 41.85. It is interesting to note that of the five cities with the highest scores in this survey, none of them had a population of more than 1,000,000 people. Milwaukee and Albuquerque had populations of between 500,000 and 1,000,000 people and Minneapolis, Providence, and Boise had populations of less than 500,000 people.

Table 3-8. Results of Evaluation for Cities More than One Million People (2020-2021)

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
1	Houston	TX	49.39	10.37	11.56	13.33	10.16	3.96
2	Chicago	IL	48.77	8.52	12.50	12.38	10.16	5.21
3	New York	NY	48.29	9.63	12.50	11.90	9.67	4.58
4	Philadelphia	PA	47.27	5.56	12.19	13.65	12.13	3.75
5	Phoenix	AZ	44.71	10.37	9.38	10.63	10.16	4.17
6	Los Angeles	CA	43.37	8.89	11.25	10.00	8.85	4.38

Table 3-9. Results of Evaluation for Cities between 500,000 and One Million People (2020-2021)

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
1	Albuquerque	NM	63.64	11.11	15.94	13.49	13.93	9.17
2	Milwaukee	WI	61.27	13.33	12.50	12.54	13.93	8.96
3	Baltimore	MD	50.05	6.67	10.94	11.59	13.77	7.08
4	Nashville	TN	49.39	8.89	13.75	12.38	10.00	4.38
5	Louisville	KY	48.38	5.19	12.81	13.02	10.49	6.88
6	Washington D.C.		47.54	9.26	12.81	11.27	8.36	5.83
7	Oklahoma City	OK	44.32	4.81	12.81	11.75	10.98	3.96
8	Portland	OR	44.18	7.78	14.38	11.75	8.20	2.08
9	Boston	MA	44.14	7.78	10.94	12.38	7.21	5.83
10	Kansas City	MO	43.79	7.78	12.81	9.84	8.36	5.00
11	Indianapolis	IN	41.35	9.26	9.69	9.84	9.02	3.54
12	Seattle	WA	40.89	10.37	8.44	9.21	10.16	2.71
13	Detroit	MI	40.52	4.81	10.94	11.27	7.87	5.63
14	Las Vegas	NV	40.16	6.30	10.94	9.68	8.03	5.21
15	Denver	CO	38.15	7.04	9.69	8.73	8.52	4.17
16	Columbus	OH	37.39	7.04	10.00	7.78	8.20	4.38
17	Charlotte	NC	35.90	4.81	9.69	11.43	7.05	2.92
17	Portland	ME	35.90	4.81	9.69	11.43	7.05	2.92
17	Jacksonville	FL	35.90	4.81	9.69	11.43	7.05	2.92
20	Atlanta	GA	31.56	2.59	10.31	6.98	10.00	1.67

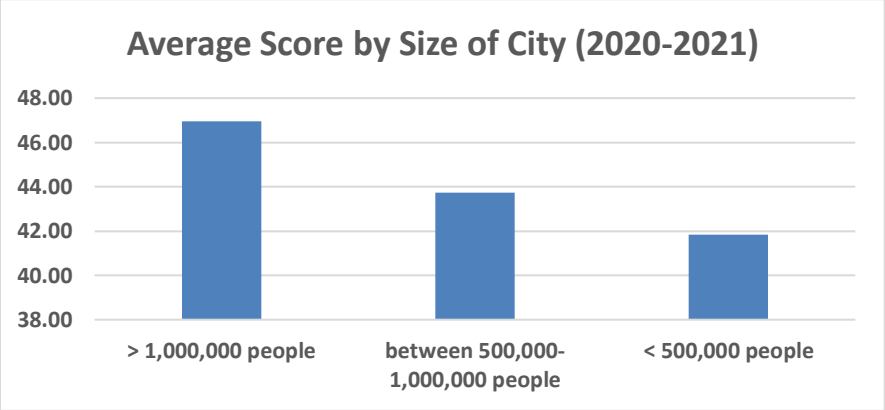
Table 3-10. Results of Evaluation for Cities Less Than 500,000 People (2020-2021)

Rank	City	State	Overall	Privacy	Usability	Content	Service	Citizens and Social Engagement
1	Minneapolis	MN	65.60	8.52	15.00	14.44	14.10	13.54
2	Boise	ID	62.57	11.11	12.19	17.30	14.26	7.71
3	Providence	RI	58.92	11.11	15.63	13.02	12.30	6.88
4	Cheyenne	WY	56.20	1.85	13.75	14.29	13.61	12.71
5	Virginia Beach	VA	55.22	8.89	12.50	14.13	12.62	7.08
6	Anchorage	AK	49.99	7.78	13.44	12.70	10.66	5.42
7	Wichita	KS	48.72	8.89	12.81	11.11	10.49	5.42
8	Billings	MT	46.18	9.63	10.00	10.48	10.66	5.42
9	Manchester	NH	44.84	9.63	15.00	8.57	9.34	2.29
10	Burlington	VT	43.59	6.67	11.25	12.38	10.16	3.13
11	Sioux Falls	SD	40.89	4.44	10.63	8.73	12.30	4.79
12	Bridgeport	CT	40.69	10.37	9.06	10.32	8.85	2.08
13	Charleston	SC	38.96	4.81	11.88	11.59	6.72	3.96
14	New Orleans	LA	38.60	7.41	11.88	7.94	7.21	4.17
15	Jackson	MS	37.98	2.22	11.56	11.27	9.18	3.75
16	Wilmington	DE	37.27	1.48	13.75	10.32	9.02	2.71
17	Fargo	ND	35.90	4.81	9.69	11.43	7.05	2.92
17	Des Moines	IO	35.90	4.81	9.69	11.43	7.05	2.92
17	Little Rock	AK	35.90	4.81	9.69	11.43	7.05	2.92
20	Salt Lake City	UT	35.54	5.19	9.38	9.37	7.87	3.75
21	Honolulu	HI	34.53	3.70	10.63	9.21	7.87	3.13
22	Newark	NJ	34.33	0.00	12.50	9.52	9.18	3.13
23	Birmingham	AL	29.14	2.96	11.56	7.46	5.90	1.25
24	Omaha	NE	19.77	0.00	7.81	6.19	4.10	1.67
25	Charleston	WV	19.02	0.00	7.50	6.83	3.44	1.25

