"E-Government and the Transformation of Public Sector Service Delivery"

by Darrell M. West
Taubman Center for Public Policy
Box 1977
Brown University
Providence, RI 02912

(401) 863-1163
www.InsidePoltics.org

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Abstract

The impact of new technology on government service delivery and public attitudes about government long has been debated by political observers. In this paper, I assess the effects of e-government on public sector service delivery and citizen attitudes. I look at the content of e-government to investigate whether e-government is taking advantage of the interactive features of the World Wide Web in order to improve service delivery, democratic responsiveness, and public outreach. In addition, using a national public opinion survey, I examine the ability of e-government to alter citizen views about government and confidence in the effectiveness of service delivery. Using both content measures as well as public assessments, I argue that so far, the e-government revolution has fallen short of its potential to transform government service delivery and public confidence in government. It still is early in the "revolution", but preliminary data suggest that e-government lies more within an incrementalist than transformational model.

The impact of new technology on government service delivery and public attitudes about government long has been debated by political observers. Each technological innovation from the telegraph in 1844 and the telephone in 1876 to the rise of radio in the 1920s and coast-to-coast television broadcasting in 1946 has sparked questions about social and political impact. Transformationalists often predict widespread consequences arising from new technology, while incrementalists note the constraining influence of social, economic, and institutional forces on the ability of technology to alter social realities (West, 2001; Margolis and Resnick, 2000; Abramson, Arterton, and Orren, 1988).

With the invention of the World Wide Web in 1991, it is no surprise that the use of the Internet to deliver government information and services has generated heated debates about technological impact (Herron, undated; Bowie, 1996). How will the Internet alter public service delivery? Will it affect public opinion? What is its potential to restore longterm trust and confidence in government? Similar to the changes that have taken place in e-commerce and e-trading, the so-called "e-government" phenomenon offers the potential to improve public service delivery, lower the costs of government, and restore public confidence in government (Norris, forthcoming, 2001).

In this paper, I assess the impact of e-government on public sector service delivery and citizen attitudes. I look at the content of e-government to investigate whether e-government is taking advantage of the interactive features of the World Wide Web in order to improve service delivery, democratic responsiveness, and public outreach. In addition, using a national public opinion survey, I examine the ability of e-government to alter citizen views about government and confidence in the effectiveness of service delivery. Using both content measures as well as public assessments, I argue that so far, the e-government revolution has fallen short of its potential to transform government service delivery and public confidence in government. It still is early in the "revolution", but preliminary data suggest that e-government lies more within an incrementalist than a transformational model.

The E-Government Phenomenon

E-government refers to the delivery of information and services online through the Internet or other digital means. With the advent of digital technology in the 1990s, many governmental units have embraced the computer revolution and are putting publications, databases, and government services online for citizen use (Deloitte Research, 2000). The emergence of this new form of information and service delivery poses opportunities for academic research on government performance and public opinion.

In Georgia, for example, state-run websites allow citizens to apply for business permits and fishing, hunting, and boating licenses on-line. Kansas residents can file state tax returns on-line and ask tax officials questions through email. People in Washington, Alaska, and Wisconsin can download driver's license forms. At the other end of the spectrum, there are a number of states that fail to offer official forms online and put only a small proportion of state agency material on the web for citizen access.

This wide variability in the extent to which web government is taking hold creates the possibility to study how e-government is affecting public sector performance and democratic responsiveness, what factors affect e-government service delivery, and how citizens judge e-government. Unlike traditional government service delivery and e-commerce, which have been widely studied, there have been relatively few studies of e-government. It is not clear exactly how far the e-government revolution has progressed and the manner in which people make use of online information and services.

In addition, at the normative level, there are unresolved questions. Concerns have arisen about the gap between technology haves and have-nots (the so-called "digital divide"), and whether e-government will exacerbate inequities among citizens (Hundt, 2000). With studies indicating that women, minorities, senior citizens, and the poor lack access to computers and the Internet, there is a need to chart how citizen access is

being affected. The manner in which citizens use and evaluate e-government information is crucial to larger questions about public sector performance, democratic responsiveness, and public confidence in government.

Of the few research projects that have looked at e-government, most have limited their analysis to single American states, which weakens the generalizability of the findings. For example, Musso, Weare, and Hale (2000) examined 270 municipal government websites in California. They find that few of these websites emphasize democratic participation, but we don't know whether their conclusions hold up for the remaining 49 states. One exception to this pattern is Norris (forthcoming, 2001), who studies websites in 176 nations around the world and finds a positive link between e-government and overall levels of democratization.

