A MIXED-METHODS ANALYSIS OF STATE HIGHWAY PUBLIC-PRIVATE PARTNERSHIP ENABLING LEGISLATION

A Dissertation

by

NICOLAS DANE NORBOGE

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Chair of Committee,	Shannon Van Zandt
Committee Members,	Ann Bowman
	David Ellis
	Wei Li
Head of Department,	Shannon Van Zandt

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ABSTRACT

This dissertation features a mixed-methods research design that tests whether outcomes seen so far show a clear public benefit after enacting highway public-private partnership (P3) enabling legislation into law. For this dissertation, public benefit is measured via three sub-hypotheses: reduction in debt (H_1), increased project innovation (H_2), and leveraged potential (H_3). A statistical analysis is used to test H_1 while hypotheses H_2 and H_3 are examined using a qualitative case study design comparing Texas and California.

Results from the quantitative and qualitative portions of this dissertation suggest mixed evidence on whether states with P3 enabling legislation provide increased public benefit. The quantitative portion of this study tests the impact of debt (H_1) by conducting paired sample t-test of the average annual state obligations for highway projects in states before and after enacting P3 enabling legislation. These results suggest a statistically significant increase in debt obligations after enacting P3 enabling legislation ($p < .001$). On the contrary, qualitative results support H_2 and H_3: a clear majority of interviewees from both Texas and California report that P3 enabling legislation has benefitted the public by increasing project innovation (H_2) and allowing additional leverage potential (H_3). Overall, interviewees from Texas and California continue to view P3s as one policy "tool" among a wider set of alternative delivery approaches supporting successful planning and project delivery.

The mixed results of this study point to the need for additional research on P3 enabling legislation. In particular, there is a need to develop validated quantitative measures that assess the before and after effects of P3 enabling legislation. A comprehensive, publicly-available data set of outcomes for transportation infrastructure projects—delivered via the conventional design-bid-build method versus alternative delivery methods— is sorely needed. Further research in P3 enabling legislation will help ensure that academics and planners possess the tools necessary to measure outcomes and ultimately assure they are applied to benefit the public.

DEDICATION

This dissertation is dedicated to my wife, Emily. Without her support and love, none of this would have been possible.

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NOMENCLATURE

P3	Public-Private Partnerships
DB	Design-Build
DOT	Department of Transportation
USDOT	United States Department of Transportation
TxDOT	Texas Department of Transportation
Caltrans	California Department of Transportation
FHWA	USDOT Federal Highway Administration
TIFIA	Transportation Infrastructure Finance and Innovation Act

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CHAPTER I

INTRODUCTION

The introduction is organized into five sections, beginning with a discussion of the motivation behind the research. The explanation of the research design and my decision to pursue a mixed-methods study, grounded in literature, follows. Next, I discuss the extrinsic benefits this research provides planners and public policy professionals, including limitations to the study and future research opportunities. Finally, I summarize how the contents of this dissertation are organized.

Research Motivation

For much of the 19th and 20th centuries, the United States led the world in its investment in transportation infrastructure. The early 19th century saw the expansion of the country's waterway canal infrastructure. Miles of new railroads were laid during the latter half of the 19th century. Railroad infrastructure was crucial to linking newly annexed land in the West with industrial centers in the East (Pinkerton 2015). Waterways and canals served a vital link connecting cities in the East. Together, these two infrastructure innovations facilitated a rapidly growing U.S. economy (Taaffe 1996).

Despite this legacy of infrastructure-as-an-economic-necessity mindset, in recent years the U.S. has not kept pace. Since 2013, the U.S. has spent below its annual average as a percent of national gross domestic product (GDP) when compared with

other developed nations (The World Bank 2018). This decline in infrastructure spending in the U.S. is a funding problem: dwindling federal, state, and local funding streams available for transportation projects are placing added pressure on state governments to meet growing transportation demand with fewer resources to keep pace. This pressure, in turn, has led some state and local governments to leverage existing resources by other means. Public-private partnerships, or P3s, are one such leveraging alternative. While P3s have been used in developed countries throughout the world for decades, only relatively recently have U.S. states seriously considered P3s as a viable project financing and delivery method (Pula 2016).

While defining what a P3 is varies by industry stakeholder, a 2004 Federal Highway Administration (FHWA) report to Congress defined P3s as "a contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional (USDOT 2004)."

After highway P3 enabling legislation was first enacted into law, the concept has spread quickly (Rall, Reed, and Farber 2010, USDOT FHWA 2018d). Thirty-seven states across the U.S. now have some form of enabling statute in place (Boyer and Scheller 2018). This is not a regional trend. Small states and large states alike, in all corners of the country, have adopted some form of legislation that can allow for increased participation by the private sector. The opportunity of partnering with the private sector to design, engineer, plan, and finance a transportation project—especially when the private sector promises to deliver projects cheaper and faster than the public sector, as some P3 advocates claim—can be enticing to state DOT officials.

As the number of state legislatures authorizing highway P3 projects increases, a greater need to understand if outcomes benefit the public exists. Proponents of P3 enabling legislation argue that it provides public benefit through alternative finance options that can transfer risk to the private sector, promote increased project innovation, and leverage private sector dollar potential (McKinsey and Company 2018, Friedman 2016).

Academics have studied P3 projects and the enabling statute authorizing them. For example, researchers have surveyed state transportation subject-matter experts on reasons why P3 enabling legislation is pursued (Chen, Daito, and Gifford 2016). Other scholars have taken a more case-study focused approach examining outcomes resulting from individual P3 projects (Geddes and Wagner 2013, Osei-Kyei and Chan 2015). Additional notable scholars exist in this area (Boyer and Scheller 2018, Mintrom and Vergari 1998, Birkland 2014, Geddes and Wagner 2013). Although studies do test some relationships between P3 enabling legislation and project outcomes, none to date have featured a systematic mixed-methods synthesis approach as proposed in this dissertation.

With this research need in mind, the question this dissertation will answer is: have the outcomes observed in a state after P3 enabling legislation is enacted into law provided benefits to the public? While benefits to the public is an unclear concept to measure, three sub-hypotheses, based on a review of the relevant literature, were developed: debt and/or risk transfer, increased project innovation, and leveraged private sector dollar potential (Chen, Daito, and Gifford 2016, Jacobson and Ok Choi 2008). These hypotheses will be further defined and discussed throughout the study.

Research Design

For this dissertation, public-private partnership enabling legislation is defined as state legislation that allows for highway project contracts to be formed "between a public agency and a private sector entity that allow for greater private sector participation in the delivery and financing of transportation projects (USDOT FHWA 2018b)."

This research features one overall hypothesis and three sub-hypotheses. The overall hypothesis is the following: $H_{(overall)}$ = The outcomes seen in states show a clear and lasting public benefit after highway P3 enabling legislation was enacted into law. Public benefit is defined and divided into three sub-hypotheses. The first sub-hypothesis (H_1) is that states with P3 enabling legislation allowed for shifting debt and risk to the private sector and away from tax payers. The second sub-hypothesis (H_2) is that states with P3 enabling legislation saw projects that offered and allowed for greater innovation in the design and construction process by accessing private-sector ideas, skills, and talent. The third sub-hypothesis (H_3) is that states with P3 enabling legislation permitted the state to leverage private investment capital for major roadmap projects. Thus, the null hypothesis (H_0) can be defined as: none of the above sub-hypotheses matter in determining outcomes, as defined by benefit to the public, after P3 enabling legislation was enacted into law.

This dissertation is a mixed-methods research design. For the quantitative portion, I built a 50-state data set of demographic, political, administrative, and other relevant characteristics. This is utilized to test the first sub-hypothesis (H_1): P3 enabling

legislation benefits the public by allowing states to decrease debt and transfer risk to the private sector.

Building on findings from the literature, the qualitative section focuses on two states with contrasting P3 experiences: Texas and California (Boyer and Scheller 2018). For these two case examples, I summarized the history and development of P3 enabling legislation in each state, including discussion of what has occurred since passage of the enabling legislative statute and explanation regarding the political and institutional differences as possible causes. When and where possible, interviews were conducted with key personnel with inside knowledge of the development of P3 enabling legislation and what has occurred since. This analysis is utilized to test the second and third sub-hypotheses: P3 enabling legislation benefits the public by increasing project innovation (H_2) and leveraging private sector dollar potential (H_3).

Research Extrinsic Benefits

This research provides several extrinsic benefits. By investigating these outcomes, planners and public policy officials can obtain insight on outcomes since states elected to pursue P3 enabling legislation. Especially pertaining to the qualitative portion, this research provides clarity to how transportation P3 enabling legislation itself works.

Insight into the process by which transportation public-private partnership enabling legislation was enacted into law helps educate state-level public policy officials across the U.S. Such partnerships are so complex that entire teams of engineering, legal, and financial professionals are typically required just to complete one transaction. A

clear unbiased understanding of how P3 enabling legislation has worked (or has not worked) to the benefit of the public, is currently lacking.

This research provides private sector partners a clearer understanding of state enabling legislation, perhaps even effective best practices for navigating *through* it. Furthermore, the research helps contrast practices used in each state. This dissertation is aimed to provide the academic community with insight into this fast-growing trend and how the urban planning discipline fits within it.

Lastly, this study provides an aid to the public sector in understanding how P3 enabling legislation benefits them. P3 projects, and the associated legislation supporting them, is often politicized. By providing in-depth unbiased assessment, this study will augment the general body of knowledge available to citizens and help provide clarity on the impact P3 enabling legislation offers the individual.

Research Limitations

One limitation to this dissertation research: a small number of states in the quantitative analysis (n=50) posed to be a challenge. To account for the relatively small sample size, comparisons undertaken among states came from multiple differing perspectives. Thus, the results from this study maintain a proper level of rigor for quality research.

A second limitation involves the small number of states examined in the qualitative study. It is infeasible to document a detailed story of how enabling legislation was enacted in all 37 states with P3 enabling legislation. The insight gained relative to

the amount of work required outweighs the benefit. For this reason, I selected case studies that were representative of the P3 landscape.

A third limitation is, that while every effort was made to ensure the objective collection of qualitative data, it is not possible to ensure such interviews are free from bias. Transportation highway P3s can be a controversial topic. That P3s can be lucrative for financial and legal teams who help craft them and bring these projects to a close comprises an additional complicating factor. As a result, public officials face immense pressure to adopt P3 enabling legislation favorable to them. While attempting every effort to take this into account, it is important to recognize most parties involved in P3s are likely to have some sort of financial motivation.

The purpose of this dissertation is not to make a value assessment on whether P3s, (and the enabling legislation making them possible) are smart public policy. The objective is rather to systematically report on outcomes to the public benefit after such legislation has been enacted. In doing so, this dissertation research aimed to shed light on the likely impacts and trends P3 enabling legislation had and will continue to have on the public as well as the planning profession in the future.

Dissertation Report Organization

This dissertation is organized into five chapters. The five chapters that comprise the dissertation are summarized in the list below.

1. Introduction. This chapter covers the research motivation, design, extrinsic benefits, limitations, and the overall dissertation report organization.

2. Literature Review. This chapter provides a summary on the relevant literature surrounding the history and development of state highway transportation P3s. Complementing this effort, the literature synthesizes the pertinent theories explaining key ways in which policy diffuses across different states.
3. Quantitative Analysis. This chapter provides a summary of the results from the quantitative research portion of this analysis. This section presents a review of major findings that emerged from the 50-state study of P3 enabling legislation. The first sub hypothesis is tested and results are discussed.
4. Qualitative Analysis. This chapter summarizes the qualitative results portion of the study, including a review of key points from stakeholder interviews and comparative results from the two case study states. Results from the second and third sub-hypotheses are discussed.
5. Conclusion. This chapter synthesizes the results presented in Chapters II, III, and IV and offers concluding considerations.

CHAPTER II

LITERATURE REVIEW

This literature review covers several key aspects associated with the history and development of P3 enabling legislation. The review provides a background on key theories behind the American federal system and how it has evolved over time. A brief review on theories behind policy diffusion across states with a special focus on network linkages in the Texas Legislature follows. Differences in state innovation are then discussed. Finally, this chapter concludes by reviewing the latest research on highway transportation P3s, including their use and some of the most recent academic studies on the topic.

American Federal System

Federalism, defined for the purpose here and as established under the U.S. Constitution, is often difficult to describe. Federalism is perhaps best understood for its more contemporary description from the founders according to the U.S. Constitution of 1787. Generally, the federalist philosophy (in contrast to con-federalism, for example) is broadly outlined as a "relationship of shared authority between two levels of government (Kenneth 1946)." Other scholars, such as Law (2013), considered the division of powers between these two levels of government to be more on "on equal status" than those commonly found in Western European democracies (Law 2013).

The concept of federalism itself, perhaps one of the most fundamental areas of disagreements among the framers, has evolved over time. During much of the 18th century, federalism was often assumed as less referring to an integrated, cohesive form of government and more of a term referring to a "compact" of individual, sovereign states. This perspective even dominated much of the early writings by some (although certainly not all) of the country's framers. In Federalist 39, James Madison referred to the new nation as "neither a national nor a federal Constitution, but a composition of both (Hamilton, Madison, and Jay 2003)." This view began to change, as the term began to denote a more integrated form of government philosophy rooted in the belief that federalism works best when power is shared between the federal and state levels of government. Such thinking was influenced by subsequent court cases, as famously occurred via the landmark 1803 U.S. Supreme Court case Marbury v. Madison (Marbury v. Madison 1803).

It is not a surprise, then, that a robust scholarly debate on how federalist systems are adopted remains. While many scholars have differing interpretations, Ziblatt (2006) provides a helpful compilation of the competing theories for federal systems (Ziblatt 2006). These theories are summarized in Table 1.

Table 1 Competing Theoretical Explanations of Federal System Adoption

Theories	**Explanation**
Ideational Theories	A greater degree of ideological commitment to decentralist ideas in society makes federalism more likely to be adopted.
Cultural-historical Theories	Federal institutions are more likely to be adopted in societies with culturally or ethnically fragmented populations.
"Social contract" Theories	Federalism emerges as a bargain between a center and periphery where the center is not powerful enough to dominate the periphery and the periphery is not powerful enough to secede from the center.
"Infrastructural power" Theories	Federalism is likely to emerge when the subunits of a potential federation already have highly developed infrastructures. For example, they are already constitutional, parliamentary, and administratively modernized states.

Source: (Ziblatt 2006)

While federalism has evolved, recent challenges are placing new pressures on the changing nature of federal/state relationships. For example, the Great Recession of 2009 resulted in serious declines in the fiscal health of state government, especially in states whose revenues rely primarily on sales taxes. For the most part, states have still not experienced full recovery. Declining state revenues, coupled with growing demands for services, have placed additional burdens on states. Such trends support a key explanation behind the rise in transportation P3 enabling legislation. To this end, some suggest the evolving federalist structure has allowed for private infrastructure firms to take certain advantages from governments while remaining immune to many of the expected consequences (Haider-Markel 2014).

Policy Development and Customization

The literature on policy development and customization is also relevant for the development of P3 enabling legislation. While the academic literature does vary somewhat, the stages of the policy process generally follow four major processes (Karch 2007):

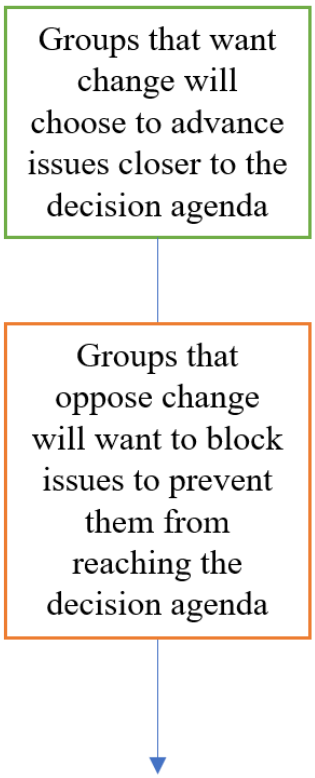
- agenda setting (i.e., process to determine which policy choice to pursue);
- information generation (i.e., process where resources provide examples of existing programs);
- customization (i.e., process where officials mold policy for political or technical reasons); and
- enactment (i.e., process where officials decide to adopt or not adopt a policy).

One of the most critical steps in the formulation of any legislative policy involves agenda setting. Typically, there is no shortage in the number of policy ideas that any state legislator can be bombarded with at any given time. The goal for elected officials is to decide which policy idea is worthy of advancement. Lawmakers also receive a trove of requests from interested parties to consider their idea and advance forward. These interested parties may strive to have their voices or perspectives heard, with only a few gaining the traction to advance for further consideration.

According to the literature, agenda setting is considered to be one of most critical stages of policy-making. Schattschneider (1975) famously noted that the definition of different policy alternatives "is the supreme instrument of power, [and] the antagonist

can rarely agree on what issues are because power is involved. He who determines what politics is runs the country, because the definition of alternatives is the choice of conflicts, and the choice of conflicts allocates power (Schattschneider 1975)." This stage of the policy formation process is important not because it establishes which issues, problems, and solutions will gain broader attention; rather, it is critical because it helps to decide which ones will not.

Perhaps as a result of the importance of agenda setting, the academic literature is replete with articles dissecting the mechanisms used (including how and when to use them) by groups to vie for power and have their position or point-of-view advanced. However, one aspect of agenda setting that clarifies how stakeholders maneuver and focus their time and resources involves the levels by which an agenda may be set. According to Birkland (2014), as the agenda is quite vast, it is advisable to think of many different levels in which an agenda may be set (Birkland 2014). An alternative way to think about agenda setting is to distinguish between formal and informal agenda setting (Corduneanu-Huci, Hamilton, and Ferrer 2012), although the distinction may be less relevant in this context. Regardless, as shown in Figure 1, according to Birkland (2014) there exists layers in which agenda seekers must get through in order to advance their interests forward (Birkland 2014). The goal is to advance issues as close as possible to the decision agenda.



Agenda Setting Category	Description
Agenda Universe	All ideas that could be brought up or discussed in a political system or society
Systemic Agenda	All issues perceived by politicians as meriting public attention
Institutional Agenda	List of items explicitly up for consideration by relevant decision-makers
Decision Agenda	Items about to be acted upon by a government body

Figure 1 Levels of the Agenda
Source: Adapted from (Birkland 2014)

The next step in the policy development process, information generation, is also a critical step at the state level—it's the point at which state lawmakers gather information and become aware of policies taking place in other states. Unfortunately, literature relating to the drivers of information generation is relatively limited. A few important exceptions exist. Mossberger (2000) takes an in-depth look by examining how the spread of state enterprise zones from 1981 to 1993 impacted the process of adoption in five states (Mossberger 2000). Rather than simply spreading from one state to another as a

result of policy "fad" among a few early adopter states, Mossberger (2000) found that the federal government actively encouraged adoption by the states. Furthermore, the research concluded that "in reality, federal activity encourages the formation of networks that include members of policy communities and the states themselves as multiple information sources (Mossberger 2000, 4-5)." This provides additional insight into the notion that, in addition to policy diffusing horizontally across state legislatures during the information generation process, policy diffusion may be accelerated through changes at the federal level.

Policy customization (i.e., the process by which policymakers take a proposal idea and mold it to fit their state's context) is intuitively a critically important phase in in the policy diffusion process. In the context of P3 policy, broadening authority for state DOTs to enter into tolling agreements with a private sector partner is one such example. Large states with a rapidly-growing population in key urban areas, such as Texas, would likely have little difficulty attracting private sector firms to offer bids to develop toll road projects. For other states, such as Montana or Alaska, attracting private companies to bid on toll road projects may be more difficult. While the diffusion of tolled policies is occurring in many U.S. states, it's reasonable to suggest that some states may have to customize policies to fit within the context of their state, especially if the policy originated from a state with dissimilar characteristics.

The literature on policy customization, however, is also limited. Most policy diffusion research addresses ways that policy innovation gained enactment, while relatively little work has attempted to understand the specific idiosyncrasies of different

policy types and how they affect customization. For example, states have wide latitude to enact and customize their approach in some policy areas (e.g., transportation policy), but are relatively limited in others due to federal policy requirements (e.g., healthcare). Despite this, recent studies like that from Hayes (1996) and Mooney and Lee (1999), have found that policy customization can be affected by the amount of controversy that policy faced in other states (Hays 1996, Mooney and Lee 1995)

Finally, while significant work has occurred in this area of policy innovation, some of the most influential and comprehensive work was accomplished by Karch (2007). Using a mixed- methods approach, Karch (2007) tests a number of conventional theories that explain policy adoption by utilizing five recent policy innovations: (1) senior prescription drug programs, (2) medical savings accounts, (3) individual development accounts, (4) time limits, and (5) family caps. Table 2 below summarizes key conventional theories about policy diffusion that Karch (2007) tests.

Table 2 Common Theories Explaining Policy Diffusion and Enactment

Theory	**Summary of Theory**	**Key Literature**
National intervention theory	A national crisis causes states to consider prompt action	Savage (1985); Welch and Thompson (1980)
Neighboring state effect theory	Geographically proximate states will consider policies adopted by one another	Foster (1978)
Problem severity theory	A state's willingness to adopt policy innovations if a problem in that state is serious enough	Sapat (2004)
State wealth theory	Wealthy states are more capable of taking policy risks than poor states	Walker (1969); Rogers (2010)
Legislative professionalism	More professional legislatures have the resources and time to innovate new policy	Squire (2007); Kousser (2005)
Ideology theory	Political ideology influences the adoption of policy innovation	Grossback, Nicholson-Crotty, and Peterson (2004)

The literature summarized in Table 2 also contributes to a more comprehensive understanding why policy or a set of policies might diffuse from one state to another, Karch (2007) found that each of these theories, when isolated, had limited predictive power. However, Karch (2007) concludes by suggesting that many of these theories might be insufficient. Ultimately, Karch (2007) argues that the policy formation and diffusion process typically have different causal agents can affect the prospect of diffusion—something he supports through a far more comprehensive examination of state health and social welfare policy (Karch 2007).

Karch's findings discussed above are also evident in transportation policy. State legislatures, often with significant help and guidance with the state executive branch, are responsible for devising a policy structure that must collect and distribute public

revenues to state and local transportation agencies in charge of constructing and maintaining the state's transportation system.

The literature summarized in Table 2 also explains how transportation funding policy diffuses among states. For example, despite a national transportation funding crisis, only a handful of states are actively seeking ways to raise additional transportation revenue (Mark Niquette 2017). While it is possible that some states are sharing innovative practices--the state of Washington recently considered adopting Oregon's VM Fee pilot program framework--most neighboring states compete rather than share many of their best practices and lessons learned (Washington State Transportation Commission 2016).

Perhaps a more appropriate understanding of policy diffusion among all 50 state legislatures is to recognize the differences and complexities associated with each. Furthermore, it is difficult to overstate the importance of the state executive branch in helping to form and shape transportation funding policy, and crucially, the significant influential role the state executive branch possesses to influence members of the legislative branch (and vice versa). One notable example involves the $142 billion Trans-Texas Corridor (TTC) plan championed by then Texas Governor Rick Perry (Batheja 2014). Only after members of the Republican-led state legislature began to receive immense pressure from their constituents did the plan lose momentum. In 2009, six years after the plan initially rolled out to the public, the proposal was dropped (Rosanna Ruiz 2009).

Perhaps in ways critical to understanding our modern interpretation of federalism, policy diffusion also forms a critical basis by which policy may be shared with other states. Inherent in our federalist structure is the ability for states to develop and disseminate policies which work well. It is this feature of federalism that Justice Brandeis noted in his landmark 1932 decision regarding the ability for states to serve as "laboratories" of policy innovation (Gardner 1995).

The scholarly study of policy diffusion in the context of federalism is rich, with many scholars examining how policies diffuse across the U.S. federalist system. For example, do policies that start in one state diffuse to others that are close to them or that align to them politically? Do "good" policies diffuse to other states while "bad" policies do not, or is this notion too simplistic or naïve? Finally, if a critical number of states adopt a good policy, does it eventually make its way toward consideration by Congress? While various scholars have explored such questions in length, findings are mixed at best.

Perhaps the best synthesis of the literature pertains to relatively recent work by Shipan and Volden (2012.) The authors provide the following seven lessons for policy diffusion in the U.S. federalism context (Shipan and Volden 2012):

- policy diffusion is not (merely) the geographic clustering of similar policies;
- governments compete with one another;
- governments learn from each other;
- policy diffusion is not always beneficial;
- politics and government capabilities are important to diffusion;

- policy diffusion depends on the policies themselves; and
- decentralization is crucial for policy diffusion.

As discussed previously, simple explanations regarding policy diffusion (e.g., ideology theory, national intervention theory, etc.) are singularly insufficient to explain diffusion which occurs within state transportation funding policy enactment. However, Shipan and Volden's (2012) seven lessons offer useful insight in explaining policy diffusion in the context of transportation funding policy. The first lesson, policy diffusion is not simply the clustering of similar policies by how close two states are to one another, is evident in how P3 policy has spread throughout the U.S. For example, that enabling legislation for P3s would cluster in a region of the country with significant presence of construction firms specializing in this type of alternative project delivery makes intuitive sense. Six of the largest contracting firms that specialize in alternative project delivery are nearly all located in either California or the East Coast (Tulacz 2017). However, many leading states for transportation public-private partnerships, such as Texas, Virginia, and Florida, are located outside of these regions. Therefore, regionalism is an insufficient explanation for policy diffusion.

The second lesson, that governments compete with one another, is also applicable in explaining how transportation funding policy diffuses across states and downward from the federal level. That states compete vigorously among one another for employers to locate within their jurisdiction is no secret. In fact, many states and cities will sometimes offer incentives: many will offer these incentives in the form of tax credits or

abatements to companies willing to locate part or all of their operations within their state. As part of this process, states may also tout the availability of transportation as one key benefit they provide a prospective employer. Such competition was evident most recently with the competitive bidding process by states and cities surrounding the possible location of Amazon's second headquarters. A total of 238 states and cities submitted bids for the chance to have Amazon locate a proposed $3.7 billion facility in their state (Amazon 2017). Such jurisdictional competition is also evident through USDOT's Transportation Investments Generating Economic Recovery, or TIGER, discretionary grants. In 2018, hundreds of state and local governments competed for a share of $500 million in discretionary grant funding (USDOT 2018b).

While local governments compete vigorously for their "share" of transportation funding, data also indicates that state governments learn from each other. Critically, it is the area of policy learning where the importance of networks is most vital. Transportation policy experts work closely with several Washington, DC-based associations, such as the American Association of State Transportation Officials and the Transportation Research Board, as well as Denver-based National Conference of State Legislatures to share best practices on transportation policy.

Other lessons of Shipan and Volden (2012) prove instructive. The benefits of policy diffusion are not always mutually shared; this is also true in the diffusion of transportation policy (Shipan and Volden 2012). More of the country's population is beginning to cluster in fewer places. As a result, policy pushes for increasing transit funding are likely to occur in the handful of states that operate large transit systems.

Sparsely populated states, who might otherwise contribute a portion of their federal tax revenues to the federal government may not likely see those funds returned for transit services. As purported by Shipman and Volden, the importance of politics, government capabilities and decentralization are also evident in transportation funding policy. For example, nearly all of the innovation occurring in new methods for promoting private participation in transportation started at the state level, absent any federal oversight or direction (USDOT 2004). Only after innovator states, such as Texas and Virginia, began to formulate and refine a P3 framework was the idea considered by Congress (Kenney 2017). While the seven lessons of Shipman and Volden (2012) prove instructive, an additional critical component to the diffusion process comprises the role of networks. While brief discussion occurred regarding this role, additional attention is necessary.

The study of policy networks generally focuses on the way governmental and non-governmental institutions are linked together to advance a particular policy forward. For example, Rhodes (2008) provides a definition for policy networks as "sets of formal institutional and informal linkages between governments and other actors structured around shared if endlessly negotiated beliefs and interests in public policy making and implementation (Rhodes 2006)." As can be inferred, the role of networks in explaining how policy diffuses across governments is significant.

As with policy diffusion, research insights on policy networks struggle with the same inherent problem: how do you define it? Several scholars provide useful perspectives on how best to interpret the form and function of policy networks. Börzel (1997), for example, notes that policy networks can be understood from two schools of

thought: (1) “typology of interest intermediation” (i.e., relationship between state and societal interests) and (2) “specific form of governance (Börzel 1997).” Several scholars also describe interest intermediation, with many sharing a common perspective that policy networks are best viewed as relationships between interest groups and government. Other scholars, such as work by Atkinson and Coleman (1989), view six types of policy networks along two dimensions: 1) the “state structure, in terms of autonomy and concentration of power” and 2) the “capacity to mobilize the interest of employers (Atkinson and Coleman 1989).”

Perhaps a more straight-forward understanding is an interpretation of these networks as a specific form of government. Through this perspective, policy networks are understood more as separate but interdependent organizations that seek to coordinate their actions through shared resources and shared interests (Börzel 1997). Essentially, from this viewpoint, understanding how policy networks function can explain the interests and motivations of actors. As noted previously, the role of networks in the development and diffusion of transportation funding policy is relevant.