Table 3-11. Average Score by size of city (2020-2021)

	> 1,000,000 people	Between 500,000-1,000,000 people	< 500,000 people
Overall Averages	46.97	43.72	41.85

Figure 3-3. Average Score by Size of City (2020-2021)



~ Section 4 ~

Privacy and Security

This chapter highlights the results for Privacy and Security. The results show that Milwaukee was first in the category of privacy and security with a score of 13.33. Albuquerque, Boise, and Providence tied for second in this category, with a score of 11.11. Houston, Phoenix, Phoenix, Seattle, and Bridgeport round out the top ranked cities, earning scores of 10.37. Table 4-1 summarizes the results for all the municipalities evaluated.

The highest possible score for any municipality in this category is 20. The average score is 6.88, with cities in the West ranking the highest with an average score of 7.54. Cities in the Northeast scored 7.28 on average in this category, followed by cities in the Midwest and the South, with scores of 6.91 and 5.79, respectively.

Table 4-1. Results in Privacy/Security (2020-21)

Rank	City	State	Privacy
1	Milwaukee	WI	13.33
2	Albuquerque	NM	11.11
2	Boise	ID	11.11
2	Providence	RI	11.11
5	Houston	TX	10.37
5	Phoenix	AZ	10.37
5	Seattle	WA	10.37
5	Bridgeport	CT	10.37
9	New York	NY	9.63
9	Billings	MT	9.63
9	Manchester	NH	9.63
12	Washington D.C		9.26
12	Indianapolis	IN	9.26
14	Virginia Beach	VA	8.89
14	Nashville	TN	8.89
14	Wichita	KS	8.89
14	Los Angeles	CA	8.89
18	Minneapolis	MN	8.52
18	Chicago	IL	8.52
20	Boston	MA	7.78
21	Anchorage	AK	7.78
21	Portland	OR	7.78
21	Kansas City	MO	7.78
24	Charlotte	NC	7.41
24	New Orleans	LA	7.41
24	Little Rock	AK	7.41
27	Denver	CO	7.04
27	Columbus	OH	7.04

(continued) **Table 4-1. *(cont'd)* Results in Privacy/Security (2020-21)**

Rank	City	State	Privacy
29	Baltimore	MD	6.67
29	Burlington	VT	6.67
31	Las Vegas	NV	6.30
31	Des Moines	IO	6.30
33	Philadelphia	PA	5.56
34	Louisville	KY	5.19
34	Salt Lake City	UT	5.19
36	Oklahoma City	OK	4.81
36	Detroit	MI	4.81
36	Charleston	SC	4.81
36	Portland	ME	4.81
40	Sioux Falls	SD	4.44
40	Jacksonville	FL	4.44
40	Fargo	ND	4.44
43	Honolulu	HI	3.70
44	Birmingham	AL	2.96
45	Atlanta	GA	2.59
46	Jackson	MS	2.22
47	Cheyenne	WY	1.85
48	Wilmington	DE	1.48
49	Newark	NJ	0.00
49	Omaha	NE	0.00
49	Charleston	WV	0.00

Figure 4-1. Average Score in Privacy and Security by Region (2020-2021)

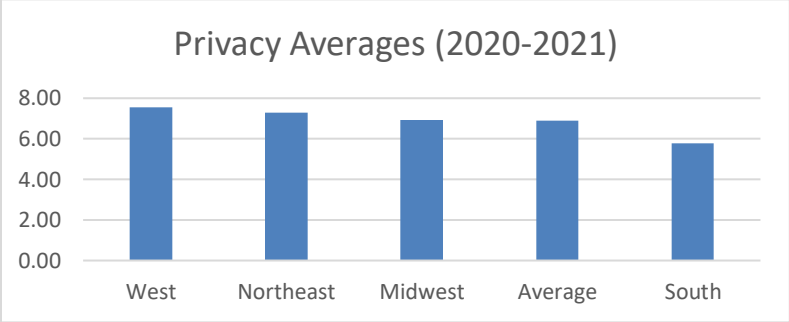


Table 4-2. Average Score in Privacy and Security by Region (2020-2021)

	West	Northeast	Midwest	Average	South
Privacy Averages	7.54	7.28	6.91	6.88	5.79

Table 4-3 lists the results of evaluation of key aspects in the category of Privacy and Security by region. All the regions have a high percent of their cities developing a privacy or security policy, with the

existence of a privacy statement ranging from 86% in the South to 91% in the West, and an average for all regions of 88%. The overall percentage for cities that have a policy addressing the use of encryption online is 49%. Regarding the use of encryption in the transmission of data, 67% of all cities evaluated in the Midwest, as well as 55% of cities in the West, and 38% of cities in the Northeast and the South have a policy addressing the use of encryption on their websites. In addition, 88% of cities evaluated in the Northeast, 69% of cities in the South, 67% of cities in the Midwest and 64% of cities in the West use "cookies" or "web beacons" to track users. Theoverall percentage for cities that have a policy addressing the use of "cookies" or "web beacons" to track users is 72%. For the use digital signatures, the scores of all regions were low; cities in the West had the highest score at 18%, followed by cities in the Northeast and the South with 13%, and then cities in the South with 6%. The overall average for all regions in the use of digital signature is 13%.

Table 4-4 shows the results of the key aspects of Privacy and Security for 2010-2011. The averages for all four of the measures in Privacy and Security for cities in all regions increased from 2010-2011 to 2020-2021. Cities that maintain a privacy or security policy went from 81% to 88%, cities that use encryption increased from 42% to 49%, cities that use cookies went from 60% to 72%, and cities that use digital signatures increased from 6% to 13%. Having a privacy and security statement increased in all four regions. The other three measures in this aspect, use of encryption, use of cookies, and a digital signature, increased in three regions and decreased in the fourth.