The rise of e-government over the past few years is important because of its possible consequences for democratic outreach in the United States (Abramson, Arterton, and Orren, 1988; Neuman, McKnight, and Solomon, 1997). The clearest advantage of digital technology is its potential for enhanced responsiveness and improved service delivery. A survey of state and federal chief information officers, for example, found remarkable optimism about the capacity of the Internet to transform government (West, 2000). In their view, 86 percent felt that e-government already had improved service delivery, 83 percent believed it had made government more efficient, and 63 percent claimed it had reduced government costs. If these sentiments are accepted by the general public, it could signal an opportunity for a fundamental change in public attitudes. Rather than cynically fearing that digital service delivery means expensive services delivered inefficiently and ineffectively, e-government offers the chance for more positive viewpoints to flourish.

Data and Methodology

Since e-government still is in its infancy, it is a perfect time to measure the extent of web service delivery, variations across the 50 American states, and the manner in which citizens rate service delivery via the Internet. In this research, I present the results of a content analysis of 1,813 government websites and a national public opinion survey about e-government. For the content study, I supervised a research team of four people that undertook a comprehensive analysis of 1,716 state government websites, 36 federal government legislative and executive sites, and 61 federal court sites. Among the sites analyzed were those developed by court offices, legislatures, statewide officials, major departments, and state and federal agencies serving crucial functions of government, such as health, human services, taxation, education, corrections, economic development, administration, natural resources, transportation, elections, and business regulation. Web sites for obscure state boards and commissions, local government, and municipal offices were excluded from the study. An average of 34 websites was studied for each individual state so we could get a full picture of what was available to the general public. Intercoder reliability scores found a 95 percent agreement in the coding.

Some projects have employed unreliable methodologies for studying the content of e-government. A rating service entitled the Digital State Survey conducted each year by the Progress & Freedom Foundation, for example, has ranked the quality of state-level e-government. However, it relies on interviews with state government chief information officers as opposed to an analysis of the actual content of state websites. My approach, which employs actual content analysis, offers a much more reliable technique for evaluation of government web delivery. Web sites were evaluated for the presence of 27 various features: office phone number, office address, online publications, online database, external links to other sites, audio clips, video clips, foreign language or language translation, privacy policy, advertisements, security features, toll-free phone number, technical assistance, subject index, frequently asked questions, disability access, services, digital signatures, credit card payments, email address, search capability, comment form, chat-room, broadcast of events, automatic email updates, push technologies that automatically send information to recipients, and personalization features.

We looked at the number and type of online services offered. Features were defined as services if the entire transaction could occur online. If a citizen could download a form for a service and then mail it back to the agency for the service, we did not count that as a service that could be fully executed online. Searchable databases counted as services only if they involved accessing information that resulted in a specific government

service. Services requiring user-fees or payments for access to the services were classified as premium services not accessible to all, and therefore were not included as general public-access services.

In order to examine responsiveness to citizen requests, we sent an email to four offices in each state as well as to selected federal agencies: the Office of the Governor, the Legislative Branch, Judiciary, and a selected state (or federal) agency. The message was short, asking a simple question: "I am trying to find out when your agency is open. Could you let me know the official hours your office is open? Thanks for your help." Email responses were recorded based on the time it took for the agency to respond.

In addition, I analyzed the results of a national public opinion survey conducted August 14-16, 2000 with 1,003 randomly sampled adults across the United States. This telephone survey had a margin of error of plus or minus 3.5 percentage points and was undertaken by the polling firm of Peter Hart/Robert Teeter of Washington, D.C. on behalf of the Council for Excellence in Government, a Washington non-profit organization dedicated to improving the functioning of government. This survey sample was developed using random-digit-dialing sampling techniques and included an oversample of 200 frequent Internet users. Data were weighted in accordance with the demographic composition of the United States population. Seventy-nine questions were included in the survey including items measuring use of government websites, evaluations of e-government (including ease of finding sites, overall rating, and past and future positive impact), views about government and political activity (trust in government, confidence in government, views about government effectiveness, and measures of political activity), and common political and demographic controls (sex, age, race, income, education, and party identification) (see Appendix for survey question wording).

