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Citizen Surveys on the Web

General Population Surveys of Community Opinion

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Experiments were conducted in two cities comparing web and mail surveys seeking resident attitudes about city services, quality of community life and local policies. Web participants were recruited the same way as mail participants, through a probability sample of addresses, but web recruits were mailed the survey URL instead of the questionnaire. Response rates, respondent demographic characteristics, use of "Don't Know" and mean responses as well as response variability were compared. Although in each city, response rates were much lower for the web participants, and web respondents had different demographic characteristics and tendencies to be opinionated compared to mail respondents, the variability and means of results were quite similar for the two survey groups. Differences between web responses and mail responses also were similar in both cities. Despite coverage limitations, web administration may have limited utility for citizen surveys where political and technical barriers can be overcome.

Keywords: survey research, Internet surveys, web surveys, city surveys, mail surveys

We have estimated that each year, more than 200 of the roughly 1,300 American cities with more than 25,000 population conduct a general survey of their residents (Miller & Kobayashi, 2000). These omnibus citizen surveys are intended to determine what residents think about the quality of community life and local government service delivery as well as to report opinion about important local policies. Results from these surveys are used for measuring performance, making budget plans, communicating with residents, and testing sentiment about proposed policies.

This estimate of the incidence of citizen surveys represents an increase from as few as 30 per year in 1990. Recently (September 2001), the International City and County Management Association, working with National Research Center, Inc., began to offer to local jurisdictions the National Citizen Survey™, a turnkey, semistandardized citizen survey instrument designed to provide normative comparisons of resident sentiment and to control the disparate methods and question wordings that plague the array of surveys now conducted across the United States. This obvious acceleration in survey use and the new intention by the managers' association to make citizen surveys a key element of good government administration indicate a growing intention to bring the voice of the average citizen into local government decision making. Nevertheless, the surveys conducted across the United States from 1995 to 2000 were conducted almost exclusively by mail (33%) or phone (67%), with so few,

if any, having been conducted by web or Internet as to have been undetectable in our survey. The National Citizen Survey™ was conceived as a mailed survey with the expectation that phone and Internet data collection would be considered in the future.

Low grades for the quality of survey methods in our 10-year-old assessment of citizen surveys (Miller & Miller, 1992) suggested a great unwitting tolerance among local government officials—by no means survey experts themselves—for mediocre survey research. Given the low expectations for methodological rigor, linked with a strong cost sensitivity among local government administrators for funding citizen surveys and the rising interest in collecting—inexpensively—opinions on the web, we expect there will be growing interest among local government officials to conduct their citizen surveys via the World Wide Web or Internet e-mail. Adding urgency to the search for alternative methods of data collection, recent events have stirred suspicions about the safety of the mails at the same time that phone response rates show no signs of recovering from their precipitous decline. The annoying calls at dinner; the defensive use of answering machines, call blocking, and legislation by the beleaguered American public to limit telemarketing; coupled with the public's inability to distinguish the estimable goals of survey research from the base purposes of marketers have led observers to conclude that “the logic of probability sampling no longer applies for telephone surveys” (Askew, Craighill, & Zukin, 2000) and “the market research industry has pretty much abandoned the response rate as a primary indicator of survey quality” (Baker, 1996). Given all of these conditions, we felt it wise to make a preemptive study of the comparative utility of citizen surveys conducted on the web and those conducted by mail, the more cost-efficient method of collecting citizen surveys compared to phone.

Public officials want “scientific surveys” (understood to be reflected in reports of credible confidence intervals) that produce results reflecting the opinions of all adult residents. Even survey-naive public servants know enough to be wary about generalizing results from Internet surveys to their entire adult residential population when home access to the Internet is understood to be far less than the universal access by mail or near total access by phone (now estimated at 96% penetration into U.S. households [Crabtree, 2000]). Current estimates place the percentage of U.S. households with Internet access at 61 (Nielsen/NetRatings, 2001), and Internet users are more likely than the U.S. adult population as a whole to be white, married, wealthy, and have more formal education (Best, Krueger, Hubbard, & Smith, 2001).

