GLOBAL E-GOVERNMENT SURVEY (2018-19)

Eighth Worldwide Survey - Longitudinal Assessment and Rankings of Municipal Websites

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We would like to express our deepest thanks to the evaluators for their contributions to this project. Their participation truly made the research project successful. On the following pages we list the 165 evaluators of websites throughout the world as acknowledgment of their efforts. Each evaluated at least one municipal website in its native language, applying 87 scaled criteria in order to assess the website's utility to its residents.

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INTRODUCTION

The Global E-Government Survey replicates research completed by the E-Governance Institute/National Center for Public Performance in 2003, 2005, 2007, 2009, 2011-12, 2013-14, and 2015-16. The Eighth 2018-19 survey continues this evaluation of the practice of digital governance in large municipalities worldwide.

This continuing research evaluates the websites of municipalities in terms of digital governance and ranks them on a global scale. Digital governance is comprised of both digital government (delivery of public services) and digital democracy (citizen participation in governance). Specifically, this research analyzes privacy/security policies, interface usability, website content, the type of services currently being offered, and the degree of citizen engagement and participation established by municipal governments through their official websites (Holzer, Zheng, Manoharan, & Shark, 14). The methodology of the 2018-19 survey of municipal websites throughout the world follows the template of our previous research, but updates

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some questions due to changes in the state of the art of website design and municipal practices. As with our previous surveys, this iteration focused on global cities based on the percentage of individuals using the internet in each nation. The Top 100 most wired nations were identified using data from the International Telecommunication Union (ITU), an organization affiliated with the United Nations (UN). The largest citiesy by population in each of these 100 nations was then selected for the study and used as a surrogate for all cities in their respective nations. For example, New York, as the largest city in the United States, represents the state of the art of municipal e-government in the U.S.

To examine how local populations, perceive their governments online, the study evaluated the official websites of each of these largest cities in their native languages. Websites were evaluated between 2018 and 2019. Of the 100 cities selected, all were found to have official municipal websites (although evaluators for one city, Riga, Latvia could not be identified). This reflects progress from the previous survey when only 97 websites were evaluated. Overall, the number of cities with official websites has generally continued to increase since the first survey in 2003. For the 2005 survey, 81 of the 100 cities had official websites, in 2007, 86 had websites, in 2009, 87 had websites, in 2011-12, 92 had websites, and 100 had

websites for the 2013-14 survey. All had websites for the 2018-19 survey.

The instrument used for the previous surveys was revised based on an expert review. The new instrument is more reflective of developments in e-government and website features since the previous survey. Our instrument for evaluating municipal websites consists of five components: 1. Privacy and Security; 2. Usability; 3. Content; 4. Services; and 5. Citizen and Social Engagement. For each of these five components, our research applied 14 to 23 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). Additionally, in developing an overall score for each municipality, we have equally weighted each of the five categories to avoid skewing the research in favor of a particular category (regardless of the number of questions in each category). This reflects the same methods utilized in the previous studies. To ensure reliability, each municipal website was assessed in the native language by two evaluators, and in cases where significant variation (+ or - 10%) existed on the adjusted score between evaluators, websites were analyzed by a third evaluator.

Based on the 2018-19 evaluation, Seoul, Madrid, Yerevan, Auckland, and Paris have the highest evaluation scores. There were noticeable changes in the Top 10 cities as

compared to the 2015-16 study: Hong Kong, Prague, Tallinn, New York, Bratislava and Vilnius are no longer in the Top 10; however, some cities that are no longer in the Top 10 overall still appear in Top 10 component rankings. Joining the Top 10 since 2015-16 are Auckland, Paris, Singapore, Amsterdam, Shanghai and Toronto. Seoul remained the highest-ranked city, and the gap between first and second cities has decreased since 2015-16. In some cases, the scores may have slightly declined from the previous study. Table 1-2 lists the Top 20 municipalities in digital governance from 2013-14 through 2018-19, and Table 1-2 lists the 20 municipalities from the 2018-19 study, along with their scores in individual categories. Tables 1-3 to 1-7 show the top-ranked municipalities for 2018-19 in each of the five categories.

The following chapters represent the overall findings:

Chapter 2 outlines the methodology utilized in determining the websites evaluated, as well as the instrument used in the evaluations. Our survey instrument uses 86 measures, and we follow a rigorous approach for conducting the evaluations.

Chapter 3 presents the overall findings for the 2018-19 evaluation. The overall results are also broken down into

results by continents, and by OECD and non-OECD member countries.

Chapter 4 provides a longitudinal assessment of the website evaluations, with comparisons among continents, e-government categories and OECD and non-OECD member countries.

Chapter 5 focuses on the results of privacy and security with regard to municipal websites.

Chapter 6 looks at the usability of municipal websites throughout the world.

Chapter 7 presents the findings for content.

Chapter 8 addresses services.

Chapter 9 concludes the focus of specific e-government categories by presenting the findings of citizen and social engagement online.

Chapter 10 takes a closer look at best practices for the Top 5 ranked cities.

Chapter 11 concludes this study, providing recommendations and discussion of significant findings.

[Table 1-1] Top Cities in Digital Governance between 2013-14 to 2018-19

	2013-14		2015-16		2018-19	
Rank	City	Score	City	Score	City	Score
1	Seoul	85.80	Seoul	79.92	Seoul	84.07
2	New York	66.15	Helsinki	69.84	Madrid	80.51
3	Hong Kong	60.32	Madrid	69.24	Yerevan	67.59
4	Singapore	59.82	Hong Kong	67.56	Auckland	67.24
5	Yerevan	59.61	Prague	66.48	Paris	65.02
6	Bratislava	58.31	Tallinn	62.10	Singapore	64.63
7	Toronto	58.05	New York	62.02	Amsterdam	60.74
8	Shanghai	56.02	Bratislava	60.34	Helsinki	60.72
9	Dubai	55.89	Yerevan	59.61	Shanghai	60.09
10	Prague	54.88	Vilnius	59.12	Toronto	59.51
11	Vilnius	53.82	Buenos Aires	57.88	New York	57.35
12	Vienna	53.40	Tokyo	57.04	Berlin	56.02
13	Oslo	52.52	Singapore	56.03	Oslo	55.98
14	Stockholm	52.25	Moscow	54.73	Hong Kong	55.78
15	London	51.90	Oslo	54.37	Kiev	55.50
16	Helsinki	51.27	Amsterdam	54.36	Taipei	53.76
17	Macau	48.69	Auckland	54.27	Tallinn	52.95
18	Mexico City	47.01	London	52.54	Sydney	52.20
19	Kuala Lumpur	46.16	Lisbon	51.68	Vilnius	51.75
20	Zurich	45.36	Sydney	50.08	Stockholm	51.31

[Table 1-2] Top 20 Cities in Digital Governance (2018-19)

Rank	City	Overall	Privacy	Usability	Content	Services	Citizens and Social Engagement
1	Seoul	84.07	18.00	15.93	17.78	18.46	13.90
2	Madrid	80.51	20.00	17.78	14.07	15.00	13.66
3	Yerevan	67.59	15.50	16.30	11.11	13.46	11.22
4	Auckland	67.24	12.00	14.81	13.15	12.88	14.39
5	Paris	65.02	12.00	11.85	14.81	12.69	13.66
6	Singapore	64.63	13.00	17.41	12.59	12.12	9.51
7	Amsterdam	60.74	10.00	15.56	11.48	13.46	10.24
8	Helsinki	60.72	12.50	15.55	13.70	11.15	7.80
9	Shanghai	60.09	4.00	17.78	13.52	9.42	15.36
10	Toronto	59.51	13.00	14.44	15.56	12.12	4.39
11	New York	57.35	13.00	10.74	13.70	13.08	6.83
12	Berlin	56.02	12.00	13.33	13.33	10.77	6.59
13	Oslo	55.98	8.00	16.30	13.70	11.15	6.83
14	Hong Kong	55.78	9.50	15.56	12.04	13.08	5.61
15	Kiev	55.50	12.00	14.44	12.96	10.00	6.10
16	Taipei	53.76	11.00	13.33	11.85	12.69	4.88
17	Tallinn	52.95	8.00	13.33	12.96	12.31	6.34
18	Sydney	52.20	11.00	14.44	11.85	8.08	6.83
19	Vilnius	51.75	10.00	15.56	11.11	9.23	5.85
20	Stockholm	51.31	10.00	15.56	11.85	10.00	3.90

[Table 1-3] Top 10 Cities in Privacy and Security (2018-19)

Rank	City	Country	Privacy
1	Madrid	Spain	20.00
2	Seoul	Korea (Rep.)	18.00
3	Yerevan	Armenia	15.50
4	Bratislava	Slovakia	14.00
5	Singapore	Singapore	13.00
5	Toronto	Canada	13.00
5	New York	USA	13.00
5	Buenos Aires	Argentina	13.00
9	London	United Kingdom	12.50
9	Helsinki	Finland	12.50
9	Vienna	Austria	12.50

[Table 1-4] Top 10 Cities in Usability (2018-19)

Rank	City	Country	Usability
1	Madrid	Spain	17.78
1	Buenos Aires	Argentina	17.78
1	Shanghai	China	17.78
4	Singapore	Singapore	17.41
5	Kuala Lumpur	Malaysia	17.04
5	Bangkok	Thailand	17.04
7	Oslo	Norway	16.30
7	Yerevan	Armenia	16.30
9	Lisbon	Portugal	15.92
9	Seoul	Korea (Rep.)	15.92

[Table 1-5] Top 10 Cities in Content (2018-19)

Rank	City	Country	Content
1	Seoul	Korea (Rep.)	17.78
2	Toronto	Canada	15.55
3	Montevideo	Uruguay	15.19
4	Paris	France	14.81
5	Madrid	Spain	14.07
6	Oslo	Norway	13.70
6	Helsinki	Finland	13.70
6	New York	USA	13.70
9	Shanghai	China	13.52
10	Luxembourg City	Luxembourg	13.33

[Table 1-6] Top 10 Cities in Service Delivery (2018-19)

Rank	City	Country	Services
1	Seoul	Korea (Rep.)	18.46
2	Madrid	Spain	15.00
3	Yerevan	Armenia	13.46
3	Amsterdam	Netherlands	13.46
3	Moscow	Russia	13.46
6	Tehran	Iran	13.08
6	Istanbul	Turkey	13.08
6	New York	USA	13.08
6	Hong Kong	China	13.08
10	Auckland	New Zealand	12.88

[Table 1-7] Top 10 Cities in Citizen and Social Engagement (2018-19)

Rank	City	Country	CS Engagement
1	Shanghai	China	15.36
2	Auckland	New Zealand	14.39
3	Seoul	Korea (Rep.)	13.90
4	Madrid	Spain	13.66
4	Paris	France	13.66
6	Lisbon	Portugal	11.95
7	Yerevan	Armenia	11.22
8	Amsterdam	Netherlands	10.24
8	Moscow	Russia	10.24
10	Singapore	Singapore	9.51

The average score for digital governance in municipalities throughout the world in 2018-19 is 38.80, which represents an overall increase in score from 36.57 in 2015-16, 33.37 in 2013-14, 33.76 in 2011-2012, 35.93 in 2009, 33.37 in 2007, 33.11 in 2005, and 28.49 in 2003. The average score for municipalities in OECD countries is 48.55, while the average score in non-OECD countries is 31.65, both of which show increases from 2015-16. This study hopes to continue to highlight such progress. Therefore, it is important to evaluate digital governance in large municipalities throughout the world periodically. Our next Worldwide Survey is tentatively planned for 2020-21, and will further provide insights into the direction and performance countries are taking with regard to e-government throughout regions of the world.

2

METHODOLOGY

The methodology of the 2018-19 survey of worldwide municipal websites mirrors the previous research done in 2015-16, 2013-14, 2011-12, 2009, 2007, 2005, and 2003. This research focuses on cities throughout the world based on population size and the total number of internet users in each nation. The identification of cities based on these factors proceeded through the utilization of statistics published by the International Telecommunication Union (ITU), an organization affiliated with the United Nations (UN). To determine the 100 most wired nations worldwide, information on the total number of online users was compiled from the ITU-UN. In each country, the largest city by population was then selected as a surrogate for all cities in that country.

The rationale for selecting the largest city by population among the most wired nations stems from the e-government literature, which suggests that at the local level there is a positive relationship between population and e-government capacity (Manoharan, 2013; Moon, 2002; Moon & deLeon,

2001; Musso, et. al., 2000). Cities were evaluated in their native languages in order to improve accuracy in assessing their e-government capacities because many English-language websites worldwide are intended for use by tourists and other non-citizens; evaluations in the native language facilitate a view of websites as they are intended for use by citizens of each country. Of the 100 cities selected, all were found to have official city websites, and these were evaluated between 2018 and 2019. Table 2-1 is a list of the 100 cities selected and for which city websites are provided in Appendix A.

[Table 2-1] 100 Cities Selected by Continent (2018-19)

Africa (7)	
Addis Ababa (Ethiopia)	Johannesburg (South Africa)
Algiers (Algeria)	Port Louis (Mauritius)
Cairo (Egypt)	Tunis (Tunisia)
Casablanca (Morocco)	
Asia (36)	
Almaty (Kazakhstan)	Karachi (Pakistan)
Amman (Jordan)	Kathmandu (Nepal)
Baku (Azerbaijan)	Kuala Lumpur (Malaysia)
Bangkok (Thailand)	Manama (Bahrain)
Beirut (Lebanon)	Manila (Philippines)
Bishkek (Kyrgyzstan)	Muscat (Oman)
Colombo (Sri Lanka)	Riyadh (Saudi Arabia)
Damascus (Syria)	Sana'a (Yemen)
Delhi (India)	Seoul (Republic of Korea)
Dhaka (Bangladesh)	Shanghai (China)

Doha (Qatar)	Singapore (Singapore)
Dubai (United Arab Emirates)	Taipei (Taiwan)
Gaza (Palestine)	Tashkent (Uzbekistan)
Ho Chi Minh City (Vietnam)	Tbilisi (Georgia)
Hong Kong (Hong Kong, China)	Tehran (Iran)
Istanbul (Turkey)	Tokyo (Japan)
Jakarta(Indonesia)	Ulaanbaatar (Mongolia)
Jerusalem (Israel)	Yerevan (Armenia)
Europe (37)	
Amsterdam (Netherlands)	Moscow (Russia)
Athens (Greece)	Nicosia (Cyprus)
Belgrade (Serbia and Montenegro)	Oslo (Norway)
Berlin (Germany)	Paris (France)
Bratislava (Slovak Republic)	Prague (Czech Republic)
Brussels (Belgium)	Riga (Latvia)
Bucharest (Romania)	Rome (Italy)
Budapest (Hungary)	Sarajevo (Bosnia and Herzegovina)
Chisinau (Moldova)	Skopje (Macedonia)
Copenhagen (Denmark)	Sofia (Bulgaria)
Dublin (Ireland)	Stockholm (Sweden)
Helsinki (Finland)	Tallinn (Estonia)
Kiev (Ukraine)	Tirana (Albania)
Lisbon (Portugal)	Vienna (Austria)
Ljubljana (Slovenia)	Vilnius (Lithuania)
London (United Kingdom)	Warsaw (Poland)
Luxemburg City (Luxembourg)	Zagreb (Croatia)
Madrid (Spain)	Zurich (Switzerland)
Minsk (Belarus)	
North and Central America (9)	
Guatemala City (Guatemala)	San Juan (Puerto Rico)
Mexico City (Mexico)	San Salvador (El Salvador)
New York (United States)	Santo Domingo (Dominican Republic)

Panama City (Panama)	Toronto (Canada)
San Jose (Costa Rica)	
South America (9)	
Bogota (Colombia)	Montevideo (Uruguay)
Buenos Aires (Argentina)	San Fernando (Trinidad and Tobago)
Caracas (Venezuela)	Santiago (Chile)
Guayaquil (Ecuador)	Sao Paulo (Brazil)
Lima (Peru)	
Oceania (2)	
Auckland (New Zealand)	Sydney (Australia)

WEBSITE SURVEY

The focus of the evaluation is the main city homepage of each of the municipalities evaluated. This is defined as the official website where information about city administration and online services are provided by the municipality. Worldwide, municipalities are constantly improving their official websites as they are the primary interface with citizens in the e-government paradigm (Holzer, Manoharan, & Van Ryzin, 2010). Our survey is intended to identify the best practices associated with developing content so as to increase e-government capacity.

A municipal website should include information about available city services, along with information related to the city council, mayor and executive branch, and other departments and services. In cases where this information

was contained on separate homepages, evaluators examined whether these sites were linked to the menu on the main city homepage. If the website was not linked, it was excluded from the evaluation as it was not easily accessible by users.

E-GOVERNMENT SURVEY INSTRUMENT

The E-Government Survey Instrument is the most comprehensive index in practice for e-government research today, with 86 measures and five distinct categorical areas of e-government research. These five components are: 1. Privacy and Security; 2. Usability; 3. Content; 4. Services; and 5. Citizen and Social Engagement. Table 2-2 summarizes the survey instrument, and Appendix B presents an overview of the criteria.

[Table 2-2] E-Government Performance Measures

E-Governance 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	53	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	193	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

components, 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 or not it had a privacy statement or policy, evaluators were given the choice of scoring the site as "0" or "1". 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 related to 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 to services.

- The **Content** category relates to overall access to contact information, access to public documents, disability access, as well as access to multimedia and time sensitive information.
- The **Services** section 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.

SECURITY & PRIVACY

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 & Manoharan, 2013). In this category, we analyzed the level of privacy and security present in municipal websites by focusing on two key issues: privacy policies and user authentication. Analyzing privacy policies, evaluators first determined if the privacy policy indeed 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. Particular 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. Evaluators also examined whether the website explained how this data was going to be used and the purpose of the data collected on 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 addressed protection of user data. This was used to assess 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 or not 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 proceed 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, then, specifically addresses whether certain key information, such as property tax, private information, court documents, etc. were made available to website users through multiple venues so as 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 website were "user-friendly". Stated in another manner, did they facilitate and encourage use via their design? 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: traditional web pages, forms, and search tools.

In our evaluation of traditional web pages written using hypertext markup language (HTML), we examined issues such as branding and structure (e.g., consistent color, font, graphics, and page length). For example, we evaluated whether all pages used consistent color, formatting and default colors (e.g., blue links and purple visited links), underlined text to indicate links, and whether or not visited links changed colors. 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 graphic appeal.

One particularly important concern in the examination was the use of online forms by government websites. These forms were typically provided to users with regard to a number of issues, ranging from reporting crimes to contacting the government. In measuring whether or not these forms facilitated ease of use, our examination, in particular, focused on whether field labels aligned appropriately with each field, whether fields were accessible by keystroke (e.g., tabs), whether the cursor automatically placed itself in the first field, whether required fields were explicitly noted, 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 form-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 alternative versions of long documents, such as PDF or DOC files. Having multiple document types appeals directly to the preferences of the user, whereas having a condensed homepage succinctly delivers 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 so as to draw attention to resources for these specific groups? Other considerations included the consistent use of navigation bars and links to the homepage on every page, the availability of a sitemap or hyperlinked outline of the entire website, and whether duplicated link names connected to

the same content. We also assessed whether or not 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 or all words, and Boolean searching capabilities (e.g., the ability to use AND/OR/NOT operators), as 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 more succinctly search for information on the website.