An in-depth evaluation of networks within Texas further supports this theory. For example, of members of the Texas Legislature face pressure from several networked groups wholly outside of state government. Figure 2 illustrate these networks further and help to highlight the number of pressures that members of a state legislature can face. Table 3 provides examples of networks influencing the Texas legislature in transportation funding issues.

Figure 2 Network Linkages of Transportation Policy in the Texas Legislature

Table 3 Examples of Networks Influencing the Texas Legislature on Transportation Funding Issues

Organization Type	**Examples**	**Information to Legislature**
Academic Institutions	Texas A&M Transportation Policy Center, University of Texas Center for Transportation Research	Expert information; evidence-based research
Out-of-State Professional Organizations	American Association of State Transportation Officials, American Road Transportation Builders Association, Association of General Contractors	Feedback from industry members; out-of-state best practices
Engineering/Construction Firms	HDR Inc., Kimley-Horn, Flour	Industry interests; industry best-practices
Municipal Representatives	City of Bryan, City of College Station, City of Mesquite	City interests; state/local partnership interests
Bond Attorneys	Bracewell Law, Boyle & Lowry LLP	Financing and funding interests; state of municipal bond market
Conservative grassroots organizations	Texas Toll Party, Texas TURF, Texans for No New Debt!	Public perception on salient transportation issues
Liberal grassroots organizations	BikeTexas, A New Dallas, Houston 2040.	Public perception on salient transportation issues

These outside organizations have extensive networks of volunteers, donors, and institutional knowledge, working to influence their member of the Texas state legislature to guide the future of Texas funding policy. Not all networked organizations have intrinsic interests or are seeking to *shape* the direction of transportation funding policy. Some, such as academic institutions, aim to provide aid in the analysis of a topic and, in doing so, help to ensure they maintain good relationships with powerful members of the state legislature. Other organizations, such as bond attorneys and engineering/construction firms, have dual interests: to protect their industry and make

sure Texas continues to invest in transportation. Municipal interests, not surprisingly, seek to ensure the interests of their cities are adequately represented in the Legislature. Finally, liberal and conservative grassroots organizations are typically comprised of active and involved citizens. These mobilized citizens hold protests and bring awareness to issues of importance to them. For conservative groups, in recent years, this has meant voicing opposition to pro-toll road legislation. For liberal groups, for example, this involved the push for Democratic lawmakers to introduce legislation for tearing down the overpass through Central Dallas (Formby 2017). These outside networked groups seek to mobilize resources to influence state transportation funding policy, especially during the policy enactment phase.

The previous discussion on policy diffusion and policy networks warrants a key question: if policy diffusion is so common, why are some state legislatures more innovative than others? It's certainly true that many state legislatures do not have full-time legislatures, while others lack the research staff to undertake a critical review of sophisticated public policy. Nevertheless, it is unclear that professional legislatures boasting competent staff have resulted in more creative, effective, or outcome-oriented legislation.

Various scholars have attempted to offer possible reasons why some states practice innovative strategies, while others "imitate" these state policies. One such work by Schultz (2012), in building on landmark work conducted by Karch (2007), provides a series of mixed-method surveys and analytical analyses finding that state governments are more often factories of replication rather than innovation (Schultz 2012, Karch

2007). Specifically, Schultz (2012) offers three possible reasons why most state legislatures simply "imitate" rather than create and enact fundamentally new policy:

- *Policymakers are often under immense pressure to offer innovative policies to show they're thinking "outside the box".* Since many state lawmakers lack the time or resources to conduct deep policy analysis, Schultz (2012) argues, lawmakers are forced to use analyses conducted elsewhere. Often, these analyses are tailored specifically for the state in which that analysis was conducted and ill-suited elsewhere.
- *Forming a consensus is time-consuming and difficult.* While it's extremely challenging to accrue and gather the necessary information for developing a policy, building the legislative support necessary proves a greater challenge. It is in this environment that the most feasible policies advanced are incremental ones—big, large changes are nearly impossible.
- *Many legislators are captured by "failed public policy myths."* Shultz (2012) notes that despite the failures of many state policies, policy myths (e.g., tax breaks to companies result in net new job creation, voter fraud is a serious problem, etc.) continue to be promulgated across state legislatures. These myths, according to Schultz (2012), are even sometimes perpetuated by outside lobbying and other interest groups.

In reviewing how Texas first enacted its transportation public-private partnership legislation during the late 1990s and early 2000s, state lawmakers were acting on outside

pressures to deliver a new framework for private participation in project delivery. As previously discussed, this outside pressure was initially more from Governor Perry's office than from outside networked groups. However, it's not exactly clear if there were strong outside networked pressures pushing on the Governor to enact the sweeping Trans-Texas Corridor plan. The close coordination between key committee members from both the House and Senate suggested that the problem of growing transportation congestion (the state just grew by 22 percent from 1990-2000) was only going to get significantly worse (Texas State Demographer 2014). State lawmakers were under immense pressure, from both their constituents and the Governor's office, to deliver. Lawmakers, in borrowing lessons learned from a 1995 public-private partnerships law enacted in Virginia, worked quickly to imitate and customize this innovative set of policies for Texas (Garvin and Bosso 2008).

From that point forward, however, the Trans-Texas Corridor faced immense opposition. Part of the reason for this was the extreme difficulty of forming a durable consensus for the project as well as a coalition to support it. Large land owners and ranchers in the state directly in the path of the proposed project began to organize and mobilize quickly in opposition. In addition, much of the proposal path bypassed large urban areas, giving little reason for those in the state's fast-growing urban areas to support the plan. Complicating matters, the project consortia were led by Cintra, a Spanish-based firm. This effort caused many grassroots groups to further mobilize in opposition (Hall 2006). The ambitious proposal simply presented too much change too fast, and state legislative leaders faced challenges in keeping their coalition together.

This example suggests that Texas was a policy innovator—partly because the legislature was forced to develop fundamentally new policy approach in responding to exploding population growth. In doing so, Texas state legislators examined other high-growth states and customized those practices to something that would fit in Texas. But in other ways, the state was a policy imitator, borrowing an existing policy framework already enacted into law in Virginia. This is a clear example of how a complex mix of forces worked together to simultaneously force innovation (Karch 2007).

It still isn't clear exactly why Texas decided to innovate in this area. One explanation might be that the right confluence of forces came together to push Texas legislators to leadership in the early 2000s. Nevertheless, despite TTC being "wiped from the books," Texas is considered a policy leader by other states wishing to pursue P3 enabling legislation. Key information experts that helped to craft the original TTC law in Texas are sought out by legislative staff in other states for their expertise, helping to ensconce Texas' reputation as a policy innovator in public-private partnership legislation. According to the FHWA, as of August 2018 a total of 37 states, the District of Columbia, and Puerto Rico have enacted some form of legislation that enables the use of several different P3 approaches for the delivery of transportation infrastructure (USDOT FHWA. 2018c).

This analysis illustrates, using the example of transportation funding policy, ways in which a policy can diffuse from one state to another under the U.S. federalist system. While some scholars have posited reasons why some policies diffuse elsewhere, this example of P3 enabling legislation suggests that such simple explanations are

probably insufficient. The better explanation is probably that it is still unclear why some states become innovators in a policy area. For Texas, important lessons around a key area of transportation policy came via painful lessons learned through an ambitious, but ultimately fateful, $130 billion Trans-Texas Corridor proposal.

Public-Private Partnerships as State Policy

The pros and cons of private infrastructure are best explained first through a historical context of the U.S. experience in privatization of infrastructure. Transportation funding policy is complex, involving a mix of federal, state, local, and private stakeholders. In addition to each level of government playing a role, much of the transportation funding policy is modal in nature. Highway funding involves mostly state funding, with significant federal and local participation. Whereas waterway and port funding has participation mostly at federal and local levels. Finally, minor but important differences among states, particularly regarding how state DOTs participate in non-highway transportation modes, is evident and is discussed later in this dissertation.

The early roads in America were pothole-ridden and in poor shape. This is perhaps a result of funding through local or private means. In fact, some of the first roads were built by developers with some of the early facilities even receiving a substantial return on their early investments (Gunderson 1989). This mode of funding was common for much of the early 19th century; by 1810, it was estimated that New England had around 300 turnpikes. However, by 1830 it was clear this model was insufficient to meet the growing need for high-quality roadway infrastructure. As a

result, more regional approaches to fund road projects began to take shape. Large linkages of communities began to form coalitions to levy and spend money for regional roadways.

By the mid-1800s, and especially during the post-Civil War era, a number of toll road companies entered into default. Consequently, a change in funding philosophy began to take shape. After the Civil War, the responsibility of paying for good roadway infrastructure was viewed as a more communal responsibility. This shift was brought about mostly by the inability of the toll model approach to meet funding demands but also by the broader increased demand for more surface transportation.

Waterways and railroads were the dominant form of transportation. However, two major limitations were shared with both modes: they were relatively limited and inflexible. Road transportation was increasingly seen as a more viable infrastructure worthy of community investment. As such, these roads (and their use) began to increase steadily over the latter part of the 18th century.

The era of funding roadways through public-good based revenue sources didn't begin until the turn of the 20th Century. During the early 1900s, the introduction of the automobile significantly increased the demand for better roads. Bicyclists and farmers also voiced strong support for paved roadways, complaining about the often-tenuous conditions of the current rural roadways. During this time, many interest groups, such as the Good Roads Association, the American Automobile Association, began to push for state involvement in roadway funding (Parker 1912). However, a serious conversation about a federal role for road funding wouldn't come for another decade.

It was also during this early period that economic analysis was first used to justify a transportation project. Mayors of small towns often questioned why their residents should be required to pay for a roadway. Sensing such disagreements could stall road projects, Good Roads Association president John Bankhead argued that higher quality roadways were a worthwhile long-term investment, especially as a means to facilitate trade and commerce (Paxson 1946). Such an argument became easier over time as vehicle ownership increased.

Momentum for investing in the nation's road network began to increase significantly with the passage of the Post Office Act of 1912, the Federal Aid Road Act of 1916, and the Federal Highway Act of 1921. The Post Office Act, predicated primarily on the basis that ensuring the efficient delivery of mail relied on good roads, was one of the first examples of federal involvement in roadway construction. This bill provided a $500 million appropriation for an "experimental construction of highways (Williamson 2012)." The 1916 Act, the first bill that dealt specifically with appropriations for roads, also was funded to ensure roads in rural areas were in good enough quality to could serve as a precursor to federal highway legislation. The 1921 Federal Highway Act provided a five-year funding program (an increasingly evident need given the time frame for planning for highway projects) and $75 million to be distributed to states on a matching basis (Weingroff 1996). Many features of this Act, including both the matching requirement and the multi-year funding horizon, involved key features of transportation authorization bills throughout the rest of the 20th Century (Williamson 2012).

During the 1920s and 1930s, roadway construction continued to progress, with developments in gravel that improved the condition of roadways. Just as notable, during this time U.S. military leaders, sensing the growing worry about rising international conflicts in Europe and Asia, began to see the role of an interconnected network of highways as critical for military mobilization. Partly for this reason, the federal role for transportation (as both a key standard enforcer and funding source) began to emerge.

It is from this point that the U.S. entered an era of unprecedented direct public investment in its transportation infrastructure network. From the early 1920s on through the mid to late 20th century, the U.S. embarked upon several large and ambitious highway infrastructure building programs, with the landmark Federal-Aid Highway Act of 1956 serving to "fuel" the infrastructure construction that would occur throughout the rest of that century (Weingroff 1996). This legislation was also the catalyst for the construction of the interstate highway network. This network, which consisted of a vision of 41,000 miles of new highway to better link the still-recovering post World War II nation. Critically, this legislation allocated $26 billion—an unprecedented commitment of public investment at the time—to be paid for through a combination of fees levied on a "per-use" basis (Childs 1989). This funding scheme was operationalized through a federal per-gallon tax levied on all gasoline and diesel motor fuel. The scheme would serve as an enormously successful mechanism in part because of the significant year-over-year growth in gasoline consumption. Funding sources could easily keep pace with growing demand by the public.

However, two structural limitations posed long-term problems with this funding scheme (Denison and Eger III 2000). First, the federal tax (and nearly all state gas taxes) was a tax based on *consumption*, not price. This meant that as the price of gasoline increased, the rate of consumption remained the same. During the latter part of the 20th century, this rarely posed a challenge as consumption was growing at such a fast rate. In fact, consumption was so rapid that revenues were able to offset the inevitable decline in purchasing power. While lawmakers increased the federal gas tax rate a total of 14 times since it was first enacted in 1932, it has not changed since 1993 (Bickley 2012). The second, longer-term factor was a steady increase in the average passenger vehicle fuel economy. This meant that by the mid to late 1990s, more drivers were going further from each gallon of gasoline or diesel purchased. As a result, the total number of miles traveled on U.S. roadways, or vehicle-miles traveled (VMT), increased significantly while federal and state fuel taxes grew at an anemic rate. Together, these factors set the stage for a growing imbalance between exploding transportation demand and the funding available to address that demand.

Several other factors also placed pressure the current fuel tax system. Most of these pressures were political. For much of the latter 20th century, increasing the gas tax rate has long been viewed negatively by both liberal-leaning and conservative-leaning lawmakers alike (Agrawal and Nixon 2017). Conservatives viewed a gas tax increase as an additional burden on an already overtaxed population, while liberal-leaning groups viewed a gas tax as regressive—one that puts even greater problems on already struggling, working families. Additionally, organized associations representing the

trucking industry, such as the American Trucking Association, have worked to defeat past attempts at a federal gas tax increase. Recent signs suggest these groups may have begun to reconsider that position (Talev 2017).

These factors together resulted in significant declines in public revenues available to fund necessary capital and operations costs for the nation's infrastructure system. While problems experienced in the U.S. highway industry are the most acute, a similar pattern of chronic underinvestment in public transit, aviation, inland waterway, and other transportation modes has also occurred. Many public officials responsible for managing the nation's transportation infrastructure have turned to other means to improve their cash flows and maintain assets. One area that officials have considered a *revisit* of the nation's model of funding infrastructure improvements from the late 1800s—through private participation. In recent years, many public officials have considered ways in which the public still retains ownership of the transportation infrastructure asset but can leverage and monetize it. Such partnerships, called P3s, have been used historically in the provision of real estate development with cities for many years—often not without controversy (Koppenjan and Enserink 2009). Despite these challenges, recent indications suggest that public-private partnerships will likely be considered by public officials for the provision of transportation infrastructure in the future.

As was briefly discussed previously, benefits and limitations are inherent with P3s. As state and local officials continue to explore P3s, many find they aren't "free money" given by the private sector simply for the public good. Rather, depending how

such a deal is structured, P3s often involve a "concession" of some form to occur. As shown in Table 4 below, many of the benefits from a P3 may involve a trade-off that multiple parties must then consider. As shown in Table 4 below, many of the benefits from a P3 may involve a trade-off that multiple parties must then consider.

Table 4 Public-Private Partnership Benefits and Limitations

Public-Private Partnership Benefits	Public-Private Partnership Limitations
• Private financing and project acceleration • Potential monetization of existing assets • Potential project cost and time savings • Possible project lifecycle efficiencies or improvements • Opportunity for improved project quality over traditional methods • Possibility for transfer of certain project risks to the private sector • Assurance in most cases of public control and accountability of project	• Possible loss of public control and flexibility • Possible unreasonable private profits at the public's expense • Perceived loss of future public revenues • Potential risk of bankruptcy or default • Accountability or transparency concerns • Potential environmental review issues • Foreign companies • Public-private partnership toll road issues and accountability • Potential for some contract terms to be unfavorable to the public sector

Source: Adapted from (Farley and Norboge 2014)

The first benefit is the potential for private financing and, in some cases, project acceleration. For example, some scholars have posited that through innovative financing mechanisms, the P3 project delivery approach can help advance the delivery of a project. For the public-sector partner, this results in a project that can be delivered faster than the public sector might normally be able to. A private sector contractor is responsible for delivering the project schedule agreed in the contract. Depending on the nature of the

concessionaire agreement, an equity investor might require that one or more contractors on a project will be required to deliver the project ahead of schedule and within budget according to pre agreed-upon terms. Any cost or schedule overruns might negatively affect the equity investor(s). A review of the available evidence does suggest that, overall, P3s do result in accelerated project delivery. For example, a recent report by the U.S. Department of Transportation found instances where using a P3 to deliver a transportation asset could help to reduce inconvenience by the traveling public through traffic disruption and help to improve public safety (USDOT 2004).

Second, P3s can be structured to help create a new cash flow, or monetize, an existing asset a governmental entity already owns. From a public-sector perspective, the monetization of assets might provide additional revenue streams into the transportation revenue account. This is especially true for existing assets, known as brownfield assets. There is some evidence to support this theory (GAO 2008).

There is also evidence of the potential for cost and time benefits related to the P3 delivery method. While scholarly evidence of P3 project outcomes in the United States is relatively limited, a recent quantitative study found evidence of improvement of project time savings for alternative delivery methods relative to the traditional design-bid-build method (Chasey, Maddex, and Bansal 2012). As cited in this and in other literature, possible reasons for time and cost savings from the public-sector perspective could be due to the direct incentives to the private contractor, use of best-practice performance-based contracting methods, bidder competition, and proper and efficient transfer and risk management by both the public sector and private sectors (Chasey,

Maddex, and Bansal 2012). It is worth noting, however, that this relatively small universe of completed projects can be limiting to proper before-and-after analysis. These authors note that it is not correct to draw generalized conclusions based on a single study alone. Results discussed in this study and in other literature do potentially point to more effective control of project schedules among projects that are delivered through the P3 approach relative to more traditional transportation project delivery approaches (Chasey, Maddex, and Bansal 2012). From a private sector contractor and equity investor perspective, this likely indicates that risk must be diligently managed to ensure that schedule and cost requirements are met.

As discussed previously, there is also evidence suggesting the P3 method can result in lifecycle efficiencies through better use of lifecycle cost analysis. As defined by the USDOT, lifecycle cost analysis generally refers to an approach involving a total cost comparison of competing design (or preservation) alternatives for a transportation project (Ozbay et al. 2004). A recent study found that, through more efficient use of this analysis process, P3s "can save from 6 to 40 percent of the cost of construction and limit the potential for cost overruns (USDOT 2004)."

In addition to improvements in lifecycle costs analysis, there is evidence suggesting that P3s can result in improved project quality and facilitate the transfer of risk from a public sector agency to one or more private sector partners. From the public-sector perspective, this means more innovation provided from a private sector partner. This also means that a private sector partner must be able to bring "more to the table" for selection in a competitive bidding process. For example, in its survey of transportation

P3 agencies, researchers at the University of Minnesota found the use of the alternative project delivery method has led to incentivizing project innovation (Zhao, Saunoi-Sandgren, and Barnea 2011).

Furthermore, in some cases, a transportation P3 contract can allow for the effective transfer and management of risk. This transfer of risk means that the public sector no longer is required to manage it. However, there are trade-offs for this. Often, the private sector will demand project equity or additional payments for taking this risk on. The available research does suggest that this risk transfer can work. For example, some scholars have shown that the transfer of risk from the public sector to the private sector can encourage the public sector to more efficiently manage project risk and, in some cases, potentially lessen the possibility of potential future financial losses. Furthermore, the preemptive consideration and planning of likely future risks, which is usually required in the development of a P3 project, can help to improve the likelihood of positive overall project outcomes (Zhao, Saunoi-Sandgren, and Barnea 2011). Indeed, a 2009 UK National Audit Office study found that the potential for benefits from the transfer of risk usually depend on "careful project analysis and public sector enforcement of a P3 agreement (UK National Audit Office 2009)."

Although some transportation scholars have cautioned that infrastructure P3s can potentially reduce public control over publicly owned infrastructure assets, others note that these innovative project delivery methods can sometimes improve the ability for public agencies to hold the private sector partner accountable for meeting certain outcomes. The peer-reviewed literature supporting this theory is limited; however, some

have made tenable cases supporting this theory. For example, some scholars have noted that most public-private partnership negotiations tend to be based on a "strong, performance-based contract that spells out all of the responsibilities and performance expectations that the government will require of the contractor. The failure to meet any of the thousands of performance standards specified in the contract exposes a contractor to financial penalties," concluding that "the public interest is protected by incorporating enforceable, detailed provisions and requirements into the contract (Gilroy 2009)." Other experts have found supporting evidence suggesting that under a typical P3 agreement, the public sector does not risk the loss of project ownership or control of a facility if the project negotiations are "well-crafted and properly enforced (Buxbaum and Ortiz 2009)." Furthermore, some suggest that deal terms can be done in a way that will help to ensure the public is adequately protected (Buxbaum and Ortiz 2009).

As is the case with many areas, there are also several limitations inherent in transportation P3s. The first concern with P3s is the possible reduction in public control in transportation project. There are an increasing number of examples of public concerns growing over a "take-over" of a public asset (Danielle Ivory 2016). There are even examples of changing terms in P3 contracts to reflect this growing concern. For example, some countries in Europe have limited the maximum term length for P3 agreements to only 35 years (Jeffers et al. 2007). From the private sector perspective, these term limits can pose challenges for long-term planning. Other scholars, however, argue these limits should be context-sensitive and concerns regarding the public control

of a transportation facility are usually addressed in P3 contracts (Buxbaum and Ortiz 2009, Jeffers et al. 2007).

Similar to concerns of a private sector "take-over" of public infrastructure, other scholars have raised the possibility of private sector companies collecting an "unreasonable" profit. These scholars suggest that private concessionaires could make profits "at the public's expense" by demanding unreasonably high tolls and fees for transportation facility use, neglecting operations and maintenance of a transportation facility, or requiring to be compensated for lost revenue (Buxbaum and Ortiz 2009, Grimsey and Lewis 2005).

Other concerns are more financial in nature: the potential for loss of future public revenues is one such concern. Again, there is some evidence to support parts of this claim. According the U.S. GAO, higher financing costs relative to financing costs only available to the public sector can, in certain circumstances, result in higher overall project costs (GAO 2008). Conversely, other scholars have argued that these such issues can be addressed and mitigated through asset valuation changes and more effective negotiation of agreements related to risk-sharing (Rall, Reed, and Farber 2010).

The risk of bankruptcy or default through a public-private partnership is another major concern—one underscored most recently with the bankruptcy and subsequent debt restructuring of State Highway 130 Segments 5 and 6 in Central Texas (Lovegrove 2016). While the public perception of P3s was damaged as a result, the private sector ultimately took on the financial loss as part of the structured agreement with TxDOT, the public-sector partner. Nevertheless, some scholars also note that there is sometimes a

risk that a private P3 partner could default on a project, negatively affecting the fiscal and social well-being of the public. This issue is especially pertinent with regard to P3s in which the public sector might be at ultimate financial risk or could otherwise could be required to make a remuneration to a private sector partner in the event of a default (Temple-West 2010).

Although preserving confidentiality during the negotiation of a P3 agreement can be essential in certain circumstances, from the public sector perspective some scholars and practitioners have voiced concerns regarding the transparency of such a process (Urahn 2009). For example, a survey of state DOTs found that 70 percent of those that responded noted that transparency was an important measure that was inherently in the public's best interest (Buxbaum and Ortiz 2009). Several studies, including the GAO, identified P3 agreements completed without public oversight and identified several options for improving the transparency and openness of the process. Ultimately, the GAO found that an open process that gives all stakeholders opportunities to provide input could be one best practice that public agencies could integrate into their proposal solicitation and evaluation process (GAO 2008). While many in the public argue that little evidence is available that suggests an open process is always followed, many large consortia argue otherwise.

Several issues have also been brought up regarding the role that environmental procedures are properly followed through an alternative project delivery method, such as a P3. For example, some scholars have raised concerns that parties in these agreements may choose "less environmentally friendly methods to save on cost (Regional Plan

Association 2006)." However, other scholars have noted that recently many P3 have included environmental performance standards that the private concessionaire is required to meet (Buxbaum and Ortiz 2009). Furthermore, due to the state of the nascent U.S. transportation P3 industry, many foreign companies will often be the ones that seek to participate in a large P3 bid. As a result, some scholars have raised issues related to involvement by a foreign company or consortia, suggesting that only U.S.-based firms should be allowed to bid.

Finally, other issues exist regarding the confusing nature by which transportation infrastructure is paid for by the public. For example, many have argued that publicly funded transportation facilities, such as state roads that receive some or all of its funding through more traditional funding mechanisms (e.g., gas taxes, vehicle registration fees) should not be monetized via a toll. To gain public support, some scholars have argued that benefits from a toll on that road need to be clearly communicated (Smith 2013).

To the extent possible, these statements were supported with evidence from peer-reviewed studies. Generally, while a public sector agency could benefit from the transfer of risk to one or more private sector partners, this is not without a concession to the private sector contractor or equity investor. With the transfer of any type of risk, the public sector (and the taxpaying public) may find itself "better off" by no longer having financial responsibility for the liabilities of maintaining and operating a long-term transportation asset. Regardless, the pros and cons of any private investment infrastructure must be carefully evaluated by the public-sector partner.

Relevant Literature Findings

This literature review covered several key aspects associated with topics related to this dissertation. First, a background on key theories behind the American federal system and how it has evolved over time was provided. Next, this dissertation presented a brief review on theories of policy diffusion across states with a special focus on network linkages in the Texas Legislature. Finally, latest research on highway transportation P3s, their use, and some of the most recent studies on the topic was presented.

Based on a review of literature, a few key findings emerged. First, the way P3 enabling legislation has been adopted over time can be explained by all four competing theories behind federalism at work simultaneously. For example, the way P3 enabling legislation has diffused across different states rather than through one single federal law shows ideationist theories of federalism. In other words, the literature findings suggest that decentralist ideas in a society (i.e., state P3 policy, at least initially) can, in some cases, make federalism more likely to function. Simultaneously, a direct legacy of the colonial structure in the pre-federalist American federal system is represented in 50 state DOTs overseen by 50 different state legislatures. This is explained best through the "infrastructural powers" theory that notes that federalism will emerge "when the subunits of a potential federation already have highly developed infrastructures (Ziblatt 2006)." A further manifestation of this legacy, then, are 50 different beliefs on P3 policy.

A second key finding is the importance of agenda setting—especially within the context of whether a state eventually adopts P3 enabling legislation. A cursory review of this legislation suggests that the time P3 legislation is first proposed in a state legislature to the time it is eventually enacted into law is short. While this does not confirm the theory that putting the issue of P3s on the agenda is the most difficult part of the process, it does suggest that state legislatures appear efficient at moving the issue through their respective chambers. This is noteworthy for P3 policy. While it is true that many state legislatures do revisit their P3 enabling legislation years and even decades after the initial enabling legislation is passed, rarely if ever do state legislatures decide to go in a fundamentally different direction.

The six policy diffusion theories presented in this literature review is also instructive for explaining how P3 enabling legislation spread from just a handful of states in the early 2000s to over three-dozen in 2018. Based on a cursory timeline of when states adopted their P3 enabling legislation, some theories (e.g., problem severity, state wealth, ideology) appear far more relevant in explaining this spread than others (e.g., legislative professionalism, neighboring state, national intervention).

Finally, this literature review explored the history of P3 legislation itself. While this discussion focused on the institutional actors involved with Texas P3 enabling legislation, it is reasonable to suggest that similar actors also participated in the development of P3 enabling legislation in similar ways in other states. Relatedly, this review provided a cursory review on the relevant "pros" and "cons" of the P3 delivery

method itself. While there are certainly opportunities for additional research, the literature summarized establishes context for the chapters that follow.

CHAPTER III

QUANTITATIVE ANALYSIS

This chapter provides three sections of analysis: descriptive, exploratory, and testing of H_1. First, a descriptive analysis is provided reviewing the history and diffusion of transportation P3 enabling legislation policy across the U.S. Next, I cover the statistical methods used for an exploratory analysis as well as H_1. The results are then provided. I conclude this chapter by discussing the results and offering possible implications for the future of P3 enabling legislation outcomes.

Descriptive Analysis

As discussed previously, 37 U.S. states, Puerto Rico, and the District of Columbia have enacted some form of highway P3 enabling legislation. As shown in Figure 3 below, states that have enacted public-private partnership enabling legislation are diverse: they are located in all four U.S. Census designated regions, include large states with a large number of lane miles and smaller states with fewer lane miles (USDOT FHWA 2018c). As shown in Figure 3, no clear geographic pattern explain how states have enacted P3 enabling legislation.