A novel feature of this national survey was that it included a quasi-experimental component highlighting two crucial sets of "before and after" questions. For example, at the beginning of the survey, questions were asked about government effectiveness and how high the priority should be for government to invest tax dollars in making information and services available over the Internet. Then, after a series of specific questions about e-government were asked such as what services and information would they like to see online, how much usage has been made of government websites, what they like and fear about e-government, respondents were asked a second time about government effectiveness and priorities. This before and after design allows researchers to investigate "priming" effects, i.e., variations in respondent views after they have been exposed to a variety of e-government questions. This survey technique is a way to simulate how the introduction of detailed questions about e-government affects citizen opinions.

The Content of E-Government

The first thing examined was the content of e-government websites. What is available online provides important clues in terms of how much progress governments have made at harnessing the interactive potential of the Internet and using it as a tool for improved service delivery. In general, we found that government websites are not making full use of available technology, and there are problems in terms of access and democratic outreach. The vast majority of sites provide their department's telephone number (91 percent) and address (88 percent), and a large proportion of sites (80 percent) provide external links to web sites outside the department.

However, not many web sites provide other information that would be useful to citizens. Only 42 percent provide any type of database and 34 percent provide a list of "Frequently Asked Questions" (FAQs) with corresponding answers. Even fewer sites (25 percent) provide an 800 number. From here, the percentage of sites with further information sources drops dramatically. Although many sites required the use of advanced software such as Adobe Acrobat Reader, only 5 percent provided technical support, 5 percent provide audio clips, and 4 percent offer video clips.

Security and privacy warnings or protection devices are valuable features for government web sites, particularly those in which people can send personal information through the site. Unfortunately, few sites offer written policies guaranteeing adequate protections. Only five percent have some form of security notice on their site, and only 7 percent have a privacy policy. There also are online problems in terms of special populations such as disability access and non-English speakers. If a site is ill-equipped to provide access to individuals with disabilities or who do not speak English, the site fails in its attempt to reach out to as many people as possible.

Only 15 percent of government web sites had some form of disability access and 4 percent offered foreign language translation (despite the availability of free software offering automatic translation capabilities). To be recorded as accessible to the disabled, the site had to have either a TTY (Text Telephone) or TDD (Telephonic Device for the Deaf) phone number, which allows hearing-impaired individuals to contact the agency by phone, or be "Bobby Approved," meaning that the site has been deemed disability-accessible by a non-profit group that rates internet web sites for such accessibility (http://www.cast.org/bobby/).

One of the major advantages of e-government is its potential for online service delivery. Online delivery of services benefits both government and constituents, since it lowers costs and make services accessible to a wide range of people. Examples of specific online services include purchasing a hunting or fishing license, filing a complaint, or requesting a publication. E-government services in which the entire transaction can be completed online revolutionize the relationship between government and citizens. As many states boast, "It's time to get out of line and get online."

Yet despite the potential of e-government, of the 1,813 web sites surveyed, only 22 percent (389 in all) contained one or more online services. Of these sites, 292 offered just one service, 57 sites offered two services, and 37 sites contained three or more services. There is great variation across states in the government services available online as well as in the kinds of services provided. The most frequently available service was the ability to order publications and subscriptions to court case information. Three percent, respectively, of all web sites offered these services. Online complaint filing and tax filing were next, with 2 percent each. Examples of other types of services online include applying to be a conservation volunteer, requesting an aircraft fly-over, and voting for a state's new quarter design.

An aspect of government websites that is potentially problematic from the standpoint of conflicts of interest is the presence of advertisements by commercial enterprises. Out of the sites visited, 44 had some sort of advertisement (2 percent). When defining what constituted an advertisement, we eliminated computer software available for free download (such as Adobe Acrobat Reader, Netscape Navigator, and Microsoft Internet Explorer) since they were necessary for viewing or accessing particular products or publications. Links to products or services available for a fee, such as commercial tax preparation software, were included as advertisements as were traditional banner style advertisements. Examples of advertisements on the states' sites were for E-File (online income tax filing software available through purchase), various radio and television stations, Fidelity Investments, IBM, Hilton Hotels, Prudential, Pfizer, Barnes and Noble, Dow Chemicals, and Compaq. Product ads on government websites create potential conflicts of interest because it makes the commercial entity an official sponsor of particular government services.

Democratic Outreach and Responsiveness

E-government proponents tout it for its potential to bring citizens closer to their governments. However, while the technology to facilitate this connection is readily available, many government sites have not taken full advantage of its benefits. Government websites tend to offer more basic information than features that make their websites interactive. This interactivity is what serves as a democratic outreach—facilitating communication between citizens and government.