CONTENT

The third component 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 examined 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 which 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. With regard to services, evaluators attempted to determine the extent to which municipalities delivered services to their citizens. We subsequently divided municipal services 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 events or services.

Regarding delivery of services that allow citizens to interact with their municipality, we examined whether or not 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, or 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 for a contract online, and in some cases listing contact information for bidders. These elements were all critically important 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 file or pay local taxes or pay fines, in some cases around the world, cities are even allowing users to register or purchase tickets online for events in 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 had developed this capacity.

CITIZEN AND SOCIAL ENGAGEMENT

The fifth component of our instrument pertains to online citizen participation in government. This is a fairly recent area of focus of e-government study, and the number of channels through which the government can communicate with governments and officials has increased, along with the proliferation of social media. As noted in the previous surveys, the Internet has proven to be a convenient mechanism through which citizens can interact with their governments. Furthermore, the interactions between the government and citizens can proceed through a number of formal channels linked to the website (chat, discussion forums, polls, online newsletter, or e-mail listserv, etc.), and through 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 particularly 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 online 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 performance and publish the results of performance measurement activities online. Still 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 were 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 developmental stage: very few public agencies offer online opportunities for civic engagement.

Evaluators also looked at whether local governments offered current information about municipal governance online or through an online newsletter or e-mail listserv, and whether they used Internet-based polls about specific local issues to garner opinions. These mediums of communication encourage citizen activity and keep users

up to date on issues. Likewise, we examined whether communities allowed users to participate in, and view the results of, citizen satisfaction surveys online.

3

OVERALL RESULTS

The following chapter presents results for all evaluated municipal websites during 2018-19. Table 3-1 provides the rankings for the 100 municipal websites and their overall scores. The scores reflect the aggregate of each municipality's evaluation in the five e-government component categories. The highest possible score for any one city website is 100. Seoul received a score of 84.07, making it the highest-ranked city website for 2018-19. Seoul's website has consistently ranked #1 overall and was the highest-ranked in 2015-16, 2013-14, 2011-12, 2009, 2007, 2005, and 2003, with respective scores of 79.92, 85.80, 82.23, 84.74, 87.74, 81.70, and 73.48. Madrid was the second-highest ranked website, with a score of 80.51, just less than a 5-point difference with Seoul, moving up from the third position and score of 69.24 in 2015-16. Yerevan was the third highest-ranked municipal website, with a score of 67.59, moving up significantly from its 9th place ranking and score of 59.61 in 2015-16. Auckland ranked fourth with a score of 67.24 in 2018-19, moving up

from its 17th place ranking in 2015-16, and improving significantly from its score of 54.27. Paris completed the Top 5 with a score of 65.02 compared to its 2015-16 score of 41.43 and position then as 41st.

The results of the overall rankings are separated by continent in Tables 3-2 through 3-7. The top-ranked cities for each continent are Johannesburg (Africa), Seoul (Asia), Madrid (Europe), Toronto (North America), Auckland (Oceania), and Montevideo (South America). Toronto replaced New York as the highest-ranked city among North American municipalities. Montevideo replaced Buenos Aires among South American municipalities.

[Table 3-1] Overall E-Government Rankings (2018-19)

Rank	City	Country	Score
1	Seoul	Korea (Rep.)	84.07
2	Madrid	Spain	80.51
3	Yerevan	Armenia	67.59
4	Auckland	New Zealand	67.24
5	Paris	France	65.02
6	Singapore	Singapore	64.63
7	Amsterdam	Netherlands	60.74
8	Helsinki	Finland	60.72
9	Shanghai	China	60.09
10	Toronto	Canada	59.51
11	New York	USA	57.35
12	Berlin	Germany	56.02
13	Oslo	Norway	55.98

14	Hong Kong	China	55.78
15	Kiev	Ukraine	55.50
16	Taipei	Taiwan	53.76
17	Tallinn	Estonia	52.95
18	Sydney	Australia	52.20
19	Vilnius	Lithuania	51.75
20	Stockholm	Sweden	51.31
21	Athens	Greece	51.11
22	Lisbon	Portugal	50.74
23	Montevideo	Uruguay	50.01
24	Buenos Aires	Argentina	49.70
25	London	United Kingdom	48.91
26	Johannesburg	South Africa	48.45
27	Bogota	Columbia	47.70
28	Istanbul	Turkey	47.66
29	Copenhagen	Denmark	47.43
30	Kuala Lumpur	Malaysia	47.04
31	Luxembourg City	Luxembourg	46.13
32	Moscow	Russia	46.00
33	Rome	Italy	45.89
34	Tokyo	Japan	45.54
35	Zurich	Switzerland	45.43
36	Tehran	Iran	45.03
37	Prague	Czech Republic	44.44
38	Dubai	United Arab Emirates	43.49
39	Ljubljana	Slovenia	42.96
40	Nicosia	Cyprus	42.45
41	Riyadh	Saudi Arabia	42.22
42	Jerusalem	Israel	41.54
43	Muscat	Oman	41.14
44	San Jose	Costa Rica	39.46
45	Dublin	Ireland	39.34

46	Bratislava	Slovakia	38.51
47	Chisinau	Moldova	38.32
48	New Delhi	India	37.24
49	Sarajevo	Bosnia	36.25
50	Doha	Qatar	35.83
51	Brussels	Belgium	35.27
52	Tbilisi	Georgia	34.35
53	Sao Paulo	Brazil	33.73
54	Vienna	Austria	33.71
55	Guatemala City	Guatemala	32.56
56	Zagreb	Croatia	32.51
57	Panama City	Panama	32.37
58	Sofia	Bulgaria	31.13
59	Minsk	Belarus	31.07
60	Almaty	Kazakhstan	30.45
61	Bangkok	Thailand	30.41
62	Guayaquil	Ecuador	29.47
63	Mexico City	Mexico	28.57
64	Port Louis	Mauritius	27.47
65	Amman	Jordan	26.88
66	San Juan	Puerto Rico	26.86
67	Ho Chi Minh City	Vietnam	26.06
68	Bucharest	Bulgaria	26.02
69	Tirana	Albania	25.66
70	San Fernando	Trinidad and Tobago	25.09
71	Casablanca	Morocco	24.96
72	Budapest	Hungary	24.70
73	Cairo	Egypt	24.60
74	Skopje	Macedonia	24.44
75	Sana'a	Yemen	23.81
76	Santo Domingo	Dominican Rep.	23.76
77	Ulaanbaatar	Mongolia	23.70

78	Jakarta	Indonesia	23.58
79	Dhaka	Bangladesh	23.24
80	Warsaw	Poland	22.30
81	Bishkek	Kyrgyzstan	21.95
82	Tashkent	Uzbekistan	21.22
83	Katmandu	Nepal	20.81
84	Lima	Peru	20.56
85	Tunis	Tunisia	20.18
86	Colombo	Sri Lanka	19.74
87	Caracas	Venezuela	18.44
88	Santiago	Chile	18.20
89	Karachi	Pakistan	17.90
90	Belgrade	Serbia	17.48
91	Manama	Bahrain	16.85
92	Beirut	Lebanon	16.46
93	Gaza	Palestine	16.07
94	Damascus	Syria	14.08
95	San Salvador	El Salvador	12.95
96	Addis Ababa	Ethiopia	11.91
97	Manila	Philippines	11.60
98	Baku	Azerbaijan	10.53
99	Algiers	Algeria	6.74
100	Riga	Latvia	-

[Table 3-2] Results of Evaluation of African Cities (2018-19)

Rank	City	Overall	Privacy	Usability	Content	Services	CS Engagement
1	Johannesburg	48.45	12.00	14.44	8.89	10.19	2.93
2	Port Louis	27.47	8.00	10.37	3.33	5.77	0.00
3	Casablanca	24.96	0.00	14.81	6.30	3.85	0.00
4	Cairo	24.60	5.66	9.38	3.21	4.23	2.11
5	Tunis	20.18	3.00	9.63	3.70	3.85	0.00
6	Addis Ababa	11.19	0.00	7.41	2.96	1.54	0.00
7	Algiers	6.74	0.00	3.70	1.11	1.92	0.00

[Table 3-3] Results of Evaluation of Asian Cities (2018-19)

Rank	City	Overall	Privacy	Usability	Content	Services	CS Engagement
1	Seoul	84.07	18.00	15.93	17.78	18.46	13.90
2	Yerevan	67.59	15.50	16.29	11.11	13.46	11.22
3	Singapore	64.63	13.00	17.41	12.59	12.11	9.51
4	Shanghai	60.09	4.00	17.78	13.52	9.42	15.36
5	Hong Kong	55.78	9.50	15.55	12.03	13.07	5.61
6	Taipei	53.76	11.00	13.33	11.85	12.69	4.88
7	Kuala Lumpur	47.04	7.00	17.04	7.03	9.48	4.87
8	Tokyo	45.54	10.00	14.07	10.74	7.30	3.41
9	Tehran	45.04	6.00	6.67	11.48	13.08	7.80
10	Dubai	43.49	11.50	12.59	7.59	6.92	4.88
11	Riyadh	42.22	11.00	14.07	2.59	5.77	8.78
12	Jerusalem	41.54	5.50	13.70	11.29	8.85	2.19
13	Muscat	41.14	6.50	15.56	5.74	8.46	4.87
14	New Delhi	37.24	4.33	12.09	9.38	8.33	3.09
15	Doha	35.83	4.00	14.81	6.30	7.31	3.41
16	Tbilisi	34.35	2.00	11.48	7.78	8.46	4.63

17	Almaty	30.45	2.00	14.07	7.78	2.69	3.90
18	Bangkok	30.41	0.00	17.04	7.78	4.62	0.98
19	Amman	26.88	9.50	8.89	3.70	3.08	1.71
20	Ho Chi Minh City	26.06	2.00	12.59	5.30	3.71	2.44
21	Sana'a	23.81	7.00	7.41	5.56	3.85	0.00
22	Ulaanbaatar	23.70	0.00	8.52	7.78	4.23	3.17
23	Jakarta	23.58	0.00	11.85	7.78	3.46	0.49
24	Dhaka	23.24	0.00	11.11	5.37	4.81	1.95
25	Bishkek	21.95	0.00	11.11	8.15	2.69	0.00
26	Tashkent	21.22	0.00	9.63	5.18	2.50	3.90
27	Katmandu	20.81	0.00	8.15	6.85	2.88	2.92
28	Colombo	19.74	3.00	8.89	1.11	5.77	0.98
29	Karachi	17.90	0.00	9.63	4.44	2.11	1.71
30	Manama	16.85	0.00	8.89	1.85	2.69	3.41
31	Beirut	16.46	7.00	5.19	1.48	2.31	0.49
32	Gaza	16.07	3.00	7.41	0.74	3.46	1.46
33	Damascus	14.08	3.00	5.19	2.22	2.69	0.98
34	Manila	11.60	0.00	5.19	3.70	1.73	0.97
35	Baku	10.53	0.00	6.67	2.22	1.15	0.49

[Table 3-4] Results of Evaluation of European Cities (2018-19)

Rank	City	Over all	Privacy	Usability	Content	Services	CS Engagement
1	Madrid	80.51	20.00	17.78	14.07	15.00	13.66
2	Paris	65.02	12.00	11.85	14.81	12.69	13.66
3	Amsterdam	60.74	10.00	15.56	11.48	13.46	10.24
4	Helsinki	60.71	12.50	15.55	13.70	11.15	7.80
5	Berlin	56.02	12.00	13.33	13.33	10.77	6.58
6	Oslo	55.98	8.00	16.30	13.70	11.15	6.83
7	Kiev	55.50	12.00	14.44	12.96	10.00	6.09
8	Tallinn	52.95	8.00	13.33	12.96	12.31	6.34

9	Vilnius	51.75	10.00	15.56	11.11	9.23	5.85
10	Stockholm	51.31	10.00	15.56	11.85	10.00	3.90
11	Athens	51.10	10.66	14.32	11.11	10.12	4.87
12	Lisbon	50.74	4.00	15.92	9.44	9.42	11.95
13	London	48.91	12.50	12.59	10.92	5.58	7.31
14	Istanbul	47.66	5.00	14.81	11.11	13.07	3.65
15	Copenhagen	47.43	8.00	15.18	8.89	7.31	8.05
16	Luxembourg City	46.13	6.00	14.81	13.33	8.08	3.90
17	Moscow	46.00	6.00	11.11	5.19	13.46	10.24
18	Rome	45.88	7.50	11.85	9.63	11.54	5.36
19	Zurich	45.43	10.00	13.70	9.26	8.07	4.39
20	Prague	44.44	11.00	13.70	10.56	5.76	3.41
21	Ljubljana	42.96	9.00	14.44	11.29	4.80	3.26
22	Nicosia	42.45	8.00	13.70	9.81	6.54	4.39
23	Dublin	39.34	9.00	12.22	7.96	5.77	4.39
24	Bratislava	38.51	14.00	11.11	7.04	5.38	0.98
25	Chisinau	38.32	9.00	13.33	9.63	5.38	0.98
26	Sarajevo	36.25	2.00	14.07	9.63	6.15	4.39
27	Brussels	35.26	9.00	11.60	7.65	5.38	1.62
28	Vienna	33.70	12.50	10.74	6.30	1.73	2.44
29	Zagreb	32.51	6.00	11.85	7.78	3.46	3.41
30	Sofia	31.13	7.33	12.84	4.56	3.46	2.92
31	Minsk	31.07	2.50	9.63	6.48	5.38	7.07
32	Bucharest	26.02	2.00	15.55	3.88	3.84	0.73
33	Tirana	25.66	0.00	13.33	5.56	3.85	2.93
34	Budapest	24.70	3.33	11.35	6.17	2.05	1.79
35	Skopje	24.44	0.00	10.61	6.42	5.12	2.27
36	Warsaw	22.30	6.00	11.11	5.00	0.19	0.00
37	Belgrade	17.48	0.00	11.11	3.51	2.11	0.73

[Table 3-5] Results of Evaluation of North American Cities (2018-19)

Rank	City	Overall	Privacy	Usability	Content	Services	CS Engagement
1	Toronto	59.50	13.00	14.44	15.55	12.11	4.39
2	New York	57.35	13.00	10.74	13.70	13.08	6.83
3	San Jose	39.46	6.50	14.44	6.29	8.07	4.14
4	Guatemala City	32.56	4.00	11.85	4.44	8.85	3.41
5	Panama City	32.37	6.00	14.07	6.30	3.08	2.93
6	Mexico City	28.57	6.50	12.22	4.63	3.27	1.95
7	San Juan	26.85	5.50	8.52	4.25	7.11	1.46
8	Santo Domingo	23.76	1.00	13.33	5.37	3.08	0.97
9	San Salvador	12.94	0.00	9.26	1.85	1.34	0.49

[Table 3-6] Results of Evaluation of Oceanic Cities (2018-19)

Rank	City	Overall	Privacy	Usability	Content	Services	CS Engagement
1	Auckland	67.24	12.00	14.81	13.14	12.88	14.39
2	Sydney	52.20	11.00	14.44	11.85	8.08	6.83

[Table 3-7] Results of Evaluation of South American Cities (2018-19)

Rank	City	Overall	Privacy	Usability	Content	Services	CS Engagement
1	Montevideo	50.01	3.00	14.81	15.19	11.15	5.85
2	Buenos Aires	49.70	13.00	17.78	11.48	5.00	2.44
3	Bogota	47.70	6.00	12.22	12.40	10.00	7.07
4	Sao Paulo	33.73	3.00	12.96	8.89	6.92	1.95
5	Guayaquil	29.47	4.00	11.85	6.67	5.00	1.95
6	San Fernando	25.09	4.00	13.33	3.70	3.08	0.98
7	Lima	20.56	0.00	10.37	5.93	2.31	1.95
8	Caracas	18.44	1.50	9.63	5.18	1.15	0.97
9	Santiago	18.19	0.00	10.74	5.18	1.54	0.73

The average scores for each continent are presented in Table 3-8. Oceania was again the highest-ranked continent, with an average score of 59.72, and Europe, with a score of 43.54 remained in the second highest position. North America and Asia followed with scores of 34.82 and 34.44 respectively. South America had an overall score of 32.54, and Africa had a score of 23.37. The overall average score for all municipalities worldwide was 38.80, an increase from 36.57 in 2015-16. Although North America is ranked fourth among the continents, it includes a wide range of performance, with cities such as New York, Toronto, and Mexico City ranked among the Top 30 cities overall, representing advanced e-government practices, while others were ranked significantly lower among the cities evaluated.

[Table 3-8] Average Score by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Overall Averages	59.72	43.54	34.44	38.80	34.82	32.54	23.37

[Fig 3-1] Average Score by Continent (2018-19)
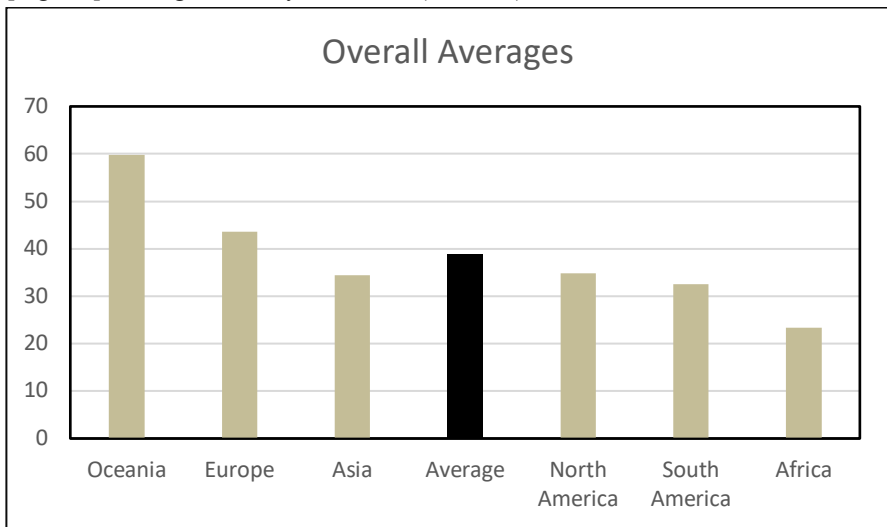
OECD MEMBER DATA

Seoul remained as the highest-ranked OECD municipality with a score of 84.07, and Yerevan emerged as the highest-ranked non-OECD in 2018-19 with a score of 67.59. Tables 3-9 and 3-10 present the overall scores for each municipality, grouped into OECD member countries and non-OECD member countries.

