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Organizational Structures and State Departments of Transportation

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Introduction

In the last 30 years, state transportation agencies have undergone many organizational changes. Originally, state Departments of Transportation (DOTs) were organized in a hierarchical structure, with a primary executive guiding the various transportation functions. Today, 37 states have broken from the traditional mold, moving away from a single political appointee making important policy decisions, to an organizational structure with a quasi-independent body of experts making major decisions. Other states, such as Kentucky, while still retaining a more traditional model, are also considering making similar changes. Despite the large shift in organizational structure, and the likelihood it will continue, little research has been conducted evaluating this change and the effect it may have on efficiency and performance of state transportation systems.

Researchers at the University of Syracuse Maxwell School of Public Affairs have conducted a multi-year analysis of the management capacity at the state and local levels of government, called the Government Performance Project (GPP). Their analysis is particularly applicable to the study of state DOTs, as they provide an evaluation mechanism or “report card” for states in various areas such as construction and maintenance of highway roads, completion of construction projects in a timely manner, and project selection (Government Performance Project, 2001). Though these measures are imprecise, they do provide a starting point to analyze the performance of state DOTs. This study will therefore incorporate the GPP analysis with my own analysis of state transportation law in an effort to answer the following questions:

- What are the common governance and management functions for each commission?
- Do states with a transportation commission receive a higher “report card” score from the Government Performance Project?

- Do state transportation commissions, that have a greater involvement role in the five common governance and management, receive higher “report card” scores from the Government Performance Project, than those with a limited involvement role?

The remainder of the paper has the following organization. Section I highlights why organizational structures are important. Section II defines the objective of the paper. Section III presents the data and methodology. Section IV presents the results and interpretations. Section V discusses the limitations of the paper, areas of future research, and a recommendation for policy makers.

Section I: Importance of Organizational Structures

Since the 1940s, researchers have analyzed the role organizational structures play in the profitability of private organizations. Previous research suggests that organizational structures have an important effect on the performance and efficiency of the organization (Decanio, Dible, and Amir-Atefi 2000; Bingham 1978; and Barnett and Finnemore 1999). Performance characteristics, such as innovation and profitability, directly influence the behavior of an organization because they enter the plans and calculations of the management (Decanio, Dible, and Amir-Atefi, 2000). Though the overall goals of private sector entities may not be the same as those in the public sphere, there remains the common goal of high performance and achieving efficiency. In the same way that organizational structures have either promoted or impeded the efficient private organization in its pursuit of performance, we would expect the organization to also be a player in any dimension of public sector performance and efficiency.

High performance and efficiency are desired goals for government agencies because of

their need to be accountable to the public and their many stakeholders. Government agencies must be efficient in their use and management of public funds, and must perform satisfactorily in providing services and being responsive to the needs of their citizen constituents.

Organizational structure should affect the economic efficiency of an entity. Efficiency in regards to public sector agencies refers to how well agencies are able to use funds in a cost-effective manner in areas pertinent to service delivery. Efficient use of state funds is particularly important to state agencies, as most state agencies must serve more constituents with fewer dollars. States are currently facing one of the severest budget crises periods in 20 years, with over 30 states running unconstitutional deficits (Lockwood and Brinckerhoff, 2003). State DOT budgets have been hit particularly hard with a decline in revenues, an increase in demand for services, and additional expenses generated by new anti-terrorism policies.

Efficiency issues are also closely tied with how well a state DOT can respond to its constituents through the delivery of services. Though previous researchers have investigated the impact of organizational structures in performance areas such as innovation and profitability, little research has been conducted on performance from the prospective of responsiveness. Specifically, does the organizational structure impact the DOTs responsiveness to the transportation needs of its constituents? It seems likely that a transportation agency, with a commission composed of citizen experts, would be more responsive to constituents, than would an agency composed of political appointees.¹

Clearly, organizational structures affect many different aspects of state DOTs. Over the years, many theories, models, and principles have been developed for managing organizations, however, organizational theorists are unable to provide state agencies with a “best practice”

¹ In most commission states the commission members are appointed by the governor, though they are protected from office removal due to unpopular policies with the administration in statutory law.

model (National Cooperative Highway Research Program). As one report surmised:

“No single institutional model or approach to management can take in every consideration or deal with every challenge, and no management prescription will work in every organization or environment. Management theories, principles and practices are continuously evolving and the public administration community has not and may never come to an agreement on the definition or techniques for achieving the ideal government organization.”

