Citizen Input in the Budget Process: When Does It Matter Most?

Hai (David) Guo and Milena I. Neshkova

Abstract
Citizen participation in public budgeting processes has been widely advocated by both theorists and practitioners of public administration. Yet there is less agreement on when the public should be brought into the process and how the timing of citizen inclusion affects the outcomes of public agencies. Using survey data about citizen involvement practices utilized by the state departments of transportation (DOTs) across the country, the authors construct citizen input indices for different stages of the budget process and examine the impact of participation on the overall organizational effectiveness. The study results show that citizen participation in the budget process has greatest positive effect on organizational performance at both the early and ending stages of the budget process, namely, the stages of information sharing and program assessment.

Keywords
citizen participation, budget process, participatory budget, GPP

Citizen participation in public budgeting processes has been widely advocated by both theorists and practitioners of public administration. The Government Finance Officers Association (GFOA, 2009) has recommended incorporating citizen input in budgeting processes as one of the best budget practices. Public involvement is praised as a way to inject democracy into decisions made by bureaucrats—who are appointed, operate with delegated authority, and judge on the basis of their specialized knowledge. Although few would deny the normative desirability of involving citizens in administrative processes, public managers are likely to be more interested if there are instrumental benefits that participation can bring to public programs, in terms of better performance (see Moynihan, 2003, for an in-depth discussion on this issue).

Prior research has examined the participation–performance nexus (Beierle & Cayford, 2002; Kathlene & Martin, 1991; Landre & Knuth, 1993; Moynihan, 2003; Neshkova & Guo, 2012, Sirianni, 2009; Thomas, 1990, 1995) and demonstrated that participation can enhance the performance of public programs. This study expands on this stream of research by asking how the timing of citizen participation affects the outcomes of public agencies. We use data on the practices for gathering citizen input utilized by state departments of transportation (DOT) across the

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country in the process of developing their budgets. By exploring the effect of participation at
different stages of the budget process among state DOTs, we seek to understand at which stage
of the process the utilization of citizen input has greater impact on the effectiveness of public
programs. State-level agencies, the unit of analysis in this research, have been the least explored
level of government from this perspective (Ebdon & Franklin, 2006).

We find that citizen input matters most at the beginning and the ending stages of the budget
process. The results show that citizen input during the overall budget process is positively asso-
ciated with greater organizational effectiveness, yet the effect is predominantly driven by the
processes at these two stages. Particularly, citizen input collected during the information shar-
ing and program assessment stages has a greater positive impact on agency outcomes than the
input collected at the budget discussion or budget decision stages. This means that involving
citizens when setting the budget priorities might help agencies better match the preferences of
their constituency. Citizens might be useful not only as consultants at the early stages but also
as judges when assessing the agencies’ results. Such findings demonstrate that the timing of
citizen input in the budget process does affect an agency’s effectiveness.

The article proceeds as follows. The next section discusses the current research on citizen
involvement in public budgeting and how the present study contributes to the body of knowledge
about the timing of citizen participation for achieving greater organizational performance. In the
following section we describe the models and present the estimation results about the varying
effect of participation across the stages of the budget process. The final section discusses the
implications and outlines avenues for future research.

Public Participation in the Budget Process

The literature on citizen participation in the budget process focuses on three main streams: (1)
rationales for involving the public in the budget process, (2) the importance of timing, and (3)
the mechanisms for collecting citizen input. The first stream addresses why governments
involve the citizen in the budget process in the first place. The latter two streams refer to the
process and design of the citizen participation and how they are intertwined. Although this study
focuses on the issues of timing, we review the relevant studies in the other two streams as well.