[Table 3-9] Results for OECD Member Countries (2018-19)

Rank	City	Country	Score
1	Seoul	Korea (Rep.)	84.07
2	Madrid	Spain	80.51
3	Auckland	New Zealand	67.24
4	Paris	France	65.02
5	Amsterdam	Netherlands	60.74
6	Helsinki	Finland	60.72
7	Toronto	Canada	59.51
8	New York	USA	57.35
9	Berlin	Germany	56.02
10	Oslo	Norway	55.98
11	Tallinn	Estonia	52.95
12	Sydney	Australia	52.20
13	Stockholm	Sweden	51.31
14	Athens	Greece	51.11
15	Lisbon	Portugal	50.74
16	London	United Kingdom	48.91
17	Istanbul	Turkey	47.66
18	Copenhagen	Denmark	47.43
19	Luxembourg City	Luxembourg	46.13
20	Rome	Italy	45.89
21	Tokyo	Japan	45.54
22	Zurich	Switzerland	45.43
23	Prague	Czech Republic	44.44
24	Ljubljana	Slovenia	42.96
25	Jerusalem	Israel	41.54
26	Dublin	Ireland	39.34
27	Bratislava	Slovakia	38.51
28	Brussels	Belgium	35.27
29	Vienna	Austria	33.71
30	Mexico City	Mexico	28.57

Rank	City	Country	Score
31	Budapest	Hungary	24.70
32	Warsaw	Poland	22.30
33	Santiago	Chile	18.20

[Table 3-10] Results for OECD Non-Member Countries (2018-19)

Rank	City	Country	Score
1	Yerevan	Armenia	67.59
2	Singapore	Singapore	64.63
3	Shanghai	China	60.09
4	Hong Kong	Hong Kong	55.78
5	Kiev	Ukraine	55.50
6	Taipei	Taiwan	53.76
7	Vilnius	Lithuania	51.75
8	Montevideo	Uruguay	50.01
9	Buenos Aires	Argentina	49.70
10	Johannesburg	South Africa	48.45
11	Bogota	Columbia	47.70
12	Kuala Lumpur	Malaysia	47.04
13	Moscow	Russia	46.00
14	Tehran	Iran	45.03
15	Dubai	United Arab Emirates	43.49
16	Nicosia	Cyprus	42.45
17	Riyadh	Saudi Arabia	42.22
18	Muscat	Oman	41.14
19	San Jose	Costa Rica	39.46
20	Chisinau	Moldova	38.32
21	New Delhi	India	37.24
22	Sarajevo	Bosnia	36.25
23	Doha	Qatar	35.83
24	Tbilisi	Georgia	34.35
25	Sao Paulo	Brazil	33.73

26	Guatemala City	Guatemala	32.56
27	Zagreb	Croatia	32.51
28	Panama City	Panama	32.37
29	Sofia	Bulgaria	31.13
30	Minsk	Belarus	31.07
31	Almaty	Kazakhstan	30.45
32	Bangkok	Thailand	30.41
33	Guayaquil	Ecuador	29.47
34	Port Louis	Mauritius	27.47
35	Amman	Jordan	26.88
36	San Juan	Puerto Rico	26.86
37	Ho Chi Minh City	Vietnam	26.06
38	Bucharest	Bulgaria	26.02
39	Tirana	Albania	25.66
40	San Fernando	Trinidad and Tobago	25.09
41	Casablanca	Morocco	24.96
42	Cairo	Egypt	24.60
43	Skopje	Macedonia	24.44
44	Sana'a	Yemen	23.81
45	Santa Domingo	Dominican Rep.	23.76
46	Ulaanbaatar	Mongolia	23.70
47	Jakarta	Indonesia	23.58
48	Dhaka	Bangladesh	23.24
49	Bishkek	Kyrgyzstan	21.95
50	Tashkent	Uzbekistan	21.22
51	Katmandu	Nepal	20.81
52	Lima	Peru	20.56
53	Tunis	Tunisia	20.18
54	Colombo	Sri Lanka	19.74
55	Caracas	Venezuela	18.44
56	Karachi	Pakistan	17.90
57	Belgrade	Serbia	17.48

58	Manama	Bahrain	16.85
59	Beirut	Lebanon	16.46
60	Gaza	Palestine	16.07
61	Damascus	Syria	14.08
62	San Salvador	El Salvador	12.95
63	Addis Ababa	Ethiopia	11.91
64	Manila	Philippines	11.60
65	Baku	Azerbaijan	10.53
66	Algiers	Algeria	6.74
67	Riga	Latvia	-

The results for OECD and non-OECD countries are analyzed as well through an analysis of their grouped averages. Figure 3-2 highlights how the OECD member countries have a combined average of 48.55. This is well above the overall average for all municipalities (38.80), and higher than their previous score from 2015-16 (48.51). Non-OECD member countries have an overall average of 31.65, which also represents a steady increase in their score from 2015-16 (30.42).

[Figure 3-2] Average Score of Cities in OECD Member and Non-Member Countries (2018-19)
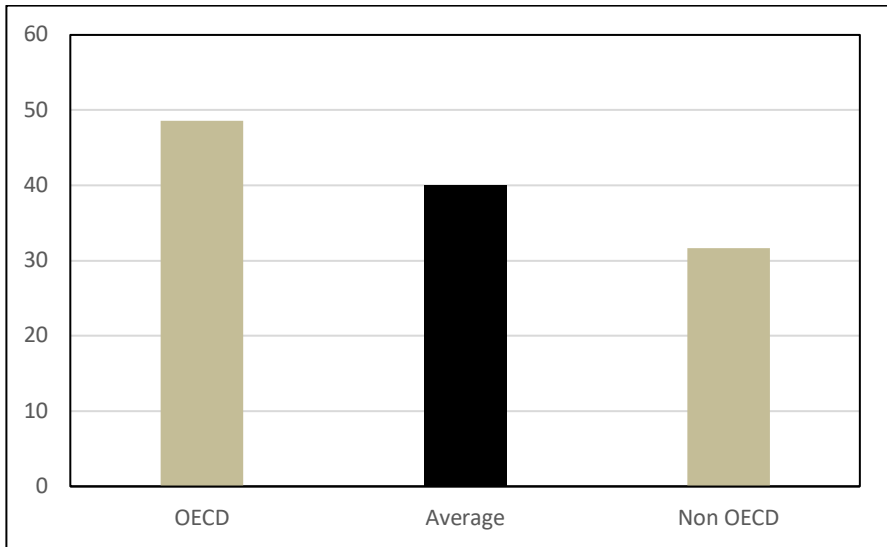
Further examination shows the differences between OECD and non-OECD countries among the five e-government categories.

Table 3-11 presents the scores for OECD member countries, non-OECD member countries, and overall average scores for each of the e-government categories. The results parallel the 2013-14 analysis. Specifically, in distinguishing between the scores, it can be seen that the average score for OECD member countries in each e-government category is higher than the average score for non-OECD member countries. The results of the evaluation are discussed in further detail in the following chapters.

[Table 3-11] Average Score of E-Government Categories in OECD Member and Non-Member Countries (2018-19)

	Privacy/ Security	Usability	Content	Service	CS Engagement
OECD	11.50	16.22	12.81	10.32	6.89
Overall Average	7.39	14.58	9.47	7.94	4.93
Non-OECD	5.34	13.77	7.80	6.75	3.96

4

LONGITUDINAL ASSESSMENT

This chapter outlines the comparison between the findings from the 2015-16, 2013-14, 2011-12, 2009, 2007, 2005 and 2003 evaluations and the findings of the 2018-19 evaluation. The 2018-19 overall average score for all municipalities surveyed around the world was 38.80, an overall increase from 36.57 in 2015-16, 33.37 in 2013-14, 33.76 in 2011-2012, 35.93 in 2009, 33.37 in 2007, 33.11 in 2005, and 28.49 in 2003 (as shown in Figure 4-1).

Compared to 2015-16, there was an increase in averages among all five e-government categories in 2018-19. Because of this, the overall average score in 2018-19 was higher than in 2015-16. Table 4-1 and Figure 4-2 highlight the differences and changes by continent.

[Figure 4-1] Average E-Government Score 2003 to 2018-19

Average Score 2003~2018-19
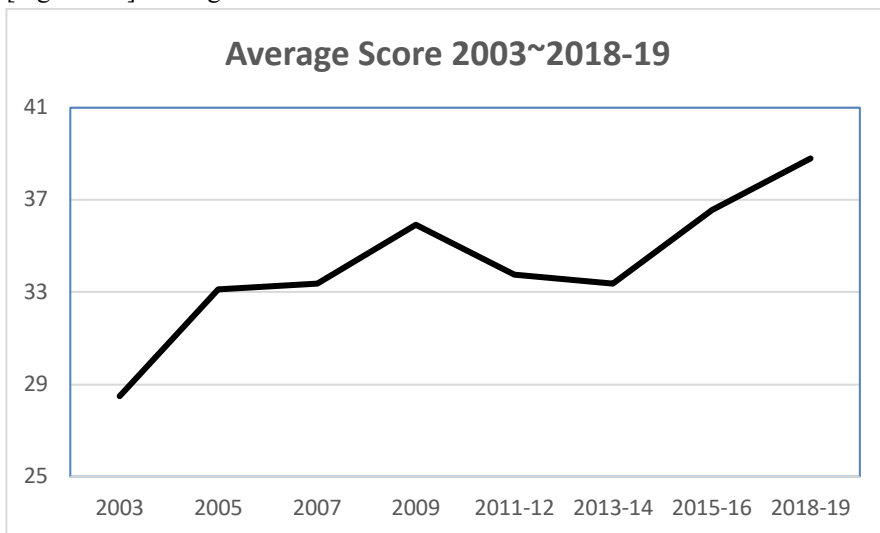
[Table 4-1] Average Score by Continent 2003 to 2018-19

	Oceania	Europe	Asia	Average	North America	South America	Africa
2018-19	59.72	43.54	34.44	38.8	34.82	32.54	23.37
2015-16	52.17	43.16	33.35	36.57	35.61	29.26	24.17
2013-14	41.08	36.2	33.1	33.37	31.96	31.37	21.18
2011-12	41.85	39.95	31.85	33.76	30.99	28.44	21.06
2009	48.59	39.54	37.13	35.93	32.65	31.23	24.06
2007	47.37	37.55	33.26	33.37	33.77	28.2	16.87
2005	49.94	37.17	33.05	33.11	30.21	20.45	24.87
2003	46.01	30.23	30.38	28.49	27.42	20.25	17.66

As mentioned, Oceania was the highest ranked continent, with an average score of 59.72, significantly higher than its score of 52.17 in 2015-16. Europe, with a score of 43.54, remained in the second highest rank, and also increased its score, which was 43.16 in 2015-16. This was followed by

North America, with a score of 34.82 (a slight decrease from its 2015-16 score of 35.61) and Asia, with a score of 34.44 respectively (a slight increase from its score of 33.35 in 2015-16). South America and Africa follow with scores of 32.54 and 23.37 respectively, changing slightly from their 2015-16 scores.

[Figure 4-2] Average Score by Continent for 2003 – 2018-19
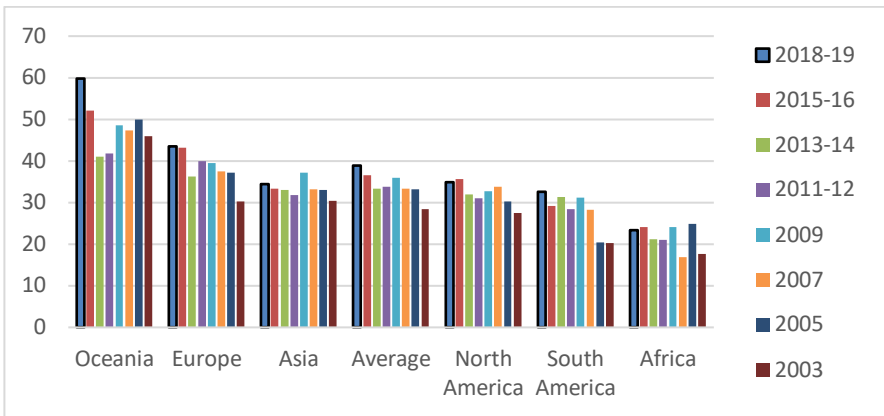
Furthermore, our survey results indicate that the number of cities with official websites in 2018-19 is 100%, increasing from 97% in 2015-16. The changes in scores from 2003 to 2018-19, represented by both OECD and non-OECD member countries, are shown in Table 4-2.

[Table 4-2] Average Scores by OECD Member and Non-Member Countries 2003 to 2018-19

Overall Averages	OECD	Average	Non-OECD
2018-19	48.55	40.1	31.65
2015-16	48.51	36.57	30.42
2013-14	43.24	33.37	28.51
2011-12	45.45	33.76	27.52
2009	46.69	35.93	30.83
2007	45	33.37	27.46
2005	44.35	33.11	26.5
2003	36.34	28.49	24.36

Municipalities surveyed from OECD member countries increased their average score from 48.51 to 48.55. In addition, municipalities surveyed from non-OECD member countries increased their average score from 30.42 to 31.65. Among the five categories (Privacy/Security, Usability, Content, Services, and Citizen and Social Engagement), all improved slightly in 2018-19 as compared to 2015-16.

The category of Usability remained as the highest average score among the five categories, and Citizen and Social Engagement remained as the category with the lowest

average score. These results show that cities are reluctant to adopt citizen-centric participatory e-government services, and have yet to recognize the importance of involving and supporting citizen participation online. Specific increases in the five e-government categories are discussed in the following chapters. Table 4-3 and Figure 4-4 highlight these findings.

[Table 4-3] Average Score by E-Government Categories 2003 to 2018-19

	Privacy/Security	Usability	Content	Service	CS Engagement
2018-19	6.19	12.36	7.97	6.70	4.10
2015-16	5.55	12.38	8.22	6.82	3.87
2013-14	4.88	12.04	7.62	5.49	3.34
2011-12	4.99	12.09	7.38	5.78	3.53
2009	5.57	11.96	8.21	6.68	3.50
2007	4.49	11.95	7.58	5.80	3.55
2005	4.17	12.42	7.63	5.32	3.57
2003	2.53	11.45	6.43	4.82	3.26

[Figure 4-4] Overall Average Score by Categories 2003 to 2018-19
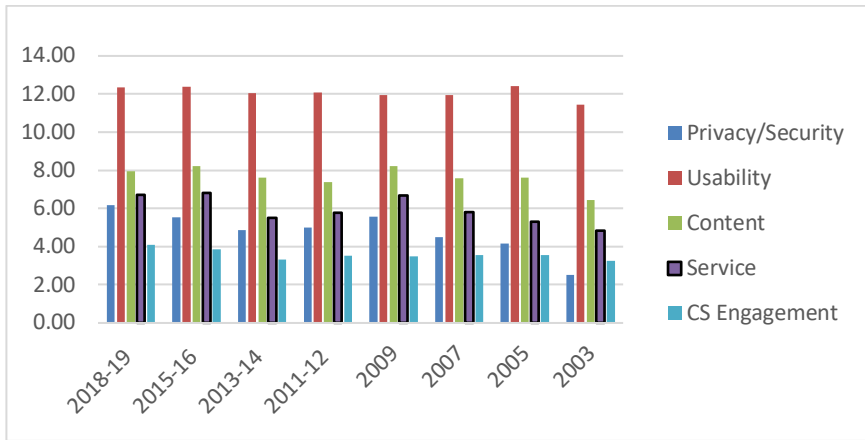
5

PRIVACY AND SECURITY

Privacy and security results show that the top-ranked cities in 2018-19 are Madrid, Seoul, Yerevan, Bratislava, Singapore, Toronto, New York, Buenos Aires. Madrid improved its position from 10th to 1st. Seoul improved its standing of 6th in 2015-16. Markedly, Yerevan moved from 54th with a score of 3.7 in 2015-16 to 3rd in 2018-19 with a score of 15.50. The Yerevan increase represents a marked improvement that is worthy of note. Bratislava ranks 4th with a score of 14.00. This is an improvement from its 2015-16 rank of 13th and its score of 11.85. Tied in 5th place with scores of 13.00 are Singapore (Ranked 19th in 2015-16), Toronto (Ranked 35th in 2015-16), New York (Ranked 8th in 2015-16), Buenos Aires (Ranked 13th in 2015-16). Table 5-1 summarizes the results for all municipalities evaluated in this category.

The average score in this category was 6.16, an increase from a score of 5.55 in 2015-16. There was a slight increase in the number of cities that earned 0 points in this category

in 2018-19. Twenty cities earned scores of 0, compared to eighteen cities so evaluated in 2015-16.