In our examination of state and federal government websites, we looked for several key features within each website that would facilitate this connection between government and citizens. The most basic of these features is email capability. In this instance, we determined whether a visitor to the website could email a person in the particular department other than the Webmaster. If a person can merely look at information on a government website without being able to contact the department, the potential for two-way interaction is thwarted. On the majority of websites, this technology was available—68 percent had email addresses.

While email is certainly the easiest method of contact, there are other methods that government websites can employ to facilitate democratic conversation. These include areas to post comments (other than through email), such as message boards. Through such features, citizens and department members alike can read and respond to others' comments regarding issues facing the department. This technology is nowhere near as prevalent as email—only 15 percent of websites offer this feature. Fewer still offer real-time chat rooms. This

feature provides the same benefits as message boards while allowing for immediate responses, more like an actual conversation. The number of websites offering this feature is even less—only 16 websites, or slightly less than 1 percent of the total.

Making government more easily accessible is another benefit of digital technology. One such feature we examined was the ability to search the particular website. Based on our content analysis, nearly half of the websites had a search function. This function is important in that it makes the information available on the website more easily accessible by allowing a web visitor to search for information he or she desires. Another way websites can make government more accessible is by offering live broadcasts of important speeches or events. These can range from live coverage of Senate or House of Representatives hearings to coverage of State of the State Address. Such broadcasts enable citizens to see and hear their elected officials speak on issues important to them. While this feature is significant, only 2 percent of websites made it available to their visitors.

One way government websites can connect citizens with their government is by enabling them to cater the available information to their particular interests. A feature we looked for was the ability to register to receive updates regarding specific issues using what is called "push technology". With this capability, a web visitor can enter their email address, street address, or telephone number to receive information about a particular subject as new information becomes available. Five percent of websites had this feature.

Another feature that government websites can use to tailor the information they provide to each individual citizen is through the capability to personalize an agency's website for their own specific interests. For example, a soybean farmer could go online and see information about crop prices, government subsidies, and new research of interest to soybean farmers. While this feature has the potential to be very useful in bringing both government and other citizens who share similar interests together, very few government websites offered this feature—only 7 out of 1,813 or less than half of one percent. Given the technology limitations we found available on government websites, it is clear that governments still have a ways to go to fully realize the benefits of digital democracy.

While it is important to have email addresses available on government websites, they serve no purpose unless someone actually reads and responds to the messages that are received. To test democratic responsiveness, we sent sample email messages asking for information regarding official office hours to the governor and to one person in each branch of the government in each state (a total of up to four officials per state). We then timed their responses to our messages by number of days. In general, government officials were highly responsive to emails. Ninety-one percent responded by answering our query. Even more impressive, a significant majority responded within one day—73 percent. While a few sites took more than a week to respond, we found that government officials in general were very responsive to citizen questions and provided answers about times the agency office was open.

Variations in State E-Government Performance

In order to see how the states ranked overall, we created an index for each website based on twelve important features centering on citizen contact material, services and information, and quality of access. These features included offering phone contact information, addresses, publications, databases, foreign language access, privacy policies, security policies, an index, disability access, services, email contact information, and search capabilities. We focused on these dimensions because they are particularly important for citizen access to information and services and the equity of the access available to people with special needs. The index measured the presence of these features on each website and then multiplied the score by 8.4 to convert it to a scale running from 0 (having none of these features) to 100 (having all twelve features). These figures were averaged across each state's sites to produce a mean rating for each state (see Table 1).

The top state in our ranking was Texas at 51 percent, meaning that every website in that state had at least half the features we considered important for quality citizen access. Other states which scored well included Minnesota (50 percent), New York (50 percent), and Pennsylvania (50 percent). The states achieving the lowest rankings were Rhode Island (29 percent), Delaware (31 percent), and New Hampshire (32 percent).

In general, large states ranked more highly in this study than small states owing to the economies of scale and budget resources available in bigger states.