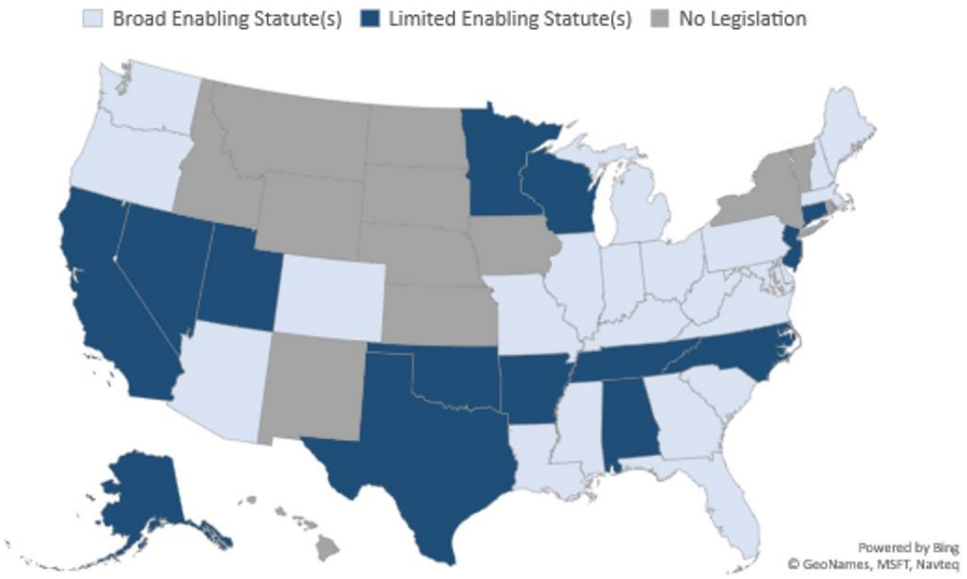


Figure 3 States with Enabling Statutes for P3s
Source: (USDOT FHWA 2018c)

As shown in Figure 3, FHWA categorizes highway P3 enabling legislation into three types: "broad," "limited," or "none." States with "broad" enabling legislation are those that, generally, do not significantly limit the number or authority of state or local entities to enter into P3 agreements. "Limited" enabling legislation, by contrast, are states whose statute restricts the number or authority of state or local agencies to enter into P3 agreements (USDOT FHWA 2018c). Finally, states with no state statute authorizing P3 agreements are denoted as "none." As shown in Table 5 below, state statutes in 23 states (46 percent) grant "broad" authority for state or local agencies to enter into highway P3 agreements, whereas another 14 states (28 percent) grant "limited" authority (USDOT FHWA 2018c).

Table 5 P3 Enabling Legislation Category and Description

P3 Enabling Legislation Category	Description	Total # of States
Broad	State statute does not significantly limit the number or authority of state or local agencies to enter into P3 agreements	23 (46%)
Limited	State statute restricts the number or authority of state or local agencies to enter into P3 agreements	14 (28%)
None	No state statute authorizing P3 agreements	13 (26%)

Source: (USDOT FHWA 2018c)

As shown in Table 5, 74 percent of states have enacted either "broad" or "limited" P3 enabling legislation. However, a majority of P3 project activity occurred in only a handful of places. According to Public Works Financing's Major Projects Database, more than half (62 percent) of all highway P3 projects, completed or proposed, have occurred in just seven states: Arizona, California, Colorado, Florida, North Carolina, Texas, and Virginia (Reinhardt 2018). For the purposes of this analysis, completed projects are those that have reached financial close (i.e., all of the project agreements have been signed and approved and all of the conditions contained in the project and financing documents were met.) Proposed projects are those that were considered but never reached financial close. Table 6 below shows the number of P3 deals, completed or proposed, by state (Reinhardt 2018).

Table 6 Highway P3 Projects Completed or Proposed, as of August 2018

State	Proposed	Completed	Total	% of Total
Arizona	7	5	12	5%
Arkansas	1	0	1	0%
California	9	15	24	9%
Colorado	4	7	11	4%
Connecticut	0	1	1	0%
District of Columbia	1	2	3	1%
Florida	10	24	34	13%
Georgia	4	3	7	3%
Illinois	3	1	4	2%
Indiana	1	6	7	3%
Louisiana	1	0	1	0%
Maine	1	0	1	0%
Maryland	1	2	3	1%
Massachusetts	1	6	7	3%
Michigan	2	1	3	1%
Minnesota	0	5	5	2%
Mississippi	1	3	4	2%
Missouri	2	1	3	1%
Nevada	2	2	4	2%
New Jersey	0	1	1	0%
New Mexico	0	3	3	1%
New York	0	4	4	2%
North Carolina	3	14	17	7%
Ohio	3	4	7	3%
Oregon	1	1	2	1%
Pennsylvania	4	1	5	2%
Rhode Island	0	1	1	0%
South Carolina	1	6	7	3%
Texas	9	33	42	16%
Utah	1	6	7	3%
Virginia	5	16	21	8%
Washington	0	4	4	2%
West Virginia	3	2	5	2%
Total	**81**	**180**	**261**	**100%**

Source: (Reinhardt 2018)

There are several possible reasons why a majority of P3 activity occurs in just seven states. Numbers in the exploratory analysis of this study demonstrate these states have experienced the largest rate of population growth over the past 30 years. With fast-

growing suburbs around large cities, they have faced the most pressure from growing vehicle demand. Another possibility is that firms in these states have the technical expertise to deliver projects through alternative project delivery means. Further research is needed to establish a more complete understanding of the relationship between these variables and P3 enabling legislation.

As shown in Figure 4 below, states that have seen the most P3 activity all have enacted some form of P3 enabling legislation into law and have had this legislation "on the books" for at least a decade or more. Three notable examples of projects completed in areas without P3 enabling legislation stand out: New Mexico, New York, and Rhode Island. While further research is needed to understand this phenomenon, several possible explanations emerge. First, it could be that legislators in these three states foresaw a favorable political environment for P3 projects to move forward in the absence of state enabling legislation (Hamm and Moncrief 2012). In other words, the political environment may have favored P3 projects so strongly that enabling legislation was not required.

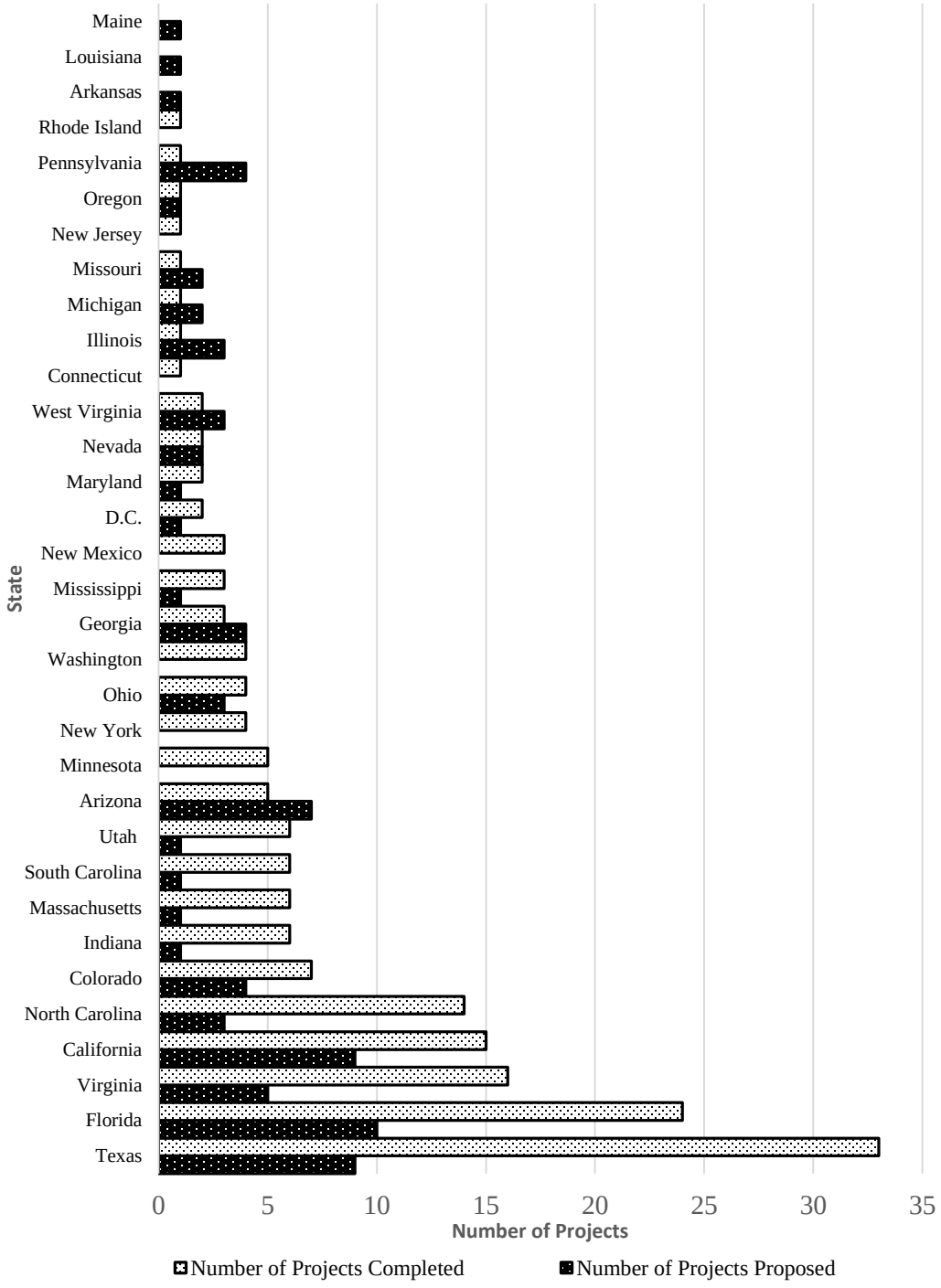


Figure 4 Major P3 Projects Proposed and Completed, 1990-2018
Source: (Reinhardt 2018)

Figure 5 below provides a cumulative histogram of the number of U.S. state or territories first enacting P3 enabling legislation by year. A majority of states enacted their P3 enabling legislation after 2001. However, after a slow period during the early 2000s, by the late 2000s state legislatures again began to enact P3 enabling legislation. In 2009 alone, for example, five U.S. states or territories—Arizona, Georgia, Maine, Massachusetts, and Puerto Rico—enacted P3 enabling legislation.

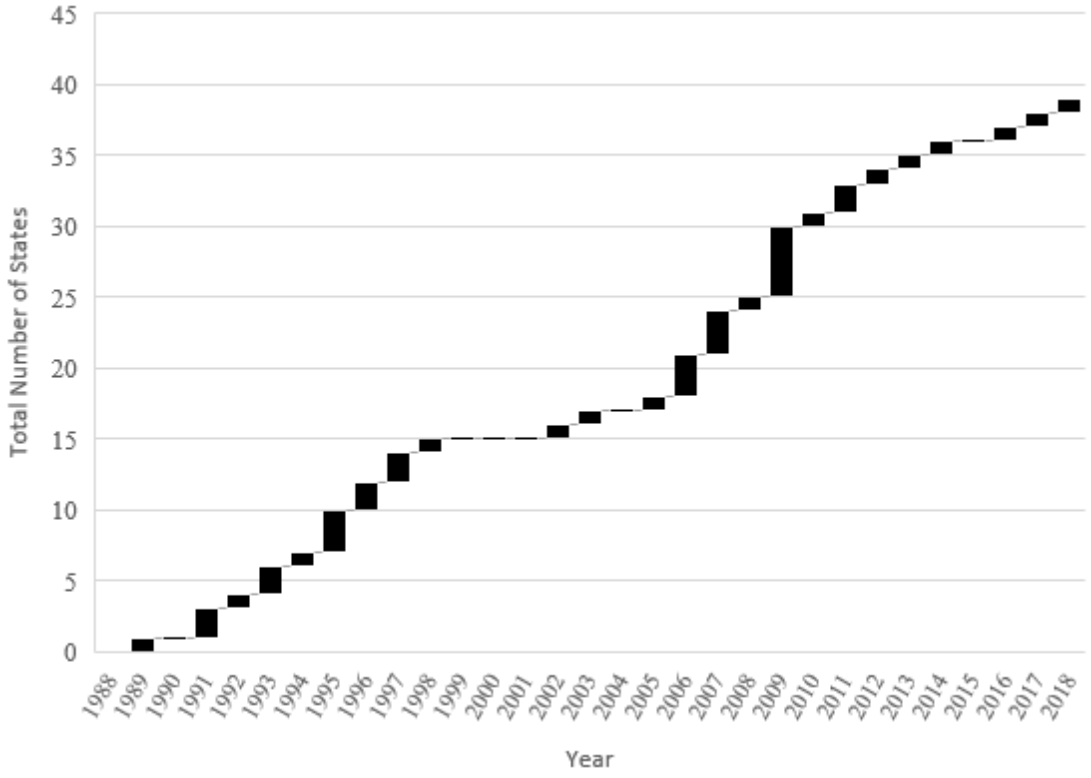


Figure 5 Cumulative Histogram of P3 Enabling Legislation Year First Enacted into Law
Source: (USDOT FHWA 2018c, Albalate, Bel i Queralt, and Geddes 2018)

Exploratory Analysis

Theory, Data, and Methods

Prior to evaluating H_1, I began with an exploratory analysis testing a series of conditions that, according to the literature, help explain the differences between states that adopt P3 enabling legislation and states that do not. I evaluated descriptive statistics as well as a series of two-sample t-tests. I first constructed a 50-state dataset of demographic, political, administrative, and other relevant characteristics. My independent variables included the presence or absence of P3 enabling legislation and the type of P3 enabling legislation enacted into law. The paragraphs that follow provide a detailed explanation of expected relationships with the independent variable and provide supporting literature.

The first relationship explored is the rate of population growth. States that grow faster are also more likely to adopt P3 enabling legislation (Albalate, Bel i Queralt, and Geddes 2018). Therefore, it is expected the percent population growth will be greater among states that have P3 enabling legislation in place when compared to states that do not. This is partly because states experiencing high population growth are also likely to face increased pressure to explore other leveraging tools such as P3s (Rall, Reed, and Farber 2010). The dependent variable used to measure this relationship is the percent change in population from 2010 to 2017. Data used to develop this dependent variable were obtained from data provided by the U.S. Census Bureau (US Census Bureau 2018).

In addition to population growth, total state population has also been shown to relate to enactment of P3 enabling legislation. Scholars argue that highly populated

states face pressure to develop alternative highway project delivery methods to connect their large population together (Rall, Reed, and Farber 2010). Therefore, states with a large population are more likely to consider P3 enabling legislation (Rall, Reed, and Farber 2010). As a result, I expect the total state population to be greater in states with P3 enabling legislation when compared to states with no P3 enabling legislation. The dependent variable used to measure this relationship is the total state population in 2017. Data used to develop this dependent variable were obtained from the U.S. Census Bureau (US Census Bureau 2018).

A recent analyses notes that the number of state lane miles could also be related to P3 enabling legislation adoption (Rall, Reed, and Farber 2010). This argument postulates that states with more total lane miles face greater demand for operations and maintenance funding and, therefore, have less funding available for new construction projects. Thus, states with large amounts of existing lane miles are more open to P3 enabling legislation as another tool to deliver new projects. This allows states to budget transportation revenues for maintenance and operation obligations instead (Siemiatycki 2009). Consequently, it is expected the total state lane miles to be greater in states with P3 enabling legislation when compared to states with no P3 enabling legislation. The dependent variable used to measure this relationship is total number of state lane miles in 2017. Data used to develop this dependent variable were obtained from the American Association of State Highway and Transportation Officials (AASHTO) (AASHTO 2016).

Next, I examined legislative characteristics. According to the literature, states with several transportation entities place added pressure on their state legislatures to provide additional leveraging tools for finance and delivery of transportation projects, including P3s (Chen, Daito, and Gifford 2016). In many states regional and county toll authorities also may play a role in infrastructure delivery; consequently, these states may be more interested in having alternative project delivery tools (Tran, Harper, and Minchin Jr 2017). Accordingly, I expect the number of state transportation entities in 2017 to be greater in states with P3 enabling legislation when compared to states that do not The dependent variable used to measure this relationship is the total number of state transportation entities, and data used to develop this dependent variable were obtained from AASHTO (AASHTO 2016).

Previous research has posited that the number of state legislative committees with jurisdiction over transportation may matter in explaining whether a state was successful in adopting its P3 enabling legislation (Munaya 2010). In this case, the relationship is negative: the mean number of transportation-related legislative committees is lower for states with P3 enabling legislation when compared to states that do not. At first, this relationship might seem counter-intuitive. However, past research has shown that a larger number of policy actors can contribute to failed passage of policy (Karch 2007). This is especially true for complex policy, such as P3 enabling legislation (Rall, Reed, and Farber 2010). The dependent variable used to measure this relationship is the number of state legislative committees with jurisdiction over transportation in

2017. Data used to develop this dependent variable were obtained from AASHTO (AASHTO 2016).

This literature also suggests that it is possible key financial considerations might play a role in whether a state enacts P3 enabling legislation. One financial consideration is the amount a state DOT spends to build and maintain its roadway network. Past studies suggest that states with higher levels of DOT expenditures tend to face less pressure to consider P3s for new construction projects. However, there is some disagreement among scholars on whether there is merit to this claim (Rall, Reed, and Farber 2010). The dependent variable used to measure this relationship is the total authorized DOT expenditures in 2017. Data used to develop this dependent variable were obtained from AASHTO (AASHTO 2016).

Previous studies theorize that states with large state transportation revenues have the resources required to build and maintain their state's highway network. Therefore, they do not see as strong a need to pursue P3 enabling legislation (Rall, Reed, and Farber 2010). I expect states with P3 enabling legislation to have less state transportation revenues when compared to states that do not. To conduct this test, the dependent variable is the total state revenue for transportation in 2017. These data were obtained from AASHTO (AASHTO 2016).

The amount of state debt is one key determinant why states might want to pursue P3 enabling legislation (DiNapoli 2013). For example, some scholars note the problems that debt can pose for state DOTs, especially if a portion of total state revenues must go toward servicing debt rather than transportation (Chapman 2008). States with large

amounts of state debt still need to meet roadway demand; therefore, they are more likely to enact P3 enabling legislation. Given this, I expect total debt obligations outstanding to be greater in states with P3 enabling legislation than states with none. To conduct this test, I used total state debt obligations outstanding in 2017 as my dependent variable. Data used to develop this dependent variable were obtained from AASHTO (AASHTO 2016).

Finally, according to the literature, the total amount of distance traveled is positively related to whether a state enacts P3 enabling legislation (Munaya 2010). This relationship makes sense: the more drivers travel in a state, the greater the demand for new roadway projects. In turn, state legislators will be more likely to face increased pressure to respond. Given this, I expect total number of vehicle kilometers traveled in 2017 to be greater in states with P3 enabling legislation than states that do not. To conduct this test, I used total vehicle kilometers traveled in 2017 as my dependent variable. Data used to develop this dependent variable were obtained from AASHTO (AASHTO 2016). All dependent variables used in this analysis and the data sources for each variable is summarized in Table 7 below.

Table 7 Exploratory Analysis Data Sources and Variables

Data Source	**Variable**
U.S. Census Bureau	Percent Change in State Population from 2010-2017
	Total State Population in 2017
AASHTO *Transportation Governance and Finance: A 50 State Review of State Legislatures and DOTs*	Number of State Lane Miles in 2017
	Number of State Transportation Entities in 2017
	Number of Legislative Committees with Jurisdiction over Transportation in 2017
	Authorized State DOT Expenditures in 2017
	Total State Revenue for Transportation in 2017
	Authorized State Debt Obligations Outstanding in 2017
	Number of Annual Vehicle Kilometers Traveled in 2017

Source: (US Census Bureau 2018, AASHTO 2016)

Table 8 below summarizes the variables tested in this exploratory analysis. A "+" in the "Expected Mean Difference (Yes – No)" column indicates the expected mean difference between states with and without P3 enabling legislation as positive. Conversely, a "-" in the "Expected Mean Difference (Yes – No)" indicates an expected negative relationship. As outlined above, these expectations are founded in the literature. The dependent variable, expected mean difference, and rationale is summarized in this table.

Table 8 Exploratory Analysis Variables**,** Expected Mean Difference, and Rationale

Variable	**Expected Mean Difference (Yes – No)**	**Rationale**
Percent Change in State Population from 2010 to 2017	+	States experiencing high rates of population growth are also facing increased pressure to make their state friendlier toward incentivizing P3 projects because they are facing immense growth in demand with relatively small increases in transportation revenues.
Total State Population in 2017	+	Heavily populated states, which also tend to be highly urbanized, face pressure to find alternative ways to deliver highway projects to connect their large metro areas together.
Number of State Lane Miles in 2017	+	States with more lane miles face greater demands for operations and maintenance funding and have less available for new construction projects, so they are more open to incentivizing P3s.
Number of State Transportation Entities in 2017	+	A review of P3 project data shows that these projects tend to be delivered by more than just the state DOT; in many states, regional and county toll authorities also play a role. Therefore, a relationship between the number of state transportation entities and the P3 private investment potential would be likely.
Legislative Committees with Transportation Jurisdiction in 2017	-	Past research has found that P3s tend to be highly complex. Therefore, the more "players" in the process, the less likely P3 enabling legislation will be enacted.
Total Authorized State DOT Expenditures in 2017	-	States that have higher levels of DOT expenditures face less pressure to consider P3s for new construction projects.
Total State Revenue for Transportation in 2017	-	States that have greater authorized state revenues available for transportation face less pressure to need P3s as an alternative.
Total State Debt Obligations in 2017	+	States with greater debt on their books are more likely to see P3s as another way to deliver transportation projects.
Annual Vehicle Kilometers Traveled in 2017	+	States that have higher overall vehicle distance traveled face greater demand for highway P3 projects.

Source: (Rall, Reed, and Farber 2010, Karch 2007, Albalate, Bel i Queralt, and Geddes 2018, US Census Bureau 2018, AASHTO 2016, DiNapoli 2013, Chapman 2008)

Results

I first reviewed descriptive statistics. As shown in Table 9 below, the mean, standard deviation, minimum, and maximum value is presented for all eight variables tested in the exploratory analysis.

Several notable findings emerge from these descriptive results. First, the percent change in state population from 2010-2017 ranges from a minimum of -2.07 percent in West Virginia to +12.1 percent growth in Texas. Interestingly, both states have enacted P3 enabling legislation. Furthermore, total state population in 2017, total state lane miles in 2017, authorized state DOT expenditures in 2017, total state transportation revenue in 2017, total state debt obligations outstanding in 2017, and annual vehicle kilometers traveled in 2017 varied for each state. This variance is not surprising: states themselves vary significantly. For example, California has a population of almost 40 million and P3 enabling legislation enacted into law. This is nearly 80 times greater than Wyoming, a state that has not enacted P3 enabling legislation. Appendix 1 provides detailed results and box plot results for each variable explored

Table 9 Descriptive Statistics of Exploratory Analysis Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Percent Change in State Population from 2010 to 2017	0.0462737	0.0378452	-0.0207397	0.121345
Total State Population in 2017	6,500,504	7,345,270	579,315	39,776,830
Number of State Lane Miles in 2017	171,017	121,236	3,428	777,575
Number of State Transportation Entities in 2017	1.951176	2.167134	1	10
Legislative Committees with Transportation Jurisdiction in 2017	4.058824	2.139269	1	11
Total Authorized State DOT Expenditures in 2017	$3,220,000,000	$350,000,000	$370,000,000	$17,000,000,000
Total State Revenue for Transportation in 2017	$2,970,000,000	$3,000,000,000	$372,000,000	$11,000,000,000
Total State Debt Obligations in 2017	$1,300,000,000	$2,770,000,000	$0	$13,700,000,00
Annual Vehicle Kilometers Traveled in 2017	100,000,000,000	105,000,000,000	5,800, 000,000	547, 000,000,000

Source: (AASHTO 2016, US Census Bureau 2018)

Next, I compared the mean of states with P3 enabling legislation with the mean of states without P3 enabling legislation for each variable. Table 10 below summarizes the results from this test.

With respect to Table 10, several observations emerged. First, states with P3 enabling legislation in place had mean values greater than states without P3 enabling legislation for all nine variables tested. This was not expected. As discussed in Table 8, I expected the mean to be lower for states with P3 enabling legislation for the following three variables: legislative committees with jurisdiction over transportation in 2017, total authorized state DOT expenditures for 2017, and total state transportation revenues for 2017. These preliminary observations suggest further research may be needed to more firmly understand why the results contradict earlier findings in the literature.

Table 10 Mean Differences by P3 Enabling Legislation

Variable	Mean with P3 Enabling Legislation	Mean without P3 Enabling Legislation	Difference
Percent Change in State Population from 2010 to 2017	.0473741	.0431418	0.0042322
Total State Population in 2017	7,505,068	3,641,360	3,863,709
Number of State Lane Miles in 2017	181,067	155,307	25,760
Number of State Transportation Entities in 2017	2.135135	1.461538	0.6735967
Legislative Committees with Transportation Jurisdiction in 2017	4.378378	3.307692	1.070686
Total Authorized State DOT Expenditures in 2017	$3,760,000,000	$1,970,000,000	$1,790,000,000
Total State Revenue for Transportation in 2017	$3,430,000,000	$1,940,000,000	$1,490,000,000
Total State Debt Obligations in 2017	$1,470,000,000	$817,000,000	$654,000,000
Annual Vehicle Kilometers Traveled in 2017	120,000,000,000	51,200,000,000	68,800,000,000

Source: (AASHTO 2016, US Census Bureau 2018)

Next, I conducted a series of t-tests to understand whether these differences are statistically significant. Table 11 compares the t-value (i.e., size of the difference relative to variation), mean difference (i.e., difference between states without P3 enabling legislation and states with P3 enabling legislation), and p-value (i.e., probability that there is a statistically significant difference between states that do not have P3 enabling legislation in place when compared to those that do).

Table 11 P3 Enabling Legislation T-Test Results

Variable	T-value	Mean Diff.	P-value
Percent Change in State Population from 2010 to 2017	-0.3437	-.0042322	0.7326
Total State Population in 2017	-1.6605	-3,863,709	0.1033
Number of State Lane Miles in 2017	-0.6617	-25760.43	0.5934
Number of State Transportation Entities in 2017	-0.9554	-0.6735967	0.1721
Legislative Committees with Transportation Jurisdiction in 2017	-1.5747	-1.070686	0.1219
Total Authorized State DOT Expenditures in 2017	-1.5946	-$1,790,000,000	0.1176
Total State Revenue for Transportation in 2017	-1.4833	-$1,490,000,000	0.1455
Total State Debt Obligations in 2017	-0.7300	-$654,000,000	0.4689
Annual Vehicle Kilometers Traveled in 2017	-2.1014	-68,800,000,000	0.0409*

Note: * denotes statistically significant at $p < 0.05$

The results presented in Table 11 above show that annual vehicle kilometers traveled in 2017 was the only statistically significant difference observed. This observation is consistent with the findings in the literature: states with higher overall greater vehicle travel also are more likely to have enacted P3 enabling legislation (Munaya 2010). For all other insignificant results, the null hypothesis cannot be rejected. This is inconsistent with the literature findings. Further explanation of these findings is provided in the discussion section of this chapter.

Hypothesis Analysis

Theory, Data, and Methods

The quantitative analysis of this dissertation will empirically examine H_1, debt and risk transfer. There are not enough available data to conduct an effective comparison of project innovation (H_2) and leverage potential (H_3). Thus, H_2 and H_3 will be examined further in the qualitative analysis. Figure 6 below provides a visual illustration of the hypothesis (H_1) that will be examined as it relates in the context of the larger research design.

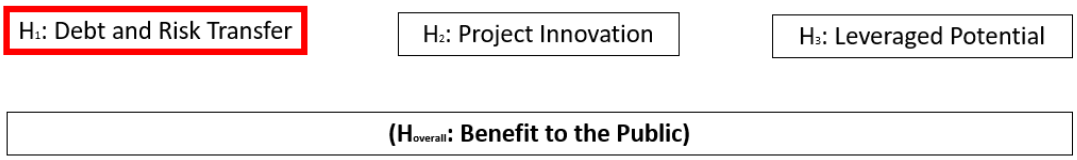


Figure 6 H_1 Debt and Risk Transfer

Operationally, H_1 addresses one reason why state lawmakers seek to enact P3 enabling legislation: reduction in overall debt. Much has been written about this topic, with some suggesting that P3s can in certain circumstances reduce the debt load states take on by shifting risks away from the public sector (Geddes and Wagner 2013). As discussed previously, Albalate et al. (2018) and have tested outcomes observed after states enacted P3 enabling legislation into law (Albalate, Bel i Queralt, and Geddes

2018, Boyer and Scheller 2018). Based on the literature, I expect the average annual state obligations outstanding for highways to decrease after a state enacts its P3 enabling legislation.

To test this hypothesis, I conducted a paired two-sample t-test comparing the average annual state debt obligations for highway projects in the five-year period prior to enacting P3 enabling legislation to the time period after P3 enabling legislation was enacted. As shown in Table 12, I defined a timeline period of before, during, and after for each state that has P3 enabling legislation enacted into law. The before period was measured as the five years prior to enacting P3 enabling legislation, the "lag" period was defined as the 2 years after legislation was enacted, and after was measure from the end of the "lag" period to 2017. This "lag" period was included because research has shown that public policy tends to take at least one year to be fully implemented (Karch 2007, Montjoy and O'Toole 1979). Due to the way this study was designed, Maryland, New Hampshire, Oklahoma, Kentucky, and New Jersey were not included in this analysis. This is because these states had just enacted their state's P3 enabling legislation and were still in their "lag" period during the time this analysis was conducted.

