

Table 1 Supplement: City Sample

From a list of the 792 local governments with populations over 50,000 across the U.S. (U.S. Census Bureau 2012), a sample of 83 cities was selected with a random number generator. 2014 sample (N=83) listed alphabetically. Data include city, state, total number of e-government services (3 maximum), population, median income, and percent of population living in poverty. Sunrise, FL and Port St. Lucie, FL were excluded from the analysis due to missing revenue data.

City	State	Total E-Gov Services	Population (2012)	Median Income	Poverty %
		(31 max.)			
Albany	GA	14	77,431	\$28,871	34.1%
Albuquerque	NM	18	555,417	\$47,399	17.3%
Alexandria	VA	21	146,294	\$83,996	8.0%
Allen	TX	14	89,640	\$101,966	4.8%
Appleton	WI	11	73,016	\$52,605	10.5%
Auburn	WA	20	73,505	\$54,329	14.9%
Baltimore	MD	17	621,342	\$40,803	23.4%
Beaumont	TX	17	118,228	\$40,765	22.3%
Bend	OR	16	79,109	\$52,601	12.1%
Bossier City	LA	5	64,655	\$47,290	16.6%
Carlsbad	CA	19	109,318	\$83,875	9.7%
Carson	CA	19	93,002	\$71,653	8.5%
Carson	NV	12	54,838	\$53,987	15.0%
Chula Vista	CA	16	252,422	\$65,364	10.4%
Clifton	NJ	12	84,722	\$64,163	9.0%
Daly City	CA	14	103,690	\$72,762	7.8%
Danbury	CT	14	82,807	\$66,281	10.1%
Delray Beach	FL	18	62,357	\$50,935	14.7%
Des Plaines	IL	15	58,840	\$65,194	7.0%
Duluth	MN	16	86,211	\$41,311	21.9%
Fayetteville	NC	9	202,103	\$44,756	17.0%
Flagstaff	AZ	19	67,468	\$48,676	23.3%
Fort Collins	CO	23	148,612	\$53,359	18.1%
Fullerton	CA	17	138,574	\$67,617	14.6%
Greeley	CO	15	95,357	\$44,226	23.5%
Gulfport	MS	12	70,113	\$38,704	21.9%
Huntsville	AL	19	183,739	\$48,632	16.3%

Irving	TX	17	225,427	\$49,303	16.2%
Kansas City	KS	13	147,268	\$37,768	24.5%
Kirkland	WA	20	50,697	\$86,656	6.1%
La Mesa	CA	20	58,160	\$55,744	12.8%
Lafayette	IN	14	67,925	\$39,083	18.9%
Lake Forest	CA	15	78,853	\$93,127	5.0%
Lakeville	MN	12	57,342	\$92,989	4.3%
Lakewood	CA	16	80,833	\$78,876	7.6%
Lawton	OK	10	98,376	\$43,953	17.6%
Madera	CA	6	62,624	\$43,240	27.4%
Manhattan	KS	13	56,069	\$40,650	27.2%
Margate	FL	9	55,026	\$43,565	13.9%
Medford	OR	14	76,462	\$42,244	19.9%
Minneapolis	MN	23	392,880	\$48,881	22.5%
Mission	TX	11	80,452	\$40,513	27.0%
Moore	OK	13	57,810	\$56,892	11.3%
Mountain	CA	22	76,621	\$92,987	8.2%
Nashua	NH	11	86,933	\$65,671	9.3%
New Britain	CT	15	73,153	\$39,898	22.9%
New Haven	CT	12	130,741	\$38,482	26.9%
Norman	OK	13	115,562	\$48,248	17.6%
North	TX	16	65,290	\$63,806	7.5%
Norwalk	CT	17	87,190	\$75,446	9.4%
Palatine	IL	12	69,144	\$73,811	8.5%
Pasadena	TX	11	152,272	\$45,843	20.9%
Pasadena	CA	21	138,547	\$68,310	12.9%
Peabody	MA	10	51,867	\$67,052	5.6%
Perth Amboy	NJ	8	51,744	\$44,166	21.2%
Placentia	CA	15	51,673	\$75,693	12.2%
Port St. Lucie	FL	17	168,716	\$49,236	13.8%
Rapid City	SD	10	69,854	\$45,707	16.1%
Reading	PA	12	88,102	\$27,206	37.9%
Richland	WA	18	51,440	\$68,744	8.9%
Roseville	CA	19	124,519	\$74,579	8.3%
Royal Oak	MI	15	58,410	\$62,453	7.3%
San Diego	CA	19	1,338,348	\$63,990	15.4%
San Francisco	CA	28	825,863	\$73,802	13.2%
Santa Monica	CA	23	91,812	\$72,271	11.3%
Scottsdale	AZ	20	223,514	\$72,163	8.3%
Sioux City	IA	13	82,719	\$42,845	17.3%
Spokane	WA	21	209,525	\$42,274	18.7%
Spokane	WA	17	90,641	\$48,690	14.0%
Springfield	MA	7	153,552	\$35,163	28.7%
Springfield	IL	16	117,126	\$49,627	16.8%
Springfield	OH	15	60,147	\$33,333	29.0%

