

# INTERNATIONAL JOURNAL OF ELECTRONIC GOVERNMENT RESEARCH

April-June 2005, Vol 1, No 2

## Table of Contents

### EDITORIAL PREFACE

- i** **Introduction**  
Lois Delcambre, Portland State University, USA  
Eduard Hovy, University of Southern California, USA

### REVIEWED PAPERS

- 1** **Transnational Information Sharing, Event Notification, Rule Enforcement and Process Coordination**  
S. Su, University of Florida, USA et al.  
*This paper presents an approach to achieve information sharing, event notification, enforcement of policies, constraints, regulations, security and privacy rules, and process coordination. A prototype of the integrated transnational information system is described.*
- 27** **E-Government-Induced Business Process Change (BPC): An Empirical Study of Current Practices**  
Hans J. (Jochen) Scholl, University of Washington, USA  
*This paper contributes to the understanding of current practices in e-gov-induced business process change, comparing those practices to prescriptions derived from private-sector experience. Among other factors, the more inclusive approach observed in e-gov business process change may explain the higher success rate of public-sector projects compared to those reported from the private sector.*
- 50** **Home (Page) Style: Determinates of the Quality of the House Members' Web Sites**  
Kevin Esterling, University of California, Riverside, USA  
David M.J. Lazer, Harvard University, USA  
Michael A. Neblo, Ohio State University, USA  
*To date, research on e-government has devoted relatively little attention to how legislators use the Internet to enhance the representative function. In this paper, the authors seek to explain statistically the variation in the quality of Web sites among members of the US Congress.*
- 64** **A Web Query System for Heterogeneous Government Data**  
Nancy Wiegand, University of Wisconsin - Madison, USA  
Isabel F. Cruz, University of Illinois at Chicago, USA  
Naijun Zhou, University of Wisconsin - Madison, USA  
William Sunna, University of Illinois at Chicago, USA  
*This paper describes a Web-based query system for semantically heterogeneous government-produced data. Geospatial Web-based information systems and portals currently are being developed by various levels of government along with the GIS community.*

# Home (Page) Style: Determinates of the Quality of the House Members' Web Sites

Kevin Esterling, University of California, Riverside, USA

David M.J. Lazer, Harvard University, USA

Michael A. Neblo, Ohio State University, USA

---

## ABSTRACT

*To date, research on e-government has devoted relatively little attention to how legislators use the Internet to enhance the representative function. In this paper, we seek to explain statistically the variation in the quality of Web sites among members of the US Congress. The dependent variable for the preliminary analysis is an ordered categorical rating of the Quality of each member's Web site on a 5-point grading scale ranging from A to F. The model specification is derived from the political science literature on Congress, including measures of electoral situation, the local situation, and the intra-institutional situation. The cross sectional findings suggest that shorter tenure and closer electoral margin both independently contribute to successful innovation; members appear to adopt new technologies when constituents are connected to the Internet; and members representing districts of lower socio-economic status tend to have better quality Web sites.*

*Keywords:* Congress – United States; digital government; representation; statistical models; Web site quality measures

---

## INTRODUCTION

As Richard Fenno demonstrated in his landmark work, *Home Style: House Members in Their Districts*, Members of Congress tend to be very good at interacting with constituents face-to-face. Digital interaction, however, is inherently new terrain for many members, and any new activity entails uncertainty and risk. Furthermore, implementing and making effective use of innovations require new knowledge and new operating procedures. As a con-

sequence, adoption of Web technologies is neither automatic nor effortless. As Dawes and her colleagues (1999) write, "Throughout our history, developments in technology have emerged much faster than the evolution of organizational forms" (p. 21).

However, communication between legislators and constituents is fundamental to effective democratic representation, and devising the institutional means for citizen/legislator communication stands as one of the core and persistent problems in the practice of democracy. A legislator needs in-

formation about the preferences, ideals, norms, and beliefs of his or her constituents in order to do the job well. Similarly, citizens need information about the actions and decisions of their representatives in order to maintain appropriate accountability. But, as national problems become more complex and as the political process grows more and more dominated by experts and organized groups, it is becoming more difficult for interested citizens to understand the meaning of government action, much less to find an effective voice in the process.