Rationales for participatory budgeting. Scholars have recognized both the normative and instru-
mental benefits that participation can bring to direct participants in the process, to communities,
and to broader public policies and governance (Beierle & Cayford, 2002; Berman, 1997; Box,
1998; Irvin & Stansbury, 2004; Kathlene & Martin, 1991; King, Feltey, & Susel, 1998; King,
Stivers, & Box, 1998; Nabatchi, 2010; Schachter, 1997; Stivers, 1990, 1994, 1998; Thomas,
1995; Timney, 1998, 2011; Watson, Juster, & Johnson, 1991). The budget process is an important
avenue for making resource allocation decisions, and thus, participatory budgeting allows citi-
zens to have a say in how the taxpayers’ money is spent by government entities. “Key public
policy decisions are made during the public budgeting process, so this would appear to be an
important opportunity for meaningful citizen participation” (Ebdon, 2000, p. 383). Bland and
Rubin (1997) encourage local governments “to involve citizens when community goals are being
developed and to seek their opinion on key policy decisions related to taxation and expenditures”
(p. 104). The underlying logic is that citizens possess local knowledge and better understand the
needs of their communities. Thus, they can provide administrative decision makers with valuable
information that might not otherwise be available and offer innovative solutions to reflect the
unique combination of political, economic, and cultural factors in their communities. Incorporat-
ing citizens’ preference and feedback in the budget process should lead to an allocation of
resources that matches the specific needs of different communities and provides for more effec-
tive public policies.
Franklin and Ebdon (2007) provide three main rationales for engaging citizens in the budget process: (1) Citizens will better understand resource allocation decisions, (2) public officials learn citizens’ preferences, and (3) citizens review public officials’ accountability. They further argue that citizen participation in budgeting fosters democracy, since decision making “involves a group or participants that are more representative and reflect broader preferences” (p. 88). In another study, Ebdon and Franklin point out that the benefits from expanding public involvement in the budget process also include sharing information with the public, educating the public of the complexity of a budget, gaining input for decision making, and enhancing public trust in government. Engaging citizens in the resource allocation process might prevent antigovernment sentiment and distrust (Ebdon & Franklin, 2006) and help citizens develop greater appreciation of the role of administrators (Ho & Coates, 2006).

Yet broader participation in budgeting has been limited due to the public’s lack of knowledge about the process (Beckett & King, 2002; Callahan, 2002; Franklin & Ebdon, 2004; Robbins & Simonsen, 2002). Both managers and citizens often view public budgeting as a complicated and thorny administrative task that should be handled by experts who possess specialized knowledge, technical skills, and years of experience. In addition, public participation is costly and time consuming, which grants another argument for limiting public involvement in allocation decisions (Callahan, 2002; Ebdon & Franklin, 2006; Irvin & Stansbury, 2004; Robbins, Simonsen, & Feldman, 2008; Thomas, 1990).

Timing of citizen participation. Whereas the costs and benefits of having engaged citizenry have been widely discussed in the literature, few have paid attention to the question of timing, or at which stage of the budget process the public should be brought in, or how the timing of public involvement affects the performance of public agencies. Prior research points out that the public should be involved in the early stages (Beckett & King, 2002; Berner, 2003; Callahan, 2002; Ebdon, 2002; Ebdon & Franklin, 2006). “Timing is important because input that is received late in the process is less likely to have an effect on outcomes” (Ebdon & Franklin, 2006, p. 439). For Callahan (2002), solicitation of citizen input early in the budget development is the most important indicator of the process effectiveness of citizen participation. Berner (2003) surveys North Carolina’s city and county managers and finds that they all value the early timing of public participation and recommend that citizens get involved in the beginning of the process: “Citizen input should come at a point when a recommended budget is sufficiently developed to provide information that can assist citizens in giving input, but before the Board has made decisions or formed opinions” (p. 471).

When engaged early in the process of budget development, citizens become knowledgeable about fiscal situations, which in turn allows them to make informed decision when casting votes on fiscal matters (Beckett & King, 2002; Ebdon & Franklin, 2006). Drawing on the example of citizen initiatives aiming to limit the taxing power of the government, Beckett and King (2002) demonstrate that uninformed citizens tend to consider short-term private gain instead of long-term public benefit. Furthermore, they argue that engaging the public in a deliberative way during the budget process contributes to more meaningful public participation. Similarly, Ebdon (2002) suggests that “one way to help citizens develop a more macro level view of budget trade-offs is to combine education and participation early in the process, at the budget development stage” (p. 291).

The literature offers some compelling examples of seeking citizen input early in the budget process. Johnson (1998) shows how Hillsborough County commissioners held public hearings on both the operating and capital budgets in the budget development stage, so that public opinions had a chance to make a difference when the elected officials deliberated the budget. Simonsen and Robbins’s study (2000) on public participation in Eugene, Oregon, provides another example of involving citizens early in the budget process. Before making the final decision on strategies to balance the budget in 1991 and 1992, the city council used various strategies such as public forum, budget exercise, and survey to collect citizen input.
Yet seeking public input early in the process does not seem to be the prevailing practice among local governments. Based on an ICMA survey, Ebdon (2000) finds that less than 20% of cities have meetings prior to the budget development and about 94% of cities make their budget available to the public during the budget consideration stage. Another study by Ebdon (2002) shows that most of the sampled city governments have collected citizen input during the legislative consideration stage rather than during the budget development stage, even though the actual participation rate has been low during the legislative consideration stage. Ebdon and Franklin (2004) examine citizen participation in the budget process of two cities of Kansas—Wichita and Topeka—and find that it is used “either right before the proposed budget was finalized or after the city council had held budget work sessions” (p. 45).