[Table 5-1] Results in Privacy and Security (2018-19)

Rank	City	Country	Score	% Max Score
1	Madrid	Spain	20.00	100.00
2	Seoul	Korea (Rep.)	18.00	90.00
3	Yerevan	Armenia	15.50	77.50
4	Bratislava	Slovakia	14.00	70.00
5	Singapore	Singapore	13.00	65.00
5	Toronto	Canada	13.00	65.00
5	New York	USA	13.00	65.00
5	Buenos Aires	Argentina	13.00	65.00
9	London	United Kingdom	12.50	62.50
9	Helsinki	Finland	12.50	62.50
9	Vienna	Austria	12.50	62.50
12	Paris	France	12.00	60.00
12	Berlin	Germany	12.00	60.00
12	Kiev	Ukraine	12.00	60.00
12	Auckland	New Zealand	12.00	60.00
12	Johannesburg	South Africa	12.00	60.00
17	Dubai	United Arab Emirates	11.50	57.50
18	Prague	Czech Republic	11.00	55.00
18	Taipei	Taiwan	11.00	55.00
18	Riyadh	Saudi Arabia	11.00	55.00
18	Sydney	Australia	11.00	55.00
22	Athens	Greece	10.66	53.30
23	Vilnius	Lithuania	10.00	50.00
23	Stockholm	Sweden	10.00	50.00
23	Zurich	Switzerland	10.00	50.00
23	Amsterdam	Netherlands	10.00	50.00
23	Tokyo	Japan	10.00	50.00

| 28	Hong Kong	China	9.50	47.50
28	Amman	Jordan	9.50	47.50
30	Ljubljana	Slovenia	9.00	45.00
30	Dublin	Ireland	9.00	45.00
30	Chisinau	Moldova	9.00	45.00
30	Brussels	Belgium	9.00	45.00
34	Oslo	Norway	8.00	40.00
34	Tallinn	Estonia	8.00	40.00
34	Copenhagen	Denmark	8.00	40.00
34	Nicosia	Cyprus	8.00	40.00
34	Port Louis	Mauritius	8.00	40.00
39	Rome	Italy	7.50	37.50
40	Sofia	Bulgaria	7.33	36.65
41	Kuala Lumpur	Malaysia	7.00	35.00
41	Sana'a	Yemen	7.00	35.00
41	Beirut	Lebanon	7.00	35.00
44	Muscat	Oman	6.50	32.50
44	Mexico City	Mexico	6.50	32.50
44	San Jose	Costa Rica	6.50	32.50
47	Luxembourg City	Luxembourg	6.00	30.00
47	Moscow	Russia	6.00	30.00
47	Zagreb	Croatia	6.00	30.00
47	Warsaw	Poland	6.00	30.00
47	Tehran	Iran	6.00	30.00
47	Bogota	Columbia	6.00	30.00
47	Panama City	Panama	6.00	30.00
54	Cairo	Egypt	5.67	28.35
55	Jerusalem	Israel	5.50	27.50
55	San Juan	Puerto Rico	5.50	27.50
57	Istanbul	Turkey	5.00	25.00
58	New Delhi	India	4.33	21.65
59	Lisbon	Portugal	4.00	20.00

59	Shanghai	China	4.00	20.00
59	Doha	Qatar	4.00	20.00
59	Guatemala City	Guatemala	4.00	20.00
59	Guayaquil	Ecuador	4.00	20.00
59	San Fernando	Trinidad and Tobago	4.00	20.00
65	Budapest	Hungary	3.33	16.65
66	Colombo	Sri Lanka	3.00	15.00
66	Gaza	Palestine	3.00	15.00
66	Damascus	Syria	3.00	15.00
66	Tunis	Tunisisa	3.00	15.00
66	Sao Paulo	Brazil	3.00	15.00
66	Montevideo	Uruguay	3.00	15.00
72	Minsk	Belarus	2.50	12.50
73	Bucharest	Romania	2.00	10.00
73	Sarajevo	Bosnia and Herzegovina	2.00	10.00
73	Tbilisi	Georgia	2.00	10.00
73	Almaty	Kazakhstan	2.00	10.00
73	Ho Chi Minh City	Vietnam	2.00	10.00
78	Caracas	Venezuela	1.50	7.50
79	Santo Domingo	Dominican Republic	1.00	5.00
80	Manila	Philippines	0.00	0.00
80	Baku	Azerbaijan	0.00	0.00
80	Belgrade	Serbia and Montenegro	0.00	0.00
80	Tirana	Albania	0.00	0.00
80	Skopje	Macedonia	0.00	0.00
80	San Salvador	El Salvador	0.00	0.00
80	Bangkok	Thailand	0.00	0.00
80	Ulaanbaatar	Mongolia	0.00	0.00
80	Jakarta	Indonesia	0.00	0.00
80	Dhaka	Bangladesh	0.00	0.00
80	Bishkek	Kyrgyzstan	0.00	0.00
80	Tashkent	Uzbekistan	0.00	0.00

80	Katmandu	Nepal	0.00	0.00
80	Karachi	Pakistan	0.00	0.00
80	Manama	Bahrain	0.00	0.00
80	Santiago	Chile	0.00	0.00
80	Lima	Peru	0.00	0.00
80	Addis Ababa	Ethiopia	0.00	0.00
80	Algiers	Algeria	0.00	0.00
80	Casablanca	Morocco	0.00	0.00

Table 5-2 represents the average scores of nations in Privacy and Security by continent. Oceania remained as the continent with the highest average scores, with 11.50 points, followed by Europe, with 7.97 points. The South American continent had the lowest average score, with 3.83 points. Asia and Africa improved slightly in score from their 2015-16 values, and all other continents increased in score.

As shown in Figure 5-2, cities in OECD countries scored an average of 9.66, while cities in non-member countries scored only 4.43 in this category. These results indicate that cities in economically advanced countries continue to emphasize privacy and security policy more than cities in less developed countries. However, both member and non-member countries saw an increase in their overall average score. Figure 5-1 illustrates the data presented in Table 5-2.

[Figure 5-1] Average Score in Privacy and Security by Continent (2018-19)
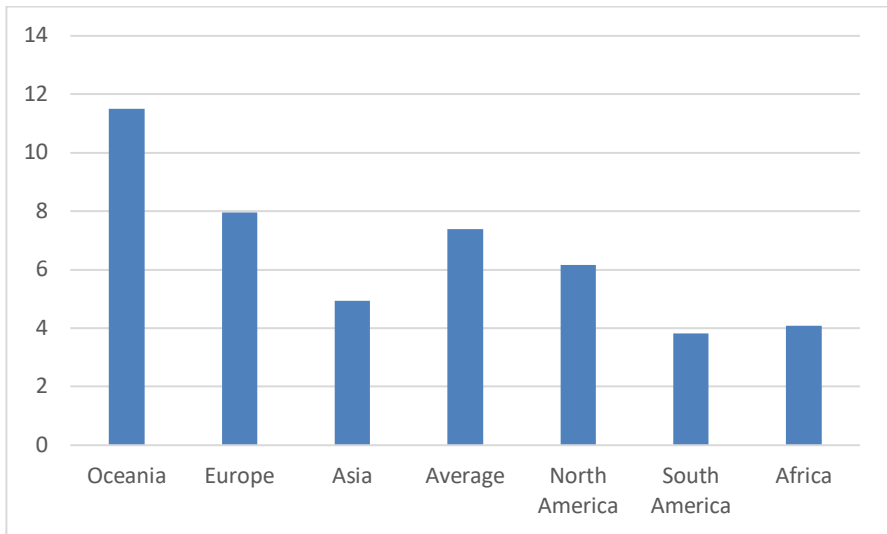
[Table 5-2] Average Score in Privacy/Security by Continent (2018-19)

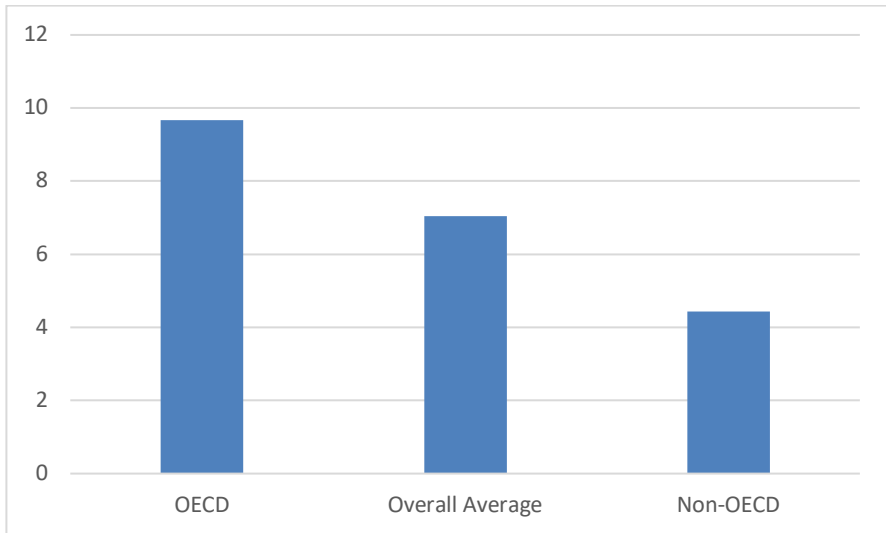|	Oceania	Europe	Asia	Average	North America	South America	Africa
Privacy Averages	11.5	7.97	4.95	7.39	6.17	3.83	4.09

Table 5-3 lists the results of the evaluation of key aspects in the category of Privacy and Security by continent. All cities in Oceania had a privacy and security statement/policy, as did 76% of cities in Europe, 48% in Asia, 66% in North America, 33% in South America, and 42% in Africa. Asian, European, and North American continents have decreased their respective percentages of posted policies since 2015-16. The overall average percentage for cities that have a privacy or security policy online is 61%, which was the same percentage as in 2015-16.

With regard to the use of encryption in the transmission of data, 20% of all cities globally have addressed this issue, a drop from 27% in 2015-16. Europe leads with 31% of cities

using encryption, followed by Oceania with 25%, North America with 22%, Asia with 17%, Africa with 14%, and South America with 11%. Overall, 20% of cities explicitly noted the use of encryption in their privacy/security policies.

The overall percentage for cities that provide the option of digital signatures is 3%, a drop of 3% from the 6% found in 2015-16. This is compared to 44% of all cities that address the use of "cookies" or "web beacons" to track users, a rise of 3% from 41% in 2015-16. No cities worldwide in the 2003 evaluation had a privacy policy addressing the use of digital signatures to authenticate users.

All cities evaluated in Oceania addressed the use of "cookies" or "web beacons." They were followed by 57% of cities in Europe, 33% in North America, 24% in Asia, 28% of in Africa, and 22% in South America.

[Table 5-3] Results for Privacy and Security by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Privacy or Security Policy	100%	76%	48%	61%	66%	33%	42%
Use of Encryption	25%	31%	17%	20%	22%	11%	14%
Use of Cookies	100%	57%	24%	44%	33%	22%	28%
Digital Signature	0%	10%	10%	3%	0%	0%	0%

Table 5-4 lists the results of the evaluation of key aspects in the category of Privacy and Security for OECD and non-OECD member countries. Overall, these results are consistent with those of previous years in that OECD countries continue to pay far greater attention on their websites to privacy/security matters than do non-OECD countries. Specifically, 92% of cities evaluated in OECD countries have developed a privacy or security statement/ policy, while only 43% of cities in non-OECD countries have a privacy statement on their websites. OECD countries show a rise in this number from 2015-16, while non-OECD countries dropped by 5% from2015-16. Overall, 68% of cities had privacy/security statements, which was a 2% decrease from 2015-16.

[Table 5-4] Results for Privacy and Security by OECD Member and Non-Member Countries (2018-19)

	OECD	Average	Non-OECD
Privacy or Security Policy	92%	68%	43%
Use of Encryption	34%	25%	16%
Use of Cookies	72%	47%	22%
Digital Signature	10%	8%	6%

With regard to the use of encryption in the transmission of data, 34% of cities evaluated in OECD countries have a privacy policy addressing the use of encryption, compared to 16% of cities in non-OECD countries. Overall, 25% of cities addressed the use of encryption in their

privacy/security statements, a drop of 4% from 29% in 2015-16. In addition, 72% of cities evaluated in OECD countries have a privacy policy addressing the use of "cookies" or "web beacons" to track users, while only 22% of cities in non-OECD countries have statements as to the use of "cookies." Overall, 47% of cities addressed the use of "cookies" in their privacy/security statements. Cities in OECD countries score above average throughout the world.

In terms of queries and whether the site has a privacy or security statement/policy, 68% of cities had privacy and security policies (Figure 5-3). Madrid, Seoul, Yerevan, Bratislava, Singapore, Toronto, New York, Buenos Aires have clear privacy or security statements/policies, as reflected by their rankings in that category.

[Figure 5-3] Existence of Privacy or Security Policy (2018-19)
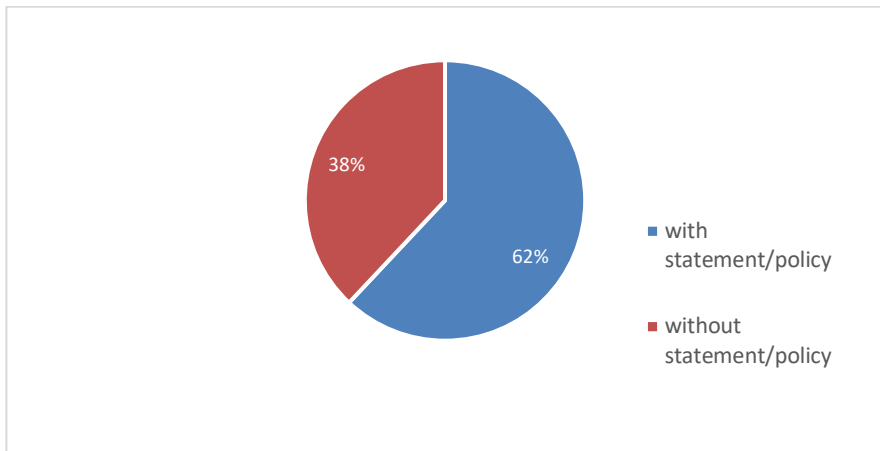
6

USABILITY

The following chapter highlights the results for the category of Usability. Results indicate that Madrid, Buenos Aires, Shanghai, Singapore, Kuala Lumpur, Bangkok, Oslo, and Yerevan are the top-ranked cities in the category of Usability in 2018-19. Except for Yerevan, seven cities are new to the Top 5 rankings. Madrid, Buenos Aires, and Shanghai share the same scores of 17.78 in the 1st position. Following is Singapore, with a score of 17.41. Kuala Lumpur and Bangkok sit in the third position with a score of 17.04. Following are Oslo and Yerevan, with identical scores of 16.30 in the 4th position. The fifth position is shared by Lisbon with a score of 15.93. Table 6-1 summarizes the results for all the municipalities evaluated in this category.

The average score in this category is 12.40, which is an overall increase from a score of 12.38 in 2015-16. The results indicate that cities in Oceania scored the highest in this category, with an overall score of 14.63 in Usability. Europe scored the second highest average of 13.40, an

increase from 13.27 in the 2015-16 results.   South America stands in the third-place position, with an average score of 12.63 in the category of Usability.

[Table 6-1] Results in Usability (2018-19)

Rank	City	Country	Usability	% Max Score
1	Madrid	Spain	17.78	88.90
1	Buenos Aires	Argentina	17.78	88.90
1	Shanghai	China	17.78	88.90
4	Singapore	Singapore	17.41	87.05
5	Kuala Lumpur	Malaysia	17.04	85.20
5	Bangkok	Thailand	17.04	85.20
7	Oslo	Norway	16.30	81.50
8	Yerevan	Armenia	16.29	81.45
9	Lisbon	Portugal	15.93	79.65
10	Seoul	Korea (Rep.)	15.92	79.60
11	Amsterdam	Netherlands	15.56	77.80
11	Helsinki	Finland	15.56	77.80
11	Vilnius	Lithuania	15.56	77.80
11	Stockholm	Sweden	15.56	77.80
15	Hong Kong	China	15.55	77.75
15	Muscat	Oman	15.55	77.75
15	Copenhagen	Denmark	15.55	77.75
18	Istanbul	Turkey	15.18	75.90
19	Luxembourg City	Luxembourg	14.81	74.05
19	Doha	Qatar	14.81	74.05
19	Montevideo	Uruguay	14.81	74.05
19	Auckland	New Zealand	14.81	74.05
19	Casablanca	Morocco	14.81	74.05
19	Kiev	Ukraine	14.81	74.05
25	Ljubljana	Slovenia	14.44	72.20

25	Toronto	Canada	14.44	72.20
25	San Jose	Costa Rica	14.44	72.20
25	Johannesburg	South Africa	14.44	72.20
25	Sydney	Australia	14.44	72.20
30	Athens	Greece	14.32	71.60
31	Sarajevo	Bosnia and Herzegovina	14.07	70.35
31	Riyadh	Saudi Arabia	14.07	70.35
31	Almaty	Kazakhstan	14.07	70.35
31	Tokyo	Japan	14.07	70.35
31	Panama City	Panama	14.07	70.35
36	Zurich	Switzerland	13.70	68.50
36	Prague	Czech Republic	13.70	68.50
36	Nicosia	Cyprus	13.70	68.50
36	Jerusalem	Israel	13.70	68.50
40	Chisinau	Moldova	13.33	66.65
40	Tirana	Albania	13.33	66.65
40	Taipei	Taiwan	13.33	66.65
40	San Fernando	Trinidad and Tobago	13.33	66.65
40	Tallinn	Estonia	13.33	66.65
40	Berlin	Germany	13.33	66.65
40	Santo Domingo	Dominican Republic	13.33	66.65
47	Sao Paulo	Brazil	12.96	64.80
48	Sofia	Bulgaria	12.84	64.20
49	London	United Kingdom	12.59	62.95
49	Ho Chi Minh City	Vietnam	12.59	62.95
49	Dubai	United Arab Emirates	12.59	62.95
52	Dublin	Ireland	12.22	61.10
52	Bogota	Columbia	12.22	61.10
52	Mexico City	Mexico	12.22	61.10
55	New Delhi	India	12.10	60.50
56	Zagreb	Croatia	11.85	59.25
56	Rome	Italy	11.85	59.25

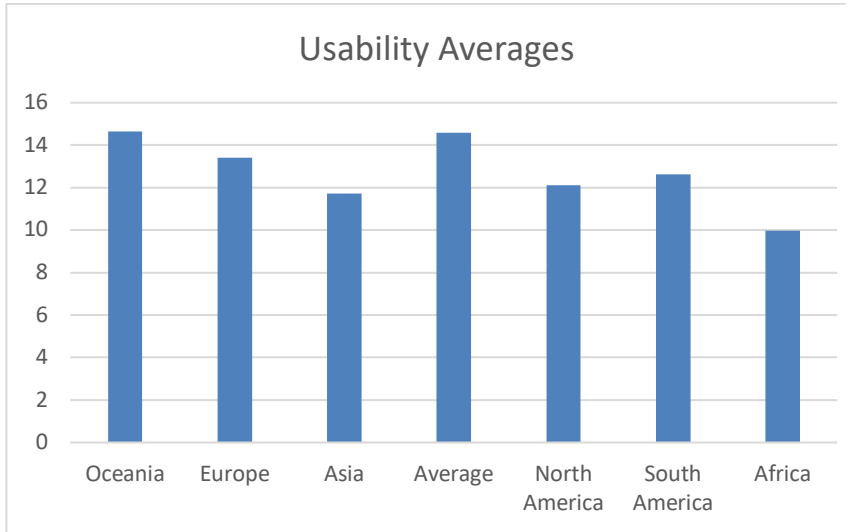| 56	Paris	France	11.85	59.25
56	Jakarta	Indonesia	11.85	59.25
56	Guayaquil	Ecuador	11.85	59.25
56	Guatemala City	Guatemala	11.85	59.25
62	Brussels	Belgium	11.60	58.00
63	Tbilisi	Georgia	11.48	57.40
64	Budapest	Hungary	11.36	56.80
65	Moscow	Russia	11.11	55.55
65	Bratislava	Slovakia	11.11	55.55
65	Warsaw	Poland	11.11	55.55
65	Belgrade	Serbia and Montenegro	11.11	55.55
65	Dhaka	Bangladesh	11.11	55.55
65	Bishkek	Kyrgyzstan	11.11	55.55
71	Vienna	Austria	10.74	53.70
71	Santiago	Chile	10.74	53.70
71	New York	USA	10.74	53.70
71	Skopje	Macedonia	10.74	53.70
75	Port Louis	Mauritius	10.37	51.85
75	Lima	Peru	10.37	51.85
77	Minsk	Belarus	9.63	48.15
77	Tashkent	Uzbekistan	9.63	48.15
77	Karachi	Pakistan	9.63	48.15
77	Tunis	Tunisia	9.63	48.15
77	Caracas	Venezuela	9.63	48.15
82	Cairo	Egypt	9.38	46.90
83	San Salvador	El Salvador	9.26	46.30
84	Amman	Jordan	8.89	44.45
84	Colombo	Sri Lanka	8.89	44.45
84	Manama	Bahrain	8.89	44.45
87	Ulaanbaatar	Mongolia	8.52	42.60
87	San Juan	Puerto Rico	8.52	42.60
87	Bucharest	Romania	8.52	42.60

90	Katmandu	Nepal	8.15	40.75
91	Sana'a	Yemen	7.41	37.05
91	Gaza	Palestine	7.41	37.05
91	Addis Ababa	Ethiopia	7.41	37.05
94	Tehran	Iran	6.67	33.35
94	Baku	Azerbaijan	6.67	33.35
96	Beirut	Lebanon	5.19	25.95
96	Damascus	Syria	5.19	25.95
96	Manila	Philippines	5.19	25.95
99	Algiers	Algeria	3.70	18.50

As shown in Figure 6-2, cities in OECD countries scored an average of 13.63, while cities in non-member countries scored only 11.71 in this category. This result indicates that cities in economically advanced countries continue to have more emphasis on usability than do cities in less developed countries. The gap between OECD member and non-member countries has remained largely the same as in the 2015-16 survey, but both member and non-member countries have increased their average Usability score. Figure 6-1 summarizes the data presented in Table 6-2.