Table 1 Ratings of State E-Governme nt Performance

TX	51%	*UT*	41
MN	50	*WV*	41
NY	50	*AR*	40
PA	50	*CT*	40
IL	49	*KY*	40
KS	48	*LA*	40
ND	48	*MD*	40
FL	47	*ME*	40
MO	47	*NJ*	40
OR	47	*NM*	40
IA	45	*TN*	40
NC	45	*WY*	40
WA	45	*OK*	39
ID	44	*AZ*	38
MI	44	*GA*	36
AK	43	*MT*	36
OH	43	*CO*	35
CA	42	*HI*	35
VA	42	*NE*	35
WI	42	*VT*	35
AL	41	*NV*	33
IN	41	*SD*	33
MA	41	*NH*	32
MS	41	*DE*	31
SC	41	*RI*	29

To examine what factors explained state rank, I undertook a multivariate regression model which looked at the impact of seven different state factors: overall population size, political complexion of the state (measured by factors such as the percentage of liberals and Democrats, respectively in each state as measured by Erikson, Wright, and McIver, 1993), overall state spending, and three state demographic factors linked to computer usage (percentage of senior citizens, college graduates, and blacks within the state, respectively, as judged by census estimates).

As shown in Table 2, the only two factors that were statistically significant in explaining state rank were state population and the percentage of citizens who classified themselves as liberal. The bigger the state, the higher that state tended to rank on e-government. And the fewer liberals there were (or the larger the number of conservatives), states tended to rank more highly on our e-government index. State population was highly intercorrelated with state gross product (a measure of overall state wealth) (Pearson r = .99), so states that were big and wealthy were the ones in the best position to take advantage of e-government economies of scale.

Table 2 Regression Model of State Rank

	Unstandardized Coeff.	Standard Error	Statistical Significance (t value)
State Population	.000000046	.00	3.7*
% Liberal	-.614	.26	-2.4*

% Sr. Citizens	.59	.43	1.4
State Spending	.00014	.001	1.1
% College Grad	.10	.20	.50
% Black	-.0045	.09	-.50
% Democratic	.0032	.12	.27

* $p < .05$

Characteristics of E-Government Users

Beyond the content of e-government features, it is important to examine how the public feels about web government. The manner in which citizens respond to e-government will shape how online democracy emerges over the long haul. According to an August, 2000 national public opinion survey, e-government website users tended to be male, younger, better educated, and earn higher incomes. Table 3 presents a profile of e-government users at the federal, state, and local government levels. Fifty-five percent of adults who have visited federal government websites are male and 45 percent are female. Eighty-three percent indicate they are white. Twenty-nine percent are college graduates. Thirty-four percent report they are under the age of 35, and 18 percent say they have incomes of $100,000 or more, figures that are higher than the general national population. Local government website users tend to be more minority than at the state level.

Table 3 Federal, State, and Local E-Government Users, 2000

	Federal	*State*	*Local*
Sex			
-male	55%	53%	56%
-female	45	47	44
Race			
-white	83	85	78
-minority	17	15	22
Education			
-high school grad	13	14	16
-college grad	29	26	23
Age			
-under 35	34	33	36
Income			
-more than 100K	18	18	16
Party ID			
-Republican	33	32	32

Source: Hart/Teeter National Survey, August, 2000

Evaluations of E-Government

E-government users say it is easy to find the government website that they need. Of those who have visited a government website, 48 percent believe it is easy to find, 31 percent indicate it is hard, and 21 percent are not sure. When asked to rate the quality of the government websites they have visited, 71 percent give the sites excellent or good marks. Only 28 percent feel the sites are "just fair" or poor.

There are variations, however, in ratings by level of government. When asked how good a job different levels of government have done in developing e-government information and services, 31 percent give excellent or good marks to the federal government, 27 percent do so for state government, and 20 percent feel that way about local government websites. Thirty-five percent believe that e-government currently is having a positive

impact on the way government operates, but 56 percent are positive about the five-to-ten year impact on government.

The Impact on Public Trust and Confidence in Government

One crucial question about e-government concerns its impact on public trust and confidence in government. In general, like Americans at large, citizens in this national sample were cynical about and disengaged from the political process. Only 30 percent say you can trust the government in Washington to do what is right most of the time, while 69 percent feel you can trust it only some of the time or never. Twenty-six percent report they have quite a lot of confidence in the federal government, compared to 30 percent who feel that way about state government and 31 percent who believe it of local government. Fifty-four percent think the government today is effective at solving problems and helping people. Twenty-seven percent say they are fairly active in politics and government, while 32 say they are somewhat active and 41 percent indicate they are not too active in politics and government.