Recent developments in interactive information technology create new possibilities for establishing communication links between citizens and their representatives. The widespread adoption and use of Web-based technologies among citizens creates the potential for greater citizen participation in and knowledge and trust of their government. Web technologies allow citizens access to the government, irrespective of their geographic proximity to the seat of government and increasingly irrespective of their wealth and educational level (Thurber & Campbell, 2003). When citizens have better knowledge of the hard choices that Congress often has to make, and of the rationale that legislators have for making them, many citizens may reinvest their trust in government (Bianco, 1994). Wisely used, the Internet can reconnect citizens and Congress in very meaningful ways.

A recent study by the Congressional Management Foundation (CMF, 2003) found that, over the past few years, many representatives in the U.S. Congress have greatly improved the quality of their official Web sites in a variety of ways, but there is still a large disparity among the offices; some have yet to take full advantage of the capabilities for communication that the

Internet has to offer (CMF, 2003). As we show in the next section, we can explain this cross sectional variation in the quality of members' Web sites using standard static analytical approaches that can be found in the political science literature on congressional behavior. This static analysis uncovers the political and institutional correlates of Web technology adoption for members and gives an outline of the incentive structure for adoption.

## STATISTICAL ANALYSIS: CORRELATES OF MEMBERS' ADOPTION DECISIONS

In this section, we present a study of the political and organizational correlates of the adoption of Web innovations by members of Congress. In many ways, the House of Representatives is a unique laboratory for understanding the effective use of information technologies in the public sector. Congressional offices function as 440 small, functionally identical, public organizations with a set of policy and procedural outputs (Salisbury & Shepsle, 1981). This enables a large N statistical study of innovation adoption, in essence to test standard political science expectations that the behaviors of members of Congress can be explained by recent electoral experience, district characteristics, and institutional resources (Fenno, 1978). The statistical study yields a static portrait of the incentives for the adoption of Web-based innovations.

### Dependent Variable

The dependent variable for our analysis is a rating of the *quality* of each member's Web site, as measured by the

Congressional Management Foundation (CMF). CMF evaluated each Web site based on 38 operational criteria. The criteria tapped into what makes for a good House Web site in the normative sense (i.e., whether the Web site communicates information constituents want to see on Web sites and information the member wants constituents to know). Those that do this get higher grades. The criteria were identified and weighted using a number of sources: asking focus groups of citizens to spend time on a sample of sites; interviews and surveys with office staff and citizens; and Web industry research on general usability. (For more detail on the coding, see Appendix 1). Some criteria (e.g., rationales for key votes and issue information) were measured on a 0-5-point scale, while others like voting records and vote sponsorships were measured on a binary scale, receiving a "1" if the site had the feature, and a "0" if it did not. Additionally, each criterion was assigned a weight that defined the criterion's relative importance to the user's experience. Related criteria were clustered into five dimensions yielding scores for *audience*, *content*, *interactivity*, *usability*, and *innovations*. *Audience* taps into whether the Web site provides information that constituents want to find online. *Content* includes things like voting records and rationales for important votes, substantive issue information, and information about the district. *Interactivity* includes such things as e-townhalls, bulletin boards, Web forms, e-mail newsletter signups, and the like. *Usability* includes items like navigability, readability, and scannability (see [www.usability.gov](http://www.usability.gov)), and *innovation* is based on an assessment of whether the site has unusual features that provide value to the site. Each Web site received a percentage score on each dimension based on the highest possible score they could receive.

To determine the overall score for each Web site, CMF assigned weight to each dimension, again based on focus groups, interviews, surveys, and previous usability research. *Audience* and *content* each were worth 25% of the overall score; *interactivity* and *usability* each were worth 20%; and the *innovations* dimension was worth 10%. The evaluation process was conducted between August and November of 2002.

To give a sense of what factors improve a member's Web site grade, Figure 1 displays the percentage of members' Web sites that contain a range of features. Notice that nearly all members use their Web sites to communicate information found in more traditional paper pamphlets such as their biographical and contact information. Relatively few members use their Web site to report their votes, much less give rationales for them (Contini et. al., forthcoming). Perhaps most interesting is that so few members include interactive features on their Web pages, such as the ability to subscribe to e-mail newsletters.