Table 4-3. Results in Privacy and Security by Region (2020-2021)

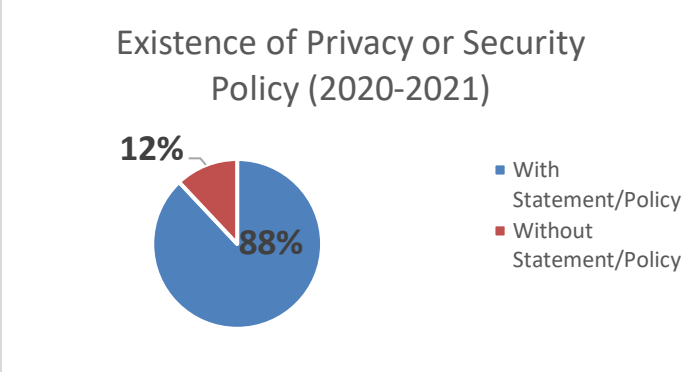
	West	Northeast	Midwest	Average	South
Privacy or Security Policy	91%	88%	87%	88%	86%
Use of Encryption	55%	38%	67%	49%	38%
Use of Cookies	64%	88%	67%	72%	69%
Digital Signature	18%	13%	13%	13%	6%

Table 4-4. Results in Privacy and Security by Region (2010-2011)

	West	Northeast	Midwest	Average	South
Privacy or Security Policy	77%	75%	86%	81%	84%
Use of Encryption	31%	50%	54%	42%	35%
Use of Cookies	58%	56%	68%	60%	58%
Digital Signature	0%	0%	11%	6%	10%

On average, 88% of all cities evaluated have developed a privacy or security statement/policy as depicted by Fig 4-2.

Figure 4-2. Existence of Privacy or Security Policy (2020-2021)



~ Section 5 ~

Usability

Chapter Five discusses the results for e-government Usability. Results indicate that Albuquerque earned first place with a score of 15.94 in the category of Usability. Providence was second with a score of 15.63, while Minneapolis and Manchester were tied for third with a score of 15.00. Portland was in fifth place at 14.38. Table 5-1 summarizes the results for all the municipalities evaluated.

The highest possible score for any municipality in this category is 20. The average score is 11.75, with cities in the Northeast ranked the highest with an average score of 12.08. Cities in the South scored 12.03 on average in this category, followed by cities in the West and Midwest with scores of 11.59 and 11.31, respectively.

Table 5-1. Results in Usability (2020-2021)

Rank	City	State	Usability
1	Albuquerque	NM	15.94
2	Providence	RI	15.63
3	Minneapolis	MN	15.00
3	Manchester	NH	15.00
5	Portland	OR	14.38
6	Cheyenne	WY	13.75
6	Nashville	TN	13.75
6	Charlotte	NC	13.75
6	Wilmington	DE	13.75
10	Anchorage	AK	13.44
10	Jacksonville	FL	13.44
12	Wichita	KS	12.81
12	Louisville	KY	12.81
12	Washington D.C		12.81
12	Oklahoma City	OK	12.81
12	Kansas City	MO	12.81
17	Milwaukee	WI	12.50
17	Virginia Beach	VA	12.50
17	Chicago	IL	12.50
17	New York	NY	12.50
17	Newark	NJ	12.50
22	Boise	ID	12.19
22	Philadelphia	PA	12.19
24	Charleston	SC	11.88
24	New Orleans	LA	11.88
26	Houston	TX	11.56

(continued) **Table 5-1. Results in Usability (2020-2021)**

Rank	City	State	Usability
26	Jackson	MS	11.56
26	Fargo	ND	11.56
26	Birmingham	AL	11.56
30	Burlington	VT	11.25
30	Los Angeles	CA	11.25
30	Little Rock	AK	11.25
33	Baltimore	MD	10.94
33	Boston	MA	10.94
33	Detroit	MI	10.94
33	Las Vegas	NV	10.94
37	Sioux Falls	SD	10.63
37	Honolulu	HI	10.63
39	Atlanta	GA	10.31
40	Billings	MT	10.00
40	Columbus	OH	10.00
40	Des Moines	IO	10.00
43	Indianapolis	IN	9.69
43	Denver	CO	9.69
43	Portland	ME	9.69
46	Phoenix	AZ	9.38
46	Salt Lake City	UT	9.38
48	Bridgeport	CT	9.06
49	Seattle	WA	8.44
50	Omaha	NE	7.81
51	Charleston	WV	7.50
30	Little Rock	AK	11.25
33	Baltimore	MD	10.94
33	Boston	MA	10.94
33	Detroit	MI	10.94
33	Las Vegas	NV	10.94
37	Sioux Falls	SD	10.63
37	Honolulu	HI	10.63
39	Atlanta	GA	10.31
40	Billings	MT	10.00
40	Columbus	OH	10.00
40	Des Moines	IO	10.00
43	Indianapolis	IN	9.69
43	Denver	CO	9.69
43	Portland	ME	9.69
46	Phoenix	AZ	9.38
46	Salt Lake City	UT	9.38
48	Bridgeport	CT	9.06
49	Seattle	WA	8.44
50	Omaha	NE	7.81
51	Charleston	WV	7.50

Figure 5-1. Average Score in Usability by Region (2020-2021)

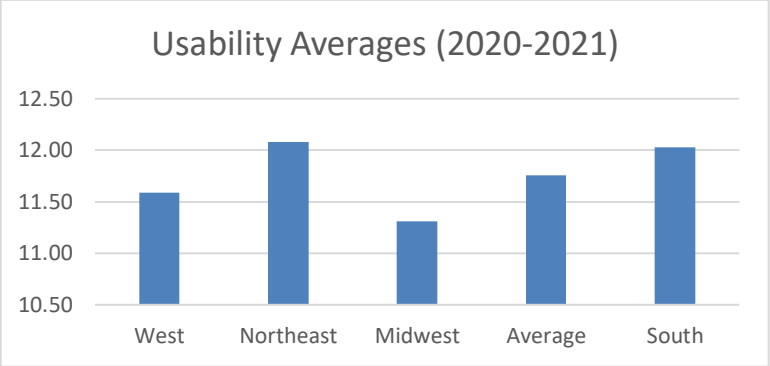


Table 5-2. Average Score in Usability by Region (2020-2021)