Budgeting is a repetitive process. Seeking citizen input early in the development stage may affect the decision on resource allocation in the current budget cycle. Citizen participation at the evaluation stage, however, may provide constructive suggestions and recommendations for the next budget cycle. Miller and Evers (2002) link the question about when to get citizens involved in the budget process with the characteristics of current policy issues. They suggest that citizen participation is good for “budget knots” and tractable issues, which require a planning process and have short-term or long-term impacts on operating budgets. Performance evaluation is regarded as one of the tractable issues well suited for citizen participation: “performance evaluation deals with what expectations citizens have for the performance of existing services as well as new services, and can involve everyone in defining how well agencies perform now, how they should perform, how this performance should be measured, and how these measures and the performance itself should be evaluated” (p. 238).

Mechanisms for seeking public input. Scholars have extensively studied the various mechanisms of seeking public input. The list of various strategies is long, including citizen survey, public meeting/hearing, focus group, budget simulation, and citizen budget advisory committee (Callahan, 2002; Ebdon, 2002; Orosz, 2002). Each mechanism has its own advantages and disadvantages, and the degree of citizen engagement varies among different citizen participation mechanisms. For example, budget simulation allows citizens to better understand the trade-off in the resource allocation process but requires more time and higher costs (Ebdon & Franklin, 2004; Simonsen & Robbins, 2000). Public meetings provide for two-way communication, but attendance rates have been chronically low (Ebdon, 2002). Surveys are representative and useful for revealing citizens’ needs and satisfactions (Hassett & Watson, 2003); however, questions can be misleading and the information only flows in one direction. Ebdon and Franklin (2004) suggest that citizen participation mechanisms involving a two-way exchange are more effective than those allowing for only one-way communication. They also argue that the use of multiple methods can compensate for the disadvantages that might occur when used separately. Franklin, Ho, and Ebdon (2009) find that it is a common practice in mid-Western cities to combine a public hearing with either a budget meeting or other type of direct citizen interaction. Their study further indicates that elected officials show preference for mechanisms of public involvement that allow for direct communication with citizens over more formal tools like citizen surveys as well as mechanisms that address micro-level issues over those tackling macro-level issues. Timney (2011) develops a scorecard for citizen participation mechanisms based on the level of collaboration and interaction between public agencies and citizens. The scorecard categorizes citizen participation mechanism into 10 levels ranging from noncommunicating mechanisms to those allowing citizens to make decisions. Timney regards collaboration between the citizen and public managers as the key element of active citizen participation.

Does the choice of participatory mechanisms vary among different budget stages, though? Berner (2003) finds that traditional public participation mechanisms like public hearings usually take place at the end of the budget process, whereas less traditional mechanisms like surveys and neighborhood meetings tend to take place in the early or middle stages of the budget process.
Ebdon (2000) shows how council-manager cities utilize citizen participation in the budget process. Less than 20% of the sample cities hold meetings prior to budget preparation. And most of the participation mechanisms used in the budget consideration stage involves one-way communication.

In sum, the timing of public participation in the budget process is essential to the success of participatory budgeting. Yet our knowledge about when to get citizens involved in the process is limited to normative claims and qualitative examples. Prior research suggests that citizens should be engaged early, at the budget preparation stage, so that their preferences can be reflected during legislative deliberation on the budget. When involved at the evaluation stage citizen can influence allocation choices in the next budget cycle. The literature provides numerous examples of public outrage when citizens are brought into the process after all important decisions have already been made. This study contributes to participatory literature by studying whether citizen input collected at various stages of the budget process has different effects on the outcomes of public programs. Based on the extant research on the issue, we expect that including citizens at the budget development stage and the evaluation stage will have greater impact on the overall performance of stage agencies compared to the other stages. We define performance here in a narrow sense as related to the outcomes of public programs.

Data and Method

This article uses data about practices of seeking citizen input in the budget process from the state DOTs. We focus on transportation for both theoretical and practical reasons. First, transportation issues are of great concern to citizens as they affect their daily lives. Kathlene and Martin (1991) show that citizen participation in transportation decisions leads to more effective solutions. Yet the complexity of transportation issues requires specialized knowledge in order to be tackled effectively, which may be an obstacle to achieving broader public participation in the decision-making process of transportation agencies. Second, the state DOTs share similar responsibilities related to the development and maintenance of state transportation systems. This paper focuses on highway transportation, as state DOTs historically started as highway agencies (Goetz, 2007).