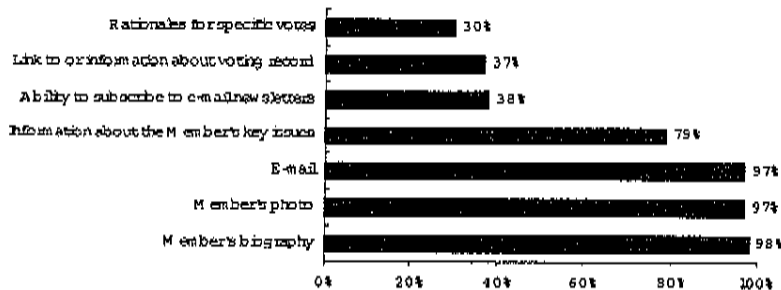
### Independent Variables

The explanatory variables in the model are a standard list of incentives and constraints for members, including measures of the electoral situation, the local district situation, and the intrainstitutional situation. Table 1 provides the summary data for the independent variables.

#### *Electoral Situation*

It is well known that members of Congress generally seek reelection. In the model we include two variables that tap into the member's electoral situation. *Tenure in office*. Members gain greater elec-

Figure 1. Features of members' Web sites



toral security with longer tenure in office due to the well-known incumbent advantages. Members with longer tenures in office have fewer incentives to seek out innovative ways to interact with constituents than those with shorter tenures. In addition, members with longer tenures are more likely to have well-established ways of communicating with constituents. *Margin of previous electoral victory.* Those with narrower victories have more powerful incentives to reach out to constituents in every manner possible.

#### Local Situation

Representation inherently requires attention to district needs and interests. In the model, we use state level measures for these variables, which will serve as rough measures of district characteristics. *Percent of households in the state with Internet connections* measures the capacity and the interest of citizens to use online services and to contact their member through Web sites, where for the average state, 50% of the households have an

Internet connection as of 2002 (NTIA, 2002). *Manufacture of electronic equipment in the state (dollars per capita).* Organized interest group politics often drives members' choices, and the amount of production of electronic equipment serves as a proxy for industry interest in technological innovations. *Population density (people per square mile).* Members with sparsely populated districts may feel the need to use innovative Web technologies where communication does not depend on geographic proximity.

#### Institutional Situation

The institutional context within Congress also can create advantages and disadvantages for members to undertake new initiatives. *Political party.* This is a dichotomous variable coded "1" if the member is a Republican, and "0" otherwise. The political parties in Congress help to organize and promote the adoption and use of IT among their members. We expect that, for historical reasons, the two parties in the House will have different capacities to pro-

mote the adoption of Web-based technologies among their members, and we include the political party variable to capture any difference. *Party leader, committee chair, or ranking member.* Members in leadership positions tend to have greater resources for managing their offices and so may have greater opportunities for adopting innovations. *Gender.* We have no *a priori* reason to believe the Web pages of female members will differ systematically from those of male members; we include gender as a standard demographic control variable.

### *Class Correlates*

We were interested in seeing if the digital divide is reproduced in Congress. We attempt to capture differences in the socioeconomic status of congressional districts by including several variables. These variables measure citizen capacity; we expect higher SES citizens to place greater demands for communicating with members through the Web. We include *median income of the district* to measure the relative income of the district. We also include *per capita gross state product* (in millions of dollars for year 2000) to capture contextual effects on the assumption that districts located in wealthier states benefit from positive externalities and redistributive policies. To measure social class, we include a measure of the *percentage of the district that is blue collar*. To measure relative education levels, we include a measure of the *percent of the district enrolled in school*.

### *Data Sources*

The data we use in the analyses come from a variety of sources. The tenure, elec-

tion margin, percent of connected households, gender, and political party variables come from the CMF (2003) *Connecting to Congress* dataset. The gross state product and electrical equipment manufacturing variables come from census data from the calendar year 2000. The district population density, percent blue collar, percent enrolled in school, and median district income are from Scott Adler's Web site, Department of Political Science, University of Colorado (Adler, 1997). The coding for party leader, chair, and ranking member comes from the [www.opensecrets.com](http://www.opensecrets.com) Web site.

### **Method**

We next present results for an ordered probit statistical model. The coefficients in a non-linear statistical model have no substantive meaning in themselves. Instead, in the text, we present "first difference" effects, which set all variables equal to their mean and counterfactually changing a typical member on the variable of interest from the 20<sup>th</sup> percentile to the 80<sup>th</sup> percentile (see Table 1). For ordered probit models, a first difference analysis estimates the change in probability of receiving each grade due to the conditional change of the independent variable in the counterfactual simulation. We estimate the standard error of the first difference effects using the Clarify software developed by Gary King and his colleagues ([www.gking.harvard.edu](http://www.gking.harvard.edu)). In the model, we cluster the standard errors by state, since we assume there may be dependence among members in each state delegation through similar (unmeasured) state circumstances and possibly through diffusion of ideas within the state delegation.