	West	Northeast	Midwest	Average	South
Usability Averages	11.59	12.08	11.31	11.75	12.03

Table 5-3 enumerates the results of the evaluation of key aspects in the category of Usability by region. For identifying targeted audiences, the average for all regions was 83%; with the South at 94%, the West at 91%, the Northeast at 75%, and the Midwest at 73%. The existence of a site map for a website is contained in an average of 73% of the cities in all the regions. A site map, existed in 82% of the cities in the West, 81% of the cities in the South, 67% of the cities in the Midwest, and 63% of the cities in the Northeast. All the regions had a 100% rating in having a search tool on the main page of their website.

Table 5-4 shows the results of the key aspects of Usability for 2010-2011. The averages for the two measures in Usability for all the regions increased from 2010-2011 to 2020-2021. Cities with targeted audience links on average went from 47% to 83% and cities having a search tool increased on average for all regions from 82% to 100%. Both the targeted audience links and search tool measures grew for each of the four regions.

Table 5-3. Results in Usability by Region (2020-2021)

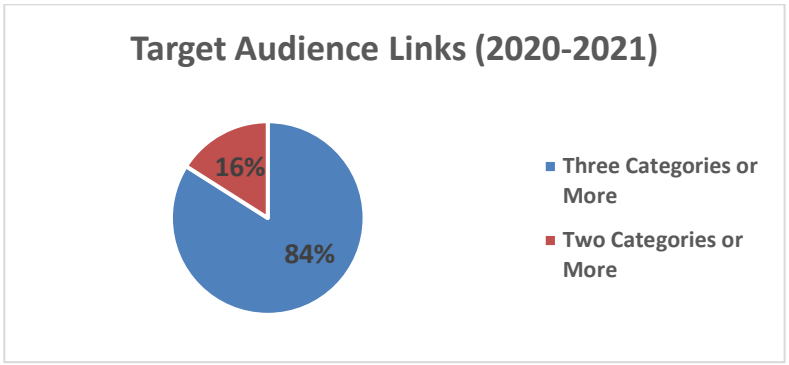
	West	Northeast	Midwest	Average	South
Targeted Audience	91%	75%	73%	83%	94%
Site Map	82%	63%	67%	73%	81%
Search Tool	100%	100%	100%	100%	100%

Table 5-4. Results in Usability by Region (2010-2011)

	West	Northeast	Midwest	Average	South
Targeted Audience Links	42%	50%	42%	47%	55%
Search Tool	85%	81%	85%	82%	77%

On average, 84% of all cities evaluated have developed targeted audience links as shown by Fig 5-2.

Figure 5-2. Target Audience Links (2020-2021)



~ Section 6 ~

Content

The following chapter shows the results for Content. Results indicate that Boise, Minneapolis, Cheyenne, Virginia Beach, and Philadelphia. are the top five ranked cities in the category of Content. Boise is ranked first with a score of 17.30, while Minneapolis follows second with a score of 14.44 points. Cheyenne is ranked third with a score of 14.29, with Virginia Beach fourth with a score of 14.13, and Philadelphia closes the top five with a score of 13.65. Table 6-1 summarizes the results for all the municipalities evaluated.

The highest possible score for any municipality in this category is 20. The average score is 10.94, with cities in the Northeast ranked the highest with an average score of 11.46. Cities in the West scored 10.98 on average in this category, followed by cities in the Midwest and South with scores of 10.67 and 10.63, respectively.

Table 6-1. Results in Content (2020-21)

Rank	City	State	Content
1	Boise	ID	17.30
2	Minneapolis	MN	14.44
3	Cheyenne	WY	14.29
4	Virginia Beach	VA	14.13
5	Philadelphia	PA	13.65
6	Albuquerque	NM	13.49
7	Houston	TX	13.33
8	Providence	RI	13.02
8	Louisville	KY	13.02
10	Anchorage	AK	12.70
11	Milwaukee	WI	12.54
12	Boston	MA	12.38
13	Nashville	TN	12.38
13	Chicago	IL	12.38
13	Burlington	VT	12.38
16	New York	NY	11.90
17	Oklahoma City	OK	11.75
17	Portland	OR	11.75
19	Charleston	SC	11.59
20	Baltimore	MD	11.59
21	Portland	ME	11.43
22	Charlotte	NC	11.43
23	Washington D.C		11.27
23	Detroit	MI	11.27
23	Jackson	MS	11.27
26	Wichita	KS	11.11
27	Phoenix	AZ	10.63
28	Billings	MT	10.48

(continued) **Table 6-1. Results in Content (2020-21)**

Rank	City	State	Content
29	Bridgeport	CT	10.32
29	Wilmington	DE	10.32
31	Jacksonville	FL	10.16
32	Los Angeles	CA	10.00
32	Little Rock	AK	10.00
34	Indianapolis	IN	9.84
35	Kansas City	MO	9.84
36	Las Vegas	NV	9.68
37	Des Moines	IO	9.68
38	Newark	NJ	9.52
39	Salt Lake City	UT	9.37
40	Seattle	WA	9.21
40	Honolulu	HI	9.21
42	Fargo	ND	8.89
43	Sioux Falls	SD	8.73
43	Denver	CO	8.73
45	Manchester	NH	8.57
46	New Orleans	LA	7.94
47	Columbus	OH	7.78
48	Birmingham	AL	7.46
49	Atlanta	GA	6.98
50	Charleston	WV	6.83
51	Omaha	NE	6.19

Figure 6-1. Average Score in Content by Region (2020-2021)