Scholars, unlike many market research firms, admonish researchers that these coverage errors are likely to undermine intentions to generalize web survey findings to a target population of all American adults (Best et al., 2001; Couper, 2000; Dahlen, 1998; Dillman & Bowker, 2001; National Council on Public Polls, 2001). The specter of the *Literary Digest's* miscalculation, predicting Alf Landon over Franklin Roosevelt in 1936, haunts survey researchers who continue to worry more about coverage errors than magazine editors did 55 years ago.

Dahlen (1998) argued that “generalization outside the web population . . . is not recommended.” Best et al. (2001) concluded that Internet surveys cannot be used to generalize univariate estimates of population parameters but can be used, like experiments with Psychology 101 students, to discover the relationships between decision-making variables. Dillman and Bowker (2001) suggested that we have little knowledge of whether web survey results differ from results by mail or phone; and Couper (2000) reported that “the key question is whether the two populations [general or Internet users] are similar on the substantive variables of interest. . . . Here there is much less research evidence as this generally requires parallel surveys using different modes” (p. 13).

Although there are studies among select populations of the differential effects of web-only surveying and surveying by other single modes or mixed modes, those studies tend to

focus on targets with almost universal access to the web, such as students, faculty, business employees, and membership lists (Crawford, Couper, & Lamias, 2000; Dahlen, 1998; Shaefer & Dillman, 1998). Only a small number of studies have been conducted that compare general-population surveys using random-digit dialing (RDD) phone sampling and the web.

Askew et al. (2000) compared results from an RDD sample of more than 500 New Jersey residents with results from self-selected web users who were invited to answer the same questions posed in *Star Ledger* newspaper coverage. Internet users, they found, tended to be more politically savvy, more opinionated, and more antigovernment. The limited weighting schemes they were able to apply to the RDD sample to simulate the Internet population (the absence of demographic information about Internet users precluded a weighting scheme for Internet responders) did nothing to reconcile the differences in opinions.

Flemming and Sonner (1999) used RDD sampling to recruit those who had Internet access and agreed to give their e-mail address. The Internet survey was conducted with those who provided their e-mail address, and results were compared with an RDD sample. The investigators concluded that as a method to infer to the population of Internet users, the Internet survey was adequate; but the low response rate (roughly 10%), different demographics (web responders were more often men, younger, and better educated than RDD responders), and the large and inexplicable differences in results between the two methods made Internet surveying unsuitable for inference to the general population.

Because survey research is forever a compromise between accuracy and available resources, and because local governments forever struggle to find enough revenue to conduct good surveys, we wanted to discover the opportunities that web surveys provide for data that are accurate enough at a low cost. Specifically, we wanted to know how the demographic characteristics of respondents to Internet versus mail surveys differed and how the variability of their responses and their response rates differed. Most important, we wanted to determine if the disadvantages of coverage errors understood in web surveys could be overcome by similarities in resident responses to typical citizen-survey questions.

THE EXPERIMENTS

We created experiments in two cities, one with a population of slightly more than 100,000 and one with a population of about 30,000, each located on the front range of Colorado. This is an area of the country located on a high-tech corridor with relatively high employment, high education, and a large percentage of non-Hispanic White residents. In both jurisdictions, we conducted similar omnibus citizen surveys by mail to which we compared results from a web survey. In both communities, Internet access was similar to the nation's as a whole. In the case of City 1, our mailed survey results indicated that 60% of respondents had a computer with Internet connection at home. In City 2, 66% reported access to the Internet at home or work. Many but not all of the questions on both surveys were the same, covering issues related to quality of community life, quality of city services, participation in community activities, topical policies, and demographics.

In the case of City 1, the web survey was conducted about 5 months after the mailed survey. Although results from the mailed survey were made public in that community, it would be uncommon to find many residents who read the initial findings summarized in the community newsletter and even less common for readers to remember the results months later. In City 2, the web survey was conducted simultaneously with the mailed survey.