Our data about citizen input collected by the state DOTs come from the 2005 Government Performance Project (GPP). Besides examining the management performance of the overall state government, the 2005 GPP also drills down to the agency level, including state DOTs. The GPP project has availed scholars with a useful data set to conduct research related to state governments’ management and performance (Jimenez & Pagano, 2011; Krueger & Walker, 2010; Neshkova & Guo, 2011; Reid, Riemeneschneider, Allen, & Armstrong, 2008; Rubin & Willoughby, 2009; Selden & Orenstein, 2011; Yusuf, O’Connell, Hackbart, & Wallace, 2008; Zhao & Guo, 2011). The Bureau of Transportation Statistics provides data for the dependent variables and controls. We pool three years (2003-2005) of data on DOT’s effectiveness and control variables to have a total of 117 cases for our analysis. Our rationale for pooling these three years of data is that the assessment of state management practices in the 2005 GPP project is based on the information collected from 2002 to 2004. By doing so, we assume that citizen input will have lagged effect on DOT’s effectiveness.

Empirical Model

We model the organizational effectiveness as a function of citizen input, our main explanatory variable, and controls. Based on the responses of previous studies of organizational performance (e.g., Meier & O’Toole, 2003; O’Toole & Meier, 1999), we controlled for past organizational performance, task difficulty, and agency resources.
Dependent variables. Organizational effectiveness captures the organization’s intended outcomes and desired ends beyond economic valuation (Poister, 2004; Richard, Devinney, Yip, & Johnson, 2009). For example, the vision statement of the Florida Department of Transportation—“Serving the people of Florida by delivering a transportation system that is fatality and congestion free”—provides a good illustration of the goals pursued by most state DOTs. This study uses public road condition and highway fatality rate to measure the effectiveness of state DOTs. Based on the International Roughness Index and Present Serviceability Rating, states’ public roads are rated as very good, good, fair, mediocre, and poor. Thus, the first dependent variable, ROADCON, is the percentage of roads for which the condition is rated below good. The second dependent variable, FATALITY, is the highway fatality rate per 1,000 million vehicle miles traveled in each state. The two variables are operationalized so lower values of the measures are associated with greater effectiveness of state DOTs and vice versa.

Key independent variable. In order to understand how citizen input utilized at different budget stages affects state DOTs’ performance, we first need a measure of citizen input for each state DOT at each budget stage. The citizen input data were collected as part of the GPP project, which used an online survey to gather information about state government performance in major management areas. Under the financial management section, the survey inquires whether and how states’ DOTs seek citizen input during the budget process. The underlying rationale is that involving citizens enhances the transparency of the budget process and, thus, improves governments’ accountability and responsiveness. The survey question states, “We are interested in any strategies that your agency has used to generate input from citizens concerning budget priorities, development and/or assessment. Specifically, if your agency has engaged in any of the strategies below to gain citizen input, indicate if the strategy has been useful in terms of the outcomes listed. (Check all that apply for each strategy.).” The citizen input strategies listed include citizen surveys, budget simulations, focus groups, open forum, public hearing, citizen advisory boards, and other. The administrators of state DOTs were asked to check any of citizen input strategies utilized at different stages of the budget process. The survey question identifies four stages of the budget process: (1) information sharing, (2) budget deliberations and discussions, (3) budget decisions, and (4) program assessment.

Table 1 summarizes the utilization of different strategies at each stage of the budget process by state DOTs. The format of the table is consistent with the layout of the original survey question. Apparently, most state DOTs pursue greater citizen involvement at the information sharing stage than at the other three stages, regardless of the type of the citizen input strategies. Telephone hotlines and citizen surveys are less popular at the stage of budget discussion and budget decision than at the stage of program assessment. There is no apparent difference of the utilization of citizen input strategies like focus groups, open forums, and public hearings among the latter three stages. A citizen advisory board is used more at the information sharing and budget decision stages than at the other stages. Among all citizen input strategies, budget simulation exercise is the least used method at any stage.

On the basis of the responses of the state agencies, we construct a citizen participation index, which is a numerical count of different citizen input strategies used at each stage of the budget process. Thus, each state DOT will have five citizen participation index scores—four scores for each stage of the budget process and one overall score summing all strategies used during the entire budget process. For example, if a state DOT uses three strategies at each stage of the budget process, the citizen participation index of this state DOT scores 3 respectively at information sharing stage, budget discussion stage, budget decision stage, and program assessment stage, and the overall citizen index score for this DOT is 12.

As Ebdon and Franklin (2004, p. 35) comment, “Governments using more than one method on a regular basis might be more likely to attain effective participation by offsetting the
weaknesses of one method with the advantages of another.” The more strategies used the more chances for citizens to get involved and communicate with administrators. Thus, the summative index serves as a proxy for the degree of public involvement in the budget process of a particular state DOT.