[Table 6-2] Average Score in Usability by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Usability Averages	14.63	13.4	11.71	14.58	12.1	12.63	9.96

[Figure 6-1] Average Score in Usability by Continent (2018-19)

Usability Averages

Continent	Score
Oceania	~14.6
Europe	~13.4
Asia	~11.7
Average	~14.5
North America	~12.1
South America	~12.6
Africa	~9.9

[Figure 6-2] Average Score in Usability by OECD Member and Non-Member Countries (2018-19)

Category	Score
OECD	~13.6
Overall Average	~12.65
Non-OECD	~11.7
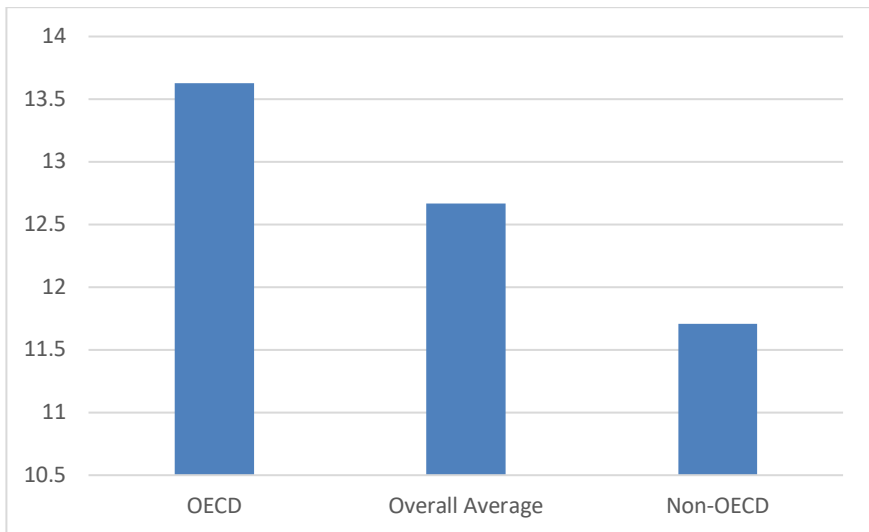
Table 6-3 lists the results of the evaluation of key aspects in the category of Usability by continent. South America improved from 67% in 2015-16 to 88% in 2018-19. This was followed by 66% of cities in Europe, 64% of cities in Africa, 50% of cities in Oceania and North America, 40% of cities in Asia, and 67% of cities in Africa that have targeted audience links divided into more than three categories (e.g., general citizens, youth, the elderly, women, family, citizens in need of social welfare services, businesses, industry, small businesses, public employees, etc.). Further, on average, 59% of all cities that have such links show a drop of 18% from 77% in 2013-14.

Also, as to the posting of site maps that contain active links and are less than two screens in length, Oceania and Europe have the highest scores with 75% and 73%, followed by 66% in Asia, 57% in Africa,55% in South America, and 33% in North America. Save for Africa, the increase in percentage of site maps was non-existent or slight among the continents. Overall, 59% of cities had a site map that contained active links and are less than two screens in length, a rise of 1% from 58% in 2015-16. In terms of online search tools, all cities in Oceania, Europe, South America, and Africa contained a search tool. Asia had a search tool available for 77% of websites.

[Table 6-3] Results for Usability by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Targeted Audience	50%	66%	40%	59%	50%	88%	64%
Site Map	75%	73%	66%	59%	33%	55%	57%
Search Tool	100%	97%	77%	85%	77%	88%	71%

Table 6-4 indicates the results of assessments of Usability among OECD and non-OECD countries. In terms of targeted audience links, 59% of cities throughout the world have targeted audience links divided into more than three categories. Further, 85% of cities in OECD countries have links divided into more than three categories, while only 56% of non-OECD countries have such links. Both showed a rise in the overall average, however.

With regard to sitemaps, 67% of cities throughout the world have a sitemap containing active links and are less than two screens in length. This was a rise of 6% from 61% in 2015-16. Also, 74% of the cities in OECD countries and 59% in non-OECD countries contained a sitemap. This shows a rise in OECD countries, and a rise in non-OECD countries since 2015-16.

Lastly, 97% of the cities in OECD countries and 80% in non-OECD countries provide online search tools. This shows a rise in OECD countries and a drop in non-OECD

countries since 2015-16. The average score among cities throughout the world was 89%.

[Table 6-4] Results for Usability by OECD Member and Non-Member Countries (2018-19)

	OECD	Average	Non-OECD
Targeted Audience	59%	58%	56%
Site Map	74%	67%	59%
Search Tool	97%	89%	80%

In terms of the topic of "Targeted audience links: Are targeted audience links available on the homepage?" (e.g., general citizens, youth, the elderly, women, citizens in need of social welfare services, businesses, industry, public employees, etc.), 54% of municipal websites are divided into more than three categories (Figure 6-3).

[Figure 6-3] Targeted Audience Links (2018-19)

7
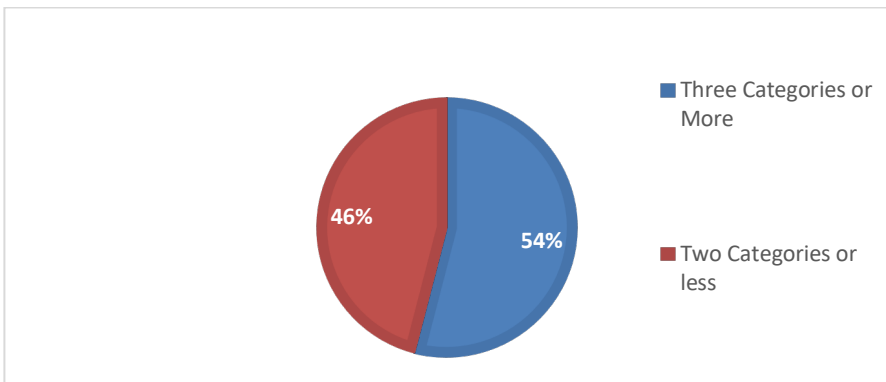
CONTENT

Results for the category of Content indicate that Seoul, Toronto, Montevideo, Paris, and Madrid are the top-ranked cities in this category. New to the Top 5 are Toronto, Montevideo, and Paris. Seoul remained in the 1st place position in content, with a score of 17.78, relatively higher to its 2015-16 score. Notably, Toronto climbed from 22nd to 2nd place with a score 15.55. Montevideo was ranked 61st in 2015-16 with a score of 6.19, but has improved its score significantly to 15.19 in 2018-19. Similarly, Paris was ranked 37th respectively in 2015-16 with a score of 9.68, but is now ranked 4th with a score of 14.81. Madrid dropped two positions to fifth in 2018-19, from its third-place position in 2015-16, with a score of 14.07. Table 7-1 summarizes the results for all the municipalities evaluated in the content category. The average score in this category is 7.94. This shows a slight decrease in the overall average content score for this category from 8.22 in 2015-16.

[Table 7-1] Results for Content (2018-19)

Rank	City	Country	Content	% Max Score
1	Seoul	Korea (Rep.)	17.78	88.90
2	Toronto	Canada	15.55	77.75
3	Montevideo	Uruguay	15.19	75.95
4	Paris	France	14.81	74.05
5	Madrid	Spain	14.07	70.35
6	Oslo	Norway	13.70	68.50
6	Helsinki	Finland	13.70	68.50
6	New York	USA	13.70	68.50
9	Shanghai	China	13.52	67.60
10	Luxembourg City	Luxembourg	13.33	66.65
10	Berlin	Germany	13.33	66.65
12	Auckland	New Zealand	13.14	65.70
13	Tallinn	Estonia	12.96	64.80
13	Kiev	Ukraine	12.96	64.80
15	Singapore	Singapore	12.59	62.95
16	Bogota	Columbia	12.40	62.00
17	Hong Kong	China	12.03	60.15
18	Taipei	Taiwan	11.85	59.25
18	Stockholm	Sweden	11.85	59.25
18	Sydney	Australia	11.85	59.25
21	Tehran	Iran	11.48	57.40
21	Amsterdam	Netherlands	11.48	57.40
21	Buenos Aires	Argentina	11.48	57.40
24	Ljubljana	Slovenia	11.30	56.50
25	Jerusalem	Israel	11.29	56.45
26	Yerevan	Armenia	11.11	55.55
26	Athens	Greece	11.11	55.55
26	Istanbul	Turkey	11.11	55.55
26	Vilnius	Lithuania	11.11	55.55
30	London	United Kingdom	10.93	54.65

31	Tokyo	Japan	10.74	53.70
32	Prague	Czech Republic	10.56	52.80
33	Nicosia	Cyprus	9.81	49.05
34	Rome	Italy	9.63	48.15
34	Chisinau	Moldova	9.63	48.15
34	Sarajevo	Bosnia and Herzegovina	9.63	48.15
37	Lisbon	Portugal	9.44	47.20
38	New Delhi	India	9.38	46.90
39	Zurich	Switzerland	9.26	46.30
40	Copenhagen	Denmark	8.89	44.45
40	Johannesburg	South Africa	8.89	44.45
40	Sao Paulo	Brazil	8.89	44.45
43	Kuala Lumpur	Malaysia	8.64	43.20
44	Bishkek	Kyrgyzstan	8.15	40.75
45	Dublin	Ireland	7.96	39.80
46	Almaty	Kazakhstan	7.78	38.90
46	Bangkok	Thailand	7.78	38.90
46	Jakarta	Indonesia	7.78	38.90
46	Zagreb	Croatia	7.78	38.90
46	Tbilisi	Georgia	7.78	38.90
46	Ulaanbaatar	Mongolia	7.78	38.90
52	Brussels	Belgium	7.65	38.25
53	Dubai	United Arab Emirates	7.59	37.95
54	Bratislava	Slovakia	7.03	35.15
55	Katmandu	Nepal	6.85	34.25
56	Guayaquil	Ecuador	6.67	33.35
57	Minsk	Belarus	6.48	32.40
57	Skopje	Macedonia	6.48	32.40
59	Doha	Qatar	6.30	31.50
59	Vienna	Austria	6.30	31.50
59	Casablanca	Morocco	6.30	31.50
59	San Jose	Costa Rica	6.30	31.50

| 59	Panama City	Panama	6.30	31.50
64	Budapest	Hungary	6.17	30.85
65	Lima	Peru	5.93	29.65
66	Muscat	Oman	5.74	28.70
67	Sana'a	Yemen	5.56	27.80
67	Tirana	Albania	5.56	27.80
69	Dhaka	Bangladesh	5.37	26.85
69	Santa Domingo	Dominican Republic	5.37	26.85
71	Ho Chi Minh City	Vietnam	5.31	26.55
72	Tashkent	Uzbekistan	5.19	25.95
73	Moscow	Russia	5.18	25.90
73	Santiago	Chile	5.18	25.90
73	Caracas	Venezuela	5.18	25.90
76	Warsaw	Poland	5.00	25.00
77	Mexico City	Mexico	4.63	23.15
78	Sofia	Bulgaria	4.56	22.80
79	Karachi	Pakistan	4.44	22.20
79	Guatemala City	Guatemala	4.44	22.20
81	San Juan	Puerto Rico	4.25	21.25
82	Bucharest	Romania	3.88	19.40
83	Amman	Jordan	3.70	18.50
83	Manila	Philippines	3.70	18.50
83	Tunis	Tunisia	3.70	18.50
83	San Fernando	Trinidad and Tobago	3.70	18.50
87	Belgrade	Serbia and Montenegro	3.51	17.55
88	Port Louis	Mauritius	3.33	16.65
89	Cairo	Egypt	3.21	16.05
90	Addis Ababa	Ethiopia	2.96	14.80
91	Riyadh	Saudi Arabia	2.59	12.95
92	Damascus	Syria	2.22	11.10
92	Baku	Azerbaijan	2.22	11.10
94	Manama	Bahrain	1.85	9.25

94	San Salvador	El Salvador	1.85	9.25
96	Beirut	Lebanon	1.48	7.40
97	Colombo	Sri Lanka	1.11	5.55
97	Algiers	Algeria	1.11	5.55
99	Gaza	Palestine	0.74	3.70

Table 7-2 represents the average score in Content by continent. Overall, cities in Oceania had the highest average score of 12.50, and Oceania remained the highest rated continent. Africa, however, remained the continent with the lowest average, with a score of 4.21. As shown in Figure 7-2, cities in OECD countries scored an average of 10.77, while cities in non-member countries scored only 6.57 in this category. Cities in economically advanced countries continue to have more emphasis on website content than do cities in less developed countries. Once again, however, both OECD member and non-member countries increased their overall Content scores. Figure 7-1 illustrates the data presented in Table 7-2.

[Table 7-2] Average Score in Content by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Content Averages	12.5	9.41	7.04	8.06	6.93	8.29	4.21

[Figure 7-1] Average Score in Content by Continent (2018-19)
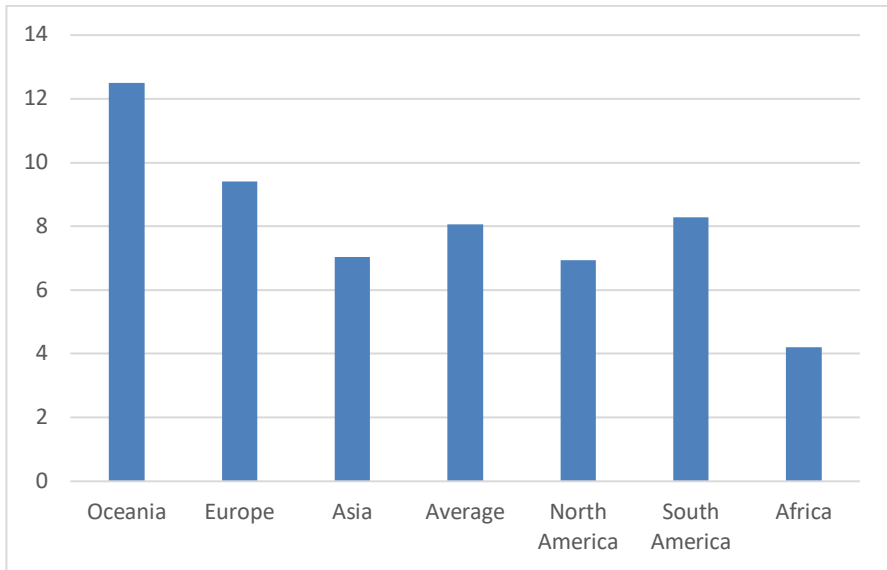
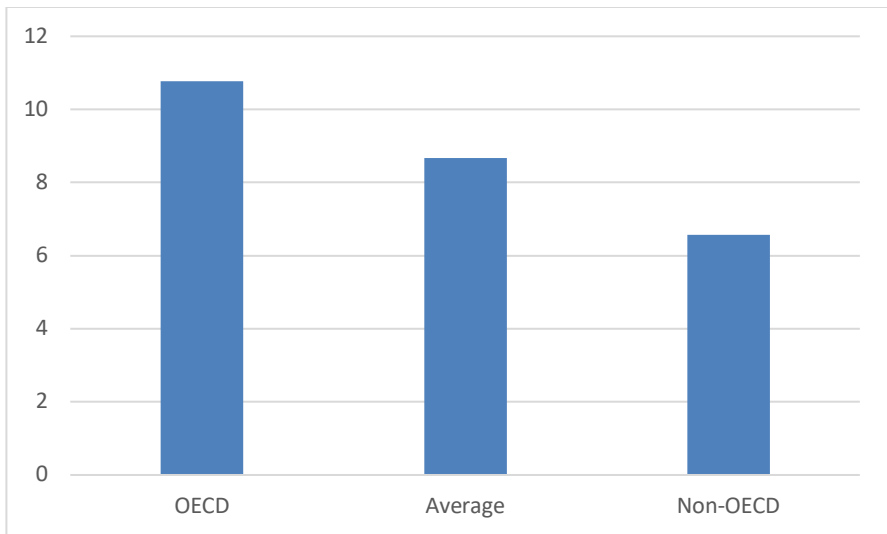[Figure 7-2] Average Score in Content by OECD Member and Non-Member Countries (2018-19)

Table 7-3 indicates the results of the evaluation of Content by continent. First, 29% of cities evaluated in all continents have websites with performance measurement mechanisms posted throughout the website. Next, 38% of cities evaluated across continents have websites with mechanisms in the area of emergency management or alerts (severe weather, etc.). This shows a drop from the level of 53% in 2015-16.

Subsequently, with regard to disability access for the blind, 28% of cites have websites providing such access (e.g., Bobby compliant: http://www.cast.org/bobby). This shows a 6% drop from the 2015-16 score of 34%. In addition, 25% of cities have websites providing disability access for the deaf (TDD phone service).

Among continents, cities in Oceania have the highest percentage--50% and 75%--of municipal websites with both blind- and deaf-assistance features.

Regarding the use of wireless technology, 100% of cities in Oceania, 72% cities in North America, 70% cities in Europe, 66% cities in South America, 64% cities in Asia, and 14% of cities in Africa have websites using technology such as messages to a mobile phone or smart phone to update applications, events, etc. All cities showed a

significant rise in this category. Overall, 64% of websites contained this feature.

Also, 79% of cities in Europe, 78% of cities in Africa, 71% of cities in Asia, 55% of cities in North America, 50% of cities in Oceania, and 11% of cities in South America have websites offering access in more than one language. All continents showed a rise in this category from 2015-16, except those in Africa and Oceania. Overall, 57% of websites offered access in multiple languages.

[Table 7-3] Results for Content by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Emergency Management	100%	34%	30%	38%	27%	16%	21%
Access for the Blind	50%	35%	27%	28%	27%	27%	7%
Access for the deaf	75%	17%	11%	25%	16%	22%	14%
Wireless Technology	100%	70%	64%	64%	72%	66%	14%
More than one Language	50%	79%	71%	57%	55%	11%	78%
Performance Measurement	75%	24%	29%	29%	11%	33%	7%

Table 7-4 indicates the results of assessments of Content among OECD and non-OECD countries. As with the other

categories discussed above, cities in OECD countries have more advanced websites in terms of content than do cities in non-OECD countries. Regarding performance measurement, 28% of OECD countries have performance measurements posted on their websites, while only 23% of non-OECD countries do. As to an emergency management or an alert mechanism, 48% of cities in OECD countries have such websites, but only 22% of cities in non-OECD member countries have such capacities.