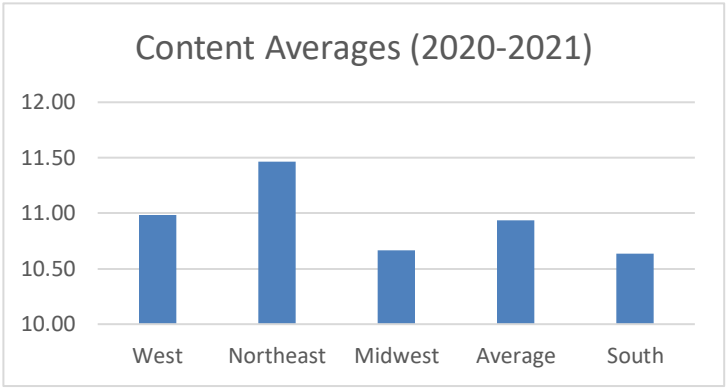


Table 6-2. Average Score in Content by Region (2020-2021)

	West	Northeast	Midwest	Average	South
Content Averages	10.98	11.46	10.67	10.94	10.63

Table 6-3 shows the results of the evaluation of key aspects in the category of Content by region. The average for cities in all regions with a link to emergency management services was high at 98%. The West, Northeast, and the South were at 100%, while the Midwest was 93%. For access for the blind, the average for all cities in all regions was 50%, with the South at 56% and the West at 55%, while Northeast was at 50% and the Midwest was at 40%. The results were somewhat better for access for the deaf, where the average of all regions was 72%. The results for cities in the Northeast was 88% and the South 75%, while the results for cities in the West and Midwest were 64% and 60% respectively.

For the presence of wireless technology, the average for all regions was very good at 96%. The Northeast and Midwest had wireless technology in 100% of their cities, and cities in the South were at 94% and the cities in the West at 91%. The average for cities in all regions whose websites had more than one language, which has become more important in recent years, is 90%. Cities in the Midwest was at 93%, cities in the West at 91%, and cities in the Northeast and the South are both at 88%. The results for cities with performance measurement information, which inform citizens how their government is functioning, showed the average for all regions was 79%. Cities in the West and the Northeast were at 100%, and the cities in the South and Midwest were 63% and 53% respectively.

Table 6-4 shows the results of the key aspects of Content for 2010-2011. The averages for the three measures for the cities for each region that were included in the surveys for 2010-2011 and 2020-2021 increased between the two survey periods. The average for city websites in all regions that has access for the blind went from 13% to 50%. For access for the deaf, the average for city websites in all regions went from 26% to 72%. Finally, for cities having performance measurement information, , the average for city websites in all regions increased from 15% to 79%. The access of the blind, the access for the deaf, and performance measurement increased in each of the four regions.

Table 6-3. Results in Content by Region (2020-2021)

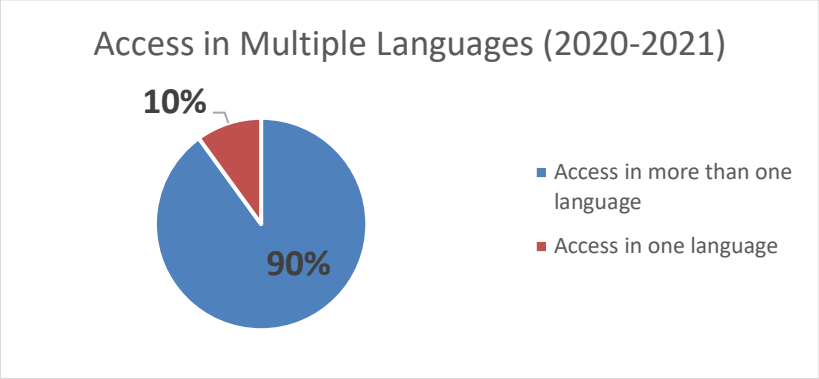
	West	Northeast	Midwest	Average	South
Emergency Management	100%	100%	93%	98%	100%
Access for the Blind	55%	50%	40%	50%	56%
Access for the Deaf	64%	88%	60%	72%	75%
Wireless Technology	91%	100%	100%	96%	94%
More than one Language	91%	88%	93%	90%	88%
Performance Measurement	100%	100%	53%	79%	63%

Table 6-4. Results in Content by Region (2010-2011)

	West	Northeast	Midwest	Average	South
Access for the Blind	8%	6%	23%	13%	13%
Access for the Deaf	19%	38%	19%	26%	32%
Performance Measurement	19%	31%	8%	15%	19%

On average, 90% of all cities evaluated had access to multiple languages as shown in Figure 6-2.

Figure 6-2. Target Access to Multiple Languages (2020-2021)



~ Section 7 ~

Services

The following chapter highlights the results for the category of Services. Results indicate Boise, Minneapolis, Albuquerque, Milwaukee, and Baltimore ranked highest in the category of Services. Boise ranked first with a score of 14.46, followed by Minneapolis with a score of 14.10. Albuquerque and Milwaukee were tied and ranked third with a score of 13.93. Baltimore was the at fifth with a score of 13.77. Table 7-1 summarizes the results for all the municipalities evaluated.

The highest possible score for any municipality in this category is 20. The average score is 9.46, with cities in the West ranked the highest with an average score of 10.00. Cities in the Midwest scored 9.56 on average in this category, followed by cities in the Northeast and the South with scores of 9.54 and 8.79 respectively.