Table 2 presents the summary statistics of the citizen input index. The maximum possible score is 7 for each budget stage and 28 for the overall index. None of the state DOT reported using all seven citizen input strategies at every stage; thus, the range of the overall index score is from 0 to 25. Higher index scores indicate greater use of citizen input by state DOT at each of the budget stages and during the overall process of resource allocation.

Admittedly, there are several caveats to this index. The first caveat is related to the limitation of the survey data. The survey question is only asking the personnel in state DOTs about participation activities in the budget process at state level in general, without referring to specific capital projects. The survey was sent to the highest possible administrator in DOTs, who then asked appropriate personnel in the agency to fill in the survey. We assume that administrators who completed the survey possessed full knowledge of the citizen participation activities in each DOT. Lacking information regarding the location of participating citizen within the state, we assume that individuals have similar tax and spending preferences. Thus, citizen input will not differ depending on where the citizen lives within the state. Therefore, we assume that individuals have similar tax and spending preferences. Thus, citizen input will not differ depending on where the citizen lives within the state. Therefore, we assume that participation rate is not affected by any form of sorting or location choices made by the citizen. Second, the index only indicates the number of citizen input strategies used at each budget stage but not the frequency of their usage. Third, each strategy carries the same weight. The effectiveness of seeking citizen input may vary among strategies. This additive index does not capture the differences in the quality of the participation techniques or their appropriateness. Furthermore, the index does not consider how well each strategy is implemented. In sum, the index used in this study serves as an ordinal indicator of the degree of citizen input utilized by state DOTs, without accounting for the quality of input gathered under each strategy, the appropriateness of the technique, or the quality of its execution.

Control variables. In the construction of our control variables, we followed the approach of Meier and O’Toole (e.g., Meier & O’Toole, 2003; O’Toole & Meier, 1999) in their studies on
how managerial networking affects school performance in terms of educational outcomes. Thus, our control variables include past performance—with a one-year lag of the dependent variable, and two types of environmental variables, both the constraints and resources that state DOTs face while working toward their intended goals.

Among constraints, we identify three measures to capture the task difficulty of state transportation agencies. The first variable is related to the need to maintain the quality of the public road system. The total length of the public goods provides a rough estimate of the workload of state DOTs. We operationalize it as the natural log of the length of public roads (LGLENGTH). The second constraint variable is the proportion of vehicle-miles traveled by trucks (TRUCK). The quality of the road depends on the type and volume of the traffic. Trucks are heavier than passenger cars and can cause more damage to the public roads. Finally, we include the proportion of urban lanes (URBANLANE). The urban lanes undertake more traffic than rural lanes do. We expect that all constraint variables will exert negative impact on a state DOT’s effectiveness, measured in terms of road condition.

In the model using fatality rate as the measure of DOT’s effectiveness, these three variables still function as constraints, as longer roads, more truck traffic, and more urban lanes are associated with more accidents on the road. We also include the road condition as a constraint in the fatality model, since poor-quality roads may lead to a larger number of accidents.

Besides the variables capturing the task difficulties, we also include a set of variables to tap the effect of the resources that state DOTs have on hand. Having more resources does not necessarily lead to better performance; however, it does enable an organization to pursue its goals. We expect that resources will exert positive impact on state DOTs’ effectiveness in terms of both better road condition and lower fatality rate. State DOTs’ revenues for highways consist of highway-user revenue (motor-fuel taxes, motor-vehicle and motor carrier taxes, and road and crossing tolls), appropriations from state general fund and other state imposts, and bond proceeds and payment from other governments. Federal funding is an important part of state DOT’s revenue sources, which on average takes up to 30% of state DOT’s revenue for highways. To capture the effect of resources, we include the natural log of total revenues used for highways per square mile (LGTOTALREV), the natural log of highway-user revenues per square mile (LGHWUSERREV), the natural log of federal funding to highway per square mile (LGFEDFUND), and the percentage of federal funding to the total revenue (FEDPERCENT). Finally, in the model of effectiveness, measured as fatality rate per 1,000 million-vehicle mile traveled, we add a variable controlling for law-abiding behavior of highway users. Research on highway safety shows that increased seat-belt use is significantly correlated with fewer car occupants’ deaths (Robertson, 1996). The variable (SEATBELT) is operationalized as the percentage of drivers and front-seat passengers wearing safety belts. We expect a negative association between seat-belt use and number of auto fatalities. Table 3 contains descriptive statistics of the variables in the models.
To account for the econometric issues presented by the pooled panel data such as contemporaneous correlation and panel heteroskedasticity autocorrelation, we estimate a panel-corrected standard error (PCSE) model with AR (1) parameter. It is possible that shocks or unobserved factors may affect state DOTs’ effectiveness simultaneously, which cause the contemporaneous correlation. The significant variation in our dependent variables may produce heteroskedastic error terms. We performed the Pesaran’s test for cross-sectional dependence, modified Wald test for groupwise heteroskedasticity, and Wooldridge’s (2003) test for autocorrelation. The test results show the presence of these problems in our model specification. We use the PCSE approach to correct for these problems, as suggested by Beck and Katz (1996) to correct for these problems and obtain sets of clear predictions about the effect of the independent variables on organizational effectiveness.