In terms of disability access for the blind, 42% of cities in OECD countries have websites providing such access, whereas only 22% of cities in non-OECD countries offer that capacity. In addition, 42% of cities in OECD countries have websites providing disability access for the deaf, while only 11% of cities in non-OECD countries offer it. With respect to the use of wireless technology, 84% of cities in OECD countries have websites using wireless technology to update applications, events, etc., while 54% of cities in non-OECD countries have websites using that technology. Lastly, 77% of cities in OECD countries have websites offering access in more than one language, while 62% in non-OECD countries offer multilingual access. Universally, the averages have dropped since 2015-16, but the gap in content between OECD and Non-OECD countries is characteristically still present in 2018-19.

[Table 7-4] Results for Content by OECD Member and Non-Member Countries (2018-19)

	OECD	Average	Non-OECD
Emergency Management	48%	35%	22%
Access for the Blind	42%	32%	22%
Access for the deaf	27%	19%	11%
Wireless Technology	84%	69%	54%
More than one Language	77%	70%	62%
Performance Measurement	28%	26%	23%

We asked: "Does the site offer access in more than one language?" Some 70% of cities evaluated have a website that offers access in more than one language, while 30% of cities have access in only one language. Figure 7-3 represents these findings in terms of overall percentages. This is a drastic increase from the overall average of 65% of websites having access in multiple languages in 2015-16.

[Figure 7-3] Access in Multiple Languages (2018-19)
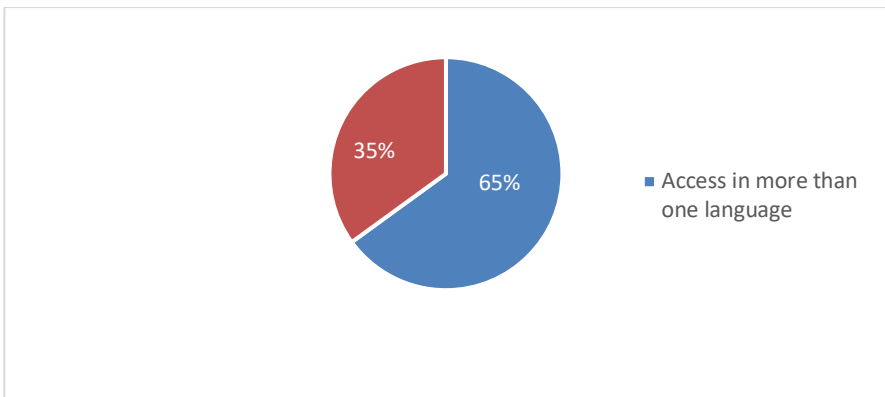
8

SERVICES

The following chapter highlights the results for the category of Services. Results indicate that Seoul, Madrid, Yerevan, Amsterdam, Moscow, Hong Kong, Tehran, Istanbul and New York are the top-ranked cities in the category of Services. Seoul remained in the first position with a score of 18.46. In second place was Madrid, with a score of 15.00, moving up from its 6th position and score of 13.44. Yerevan, Amsterdam and Moscow shared the third rank, with a score of 13.46. The sixth-ranked cities were Hong Kong and Tehran, with scores of 13.08. Istanbul and New York were ranked eighth, with a score of 13.07. Table 8-1 summarizes the results for all municipalities evaluated in this category. The average score in the service category is 6.61 in 2018-19. This shows a slight decrease from cities' scores of 6.82 in 2015-16.

[Table 8 -1] Results in Services (2018-19)

Rank	City	Country	Services	% Max Score
1	Seoul	Korea (Rep.)	18.46	92.30
2	Madrid	Spain	15.00	75.00
3	Yerevan	Armenia	13.46	67.30
3	Amsterdam	Netherlands	13.46	67.30
3	Moscow	Russia	13.46	67.30
6	Hong Kong	China	13.08	65.40
6	Tehran	Iran	13.08	65.40
8	Istanbul	Turkey	13.07	65.35
8	New York	USA	13.07	65.35
10	Auckland	New Zealand	12.88	64.40
11	Taipei	Taiwan	12.69	63.45
11	Paris	France	12.69	63.45
13	Tallinn	Estonia	12.31	61.55
14	Toronto	Canada	12.12	60.60
15	Singapore	Singapore	12.11	60.55
16	Rome	Italy	11.54	57.70
17	Helsinki	Finland	11.15	55.75
17	Oslo	Norway	11.15	55.75
17	Montevideo	Uruguay	11.15	55.75
20	Berlin	Germany	10.77	53.85
21	Johannesburg	South Africa	10.19	50.95
22	Athens	Greece	10.13	50.65
23	Stockholm	Sweden	10.00	50.00
23	Kiev	Ukraine	10.00	50.00
23	Bogota	Columbia	10.00	50.00
26	Kuala Lumpur	Malaysia	9.49	47.45
27	Shanghai	China	9.42	47.10
27	Lisbon	Portugal	9.42	47.10
29	Vilnius	Lithuania	9.23	46.15
30	Guatemala City	Guatemala	8.85	44.25

30	Jerusalem	Israel	8.85	44.25
32	Muscat	Oman	8.46	42.30
32	Tbilisi	Georgia	8.46	42.30
34	New Delhi	India	8.33	41.65
35	Luxembourg City	Luxembourg	8.08	40.40
35	Zurich	Switzerland	8.08	40.40
37	San Jose	Costa Rica	8.07	40.35
37	Sydney	Australia	8.07	40.35
39	Doha	Qatar	7.31	36.55
39	Tokyo	Japan	7.31	36.55
41	Copenhagen	Denmark	7.30	36.50
42	San Juan	Puerto Rico	7.11	35.55
43	Dubai	United Arab Emirates	6.92	34.60
43	Sao Paulo	Brazil	6.92	34.60
45	Nicosia	Cyprus	6.54	32.70
46	Sarajevo	Bosnia and Herzegovina	6.15	30.75
47	Riyadh	Saudi Arabia	5.77	28.85
47	Colombo	Sri Lanka	5.77	28.85
47	Port Louis	Mauritius	5.77	28.85
47	Prague	Czech Republic	5.77	28.85
47	Dublin	Ireland	5.77	28.85
52	London	United Kingdom	5.58	27.90
53	Bratislava	Slovakia	5.38	26.90
53	Chisinau	Moldova	5.38	26.90
53	Brussels	Belgium	5.38	26.90
53	Minsk	Belarus	5.38	26.90
57	Skopje	Macedonia	5.13	25.65
58	Guayaquil	Ecuador	5.00	25.00
58	Buenos Aires	Argentina	5.00	25.00
60	Ljubljana	Slovenia	4.81	24.05
60	Dhaka	Bangladesh	4.81	24.05
62	Bangkok	Thailand	4.62	23.10

63	Ulaanbaatar	Mongolia	4.23	21.15
63	Cairo	Egypt	4.23	21.15
65	Sana'a	Yemen	3.85	19.25
65	Tirana	Albania	3.85	19.25
65	Casablanca	Morocco	3.85	19.25
65	Tunis	Tunisia	3.85	19.25
65	Bucharest	Romania	3.85	19.25
70	Ho Chi Minh City	Vietnam	3.72	18.60
71	Jakarta	Indonesia	3.46	17.30
71	Gaza	Palestine	3.46	17.30
71	Zagreb	Croatia	3.46	17.30
71	Sofia	Bulgaria	3.46	17.30
75	Mexico City	Mexico	3.27	16.35
76	Amman	Jordan	3.08	15.40
76	San Fernando	Trinidad and Tobago	3.08	15.40
76	Panama City	Panama	3.08	15.40
76	Santo Domingo	Dominican Republic	3.08	15.40
80	Katmandu	Nepal	2.88	14.40
81	Bishkek	Kyrgyzstan	2.69	13.45
81	Damascus	Syria	2.69	13.45
81	Almaty	Kazakhstan	2.69	13.45
81	Manama	Bahrain	2.69	13.45
85	Tashkent	Uzbekistan	2.50	12.50
86	Beirut	Lebanon	2.31	11.55
86	Lima	Peru	2.31	11.55
88	Karachi	Pakistan	2.11	10.55
88	Belgrade	Serbia and Montenegro	2.11	10.55
90	Budapest	Hungary	2.05	10.25
91	Algiers	Algeria	1.92	9.60
92	Manila	Philippines	1.73	8.65
92	Vienna	Austria	1.73	8.65
94	Addis Ababa	Ethiopia	1.54	7.70

| 94	Santiago	Chile	1.54	7.70
96	San Salvador	El Salvador	1.34	6.70
97	Baku	Azerbaijan	1.15	5.75
97	Caracas	Venezuela	1.15	5.75
99	Warsaw	Poland	0.19	0.95

Table 8-2 represents the average score of Services by continent. Overall, cities in Oceania again ranked highest, with a score of 10.48, followed by European cities, which remained in the second position with a score of 7.55. North American cities ranked third, with a score of 6.67, while cities in Asia ranked fourth, with a score of 6.30.

Further, cities in OECD countries had an average score of 8.73 in 2018-19. Conversely, cities in non-member countries recorded an average of 5.65 in this category, which was an increase in the average service score of 5.43 from 2015-16. This result suggests that cities in developed countries have provided citizens with more Services than cities in less developed countries. Figures 8-1 and 8-2 highlight that conclusion.

[Table 8-2] Average Score in Services by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Service Averages	10.48	7.55	6.30	6.77	6.67	5.13	4.48

[Figure 8-1] Average Score in Services by Continent (2018-19)
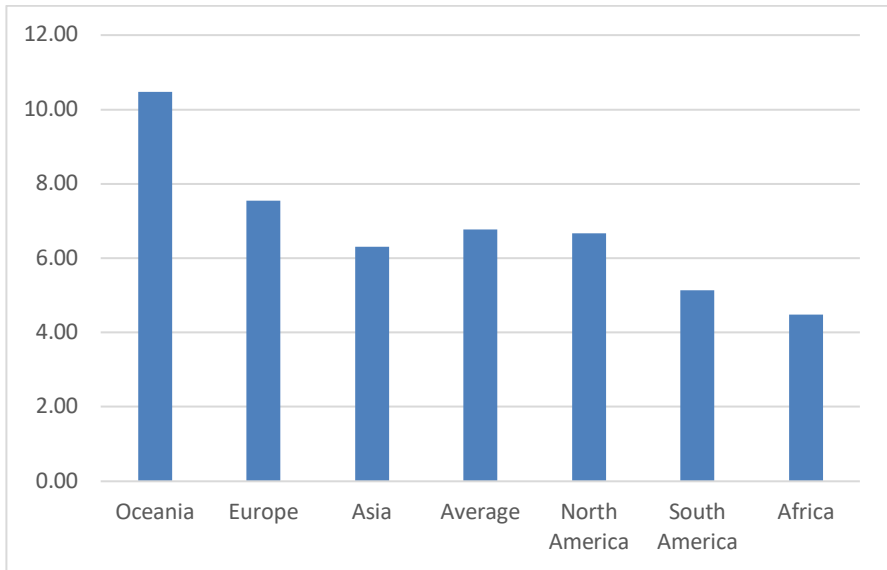
[Figure 8-2] Average Score in Services by OECD Member and Non-Member Countries (2018-19)
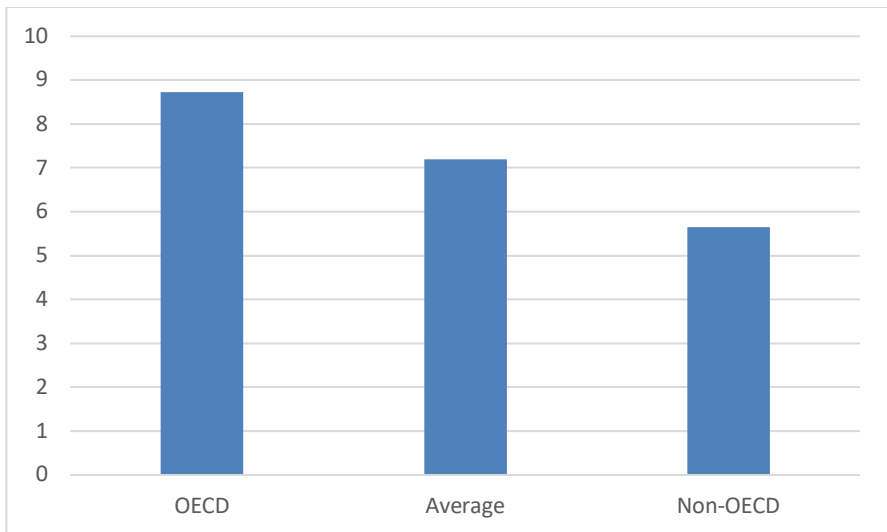
Table 8-3 indicates the results of key aspects selected in the category of Service Delivery by continent. With regard to searchable databases, 100% of cities in Oceania, 65% of cities in Europe, 52% in Asia, 38%in both North America and South America, and 26% in Africa have websites offering a searchable database. All continents, save for Oceania, showed a decrease in this score. The overall average for cities with searchable databases was 53%.

In terms of portal customization, which allows users to customize the main city homepage, depending on their needs, percentages are far lower. Oceania had the highest degree of portal customization at 25%, followed by Asia at 21%, Europe at 10%. North America, South America, and Africa had no websites with portal customization. The overall percentage dropped 14%, to 9% in 2018-19 from 14% in 2015-16.

In addition, with respect to access to their private information online (e.g., educational records, medical records, point total of driving violations, lost pet dogs, lost property), some 24% of cities, on average, allow users such access. This was a decrease of 5% from the 2015-16 score of 24%. Specifically, Oceania had the highest degree of access to private information online at 50%, followed by North America at 38%, Europe at 24%, South America at 22 %, Asia at 12%. Africa had no access to such records.

As represented by the overall average of 24%, all cities (except those in Africa) showed significant increases in such access since 2015-16.

[Table 8-3] Results for Services by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Searchable Database	100%	65%	52%	53%	38%	38%	26%
Portal Customization	25%	10%	21%	9%	0%	0%	0%
Access to Private Info	50%	24%	12%	24%	38%	22%	0%

Table 8-4 represents the results of key aspects in the category of Service Delivery by OECD membership. With regard to searchable databases, 74% of cities in OECD countries have websites offering a searchable database, and 43% in non-OECD countries have sites offering that capacity. In terms of portal customization, 13% of cities in OECD countries allow users to customize the main city homepage depending on their needs, and 11% in non-OECD countries allow citizens to do so. In addition, with respect to access to private information online, 33% of cities in OECD countries allow users to access such information, while 13% of cities in non-OECD countries allow citizens to do so. Among all categories, there was a drop in

percentage among both OECD and Non-OECD countries since 2015-16.

[Table 8-4] Results for Services by OECD Member and Non-Member Countries (2018-19)

	OECD	Average	Non-OECD
Searchable Database	74%	59%	43%
Portal Customization	13%	12%	11%
Access to Private Info	33%	23%	13%

Overall, 24% of all cities allow citizens access to their private information online in response to the question, "Does the site allow access to private information online?" (e.g., educational records, medical records, point total of driving violations, lost pet dogs, lost property). Over 78% of cities do not allow such access. Though there has been a rise in such access since 2015-16, when only 22% of cities provided such access, the gap is still large. Figure 8-3 illustrates this finding.

[Figure 8-3] Access to Private Information Online (2018-19)

9
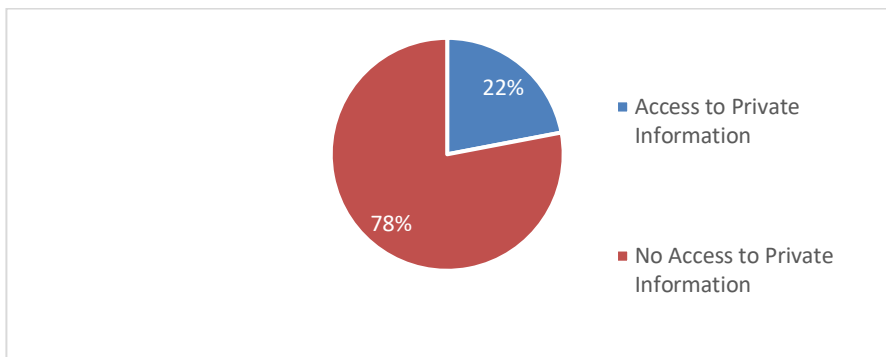
CITIZEN AND SOCIAL ENGAGEMENT

The following chapter highlights the results for the category of Citizen and Social Engagement. Results indicate that Shanghai, Auckland, Seoul, Madrid, Paris, and Lisbon are the top-ranked cities in the category of Citizen and Social Engagement. New to the Top 5 are Shanghai, Auckland, and Paris. Shanghai is ranked first, with a score of 15.36, a jump from 10th position and a score of 8.75 in 2015-16. Auckland, which ranked 13th in 2015-16 and had a score of 7.29, was in the second position in 2018-19, with a score of 14.39. Seoul is ranked third with a score of 13.90, a drop from the 1st position in 2015-16. Madrid and Paris share 4th position in 2018-19 with a score of 13.66. Lisbon came in at the sixth ranking, with a score of 11.95, followed by Yerevan, Amsterdam, Moscow and Singapore. Table 9-1 summarizes the results for all municipalities evaluated in this category.

The average score in this category is 4.10, which shows a slight increase from a score of 3.87 in 2015-16. Overall,

cities have been slow in developing e-government outlets that would empower citizen participation. This can be attributed to the relative lack of support for online citizen participation outlets and practices among municipalities across the world. In addition, the survey assessed digital opportunities for citizen and social engagement. It does not evaluate the extent to which residents and citizens use engagement opportunities.