St. Louis	MO	13	318,172	\$34,384	27.0%
St. Peters	MO	14	54,078	\$70,859	3.0%
Sugarland	TX	16	82,480	\$107,149	4.4%
Sunrise	FL	13	88,843	\$49,120	11.6%
Tempe	AZ	18	166,842	\$47,882	22.2%
Thornton	CO	17	124,140	\$66,176	9.2%
West Allis	WI	16	60,732	\$44,066	14.2%
West Covina	CA	11	107,440	\$68,677	9.3%
Weston	FL	13	67,641	\$93,886	5.9%
Yakima	WA	19	93,101	\$40,569	22.9%
Yorba Linda	CA	11	66,735	\$116,881	2.8%

Text 1 Supplement: City Manager Interview Protocol

We originally selected nine cities to include for interviews by plotting all 83 cities in the sample (before Sunrise, FL and Port St. Lucie, FL were removed from the sample due to missing financial data) on a three by three grid broken down by total number of online services offered and median income. Specifically, median income was divided into low (below \$43,759), medium (between \$43,760 and \$69,800), and high (\$69,801 or above) and total online services was divided into low (11 or fewer), medium (12 to 18), and high (19 or more). This created 9 cells within which a city could fall. After plotting each city in the appropriate cell, we then chose one city from each cell, paying attention to have a variety of population sizes amongst the cities selected and cities from different regions of the country. We contacted each of the selected nine cities to request an interview, and four of the original nine cities agreed to be interviewed (Santa Monica, Scottsdale, Margate, and Port St. Lucie). We then selected five additional cities to contact for interviews, each of which was as similar as possible to each of the original cities that

did not respond. Of these five cities, three agreed to be interviewed (North Richland Hills, Lakeville, and New York City).

1. Could you give me an overview about how e-government is used in _____ and the decision making process regarding what services to offer and how they are to be provided?
2. We are interested in understanding why type of online presence your city has and what types of things citizens can use the city website for. To what extent would you say your city is doing the following things?
 - a. Allowing citizens to make payments online (parking tickets, pay fines, property etc.)
 - b. Submit service requests online
 - c. Provide general feedback/communicate with officials online
 - d. Multimedia (watch council meeting online)
 - e. Access documents or records online (for view or for download)
 - f. Using social media

(Group A) If doing a good deal of these things...

3. How or when did the city decide to start making use of these online tools?
4. How has using these online tools helped to achieve:
 - a. Cost savings?
 - b. Effectiveness of providing services?
 - c. Ability to reach citizens?

5. Which online services have you found most useful to your city and why?
6. What challenges does using these online services present?
7. To what degree do citizens make use of these services? What percent of citizens do you believe are aware of and regularly make use of these services?

(Group B) If not doing a good deal of these things...

8. If you aren't making use of all of these online tools, what are the barriers to adoption?
(Has the city previously discussed using any of these online tools?)
9. Which online services would you want to adopt and why?
10. Which online tools do you think would be most useful from your perspective as city manager?
11. To what degree have citizens requested that the city use these online tools? Are there any online tools in particular that citizens have strongly indicated they would like the city to use?

Text 2 Supplement: Data Collection

During August of 2014, one member of the research team reviewed the websites of all 83 cities included in the original sample. This member of the research team thoroughly examined each city website and coded whether the city offered each of the online services we are interested in. While we originally coded for 32 different e-government services, we chose to exclude the measure of online voter registration from this analysis as some states, such as Texas, only allow residents to download the voter registration form online but require that the resident print the

registration form and mail it to the registrar (Texas Secretary of State 2017), thus taking the decision as to whether or not to offer this service online out of the hands of municipal officials. This left us with a total of 31 services that we consider.

We measure each of these 31 e-government services for each city website, ranging from the widely available (council meeting agenda or city code downloads) to the less common (property registration and business license application). For descriptive statistics of all variables, see Appendix D.

In addition to our measure of the total number of services offered, we combined similar types of services into four broad categories: interactive features (N=27), informational features (N=16), financial/payment features (N=4), and social media features (N=12). Some e-government tools that straddled more than one category were counted in multiple categories. For instance, some payment services are included as both interactive and financial features.