From the standpoint of this study, however, the crucial question is how these views compare between e-government users and non-users. Table 4 breaks down views about government between citizens who have visited and not visited government websites. There is no significant correlation between use of e-government and views about trust, confidence, and government effectiveness. E-government users were no more likely than non-users to be positive about the government. The only exception to this pattern is political activity, which is significantly linked to e-government use. Those who use e-government report they are more politically active than those who do not visit government websites, a finding that is linked to the higher income and education levels of e-government users.

Table 4 E-Government Use and Confidence in Government

	Use E-Govt	*Don't Use E-Govt*	*Kendall Tau Correlation*
Trust in Govt	30%	30	.01
Confidence in Govt	31	25	.06
Think Govt is Effective	53	58	-.04
Politically Active	36	20	.21***

Source: Hart/Teeter National Survey, August, 2000

*** $p < .001$

Before and After E-Government Priming

To see how questions about e-government affected responses, the national survey asked two sets of before and after questions: one dealing with how much of a priority the subject gives to e-government and another dealing with views about government effectiveness. For the priority item, a question ("in your view, how high a priority should it be for government to invest tax dollars in making information and services available over the Internet") was asked before significant cues about e-government were provided and then the identical question was asked near the end of the questionnaire following a series of questions about e-government.

As shown in Table 5, there were significant differences that emerged between the two points. For three groupings (all adults, those not politically active, and those with low confidence in government), questions about e-government were associated with being more likely to cite a higher priority to government investments in online information and services. Among all adults, the priority ranking rose by 9 percentage points, while for those who were not active or who had low confidence in government, there were 13 percentage point increases, respectively.

Table 5 Before and After Priming on E-Government Priority

	Before	*After*	*Difference*

All adults	68%	77%	+9%
Adults not active	65	78	+13
Adults with low confidence in fed govt	58	71	+13
Source: Hart/Teeter National Survey, August, 2000			

The same was not true on views about government effectiveness (see Table 6). Using a question "how effective do you think government is today at solving problems and helping people," there were few differences before and after priming. For all adults, there was a one percentage point gain in views about government effectiveness before and after the priming. There was no difference among those who were not politically active and only a one percentage point gain for adults having low confidence in the federal government, results that were not statistically significant.

Table 6 Before and After Priming on Government Effectiveness			
	Before	*After*	*Difference*
All adults	54%	55%	+1%
Adults not active	57	57	0
Adults with low confidence in fed govt	45	46	+1
Source: Hart/Teeter National Survey, August, 2000			

Conclusion

To summarize, I find that so far the e-government revolution has fallen short of its true potential. Government officials have not incorporated advanced technology that enhances public outreach and the democratic potential of the Internet. Few sites offer access to the disabled or non-English speakers. Most do not have visible security or privacy policies. Only one-fifth offer an online service. Interactive features are generally absent from government websites. State sites are difficult to navigate due to the lack of consistent design and navigational systems.

The only exception to these generally pessimistic conclusions about the transformational potential of e-government comes in the area of citizen responsiveness. Alone among our indicators, we found that at least on simple measures of responding to citizen emails, there was a high degree of responsiveness via the web: 91 percent overall and 73 percent responding within a single day. This suggests that as agency officials learn to harness the power of the Internet, more positive results may emerge for service delivery and public reactions (also see LaPorte, Demchak, de Jong, and Friis, 2000; Margolis and Resnick, 2000; Davis, 1999).

It is not surprising that e-government so far has not yet produced an increase in trust or confidence in government. In comparing e-government users and non-users, there are few improvements in terms of greater trust in government, confidence in government, or beliefs tht the government is effective. Even with the help of questionnaire priming, there is no significant improvement in public assessments of government.

In the long run, it is not clear whether e-government will become a vehicle for the revitalization of citizen confidence or simply another factor that re-inforces citizen cynicism. With governments starting to accept commercial advertisements on public sector websites, the appearance of conflicts of interests emerges as a serious problem. It is easy to see journalists and citizens groups complaining about government integrity when hotel chains are advertising on tourism sites and e-filing software is being sold through links to state revenue departments.

In terms of service delivery, this research provides evidence that overall state performance is a function of population size and state wealth. Rather than being a device to overcome societal inequalities, e-government may merely reinforce socio-economic patterns. States that are big and wealthy have greater resources for service delivery via the Internet than small, poor ones (also see Norris, forthcoming, 2001 for a similar point about the international system).