[Table 9-1] Results in Citizen and Social Engagement (2018-19)

Rank	City	Country	CS Engagement	% Max Score
1	Shanghai	China	15.36	71.95
2	Auckland	New Zealand	14.39	69.51
3	Seoul	Korea (Rep.)	13.90	68.29
4	Madrid	Spain	13.66	68.29
4	Paris	France	13.66	65.85
6	Lisbon	Portugal	11.95	59.76
7	Yerevan	Armenia	11.22	56.10
8	Amsterdam	Netherlands	10.24	51.22
8	Moscow	Russia	10.24	47.56
10	Singapore	Singapore	9.51	43.90
11	Riyadh	Saudi Arabia	8.78	43.90
12	Copenhagen	Denmark	8.05	40.24
13	Tehran	Iran	7.80	39.84
13	Helsinki	Finland	7.80	39.02
15	London	United Kingdom	7.31	36.59
16	Minsk	Belarus	7.07	35.37
16	Bogota	Columbia	7.07	35.37
18	Oslo	Norway	6.83	34.96
18	New York	USA	6.83	34.15
18	Sydney	Australia	6.83	34.15

21	Berlin	Germany	6.58	34.15
22	Tallinn	Estonia	6.34	31.71
23	Kiev	Ukraine	5.85	29.27
23	Vilnius	Lithuania	5.85	29.27
25	Montevideo	Uruguay	5.61	28.05
26	Hong Kong	China	5.36	26.83
27	Rome	Italy	4.88	24.39
27	Taipei	Taiwan	4.88	24.39
29	Kuala Lumpur	Malaysia	4.87	24.39
29	Dubai	United Arab Emirates	4.87	24.39
29	Muscat	Oman	4.87	24.39
32	Athens	Greece	4.63	23.17
33	Tbilisi	Georgia	4.39	21.95
33	Zurich	Switzerland	4.39	21.95
33	Nicosia	Cyprus	4.39	21.95
33	Dublin	Ireland	4.39	21.95
33	Sarajevo	Bosnia and Herzegovina	4.39	21.95
38	Toronto	Canada	4.14	20.73
39	San Jose	Costa Rica	3.90	19.51
39	Almaty	Kazakhstan	3.90	19.51
39	Tashkent	Uzbekistan	3.90	19.51
39	Stockholm	Sweden	3.90	19.51
43	Luxembourg City	Luxembourg	3.65	18.29
44	Istanbul	Turkey	3.41	17.07
44	Doha	Qatar	3.41	17.07
44	Manama	Bahrain	3.41	17.07
44	Prague	Czech Republic	3.41	17.07
44	Ljubljana	Slovenia	3.41	17.07
44	Zagreb	Croatia	3.41	17.07
44	Tokyo	Japan	3.41	15.85
51	Guatemala City	Guatemala	3.26	17.07
52	Ulaanbaatar	Mongolia	3.17	15.45

53	New Delhi	India	3.09	14.63
54	Katmandu	Nepal	2.93	14.63
54	Sofia	Bulgaria	2.93	14.63
54	Tirana	Albania	2.93	14.63
57	Panama City	Panama	2.92	14.63
57	Johannesburg	South Africa	2.92	12.20
59	Ho Chi Minh City	Vietnam	2.44	12.20
59	Vienna	Austria	2.44	12.20
59	Buenos Aires	Argentina	2.44	11.38
62	Skopje	Macedonia	2.27	10.98
63	Jerusalem	Israel	2.20	10.57
64	Cairo	Egypt	2.11	30.49
65	Dhaka	Bangladesh	1.95	9.76
65	Sao Paulo	Brazil	1.95	9.76
65	Guayaquil	Ecuador	1.95	9.76
65	Lima	Peru	1.95	9.76
65	Mexico City	Mexico	1.95	8.94
70	Budapest	Hungary	1.79	8.54
71	Amman	Jordan	1.71	8.54
71	Karachi	Pakistan	1.71	8.13
73	Brussels	Belgium	1.63	7.32
74	Gaza	Palestine	1.46	7.32
74	San Juan	Puerto Rico	1.46	4.88
76	Caracas	Venezuela	0.98	9.76
76	Colombo	Sri Lanka	0.98	4.88
76	Damascus	Syria	0.98	4.88
76	Manila	Philippines	0.98	4.88
76	Bratislava	Slovakia	0.98	4.88
76	Chisinau	Moldova	0.98	4.88
82	Santa Domingo	Dominican Republic	0.97	4.88
82	San Fernando	Trinidad and Tobago	0.97	4.88
82	Bangkok	Thailand	0.97	4.88

85	Bucharest	Romania	0.73	3.66
85	Belgrade	Serbia and Montenegro	0.73	3.66
85	Santiago	Chile	0.73	3.66
88	Jakarta	Indonesia	0.49	2.44
88	Beirut	Lebanon	0.49	2.44
88	Baku	Azerbaijan	0.49	2.44
88	San Salvador	El Salvador	0.49	2.44
92	Bishkek	Kyrgyzstan	0.00	0.00
92	Sana'a	Yemen	0.00	0.00
92	Warsaw	Poland	0.00	0.00
92	Port Louis	Mauritius	0.00	0.00
92	Casablanca	Morocco	0.00	0.00
92	Tunis	Tunisia	0.00	0.00
92	Addis Ababa	Ethiopia	0.00	0.00
92	Algiers	Algeria	0.00	0.00

Table 9-2 represents the average score by continent. Overall, Oceania is the highest ranked continent, with a score of 10.61. Europe garnered the second-place position with a score of 5.09, and Asia the third position with a score of 4.03, a slight rise from the score of 3.59 in 2015-16.

As shown in Figure 9-2, cities in OECD countries scored an average of 5.78, which was a slight decrease in their 2015-16 score of 5.83. Cities in non-member countries scored only 3.24 in this category, which shows a noticeable gap between member and non-member countries. This result indicates that cities in economically advanced countries continue to place more emphasis on citizen participation

than do cities in less developed countries. Figures 9-1 illustrates the data presented in Table 9-2.

[Table 9-2] Average Score in Citizen and Social Engagement by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
CS Engagement Averages	10.61	5.09	4.03	4.34	2.95	2.65	0.72

[Figure 9-1] Average Score in Citizen and Social Engagement by Continent (2018-19)
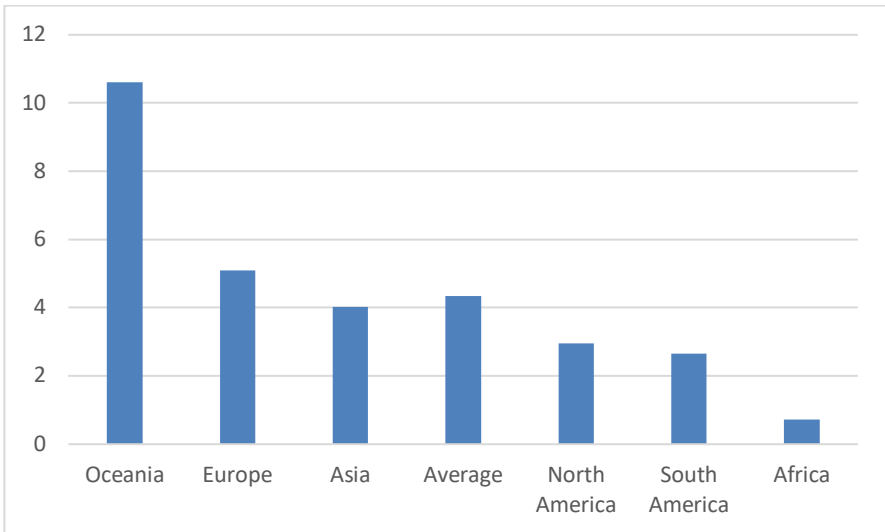
[Figure 9-2] Average Score in Citizen and Social Engagement by OECD Member and Non-Member Countries (2018-19)
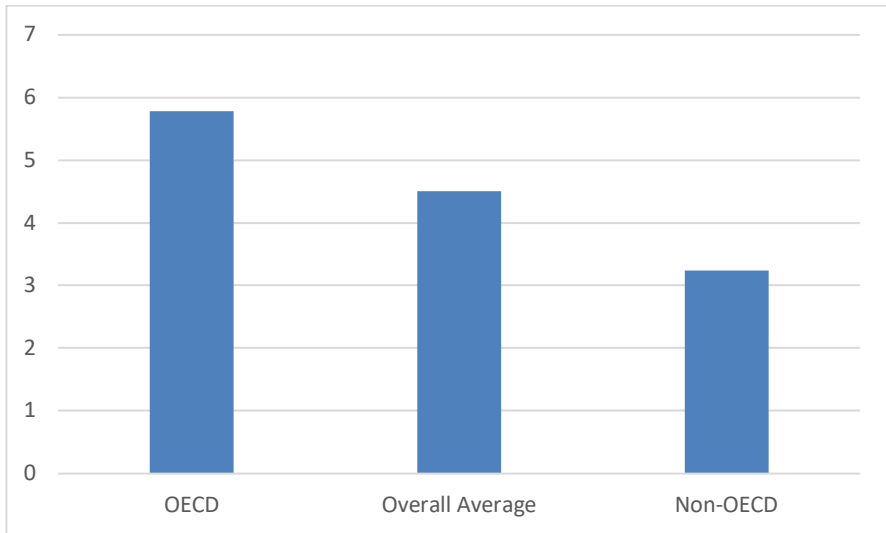
Table 9-3 indicates the results of key aspects of the category of Citizen and Social Engagement by continent. In terms of the question, "Does the website allow users to provide comments or feedback to individual departments/agencies through online forms?" 65% of municipalities do provide a mechanism allowing comments or feedback through such forms. This indicates a decrease from the average score of 82% in 2015-16. 100% of cities in Oceania offered access to such feedback forms, along with 77% of cities in Europe, 65% in Asia, 72% in North America, 66% in South America, and 11% in Africa.

With respect to access to online bulletin board or chat capabilities for gathering citizen input on public issues

("online bulletin board" or "chat capabilities" refers to a city website where any citizens can post ideas, comments, or opinions without specific discussion topics), 29% of cities have these capabilities. This shows a 7% rise from the 2015-16 score of 22%. 75% of cities in Oceania, 27% of cities in Europe and South America offered access to such bulletin boards, along with 25% of cities in Asia, 16% in North America, and 4% in Africa.

Lastly, with regard to online discussion forums on policy issues ("online discussion forum" means the city websites where the city arranges public consultation on policy issues, and citizens participate in discussing those specific topics), 29% of the municipalities evaluated have a site containing an online discussion forum. This is a decrease of 1% compared to the 2015-16 score of 30%. 75% of cities in Oceania offered access to such feedback forms, along with 40% of cities in Europe, 25% in Asia, 22% in North America, 11% in Africa, and 5% in South America had access to such discussion forums.

[Table 9-3] Results for Citizen and Social Engagement by Continent (2018-19)

	Oceania	Europe	Asia	Average	North America	South America	Africa
Feedback Form	100%	77%	65%	65%	72%	66%	11%
Bulletin Board	75%	27%	25%	29%	16%	27%	4%
Policy Forum	75%	40%	25%	29%	22%	5%	11%

Table 9-4 represents the results of key aspects selected in the category of Citizen and Social Engagement across OECD and non-OECD countries. In terms of the question, "Does the website allow users to provide comments or feedback to individual departments/agencies through online forms?" we found that 83 % of municipalities in OECD countries provide a mechanism allowing comments or feedback through online forms compared to 59% of municipalities in non-OECD countries. Overall, 71% of countries provide this mechanism of communication.

With respect to online bulletin board or chat capabilities for gathering citizen input on public issues, 28% of municipalities in OECD countries provide online bulletin board or chat capabilities, while 23% of municipalities in non-OECD countries provide such capabilities. Overall, 26% of countries provide this mechanism for communication.

With regard to online discussion forums on policy issues, 39% of municipalities in OECD countries have a site containing an online discussion forum, but only 23% of municipalities in non-OECD countries have a site containing such a forum. Similar to other categories, the percent of countries with these services has decreased, but there is still a noticeable gap between OECD and non-OECD countries. Overall, 31% of countries provide this mechanism of communication.

[Table 9-4] Results for Citizen and Social Engagement by OECD Member and Non-Member Countries (2018-19)

	OECD	Average	Non-OECD
Feedback Form	83%	71%	59%
Bulletin Board	28%	26%	23%
Policy Form	39%	31%	23%

[Figure 9-3] Online Policy Forums (2018-19)
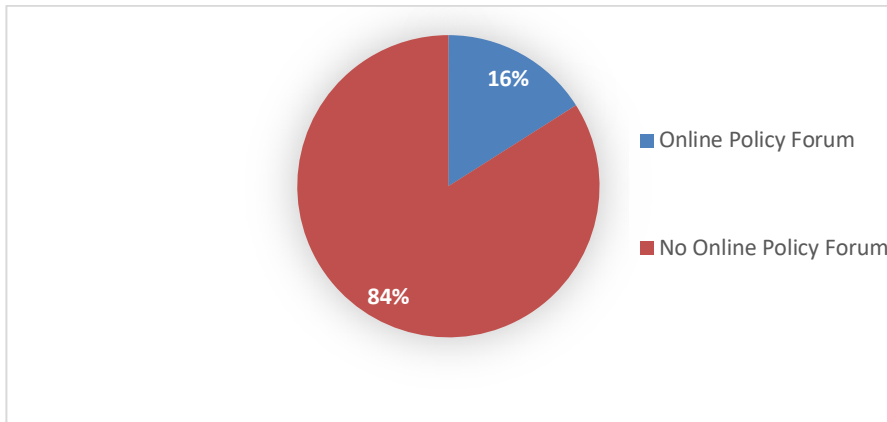
10

BEST PRACTICES

Seoul

In the Eighth Worldwide Digital Governance Survey, Seoul, South Korea once again is at the top of the charts, ranking first among all evaluated cities overall. When broken down by category, the government website of Seoul ranks #1 in Service Delivery, #1 in Content, #2 in Privacy and Security, #3 in Citizen and Social Engagement, and #9 in Usability. Compared to previous evaluations, Seoul jumped up four placements in Privacy and Security and one placement in Usability. It continues to place first in the Service Delivery and Content categories, thus holistically maintaining a world-class, high-quality and comprehensive e-government system.

Year to year, Seoul's government website touts a user-friendly interface with clear block arrangements, vibrant graphics, and a homepage of appropriate length. With an easy to use navigation bar, website-goers can easily locate the necessary information and resources they may need. There is uniform font and color formatting throughout the site. Stand-out elements include a sitemap with active links and a robust search engine on the homepage that allows

users to sort search results by relevance, data, or other criteria. It also provides the ability to narrow a set of returned search results. Overall, the stylistic design decisions encourage interaction with the e-government platform. Image 10-1 demonstrates Seoul's clean, sleek, easy-to-navigate homepage, justifying its Usability score.

With a noticeable increase in Privacy and Security efforts, Seoul's city government website trails only that of Madrid. It promotes pertinent information regarding news, polices, and government activities. Digitally available services range from administrative applications to basic public services, warranting its first-place ranking in Service Delivery. Citizens can access several types of e-participation initiatives, such as petitions, debates and comment forums. There is also a direct line of communication to the mayor as individuals can send emails to that official, an option that is visibly apparent on the website's homepage. Additionally, citizens can utilize other platforms such as various social media channels to interact instantaneously with the city government.

[Image 10-1] Seoul Metropolitan Government's Website

Madrid

The city of Madrid's government website ranks second overall as it continues to be a high performer in the Global E-Government Survey, and has been at that level for the past several years. It's position near the top of the ranking is due in part to its #1 rankings in in Privacy and Security and in Usability, and #2 rankings in Service Delivery. It has achieved #4 and #5 rankings in Citizen and Social Engagement and in Content, respectively. Its overall ranking has risen one spot since the previous survey.

With just one click off the homepage, users can access Madrid's transparency portal, open data portal, new municipal organization chart, security measures, and more, which bolsters its number one ranking in Privacy and Security. Their tax-paying system allows users to create a personal account, and also gives individuals the ability to pay municipal parking fees, fines, environmental and car services, and social services. All information on procedures for both citizens and companies alike has been mainstreamed and can be located in one spot.

A banner at the top of the homepage, titled "Most Seen," provides three of the most trending links at the time of visit, which helps its Content score to sit near the top. Residents can also subscribe to the content of their interest and receive the latest updates via email. A unique element, as depicted

in Image 10-2, is "Madrid at the Minute," which provides the current time, weather, air quality, traffic, and alternative travel route options. Public officials and government departments can also engage with citizens through online communications forums. People can participate in surveys, polls, and provide opinions via a comment section.

[Image 10-2] "Madrid at the Minute"

MADRID AT THE MINUTE

Tuesday , July 9

Time
max 29 ° C | min 16 ° C

Air quality
Updated information on the main pollutants

Traffic situation
The map that gathers information about mobility in Madrid

Move around Madrid
Know all the alternatives and choose your best option

Yerevan

In the 2018-19 Global E-Government Survey, Yerevan appears in the Top 3 for the first time. It ranks #3 in both Privacy and Security and Service Delivery, #7 in Citizen and in Social Engagement, and #8 in Usability.

As a leader in Service Delivery, Yerevan's government website allows users to pay utilities, file and pay taxes, and pay fines and tickets. Not only can permits and licenses be obtained, but the website also provides a tracking system with real time information, including both the current and future status of the permit. Service requests from citizens can be made through the Yerevan Municipality Facebook Page, and complaints made through the website can be tracked as action is taken. The site provides forms to request information, a discussion board, and online surveys and polls for specific issues that display immediate results.

Overall, Yerevan's city government website has risen six places since the previous survey. Contributing elements include a privacy policy (see Image 10-3) that identifies what data is being collected on the site, the intended use of the data collected, and the option to have personal information used to send unsolicited materials. The policy also addresses the use of encryption and cookies, whether personal information is disclosed to any third parties, and any managerial measures that limit the access of data.

Lastly, the policy assures the data collected is not used for unauthorized purposes.

[Image 10-3] Screenshot from Yerevan's City Government Website

Privacy:

The privacy policy is defined by the use and protection of information provided by users of the Municipality of Yerevan (hereinafter referred to as the Website).
You can learn about changes to the Privacy Policy by following the updates on that page.
This privacy policy is effective from 02.03.2015.

What personal data are collected?
The site collects the following information:
- Name surname
- Contact information, including email email addresses and phone numbers
- Other Information

When is personal information collected?
The site collects the data when the user completes an online application form or sends personal data online to email.
An online signature is used to authenticate the online signatory and protect the electronic document from fraud and distortion.

How are collected data used?
The information needed for the site is to understand the users' problems and provide them with relevant services.

How are collected data stored?
User personal information is transmitted by coded connection and only limited number of people have access to the appropriate system and are required to maintain confidentiality of the information.
While entering, provisioning or confirming by the user, the Website implements a number of measures aimed at maintaining personal data security.
The personal data collected is stored on specially protected servers that do not have an open internet connection.

Use of cookies
The site does not use "Cookie", "Web beacon" - to track user steps.

Third-person factor
The site does not provide or sell third party personal data.

Link to other sites
The site may include links to other sites or services that have their privacy policies. Consequently, the Site is not responsible for the activities or content of those sites.

Google
The site uses the Google Analytics system to analyze visitors 'behavior and get a full picture of the users' audience. Google Analytics applies "first-party cookies" (details).