Table 7-1. Results in Services (2020-2021)

Rank	City	State	Service
1	Boise	ID	14.26
2	Minneapolis	MN	14.10
3	Albuquerque	NM	13.93
3	Milwaukee	WI	13.93
5	Baltimore	MD	13.77
6	Cheyenne	WY	13.61
7	Virginia Beach	VA	12.62
8	Providence	RI	12.30
8	Sioux Falls	SD	12.30
10	Philadelphia	PA	12.13
11	Oklahoma City	OK	10.98
12	Anchorage	AK	10.66
12	Billings	MT	10.66
14	Wichita	KS	10.49
15	Louisville	KY	10.49
16	Phoenix	AZ	10.16
16	Burlington	VT	10.16
18	Chicago	IL	10.16
18	Seattle	WA	10.16
20	Houston	TX	10.16
21	Nashville	TN	10.00
21	Atlanta	GA	10.00
23	New York	NY	9.67
24	Manchester	NH	9.34
25	Jacksonville	FL	9.18
25	Jackson	MS	9.18
25	Newark	NJ	9.18
28	Indianapolis	IN	9.02

(continued) **Table 7-1. Results in Services (2020-2021)**

Rank	City	State	Service
29	Wilmington	DE	9.02
30	Los Angeles	CA	8.85
30	Bridgeport	CT	8.85
32	Denver	CO	8.52
33	Washington D.C		8.36
33	Kansas City	MO	8.36
33	Fargo	ND	8.36
36	Portland	OR	8.20
36	Columbus	OH	8.20
38	Charlotte	NC	8.03
38	Las Vegas	NV	8.03
40	Detroit	MI	7.87
40	Salt Lake City	UT	7.87
40	Honolulu	HI	7.87
43	Boston	MA	7.21
44	New Orleans	LA	7.21
45	Portland	ME	7.05
46	Charleston	SC	6.72
47	Birmingham	AL	5.90
48	Little Rock	AK	4.75
49	Des Moines	IO	4.59
50	Omaha	NE	4.10
51	Charleston	WV	3.44

Figure 7-1. Average Score in Services by Region (2020-2021)

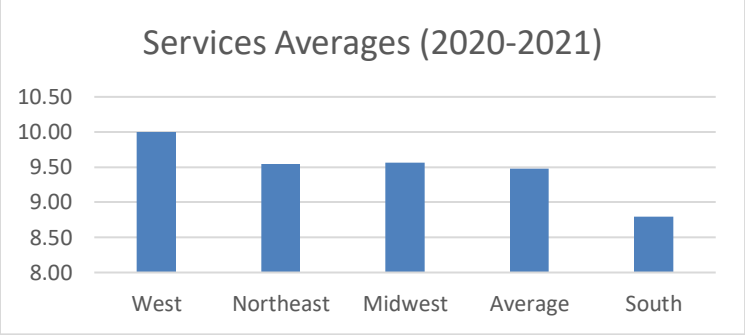


Table 7-2. Average Score in Services by Region (2020-2021)

	West	Northeast	Midwest	Average	South
Services Average	10.00	9.54	9.56	9.46	8.79

Table 7-3 shows the results of the evaluation of key aspects in the category of Services by region. The average score for all cities that had a searchable data base on their website was high at 98%. A searchable data base enables users to locate information more easily. Regarding a searchable data base, 100% of the cities in the West, Northeast, and the South had websites with a searchable data base, and 93% of the cities in the Midwest offer this feature. For cities where portal customization was available on their website, the average for all cities was 27%. Portal customization was highest for cities in the Northeast at 38%. The next highest-ranking regions that had the ability for portal customization were the Midwest 33%, the South at 19%, and the West 18%. In terms of city websites that allow access to private information on their websites, an average of 64% of all cities provide this feature. The Northeast ranked the highest with 75% of the cities' websites permitting access to private information, followed by cities in the West, Midwest, and South at 64%, 60%, and 56% respectively.

Table 7-4 shows the results of the key aspects of Services for 2010-2011. The one measure that was included in the surveys for 2010-2011 and 2020-2021 was a city website that had a searchable database. The average for all regions for cities with websites with a searchable database increased 70% to 98%. The measure of city websites that have a searchable data base increased in each of the four regions.

Table 7-3. Results in Services by Region (2020-2021)

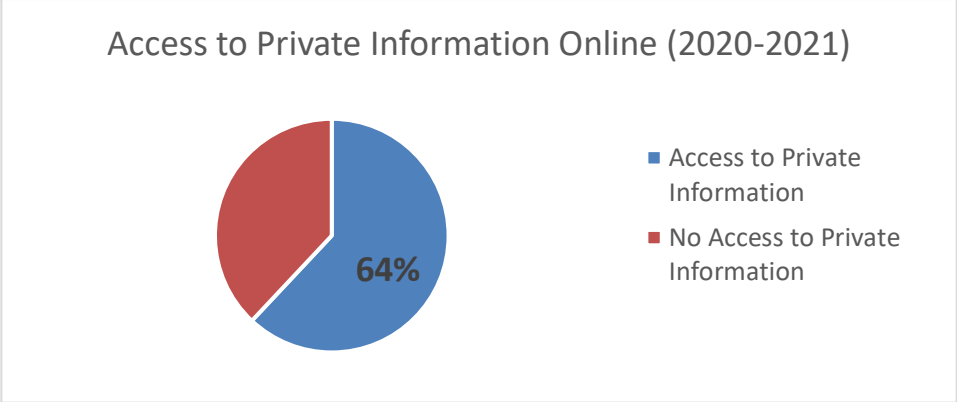
	West	Northeast	Midwest	Average	South
Searchable Database	100%	100%	93%	98%	100%
Portal Customization	18%	38%	33%	27%	19%
Access to Private Information	64%	75%	60%	64%	56%

Table 7-4. Results in Services by Region (2010-2011)

	West	Northeast	Midwest	Average	South
Searchable Database	50%	75%	73%	**70%**	81%

On average, 64% of all cities evaluated had access to private information as shown in Figure 7-2.

Figure 7-2. Access to Private Information Online (2020-2021)



~ Section 8 ~

Citizen and Social Engagement

This chapter shows the results for Citizen and Social Engagement. The results indicate that Minneapolis, Cheyenne, Albuquerque, Milwaukee, and Boise are the top ranked cities in the category of Citizen and Social Engagement. Minneapolis is ranked first with a score of 13.54, with Cheyenne in the second position with a score of 12.71. Albuquerque is third with a score of 9.17, and Milwaukee is ranked fourth and Boise is ranked fifth with scores of 8.96 and 7.71 respectively. Table 8-1 summarizes the results for all the municipalities evaluated in this category.