Therefore, states must experiment with different structures and models until they find a system that works best for them. In the last 30 years, state DOTs have been reorganizing their organizational structure, with some states moving to a more centralized system and others toward a decentralized system.² One common trend that has emerged from a majority of the states is that state DOTs are more likely to have a quasi-independent body composed of transportation experts and individual citizens making major transportation decisions in areas such as public policy, long and short-term planning, financial management, and project selection. States vary in the official title they attach to these bodies, such as commission, agency, or board, though they generally perform similar functions.

Section II: Research Objective

Given that no previous research has been conducted evaluating the evolution and implementation of commissions in state DOTs, this paper will attempt to provide a preliminary analysis. In addition to determining which states have commissions present in their organizational structure, this research is designed to assess the five common governance and management functions of state DOTs (with a commission present) and the relative power the

commission has over these five areas.

Two Hypotheses

Hypothesis I: States with transportation commissions will have higher performance scores for capital management, than will states where there is no commission present.

Commission states should receive higher performance scores because their members are more insulated from the political process than are traditional DOT officials. Traditional DOTs are lead by political appointees (eg. Secretary of Transportation), who may feel pressured to include projects that are not in the states best interest or that may not have adequate funding. For example, Kentucky's statute specifically allows state legislators to add additional projects to the six year plan, without finding a funding mechanism for those projects. Most commission members are insulated from political pressures and (hopefully) are more likely to act in the states best interest. Commission members are more insulated because of statutory protections. Some states have formal processes to remove commission members, while other states completely prevent the removal of members until their term has expired. Thus, neither the governor nor the legislature can arbitrarily remove commission members for political reasons. There are also statutory regulations that prevent the governor from simply naming political followers to the committee. These include regulations such as approval from the state senate, regional membership, expert qualifications, and political party restrictions.

Hypothesis II: States transportation commissions that have "greater involvement" in the five governance and management functions, will have higher performance scores for capital management, then will states with limited involvement in the five governance and management functions.

² Though this paper does not address the change in centralization or decentralization of a state agency with a commission, future research in this area would be interesting.

States with transportation commissions that have “greater involvement” in the five governance and management functions should receive higher performance scores because they control more of the processes the GPP evaluates in its “report card” scores. The GPP specifically evaluates item such as whether a project is completed in a timely manner, whether the project cost more than was originally projected, and how the project fits into the overall capital expenditure plan (Government Performance Project, 2001). Commissions that have greater involvement in the five governance and management functions, described below, should have higher performance scores.

Section III: Data and Methodology

We gathered data from several sources to determine (a) whether a commission is present in the DOT organizational structure and (b) the degree of involvement in five governance and management functions.³ The primary data source is the state statutory laws, though State DOT web sites are also used. After an initial analysis of the statutes, we devised a systematic coding scheme to analyze each statute (See Appendix 1).

After determining which states had transportation commissions, we created a Commission Involvement Index based on five governance and management functions of the state DOT. The following rating scheme was: 1 for limited involvement, 2 for average involvement, and 3 for greater involvement. The five governance and management functions used to create the index are:

1) *Policy-making*: Policy making encompasses determining statewide transportation policy, in addition to departmental policies such as rules and regulations pertaining to the administration

³ Collection and analysis of the state transportation statutes were conducted between June – September, 2004 by Wie Yusuf and I.

and operations of the Transportation Department.

2) *Short-term Planning*: Short-term planning is defined as planning transportation activities with durations less than 10 years.

3) *Long-term Planning*: Long-term planning is defined as planning transportation activities with time horizons beyond 10 years. This includes comprehensive and balanced statewide transportation planning and long-term multimodal planning.

4) *Project Selection*: Project selection encompasses all activities related to the selection, ranking, and prioritization, of projects and the matching of those projects to the budgets and funding sources.

5) *Financial Management and Oversight*: Financial management and oversight involves all fiscal activities related to the financing and managing of transportation systems. It includes budget development, resource allocation, bond issuance, and financial audits.