Table 1. Summary statistics for the independent variables

	N.	Mean	SD	20 <sup>th</sup> percentile	80 <sup>th</sup> percentile
<b>Electoral Situation</b>					
Tenure (# of terms)	436	5.52	3.83	2	9
Margin in Previous Election	437	68.88	13.55	58	77
<b>Local Situation</b>					
Percent of State Households Connected to the Internet	433	50.43	5.17	46.9	55.3
Elec. Equip. Manuf. (\$ per capita)	433	802	785	321	1364
District Population (per sq. mi.)	435	2353	6541	65	2390
<b>Institutional Situation</b>					
Political Party (Republican = 1)	440	.497	.500	---	---
Leader, Chair, or Ranking Member	437	.109	.320	---	---
Gender (Female = 1)	440	.138	.345	---	---
<b>Class Correlates</b>					
Gross State Product (\$ per capita)	433	35131	6264	31182	39267
Percent of District Blue Collar	435	6.9	2.2	5.0	8.6
Percent of District Enrolled in School	435	15.5	2.9	13.3	17.6
Median Income of District	435	36020	9306	28591	43375

## Results

Table 2 shows the first difference effects from the ordered probit model. The first difference effects give a substantive interpretation of the magnitude of the effect of each independent variable that is estimated in the model. One can think of a first difference effect as a "thought exercise" (i.e., based on the model estimates, how much does the quality grade of a typical member's Web site change and in what direction, if one were to counterfactually change the independent variable measure from low to high?). The first result column of Table 2 shows the estimated impact of the independent variable listed on the probability of receiving a grade of "B" or higher that comes from changing the independent variable across the domain shown, while holding all other variables constant at their mean. The second result column shows the corresponding change in the probability of receiving an "A," the highest grade given.

Not surprisingly, the variables measuring members' electoral situation have a

strong and robust effect on the overall quality of members' Web sites. Counterfactually changing a typical member's electoral margin in the 2000 election from 58% to 77% leads to a 7% decrease in the member's probability of getting a grade of "B" or higher. This result is not surprising, since the reelection incentive is strong, and one would expect members to increase district communication of all types in competitive districts. Similarly, increasing a typical member's tenure from two years to nine years leads to an 11% decrease in the probability of getting a grade of "B" or higher. This result, too, is expected since seniority helps to confer a member an incumbency advantage, and at the same time members with a longer tenure in office will have established standard operating procedures for communicating with constituents. (If we include age in the model, age is not statistically significant, and the effects of tenure remain significant and large.)

We include several variables in the model that measure the demand and the capacity for local constituents to gain ac-

cess to a member's Web site. The percentage of households in the state that are connected to the Internet is a measure of the individual-level constituent capacity to access a member's Web site, and also a proxy for the demand among constituents for Web-based information and services. We find that increasing the percentage of connected households from 47% to 55% leads to a 9% increase in the probability that a typical member will receive a grade of "B" or higher. To measure the demand for technology-based communication among local organized interests and firms, we include a measure of the total output in the electronic equipment-manufacturing sector, normalized by the state population. Increasing per capita sales in this sector from \$322 to \$1,364 leads to an estimated 6% increase in the probability that the member receives a grade of "B" or higher. The density of the population in the district does not appear to have an effect on the quality of Web sites in the statistical model.

Republicans are 8% more likely than Democrats to receive a "B" or higher. This comports with Adler et. al. (1998) who found that Republicans are more likely to have set up homepages in the early days of adoption on the Hill. Thus, the Republicans' current advantage in quality simply may reflect more and earlier experience with e-government. However, this only pushes the question back to why Republicans adopted earlier. Members of his own party might have followed Speaker of the House Newt Gingrich's push to "tech up" the Congress more aggressively, or perhaps it is a simple result of being in the majority party during the crucial time period.

Once tenure and seniority are controlled, being in a leadership position such as party leader, committee chair, or ranking member does not seem to have any effect. Likewise, once tenure is controlled

for, gender does not appear to have an independent effect on the quality of members' Web sites.