Table 12 P3 Test Period by State

State	Five Years Before P3 Enabling Legislation Enacted into Law	"Lag" Period	After P3 Enabling Legislation Enacted into Law
California	1983 – 1988	1989 – 1991	1992 – 2017
Florida	1985 – 1990	1991 – 1993	1994 – 2017
Texas	1985 – 1990	1991 – 1993	1994 – 2017
Illinois	1986 – 1991	1992 – 1994	1995 – 2017
Minnesota	1987 – 1992	1993 – 1995	1996 – 2017
South Carolina	1988 – 1993	1994 – 1996	1997 – 2017
Delaware	1989 – 1994	1995 – 1997	1998 – 2017
Oregon	1989 – 1994	1995 – 1997	1998 – 2017
Virginia	1989 – 1994	1995 – 1997	1998 – 2017
Alabama	1990 – 1995	1996 – 1998	1999 – 2017
Colorado	1990 – 1995	1996 – 1998	1999 – 2017
Indiana	1991 – 1996	1997 – 1999	2000 – 2017
Louisiana	1991 – 1996	1997 – 1999	2000 – 2017
Wisconsin	1992 – 1997	1998 – 2000	2001 – 2017
North Carolina	1996 – 2001	2002 – 2004	2005 – 2017
Nevada	1997 – 2002	2003 – 2005	2006 – 2017
Washington	1999 – 2004	2005 – 2007	2008 – 2017
Alaska	2000 – 2005	2006 – 2008	2009 – 2017
Missouri	2000 – 2005	2006 – 2008	2009 – 2017
Utah	2000 – 2005	2006 – 2008	2009 – 2017
Arkansas	2001 – 2006	2007 – 2009	2010 – 2017
Mississippi	2001 – 2006	2007 – 2009	2010 – 2017
Tennessee	2001 – 2006	2007 – 2009	2010 – 2017
West Virginia	2002 – 2007	2008 – 2010	2011 – 2017
Arizona	2003 – 2008	2009 – 2011	2012 – 2017
Georgia	2003 – 2008	2009 – 2011	2012 – 2017
Maine	2003 – 2008	2009 – 2011	2012 – 2017
Massachusetts	2003 – 2008	2009 – 2011	2012 – 2017
Michigan	2004 – 2009	2010 – 2012	2013 – 2017
Connecticut	2005 – 2010	2011 – 2013	2014 – 2017
Ohio	2005 – 2010	2011 – 2013	2014 – 2017
Pennsylvania	2006 – 2011	2012 – 2014	2015 – 2017
Maryland	n/a	n/a	n/a
New Hampshire	n/a	n/a	n/a
Oklahoma	n/a	n/a	n/a
Kentucky	n/a	n/a	n/a
New Jersey	n/a	n/a	n/a

Note: "n/a" denotes insufficient data available to conduct a fair "after" comparison. For this reason, Maryland, New Hampshire, Oklahoma, Kentucky, and New Jersey were not included in this analysis.
Source: (USDOT FHWA 2018c, Albalate, Bel i Queralt, and Geddes 2018)

To measure debt and risk transfer, I used average annual state obligations outstanding for highways as a proxy. The numbers were adjusted to account for the time value of money, thus, all data are shown in 2018 dollars (Clemons and McBeth 2015).

Results

Table 13 compares average annual state obligations outstanding for highways five years before a state enacted its P3 enabling legislation into law, during the two year "lag" period, and afterward. Only seven states saw their average annual obligations outstanding for highways decrease after they enacted P3 legislation: Alabama, Georgia, Louisiana, Michigan, Minnesota, North Dakota, and West Virginia. The remaining 26 states saw an increase. Overall, the mean difference observed was $1,629,366,000 in 2018 dollars.

Table 13 Average Annual State Obligations Outstanding for Highways Before, during "Lag" Period, and After P3 Enabling Legislation Enaction, in 2018 Dollars

State	Five Years Before P3 Enabling Legislation Enacted into Law	"Lag" Period	After P3 Enabling Legislation Enacted into Law	Difference (After-Before)
Alabama	$213,252,000	$81,184,000	$185,505,000	-$27,747,000
Alaska	$64,272,000	$203,513,000	$235,434,000	$171,163,000
Arizona	$2,026,448,000	$3,023,231,000	$3,004,125,000	$977,677,000
Arkansas	$531,821,000	$566,972,000	$563,103,000	$31,283,000
California	$265,216,000	$556,222,000,000	$5,181,669,000	$4,916,453,000
Colorado	$586,181,000	$0	$1,159,638,000	$573,456,000
Connecticut	$3,558,422,000	$3,802,034,000	$4,127,439,000	$569,016,000
Delaware	$877,654,000	$1,246,816,000	$1,870,584,000	$992,930,000
Florida	$2,351,776,000	$5,162,977,000	$8,300,907,000	$5,949,132,000
Georgia	$2,437,175,000	$3,907,293,000	$435,768,000	-$2,001,407,000
Illinois	$3,281,248,000	$3,964,050,000	$5,664,516,000	$2,383,268,000
Indiana	$1,032,349,000	$992,388,000	$2,942,430,000	$1,910,080,000
Louisiana	$2,295,021,000	$827,967,000	$1,761,521,000	-$533,501,000
Maine	$474,677,000	$581,791,000	$539,128,000	$64,451,000
Massachusetts	$9,034,245,000	$9,642,672,000	$9,795,160,000	$760,915,000
Michigan	$2,243,890,000	$2,646,718,000	$2,147,140,000	-$96,750,000
Minnesota	$760,746,000	$127,724,000	$677,960,000	-$82,786,000
Mississippi	$518,519,000	$267,965,000	$827,809,000	$309,289,000
Missouri	$490,737,000	$1,502,882,000	$3,052,654,000	$2,561,916,000
Nevada	$52,188,000	$258,093,000	$659,932,000	$607,744,000
North Carolina	$179,101,000	$248,341,000	$1,400,412,000	$1,221,311,000
Ohio	$38,901,000	$2,394,384	$3,433,701,000	$3,394,800,000
Oregon	$218,014,000	$63,419,000	$1,266,656,000	$1,048,642,000
Pennsylvania	$5,547,982,000	$10,635,401,000	$13,054,416,000	$7,506,434,000
South Carolina	$9,751,000	$10,633,000	$917,824,000	$908,073,000
Tennessee	$0	$0	$0	$0
Texas	$737,532,000	$6,491,738,000	$11,600,521,000	$10,862,989,000
Utah	$1,433,162,000	$1,285,033,000	$2,481,728,000	$1,048,567,000
Virginia	$1,541,729,000	$1,490,978,000	$2,975,039,000	$1,433,311,000
Washington	$1,679,989,000	$3,084,017,000	$6,965,425,000	$5,285,436,000
West Virginia	$793,491,000	$730,068,000	$536,401,000	-$257,090,000
Wisconsin	$1,147,863,000	$1,214,443,000	$2,469,170,000	$1,321,307,000

Data Source: (USDOT FHWA 1983 - 2017)

Results for the paired two-sample t-test are shown in Table 14. The mean difference was $1,629,366,000 and the standard deviation was $2,610,202,000. The t-value was -3.5859 and the p-value was 0.0011. The results are statistically significant: I can reject the null hypothesis and conclude the mean difference is positive.

Table 14 Paired Two-Sample T-Test of Average Annual State Debt Obligations Outstanding for Highways Before and After P3 Enabling Legislation

P3 Enabling Legislation	Obs.	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
Before	32	1,408,660	322,677.8	1,853,643	751,386.3	2,065,933
After	32	3,038,025	591,425.5	3,397,481	1,833,331	4,242,720
Difference	32	-1,629,366	454,377.9	2,610,202	-2,554,903	-703,828.5
T-value	-3.5859					
Df	31					
P-value	0.0011					

Source: (AASHTO 2016)

These results show that, for the time period tested, average annual state obligations outstanding for highways did not decrease after a state enacted its P3 enabling legislation. Rather, the opposite occurred. This study does not account for outside influences that could impact average annual state debt obligations for highway projects. Thus, it is impossible to conclude that P3 enabling legislation was the cause of this increase. However, this study does not provide evidence that P3s reduce average annual state debt obligations for highways. As discussed earlier, seven states did see a

decrease in average annual state debt obligations outstanding for highways. The remaining 26 states, however, saw an increase.

Discussion

This analysis explored the relationship between P3 enabling legislation and the outcomes observed. Building on work done by Albalate et al. (2013), Geddes (2018), and Boyer (2018), this analysis assessed whether a state's P3 enabling legislation provided a clear benefit to the public.

The findings presented in this chapter suggest key differences before and after a state enacts its P3 enabling legislation. Furthermore, there is evidence to suggest that a state is far more likely to pursue P3 projects once it has enabling legislation in place. While three states delivered P3 projects before enacting P3 enabling legislation, this appears to be the exception rather than the rule. For the most part, states have their enabling legislation in place before pursuing a P3 project. Finally, this research compared whether states that have P3 enabling legislation "on the books" are better able to shift risks and debt on to the private sector. For this test, too, there does not appear to be any significant decline in average annual state debt obligations among states that have enacted P3 enabling legislation. The primary challenge in this analysis were the availability of data. Data as far back as 1983 were required to do a proper before-and-after comparison on the effects of P3 enabling legislation. This research found a major need for future research that can measure P3 enabling legislation outcomes while taking these data limitations into consideration.

CHAPTER IV

QUALITATIVE ANALYSIS

Complementing the quantitative analysis in Chapter III, the aim of this chapter is to report findings from P3 subject-matter experts in two key case study states. This chapter begins by summarizing the reasons I selected Texas and California as my two case study states. Next, I discuss the history and development of conditions and factors leading up to the passage of P3 enabling legislation for each state. I then discuss the results from my remaining two hypotheses, H_2 and H_3. I conclude by providing a discussion of those results. For this research, I followed all IRB protocol and have anonymized responses to maintain confidentiality of the interviewee.

Case Study Selection

These two states were selected both for their similarities and differences. Regarding their similarities: Texas and California are both highly populated, urbanized states. In 2017, California had a population of 39.5 million, making it the most populated state in the U.S. and home to the 2nd and 7th largest metropolitan area by GDP. With the second-largest population in the U.S., Texas is not far behind with a population 28.3 million and home to the 5th and 6th largest metropolitan area by gross domestic product. Furthermore, both states first enacted their P3 enabling legislation around the same time—California enacted its first P3 statute in 1989 and Texas in 1991.

However, the differences between both states are also important. One difference is terrain: California is home to multiple mountain ranges that often straddle the state's largest metropolitan regions while all of Texas's largest metropolitan areas are located on mostly flat terrain. This difference is relevant for transportation policy: developable land is plentiful near Texas's largest cities, allowing for un-throttled, sprawling suburban development. Sprawl is relatively more limited in California, especially near the Los Angeles and San Francisco Bay areas. In this context, then, transportation policy is a direct result of each state's geographic realities.

In addition to terrain differences, political party control is also notable. Since the early 1990s, after both states adopted their P3 enabling legislation into law, power by political parties diverged in opposite directions. From the early 1990s to today, Democrats have taken full control over both chambers of the California Legislature. By comparison, during this same time period Republicans have taken control of the Texas Legislature. Democrats and Republicans now have a state government "trifecta"—one party controls both branches of the state legislature and the governor's mansion—in California and Texas, respectively.

Background

California

California's early P3 enabling legislation statutes were first signed into law in 1989 by then Governor Pete Wilson. Specifically, this legislation made changes to Section 143 of the California Streets and Highways Code. The early version of this legislation was comprehensive: it allowed for Caltrans and local transportation agencies to enter into many types of P3 agreements. Specifically, California Assembly Bill 680 authorized Caltrans to "solicit proposals and enter into agreements with private entities, or consortia thereof, for the construction by, and lease to, private entities of four public transportation demonstration projects, at least one of which shall be in northern California and one in southern California (Baker 1989)."

Following the passage of this legislation, Caltrans entered into two P3 agreements—State Route 91 and State Route 125—both tolled facilities located in Southern California. In 1996, legislative changes were made that further expanded the ability for local governments to enter into P3 agreements. Changes were made to California Government Code Section 5956 to 6956.10 authorizing a local to government agency to "solicit proposals and enter into agreements with private entities for the design, construction, or reconstruction by, and may lease to, private entities for the following types of fee-producing infrastructure projects; (a) irrigation; (b) drainage; (c) energy or power production; (d) water supply, treatment, and distribution; (e) flood control; (f) inland waterways; (g) harbors; (h) municipal improvements; (i) commuter and light rail; (j) highways or bridges; (k) tunnels; (l) airports and runways; (m)

purification of water; (n) sewage treatment, disposal, and eater recycling; (o) refuse disposal; (p) structures or buildings, except structures or buildings that are to be utilized primarily for sporting or entertainment events (California Public Law Stats. 1996 Ch. 1040)." Notably, at the time these changes were made, the California Legislature intentionally gave broad authorities to local entities.

Lawmakers appeared sympathetic to the challenges faced by municipalities and counties by noting that local government agencies "have experienced a significant decrease in available tax revenues to fund necessary infrastructure improvements." Furthermore, this statute noted that if "local government agencies are going to maintain the quality of life that this infrastructure provides, they must find new funding sources. One source of new money is private investment capital utilized to design, construct, maintain, rebuild, improve, repair, or operate, or any combination thereof, fee-producing infrastructure facilities, some local governmental agencies will be unable to replace deteriorating infrastructure.

Further, some local governmental agencies will be unable to expand and build new infrastructure facilities to serve the population (California Public Law Stats. 1996 Ch. 1040)." Recognizing this, the California Legislature further noted that "it is the intent of the Legislature that local agencies have the authority and flexibility to utilize private investment capital to study, plan, design, construct, develop, finance, maintain, rebuild, improve, repair, or operate, or any combination thereof, fee-producing infrastructure facilities (California Public Law Stats. 1996 Ch. 1040).

Texas

Texas lawmakers have made changes to the their P3 enabling legislation over time. Table 15 below summarizes the major P3 enabling legislation provisions in the Texas Transportation Code (USDOT FHWA 2018c).

Texas Transportation Code Chapter 222.001 to 107 outlines many of the ways a private sector entity can participate in the delivery of a transportation project in the state. For example, Sec. 222.103(a) grants TxDOT the authority to "participate, by spending money from any available source, in the cost of the acquisition, construction, maintenance, or operation of a toll facility of a public or private entity on terms and conditions established by the [Texas Transportation Commission] (Texas Transportation Code Statutes 222.001 - 107)."

Texas Transportation Code Ann. Sec. 366.401(a) further gives powers to regional mobility authorities: "[a]n authority may use a comprehensive development agreement with a private entity to design, develop, finance, construct, maintain, repair, operate, extend, or expand a turnpike project (Texas Transportation Code Statutes 366.401(a)).

Table 15 Texas P3 Enabling Statutes

Code	Statute Type	Projects or Project Types Authorized
Texas Transportation Code Ann. 222.001 to 107	Limited; state, regional and local	Agreements with private entities for design, financing, maintenance, operation, or construction—including oversight and inspection—of a toll or non-toll facility on the state highway system, where the private or public entity is paid pass-through tolls
Texas Transportation Code Ann. Sec. 91.054; Sec. 223.201 to 210; Ch. 228; Sec. 371.001 to 153	Limited; state	Comprehensive development agreements with private entities to design, develop, finance, construct, maintain, repair, operate, extend or expand a toll project or a state highway improvement project that either includes both tolled and un-tolled lanes, is financed by private activity bonds, or in which the private entity has an interest. Also allows agreements for financing, design, acquisition, construction, maintenance, or operation of a project.
Texas Transportation Code Ann. 366.401 to 409; Sec. 371.001 to 153 (2007)	Comprehensive ; regional	Comprehensive development agreements with private entities for at least the design, construction, rehabilitation, expansion or improvement of a turnpike project; also may include financing, acquisition, maintenance or operation of a turnpike project.
Texas Transportation Code Ann. Sec. 370.305 to 317; Sec. 371.001 to 153	Regional	Comprehensive Development Agreements with private entities for at least the design and construction of a transportation project; also may include financing, acquisition, maintenance, or operation of a transportation project. Projects may not be part of the state highway system unless agreed to by the authority and TxDOT
Texas Transportation Code Ann. Ch. 284 (Subject to Ch. 223 and Ch. 366): Sec. 371.001 to 153	Comprehensive ; local; transportation	Comprehensive Development Agreements with private entities to design, develop, finance, construct, maintain, repair, operate, extend, or expand a proposed or existing causeway, bridge, tunnel, turnpike, highway, or ferry project, to the extent and in the manner applicable to TxDOT under Ch. 223 and to Regional Tollway Authorities under Chapter 366. Projects may not be part of the state highway system unless agreed to by TxDOT.

Source: (Pula 2016, USDOT FHWA 2018c)

Case Study Comparison

As discussed previously, at first glance Texas and California are similar in terms of the history and development of P3 enabling legislation, overall population, total centerline lane miles, and total vehicle registrations Table 16 below summarizes several key characteristics of Texas and California (US Census Bureau 2018, USDOT FHWA 1983 - 2017, Albalate, Bel i Queralt, and Geddes 2018).

Table 16 Comparison of Texas and California

Characteristic	**California**	**Texas**
Total Population in 1990	29,760,021	16,986,510
Total Population in 2016	38,654,206	27,904,862
Total Housing Units in 2016	13,911,737	9,289,554
Land Area in Square Miles in 2015	155,779	261,232
Population Change from 1990 to 2016	29.90%	64.28%
Total Employment in 2016	30,565,746	20,599,223
Mean Travel Time to Work in Minutes in 2016	28.4	25.9
Total Commuters to Work in 2016	17,193,695	12,237,558
Median Household Income in 2016	$63,783	$54,727
Total Vehicle Miles Traveled in 2015	335,539,000,000	261,232,000,000
Total Public Road Lane Miles (2015)	432,083	677,577
Total Vehicle Registrations in Millions (2015)	29.42	21.86
P3 Enabling Legislation First Enacted (Year)	1989	1991

Source: (US Census Bureau 2018, USDOT FHWA 1983 - 2017, Albalate, Bel i Queralt, and Geddes 2018)

As shown in Table 16, both states are relatively similar in terms of scope (both measured in terms of land area and total population), in total vehicle miles traveled, total number of registered vehicles, and total number of commuters to work. These two states also differ in other important ways: notably, the total population in Texas increased by

nearly 65 percent from 1990-2016, whereas California only saw an approximately 30 percent change during the same period. In terms of legislative composition, there also appears to be important and relevant differences, as shown in Table 17.

Table 17 Governor and State Legislature Control by Political Party, 1988-2017

	California			Texas		
Year	**Governor**	**Senate**	**Assembly**	**Governor**	**Senate**	**House**
1988	R	D	D	R	D	D
1989	R	D	D	R	D	D
1990	R	D	D	R	D	D
1991	R	D	D	D	D	D
1992	R	D	D	D	D	D
1993	R	D	D	D	D	D
1994	R	D	D	D	D	D
1995	R	D	S	R	D	D
1996	R	D	D	R	D	D
1997	R	D	D	R	R	D
1998	R	D	D	R	R	D
1999	D	D	D	R	R	D
2000	D	D	D	R	R	D
2001	D	D	D	R	R	D
2002	D	D	D	R	R	D
2003	D	D	D	R	R	R
2004	R	D	D	R	R	R
2005	R	D	D	R	R	R
2006	R	D	D	R	R	R
2007	R	D	D	R	R	R
2008	R	D	D	R	R	R
2009	R	D	D	R	R	R
2010	R	D	D	R	R	R
2011	D	D	D	R	R	R
2012	D	D	D	R	R	R
2013	D	D	D	R	R	R
2014	D	D	D	R	R	R
2015	D	D	D	R	R	R
2016	D	D	D	R	R	R
2017	D	D	D	R	R	R

Note: “D” denotes Democratic controlled, “R” denotes Republican controlled, and “S” denotes Split Chamber

Source: (Texas Legislative Reference Library 2018, California Legislative Information 2018)

As shown in Table 17, differences in party control of the Governor's mansion and each legislative chamber is noteworthy. In California, Republicans controlled the Governor's mansion from 1988-1998; Democrats would win the office back in 1998 with the election of Gray Davis. Republicans would then win the office back in a 2003 recall election with Arnold Schwarzenegger and would hold the office until 2010 when Mr. Jerry Brown defeated Republican nominee Ms. Margaret Whitman. Democrats then regained control from 2011 onward with Gov. Jerry Brown winning re-election in 2014.

In Texas, an opposite trend occurred. In 1986, Bill Clements gained control of the Governor's mansion for Republicans for the first time in decades. After Mr. Clements decided not to run for the 1990 Texas Gubernatorial election, Ms. Ann Richards defeated Mr. Clayton W. Williams, Jr. to control the Governor's mansion once again for Democrats. This did not last long: in 1994, George W. Bush defeated Ann Richards, and Republicans would retain control as of 2018.

Party control of the upper and lower chambers would exhibit a similar divergence between both states. Except for 1996, Democrats retained control of the California State Senate and Assembly from 1988 to present—an unprecedented 30-year run. In Texas, Republicans would retain control of the upper chamber and lower chamber in 1996 and 2003, respectively, where they still hold power as of 2018.

Differences in political control of the executive and legislative branches for each state government is instructive in possibly explaining P3 policy outcomes in each state. In addition to political differences, several organizational differences are also evident between these states. Table 18 below, based on data gathered by a 2016 AASHTO

report on transportation governance and finance, compares the key differences in how legislatures are organized differently in each state (AASHTO 2016).

Table 18 Comparison of California and Texas Legislature Structure

Characteristic	**California Legislature**	**Texas Legislature**
Structure	Bicameral, Partisan	Bicameral, Partisan
Chambers	Senate (40 members), Assembly (80 members)	Senate (41 members), House of Representatives (150 members)
Type	Professional	Hybrid
Session	Annual; Approximately January to September (odd years) and January to August (even years)	Biennial; Approximately January to May (odd years only)
Legislative Measures Introduced in 2016	2,600	0 (No 2016 Session)
Number of Legislative Committees with Jurisdiction Over Transportation-Related Issues	10	8

Source: (AASHTO 2016)

In addition to differences in legislative structures, there are also key differences in each state's DOT. These factors are important because state DOTs play a vital role in the planning, design, and delivery of P3 projects. As shown in Table 19 below, also based on data gathered by a 2016 AASHTO report, on the surface these two DOTs aren't structurally different (AASHTO 2016).

Table 19 Comparison of Texas and California DOTs

Characteristic	California DOT	Texas DOT
Structure	Organized mainly by functional activity.	Organized by both functional activity and transportation mode. TxDOT is organized into a number of divisions, some of which are dedicated to transportation modes (e.g., aviation, maritime, public transportation, etc.).
Leadership	Secretary of the California State Transportation Agency (serves on governor's cabinet), Caltrans Director, California Transportation Commission (independent body). The California Transportation Commission is one of several state entities under the California State Transportation Agency, and is structurally separate from Caltrans.	Executive Director of TxDOT (does not serve on governor's cabinet; Texas has no formal cabinet system), Texas Transportation Commission (independent body).
Modes Over Which the State DOT has Jurisdiction	Roads/bridges, public transit, passenger rail, aviation, ports/waterways, pedestrian/bicycle.	Roads/bridges, public transit, freight and passenger rail, aviation (general aviation only), ports/waterways, pedestrian/bicycle. TxDOT's role in public transit and general aviation are limited to managing grant programs, and its role in rail, marine, and non-motorized transportation is limited to statewide coordination and planning. TxDOT is the state sponsor of the Gulf Intracoastal Waterway and, as such, facilitates the placement of dredge disposal for improvements to the waterway by the U.S. Army Corps of Engineers.
Includes DMV?	No	No
Includes Highway Patrol?	No	No
Jurisdiction Over Toll Facilities?	Yes. Caltrans owns and operates seven toll bridges.	Yes. TxDOT has jurisdiction over some (but not all) toll facilities in the state. Other entities (e.g., RMAs, etc.) also have jurisdiction.

Source: (AASHTO 2016)

Finally, in terms of total Transportation Infrastructure Financing and Innovation Act (TIFIA) activity, there does appear to be noticeable differences between the two states. As shown in Table 20, California received a total of $1.8 billion in TIFIA assistance on a total of $6.4 billion worth of transportation infrastructure projects (USDOT 2018a).

Table 20 TIFIA Assistance, California

Project Name	**Primary Revenue Pledge**	**Fiscal Year Closed**	**Project Cost**	**TIFIA Assistance**
South Bay Expressway	User Charges	FY2003	$658,000,000	$140,000,000
Presidio Parkway	Availability Payments	FY2012	$852,000,000	$150,000,000
SR 91 Corridor Improvement	User Charges	FY2013	$1,279,000,000	$421,000,000
Gerald Desmond Bridge Replacement	Port Revenues	FY2014	$1,288,000,000	$325,000,000
I-405 Improvement Project	Toll Revenues	FY2017	$1,908,100,000	$628,930,000
I-15 Express Lanes Project	Toll Revenues	FY2017	$461,300,000	$152,200,000
		Total	**$6,446,400,000**	**$1,817,130,000**

Source: (USDOT 2018a)

As shown in Table 21, Texas received a total of $5.6 billion in TIFIA assistance that leveraged a total of $18.6 billion in highway transportation infrastructure projects.

Table 21 TIFIA Assistance, Texas

Project Name	Primary Revenue Pledge	Fiscal Year Closed	Project Cost	TIFIA Assistance
Central Texas Turnpike System	User Charges	FY2002	$3,250,000,000	$900,000,000
183-A Turnpike	User Charges	FY2005	$304,700,000	$66,000,000
SH 130 (Segments 5 and 6)	User Charges	FY2007	$1,328,000,000	$430,000,000
IH 635 Managed Lanes	User Charges	FY2010	$2,615,000,000	$850,000,000
North Tarrant Express Segments 1 and 2A	User Charges	FY2010	$2,047,000,000	$650,000,000
President George Bush Turnpike Western Extension	User Charges	FY2011	$1,268,000,000	$418,000,000
North Tarrant Express (Segments 3A and 3B)	User Charges	FY2013	$1,637,000,000	$531,000,000
Grand Parkway Segments D–G	Toll Revenues	FY2014	$2,913,000,000	$841,000,000
State Highway (SH) 288 Toll Lanes Project	Toll Revenues	FY2016	$1,063,500,000	$357,000,000
US-183S Bergstrom Expressway	Project Revenues	FY2016	$859,600,000	$282,200,000
35 Express	Toll Revenues	FY2017	$1,303,000,000	$285,000,000
		Total	**$18,588,800,000**	**$5,610,200,000**

Source: (USDOT 2018a)

Finally, Table 22 compares the total number of projects that were proposed and completed in each state and the estimated project cost for each.

Table 22 Comparison of P3 Activity, Texas and California

Characteristic	California	Texas
Number of Projects Proposed	15	9
Number of Projects Completed	9	33
Total Number of P3 Projects, Proposed and Completed	24	42
Average Project Cost, Projects Proposed	$3,033,000,000	$1,276,000,000
Average Project Cost, Projects Completed	$675,000,000	$680,000,000

Source: (Reinhardt 2018)

As shown in Table 22, California had a total of 24 P3 or design-build projects that were proposed since its enabling legislation was enacted into law in 1989—nine of which were completed (39 percent). By comparison, Texas had a total of 42 design-build or P3 projects that were proposed, with 33 (79 percent) that were completed. Of the projects that were proposed that data were available, the average project cost seen in California (i.e., $3 billion) was much greater than the average project cost seen in Texas (i.e., $1.2 billion.) The average cost of projects completed in California and Texas were $0.675 billion and $0.680 billion, respectively.

Theory, Data, and Methods

The qualitative analysis tests the remaining two hypotheses: H_2 and H_3. H_2, shown in Figure 7, addresses a second often cited reason for pursuing P3 enabling legislation: project innovation (Grimsey and Lewis 2007). Some studies have shown that when a private sector entity has greater control over the financing and design components of project delivery, the private sector may be incentivized to innovate (Tang, Shen, and Cheng 2010, Hodge and Greve 2007). Operationalized, this hypothesis

is the following: H_2 = a state with P3 enabling legislation saw projects that offered and allowed for greater innovation in the design and construction process.

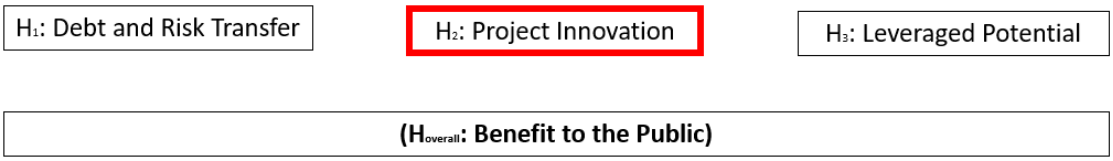


Figure 7 H_2 Project Innovation

H_3, as shown in Figure 8, addresses a commonly cited reason for pursuing P3 enabling legislation: highway P3 enabling legislation incentivizes additional private sector investment capital in that state, or leverage potential. Previous studies have found some evidence linking the presence of public-private partnership enabling legislation and more private capital flow to help finance the construction of a public infrastructure asset (Rall, Reed, and Farber 2010). If it is shown that P3 enabling legislation does lead to overall improved investment potential by the public sector, this would help provide evidence of a relationship between P3 enabling legislation and a positive, lasting public benefit (Brinkerhoff and Brinkerhoff 2011). Operationalized, then, the third sub-hypothesis is as follows: H_3 = States with P3 enabling legislation permitted states to leverage more private investment for major roadway projects.