### Findings

Tables 4 and 5 present the results of PCSE estimations with road condition and fatality as dependent variables, respectively. Each table contains the results of five models using the overall citizen input index and a subindex for each budget stage as the key independent variable. We seek to identify at which stage the input from citizens makes the greatest difference in the level of agency’s performance. The $R^2$ values show that the models can explain more than 92% of variation of the dependent variables.

#### Table 3. Summary Descriptives of Variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency measure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROADCON % of miles of road rated below good quality</td>
<td>59.72</td>
<td>15.25</td>
<td>14.45</td>
<td>92.74</td>
</tr>
<tr>
<td>Effectiveness measure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FATALITY Annual fatality rate per 1,000 million vehicle miles traveled</td>
<td>15.29</td>
<td>4.01</td>
<td>8</td>
<td>24.1</td>
</tr>
<tr>
<td><strong>Independent variables (controls)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task difficulty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LGLENGTH Log of public road length in miles (in thousands)</td>
<td>10.98</td>
<td>0.94</td>
<td>7.27</td>
<td>12.62</td>
</tr>
<tr>
<td>TRUCK % of truck miles traveled</td>
<td>10.87</td>
<td>3.66</td>
<td>3.08</td>
<td>24.23</td>
</tr>
<tr>
<td>URBANLANE % of the length of urban lanes</td>
<td>27.99</td>
<td>20.59</td>
<td>2.29</td>
<td>82.61</td>
</tr>
<tr>
<td>SEATBELT % of drivers and front-seat passengers with safety belts</td>
<td>78.93</td>
<td>8.96</td>
<td>50</td>
<td>95</td>
</tr>
<tr>
<td>Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LGTOTALREV Log of total revenues used for highways per square mile (in thousand)</td>
<td>9.88</td>
<td>1.35</td>
<td>5.75</td>
<td>12.66</td>
</tr>
<tr>
<td>LGHWUSERREV Log of highway-user revenues per square mile (in thousand)</td>
<td>10.98</td>
<td>0.94</td>
<td>7.27</td>
<td>12.63</td>
</tr>
<tr>
<td>LGFEDFUND Log of federal funding for highway per square mile (in thousand)</td>
<td>31.55</td>
<td>12.32</td>
<td>9.41</td>
<td>66.57</td>
</tr>
<tr>
<td>FEDPERCENT % of federal funding to state total revenue for highway</td>
<td>7.23</td>
<td>1.71</td>
<td>3.47</td>
<td>11.07</td>
</tr>
</tbody>
</table>

#### Estimation Routine

To account for the econometric issues presented by the pooled panel data such as contemporaneous correlation and panel heteroskedasticity autocorrelation, we estimate a panel-corrected standard error (PCSE) model with AR (1) parameter. It is possible that shocks or unobserved factors may affect state DOTs’ effectiveness simultaneously, which cause the contemporaneous correlation. The significant variation in our dependent variables may produce heteroskedastic error terms. We performed the Pesaran’s test for cross-sectional dependence, modified Wald test for groupwise heteroskedasticity, and Wooldridge’s (2003) test for autocorrelation. The test results show the presence of these problems in our model specification. We use the PCSE approach to correct for these problems, as suggested by Beck and Katz (1996) to correct for these problems and obtain sets of clear predictions about the effect of the independent variables on organizational effectiveness.
Our data support the hypothesis that citizen participation is positively associated with greater organizational performance. Our estimation results show that in general if a state DOT adopts more citizen input strategies in the budget process, it achieves better outcomes. In other words, other things held equal, more citizen participation in the budget process is associated with fewer poor-quality roads and less fatalities on state highways. Moreover, the effect of the citizen participation at different budget stages shows similar pattern between models with road condition and fatality rate as dependent variables. In terms of road condition, citizen participation makes a difference at all but the discussion stage. The coefficients of citizen input are statistically significant at every budget stage in the model of fatality rate. In terms of the magnitude, the coefficients of citizen input are greater at the information and assessment stage in both models.