The Commission Involvement Index is the sum of the rating for each function. This index ranges from 5, for a commission that is weakly involved in all of the five functions, to 15, for a commission that is strongly involved in all five governance and management functions. Commissions with index values between 5 and 8 are defined as those with limited or no involvement in the governance and management functions of departments of transportation. Commissions with index values between 9 and 11 are defined as being somewhat involved. Commissions with index values between 12 and 15 are defined as being strongly involved.

The measure of state DOT performance was collected directly from the Maxwell School of Public Policy at Syracuse University. The Governance Performance Project (GPP) estimated the efficiency of state governments in various policy areas. The results used in this study were derived from fiscal year 2000 state evaluation of the state management of capital assets, which is

primarily the spending and completion of transportation projects and assets (Ebdon, 2001).⁴
 Each DOT received a “report card” grade from A to F.

Section IV: Results and Interpretation

We reviewed the 50 state transportation statutes. Thirty-seven statutes contained a section authorizing the creation of a commission to serve for some aspect of duties of the state DOT. *Table 1* presents those states with a commission, board, or agency present. *Table 2* presents those states where no commission, board, or agency is present. *Figure 1* presents a pictorial view of those states with a commission, board, or agency present.

Table 1: Commission States

Arizona	Michigan	Oregon
Arkansas	Minnesota	Pennsylvania
California	Mississippi	South Carolina
Colorado	Missouri	South Dakota
Delaware	Montana	Texas
Florida	Nebraska	Utah
Georgia	Nevada	Vermont
Hawaii	New Jersey	Virginia
Idaho	New Mexico	Washington
Iowa	North Carolina	Wisconsin
Kansas	North Dakota	Wyoming
Maryland	Ohio	
Massachusetts	Oklahoma	

⁴ Though this is not a perfect measure of state DOT’s, it does provide a preliminary basis for which I can investigate the performance and efficiency of these agencies. I have attempted to obtain the exact measures that were used in the state management of capital assets, though in the last 9 months, this has proved unsuccessful. Once the exact measures are known, a more complete evaluation can be made.

Table 3: Classification of State Transportation Governance Structures

Commission Category	Number of States	Example
Limited Involvement	14	South Carolina
Average Involvement	13	Florida
Greatest Involvement	10	Colorado

Fourteen states, such as South Carolina, South Dakota, and Kansas received a Commission Involvement Index score between 5 and 8, placing them in the limited involvement category. Thirteen states, such as Florida, Missouri, and Georgia received a Commission Involvement Index score between 9 and 11, placing them in the average involvement category. Ten states, such as Colorado, Mississippi, and North Carolina, received a Commission Involvement Index score between 12 and 15, placing them in the greater involvement category.

With the categorization of the states as commissions, and their degree of involvement in the five governance and management categories, I can now compare these results to the performance grades from the Government Performance Project. By changing the “report card” grades into their numerical equivalent, (A = 4.00, B = 3.00, C = 2.00, D = 1.00 etc.), I can compare the average grades for the commission states to the average grades to the non-commission states. *Table 4* presents these results.

Table 4: Average grades for Commission States vs. Non Commission States

Type of State	Average Grade Number	Average Letter Grade Range
Commission	2.825*	B- to B
Non-Commission	2.43*	C+ to B-

* p < .05. T-test indicates there is a statistically significant difference between commission and non-commission states.

As *Table 4* suggests, states with a transportation commission received a higher grade on average than did those states without a transportation commission. The data support *Hypothesis I* that states with a transportation commission present, on average, receive higher performance scores than did those states without a transportation commission. I also performed a t-test to compare the means to see if there was a significant statistical difference between commission and non-commission states and their performance grades. The t-test suggests that there is a significant statistical difference between commission and non-commission states at the 95% confidence level. Finding support for *Hypothesis I*, that there is a statistical difference between commission and non-commission states and that commission states receive higher performance scores, raises the question of why they are different and why they are performing better. Perhaps commission states received higher performance scores because of their level of involvement in the five governance and management functions.

To test *Hypothesis II*, that state transportation commissions with greater involvement in the five governance and management functions would receive a higher GPP grade than would states with limited involvement, I computed the aggregate means for the commission index.

Table 5 presents these results.