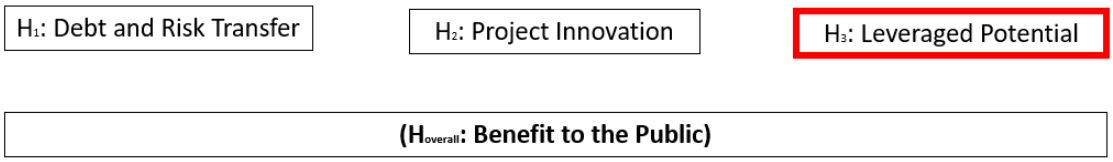


Figure 8 H_3 Leveraged Potential

To test H_2 and H_3, 20 one-on-one telephone interviews were scheduled with public and private sector officials with knowledge of the P3 delivery process, nine were from California and 11 from Texas. I followed IRB protocol and asked interviewees questions only provided in Appendix 2. However, at times interviewees did provide additional information that was not the subject of this research. These interviews were scheduled for no more than 20 minutes; however, most interviews went longer. The range in telephone interviews also varied: the shortest telephone interview lasted 17.1 minutes. The longest conversation was 39.1 minutes. The average telephone call was 25.9 minutes. Per IRB protocol, the telephone calls were not recorded. All interviewees were informed about the purpose of this research and were given instructions to notify me if they wished to end the telephone conversation at any time; however, no interviewee asked to stop the telephone conversation early.

Of those familiar with the P3 experience in California, four were currently or formerly employed by a public sector agency, two were currently or formerly employed at a law firm that participated in representing a public or private firm involved in a P3 project, and three were currently or formerly employed at a consulting firm. Of those

familiar with the P3 experience in Texas, five were currently or formerly employed by a public sector agency, three were currently or formerly employed at a law firm that participated in representing a public or private firm involved in a P3 project, and three were currently or formerly employed at a consulting firm. Table 23 summarizes the state, institution, and telephone interview duration for each interviewee.

Table 23 Summary of Interviewee State, Organization Type, and Interview Duration

Interviewee No.	State	Organization Type	Sector	Interview Duration (Minutes)
1	California	Public Sector Agency	Public	22.5
2	California	Public Sector Agency	Public	39.1
3	California	Public Sector Agency	Public	18.1
4	California	Public Sector Agency	Private	25.6
5	California	Legal Counsel	Private	41.9
6	California	Legal Counsel	Private	22.6
7	California	Consulting Firm	Private	19.3
8	California	Consulting Firm	Private	18.5
9	California	Consulting Firm	Private	33.1
10	Texas	Public Sector Agency	Public	26.3
11	Texas	Public Sector Agency	Public	21.2
12	Texas	Public Sector Agency	Public	24.5
13	Texas	Public Sector Agency	Public	33.1
14	Texas	Public Sector Agency	Public	32.0
15	Texas	Legal Counsel	Private	17.1
16	Texas	Legal Counsel	Private	36.1
17	Texas	Legal Counsel	Private	20.0
18	Texas	Consulting Firm	Private	19.3
19	Texas	Consulting Firm	Private	25.1
20	Texas	Consulting Firm	Private	22.3
			Average	**25.9**
			Total	**517.7**

Once the interviews were complete, I then coded, cleaned, organized, and synthesized the results. I stored my data on a password protected, encrypted drive to ensure the confidentiality of the interviewee is protected. Once I completed my analysis, I destroyed personally identifiable information.

Results

With regard to H_2, project innovation, interviewees were asked the following: "Based on your knowledge of P3 projects delivered in your state, have they led to innovations that benefitted the public?" Interviewees were asked to report either "yes" or "no." As a follow-up question, interviewees were then asked to respond on a scale from 1 to 5 to the following statement: "P3 projects have led to improved project innovation in my state, with "1" as "Strongly Disagree" to "5" as "Strongly Agree." Table 24 below summarizes the results observed.

Table 24 Project Innovation Responses and Ranked Score

Interviewee No.	State	Yes or No Response	Ranked Response
1	Texas	Yes	5
2	Texas	No	4
3	Texas	Yes	3
4	Texas	Yes	3
5	Texas	Yes	4
6	Texas	No	2
7	Texas	Yes	5
8	Texas	Yes	4
9	Texas	Yes	3
10	Texas	Yes	3
11	Texas	No	3
12	California	Yes	4
13	California	Yes	3
14	California	No	2
15	California	No	2
16	California	Yes	3
17	California	Yes	3
18	California	No	2
19	California	No	2
20	California	Yes	3
		Texas Average	**3.6**
		California Average	**2.7**
		Total Average	**3.2**

Note: For confidentiality reasons, the interviewee number in this table does not correspond interviewee number descriptions presented in Table 23

As discussed in Table 24, a majority of interviewees from Texas (8 out of 10) and California (4 out of 9) reported project innovations that resulted from having P3 enabling legislation in place. The average response rank on project innovation for Texas and California was 3.6 and 2.7, respectively.

With respect to H_3, leverage potential, interviewees were asked, "Based on your knowledge of P3 projects delivered in your state, have they led to increased leveraged

investment from the private sector?" Interviewees were then asked to report either "yes" or "no". As a follow-up question, interviewees were also asked to respond on a scale from 1 to 5 to the following statement: "P3 projects have led to increased leveraged investment in my state, with "1" as "Strongly Disagree" to "5" as "Strongly Agree." Table 25 below summarizes the responses from these questions.

Table 25 Leveraged Investment Responses and Ranked Score

Interviewee No.	**State**	**Yes or No Response**	**Ranked Response**
1	Texas	Yes	4
2	Texas	Yes	4
3	Texas	Yes	5
4	Texas	Yes	4
5	Texas	Yes	5
6	Texas	Yes	5
7	Texas	Yes	5
8	Texas	Yes	4
9	Texas	No	1
10	Texas	Yes	5
11	Texas	Yes	5
12	California	No	1
13	California	No	2
14	California	Yes	4
15	California	Yes	5
16	California	Yes	5
17	California	Yes	5
18	California	Yes	5
19	California	Yes	4
20	California	Yes	5
		Texas Average	**4.3**
		California Average	**4.0**
		Total Average	**4.2**

Note: For confidentiality reasons, the interviewee number in this table does not correspond interviewee number descriptions presented in Table 23 or to the response provided in Table 24

As shown in Table 25 above, similar to what was observed with leverage potential, a majority of interviewees from Texas (9 out of 11) and California (7 out of 9) reported that they could report leverage potential that resulted from P3 projects. The average response rank on project innovation for Texas and California was 4.3 and 4.0, respectively.

Discussion

The qualitative portion of this dissertation compared the P3 experience in Texas and California. As discussed previously, these two states were chosen for comparison for both their similarities and differences. The way these two states are similar—both large, growing, diverse, and relatively auto-dependent urban areas which enacted their transportation P3 enabling legislation roughly around the same time—is especially noteworthy in light in the differences in P3 project experience. One noteworthy statistic: Texas has been nearly six times more productive in using this delivery method (as measured by total project cost delivered via P3) than California.

A total of 20 subject matter experts in the area of P3s were interviewed for this dissertation research—including six with direct knowledge in Texas and four with direct knowledge in California. Based on the feedback from these responses, several themes emerged. First, there appeared to be an attitudinal difference on the overall effectiveness of P3 projects themselves. Many of the officials from Texas noted that while P3 enabling legislation underwent several changes, the overall framework gave the state DOT the ability and flexibility they needed to use P3s to deliver projects. In California,

however, challenges with a few projects early on quickly soured the public's mood on the delivery method. One interviewee from California noted that after the first few projects were not perceived as successful, "from that point forward, P3 highway projects were never able to truly get off the ground (Texas and California P3 Subject Matter Expert Interviews 2018)."

This is not to suggest, however, that officials in either state were pessimistic about the long-term prospects of P3 delivery method. Interviewees in both states were hopeful about the future prospect of P3s as a delivery method and wanted to see it continue as an option for the future. "Given the realities of transportation funding, it would be crazy not to have [P3s] as a tool in our state's toolbox," one interviewee noted (Texas and California P3 Subject Matter Expert Interviews 2018).

Several interviewees from California noted an interesting observation: while P3s may not be a heavily used tool at the state level, its statute gives local governments the power to consider P3s. Texas's statute also gives regional authorities some flexibility to consider alternative delivery approaches as well, although California's statute grants these powers directly to regional and local governments. Despite this feature in California's, however, a few public sector interviewees said that they were surprised this power wasn't utilized more by local governments. This is one area of opportunity for future research.

There appeared to be some inconsistencies among interviewees regarding the short and medium-term prospects for P3s. Exactly half of the respondents—an equal share from both states—noted that while they see the P3 delivery method as a valuable

tool to consider, they see the continued use of the design-build delivery method for many of their larger projects. Others, however, noted that transportation funding is simply becoming too challenging and the prospect of transferring project risk, especially financing risk, to the private sector from a DOT perspective is simply too attractive of a feature to ignore. Finally, regarding overall benefits to the public: interviewees were in nearly unanimous agreement that the evidence so far they have seen suggests that P3 projects were a net positive for their state. However, nearly all also said that public messaging remained a challenge. Several interviewees noted that a better job could be done to quantify the benefits of P3 projects and discuss those benefits to their respective state's population.

Due to the small number of states included in this analysis, there are limitations associated with definitively rejecting the null hypothesis for H_2 and H_3 to provide support that P3 projects result in increased project innovation and greater leveraged investment. As the outcomes associated with the P3 project delivery method become more clear, future research could help to establish this link further.

CHAPTER V

CONCLUSIONS

As discussed, declining federal, state, and local transportation resources available for transportation through more traditional sources have led to increased pressure for state legislatures and DOTs to explore other options to fund, finance, and deliver highway transportation infrastructure projects (Hodge and Greve 2007). One result of this increased pressure is a growing number of state legislatures considering (and in some cases, enacting) bills authorizing their state departments of transportation to enter into P3 agreements. This trend—which mostly started in the early 2000s and is continuing up through 2018—shows no sign of slowing down (see Figure 5). It is for this reason that P3s in general (and P3 enabling statutory framework in particular) is a continued area of importance for academics and practitioners in the transportation and urban planning fields.

In light of this, the key research question this dissertation sought to examine is whether the outcomes seen in a state after P3 enabling legislation was passed provided clear benefits to the public. This dissertation utilized a mixed-methods approach: one that relied on a quantitative assessment of all 50 states and a deep-dive in two states relevant to this discussion. Findings from both the quantitative and qualitative parts of this dissertation provide findings dependent upon their design, but both provide a useful contribution to the literature.

Summary of Findings

The review of literature this study provides relevant findings. First, the way that P3 enabling legislation has been adopted over time can be explained by all four competing theories behind federalism at work simultaneously (Kenneth 1946). For example, the way P3 enabling legislation has diffused across different states rather than through one single federal law shows ideationist theories of federalism at work (Karch 2007). Simultaneously, a direct legacy of the colonial structure in the pre-federalist American federal system is reflected in the 50 state DOTs overseen by 50 different state legislatures (Haider-Markel 2014). This is explained best through the "infrastructural powers" theory that notes "federalism is likely to emerge when the subunits of a potential federation already have highly developed infrastructures." A further manifestation of this legacy, then, are the 50 different beliefs on P3 policy reflected in each state (Karch 2007).

A second key finding is the importance of agenda setting—especially within the context of whether a state eventually adopts P3 enabling legislation. A cursory review of this legislation suggests the time that legislation is first proposed in a state legislature to the time it is eventually enacted into law is short. While this does not confirm the theory that putting the issue of P3s on the agenda is the most difficult part of the process, a review of P3 enabling legislation by state does suggest that state legislatures appear fairly efficient at moving the issue through their respective chambers. This is especially noteworthy for P3 enabling legislation due to the extensive complexity of the policy itself (Garvin and Bosso 2008). While it is true that many state legislatures do revisit

their P3 enabling legislation years after the initial enabling legislation is passed, rarely do state legislatures decide to go in a fundamentally different direction.

The six policy diffusion theories presented in this literature review are also instructive for explaining how P3 enabling legislation spread from just a handful of states in the early 2000s to over three-dozen in 2018 (Albalate, Bel i Queralt, and Geddes 2018). Based on a cursory timeline of when states adopted their P3 enabling legislation, some theories (e.g., problem severity, state wealth, ideology) appear far more relevant in explaining this spread than others (e.g., legislative professionalism, neighboring state, national intervention.)

Finally, this literature review took a deep dive into the history of P3 legislation itself. While this discussion focused on the institutional actors involved in the development of Texas P3 enabling legislation, it is reasonable to suggest that similar actors also participated in the development of P3 enabling legislation in similar ways in other states. Relatedly, this review also aimed to provide a surface-level review on the relevant "pros" and "cons" of the P3 delivery method itself (Farley and Norboge 2014). While there are certainly opportunities for additional research in the area of overall P3 project cost and time savings, the research summarized here seeks to provide the necessary context in this area.

Results from the quantitative and qualitative portions of this dissertation provide mostly mixed evidence on whether states with P3 enabling legislation provide increased public benefit. The quantitative portion of this study tests the impact of debt and risk transfer (H_1) by conducting paired sample t-test of the average annual state obligations

for highway projects in states before and after enacting P3 enabling legislation. These results suggest a statistically significant increase in debt obligations after enacting P3 enabling legislation ($p < .001$). However, qualitative results support H_2 and H_3: a clear majority of interviewees from both Texas and California report that P3 enabling legislation has benefitted the public by increasing project innovation (H_2) and allowing additional leverage potential (H_3). Overall, interviewees from Texas and California viewed P3s as one policy "tool" among a wider set of alternative delivery approaches supporting successful planning and project delivery.

Study Implications

Results from the qualitative assessment imply the positive potential of P3 projects. It was evident in conversations with interviewees that the political environment and culture in Texas is more supportive of P3 projects than California. However, despite this difference in culture, both groups of interviewees voiced support of P3's and their ability to provide public benefit. This stands in contrast to the results from the quantitative analysis—clear evidence of the public benefit of P3 enabling legislation was not supported empirically. Specific to debt and risk transfer ($H_{1)}$, this is partially due to an inability to measure outside factors that could place added strain on debt obligations. Furthermore, P3 projects represent an extremely low percent of total projects delivered, indicating any reduction in overall average debt obligations would be equally low. In light of the trend of increased debt obligations this study demonstrates, results suggest an

increasing need to rely on P3 enabling legislation. This is suggested in the results from the qualitative analysis as well as previous literature (Buxbaum and Ortiz 2009).

When reviewing these implications, two major limitations are inherent in this study. First, is the relatively small number of state examples contained within the quantitative analysis and the even fewer number of case study states in the qualitative research. A second limitation is specific to the qualitative portion of this dissertation. Finally, while every effort was made to ensure data collected were accurate and fact-based as possible, it is impossible to ensure such interviews were free from bias.

Future Areas of Study

Further research on the topic of P3s in general (and P3 enabling legislation in particular) is sorely needed. The limitations in this study demonstrate there is a need for developing new validated quantitative measures that assess the before and after effects of P3 enabling legislation. Specifically, these measures may be able to help shed further light on the features of P3 enabling legislation that lead to better overall public benefit. A first attempt toward developing an overall evaluative framework was outlined in this dissertation but it is in no way perfect. Future work could further test and validate useful measures that assess, as objectively as possible, the benefits of this legislation.

Second, there is a significant need for a comprehensive, publicly-available data set of inputs and outcomes associated with transportation infrastructure projects—both delivered via the conventional design-bid-build method and via alternative delivery methods. Fortunately, there do appear to be ongoing efforts in this direction: in 2017,

FHWA released a discussion paper that "explores the issues associated with compiling information on major surface transportation projects in a publicly accessible online information source or database to assist in establishing benchmarks on projects delivered conventionally and through Public-Private Partnerships (P3s) (USDOT FHWA 2017)." Future work in this direction could continue to improve and ensure that P3 project outcomes are providing clear benefits to the public.

Measuring outcomes resulting from P3 enabling legislation is an inherently difficult proposition that can be fraught with risks and uncertainty. In light of this, several possible new measures could be devised that better measure outcomes resulting from P3 projects. For example, one possible idea is a single P3 index measuring public benefit by P3 project or set of projects as a whole. Variables tested within this dissertation, as well as other variables, could be included into an index that quantifies the value a project provides the public if it were to be delivered via a delivery method beyond the traditional design-bid-build method. Such a comprehensive measure could help policymakers determine outcomes based on the specific design of their respective state's P3 enabling legislation. Further information on P3 enabling statute by all 37 states that have P3 enabling legislation as of 2018 can be found in Appendix 3 of this dissertation.

To develop such a comprehensive index measure, however, high-quality data is sorely needed. This is one opportunity where state legislators could mandate state DOTs and regional transportation agencies, via statutory requirements, to track and monitor the

effectiveness of their P3 projects. Such requirements could help to better ensure that P3 policy is meeting the goals as originally intended.

While further work may be needed toward better measurement of P3 project outcomes, the current state of P3's has not gone unnoticed by the transportation community. For example, there is an ongoing project funded by the FHWA's Center for Innovative Finance Support, expected to be completed in 2019, that aims to build a comprehensive database of measures for major projects around the U.S., including P3 projects (USDOT FHWA 2018a). Furthermore, a recent report entitled *Successful Practices for P3s,* published by FHWA and based on feedback from a diverse working group of public and private sector officials, offered several recommendations for effective performance monitoring and oversight. Among other recommendations, this report called for "defining output-based metrics" that "facilitate innovative solutions better than input-based or detailed performance specifications (USDOT FHWA 2016)." In doing so, this report recommended key performance indicators "tailored" to "project-specific circumstances and reflect agency and community objectives (USDOT FHWA 2016)." These efforts suggest that both FHWA and state DOTs are moving in the direction toward monitoring and improving P3 project outcomes.

Furthermore, P3s have been used widely elsewhere outside the U.S.—often with success. Future research on international models for measuring P3 outcomes could be one place to add to this growing area of study.

REFERENCES

AASHTO. 2016. *Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation.* American Association of State Highway and Transportation Officials. Accessed November 18, 2018. http://www.financingtransportation.org/pdf/50_state_review_nov16.pdf

Agrawal, Asha Weinstein, and Hilary Nixon. 2017. *What Do Americans Think about Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year Eight of a National Survey.* Mineta Transportation Institute. Accessed November 18, 2018. https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1230&context=mti_publications

Albalate, Daniel, Germà Bel i Queralt, and R Richard Geddes. 2018. "Do public-private partnership enabling laws increase private investment in infrastructure." *UB Economics–Working Papers, 2018, IR18/15*.

Amazon. 2017. "Amazon HQ2." Accessed November 18, 2018. https://www.amazon.com/b?ie=UTF8&node=17044620011.

Atkinson, Michael M, and William D Coleman. 1989. "Strong states and weak states: Sectoral policy networks in advanced capitalist economies." *British Journal of Political Science* 19 (1):47-67.

Batheja, Aman. 2014. "The Perry Legacy: Transportation." *The Texas Tribune*, December 28, 2014. Accessed October 21, 2018. https://apps.texastribune.org/perry-legacy/transportation/.

Bickley, James M. 2012. *The Federal Excise Tax on Gasoline and the Highway Trust Fund: A Short History*. Washington: Congressional Research Service. Accessed November 18, 2018. https://fas.org/sgp/crs/misc/RL30304.pdf

Birkland, Thomas A. 2014. *An introduction to the policy process: Theories, concepts and models of public policy making*: Routledge.

Börzel, Tanja. 1997. "What's so special about policy networks? An exploration of the concept and its usefulness in studying European governance." *European Integration Online Papers (EIoP), Vol. 1 No. 16 1997.*

Boyer, Eric J, and Daniel S Scheller. 2018. "An Examination of State-Level Public–Private Partnership Adoption: Analyzing Economic, Political, and Demand-Related Determinants of PPPs." *Public Works Management & Policy* 23 (1):5-33.

Brinkerhoff, Derick W, and Jennifer M Brinkerhoff. 2011. "Public–private partnerships: Perspectives on purposes, publicness, and good governance." *Public Administration and Development* 31 (1):2-14.

Buxbaum, Jeffrey N, and Iris N Ortiz. 2009. *Public sector decision making for public-private partnerships*. Vol. 391: Transportation Research Board.

California Legislative Information. 2018. "California Legislative Information." Accessed October 21, 2018. http://leginfo.legislature.ca.gov/.

California Public Law Stats. 1996 Ch. 1040, Sec. 1. Chapter 14 Infrastructure Financing. In *Stats. 1996, Ch. 1040, Sec. 1.*

Chapman, Jeffrey I. 2008. "State and local fiscal sustainability: The challenges." *Public Administration Review 68:S115-S131*.

Chasey, Allan, William Maddex, and Ankit Bansal. 2012. "Comparison of public-private partnerships and traditional procurement methods in North American highway construction." *Transportation Research Record: Journal of the Transportation Research Board* (2268):26-32.

Chen, Zhenhua, Nobuhiko Daito, and Jonathan L Gifford. 2016. "Data review of transportation infrastructure public–private partnership: A meta-analysis." *Transport Reviews* 36 (2):228-250.

Childs, William R. 1989. "Building the American Highway System: Engineers as Policy Makers." *Business History Review* 63 (2):430-433.

Clemons, Randy S, and Mark K McBeth. 2015. *Public policy praxis: A case approach for understanding policy and analysis*: Routledge.

Corduneanu-Huci, Cristina, Alexander Hamilton, and Issel Masses Ferrer. 2012. *Understanding policy change: How to apply political economy concepts in practice*: World Bank Publications.

Danielle Ivory, Ben Protess, and Griff Palmer. 2016. "In American Towns, Private Profits from Public Works." *New York Times*. Accessed October 21, 2018. https://www.nytimes.com/2016/12/24/business/dealbook/private-equity-water.html.

Denison, Dwight V, and Robert J Eger III. 2000. "Tax evasion from a policy perspective: The case of the motor fuels tax." *Public Administration Review* 60 (2):163-172.

DiNapoli, Thomas P. 2013. "Private financing of public infrastructure: Risks and options for New York State." *New York State Comptroller's Office*:4.

Farley, Robert, and Nicolas D. Norboge. 2014. *Public-Private Investment Models for Roadway Infrastructure.* Texas A&M Transportation Institute Legislative Policy Center. Accessed November 18, 2018. https://static.tti.tamu.edu/tti.tamu.edu/documents/PRC-14-15-F.pdf

Formby, Brandon. 2017. "Dallas freeway becomes national target for highway teardown movement." *The Texas Tribune*, January 30, 2017. Accessed November 18, 2018. https://www.texastribune.org/2017/01/30/dallas-freeway-lands-national-list-targets-highway/.

Foster, John L. 1978. "Regionalism and innovation in the American states." *The Journal of Politics* 40 (1):179-187.

Friedman, Stephen B. 2016. *Successful Public/Private Partnerships.* Urban Land Institute. Accessed November 18, 2018. https://uli.org/wp-content/uploads/ULI-Documents/Successful-Public-Private-Partnerships.pdf

GAO, US. 2008. *More Rigorous Up-front Analysis Could Better Secure Potential Benefits and Protect the Public Interest.* GAO-08-44. Washington: Government Accountability Office.

Gardner, James A. 1995. "The States-as-Laboratories Metaphor in State Constitutional Law." *Valparaoso University Law Review* 30:475.

Garvin, Michael J, and Doran Bosso. 2008. "Assessing the effectiveness of infrastructure public—private partnership programs and projects." *Public Works Management & Policy* 13 (2):162-178.

Geddes, R Richard, and Benjamin L Wagner. 2013. "Why do US states adopt public–private partnership enabling legislation?" *Journal of Urban Economics* 78:30-41.

Gilroy, Leonard. 2009. *Modernizing and Expanding Pennsylvania's Transportation Infrastructure through Public-Private Partnerships*. Testimony before the Pennsylvania House Republican Policy Committee, Los Angeles: Reason Foundation. Accessed November 18, 2018. https://reason.org/wp-content/uploads/2009/12/testimony_pennsylvania_transportation_public_private_partnerships.pdf

Grimsey, Darrin, and Mervyn Lewis. 2007. *Public private partnerships: The worldwide revolution in infrastructure provision and project finance*: Edward Elgar Publishing.

Grimsey, Darrin, and Mervyn K Lewis. 2005. "Are Public Private Partnerships value for money?: Evaluating alternative approaches and comparing academic and practitioner views." *Accounting Forum Vol. 29 No. 4, pp. 345-378.* Elsevier, 2005.

Grossback, Lawrence J, Sean Nicholson-Crotty, and David AM Peterson. 2004. "Ideology and learning in policy diffusion." *American Politics Research* 32 (5):521-545.

Gunderson, Gerald. 1989. "Privatization and the 19th-century turnpike." *Cato Journal* 9:191.

Haider-Markel, Donald P. 2014. *The oxford handbook of state and local government*: OUP Oxford.

Hall, Terri. 2006. "Toll roads and TTC were a BIG factor in this election…" Accessed October 30, 2018. http://tollfreehighways.com/465-2/.

Hamilton, Alexander, James Madison, and John Jay. 2003. *The federalist: with letters of brutus*: Cambridge University Press.

Hamm, Keith, and Gary Moncrief. 2012. "Legislative Politics in the States." *Politics in the American States: A Comparative Analysis,* CQ Press, pp. 163-207.

Hays, Scott P. 1996. "Influences on reinvention during the diffusion of innovations." *Political Research Quarterly* 49 (3):631-650.

Hodge, Graeme A, and Carsten Greve. 2007. "Public–private partnerships: an international performance review." *Public Administration Review* 67 (3):545-558.

Jacobson, Carol, and Sang Ok Choi. 2008. "Success factors: public works and public-private partnerships." *International Journal of Public Sector Management* 21 (6):637-657.

Jeffers, JP, CL McDavid, JV Broadhurst, KR Grosskopf, JJ Jones, EG Kamnikar, JA Kamnikar, JR Mayer, C Rosti, and B Scott. 2007. "Audit stewardship and oversight of large and innovatively funded projects in Europe: international technology scanning program."

Karch, Andrew. 2007. *Democratic laboratories: Policy diffusion among the American states*: University of Michigan Press.

Kenneth, Wheare. 1946. Federal government. Oxford University Press, London.

Kenney, Jen. 2017. "U.S. DOT Offers Guidance on Public-Private Partnerships." Next City, accessed October 30. https://nextcity.org/daily/entry/us-dot-transportation-projects-public-private-partnerships.

Koppenjan, Joop FM, and Bert Enserink. 2009. "Public–private partnerships in urban infrastructures: reconciling private sector participation and sustainability." *Public Administration Review* 69 (2):284-296.

Kousser, Thad. 2005. *Term limits and the dismantling of state legislative professionalism*: Cambridge University Press.

Law, John. 2013. "How Can We Define Federalism?" *Centro Studi Sul Federalismo* 5 (3).

Lovegrove, Jamie. 2016. "SH 130 Toll Road Operator Files for Bankruptcy." Accessed November 18, 2018. https://www.texastribune.org/2016/03/02/sh-130-toll-road-files-bankruptcy/.

Marbury v. Madison, 5 U.S. (1 Cranch) 137. 1803. Accessed November 18, 2018. http://cdn.loc.gov/service/ll/usrep/usrep005/usrep005137/usrep005137.pdf

McKinsey and Company. 2018. "The rising advantage of public-private partnerships." McKinsey and Company. Accessed October 21, 2018. https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/the-rising-advantage-of-public-private-partnerships.

Mintrom, Michael, and Sandra Vergari. 1998. "Policy networks and innovation diffusion: The case of state education reforms." *The Journal of Politics* 60 (1):126-148.

Montjoy, Robert S, and Laurence J O'Toole. 1979. "Toward a theory of policy implementation: An organizational perspective." *Public Administration Review* 39 (5):465-476.

Mooney, Christopher Z, and Mei-Hsien Lee. 1995. "Legislative morality in the American states: The case of pre-Roe abortion regulation reform." *American Journal of Political Science*:599-627.

Mossberger, Karen. 2000. *The politics of ideas and the spread of enterprise zones*: Georgetown University Press.

Munaya, A. 2010. "The advantages and risks of pursuing public private partnerships elements of express lane networks in California, USA: lessons for developing countries." Proceedings 46th ISOCARP Congress.

Niquette, Mark, John McCormicj, Hannaj Recht. 2017. "States Aren't Waiting for Trump to Seek Funds for Infrastructure." *Bloomberg*. Accessed September 23, 2018. https://www.bloomberg.com/graphics/2017-states-raise-gas-taxes/.