We assumed that we would find the digital divide reproduced in Congress, but instead, we found the opposite—districts with lower SES tend to have more effective online representation. Increasing the state's wealth, as measured by the state gross product, leads to a substantial decrease in the quality of the member's Web site; increasing per capita state gross product from \$31,182 to \$39,267 leads to a 5.5% decrease in the probability of receiving a "B" or higher. Likewise, increasing the percentage of the district enrolled in school from 13% to 18% decreases the probability of getting a "B" or higher by 5%. Increasing the percentage blue collar from 13% to 18% (a measure of social class for the district) increases the probability of getting a "B" or higher by 5%. Finally, once these demographic variables are controlled in the model, district median income does not appear to have an independent effect. Indeed, district median income has no effect in models that omit state GDP and electronic manufacturing. We do not have an explanation for this anomaly and intend to study this further in the future.

## Discussion

These cross-sectional findings confirm the standard expectations in the political science literature on U.S. congressional behavior: the quality of members' Web sites, as in other decisions, is heavily dependent in predictable ways on the member's political and institutional situation. On the "electoral connection" side, necessity appears to be the mother of invention when it comes to adopting Web-based innovations among members of Congress. It seems quite natural that a narrow victory would



Table 2. Estimated change in probability in receiving grade, marginal effects (standard errors of estimates in parentheses)

	Change in probability of receiving a B or higher	Change in probability of receiving an A
<b>Electoral Situation</b>		
Tenure in Office [Δ 2 year to 9 years]	-11.4% <sup>*</sup> (2.4)	-3.4% <sup>*</sup> (1.2)
Election Margin [Δ 58% to 77%]	-6.7 <sup>*</sup> (1.8)	-2.1 <sup>*</sup> (1.0)
<b>Local Situation</b>		
State % Connected Households [Δ 47% to 55%]	8.7 <sup>*</sup> (2.2)	2.6 <sup>*</sup> (1.1)
State Electronic Manufacturing (per capita) [Δ \$322 to \$1,364]	6.3 <sup>*</sup> (1.2)	1.9 <sup>*</sup> (0.6)
District Population (per sq. mi.) [Δ 65 to 2,390]	0.3 (0.2)	0.1 (0.1)
<b>Institutional Situation</b>		
Republican Party Member [Δ Democrat to Republican]	8.1 <sup>*</sup> (2.4)	2.4 <sup>*</sup> (1.2)
Chair or Party Leader [Δ non-leader to leader]	-2.0 (3.6)	-0.4 (1.7)
Gender is Female [Δ male to female]	5.1 (3.3)	1.7 (1.9)
<b>Class Correlates</b>		
Gross State Product (per capita) [Δ \$31,182 to 39,267]	-5.5 <sup>*</sup> (1.0)	-1.6 <sup>*</sup> (0.5)
% District Blue Collar [Δ 5% to 9%]	5.0 <sup>*</sup> (1.7)	1.5 <sup>*</sup> (0.8)
% District Enrolled in School [Δ 13% to 18%]	-5.0 <sup>*</sup> (1.6)	-1.5 <sup>*</sup> (0.8)
District Median Income [Δ \$28,591 to \$43,376]	-0.8 (2.8)	-0.3 (1.2)
<p>Note: Cells give the estimated change in probability that comes from a counterfactual simulation, where a member who is typical in all respects is assumed to change his or her value in the column variable from its 20<sup>th</sup> percentile to its 80<sup>th</sup> percentile. Standard errors for the changes in probability are given in parentheses; standard errors are estimated using the Clarify software (gking.harvard.edu) and using the Huber-White variance estimator clustered by state.</p> <p><sup>*</sup>statistically significant at p&lt;0.05  <sup>†</sup>statistically significant at p=0.07</p>		

intensify a member's incentives to extend his or her advertising, position-taking, and credit-claiming activities to a high quality Web presence (Mayhew, 1974). Indeed, a glance back at Figure 1 shows that we can subsume a whole range of CMF's Web criteria under Mayhew's classic categories of electorally motivated congressional behavior. Nearly all of the Web sites carry the member's picture and biography, the beginning of any good campaign to adver-

tise a person. Prominently displaying information about the member's key issues is archetypal position-taking. Finally, promoting subscription to e-mail newsletters and links to press releases creates a prime forum for credit-claiming.