METHOD

The mail- and web-sampling methods were the same in both cities. In each city, two separate systematic samples of addresses were selected according to our instructions by our mail-preparation affiliate, which purchases addresses from the U.S. Postal Service and addresses, stuffs, and mails our envelopes. Address lists are updated quarterly and do not include householder names, which if incorrect (as they often are, especially in rented units), would reduce response more than the impersonal *resident* label. Each sample within a city had the same skip factor but a different random start, so that 3,000 households were sampled for the mailed survey and a different 3,000 for the web survey. Attached units were oversampled 5:3 for all samples to improve the representation of dwellers in this harder-to-reach group. All mail was sent first-class with city logos affixed as identifiers. Results were reweighted to reflect the proper proportion of dwelling unit type and other demographic characteristics of the community known from the census or local planning department.

Mail

In each city, the mailed sample was sent a presurvey notification postcard, followed in 1 week by the survey. Survey instructions asked that the adult (age 18 or older) in the household who most recently had a birthday complete the survey. Two weeks later, all households were sent a second survey with a cover letter thanking those who had responded, asking them not to respond again, and reminding the others to complete and return the survey. All correspondence was signed by the mayor.

Web

In each city, the sample of 3,000 householders was sent a letter invitation to participate in an Internet survey. The URL (web address) was provided, and potential respondents were asked to type it into the address box on their web browser.¹ Those without access to the Internet at home or at the office were invited to go to the public library to participate. No alternative medium was made available for participation. Following the same reminder calendar as mail, all web invitees were sent follow-up postcards at 1 week, then 2 weeks (see Figure 1 for example.). Reminder cards included the URL, thanks, and the request not to respond again if recipients already had done so. Although it was possible to prohibit second access of the web site from a single computer station, we opted not to preclude multiple access because we felt our bigger problem was that potential respondents would not participate, not that respondents would trouble themselves to respond many times.² Furthermore, access from a library computer would have been precluded after one survey submittal had we opted to use the "cookie" information from computers to block multiple access, and well-intended respondents who inadvertently submitted their survey too soon could not reenter to complete it. As with the mailed survey, the birthday method was used to select the participating member within the household and the mayor signed the cards.

Following recommendations and prior findings from studies of web survey design (Dillman, Tortora, & Bowker, 1998; Dillman, Tortora, Conradt, & Bowker, 1998), we made the layout simple, scrollable, with multiple options available in each screen, without branching questions to complicate or add to load times, and without any apparently ineffective progress indicator (Crawford et al., 2001).³ See Figure 2 for the splash page of one of the web surveys.

Dear City [2] Resident,

About a week ago, you should have received a letter inviting you to participate in the City of [2] Web Survey. **This survey is unique in that it will take place on the Internet.** If you have already taken the time to complete the survey, thank you. *Please do not respond more than once.* If you have not yet had the chance, please enter the following address into the address box of your Internet browser in as it appears here: <http://www.n-r-c.com/survey/xxxxx.htm>. Remember, the person filling out the survey should be the adult in the household (18+) **who has most recently had a birthday.** Using the Internet is a new approach to conducting citizen surveys and we would like to thank you in advance for helping us explore the possibilities! If you have any questions, please call the Public Information Officer, xxxx, at 303-762-2317.

Sincerely,

Mayor's Name
Mayor

Figure 1: Example of Reminder Postcard Sent to Web Sample

2001 _____ Citizen Survey

Welcome to the Citizen Survey!

Please have the adult household member (18 years or older) who has most recently had a birthday complete the survey (Year of birth does not matter). Thank You!

After answering each question, you will need to scroll down to view the rest of the questions. Please do not click "Next" until you have completed the final question. Depending on your browser and settings, you may need to scroll down to insure that you are viewing the entire question on your screen, and not just part of the question and responses. After viewing the final question (Q37), you should click "Next" and follow the instructions to finish submitting your responses. If, after leaving the survey page, you would like to go back and revise your answers, click the "Back" button. If you wish to clear your responses and start again, you must click "Reset".