Osei-Kyei, Robert, and Albert PC Chan. 2015. "Review of studies on the Critical Success Factors for Public–Private Partnership (PPP) projects from 1990 to 2013." *International Journal of Project Management* 33 (6):1335-1346.

Ozbay, Kaan, Dima Jawad, Neville Parker, and Sajjad Hussain. 2004. "Life-cycle cost analysis: State of the practice versus state of the art." *Transportation Research Record: Journal of the Transportation Research Board* (1864):62-70.

Parker, Harold. 1912. "Good Roads Movement." *The ANNALS of the American Academy of Political and Social Science* 40 (1):51-57.

Paxson, Frederic L. 1946. "The highway movement, 1916-1935." *The American Historical Review* 51 (2):236-253.

Pinkerton, James P. 2015. *A Vision of American Strength: How Transportation Infrastructure Built the United States*. American Road and Transportation Builders Association. Accessed November 18, 2018. https://www.artba.org/wp-content/uploads/2015/11/Vision-of-American-Strength_CompleteBook.pdf

Pula, Kevin. 2016. *Public-Private Partnerships for Transportation: Categorization and Analysis of State Statutes.* Denver: National Conference of State Legislatures. Accessed November 18, 2018. http://www.ncsl.org/research/transportation/public-private-partnerships-for-transportation-categorization-and-analysis-of-state-statutes-january-2016.aspx

Rall, Jaime, James B Reed, and Nicholas J Farber. 2010. *Public-Private Partnerships for Transportation: A Toolkit for Legislators.* Accessed November 18, 2018. http://www.ncsl.org/research/transportation/public-private-partnerships-for-transportation.aspx

Regional Plan Association. 2006. *Proceed with Caution: Ground Rules for a Public Private Partnership in New Jersey*. Accessed November 18, 2018. http://www.rpa.org/article/rpa-to-nj-proceed-with-caution-on-public-private-partnerships

Reinhardt, Bill. 2018. *Public Private Partnership Projects.* Database by Public Works Financing. Data query performed July 1, 2018.

Rhodes, Rod AW. 2006. "Policy network analysis." *The Oxford handbook of public policy*:423-445.

Rogers, Everett M. 2010. *Diffusion of innovations*: Simon and Schuster.

Rosanna Ruiz, Janet Elliott, R.G. Ratcliffe. 2009. "Trans-Texas Corridor plans dropped after public outcry." *Houston Chronicle*. Accessed November 18, 2018. http://www.chron.com/neighborhood/cyfair-news/article/Trans-Texas-Corridor-plans-dropped-after-public-1745411.php.

Sapat, Alka. 2004. "Devolution and innovation: The adoption of state environmental policy innovations by administrative agencies." *Public Administration Review* 64 (2):141-151.

Savage, Robert L. 1985. "When a Policy's Time Has Come: Cases of Rapid Policy Diffusion 1983–1984." *Publius: The Journal of Federalism* 15 (3):111-126.

Schattschneider, Elmer E. 1975. "The Semi-Sovereign People: A Realist\'s View of Democracy in America."

Schultz, David. 2012. *American Politics in the Age of Ignorance: Why Lawmakers Choose Belief Over Research*: Springer.

Shipan, Charles R, and Craig Volden. 2012. "Policy diffusion: Seven lessons for scholars and practitioners." *Public Administration Review* 72 (6):788-796.

Siemiatycki, Matti. 2009. "Delivering transportation infrastructure through public-private partnerships: Planning concerns." *Journal of the American Planning Association* 76 (1):43-58.

Smith, Stephen. 2013. "Reason Foundation: Toll the Interstates to Pay for Their $1 Trillion Needs." accessed October 11. https://nextcity.org/daily/entry/reason-foundation-toll-the-interstates-to-pay-for-their-1-trill.

Squire, Peverill. 2007. "Measuring state legislative professionalism: The squire index revisited." *State Politics & Policy Quarterly* 7 (2):211-227.

Taaffe, Edward James. 1996. *Geography of transportation*: Morton O'kelly.

Talev, Margaret. 2017. "Trump Open to Raising Gas Tax, Says Truckers Back Higher Price for Highways." Transport Topics. Accessed October 27, 2018. http://www.ttnews.com/articles/trump-open-raising-gas-tax-says-truckers-back-higher-price-highways.

Tang, LiYaning, Qiping Shen, and Eddie WL Cheng. 2010. "A review of studies on public–private partnership projects in the construction industry." *International Journal of Project Management* 28 (7):683-694.

Temple-West, Patrick. 2010. "Trends in the Region: Toll Tug-of-War in South Carolina." *Bond Buyer* Bond Buyer 272 (Number 33346).

Texas Legislative Reference Library. 2018. "Legislative Reference Library." Accessed October 21, 2018. https://lrl.texas.gov/.

Texas State Demographer. 2014. "Population Growth of Texas Cities and Its Impact." Accessed November 18, 2018. http://demographics.texas.gov/Resources/Presentations/OSD/2014/2014_10_15_House_LandResourceMgmtandUrbanAffairs.pdf.

Texas Transportation Code Statute 222.001 – 222.107. Accessed November 18, 2018. https://statutes.capitol.texas.gov/Docs/TN/htm/TN.222.htm

Texas Transportation Code Statute 366.401(a). Accessed November 18, 2018. https://statutes.capitol.texas.gov/Docs/TN/htm/TN.366.htm

Tran, Dan, Christofer Harper, and R Edward Minchin Jr. 2017. *Strategic Program Delivery Methods*.

Tulacz, Gary J. 2017. *The Top 100 Construction Project Delivery Firms*. Edited by Engineering News-Record.

UK National Audit Office. 2009. *Private Finance Projects: A Paper for the Lords Economic Affairs Committee.* Accessed November 18, 2018. https://www.nao.org.uk/wp-content/uploads/2009/11/HL_Private_Finance_Projects.pdf

Urahn, Susan. 2009. *Drive by Dollars: What States Should Know When Considering Public-Private Partnerships to Fund Transportation.* Accessed November 18, 2018. https://www.pewtrusts.org/~/media/legacy/uploadedfiles/wwwpewtrustsorg/reports/state_policy/paturnpikefinalwebpdf.pdf

US Census Bureau. 2018. "State Population Trends." https://www.census.gov/topics/population.html.

USDOT. 2004. *Report to Congress on Public-Private Partnerships.* Washington: USDOT FHWA. Accessed November 18, 2018. https://www.fhwa.dot.gov/reports/pppdec2004/pppdec2004.pdf

USDOT. 2018a. "TIFIA Financed Projects." Accessed November 18, 2018. https://www.transportation.gov/tifia/projects-financed.

USDOT. 2018b. "U.S. Department of Transportation Announces Half A Billion Dollars in Infrastructure Investments to 41 Projects in 43 States." Accessed October 21, 2018. https://www.transportation.gov/briefing-room/dot1818National

USDOT Bureau of Transportation Statistics. 2018. *Roadway Vehicle-Kilometers Traveled (VKT) and VKT per Lane-Kilometers by Functional Class.* Accessed November 19, 2018. https://www.bts.gov/content/roadway-vehicle-kilometers-traveled-vkt-and-vkt-lane-kilometers-functional-class

USDOT FHWA. 1983 - 2017. Federal Highway Statistics Series. Washington: USDOT FHWA.

USDOT FHWA. 2016. *Successful Practices for P3s.* Washington: USDOT FHWA. Accessed November 18, 2018. https://cms.dot.gov/sites/dot.gov/files/docs/P3_Successful_Practices_Final_BAH.PDF

USDOT FHWA. 2017. *Concept Design for an Online Information Source for Major Surface Transportation Projects: A Discussion Paper*. Washington: USDOT. Accessed November 18, 2018. https://www.fhwa.dot.gov/ipd/pdfs/p3/online_info_for_surface_transportation_projects.pdf

USDOT FHWA. 2018a. "Information Source for Major Transportation Projects Stakeholder Group: Request for Proposals."

USDOT FHWA. 2018b. "P3 Defined." United States Department of Transportation Federal Highway Administration, Accessed October 21, 2018. https://www.fhwa.dot.gov/ipd/fact_sheets/p3.aspx.

USDOT FHWA. 2018c. "State P3 Legislation." United States Department of Transportation Federal Highway Administration. Accessed October 21, 2018. https://www.fhwa.dot.gov/ipd/p3/legislation/.

USDOT FHWA. 2018d. "States and Territories with Enabling Statutes for P3s as of August 2018." USDOT FHWA. Accessed October 21, 2018. https://www.fhwa.dot.gov/ipd/p3/legislation/.

Walker, Jack L. 1969. "The diffusion of innovations among the American states." *American Political Science Review* 63 (3):880-899.

Washington State Transportation Commission. 2016. *Washington State Road Usage Charge Assessment*. Accessed November 18, 2018. http://wstc.wa.gov/StudiesSurveys/RoadUsage/RUC2013/default.htm

Weingroff, Richard F. 1996. "From 1916 to 1939: The Federal-State partnership at work." *Public Roads* 60 (1).

Welch, Susan, and Kay Thompson. 1980. "The impact of federal incentives on state policy innovation." *American Journal of Political Science*:715-729.

Williamson, John. 2012. *Federal aid to roads and highways since the 18th century: A legislative history*. Washington: Congressional Research Service. Accessed November 18, 2018. https://fas.org/sgp/crs/misc/R42140.pdf

The World Bank. 2018. Annual average infrastructure expenditures as percent of GDP worldwide from 2008 to 2013, by country. Edited by The World Bank.

Zhao, Zhirong Jerry, Emily Saunoi-Sandgren, and Avital Barnea. 2011. *Advancing public interest in public-private partnership of state highway development.* Minnesota Department of Transportation. Accessed November 18, 2018. https://conservancy.umn.edu/handle/11299/149401

Ziblatt, Daniel. 2006. *Structuring the state: the formation of Italy and Germany and the puzzle of federalism*: Princeton University Press.

APPENDIX 1

QUANTITATIVE RESULTS

This appendix provides the complete results from the statistical two-sample t-test results and box plot comparisons by FHWA P3 category. The t-tests and box plots are presented in the following order:

- Percent Population Change from 2010-2017 by P3 Enabling Legislation;
- Total State Population in 2017 by P3 Enabling Legislation;
- Total State Lane Miles in 2017 by P3 Enabling Legislation;
- Number of State Transportation Entities in 2017;
- Number of State Transportation Legislative Committees with Jurisdiction over Transportation in 2017 by P3 Enabling Legislation;
- Authorized State DOT Expenditures in 2017 by P3 Enabling Legislation;
- Total State Transportation Revenues in 2017 by P3 Enabling Legislation;
- Authorized State Debt Obligations in 2017; and
- Annual Vehicle Kilometers Traveled in 2017 by P3 Enabling Legislation.

Table 26 Percent Population Change from 2010-2017 by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	.0431418	.0095398	.0343962	.0223564	.0639273
Yes	37	.0473741	.0064731	.0393740	.0342461	.0605020
Combined	50	.0462737	.0053521	.0378452	.0355182	.0570292
Difference		-.0042322	.0123131		-.0289894	.0205249
T-value	-0.3437					
DF	48					
P-value	0.7326					

Source: (US Census Bureau 2018)

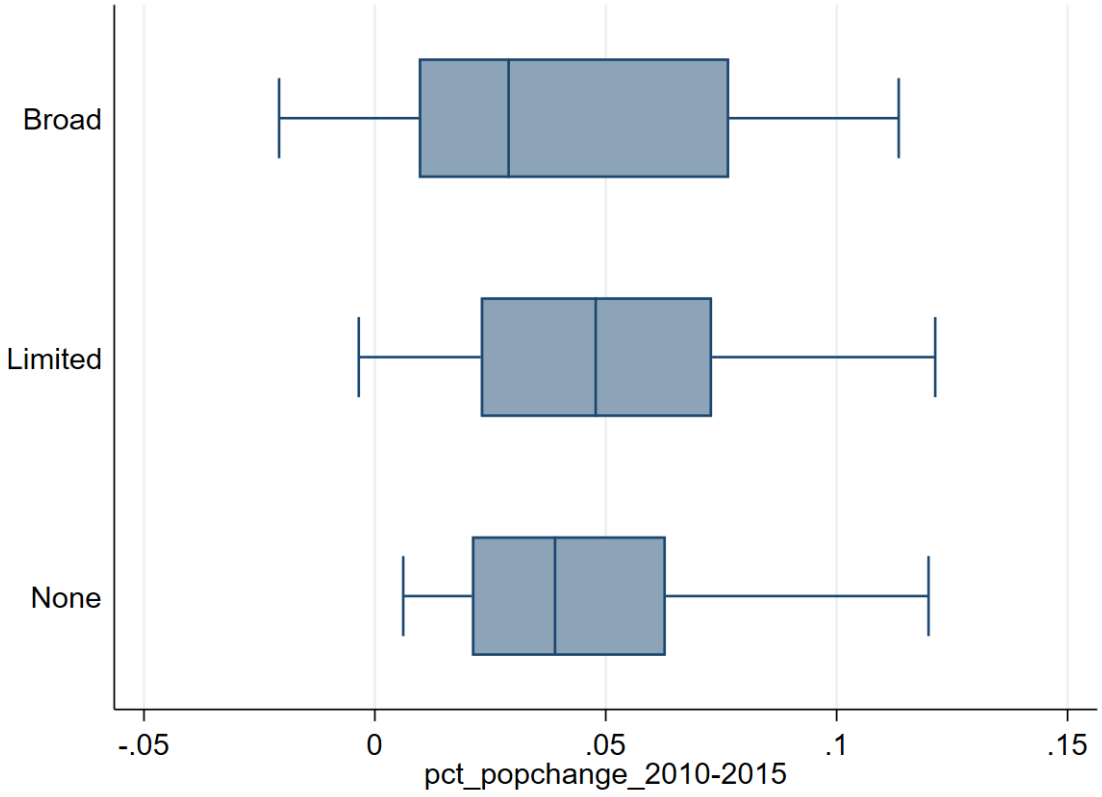


Figure 9 Percent Population Change from 2010-2017 by P3 Enabling Legislation Category Box Plot
Source: (US Census Bureau 2018, USDOT FHWA 2018c)

Table 27 Total State Population in 2017 by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	3,641,360	1,511,019	5,448,057	349,131	6,933,588
Yes	37	7,505,068	1,268,678	7,717,064	4,932,071	10,100,000
Combined	50	6,500,504	1,038,778	7,345,270	4,413,002	8,588,007
Difference		-3,863,709	2,326,855		-8,542,165	814,748
T-value	-1.6605					
DF	48					
P-value	0.1033					

Source: (US Census Bureau 2018)

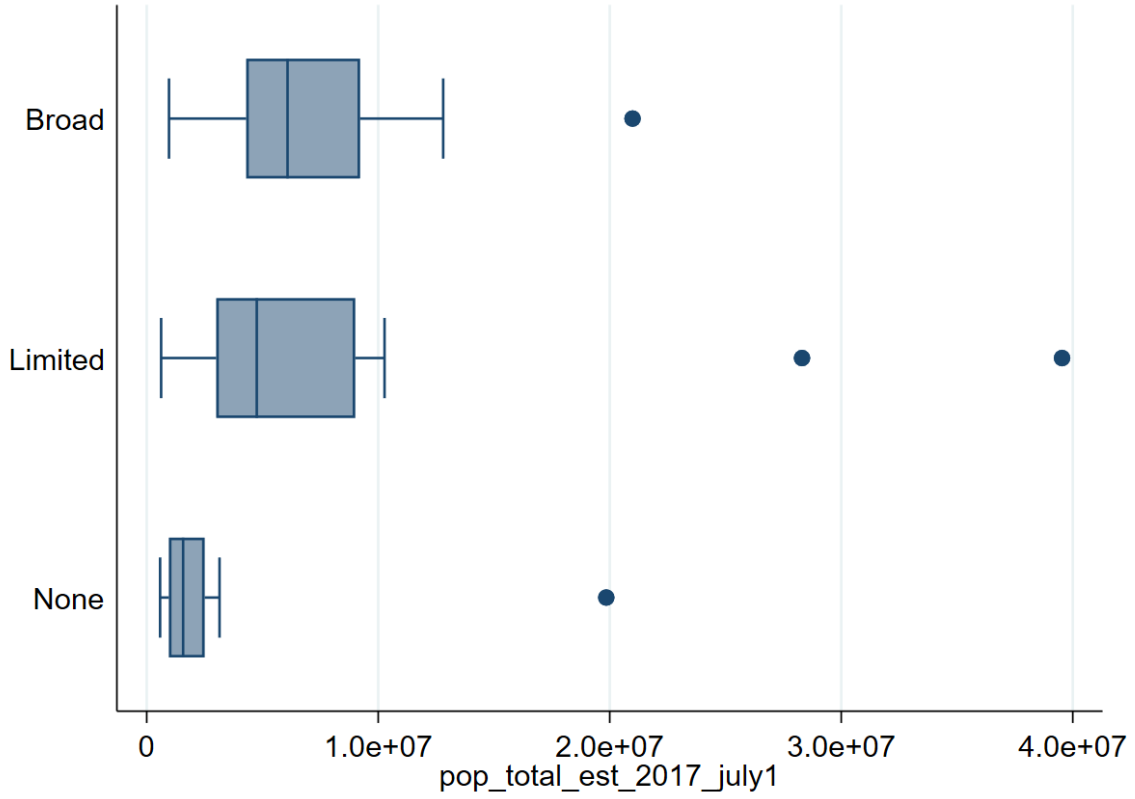


Figure 10 Total State Population in 2017 by P3 Enabling Legislation Category Box Plot
Source: (US Census Bureau 2018, USDOT FHWA 2018c)

Table 28 Total State Lane Miles in 2017 by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	155307	24767.3	89299.76	101343.7	209270.3
Yes	37	181067.4	21297.56	129548	137874	224260.9
Combined	50	174369.7	16978.42	120055.6	140250.3	208489.1
Difference		-25760.43	38931.45		-104037.4	52516.49
T-value	-0.6617					
DF	48					
P-value	0.5113					

Source: (AASHTO 2016)

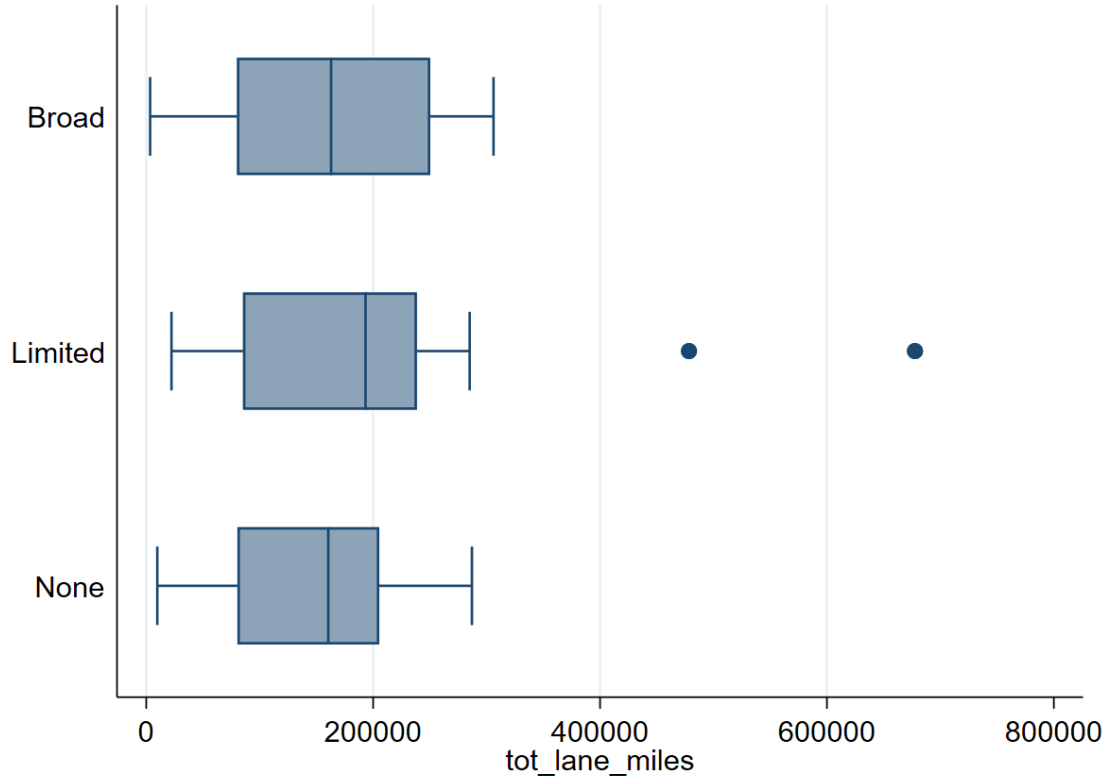


Figure 11 Total State Lane Miles in 2017 by P3 Enabling Legislation Category Box Plot
Source: (AASHTO 2016, USDOT FHWA 2018c)

Table 29 Number of State Transportation Entities in 2017 by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	1.461538	.6851482	2.470337	-.0312712	2.954348
Yes	37	2.135135	.3425793	2.083829	1.440352	2.829918
Combined	50	1.96	.3089944	2.18492	1.339052	2.580948
Difference		-.6735967	.705075		-2.091245	.7440516
T-value	-0.9554					
DF	48					
P-value	0.1721					

Source: (AASHTO 2016)

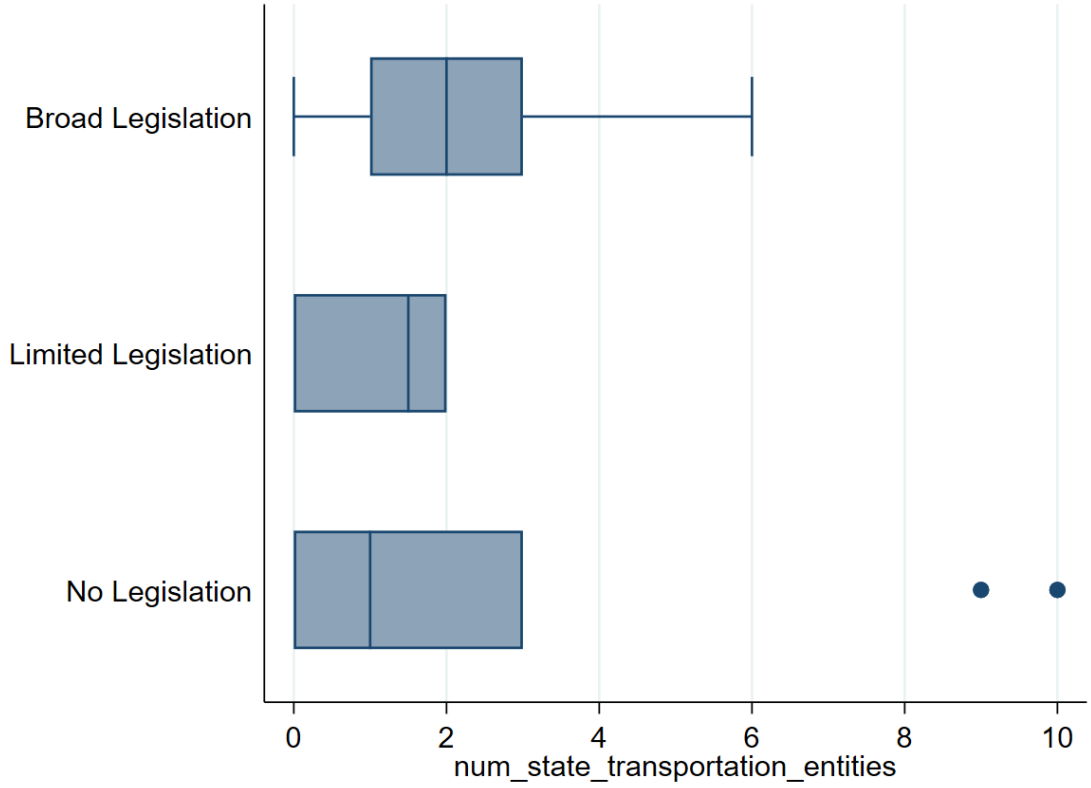


Figure 12 Number of State Transportation Entities in 2017 by P3 Enabling Legislation Category Box Plot
Source: (AASHTO 2016, USDOT FHWA 2018c)

Table 30 Number of State Legislative Committees with Jurisdiction Over Transportation in 2017 by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	3.307692	0.3468654	1.250641	2.551938	4.063447
Yes	37	4.378378	0.382326	2.325599	3.602985	5.153772
Combined	50	4.100000	0.3027089	2.140475	3.491684	4.708316
Difference		-1.070686	0.6799269		-2.437771	0.2963986
T-value	-1.5747					
DF	48					
P-value	0.1219					

Source: (AASHTO 2016)

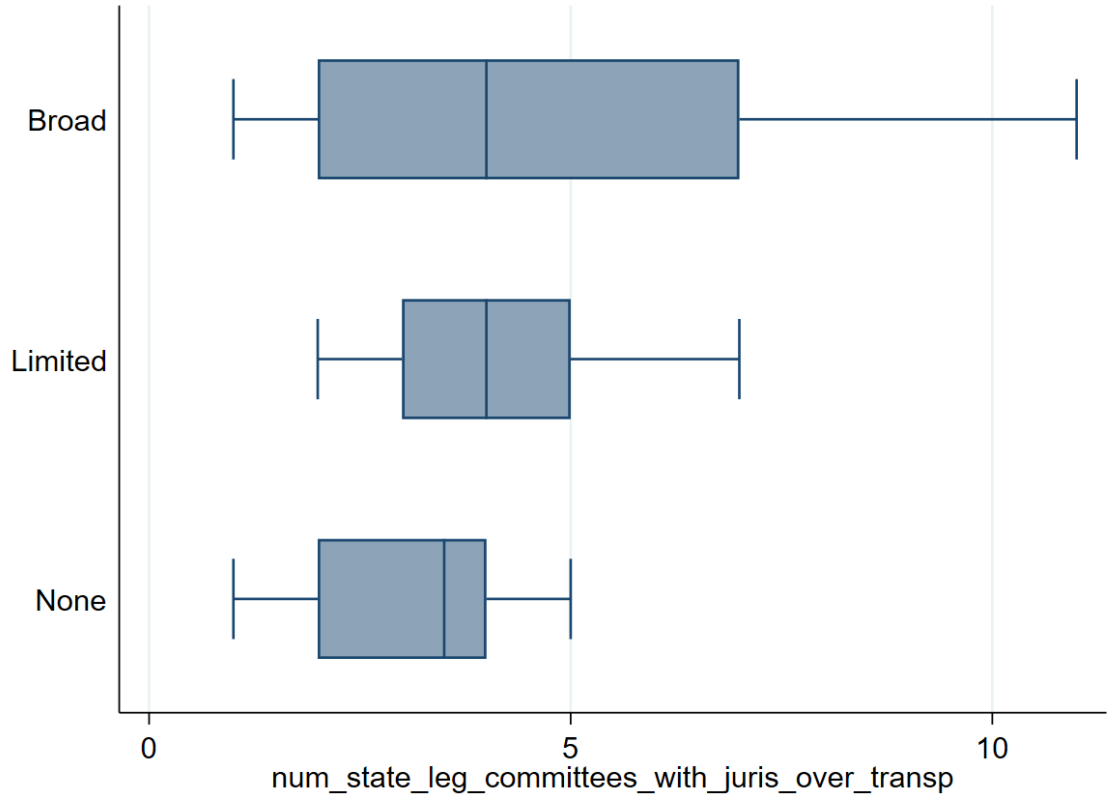


Figure 13 Number of State Legislative Committees with Jurisdiction over Transportation in 2017 by P3 Enabling Legislation Category Box Plot
Source: (AASHTO 2016, USDOT FHWA 2018c)

Table 31 Authorized State DOT Expenditures by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	1.97e+09	7.95e+08	2.87e+09	2.40e+08	3.70e+09
Yes	37	3.76e+09	6.15e+08	3.64e+09	2.51e+09	5.01e+09
Combined	50	3.28e+09	5.07e+08	3.51e+09	2.26e+09	4.30e+09
Difference		-1.79e+09	1.12e+09		-4.05e+09	4.69e+08
T-value	-1.5946					
DF	46					
P-value	0.1176					

Source: (AASHTO 2016)