1. Municipal Level Variables:

- a. City name
- b. State
- c. Population rank
- d. Population
- e. Median income
- f. Percent of population living under the poverty line
- g. Population by gender
- h. Population by race
- i. Population by age
- j. Percent of households in metro area with high-speed internet access
(2013)
- k. Form of government (council-manager or other)
- l. Total revenue per capita from all sources (2012)
- m. Total expenditures per capita on central staff services (2012)

2. E-government services offered by cities:

- a. Pay tickets/fines
- b. Pay taxes
- c. Pay utility bills
- d. Pay for licenses/permits
- e. Property registration
- f. Apply for a business license
- g. Permit application

- h. Register for parks and recs services
- i. Request services (e.g. fix potholes)
- j. Request government records online
- k. View government records online
- l. Interactive maps
- m. City job applications
- n. Download official city forms
- o. Online communication with officials (e.g. e-mail, social media, etc.)
- p. View agenda or minutes
- q. View city codes or ordinances
- r. E-newsletter
- s. Streaming video (e.g. meetings, public forums, etc.)
- t. Video on demand (e.g. meetings, informational videos, etc.)
- u. Instant messaging
- v. Chat rooms
- w. Mobile apps
- x. 311 information available online
- y. Podcasts
- z. E-alerts
- aa. Blogs
- bb. Flickr
- cc. YouTube
- dd. Social media:

- i. Twitter
- ii. Facebook
- iii. LinkedIn
- iv. Tumblr
- v. Instagram
- vi. Google +
- vii. Pinterest
- viii. NixLe
- ix. Foursquare
- x. Nextdoor
- xi. Yelp
- xii. MyConnection

Classification of services:

- 1. Interactive (27):
 - a. Pay ticket/fine
 - b. Pay taxes
 - c. Pay utility bills
 - d. Pay for license/permit
 - e. Property registration
 - f. Apply for business license
 - g. Permit application
 - h. Register for parks/rec

- i. Request services
- j. Request government records
- k. Interactive maps
- l. Job application
- m. Online communication with office holder
- n. Mobile apps
- o. Twitter
- p. Facebook
- q. LinkedIn
- r. Tumblr
- s. Instagram
- t. Google+
- u. Pinterest
- v. NixLe
- w. Foursquare
- x. Nextdoor
- y. Yelp
- z. MyConnection

2. Informational (16):

- a. Request government records
- b. Interactive maps
- c. Downloadable forms

- d. Agenda/minutes
- e. Codes/ordinances
- f. e-newsletter
- g. streaming video
- h. video on demand
- i. mobile apps
- j. podcasts
- k. 311
- l. e-alerts
- m. blogs
- n. flickr
- o. youTube
- p. online government records

3. Social media (12):

- a. Twitter
- b. Facebook
- c. LinkedIn
- d. Tumblr
- e. Instagram
- f. Google+
- g. Pinterest
- h. NixLe

- i. Foursquare
- j. NextDoor
- k. Yelp
- l. MyConnection

4. Payment (4):

- a. Pay ticket/fine
- b. Pay taxes
- c. Pay utility bill
- d. Pay license/permit

Table 2 Supplement. Summary Statistics

	N	mean	sd	min	max
Dependent Variables					
Total Services	81	14.93	4.147	5	27
Percent of Total Services	81	48.15	13.38	16.13	87.10
Total Informational	81	8.679	2.514	3	15
Percent of Informational	81	54.24	15.71	18.75	93.75
Total Payment Services	81	2.049	1.059	0	4
Total Interactive Services	81	8.753	3.231	2	18
Percent Interactive Services	81	32.42	11.97	7.407	66.67
Social Media (count)	81	1.877	1.100	0	5
Independent Variables					
Council-Manager Form	81	0.531	0.502	0	1

Percent High Speed Internet	81	79.67	5.699	55.20	88.50
Percent 18 to 65	81	64.63	4.256	55.08	77.19
Total Rev. per capita (thous)	81	2.380	1.736	0.064	10.05
Central Staff per capita (thous)	81	0.0731	0.102	0	0.809
Population (ln)	81	11.53	0.652	10.83	14.08

Control Variables

Poverty Rate	81	0.152	0.077	0.030	0.380
Percent White	81	68.40	17.34	23.58	91.67

Text 3 Supplement: Robustness Checks

Robustness checks of our models suggest that multicollinearity and heteroskedasticity are not concerns in these models. With regard to multicollinearity, we checked for multicollinearity using Variance Inflation Factors and found that when assessing all of our independent and control variables together, none had a VIF of above 1.53, with an average VIF of 1.35. Therefore, we are satisfied that multicollinearity between the independent variables included in our model is not a problem. With regard to heteroskedasticity, for all models included we conducted a White test and a Breusch-Pagan test, both of which test the null hypothesis that the variance of the residuals is homogenous. In all models, we fail to reject the null, leading us to conclude that our models do not suffer from heteroskedasticity of variance of the residuals.