We start the discussion with the road condition models (Table 4). The coefficients of CITIZEN INPUT are negative and statistically significant in the overall model and three stages (excluding discussion stage), ranging from \(-.10\) and \(-.54\). Other things held equal, the estimation results show that greater utilization of citizen input in the overall budget process and at the stage of information sharing, budget decision, and program assessment is associated with less public roads rated below good quality. The variable lacks statistical significance in the discussion stage, though the sign is negative as expected.

Among the control variables, past performance—the autoregressive term—is the most important explanatory variable. The coefficient of past performance in the road condition models (Table 4) ranges from \(.92\) to \(.94\) indicating that the proportion of public roads rated below good quality

<table>
<thead>
<tr>
<th>Table 4. Panel Regression Coefficients for the Models of Effectiveness—I.</th>
<th>Overall</th>
<th>Information</th>
<th>Discussion</th>
<th>Decision</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITIZEN INPUT</td>
<td>(-0.10^*)</td>
<td>(-0.26^{**})</td>
<td>(-0.10)</td>
<td>(-0.20^*)</td>
<td>(-0.54^*)</td>
</tr>
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<td>(R^2)</td>
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<td>0.93</td>
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</table>

Note: Models provide coefficients from linear regression estimations with a common AR(1) parameter; panel-corrected standard errors (PCSE) are in parentheses. The dependent variable, ROADCON, is % of miles of road rated below good quality.

\(^*p < .05. ^{**}p < .01.\)
in the current year is largely dependent on that of the previous year. Even though this coefficient is close to 1, the past does not entirely determine the current performance.

Among the task difficulty control variables, URBANLANE has a positive sign and is statistically significant at every budget stage and in the overall model, which indicates that a state with a higher proportion of urban lanes tend to have more public roads rated below good. None of the resources-related control variables shows significant impact on road conditions.

In the fatality rate models (Table 5), the coefficients of citizen input measure are negative and statistically significant in all the five models ranging from –.04 to –.15. Among the four stages of the budget process, the coefficient of citizen input at the assessment stage is the largest, followed by the information sharing stage and discussion stage. Combined with the road condition model, it seems that the effect of citizen input on state DOT’s effectiveness is greater at the information sharing and program assessment stages than at the other two stages.

The results of the fatality models confirm that past performance is a strong predictor of current performance. The previous year’s fatality rate has a statistically significant impact on the fatality rate in the year after. Yet the distance of the coefficient of past performance (about .89)

### Table 5. Panel Regression Coefficients for the Models of Effectiveness—II.

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<tr>
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<th>Overall</th>
<th>Information</th>
<th>Discussion</th>
<th>Decision</th>
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<tr>
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<td>Intercept</td>
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<td>$R^2$</td>
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<td>0.93</td>
<td>0.93</td>
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Note: Models provide coefficients from linear regression estimations with a common AR(1) parameter; panel corrected standard errors (PCSE) in parentheses. The dependent variable, FATALITY, is the state fatality rate per 1,000 million vehicle miles traveled.

* $p < .05$. ** $p < .01$. 

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from 1 is greater in the fatality rate models than in the road condition models, which shows that past performance cannot entirely explain the current performance. TRUCK is the task difficult control variables that show significant impact on fatality rate in the overall model and at information sharing and discussion stage. The positive sign indicates that having more trucks on state roads is associated with more deaths. None of the resources-related control variables are statistically significant in the fatality model.

The findings from the models using both road condition and fatality rate as dependent variables are consistent with the expectations put forward by Stivers (1990) and Roberts (1997), who both argue that citizen participation leads to smarter public policies. Yet the input collected at some stages of budget development exerts greater effect than does the input collected at other stages. The evidence presented here from the models of different stages of the budget process shows that citizen input is most crucial when utilized at the information sharing and assessment stages.

**Conclusions**

Finding the right balance between the requirements for expertise and responsiveness in bureaucratic decision making is a fundamental dilemma of the modern administrative state. The extant research on citizen involvement argues that an engaged citizenry has the potential to solve a range of problems related to widespread distrust in government and to generate some important benefits for the participants in the process, such as educating them about the intricacies of policies and increasing the understanding on where both citizen and administrators stand on issues. Scholars (e.g., Fung, 2004; Moynihan, 2003; Roberts, 1997; Stivers, 1990) have contended that public participation can lead to innovative decisions, help avoid costly mistakes, and, thus, contribute to better performance of public programs. This study builds from this intellectual background, but it goes further by asking when in the process does citizen input make a greater difference.