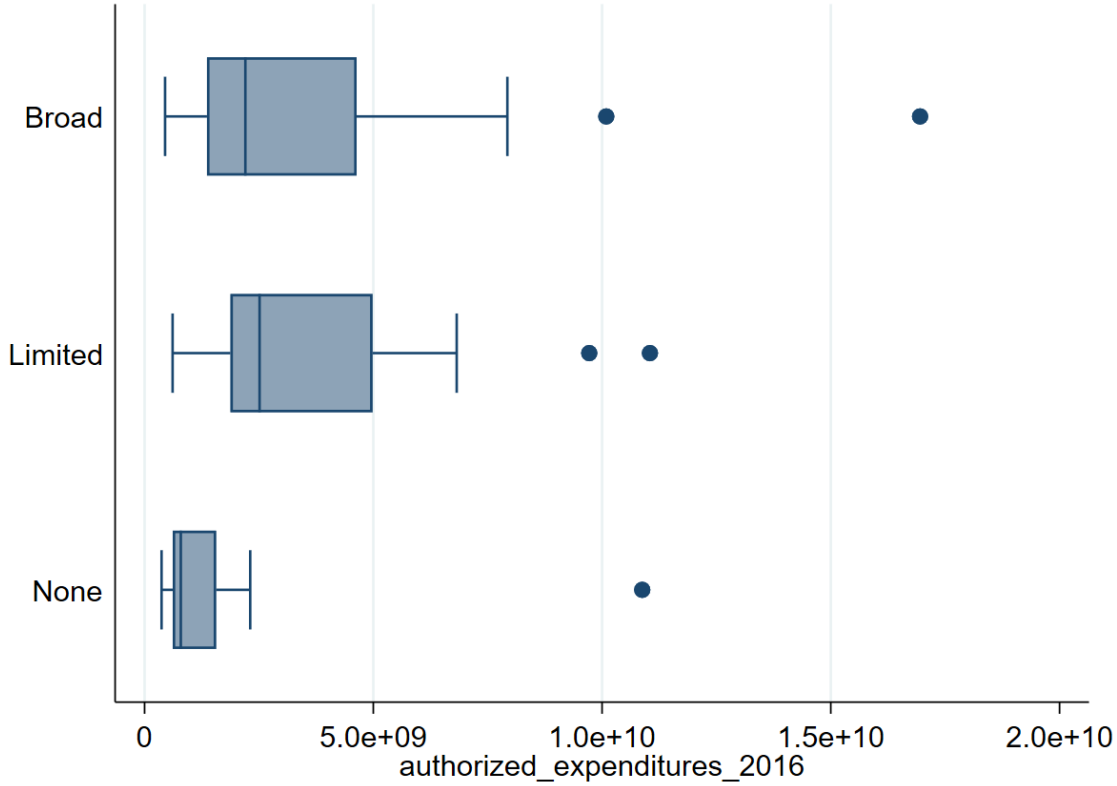


Figure 14 Authorized Transportation Expenditures by P3 Enabling Legislation Category Box Plot
Source: (AASHTO 2016, USDOT FHWA 2018c)

Table 32 Total State Revenue for Transportation in 2017 by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	1.94e+09	8.64e+08	2.99e+09	4.28e+07	3.85e+09
Yes	37	3.43e+09	5.23e+08	2.96e+09	2.37e+09	4.50e+09
Combined	50	3.03e+09	4.54e+08	3.01e+09	2.11e+09	3.94e+09
Difference		-1.49e+09	1.00e+09		-3.52e+09	5.37e+08
T-value	-1.4833					
DF	42					
P-value	0.1455					

Source: (AASHTO 2016)

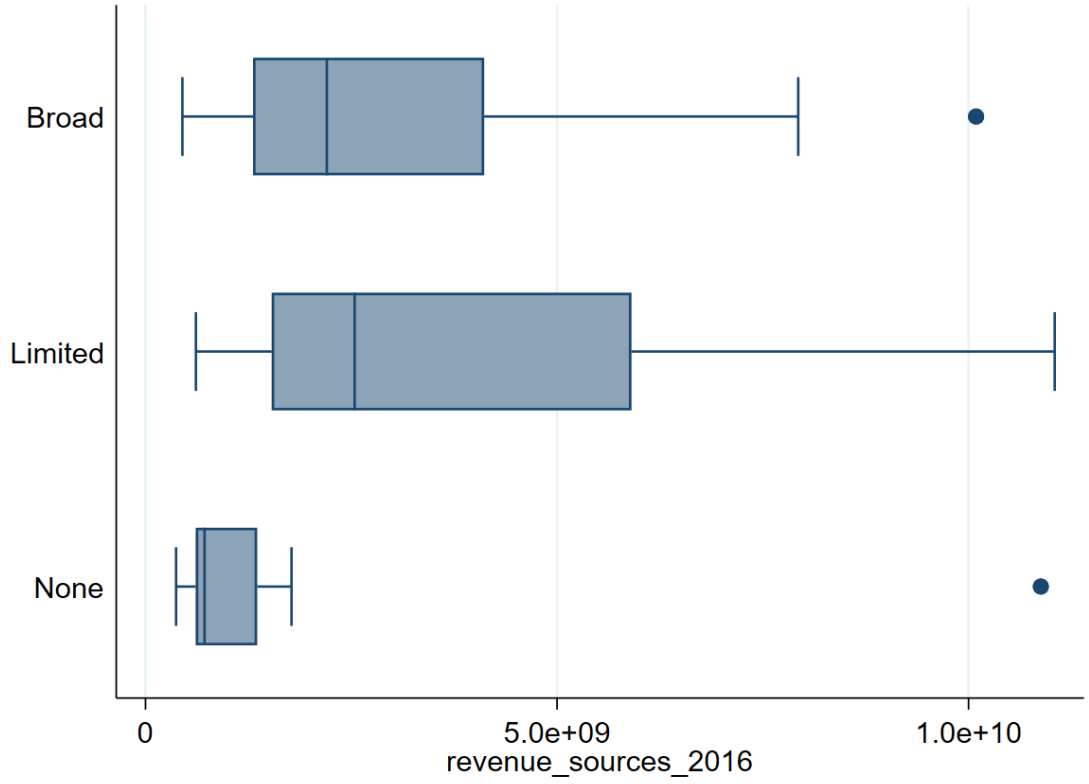


Figure 15 Total State Revenue for Transportation in 2017 by P3 Enabling Legislation Category Box Plot
Source: (AASHTO 2016, USDOT FHWA 2018c)

Table 33 Authorized State Debt Obligations Outstanding in 2017 by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	8.17e+08	5.61e+08	2.02e+09	-4.06e+08	2.04e+09
Yes	37	1.47e+09	4.91e+08	2.99e+09	4.74e+08	2.47e+09
Combined	50	1.30e+09	3.91e+08	2.77e+09	5.15e+08	2.09e+09
Difference		-6.54e+08	8.96e+08		-2.46e+09	1.15e+09
T-value	-0.7300					
DF	48					
P-value	0.4689					

Source: (AASHTO 2016)

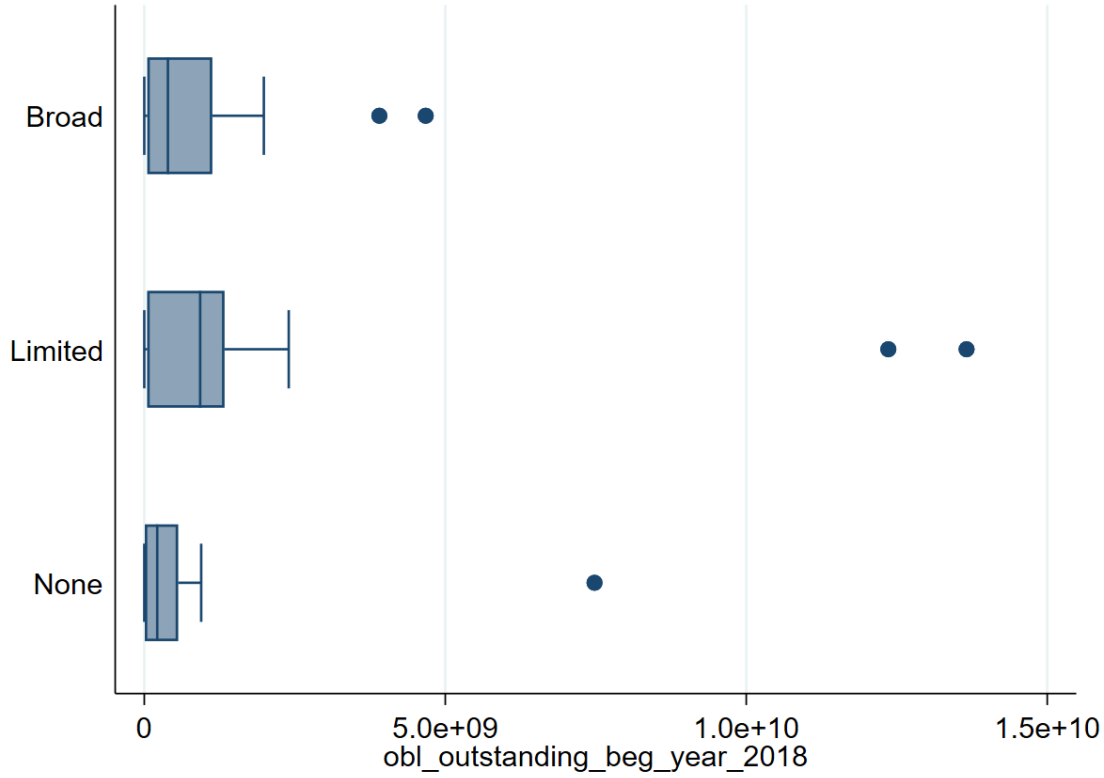


Figure 16 Authorized State Debt Obligations Outstanding in 2017 by P3 Enabling Legislation Category Box Plot
Source: (AASHTO 2016, USDOT FHWA 2018c)

Table 34 Annual Vehicle Kilometers Traveled in 2017 by P3 Enabling Legislation T-Test Results

P3 Enabling Legislation	Observations	Mean	Standard Error	Standard Deviation	95% CI (L)	95% CI (H)
No	13	5.12e+10	1.64e+10	5.90e+10	1.55e+10	8.68e+10
Yes	37	1.20e+11	1.84e+10	1.12e+11	8.25e+10	1.57e+11
Combined	50	1.02e+11	1.48e+10	1.05e+11	7.22e+10	1.32e+11
Difference		-6.88e+10	3.27e+10		-1.35e+11	-2.97e+09
t value	-2.1014					
DF	48					
P-value	0.0409					

Source: (USDOT Bureau of Transportation Statistics 2018)

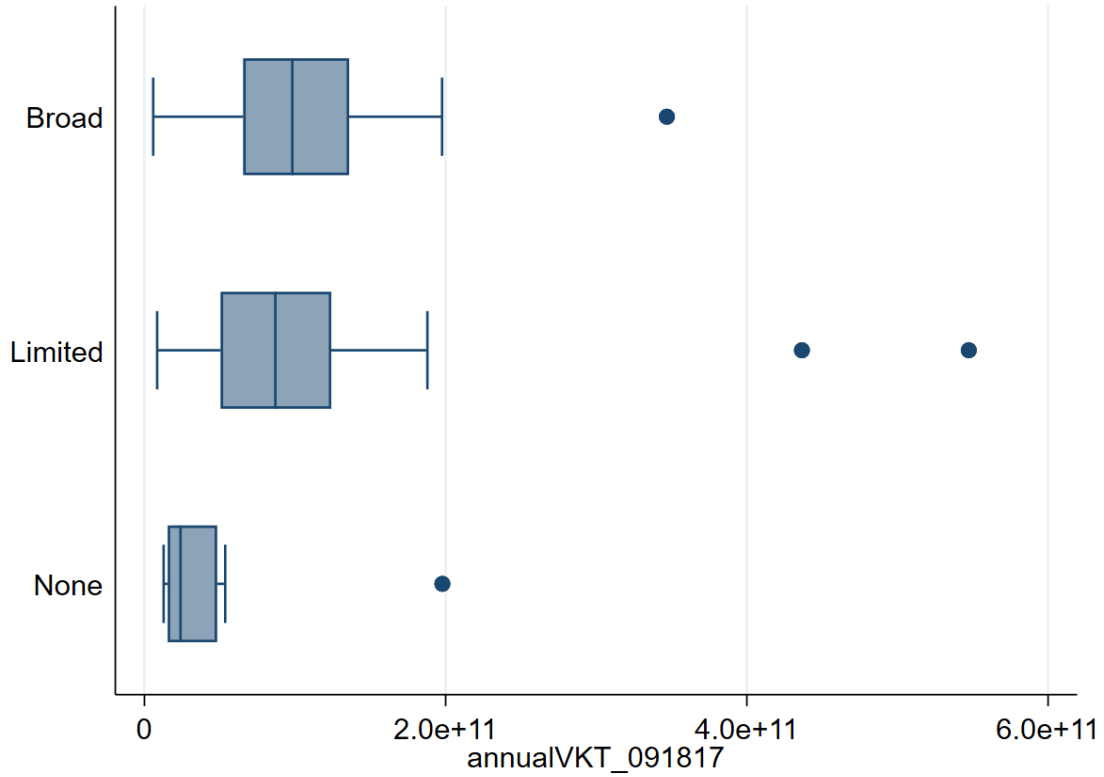


Figure 17 Annual Vehicle Kilometers Traveled in 2017 by P3 Enabling Legislation Category Box Plot
Source: (USDOT Bureau of Transportation Statistics 2018, USDOT FHWA 2018c)

APPENDIX 2

INTERVIEWEE QUESTIONNAIRE

1. What has been the history of highway public-private partnership (P3) enabling legislation in your state?
2. Who were the primary contractors and other professional services firms that participated in some of the early P3 projects in your state?
3. What were some of the factors reported to you by private firms about ways your state's public private partnership enabling legislation helped or hindered the chance of the project reaching close?
4. Based on your knowledge of P3 projects delivered in your state, have they led to innovations that benefitted the public?
5. Did the contractors you worked with have experience with P3 projects elsewhere?
6. Were any projects that you participated in financed using Transportation Infrastructure Financing and Innovation Act (TIFIA) loans?
7. In total, how many deals were closed under your state's P3 enabling legislation?
8. How many of these deals were for roadway improvements? Transit improvements?
9. Based on your knowledge of P3 projects delivered in your state, have they led to increased leveraged investment from the private sector?
10. Do you have additional documents regarding the development of your state's public-private partnership enabling legislation that you would be willing to share for this project?
11. Who were your primary contacts at FHWA?
12. Do you have data on key projects that closed in your state that you would be willing to share for this project?
13. Do you have other information relevant to this topic that you would be willing to share for this project?

APPENDIX 3

PUBLIC-PRIVATE PARTNERSHIP STATUTE BY STATE

Table 35 Summary of Key P3 Statutes by State (1 of 3)

State	P3 Statute(s)	Page #
Alabama	• Ala. Code §§ 23-1-40 • Ala. Code §§ 23-1-81	127
Alaska	• Alaska Stat. §§ 19.75.011 to 990;	128
Arizona	• Ariz. Rev. Stat. §§ 28-7701 to 7710 A	129
Arkansas	• Ark. Stat. Ann. § 14-305-102;	130
California	• Cal. Gov. Code §§ 5956 to 5956.10	131
Colorado	• Colo. Rev. Stat. § 32-9-128.5 • Colo. Rev. Stat. §§ 43-1-1201 to 1209 • Colo. Rev. Stat. § 43-2-219 • Colo. Rev. Stat. §§ 43-3-202.5 • Colo. Rev. Stat. §§ 43-4-413-414 • Colo. Rev. Stat §§ 43-4-801 to 812	132
Connecticut	• Conn. Gen. Stat. §§ 4-255 to 4-263	133
Delaware	• Del. Cod. Ann. Tit. 2, §§ 2001 to 2012	134
Florida	• Fla. Stat. Ann. § 334.30 • Fla. Stat. Ann. § 337.251 • Fla. Stat. Ann. § 338.22 to 2511 • Fla. Stat. Ann. § 343.962 • Fla. Stat. Ann. § 343.87 • Fla. Stat. Ann. § 348.0004 • Fla. Stat. Ann § 287.05712 • Fla. Stat. Ann § 255.065	135
Georgia	• Ga. Code Ann. §48-5-41 • Ga. Code Ann. §48- 5-421.1 • Ga. Code Ann. § 32-10-76 • Ga. Code Ann. §32-2-41(b)(6) • Ga. Code Ann. §§ 32-2-78 to 80 • Ga. Code. Ann. §§ 36-91-110 to 36-91-118	137

Source: (USDOT FHWA 2018c)

Table 36 Summary of Key P3 Statutes by State (2 of 3)

State	P3 Statute(s)	Page #
Illinois	• Ill. Rev. Stat. ch. 20, § 2705/2705-450 • Ill. Rev. Stat. ch. 620 § 75/2-35 • Ill. Rev. Stat. ch. 605, § 5/10-802 • Ill. Rev. Stat. ch. 605 §§ 130/1 to 130/999 • Ill. Rev. Stat. ch. 630 §§ 15/5	138
Indiana	• Ind. Code Ann. §§ 5-23-1-1 to 5-23-7-2 • Ind. Code Ann. §§ 8-15.5-1-1 to 8-15.5-13-8 • Ind. Code Ann. §§ 8-15.7-1-1 to 8-15.7-16-8	140
Kentucky	• Ky. Rev. Stat. § 45A.077	141
Louisiana	• La. Rev. Stat. Ann. § 48:250 • La. Rev. Stat. Ann. § 48:1660.1 • La. Rev. Stat. Ann. §§48:2020 to 2037 • La. Rev. Stat. Ann. §§48:2071 to 2074; La. Rev. Stat. Ann. §48:2077 • La. Rev. Stat. Ann. §§48:2084 to 2084.15	142
Maine	• Me. Rev. Stat. Ann. Title 23, § 4251	143
Maryland	• Md. Code Regs. § 23.3.05.05 • Md. Code Ann., State Fin. & Proc. §§ 10a-101 to 10a-403 • Md. Code Regs. §§ 11.07.06.01 to 14	144
Massachusetts	• Mass. Gen. Laws Ann. Ch. 6C, §§1 to 74	145
Michigan	• Mich. Comp. Laws § 124.401 to 426 • Mich. Comp. Laws Ann. §§ 125.1871 to 125.1883	146
Minnesota	• Minn. Stat. Ann. §§ 160.84 to 98	147
Mississippi	• Miss. Code Ann. §§ 65-43-1 to 85	148
Missouri	• Mo. Rev. Stat. §§ 227.600 to 669 • Mo. Rev. Stat. §§ 238.300 to 367	149
New Jersey	• NJ - Statute to be determined; SB 865	150
Nevada	• Nev. Rev. Stat. §§ 338.161 to 167 • Nev. Rev. Stat. §§ 338.161 to 168 • Nev. Rev. Stat. Chapter 277A	151
New Hampshire	• NH Rev. Stat. Ann. 228:107 to 228:115	152
North Carolina	• NC Gen. Stat. § 136-18 • NC Gen. Stat. §§ 136-89.180 to 198	153
Ohio	• Ohio Rev. Code Ann. § 5501.71 to 5501.75	154
Oklahoma	• Okla. Code Ann. Tit. 74 § 5151 to 5158	155
Oregon	• Or. Rev. Stat. §§ 383.001 to 075 • Or. Rev. Stat. §§ 367.800 to 826 • Or. Rev. Stat. § 184.631	156

Source: (USDOT FHWA 2018c)

Table 37 Summary of Key P3 Statutes by State (3 of 3)

State	*P3 Statute(s)*	Page #
Pennsylvania	• Penn. Conso. Stat.74 §§ 9101 to 9124	157
South Carolina	• SC Code Ann. §§57-5-1310 to 1495 • SC Code § 57-3-200 • SC Code Ann. §§57-5-1310 to 1495	158
Tennessee	• Tenn. Code §§ 54-3-101 to 54-3-113 • Tenn. Code §§ 54-6-101 to 54-6-121 • Tenn. Code §§ 54-3-101 to 54-3-113	159
Texas	• Tex. Transportation Code Ann. §§222.001 to 107 • Tex. Transportation Code Ann. §§ 366.401 to 409 • Tex. Transportation Code Ann. §§222.001 to 107	160
Utah	• Utah Code Ann. § 63G-6-503; § 63G6a-103; § 6 3G-6a702; § 63G6a-703; § 63G-6a-707 • Utah Code Ann. §72-6-118; Utah Code Ann. 72-2-120 • Utah Code Ann. § 63G-6-503; § 63G6a-103; § 6 3G-6a702; § 63G6a-703; § 63G-6a-707	161
Virginia	• Va. Code §§ 33.2-1800Wash. Rev. Code §§ 47.29.010 to 900	162
Washington	• Wash. Rev. Code §§ 47.29.010 to 900	163
West Virginia	• W.Va. Code §§ 17-28-1 to 12	164
Wisconsin	• Wis. Stat. Ann. § 84.01 (30)	165

Source: (USDOT FHWA 2018c)

Alabama

Table 38 Alabama P3 Statute

Statute	Summary
Ala. Code §§ 23-1-40	Effective November 2018, this statute describes the state DOT duties and powers generally. The statute gives the DOT the authority to enter into contracts with public or private entities for the construction of a public road, bridge, or tunnel. The DOT may use design-build, design-build-operate, design-build-own-operate, design-build-own-operate-maintain, design-build-finance-operate-maintain, or other similar project delivery models in which "the design, right-of-way acquisition, relocation of structures or utilities, construction, financing, ownership, management, maintenance, and operation, or any combination thereof, of a public road, bridge, or tunnel project is accomplished by the department or on behalf of the department by any of the aforementioned entities or methods." The DOT may also enter leases, licenses, franchises, concessions, or other agreements for the development, operation, management, or undertaking of all or any part of a public road, bridge, or tunnel project.
Ala. Code §§ 23-1-81	Authorizes county commissions and the state DOT to license private entities to establish or operate toll roads, toll bridges, ferries or causeways. Allows the authorization of a licensee to establish and fix the rates of toll.
Ala. Code §§ 23-2-140 to 163	Authorizes the Alabama Toll Road, Bridge and Tunnel Authority to enter into agreements for design-build, design-build-operate, design-build-own-operate or design-build-own-operate-maintain contracts, or other similar arrangements or agreements; also allows for leases, licenses, franchises, concessions or other agreements for the development, operation, management or undertaking of all or any part of a project. Allows any entity that owns, leases or otherwise operates a toll facility to set and collect tolls, subject to such conditions as the authority and the state DOT may establish. Allows bids to be awarded by best value or qualifications. Sets the bond issue date at 75 years.

Source: (USDOT FHWA 2018c)

Alaska

Table 39 Alaska P3 Statute

Statute	Summary
Alaska Stat. §§ 19.75.011 to 990	Authorizes the Knik Arm Bridge and Toll Authority to enter into P3s in any form to finance, design, construct, maintain, improve or operate the Knik Arm Bridge. Allows the authority to issue bonds or incur other forms of indebtedness to finance the project and to fix and collect tolls for the use of the bridge; these tolls may exceed operating costs.

Source: (USDOT FHWA 2018c)

Arizona

Table 40 Arizona P3 Statute

Statute	Summary
Ariz. Rev. Stat. §§ 28-7701 to 7710 A	Comprehensive statute that authorizes P3s for transportation projects. Under legislation enacted in 2009 (Senate Bill 2396; 2009 Ariz. Sess. Laws, Chap. 141), authorizes the state DOT to enter into agreements with private entities to design, build, finance, maintain, operate, manage and/or lease transportation facilities, or for any other project delivery method that the DOT determines will serve the public interest. Allows for availability payments and revenue sharing. Limits agreements to no more than 50 years, which may be extended by the DOT. Requires any foreign entity that submits a concession agreement to provide satisfactory evidence of compliance with certain requirements. Prohibits noncompete clauses, in that a P3 agreement must include a provision that bars a private partner from seeking relief to hinder the DOT from developing or constructing any facility that was planned at the time the agreement was executed. However, an agreement may provide for reasonable compensation to the private partner for adverse effects on revenues resulting from the development and construction of a then-unplanned facility. Allows for solicited and unsolicited proposals.

Source: (USDOT FHWA 2018c)

Table 41 Arkansas P3 Statute

Statute	Summary
Ark. Stat. Ann. § 14-305-102	The law authorizes the use by counties of P3s for the development of unpaved roads.
Ark. Stat. Ann. §§27-86-201 to 211; Ark. Stat. Ann. §27.76.402	Sections 27-86-201 to 211 allows counties to grant franchises to private entities to build toll bridges, turnpikes or causeways over or along swamps, watercourses, lakes or bays whenever it is in the public interest. Requires consent from the federal government for construction of the bridge. Gives counties superintending authority on rates. Prohibit granting a franchise to operate a toll road on the state highway system. Section 27.76.402 prohibits a regional mobility authority from selling a toll facility project to a private entity or entering into a lease or concession agreement for a toll facility.
Ark. Code §§ 22-10-101 to 22-10-505	The Partnership for Public Facilities and Infrastructure Act authorizes county and local government to use P3 for projects that have a long-term operations agreement. Eligible projects include: ferry, mass transit facility, vehicle parking facility, port facility, power generation facility, fuel supply facility, combined heating and power facility, central utility plant facility, distributed generation facility, oil or gas pipeline, water supply facility, water treatment intake and distribution facility, waste water treatment and collection facility, waste treatment facility, hospital, library, school, educational facility, medical or nursing care facility, recreational facility, administrative facility, law enforcement facility, fire department facility, public administrative office, toll road, correctional facility, technology infrastructure facility, public building, and transportation system. Projects must be approved by the Arkansas Economic Development Commission and Arkansas Development Finance Authority. The statue does not apply to the DOT.

Source: (USDOT FHWA 2018c)

California

Table 42 California P3 Statute

Statute	Summary
Cal. Gov. Code §§ 5956 to 5956.10	Authorizes local governmental agencies to enter into agreements with private entities to study, plan, design, construct, develop, finance, maintain, rebuild, improve, repair and/or operate a variety of fee-producing infrastructure facilities, including rail, highway, bridge, tunnel or airport projects. Allows for solicited and unsolicited proposals. Prohibits using the authority in this section to design, construct, finance or operate a toll road on a state highway.

Source: (USDOT FHWA 2018c)

Table 43 Colorado P3 Statute

Statute	Summary
Colo. Rev. Stat. § 32-9-128.5	Regional Transportation District has authority for mass transit projects. This statute describes how the Regional Transportation District may load net proceeds of private activity or exempt facility bonds to a private entity to finance all or a portion of a project.
Colo. Rev. Stat. §§ 43-1-1201 to 1209	Allows the state DOT to enter into agreements for public-private initiatives, including for the design, financing, construction, operation, maintenance, and/or improvement of toll roads, turnpikes and high-occupancy toll lanes. Allows for solicited and unsolicited proposals.
Colo. Rev. Stat. § 43-2-219	Authorizes a board of county commissioners to enter into public-private initiatives for county highways and bridges, to privatize any county highway or bridge, or to charge tolls for such facilities.
Colo. Rev. Stat. §§ 43-3-202.5	Authorizes the state DOT to make or enter into contracts or agreements with one or more public or private entities to design, finance, construct, operate, maintain, reconstruct or improve a turnpike project by means of a public-private initiative. Finds that privately-developed transportation projects can result in time and cost savings, risk reduction and new tax revenues. Requires that the public or private entity secure and maintain liability insurance coverage.
Colo. Rev. Stat. §§ 43-4-413-414	Authorizes the Transportation Commission, with the approval of the governor, to enter into a contract with a private individual, firm or corporation for construction, maintenance and operation of one or more toll tunnels. Requires all rates for tolls or fees to be charged by a private contractor to first be approved by the commission.
Colo. Rev. Stat §§ 43-4-801 to 812	Creates and authorizes a Statewide Bridge Enterprise to enter into P3s to design, develop, construct, reconstruct, repair, operate or maintain bridge projects. Also creates the High-Performance Transportation Enterprise (HPTE) to seek out and enter into P3s and other innovative means of completing surface transportation infrastructure projects. Both enterprises shall operate as government owned businesses within the state DOT.

Source: (USDOT FHWA 2018c)

Connecticut

Table 44 Connecticut P3 Statute

Statute	**Summary**
Conn. Gen. Stat. §§ 4-255 to 4-263	This statute authorizes the Governor to approve up to 5 projects to be implemented as P3 projects prior to January 2016. Eligible facilities include early childcare, educational, health or housing; transportation systems including ports, transit-oriented development; or any other facility designated by an act of the General Assembly. The statute limits state support of a partnership agreement to 25% of the cost of the project.

Source: (USDOT FHWA 2018c)

Delaware

Table 45 Delaware P3 Statute

Statute	Summary
Del. Cod. Ann. Tit. 2, §§ 2001 to 2012	Comprehensive statute that authorizes P3s for transportation projects. Authorizes the secretary of transportation to enter into agreements with private entities to study, plan, design, construct, lease, finance, operate, maintain, repair and/or expand transportation systems. Establishes the Public-Private Initiatives Program Revolving Loan Fund, which provides funds for financing such projects. Allows for solicited and unsolicited proposals.