The highest possible score for any municipality in this category is 20. The average score is low at 4.67 and can be the result of the expansion of the number of questions and focus of the survey instrument on Citizen and Social Engagement, the many changes that have occurred in social media capabilities in the last number of years, and the inability of cities to keep up with these new capabilities. Overall, cities in the Midwest ranked the highest amongst the regions with an average score of 5.49, whilecities in the West scored 5.28 on average in this category. They are followed by cities in the South and Northeast, with scores of 4.05 and 3.84 respectively.

Table 8-1. Results in Citizen and Social Engagement (2020-2021)

Rank	City	State	Citizens and Social Engagement
1	Minneapolis	MN	13.54
2	Cheyenne	WY	12.71
3	Albuquerque	NM	9.17
4	Milwaukee	WI	8.96
5	Boise	ID	7.71
6	Virginia Beach	VA	7.08
6	Baltimore	MD	7.08
8	Providence	RI	6.88
8	Louisville	KY	6.88
10	Washington D.C		5.83
11	Boston	MA	5.83
12	Detroit	MI	5.63
13	Wichita	KS	5.42
14	Anchorage	AK	5.42
14	Billings	MT	5.42
16	Las Vegas	NV	5.21
17	Chicago	IL	5.21
17	Des Moines	IO	5.21
19	Charlotte	NC	5.00
19	Kansas City	MO	5.00
21	Sioux Falls	SD	4.79
22	New York	NY	4.58
23	Nashville	TN	4.38
23	Los Angeles	CA	4.38

(continued) **Table 8-1. Results in Citizen and Social Engagement (2020-2021)**

Rank	City	State	Citizens and Social Engagement
23	Columbus	OH	4.38
26	Phoenix	AZ	4.17
26	Denver	CO	4.17
28	New Orleans	LA	4.17
29	Houston	TX	3.96
29	Oklahoma City	OK	3.96
29	Charleston	SC	3.96
32	Philadelphia	PA	3.75
32	Jackson	MS	3.75
32	Salt Lake City	UT	3.75
35	Indianapolis	IN	3.54
36	Jacksonville	FL	3.33
36	Fargo	ND	3.33
38	Burlington	VT	3.13
38	Honolulu	HI	3.13
38	Newark	NJ	3.13
41	Portland	ME	2.92
42	Seattle	WA	2.71
42	Wilmington	DE	2.71
44	Little Rock	AK	2.29
44	Manchester	NH	2.29
46	Portland	OR	2.08
46	Bridgeport	CT	2.08
48	Atlanta	GA	1.67
49	Omaha	NE	1.67
50	Birmingham	AL	1.25
50	Charleston	SC	1.25

Figure 8-1. Average Score in Citizen and Social Engagement by Region (2020-2021)

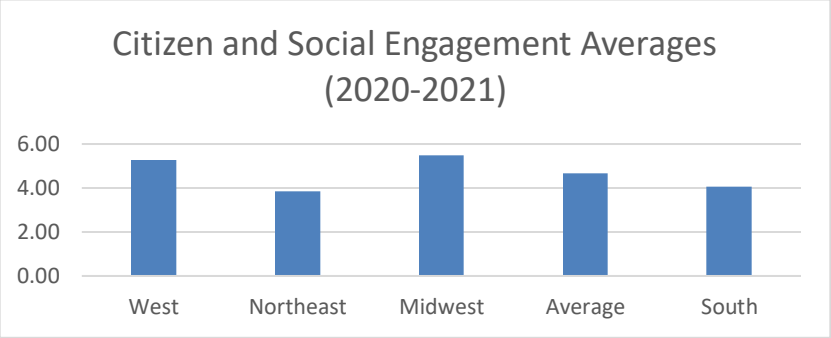


Table 8-2. Average Score in Citizen and Social Engagement by Region (2020-2021)

	West	Northeast	Midwest	Average	South
Citizen and Social Engagement Average	5.28	3.84	5.49	4.67	4.05

Table 8-3 shows the results of the evaluation of the main aspects in the category of Services by region. Online feedback forms enable citizens to provide information to cities and their agencies on issues that are concern to them and other comments. The average score for all cities whose websites had a feedback form on their website was high at 93%. In the Northeast and the West, 100% of the cities had feedback forms. This was followed by cities in the West and the South, with 91% and 81% respectively having websites with a feedback form. Another feature of a website is having a bulletin board to post information about city sponsored events, meetings, etc. The average number of cities in all regions that had bulletin boards was low at 12%. The cities in the Midwest and the Northeast had the best record in this area, with the Midwest at 20% and the Northeast at 13%. This was followed by the cities in the West at 9% and the South at 6%. A policy forum is an electronic space where a city seeks citizen input and dialogue on different polices a city is considering implementing. The average for cities in all regions that had a policy forum was only 28%. The cities in the West and the Midwest had the highest score for having a policy forum were 36% and 33% respectively. The cities in the Northeast had 25% of the cities which had policy forums and the cities in the South had 19% of cities with policy forums.

Table 8-4 shows the results of the key aspects of Citizen and Social Engagement for 2010-2011. There were two measures that were included in the surveys for 2010-2011 and 2020-2021, cities having a feedback form and policy forums. The average websites for cities in all regions that had a feedback form increased considerably from 39% to 93%. For cities having a website with policy forums, the average of cities for all regions increased from 22% to 28%. The presence of a feedback form grew in each of the four regions, while the existence of policy forums increased in three regions and decreased in the fourth.