QUALITY OF COMMUNITY

Q1 Please mark the answer that best describes your opinion for each of the following questions:

	Excellent	Good	Fair	Poor	Don't Know
How would you describe the quality of life in _____?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How do you rate the overall quality of your neighborhood?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How do you rate _____ as a place to raise children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How do you rate _____ as a place to retire?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How do you rate the overall direction the City is taking?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q2 Please rate the following characteristics as they relate to the City of _____ as a whole:

Figure 2: Splash Screen for Web Survey in City 2

RESULTS

Response Rates

Not all surveys are deliverable. In each community, for web and mail, about 3% to 6% of the initial mailings came back undelivered. After removing these from the count of those assumed to have arrived at their intended destination, response rates were calculated. Web

TABLE 1
Response Rates of Web and Mail Surveys Compared

	City 1		City 2	
	Web	Mail	Web	Mail
Number out	3,000	3,000	3,000	3,000
Estimated number delivered	2,805	2,811	2,900	2,897
Number returned	401	1,040	373	1,101
Response rate (%)	14	37	13	38

TABLE 2
Comparative Demographic Characteristics of Web and Mail Survey Respondents

	City 1				City 2			
	Norm (%)	Mail (%)	Web (%)	p Value ^a	Norm (%)	Mail (%)	Web (%)	p Value ^a
Detached	60	65	82	.000	56	64	72	.007
Attached	40	35	18		44	36	28	
Rent	35	20	14	.003	48	37	30	.016
Own	65	80	86		52	63	70	
Female	51	58	48	.001	52	62	53	.002
Male	49	42	52		48	38	47	
White	91	91	88	.100	93	87	94	.001
Non-White	9	9	12		7	13	6	
Hispanic	12	8	3	.001	8	8	5	.144
Non-Hispanic	88	92	97		92	92	95	
18 to 24	14	5	3	.000	11	5	2	.000
25 to 44	59	42	48		48	39	48	
45 to 64	20	37	44		21	32	38	
65 or older	7	16	5		20	24	12	

NOTE: Norm is 1990 or 2000 Census or local planning department.

a. Pearson χ^2 test of mail versus web for each item within each city.

respondents were a third or less of the respondents by mail, confirming what Flemming and Sonner (1999) and others have found when web surveys have been compared to mail in "captive" populations (i.e., those with almost ubiquitous access to e-mail) (Crawford et al., 2001; Shaefer and Dillman, 1998). Response rates are shown in Table 1.

Respondent Characteristics and Survey Preference

In Table 2, we compare the unweighted demographic characteristics of mail and web responders to 2000 census data (with the exception of unit type—attached or detached—which was only available in the 1990 census). Results indicate that, in both cities, compared to the Census, web and mail respondents more often came from detached homes and owned homes despite our oversampling of attached units. Web respondents were more likely to live in detached units and to be owners than mail respondents, implying web users' higher income.

Web and mail respondents tended to underrepresent the youngest residents (18-24), and youth responding by web were even more poorly represented than those responding by mail, possibly suggesting as much or more about the content of the survey as the demographic of

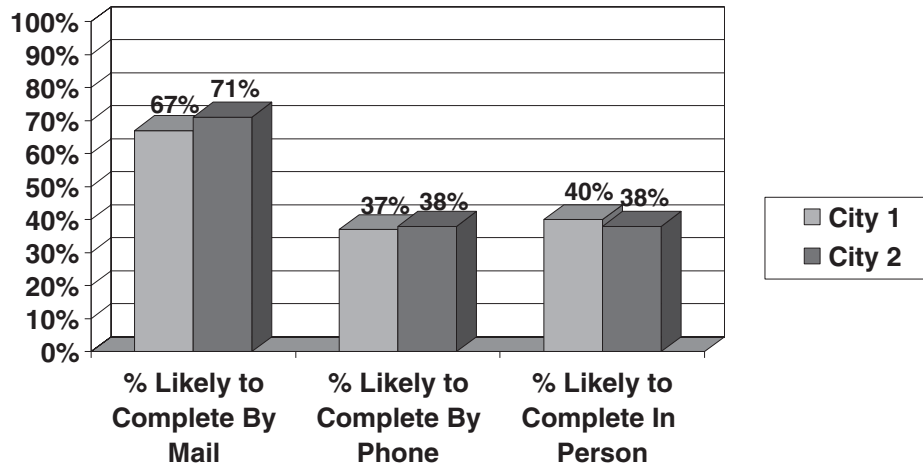


Figure 3: Reported Likelihood of Completing Survey by Other Modes

web users. Oldest residents were underrepresented among web participants but overrepresented among mail responders compared to census data. Whereas the two mailed surveys drew too few men, the web surveys drew a proportion that more closely matched the census data.