Table 5: Average Grades for Commission Involvement Index

Commission Category	Average Grade Number	Average Letter Grade Range
Limited Involvement	2.90	B- to B
Average Involvement	2.74	B- to B
Greatest Involvement	2.86	B- to B

Table 5 suggests that *Hypothesis II* is not supported by the data. Though all the categories fall

into the same average letter grade range, the average grade number suggests that state commissions with limited involvement received higher performance scores, than did those state commissions with greater involvement. To test whether these results were statistically significant, I performed an ANOVA test. The ANOVA model suggests that there is no significantly statistical difference between commissions with greater or limited involvement. However, there may some difference among the five separate categories. A commission's involvement in financial oversight, for example, could be significant, whereas policy making is not. Testing in the aggregate may mask some of the relationships between the individual components of the Commission Involvement Index.

To test whether commission states receive higher scores because of their individual involvement in the five governance and management functions, I categorized each commission state according to their respective GPP grade, arriving at three grade categories. Since each commission state already had an index score (1-3) for their role in each of the five governance and management functions, I tabulated the means for each index category by grade type. *Table 6* presents the results.

Table 6: Governance and Management Function and GPP grade

	Policy-Making	Short-term Planning	Long-range Planning	Project Selection	Financial Oversight
GPP Grades					
A to A-	2.40	1.40	2.00	1.40	2.40
B+ to B-	2.05	1.55	1.55	2.05	2.05
C+ to D	2.70	1.80	1.60	2.00	2.50

As before with the aggregate model, the relationships between the individual components of the Commission Involvement Index and the report card scores do not support *Hypothesis II*. For example, the data suggest that commissions with a high degree of involvement in policy-making

(2.70), receive on average the lowest GPP grades. The same is true for short-term planning (1.80) and financial oversight (2.50), the opposite relationship of what was hypothesized.

Similar to the aggregate model, these results are not statistically significant.

There are several possible reasons that *Hypothesis II* was not supported by the data. The state statutory laws are not perfectly clear as to how much “power” each commission has in each category. Thus the index created may not be a perfectly accurate measure of exactly what each commission does in the five governance and management categories. There are also several other aspects of commission “power” that the index does not address. These include the power to appoint high ranking DOT officials and the power to hold public hearing. Both of these variables may have a significant impact on how much overall power a commission has overall. Lastly, in some states, state statutory law regarding commissions, serve as loose guidelines for the actual powers of the commission. In several instances, commissions have assumed more power than is defined in statutory law. In other instances, it is clear that the commission does not exercise all the power that the statute grants. Instead, those powers are assumed by the DOT.

Section V: Limitations, Future Research, and Recommendations

State Transportation Departments with a commission present in their organizational structure, received higher performance scores than did those states that still function under a traditional hierarchical structure. However, there are many variables this study does not account for. As stated before, the GPP grades are not perfect measures of DOT performance; they do include other aspects of capital management in the state (though most of the score is based on transportation related infrastructure and output). Unfortunately, the Maxwell School has not be forthcoming with their data, thus the capital management scores are the current best indicators.

There are also several other important variables missing that may explain why

commission states receive higher performance scores. Many commissions are required to hold public hearing for proposed transportation projects. The inclusion of public input into the planning and selection process before the construction process, may expedite the completion of the project. Since completion of capital projects on schedule is one of the criteria used by GPP researchers to assign the performance grade (Ebdon, 2001), knowing the completion rates by commission and non-commission states would be an important variable. Another important variable that should be included in future studies is a measure of project cost accuracy. Can a group of politically insulated experts estimate project costs more accurately than public officials? Public officials may feel political pressures to drive costs down in an effort to get their project in the budget, and then worry about the true costs after the project has already begun. GPP researchers include a similar measure in their evaluation of a state's capital management program which is reflected in the subsequent grade, thus including this variable with a division between commission and non-commission states may begin to explain why these states are different.

Despite these limitations and the need for additional research, the initial findings are suggestive. Perhaps 37 states are pursuing the most effective avenue of change within the organizational structures of their DOTs, as evident through their statistically significant higher mean score. Though each state is different, and each state must find the best fit organizational structure for their environment, policy makers in the non-commission states should consider investigating and possibly implementing a commission in their state Department of Transportation.