Shorter tenure contributed to higher quality Web sites, even controlling for margin of victory. There are several possible interpretations of this result. First, it is possible that there is still a kind of electoral

security connection beyond the margin of victory. That is, there may be more variance in margins of victory early in one's career (or just less information) leading to a kind of risk-averse discounting of a freshman's wide margin of victory. Second, the tenure effect might be driven by more institutional factors. Since members with lower seniority have fewer institutional roles and powers, they tend to focus more on constituent services. Such services are featured prominently on many Web sites. Third, new members will be setting up their Web sites from scratch and, thus, may benefit from more recent best practices before routinization and office inertia set in. Finally, tenure may be proxying for some mechanisms associated with age (e.g., younger people are more comfortable with technology). Because of colinearity issues, this last possibility is difficult to tease out, but in future research, we plan to identify the precise mechanism or mechanisms driving the significant tenure effect.

So far, we have discussed "supply side" determinates of high quality sites. Turning to "demand side" determinates, it should come as no surprise that having a higher proportion of one's constituents connected to the Web would create more demand for computer mediated interaction with one's elected representatives. Nonetheless, the dynamics around this variable should become more interesting over time. As Web connections go the way of the telephone (i.e., from a luxury to a nearly universal household feature), the decrease in variance for this variable presumably will cause it to lose predictive power. However, it is possible that the effect is capturing something more than merely the raw possibility for accessing Web sites, such as the characteristics of individuals and districts that adopted technology early (controlling for income and local tech industry). The

search then will be on to find indicators for these other possible effects.

In general, then, members appear to adopt new technologies when the marginal benefit of doing so increases; and institutional resources and support appear to matter, all pretty much as expected. However, there is one rather large exception to this general confirmation of our hypotheses: class correlates (i.e., gross state product, % blue collar, % in school, district median income) did evince a "digital divide." However, all of the variables pushed in the opposite direction of their predicted signs, the first three to both a statistically and substantively significant degree. This is not artifactual; this basic pattern of results proved robust to alternative specifications. Clearly, this result will require further research to generate an adequate account of its meaning. However, we want to propose a few admittedly post-hoc explanations. First, members who represent less wealthy states and districts might feel an especially acute need to establish simple, low-cost means in order for poorer, less educated, and less engaged constituents to interact with them. Alternatively, it is possible that members from lower SES areas tend to receive greater demands from constituents for case work and personal services. Such members would have greater incentives to establish effective Web pages with services in order to reduce demand on their office staff. Finally, representatives from poorer districts may have to do a higher proportion of their fundraising outside of their district. High-quality Web sites project an active and professional image that is not bound by geography.

## CONCLUSION

In summary, we argue that the determinants of Web-based innovations among

congressional offices presented in this chapter generally comport well with predictions generated out of previous research into pre-Web domains of congressional behavior (Mayhew, 1974; Fenno, 1978). It also integrates nicely with research into the very early days of congressional e-government (Adler et. al., 1998; Owen et. al., 1999). Both supply-side variables that tap members' motivational incentives (i.e., margin of victory), and demand-side variables that tap constituent interest (i.e., percent connected), behave as predicted. The only major exception to our expectations was with the class correlate variables, which will require more fine-grained future research to interpret definitively.

Thus, the cross sectional study shows that adoption is not haphazard, but instead a generally purposeful response to a member's political situation. So, where do we go from here? The static nature of our analysis, while interesting and informative, does not answer other important questions regarding the diffusion and use of digital technologies inside Congress. What is the specific process of diffusion of Web-based innovations? Do members with better quality Web sites also make better use of feedback from constituents in their offices?

These considerations suggest that future studies of Web-based innovations require combined quantitative/qualitative and dynamic analyses to identify the mechanisms behind and the impact of adopted technologies. Future research could fruitfully study adoption patterns among members by using diffusion models; the means by which members make use of constituent feedback through qualitative fieldwork of their management practices; and the way citizens respond to members' Web sites through focus group and experimental research methods.

In combination with the research presented here, such studies will help political scientists and e-government researchers better understand what is rapidly becoming the most common mode of interaction between citizens and their elected representatives. This academic knowledge, in turn, can be deployed by practitioners to facilitate more and better representation. Thus, we can say without hyperbole that the Web and its progeny are almost certain to prove a key nexus for any normatively ambitious 21<sup>st</sup>-century democracy.