Using data about practices of seeking citizen input during the budget process from state DOTs across the country, we were able to examine the relationship between citizen participation at various budget stages and the effectiveness of state DOTs. Our findings demonstrate that citizen participation in the budget process is positively associated with achieving better program outcomes, when organizational outcomes are measured in terms of traffic fatalities and road condition. Yet the strength of the association varies among different budget stages. Specifically, our estimation results suggest that the association is stronger at the stages of information sharing and assessment than at the stages of discussion and decision.

This study has both theoretical and practical implications. Ebdon and Franklin (2006) point out several gaps in the body of knowledge on citizen participation in public budgeting. One of them pertains to the lack of empirical evidence about the outcomes of citizen participation. The other is related to the limited amount of studies on participation beyond the level of the city government. This study contributes to the literature on both fronts. The empirical analysis provides evidence that citizen input in public budgeting enhances organizations’ performance. The unit of analysis is the state agency rather than city government, which broadens scholarly understanding about the effects of participatory processes across the levels of government.

In a practical sense, our results suggest that the utility of citizen participation at various stages of the budget process differs. Our results show that citizen input matters more at the stages of information sharing and program assessment. This means that public managers should seek public input at these stages not only because it is normatively desirable but also for the very practical reasons of achieving better performance. When conveyed at the information sharing stage, citizens’ preferences can be taken into account by decision makers and incorporated into the budget
priorities. Such allocation of resources should also better reflect the needs of particular communities. This result provides empirical support for the claims that the public should be engaged at the early stage of the budget process (Beckett & King, 2002; Ebdon, 2002, 2006; Franklin & Ebdon, 2004; Robbins & Simonsen, 2002). Our data reveal that the inclusion of citizens is of great importance at the ending stage of the budget process as well. The program assessment stage provides a good venue for citizens to provide feedback on the program implementation and results, so that improvements can be pursued in the next budget cycle. Participation at the stages of budget discussion and budget decision also has a positive and significant impact on program outcomes, as indicated by the models with fatality rate as the dependent variable. Yet these effects do not hold in the models where road condition is used as the dependent variable. Our estimation results show that citizen participation plays a relatively less important role at the stages of budget discussion and budget decision. The complexity of the budget process at these two stages may mitigate the effect of public participation.

Although widely advocated, citizen participation in public budgeting remains relatively understudied. This empirical study focuses on the question of when to get citizens involved by exploring whether the impact of public participation differs at various budget stages. We envision several avenues for future research. First, there is still no complete understanding about the effects of various participatory mechanisms on the results achieved by public agencies. The extant literature agrees that there is no one perfect method. What then is the effect of mixing different participatory methods on agency performance? What are the appropriate mixes and do they vary depending on the political, economic, and cultural environment in which public agencies operate? Are they contingent upon the stages of the budget process at which they are utilized? Second, we only examine here the effects of participation in the setting of one state agency—DOT. Since state DOTs may have some unique characteristics that make them less typical than other state agencies, future research should test whether the effects registered here hold in terms of other state agencies, with newer and more refined data. It would be particularly useful to investigate the effect of the 2010 stimulus money devoted to transportation projects on citizen participation processes. Third, researchers might want to explore the timing of participation beyond the budget process. Budgeting is an important policy area as it involves making decisions on the allocation of scarce public resources. Yet focusing on the budget process limits our ability to understand public participation that is driven by substantive policy issues or by design of particular public projects. Even further, future research might explore whether the results reported in this study can be generalized to other policy areas and, more broadly, to the stages of the policy process.

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Notes
1. The sample includes 28 cities with population more than 25,000 in four Midwest states: Iowa, Kansas, Missouri, and Nebraska.
2. The Government Performance Project (GPP) is a periodic survey conducted of state government management practices in the areas of human resources, budgeting and financial management, infrastructure, and information. The project is sponsored by The Pew Charitable Trusts and its Center on the States and involves both academic and journalist partners for the collection, analysis, and reporting of data. A
complete accounting of this research methodology, survey development, responses, and analyses of the GPP survey is posted at: http://www.pewcenteronthestates.org/gpp_report_card.aspx (Pew Center on the States, 2005). This article was developed using data from a number of sources, including that generated by the GPP. The views expressed here are those of the authors and do not necessarily reflect the views of the GPP or the Pew Charitable Trusts.

3. The GPP online survey was distributed to all 50 states; therefore, each state DOT (department of transportation) was asked to respond to the citizen input questions. The response rate to this particular question is 78%, which means 39 state DOTs provided valid answers to this question.

4. The results of the 2005 GPP was released in 2005; however, the online survey was launched in 2004. The responses to the citizen participation question was based on information prior to 2004.

References


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