Table 8-3. Results in Citizen and Social Engagement by Region (2020- 2021)

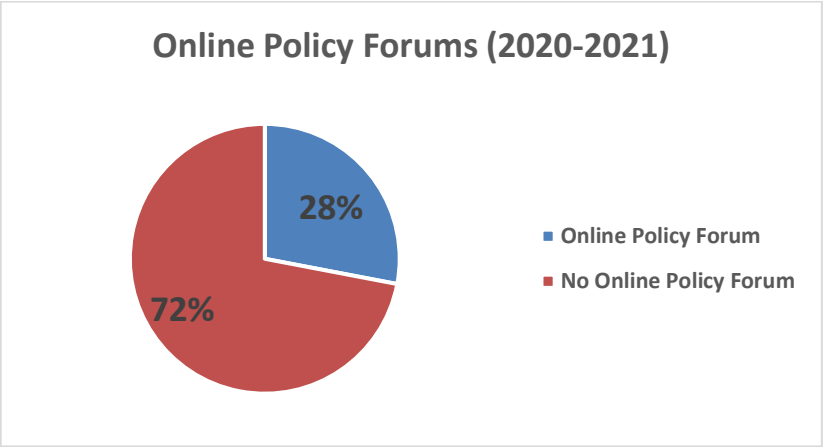
	West	Northeast	Midwest	Average	South
Feedback Form	91%	100%	100%	93%	81%
Bulletin Board	9%	13%	20%	12%	6%
Policy Forum	36%	25%	33%	28%	19%

Table 8-4. Results in Citizen and Social Engagement by Region (2010-2011)

	West	Northeast	Midwest	Average	South
Feedback Form	38%	38%	42%	39%	39%
Policy Forum	23%	6%	31%	22%	23%

On average, 28% of all cities evaluated had online policy forums as shown in Figure 8.2.

Figure 8-2. Online Policy Forums (2020-2021)



~ Section 9 ~

Conclusion

City websites have become more robust and more important to both citizens and government. Citizens are receiving more information about their city, obtaining services that were previously only available in person, and interacting with government. Government managers and elected officials learn the concerns of their citizens and receive feedback from citizens regarding on the performance of different city agencies. City websites have become an essential part of an effective local government in the twenty-first century. Two studies were previously conducted on the effectiveness of municipal websites, in 2008 and 2010-2011, with the current study covering 2020-2021. This study has produced findings that contribute to the e-government literature, in the areas of website Privacy/Security, Usability, Content, Services, and Citizen and Social Engagement.

There have been numerous developments in digital technology over this period, especially in the expansion of the form and scope of social media and the improvement of technology which has permitted cities to further develop their websites. This has resulted in an expansion of the number of ways that citizens can interact with their local government in the areas of Privacy/Security, Usability, Content, Services, and Citizen and Social Engagement. To benefit from these technological developments, cities must make the effort to be abreast of advances in the field, allocate resources to improve their websites, and have the political determination to bring these new ideas to fruition.

Table 9-1 shows the results of the website evaluations in in 2010-2011 and 2020-2021. Overall, the average score decreased from 45.71 in 2010-2011 to 43.71 in 2020-2021. Three of the areas had increases in their scores from 2010-2011 to 2020-2021: the score for content went from 10.72 in 2010-2011 to 10.87, Services increased from 9.28 to 9.41, and Citizen and Social Engagement went for 4.69 to 4.70. These small increases in scores were more than offset by the decreases in scores between the two periods for Privacy and Security, which went from 8.33 to 6.76 and in Usability which decreased from 12.68 to 11.73. This overall decrease in scores can signify that even though cities have made efforts to improve their websites, this did not result in the outcome desired.

Table 9-1. Average Score by Category—2010-2011 & 2020-2021

Category	2010-2011	2020-2021
Overall	45.71	43.71
Privacy & Security	8.33	6.76
Usability	12.68	11.73
Content	10.72	10.87
Services	9.28	9.41
Citizen & Social Engagement	4.69	4.70

Table 9-2 shows the outcomes of the website evaluations for 2010-2011 and 2020-2021 by subcategory. The results were examined for similar subcategories that were included in the 2010-2011 and 2020-2021 surveys. The results indicate that while the overall score for the cities decreased from 2010-2011 to 2020-2021, there were several subcategories which showed improvement. In Privacy and Security, the use of cookies increased in cities from 60% in 2010-2011 to 72% in 2020-2021. The results for Usability indicate that having the capability to target audience links expanded in cities from 47% in 2010-2011 to 83% in 2020-2021. Cities with websites having a search tool increased from 82% to 100% between the two periods.

In Content, the subcategories for cities with websites that provide access for the blind increased from 13% to 50% from 2010-2011 to 2020-2021. City websites with access for the deaf expanded from 26% to 72% between the two periods. And the results for city websites that contained performance measurement information increased from 15% to 79% between from 2010-2011 to 2020-2021. The results for Services shows that city websites that had searchable databases grew from 50% to 98%. Finally, for Citizen and Social Engagement, city websites that had a feedback form went from 39% to 93% between the two periods. The increases in the results for the subcategories is encouraging and can be built on in the future.

Table 9-2. Average Score by Subcategory—2010-2011 & 2020-2021

Privacy and Security	**2010-2011**	**2020-2021**
Privacy or Security Policy	81%	88%
Use of Encryption	42%	49%
Use of Cookies	60%	72%
Digital Signature	6%	13%

Usability	**2010-2011**	**2020-2021**
Targeted Audience	47%	83%
Search Tool	82%	100%

Content	**2010-2011**	**2020-2021**
Access for the Blind	13%	50%
Access for the Deaf	26%	72%
Performance Measurement	15%	79%

Services	**2010-2011**	**2020-2021**
Searchable Database	50%	98%

Citizen and Social Engagement	**2010-2011**	**2020-2021**
Feedback Form	39%	93%
Policy Forum	22%	28%

We have learned that robust city websites respect citizen privacy and security, emphasize ease of use, have relevant content, contain useful services, and encourage citizen and social engagement. The results of the 2020-2021 survey led to several recommendations. To begin, elected officials and government managers can attempt to understand the potential usefulness of city websites to improve communication with citizens and the satisfaction of citizens with government agencies. More specifically, government managers can conduct an analysis of the strengths and weaknesses of their city's current website in terms of the five categories of Privacy and Security, Useability, Content, Services, and Citizen and Social Engagement. Another step would be to examine and communicate with cities with highly-rated city websites from this survey to learn what has already been developed and works in each of the categories above. Elected officials and government managers could then secure the funds to improve the city website. Finally, the new website with its improved features should be carefully implemented.

This study as well as the previous ones show the merits of continued research of city websites and how e-government at the local level has changed over time. There is much to be learned about e-government and how it can be made more effective in the future.

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