## ACKNOWLEDGMENTS

This paper was originally prepared for presentation at dg.02004, the National Conference on Digital Government Research, Seattle, Washington, May 24-26, 2004. The authors would like to thank the Congressional Management Foundation and Scott Adler for the use of their data; Michael Hannon, a graduate student at OSU for research assistance; Kathy Goldschmidt and Rick Shapiro for their direct intellectual contributions to this paper; for insightful comments from Paul Herrnson, Richard Niemi, three anonymous reviewers from the program committee for the dg.02004 conference, and three additional anonymous reviewers for the *International Journal of Electronic Government Research* review process. We also acknowledge partial support for this research from the National Science Foundation grants 0131923 and 0429365. Any opinions, findings, and conclusions or recommendations expressed in this paper are those of the authors and do not necessarily reflect the views of the NSF. For updates on this research, visit [www.ksg.harvard.edu/digitalcenter/](http://www.ksg.harvard.edu/digitalcenter/).

## REFERENCES

- Adler, E.S. (1997). Congressional district data file. Boulder, CO: University of Colorado. Retrieved from: <http://sobek.colorado.edu/esadler/districtdatawebsite/congressanddistrictdatasetwebpage.htm>
- Adler, E.S., Chariti, E.G., & Cary, B.O. (1998). The home style homepage: Legislator use of the World Wide Web for constituency contact. *Legislative Studies Quarterly*, 23(4), 585-595.
- Bianco, W. (1994). *Trust: Representatives and constituents*. University of Michigan Press.
- Congressional Management Foundation (2003). *Congress online 2003: Turning the corner on the information age*. Washington, DC: Congress Online Project.
- Contini, E., et al. (forthcoming). The content of U.S. House member Web sites. *International Journal of E-Government Research*, 1(1).
- Dawes, S.S., Bloniarz, P.A., & Kelly, K.L. (1999). *Some assembly required: Building a digital government for the 21<sup>st</sup> century*. Albany, NY: SUNY Albany Center for Technology in Government.
- Fenno, R.F. (1978). *Home style: House members in their districts*. Boston: Little, Brown.
- Mayhew, D.R. (1974). *Congress: The electoral connection*. New Haven, CT: Yale University Press.
- National Telecommunications and Information Administration/Department of Commerce (2002). *A nation online: How Americans are expanding their use of the Internet*.
- Owen, D., Davis, R., & Strickler, V.J. (1999). Congress and the Internet. *Press/Politics* 4(2), 10-29.
- Salisbury, R.H., & Shepsle, K.A. (1981). Congressional staff turnover and the ties-that-bind. *American Political Science Review*, 75(2), 381-396.
- Thurber, J.A., & Cambell, C.C. (eds.) (2003). *Congress & the Internet*. Upper Saddle River, NJ: Prentice Hall.

*Kevin M. Esterling is assistant professor of political science at the University of California, Riverside.*

*David M.J. Lazer is associate professor of public policy at the John F. Kennedy School of Government at Harvard University.*

*Michael A. Neblo is assistant professor of political science at the Ohio State University.*

## APPENDIX

### Measurement of the Quality of Web Sites

CMF conducted a three-step content analysis of each member's Web site:

**Round 1.** This first step—the only step to include all 440 House member Web sites—measured 38 criteria relating to the

dimensions of audience, content, interactivity, usability, and innovations. The criteria were defined through focus group, interview, survey, and Web industry research as being the most important elements of a congressional Web site. Some criteria (e.g., rationales for key votes and issue information under the *content* dimension) were measured on a zero- to five-point qualitative scale, while others (e.g., voting records and vote sponsorships) were measured quantitatively; the site either had

Table 3. Criterion used in evaluating Web sites

#### Audience (25% of score)

Criterion	Scoring Standard	Level of Priority
<b>Round 1:</b>		
Constituent interests	(1-5)	1
Recruit interests	(1-5)	2
Press interests	(1-5)	2
<b>Round 2:</b>		
Activist interests	(1-5)	3
Strategic interests	(1-5)	3

#### Content (25% of score)

Criterion	Scoring Standard	Level of Priority
<b>Issue Information</b>		
<b>Round 1:</b>		
Member's key issues	(1-5)	1
"Hot" issues	(1-5)	1
National issues	(1-5)	1
State/local issues	(1-5)	1
<b>Casework and Constituent Services</b>		
<b>Round 1:</b>		
Casework guidance or answers to frequently asked questions	(1-5)	1
Casework initiation instructions	(1-5)	2
Information and links for key agencies for casework	(1-5)	2
Grant information	(1-5)	3
<b>Round 2:</b>		
Internship information	(1-5)	3
Academy information	(1-5)	3
Tour ticket information	(1-5)	3
Flag ordering information	(1-5)	3
Student/kids' page	(1-5)	4
Information about local resources for assistance	(1-5)	3
<b>Accountability Information</b>		
<b>Round 1:</b>		
Vote rationale	(1-5)	2
Voting record	(yes/no)	1
Sponsorships and co-sponsorships	(yes/no)	1