Contacts
If you have any questions about the data collection and use policy please contact privacypolicy@yerevan.am .
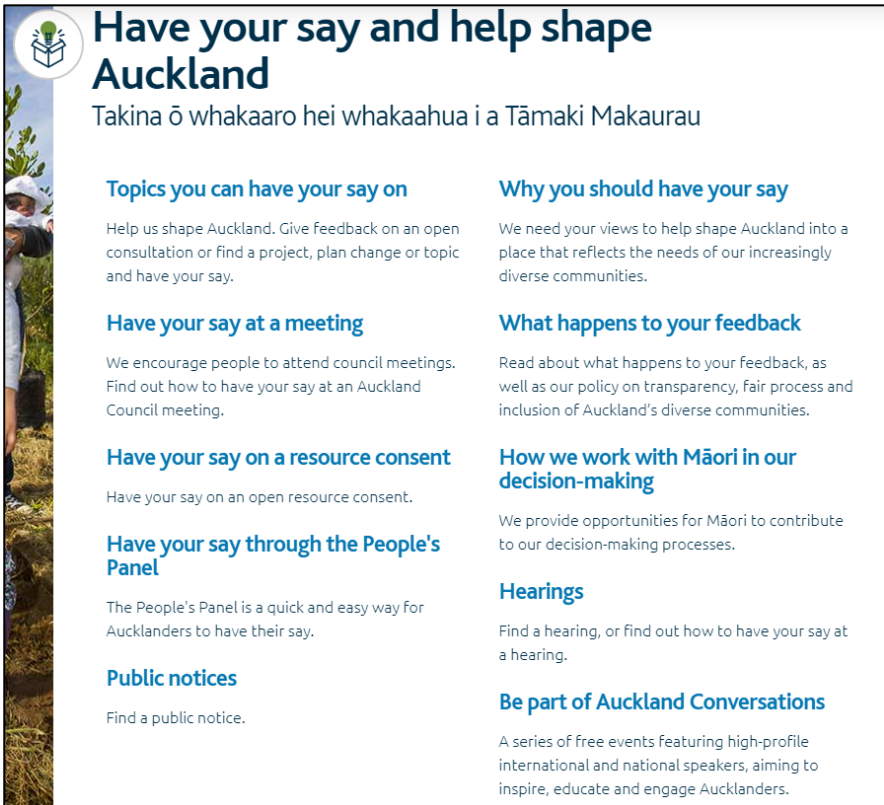
Auckland

The official website of Auckland is ranked number four in the eighth Worldwide Digital Governance Survey. The city has jumped an impressive thirteen spots from the previous survey, and did not break through the Top 20 in the survey before that. Some of its most notable features include ninth rank in the Service Delivery category, and second in Citizen and Social Engagement. Promoting an online bulletin board with advanced search features such as sorting by authors and key words, as well as the option to provide feedback to elected officials through the website, are some of the unique features that generate Auckland's top-ranking score.

With an entire subpage titled "Have your say and help shape Auckland," the site also includes surveys and polls with posted results, live steaming capabilities, and access to archived video of meetings. Image 10-4 demonstrates the different ways in which citizens can directly interact and communicate with the government.

In terms of Service Delivery, Auckland's website also allows users to access reports from other citizens, such as lost pets. Community members can book venues, sports fields and parks right from the website. Property owners can look up assessments online, which are used for levying taxes, and then pay said tax via the city's website.

[Image 10-4] Screenshot from Auckland's Website

Have your say and help shape Auckland

Takina ō whakaaro hei whakaahua i a Tāmaki Makaurau

Topics you can have your say on

Help us shape Auckland. Give feedback on an open consultation or find a project, plan change or topic and have your say.

Have your say at a meeting

We encourage people to attend council meetings. Find out how to have your say at an Auckland Council meeting.

Have your say on a resource consent

Have your say on an open resource consent.

Have your say through the People's Panel

The People's Panel is a quick and easy way for Aucklanders to have their say.

Public notices

Find a public notice.

Why you should have your say

We need your views to help shape Auckland into a place that reflects the needs of our increasingly diverse communities.

What happens to your feedback

Read about what happens to your feedback, as well as our policy on transparency, fair process and inclusion of Auckland's diverse communities.

How we work with Māori in our decision-making

We provide opportunities for Māori to contribute to our decision-making processes.

Hearings

Find a hearing, or find out how to have your say at a hearing.

Be part of Auckland Conversations

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Paris

The city of Paris, France rounds out the Top 5 Best Practices section. It ranks #4 in Content, #5 in Citizen and Social Engagement and #10 in Service Delivery.

Paris' leadership in Service Delivery is immediately apparent from its government website homepage. The very first link on its navigation bar is titled, "Services and Practical Information," which leads to a page of the six most requested types of content – services ranging from paying for parking to obtaining a national identity card and/or a passport. The sidebar then displays over a dozen other links to everyday information, culminating with a "looking for something else" button that leads to a Frequently Asked Questions (FAQ) page.

For at least some kinds of permits or services, the website offers real-time status information on various requests and applications. The site also provides an online form at the bottom of every page that allows users to request information. In order to aid civilians in contacting the correct public officials for their needs, the city's twitter account posted a decision-tree infographic that shows different handles to contact depending on the question. The graphic is driven by user needs rather than organized by the administrative hierarchy of the government itself.

[Image 10-5] Screenshot from Paris' Website

11
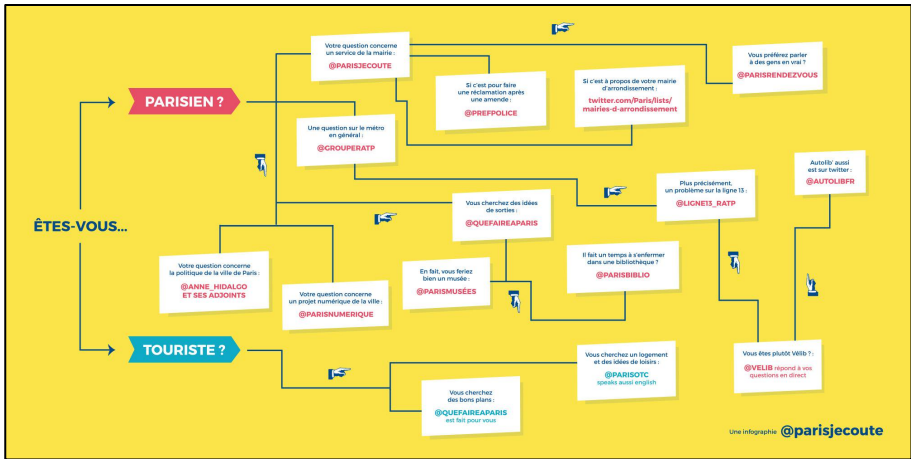
CONCLUSION

There is marked importance in continuing the study of e-government practices throughout the world in order to better understand what efforts are being taken to increase such services across the components of Privacy/Security, Usability, Content, Service Delivery, and Citizen and Social Engagement. Our studies in 2003, 2005, 2007, 2009, 2011-12, 2013-14, 2015-16 and 2018-19 have produced findings that contribute to the e-government literature and help to longitudinally measure developments on macro and micro levels for countries around the world. Previous research on government websites has focused primarily on e-government at the federal, state, and local levels in the United States. This study seeks to expand upon such analyses and examine e-government on a global scale. The continued effort of this research has been to map what advances are occurring among countries around the world in increasing their e-government capacities. Our research will continue as a longitudinal effort to evaluate digital governance in large municipalities throughout the world.

The 2018-19 study highlights advances made in each of the evaluated categories overall. The results show increases in the scores of all continents on Privacy/Security, Services, and Citizen and Social Engagement. While overall scores increased on Usability, Africa's score decreased from 2015-16. Similarly, in the category Services scores increased overall, but Africa and North America saw decreases from the previous survey. The results largely mirror those of previous findings. Also, similar to our previous findings, Citizen and Social Engagement recorded the lowest score among the five categories, which has been the case since 2005. Cities have not yet fully recognized the importance of involving and supporting citizen e-participation online.

However, there has been a rise in the average score in all five evaluation categories, which suggests that countries are taking more action to increase their capacities across all five categories even though they focus more noticeably on particular areas (i.e. Privacy/Security and Usability). Among the five categories, governments have been steadily improving their e-government scores longitudinally. Content, Privacy/Security, Usability, Services, and Citizen and Social Engagement all increased in 2018-19. This is evidence that cities have been making steady progress in building their e-government capacities.

In mirroring best e-government practices on the aggregate, continent level, governments should look especially to Oceania and Europe for best practices. Oceania was the highest ranked continent overall, and was followed by Europe. In looking at city examples of exemplary e-government, Seoul's model showcases many exemplary practices. With regard to citizen e-participation channels, Seoul's model offers a multitude of tools, is easy to use and provides the best example of effective Citizen and Social Engagement.

With regard to Privacy/Security, the efforts of Madrid have been exemplary in making their privacy policy comprehensive. The site addresses what types of data are being collected and which organizations are collecting it. Further, users can access the privacy statement directly from all pages of the website. In addition, the intended use of the data is made clear and users are given the option to not have unsolicited material sent to them as a result of the data collected.

In addition, this survey has further taken note of the digital gap between OECD and non-OECD member countries in their average scores. It concludes that among all categories the scores of OECD and Non-OECD countries have increased, along with the overall average among these countries. These findings indicate the continued importance

of international organizations, such as the UN and cities in advanced countries in bridging the digital divide. By showcasing best examples, the benefits of e-government can be accurately communicated to nations in developing their e-government efforts.

In many nations, especially those belonging to the non-OECD category, the digital divide may imply more than access to the Internet alone; this divide refers to access to basic infrastructure such as telephones, electricity and communications (Manoharan & Carrizales, 2010). Without such infrastructure, it becomes difficult for countries to increase their e-government capacity to facilitate citizen use. We, therefore, recommend developing a comprehensive policy for bridging that divide. We advise that such a comprehensive policy should include capacity building for municipalities, including information infrastructure, content, applications and access for individuals, and educating residents with appropriate computer education.

The continued study of municipalities worldwide, with the next evaluation planned in 2020-2021, will further provide insights into the direction of e-government and the performance of e-government throughout regions of the world. Every region offers examples of best practices for overall performance across specific e-government

categories.   As municipalities seek to increase their municipal website performance, searching for models within their region is an opportunity to identify e-government benchmarks. Those municipalities that serve as top performers in their respective regions can then look to the top-ranked cities throughout the world for suggestions and advice on best practices and standards.

BIBLIOGRAPHY

Fudge, M. K., & Manoharan, A. (2013). Fear or Negligence? Contemporary Trends, Approaches and the Future of Online Privacy and Security Policies in US Cities. *IJeN*, *1*(2), 22-37.

Giga Consulting. (2000). Scorecard Analysis of the New Jersey Department of Treasury. An unpublished report to the NJ Department of Treasury.

Holzer, M., Manoharan, A., & Melitski, J. (2019). *E-Government and Information Technology Management: Concepts and Best Practices*. Irvine, CA: Melvin & Leigh.

Holzer, M., Manoharan, A., & Van Ryzin, G. (2010). Global Cities on the Web: An Empirical Typology of Municipal Websites. *International Public Management Review*. *11*(3), 104-121.

Holzer, M., Zheng, Y., Manoharan, A. & Shark, A. (2014). Digital Governance in Municipalities Worldwide (2013–14): Sixth Global E-Governance Survey: A Longitudinal Assessment of Municipal Websites throughout the World. *National Center for Public Performance, Rutgers University-Newark.*

Manoharan, A. (2013). A Study of the Determinants of County E-Government in the United States. *The American Review of Public Administration*, *43*(2), 159-178.

Manoharan, A., & Carrizales, T. J. (2010). Technological Equity: An International Perspective of E-Government and Societal Divides. *Electronic Government, An International Journal*, *8*(1), 73-84.

Moon, M. J. (2002). The Evolution of E-Government among Municipalities: Rhetoric or Reality? *Public Administration Review, 62*(4): 424-433.

Moon, M. Jae & P. deLeon. (2001). Municipal Reinvention: Municipal Values and Diffusion among Municipalities. *Journal of Public Administration Research and Theory, 11*(3): 327-352.

Musso, J., Weare, C., & Hale, M. (2000). Designing Web Technologies for Local Governance Reform: Good Management or Good Democracy. *Political Communication, 17*(l): 1-19.

APPENDICES

APPENDIX A
Cities and Websites

City	Country	Website
Addis Ababa	Ethiopia	www.addisababacity.gov.et/
Algiers	Algeria	www.wilaya-alger.dz
Almaty	Kazakhstan	www.almaty.gov.kz/
Amman	Jordan	www.ammancity.gov.jo/
Amsterdam	Netherlands	www.iamsterdam.com
Athens	Greece	www.cityofathens.gr
Auckland	New Zealand	www.aucklandcouncil.govt.nz
Baku	Azerbaijan	www.baku-ih.gov.az/
Bangkok	Thailand	www.bangkok.go.th
Beirut	Lebanon	www.beirut.gov.lb/
Belgrade	Serbia	www.novibeograd.rs/
Berlin	Germany	www.berlin.de
Bishkek	Kyrgyzstan	www.meria.kg/
Bogota	Colombia	www.bogota.gov.co
Bratislava	Slovakia	www.bratislava.sk/
Brussels	Belgium	www.be.brussels
Bucharest	Romania	www1.pmb.ro
Budapest	Hungary	www.budapest.hu/
Buenos Aires	Argentina	www.buenosaires.gob.ar
Cairo	Egypt	www.cairo.gov.eg
Caracas	Venezuela	www.caracas.gov.ve
Casablanca	Morocco	www.casablancacity.ma
Chisinau	Moldova	www.chisinau.md/
Colombo	Sri Lanka	www.cmc.lk/
Copenhagen	Denmark	www.kk.dk/
Damascus	Syria	www.damascus.gov.sy/

Dhaka	Bangladesh	www.dncc.gov.bd (North Dhaka) & www.dhakasouthcity.gov.bd (South Dhaka)
Doha	Qatar	www.baladiya.gov.qa
Dubai	United Arab Emirates	www.dm.gov.ae/
Dublin	Ireland	www.dublincity.ie/
Gaza	Palestine	www.gaza-city.org/
Guatemala City	Guatemala	www.muniguate.com/
Guayaquil	Ecuador	www.guayaquil.gob.ec/
Helsinki	Finland	https://www.hel.fi/www/helsinki/en
Ho Chi Minh City	Vietnam	www.hochiminhcity.gov.vn
Hong Kong	Hong Kong, China	www.gov.hk/
Istanbul	Turkey	www.ibb.gov.tr
Jakarta	Indonesia	www.jakarta.go.id/
Jerusalem	Israel	www.jerusalem.muni.il
Johannesburg	South Africa	www.joburg.org.za/
Karachi	Pakistan	www.kmc.gos.pk/
Kathmandu	Nepal	www.kathmandu.gov.np
Kiev	Ukraine	www.kyiv-obl.gov.ua
Kuala Lumpur	Malaysia	www.dbkl.gov.my
Lima	Peru	www.munlima.gob.pe/
Lisbon	Portugal	www.cm-lisboa.pt
Ljubljana	Slovenia	www.ljubljana.si/
London	United Kingdom	www.london.gov.uk
Luxembourg City	Luxembourg	www.vdl.lu/
Madrid	Spain	www.madrid.es
Manama	Bahrain	www.capital.gov.bh/
Manila	Philippines	www.manila.gov.ph
Mexico City	Mexico	www.cdmx.gob.mx

Minsk	Belarus	www.minsk.gov.by/ru/
Montevideo	Uruguay	www.montevideo.gub.uy
Moscow	Russia	www.mos.ru
Muscat	Oman	www.mm.gov.om/
New Delhi	India	www./delhi.gov.in/
New York	United States	www1.nyc.gov
Nicosia	Cyprus	www.nicosia.org.cy
Oslo	Norway	www.oslo.kommune.no/
Panama City	Panama	www.mupa.gob.pa
Paris	France	www.paris.fr
Port Louis	Mauritius	www.mpl.intnet.mu/
Prague	Czech Republic	www.prague.eu/en
Riga	Latvia	www.riga.lv
Riyadh	Saudi Arabia	www.arriyadh.com/
Rome	Italy	www.comune.roma.it
San Fernando	Trinidad and Tobago	www.localgov.gov.tt/
San Jose	Costa Rica	www.msj.go.cr
San Juan	Puerto Rico	www.sanjuanciudadpatria.com/
San Salvador	El Salvador	www.sansalvador.gob.sv/
Sana'a	Yemen	www.sanaacity.com
Santiago	Chile	www.gobiernosantiago.cl/
Santo Domingo	Dominican Rep.	www.adn.gob.do/
Sao Paulo	Brazil	www.saopaulo.sp.gov.br
Sarajevo	Bosnia and Herzegovina	www.banjaluka.rs.ba
Seoul	South Korea	www.seoul.go.kr
Shanghai	China	www.shanghai.gov.cn
Singapore	Singapore	www.gov.sg/
Skopje	Macedonia	www.skopje.gov.mk/
Sofia	Bulgaria	www.sofia.bg/

Stockholm	Sweden	www.stockholm.se
Sydney	Australia	www.cityofsydney.nsw.gov.au
Taipei	Taiwan	www.ntpc.gov.tw/
Tallinn	Estonia	www.tallinn.ee/
Tashkent	Uzbekistan	www.tashkent.uz/
Tbilisi	Georgia	www.tbilisi.gov.ge/
Tehran	Iran	www.tehran.ir
Tirana	Albania	www.tirana.gov.al
Tokyo	Japan	www.metro.tokyo.jp/
Toronto	Canada	www1.toronto.ca/
Tunis	Tunisia	www.commune-tunis.gov.tn
Ulaanbaatar	Mongolia	www.ulaanbaatar.mn
Vienna	Austria	www.wien.gv.at/
Vilnius	Lithuania	www.vilnius.lt
Warsaw	Poland	www.um.warszawa.pl
Yerevan	Armenia	www.yerevan.am/am/
Zagreb	Croatia	www.zagreb.hr
Zurich	Switzerland	www.stadt-zuerich.ch

APPENDIX B
Criteria by Category

Privacy/Security	
1. A privacy or security statement/policy	9. Secure server
2-3. Data Collection	10. Use of "cookies" or "Web Beacons"
4. Option to have personal information used	11. Contact or e-mail address for inquiries
5. Third party disclosures	12. Public Information through a restricted area
6. Ability to review personal data records	13. Social media policy for posting information
7. Managerial measures	14. Use of digital signatures
8. Use of encryption	

Usability	
15. Homepage, page length	20-21. Font Color
16. Target Audience	22-24. Forms
17-18. Navigation Bar	25-28. Search tool
19. Site Map	29. Update of website

Content	
30. Information about the location of offices	41. Portal to promote open government initiative
31. Listing of external links	42. Performance Measurement Online
32. Contact Information	43. Documents, reports, or books (publications)
33. Calendar of events	44. GIS capabilities
34. Alerts and social media notification	45. Emergency Management
35. Minutes of public	46-47. Disability access

36. City code and regulations	48. Wireless technology
37. City charter and policy priority	49. Access in more than one language
38. Mission Statements	50. Job listings online
39. Budget Information	51. Human resources information
40. Documents, reports, or books (purchasing online)	52. Calendar of events

Service	
53-55. Pay utilities, taxes, fines	63-64. Bulletin board about civil applications
56. Service request on social media sites	65. FAQ
57. Online tracking system	66. Request information
58. Apply for permits	67. Customize the main city homepage
59. E-procurement	68. Access private information online
60. Property assessments	69. Purchase tickets
61. Searchable databases	70. Report violations of administrative laws and regulation
62. Complaints	

Citizen and Social Engagement	
71-72. Comments or feedback	81. Synchronous video
73. Newsletter	82. Citizen satisfaction survey
74. Online bulletin board or chat capabilities	83. Online decision making
75-77. Online discussion forum on policy issues	84. Encouraging citizens to post on social media
78-79. Scheduled e-meetings for discussion	85. Listing of specific departments
80. Online survey/ polls	86. Real time chat or instant messaging

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