Findings related to ethnicity and race were mixed. In both cities and for both web and mail, Hispanic residents were underrepresented compared to the Census, and an even smaller percentage of web than mail respondents were Hispanic. As for race, there were more White respondents compared to Census norms among mail respondents in both cities; but in City 2, there were fewer White mail responders than White web responders, whereas the opposite was true in City 1.

Not only did we record the demographic characteristics of responders to identify the different type of respondent by web, we asked web responders how likely they would have been to complete the survey by other modes—mail, phone, or in person. Figure 1 displays the sum of the “very likely” and “likely” responses given by the web participants in the two jurisdictions. Results were similar for both cities. Interestingly, web responders by far preferred the prospect of being surveyed by mail than by phone or in person, suggesting that their perspectives may better be captured by a mail than a phone survey, which is a more common alternative to mail than in-person interviewing. We may even conclude that among web respondents, only about 30% (those neutral or unlikely to respond by mail) were captured uniquely using the web compared to our mail survey results.

Opinionated Web Respondents

Table 3 provides limited support for earlier findings that web respondents tend to be more opinionated than respondents by other means. We found this to be true even for questions about quality-of-city-service ratings, arguably more benign than many policy questions. For 5 of the 11 service item ratings, web more than mail responders in City 1 reported “don’t know” significantly less often. Among the remaining 6 items, web responders more often (though not significantly more often) reported “don’t know” for 4 and less often for 2 (police and fire quality ratings).

TABLE 3
Respondents Answering “Don’t Know” in Web and Mail Surveys

	City 1		City 2	
	Mail	Web	Mail	Web
Snow removal				
%	4.3	1.0	3.0	1.4
<i>n</i>	1,030	390	1,063	370
<i>p</i> value		.003		.083
Street repair				
%	2.4	0.3	1.4	0.5
<i>n</i>	1,030	388	1,060	369
<i>p</i> value		.007		.186
Traffic enforcement				
%	4.8	2.6	7.6	7.0
<i>n</i>	1,013	389	1,060	369
<i>p</i> value		.058		.893
Code enforcement				
%	22.2	17.0	11.3	12.3
<i>n</i>	1,013	389	1,051	365
<i>p</i> value		.030		.605
Park maintenance				
%	7.5	3.3	8.2	5.7
<i>n</i>	1,031	390	1,055	367
<i>p</i> value		.004		.129
Library services				
%	17.4	18.9	25	18.4
<i>n</i>	1,024	387	1,055	365
<i>p</i> value		.517		.009
Water quality				
%	3.6	2.6	2.9	2.2
<i>n</i>	1,029	390	1,068	366
<i>p</i> value		.332		.467
Recreation programs/facilities				
%	10.1	6.8	25.8	27.5
<i>n</i>	1,026	385	1,049	367
<i>p</i> value		.050		.528
Emergency medical/fire protection				
%	18.7	23.2	19.2	17.3
<i>n</i>	1,927	384	1,065	369
<i>p</i> value		.061		.419
Police protection				
%	9.0	9.9	6.9	6.0
<i>n</i>	1,031	382	1,073	369
<i>p</i> value		.593		.534
Overall customer service ^a				
%	0.9	0.0	0.9	0.8
<i>n</i>	558	224	581	243
<i>p</i> value		.155		.957

NOTE: *p* values are Pearson χ^2 test of mail versus web for each item within each city.

a. Answered only by those who had contact with city employee over prior 12 months.

In City 2, the tendency for web responders to be more opinionated was more muted than in City 1. Only one service (libraries) showed a significant difference in the “don’t know” percentages for web and mail survey respondents. Again the difference was in the expected

direction, with web responders less likely to say “don’t know.” For the remaining 10 statistically nonsignificant differences, 8 showed a tendency for lower response in the “don’t know” category to be made by web responders. For 2 services, web responders reported “don’t know” more often, though not significantly so (code enforcement and recreation programs/facilities).

For each of two traffic-related policy questions, not shown, web responders in City 1 again showed their inclination to be more opinionated (with significantly lower “don’t know” responses) compared to their mailed survey counterparts, whereas web responders in City 2 were no more or less likely to be opinionated compared to the mail respondents regarding three traffic-related policy questions (which were not the same as those for City 1).