or did not have the element. Additionally, each criterion was assigned a weight that defined the criterion's relative importance to the user's experience. For example, issue information was assigned greater weight than multimedia features. The weight for each criterion was defined through CMF's research. For each dimension—audience, content, interactivity, usability, and innovations—scores were calculated as percents. To determine the overall score for each Web site, CMF assigned

weight to each dimension; *audience and content* were each worth 25% of the overall score; *interactivity and usability* were each worth 20%; and the *innovations* dimension was worth 10%. The scores for this round were then converted into a five-point grading scale ranging from A to F. Figure 2 shows the distribution of grades.

**Round 2.** The second round enabled CMF to differentiate among the highest-scoring Web sites. The 76 highest-scoring

**Content (25% of score) (cont.)**

Criterion	Scoring Standard	Level of Priority
<b>Round 2:</b>		
Information about the member's accomplishments	(yes/no)	3
Member's schedule	(yes/no)	3
<b>Educational Information</b>		
<b>Round 1:</b>		
Information about the legislative process	(yes/no)	1
<b>Round 2:</b>		
Information about what a member does	(yes/no)	3
Information about the committee process	(yes/no)	5
<b>Press Information</b>		
<b>Round 1:</b>		
Press contact information	(yes/no)	2
Press releases by date	(yes/no)	1
Press releases by topic	(yes/no)	1
<b>Round 2:</b>		
Downloadable photos	(yes/no)	5
Op-eds, speeches, and/or messages from the member	(yes/no)	3
Audio/video	(yes/no)	5
<b>Legislative Information</b>		
<b>Round 1:</b>		
Member's committee service	(yes/no)	1
House and/or Senate schedules	(yes/no)	2
Link to Thomas or Thomas search box	(yes/no)	2
<b>Round 2:</b>		
Member's floor statements	(yes/no)	3
<b>District/State Information</b>		
<b>Round 1:</b>		
Member's district schedule or schedule of district events	(yes/no)	2
<b>Round 2:</b>		
Links to district/state information	(yes/no)	3
Photos of constituents	(yes/no)	3
Highlights or features about the district/state	(yes/no)	3
District/state demographic information	(yes/no)	4
<b>Member Information</b>		
<b>Round 1:</b>		
Member's biography	(yes/no)	1
Member's photo	(yes/no)	3
<b>Privacy Information</b>		
<b>Round 1:</b>		
Privacy statement	(yes/no)	1

member Web sites were subjected to an additional evaluation that measured an additional 29 criteria relating to the same dimensions as those in Round 1. These criteria were defined through research as enhancing a visitor's experience on a member's Web site, but they were not identified as being of fundamental importance.

The same methodology was used to calculate scores for each Web site. These scores were then used to further differentiate between sites that were solid A sites and those that were B+ sites.

Table 3 lists the criteria used in evaluating the Web sites as well as the level of priority those criteria received.

**Interactivity (20% of score)**

Criterion	Scoring Standard	Level of Priority
<b>Round 1:</b>		
E-mail updates	(yes/no)	1
Office hours	(yes/no)	2
Web form or public e-mail address	(yes/no)	1
Postal addresses	(yes/no)	1
Phone numbers	(yes/no)	1
Guidance on how to communicate with the office	(yes/no)	2
<b>Round 2:</b>		
Online polls or surveys	(yes/no)	5
Online town hall	(yes/no)	5
Chat room or bulletin board	(yes/no)	5
"E-mail a friend" feature	(yes/no)	5
Staff information	(yes/no)	5

**Usability (20% of score)**

Criterion	Scoring Standard	Level of Priority
<b>Round 1:</b>		
Navigation	(1-5)	2
Timeliness	(1-5)	1
Readability	(1-5)	2
Scannability	(1-5)	2
Search engine	(yes/no)	2
<b>Round 2:</b>		
Consistency	(1-5)	4
Information architecture	(1-5)	3
Look and feel	(1-5)	3
Site map	(yes/no)	3

**Innovations (10% of score)**

Criterion	Scoring Standard	Level of Priority
<b>Round 1:</b>		
To what degree does the site provide innovative features or content that makes the site easier or more interesting to use?	(1-5)	1