The most difficult challenge facing e-government is the digital divide between those who use computers versus those who do not. Governments must make a concerted effort to provide computers in publicly accessible places such as libraries or shopping malls. Since there is potential for e-government to enfranchise a much greater portion of the population than the proportion that currently falls under the category, we must take care that e-government does not further weaken the access and clout of traditionally disenfranchised groups.

Appendix: National Survey Question Wording, August, 2000

Political Activity--How active would you say you are in politics and government: 1) very active 2) fairly active 3) just somewhat active, or 4) nott too active

Confidence in Federal Government--I am going to read a list of institutionsin American society and I'd like you to tell me how much confidence you have in each one: federal government 1) a great deal 2) quite a lot, 3) some, or 4) very little confidence

Trust in Government--How much of the time do you think you can trust the government in Washington to do what is right: 1) just about always, 2) most of the time, 3) only some of the time, or 4) never

Government Effectiveness--How effective do you thnk government is today at solving problems and helping people: 1) very effective 2) fairly effective 3) fairly ineffective, or 4) very ineffective

E-Government Current Positive Impact--Overall, would you say that e-government is having a: 1) very positive, 2) somewhat positive, 3) neutral, 4) somewhat negative, or 5) very negative effect on the weay that government operates

E-Government Future Positive Impact--And looking ahead five to ten years, do you think that e-government will have a: 1) very positive, 2) somewhat positive, 3) neutral, 4) somewhat negative, or 5) very negative effect on the weay that government operates

E-Government Priority--In your view, how high a priority should it be for government to invest tax dollars in making information and services available over the Internet: 1) a very high priority, 2) a high priority 3) a medium priority 4) a low priority, or 5) a very low priority

Use of Federal Government Website--Have you ever visited the Web site of: a federal agency? 1) yes, have visited web site 2) no, have not visited web site

Use of State Government Website--Have you ever visited the Web site of: a department of your state government? 1) yes, have visited web site 2) no, have not visited web site

Use of Local Government Website--Have you ever visited the Web site of: a department of your local government? 1) yes, have visited web site 2) no, have not visited web site

Rating of E-Government Website--In general, how would you rate the quality of the government Web sites that you have visited: 1) excellent, 2) good, 3) just fair 4) poor

Ease of Finding E-Government Website--When you want to get information about a particular government service or agency, do you find that it is: 1) generally very hard, 2) fairly hard, 3) fairly easy, or 4) very easy to find the government Web site that you need

Federal E-Government Website Rating--How good a job do you think the federal government is doing in developing e-government information and services: 1) an excellent job 2) a good job, 3) just a fair job, or 4) a poor job

State E-Government Website Rating--How good a job do you think your state government is doing in developing e-government information and services: 1) an excellent job 2) a good job, 3) just a fair job, or 4) a poor job

Local E-Government Website Rating--How good a job do you think your local government is doing in developing e-government information and services: 1) an excellent job 2) a good job, 3) just a fair job, or 4) a poor job

Sex: 1) male 2) female

Age--How old are you? 1) 18-24, 2) 25-29) 3) 30-34 4) 35-39 5) 40-44 6) 45-49 7) 50-54 8) 55-59 9) 60-64 10) 65-69 11) 70-74 12) 75 and over

Race--Are you from a Hispanic or Spanish-speaking background? If no, what is your race: 1) hispanic 2) white 3) black 4) asian 5) other (recoded as 1) minority 2) white

Income--If you added together the yearly income of all the members of your family who were living at home last year, would the total be: 1) less than $10,000 2) between $10,000 and $20,000 3) between $20,000 and $30,000 4) between $30,000 and $40,000 5) between $40,000 and $50,000 6) between $50,000 and $75,000 7) between $75,000 and $100,000 8) more than $100,000

Education--What is the last grade that you completed in school: 1) grade school 2) some high school 3) high school graduate 4) some college, no degree 5) vocational training, 2-year college 6) 4-year college/bachelor's degree 7) some postgraduate work, no degree 8) 2-3 years' postgraduate work, master's degree 9) doctoral degree/law degree

Party Identification--Generally speaking, do you think of yourself as a Democrat, a Republican, an independent, or something else? Would you call yourself a strong Democrat/Republican or not a very strong Democrat/Republican? Do you think of yourself as closer to the Republican Party, closer to the Democratic party, or do you think of yourself as strictly independent? (coded as a 1 to 7 party identification scale with 1 being a strong Democrat and 7 being a strong Republican)

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