Ratings of Community Quality and Quality of Service Delivery

The most compelling question motivating this study, despite the clear limitations of web coverage, and despite our findings that web responders overrepresent the more well off, non-Hispanic, male, middle-aged, and opinionated community residents, was whether the opinions about community quality and quality of city services would be different among web responders and mail responders and whether those differences would be constant across types of citizen-survey questions. Table 4 displays our results. We tested each survey item—2 related to quality of community and 11 related to quality of city services (which represented all of the questions held in common between the surveys from the two cities)—using a two-by-two fixed factor analysis of variance with city as one factor (City 1 vs. City 2) and mode of survey administration as the other factor (mail vs. web). The interaction term for each item tested whether the difference between web and mail response was the same for City 1 and City 2. All responses were converted to a single scale score (see Miller & Miller, 1991, for full description of how these conversions are made), where the average response of those with an opinion was calculated after removing the percentage of “don’t know” responses.⁴ Ratings ranged from 0 = *poor* to 100 = *excellent*. Scores of 33 and 66 correspond to *fair* and *good*, respectively. Whereas we are most concerned with differences in response between the two modes of administration, exploring differences between cities where residents have different perspectives about the kinds of questions posed in citizen surveys and examining the interaction of survey mode with location helps us to understand the breadth of generalizability of findings. Furthermore, including city as a factor in the statistical tests gives the tests more power.

With a few exceptions, the findings demonstrate considerable consistency between web and mail ratings of community and service quality. Web responses, by and large, were 1 to 4 points higher than the mail responses on the 100-point scale, an effect size rarely greater than 0.2 of a standard deviation. With the considerable power of our tests, these differences tended to be statistically significant, showing a main effect for method in all but traffic and code enforcement. Generally, the interaction terms of our model were not statistically significant (for 11 of 13 items), indicating that these small differences between web and mail responses were consistent from city to city for any given item. Noticeably, standard deviations were quite similar for web and mail responses within each city, suggesting close to the same spread of responses for each mode.

If only a web survey or only a mailed survey were conducted, conclusions about the relative quality of city services might be different. We examined how similar the two sets of ratings were by calculating Kendall’s *W* (coefficient of concordance), which estimates the correlation between the web rankings of service quality and the rankings of service quality by mail in each community. Across 16 services rated in City 1, Kendall’s *W* was .991 ($p = .013$)

TABLE 4
Mean Responses From Web and Mail Surveys

	City 1							City 2							p Values		
	Mail			Web			Difference in Ms	Mail			Web			Difference in Ms	Method	City	Method × City
	M	SD	n	M	SD	n		M	SD	n	M	SD	n				
Quality of life	74.81	15.58	1,036	77.50	15.68	400	2.69	65.50	19.83	1,082	68.37	19.27	372	2.87	.000	.000	.901
Quality of neighborhood	70.51	19.26	1,015	72.54	17.88	389	2.03	60.19	24.21	1,080	64.08	23.11	373	3.89	.001	.000	.310
Snow removal	66.97	21.19	986	69.25	20.75	386	2.28	46.85	27.84	1,031	49.41	29.40	365	2.56	.023	.000	.897
Street repair	51.90	25.29	1,005	54.59	24.12	387	2.69	55.22	25.72	1,051	58.13	25.36	367	2.91	.009	.001	.920
Traffic enforcement	58.72	23.44	981	58.76	22.61	378	0.04	53.86	27.12	979	53.24	27.56	340	-0.62	.792	.000	.759
Code enforcement	56.31	23.69	788	57.30	20.85	323	0.99	49.03	29.88	932	49.69	31.23	320	0.66	.512	.000	.893
Park maintenance	72.60	17.39	954	74.15	15.98	377	1.91	65.53	21.42	969	67.63	23.52	346	2.1	.019	.000	.915
Library services	75.61	18.71	846	76.97	18.59	314	1.36	76.49	22.33	791	80.20	21.18	298	3.71	.009	.034	.223
Water quality	68.38	21.62	992	68.37	22.46	380	-0.01	31.21	31.24	1,037	36.41	31.46	358	5.2	.026	.000	.025
Recreation programs/facilities	76.94	17.32	893	78.25	15.99	343	1.43	74.12	22.15	778	76.57	21.92	266	1.98	.043	.015	.543
Emergency medical/fire protection	73.60	17.27	771	75.27	15.51	272	1.67	77.13	20.76	860	78.47	20.21	305	1.34	.100	.000	.821
Police protection	68.76	20.77	938	70.27	21.33	344	1.51	69.64	24.45	999	73.29	22.76	347	3.65	.010	.051	.283
Overall customer service	69.78	23.83	553	68.88	25.90	224	-0.09	69.73	32.49	576	78.42	29.89	241	8.69	.013	.002	.002

between the rank order of mean scores for web and mail quality ratings. For 27 service ratings in City 2, Kendall's W was .956 ($p = .003$) for the rank order of mean scores of the two modes.

CONCLUSIONS

Despite the coverage problems reported elsewhere and demonstrated here, there appears to be limited use for web surveying of general populations asked to report their opinions about community quality of life and quality of services. With random recruitment by mail, we found that web survey results were generally 1 to 4 points higher (on a 100-point scale) for service and quality-of-life ratings than mail survey results on most but not all items (11 of 13). The rank order of quality ratings was quite similar for both web and mail, and policy questions related to traffic (not shown) demonstrated similar responses via web and mail surveying. Results were consistent across two communities where residents had very different perspectives about the quality of community life. Results demonstrate that city staff, elected officials, and the public would not be wildly misled by web survey results in which respondents are recruited via mail in a probability sample. Still, using the web to track often small changes, wherein sensitivity of measurement is needed to track city changes in performance, may be premature.

Before researchers abandon more traditional survey methods to use the web even for assessment of general perspectives on important community issues, a few technical points need to be considered. The low response rate by web, while not undermining the accuracy of results, would be hard to reconcile in the political arena in which citizen surveys reside. The results from research like this would hardly mute criticism of elected officials or their constituents, who simply would blanch at response rates so much lower than they are used to hearing or have come to believe exist for mail or phone surveys. Furthermore, whereas web surveys have the potential to be quicker, cheaper, and easier, we found that neither the technology nor the technological savvy of residents is yet sufficient to make web surveying easy. Staff members of the cities participating in this research fielded more than 100 phone calls from residents who did not know how to make a web browser get to the specified URL. Load times were inconsistent and frustratingly long with modem connections. The web software had limitations that increased the likelihood of inadvertent "submit"s and premature terminations.

When they had no home or work web access, some community members resented not having options for participation other than the web. Despite our offer for residents without other access points to use their public library, use of the library was inconsistent in the two communities. Only 5% of residents of City 1 reported that they responded at the library, whereas 21% of residents in City 2 made the same report.

We believe that even with the currently limited, but growing, penetration of web access in America, there is merit in considering citizen surveys on the web. Caution should be used before blindly assuming that a web survey will be significantly cheaper or as acceptable to the public as other modes of data collection, but for a relatively quick read on public attitude that is not a central decision point for policy or performance, a web survey, with probability sampling by mail or phone, may be good enough.

NOTES

1. In the case of City 1, we added one experimental factor—length of web survey—to determine its influence on response rate. Unknown in advance, a random half of the web invitees were given a URL for a citizen survey that was

roughly half as long as the full survey. We found virtually no difference in numbers of submitted surveys. We collapsed results from the split sample.

2. In prior research, we have determined that fewer than 2% of respondents may have responded twice to our mailed surveys, which include the complete survey in a second, reminder mailing.

3. We used a web posting product called SNAP. We used SNAP Version 5, copyright 1987-1998, purchased in 2000 from Mercator.

4. Because responses from City 1 were made on a 5-point scale with points labeled *very good, good, neither good nor bad, bad, very bad* (VG - VB) and City 2 responses were made on a scale of *excellent, good, fair, poor* (EGFP), all responses were converted to a 0 to 100 point scale, where 0 is the lowest rating and 100 is the highest. Other modifications to ratings (between cities but not affecting our comparison of modes within cities) were made according to algorithms developed by National Research Center, Inc., examples of which can be found in Miller and Miller (1991). These modifications corrected for differences in number of response options and the use of EGFP versus VG - VB.

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