Source: (USDOT FHWA 2018c)

Table 46 Florida P3 Statute (1 of 2)

Statute	Summary
Fla. Stat. Ann. § 334.30	Comprehensive statute that authorizes P3s for transportation projects. Authorizes the state DOT, with legislative approval, to enter into agreements with private entities to build, operate, own or finance transportation facilities. Creates evaluation criteria for such projects. Prohibits noncompete clauses. Exempts private entities from certain taxes. Allows the DOT to lease existing toll facilities (except the Florida Turnpike System) through P3s with legislative approval; the DOT also may develop new toll facilities or increase capacity on existing toll facilities through P3s. Requires provisions in the P3 agreement that ensure a negotiated portion of revenues from tolled or fare generating projects are returned to the DOT over the life of the agreement. Allows a private entity to impose tolls or fares, subject to DOT regulation and certain limits. Allows for availability payments or shadow tolls, subject to annual appropriation by the Legislature. Limits P3 terms to no more than 50 years; however, the secretary of transportation may authorize a term of up to 75 years, and the Legislature may approve a term exceeding 75 years. Limits the total obligations for all projects under this section to no more than 15 percent of total federal and state funding for the State Transportation Trust Fund in any given year. Allows for solicited and unsolicited proposals.
Fla. Stat. Ann. § 337.251	Authorizes the state DOT to lease to public or private entities, for a term not to exceed 99 years, the use of DOT property, including rights-of-way. Also authorizes the DOT to lease the use of areas above or below state highways or other transportation facilities for commercial purposes. Leases under this section may not interfere with the primary state transportation needs nor be contrary to the best interests of the public. Allows for solicited and unsolicited proposals.
Fla. Stat. Ann. § 338.22 to 2511	Creates the Florida Turnpike Enterprise, which operates like private-sector business within the state DOT, in order to plan, develop, own, purchase, lease or otherwise acquire, demolish, construct, improve, relocate, equip, repair, maintain, operate and manage the Florida Turnpike System. Allows the enterprise to cooperate, coordinate, partner and contract with other entities, public and private, to accomplish its purposes.

Source: (USDOT FHWA 2018c)

Table 47 Florida P3 Statute (2 of 2)

Statute	Summary
Fla. Stat. Ann. § 343.962	Tampa Bay Area Regional Transportation Authority Act authorizes the regional transportation authority to receive or solicit proposals and enter into agreements with private entities or consortia thereof for the building, operation, ownership, or financing of multimodal transportation systems, transit-oriented development nodes, transit stations, or related facilities
Fla. Stat. Ann. § 343.875	Authorizes the Northwest Florida Transportation Corridor Authority to enter into agreements with private entities to build, operate, own or finance transportation facilities within its jurisdiction. Sets criteria for proposed projects. Allows for solicited and unsolicited proposals. Allows a private entity to impose tolls or fares, but rates and use of funds must be regulated by the authority to avoid unreasonable costs to facility users.
Fla. Stat. Ann. § 348.0004	Authorizes any expressway authority, transportation authority, bridge authority or toll authority to enter into agreements with private entities to build, operate, own or finance transportation facilities within the jurisdiction of the authority. Creates evaluation criteria for such projects. Prohibits noncompete clauses. Allows a private entity to impose tolls or fares, but rates and use of funds must be regulated by the authority to avoid unreasonable costs to the users of the facility. Requires all P3 facilities to be consistent with state, regional and local comprehensive plans. Allows for solicited and unsolicited proposals.
Fla. Stat. Ann § 287.05712	County, municipality, or special district has authority to establish P3 for project that serves a public purpose, including, but not limited to, any ferry or mass transit facility, vehicle parking facility, airport or seaport facility, rail facility or project, fuel supply facility, oil or gas pipeline, medical or nursing care facility, recreational facility, sporting or cultural facility, or educational facility or other building or facility that is used or will be used by a public educational institution, or any other public facility or infrastructure that is used or will be used by the public at large or in support of an accepted public purpose or activity. The statute describes the project qualification process and procurement procedures, including the development of interim and comprehensive agreements. Allows for solicited and unsolicited proposals.
Fla. Stat. Ann § 255.065	Exempts unsolicited proposals for P3 projects from public record and public meeting requirements for 180 days after receipt, if the public entity does not issue a competitive solicitation, or until the end of any competitive solicitation or promptly reissued competitive solicitation. These temporary exemptions are intended to protect the P3 process by "encouraging private entities to submit such proposals, which will facilitate the timely development and operation of a qualifying project."

Source: (USDOT FHWA 2018c)

Georgia

Table 48 Georgia P3 Statute

Statute	Summary
Ga. Code Ann. §48-5-41; Ga. Code Ann. §48- 5-421.1	This statute exempts property that qualifies as a public-private transportation project from ad valorem taxes, and section 48-5-421.1 provides that such projects shall not constitute special franchises.
Ga. Code Ann. § 32-10-76	This statute establishes a grant program for P3 streetcar development and provides assistance to local government entities.
Ga. Code Ann. §32-2-41(b)(6)	This statute allows the commissioner to establish a Public-Private Initiatives Division within the state DOT.
Ga. Code Ann. §§ 32-2-78 to 80	Authorizes the DOT to solicit and accept proposals for projects that are funded or financed in part or in whole by private sources. Require all future P3 projects to be solicited by the DOT. Include public comment requirements and criteria for the DOT to use in awarding contracts. Authorizes contracts to include tolls, fares, or other user fees and tax increments for use of the project. Final approval of P3 contracts shall be by action of the State Transportation Board.
Ga. Code. Ann. §§ 36-91-110 to 36-91-118	The Partnership for Public Facilities and Infrastructure Act establishes guidelines for local government for P3 procurement. The statute also outlines procedures for the review and analysis of each proposal. 'Qualifying project' means any project selected in response to a request from a local government or submitted by a private entity as an unsolicited proposal and subsequently reviewed and approved by a local government, within its sole discretion, as meeting a public purpose or public need. This term shall not include and shall have no application to any project involving a) the generation of electric energy for sale, b) communication services, c) cable and video services, d) water reservoir projects.

Source: (USDOT FHWA 2018c)

Table 49 Illinois P3 Statute (1 of 2)

Statute	Summary
Ill. Rev. Stat. ch. 20, § 2705/2705-450	Authorizes the state DOT to enter into agreements with any public or private entity for the purpose of promoting and developing high-speed rail and magnetic levitation transportation within the state.
Ill. Rev. Stat. ch. 620 § 75/2-35	The South Suburban Airport Act provides gives general powers to the airport authority, specifically for P3. Any combination of design, build, finance, operate, and maintain are authorized. The term of a P3 agreement is lifted to 75 years, though the term may be extended by the General Assembly by law. The statute describes the prequalification and procurement processes. The statute also describes the provisions to be included in the P3 agreement. The P3 developer is unable to impose user fees outside of the P3 agreement.
Ill. Rev. Stat. ch. 605, § 5/10-802	Authorizes municipalities to make contracts "of every kind and nature" to acquire, construct, reconstruct, improve, enlarge, better, operate, maintain and/or repair any bridge within five miles of the corporate limits of the municipality, and to fix and apply tolls and fees for use of such a bridge.
Ill. Rev. Stat. ch. 605 §§ 130/1 to 130/999	Authorizes the state DOT to enter into a P3 to develop, construct, manage or operate the Illiana Expressway. Limits the contract term to 99 years, including extensions. Requires legislative approval for all extensions. Chapter 820 section 130/2 makes a P3 for the Illiana Expressway subject to the state Prevailing Wage Act (this section is also applicable to a lease of facility property at Chicago Midway International Airport).
Ill. Rev. Stat. ch. 630 §§ 15/5	The Public-Private Partnership Act provides broad authority for the development of new P3 projects by the DOT and Tollway Authority. Eligible projects include roads, bridges, intermodal facilities, intercity or high-speed passenger rail or other transportation facilities. Airports and toll roads are not eligible unless authorized by law. The Act can be applied toward reconstruction or expansion of existing assets. The Act describes project identification processes and the need for legislative authorization by joint resolution of the Illinois House and Senate. The Act describes three types of procurement processes: sealed bidding, sealed proposals, and design-build. A preferred proponent's proposal will be reviewed by the State's Commission on Government Forecasting and Accountability. The Governor makes the final award decision.

Source: (USDOT FHWA 2018c)

Table 50 Illinois P3 Statute (2 of 2)

Statute	Summary
Ind. Code Ann. §§ 5-23-1-1 to 5-23-7-2	Authorizes governmental bodies to enter into P3 agreements with private entities for the acquisition, planning, design, development, reconstruction, repair, maintenance or financing of public facilities. Applies to the state, a political subdivision in a county containing a consolidated city, or a political subdivision in a county that adopts these provisions by resolution or ordinance. Limits original terms of P3 agreements to no more than five years with board approval; a term in excess of five years requires approval from the board, the governor and/or the fiscal body of a political subdivision. Requires a public hearing. Allows for solicited proposals only.

Source: (USDOT FHWA 2018c)

Table 51 Indiana P3 Statute

Statute	Summary
Ind. Code Ann. §§ 5-23-1-1 to 5-23-7-2	Authorizes governmental bodies to enter into P3 agreements with private entities for the acquisition, planning, design, development, reconstruction, repair, maintenance or financing of public facilities. Applies to the state, a political subdivision in a county containing a consolidated city, or a political subdivision in a county that adopts these provisions by resolution or ordinance. Limits original terms of P3 agreements to no more than five years with board approval; a term in excess of five years requires approval from the board, the governor and/or the fiscal body of a political subdivision. Requires a public hearing. Allows for solicited proposals only.
Ind. Code Ann. §§ 8-15.5-1-1 to 8-15.5-13-8	Authorizes the Indiana Finance Authority to enter into P3 agreements with private entities to plan, design, acquire, construct, reconstruct, improve, extend, expand, lease, operate, repair, manage, maintain or finance toll road projects. Prohibits the state DOT or the authority from issuing a request for proposals or entering into a P3 for a toll road after Aug. 1, 2006, unless the General Assembly adopts a statute authorizing the imposition of tolls. Exempts certain projects from the legislative approval requirement, including the Illiana Expressway under legislation enacted in 2010 (Senate Bill 382; 2010 Ind. Acts, P.L. 85). Requires public hearings to be held in affected counties; also requires certain preliminary studies. Limits lease terms to no more than 75 years. Allows for solicited proposals only.
Ind. Code Ann. §§ 8-15.7-1-1 to 8-15.7-16-8	Authorizes the state DOT to enter into P3s to develop, finance or operate transportation projects, including tollways, roads and bridges, and some rail projects. Prohibits the DOT or the Indiana Finance Authority from issuing a request for proposals or entering into a P3 agreement unless the General Assembly adopts a statute authorizing that activity. Exempts certain projects from the legislative approval requirement, including an Interstate 69 project and the Illiana Expressway under new legislation enacted in 2010 (Senate Bill 382; 2010 Ind. Acts, P.L. 85). Allows for solicited proposals only.

Source: (USDOT FHWA 2018c)

Kentucky

Table 52 Kentucky P3 Statute

Statute	Summary
Ky. Rev. Stat. § 45A.077	The statute establishes an 11-member Kentucky Local Government Public Private Partnership, which will approve review and approve certain P3 agreements. The law also directs the Secretary of Finance and the Administration Cabinet to establish regulations in order to determine when a P3 may be used for a particular project, as well as those local governments must follow concerning P3 agreements. The law sets forth regulations as to what should be contained in an RFP and establishes procedures regarding unsolicited proposals.

Source: (USDOT FHWA 2018c)

Louisiana

Table 53 Louisiana P3 Statute

Statute	Summary
La. Rev. Stat. Ann. § 48:250	Authorizes the DOT to solicit and enter P3 contracts for a transportation facility. Twenty-five percent of P3 projects undertaken by the DOT should be located outside the boundaries of a metro area. Rural projects are subject to approval of the House and Senate committee on agriculture and rural development.
La. Rev. Stat. Ann. § 48:1660.1	Competitive bidding on contracts provides broad authority to the Regional Transit Authority to enter into P3 contracts for transportation facilities. RTA is unable to accept an unsolicited proposal. The statute refers to the procedural requirements previously enacted.
La. Rev. Stat. Ann. §§48:2020 to 2037	Encourages parishes and municipalities to use P3s to help the state finance improvements to the state highway system and meet local transportation needs. Authorizes parishes and municipalities to create transportation authorities, which may enter into agreements with public or private entities to construct, maintain, repair and/or operate transportation projects. Allows transportation authorities to authorize investment of public and private money to finance such projects, subject to compliance with state law relative to use of public funds.
La. Rev. Stat. Ann. §§48:2071 to 2074; La. Rev. Stat. Ann. §48:2077; La. Rev. Stat. Ann. §§48:2084 to 2084.15	Creates the Louisiana Transportation Authority to pursue alternative and innovative funding sources - including P3s, tolls and unclaimed property bonds - to supplement public revenue sources and to improve Louisiana's transportation system. Allows the authority to contract with a public or private entity to construct, maintain, repair or operate authority projects, and to authorize the investment of public and private money to finance such projects, subject to compliance with state law relative to the use of public funds. Allows a private entity to impose user fees, but prohibits a private entity from imposing tolls or user fees on any existing free transportation facility unless the facility is improved or expanded. Allows for solicited and unsolicited proposals.

Source: (USDOT FHWA 2018c)

Maine

Table 54 Maine P3 Statute

Statute	Summary
Me. Rev. Stat. Ann. Title 23, § 4251	Authorizes the state DOT - with legislative approval - to enter into P3s for transportation projects with an estimated cost of more than $25 million or when a project proposal includes tolling existing transportation facilities that were not previously subject to tolls. Allows for solicited and unsolicited proposals. Sets standards and requirements for P3 proposals, including completion of certain studies. Requires P3 proposals to limit the use of state capital funding to less than 50 percent of the initial capital cost of the facility and, to the extent practicable minimize use of public transportation funding sources. Allows a P3 agreement to authorize a private entity to impose tolls or fares, subject to certain requirements. Limits term length to 50 years unless the Legislature, upon the recommendation of the commissioner of transportation, approves a longer term.

Source: (USDOT FHWA 2018c)

Maryland

Table 55 Maryland P3 Statute

Statute	Summary
Md. Code Regs. § 23.3.05.05	County or local educational agencies can establish P3 for shared use arrangements of school facilities in exchange for school property enhancements and/or revenue
Md. Code Ann., State Fin. & Proc. §§ 10a-101 to 10a-403	Statute provides authority to reporting agencies to State Finance and Procurement to pursue P3 project delivery. The statute allows agencies to determine their own regulations and processes for the procurement, development and delivery of P3 projects. Eligible projects are those that "develop and strengthen a public infrastructure asset in conjunction with a public-private partnership."
Md. Code Regs. §§ 11.07.06.01 to 14	The law establishes a Maryland Transportation Authority program for P3. It describes the steering committee, identification process, screening process, procurement steps, and delivery procedures. Allows for unsolicited proposals only.

Source: (USDOT FHWA 2018c)

Massachusetts

Table 56 Massachusetts P3 Statute

Statute	Summary
Mass. Gen. Laws Ann. Ch. 6C, §§1 to 74	Massachusetts DOT may solicit proposals and enter into contracts for design-build-finance-operate-maintain or design-build-operate-maintain services with the responsible and responsive offeror submitting the proposal that is most advantageous to the department through the sale, lease, operation and maintenance of a transportation facility within the commonwealth. A Special Public-Private Partnership Infrastructure Oversight Commission is established, which must comment on and approve all requests for proposals.

Source: (USDOT FHWA 2018c)

Michigan

Table 57 Michigan P3 Statute

Statute	Summary
Mich. Comp. Laws § 124.401 to 426	This statute provides broad procurement authority to metro transportation authorities to implement P3 for transportation facilities.
Mich. Comp. Laws Ann. §§ 125.1871 to 125.1883	The Private Investment Infrastructure Funding Act authorizes the department of transportation, county road commission, drain commissioner, city, village or township with jurisdiction of a public facility to establish a negotiating partnership to develop and finance public facilities. While not explicitly recognizing P3 in the traditional sense, this has allowed agencies to negotiate with private entities on the development and financing of public facilities.

Source: (USDOT FHWA 2018c)

Table 58 Minnesota P3 Statute

Statute	Summary
Minn. Stat. Ann. §§ 160.84 to 98	This statute generally authorizes state and local road authorities to solicit or accept proposals from and enter into development agreements with private entities to develop, finance, design, construct, improve, rehabilitate, own and/or operate toll facilities. It also authorizes user fees for as high-occupancy vehicle lanes or dynamic shoulder lanes. The extent to which a private entity can operate and maintain a road is significantly limited. Section 160.845 prohibits a road authority or a private operator from converting, transferring or utilizing any portion of a highway to impose tolls or for use as a toll facility (excepting dynamic shoulder lanes or HOV/HOT lanes); and section 160.98 prohibits a road authority from selling, leasing, executing a development agreement for a build-operate-transfer or build-transfer-operate facility that transfers an existing highway lane, or otherwise relinquishing management of a highway.

Source: (USDOT FHWA 2018c)

Mississippi

Table 59 Mississippi P3 Statute

Statute	Summary
Miss. Code Ann. §§ 65-43-1 to 85	Authorizes the Mississippi Transportation Commission, county boards of supervisors and/or the governing authorities of municipalities to contract with other governmental agencies or private entities for the purpose of designing, financing, constructing, operating and maintaining one or more new toll roads or toll bridges in the state. Prohibits noncompete clauses by authorizing toll roads or bridges at and along only those locations where an alternate un-tolled route exists. Limits contract terms to 50 years, which cannot be extended or renewed. Allows for solicited and unsolicited proposals.

Source: (USDOT FHWA 2018c)

Table 60 Missouri P3 Statute

Statute	Summary
Mo. Rev. Stat. §§ 227.600 to 669	The Missouri Public-Private Partnerships Transportation Act authorizes the Highways and Transportation Commission to enter into agreements with private partners to finance, develop and/or operate any pipeline, ferry, river port, airport, railroad, light rail or other mass transit facility. Any project not mentioned previously cannot be financed, developed or operated by a private partner until it is approved by a vote of the people. Allows for solicited and unsolicited projects.
Mo. Rev. Stat. §§ 238.300 to 367	Authorizes creation of special purpose, nonprofit "transportation corporations" by private parties, which may enter into agreements with the Highways and Transportation Commission in order to fund, promote, plan, design, construct, maintain and operate one or more transportation projects. Authorizes such corporations to issue bonds and to establish and charge user fees for projects. No part of the earnings or assets of a transportation corporation shall inure to the benefit of any private interests, person or entity.

Source: (USDOT FHWA 2018c)

Table 61 New Jersey P3 Statute

Statute	Summary
Statute to be determined; SB 865	This law authorizes local government entities to enter into P3 agreements for the "development, construction, reconstruction, repair, alteration, improvement, extension, operation, and maintenance of any building, road, structure, infrastructure, or facility constructed or acquired by a local government unit to house local government functions, including any infrastructure or facility used or to be used by the public or in support of a public purpose or activity; provided that, with respect to a roadway or highway project, a qualifying project shall include an expenditure of at least $10 million in public funds, or any expenditure in solely private funds." P3 lease terms are limited to 30 years. Qualifying projects will be submitted to the New Jersey Economic Development Authority for its review and approval. The law allows for unsolicited proposals.

Source: (USDOT FHWA 2018c)

Nevada

Table 62 Nevada P3 Statute

Statute	Summary
Nev. Rev. Stat. §§ 338.161 to 167	The law authorizes counties with a population exceeding 700,000 to enter into P3s for transportation projects, including mass transit facilities.
Nev. Rev. Stat. §§ 338.161 to 168	Allows private entities to submit a request to a public body to develop, construct, improve, maintain or operate, or any combination thereof, a transportation facility. Excludes toll roads and toll bridges.
Nev. Rev. Stat. Chapter 277A	This statute defines powers for regional transportation commissions and section 280 allows for the use of turnkey procurement and competitive negotiation procurement processes.

Source: (USDOT FHWA 2018c)

New Hampshire

Table 63 New Hampshire P3 Statute

Statute	Summary
NH Rev. Stat. Ann. 228:107 to 228:115	Establishes a P3 oversight commission to recommend projects to the transportation commissioner using DBFOM or DBOM delivery models. The commission functions as an advisory board during P3 project implementation by helping to develop the RFP and preparation of agreements.

Source: (USDOT FHWA 2018c)

Table 64 North Carolina P3 Statute

Statute	Summary
NC Gen. Stat. § 136-18	Allows the state DOT to enter into a contract with a private developer to accomplish the engineering, design or construction of improvements to any transportation infrastructure under its jurisdiction. Sets restrictions on such projects, including that DOT participation is limited to the lesser of 10 percent of the engineering contract and any construction contract or $250,000, and that, in any case, DOT costs must not exceed normal practices. Requires projects to be constructed in accordance with DOT-approved plans and specifications. Terms must be less than 50 years. Solicited proposals only.
NC Gen. Stat. §§ 136-89.180 to 198	Authorizes the North Carolina Turnpike Authority to enter into agreements with the state DOT, political subdivisions and private entities, and to expend such funds as it deems necessary pursuant to such agreements, to finance the acquisition, construction, equipping, operation or maintenance of any turnpike project. Authorizes the authority to fix and collect tolls and fees for the use of a turnpike project. Prohibits noncompete clauses by requiring the DOT to maintain an existing, alternate, comparable non-toll route corresponding to each turnpike project constructed pursuant to this article. Allows the authority to study, plan and conduct preliminary design work on up to nine projects and then to design, establish, purchase, construct, operate and maintain five identified projects only. Any additional projects require legislative approval.

Source: (USDOT FHWA 2018c)

Table 65 Ohio P3 Statute

Statute	Summary
Ohio Rev. Code Ann. § 5501.71 to 5501.75	This statute defines the authority of the state DOT to enter public-private initiatives, including guidelines for solicitation and selection. The state DOT can use P3 for public or private highway, road, street, parkway, public transit, aviation, or rail project, and any related rights-of-way, bridges or tunnels. The DOT may use sealed bidding and the selection of proposals using qualifications or best value (or both).

Source: (USDOT FHWA 2018c)

Oklahoma

Table 66 Oklahoma P3 Statute

Statute	Summary
Okla. Code Ann. Tit. 74 § 5151 to 5158	The Oklahoma Public and Private Facilities and Infrastructure Act establishes a Partnership Committee to determine potential P3 projects. The statute requires that the Committee provide a public sector comparator for each project. The Oklahoma Office of P3 is responsible for procurement practices. The state DOT and Turnpike Authority are exempt from the law.

Source: (USDOT FHWA 2018c)

Oregon

Table 67 Oregon P3 Statute

Statute	Summary
Or. Rev. Stat. § 184.631	OR DOT's Research and Development Program can use P3 for state highways
Or. Rev. Stat. §§ 367.800 to 826	Establishes the Oregon Innovative Partnerships Program within the state DOT, which is authorized to enter into agreements with private entities to plan, acquire, finance, develop, design, construct, reconstruct, replace, improve, maintain, manage, repair, lease and/or operate transportation projects. Lists specific goals for the program, including to speed project delivery, maximize innovation and develop partnerships with private entities. Lists specific requirements for P3 agreements, including financing, risk management, penalties for nonperformance and incentives for performance. Allows for solicited and unsolicited proposals.
Or. Rev. Stat. §§ 383.001 to 075	Authorizes the state DOT to enter into agreements with private entities and/or units of government to acquire, design, construct, reconstruct, operate or maintain and repair tollway projects. Includes lease agreements. Allows the DOT or a private entity that operates a tollway project pursuant to an agreement with the DOT to impose and collect tolls. Allows for solicited and unsolicited proposals.

Source: (USDOT FHWA 2018c)

Pennsylvania

Table 68 Pennsylvania P3 Statute

Statute	Summary
Penn. Conso. Stat.74 §§ 9101 to 9124	The law allows state or local public entities to enter into P3s for the design, construction, operation, maintenance, financing or lease of transportation facilities. All partnerships must be approved by a Public-Private Transportation Partnerships Board. The bill also allows the legislature to block P3s for state-owned facilities and requires legislative approval for P3s on the Pennsylvania Turnpike.

Source: (USDOT FHWA 2018c)

Table 69 South Carolina P3 Statute

Statute	Summary
SC Code Ann. §§57-5-1310 to 1495	Allows the state DOT to construct and operate turnpike facilities. Section 57-5-1330(1)(4) appears to allow the use of P3s for these facilities by allowing the DOT to exercise such authorizations as are granted by the provisions in other statute law to designate, establish, plan, abandon, improve, construct, maintain and regulate turnpike facilities.
SC Code § 57-3-200	Authorizes the state DOT to expend such funds as it deems necessary to enter into partnership agreements with private entities to finance, by tolls and other methods, the cost of acquiring, constructing, equipping, maintaining and operating highways, roads, streets and bridges in the state.
SC Code Ann. §§57-5-1310 to 1495	Allows the state DOT to construct and operate turnpike facilities. Section 57-5-1330(1)(4) appears to allow the use of P3s for these facilities by allowing the DOT to exercise such authorizations as are granted by the provisions in other statute law to designate, establish, plan, abandon, improve, construct, maintain and regulate turnpike facilities.

Source: (USDOT FHWA 2018c)

Tennessee

Table 70 Tennessee P3 Statute

Statute	Summary
Tenn. Code §§ 54-3-101 to 54-3-113	Authorizes tolling as an additional and alternative method for funding or financing transportation facilities. Authorizes the state DOT to enter into agreements with private parties to develop or operate a tollway, toll facility or any part thereof. Limits authorization for tolling initially to a pilot program of two projects. Provides that existing highways cannot be converted into toll roads, but additional lane capacity constructed on or along an existing highway or bridge may be developed and operated like a tollway. Requires legislative approval.
Tenn. Code §§ 54-6-101 to 54-6-121	This law enables the DOT to use P3 delivery for a tollway or toll facility. The law outlines procedures for project procurement, and the metrics that the DOT may consider when evaluating a proposal. Allows for unsolicited proposals.
Tenn. Code §§ 54-3-101 to 54-3-113	Authorizes tolling as an additional and alternative method for funding or financing transportation facilities. Authorizes the state DOT to enter into agreements with private parties to develop or operate a tollway, toll facility or any part thereof. Limits authorization for tolling initially to a pilot program of two projects. Provides that existing highways cannot be converted into toll roads, but additional lane capacity constructed on or along an existing highway or bridge may be developed and operated like a tollway. Requires legislative approval.

Source: (USDOT FHWA 2018c)

Table 71 Texas P3 Statute

Statute	Summary
Texas Transportation Code Ann. §§ 222.001 to 107	Agreements with private entities for design, financing, maintenance, operation, or construction—including oversight and inspection—of a toll or non-toll facility on the state highway system, where the private or public entity is paid pass-through tolls
Texas Transportation Code Ann. §§ 91.054; §§ 223.201 to 210; Ch. 228; §§ 371.001 to 153	Comprehensive development agreements with private entities to design, develop, finance, construct, maintain, repair, operate, extend or expand a toll project or a state highway improvement project that either includes both tolled and un-tolled lanes, is financed by private activity bonds, or in which the private entity has an interest. Also allows agreements for financing, design, acquisition, construction, maintenance, or operation of a
Texas Transportation Code Ann. §§ 366.401 to 409; §§ 371.001 to 153	Comprehensive development agreements with private entities for at least the design, construction, rehabilitation, expansion or improvement of a turnpike project; also may include financing, acquisition, maintenance or operation of a turnpike project.
Texas Transportation Code Ann. §§ 370.305 to 317; §§ 371.001 to 153	Comprehensive Development Agreements with private entities for at least the design and construction of a transportation project; also may include financing, acquisition, maintenance, or operation of a transportation project. Projects may not be part of the state highway system unless agreed to by the authority and TxDOT
Texas Transportation Code Ann. Ch. 284 (Subject to Ch. 223 and Ch. 366): §§ 371.001 to 153	Comprehensive Development Agreements with private entities to design, develop, finance, construct, maintain, repair, operate, extend, or expand a proposed or existing causeway, bridge, tunnel, turnpike, highway, or ferry project, to the extent and in the manner applicable to TxDOT under Ch. 223 and to Regional Tollway Authorities under Chapter 366. Projects may not be part of the state highway system unless agreed to by TxDOT.

Source: (USDOT FHWA 2018c)

Table 72 Utah P3 Statute

Statute	Summary
Utah Code Ann. § 63G-6-503; § 63G6a-103; § 6 3G-6a702; § 63G6a-703; § 63G-6a-707	Authorizes the state DOT to accept proposals for, and enter into, tollway development agreements with public or private entities to study, predevelop, design, finance, acquire, construct, reconstruct, maintain, repair, operate, extend or expand tollway facilities. Defines the terms that must be included in such agreements. Tollway development agreements must be approved by the Utah Transportation Commission. Allow for solicited and unsolicited proposals.
Utah Code Ann. §72-6-118; Utah Code Ann. 72-2-120	Authorizes the state DOT to establish, expand and operate tollways and related facilities. Authorizes the DOT to enter into contracts, agreements, licenses, franchises, tollway development agreements, or other arrangements for tollway projects. Prohibits the DOT or other entity from establishing or operating a tollway on an existing state highway unless approved by the Transportation Commission and the Legislature, except for high occupancy toll lanes or additional capacity lanes. Requires revenue generated from tollway development agreement projects to be deposited into the Tollway Special Revenue Fund created in section 72-2-120 and used for transportation facilities within the corridor served by the tollway, unless the revenue is to the private entity or identified for a different purpose under the agreement.
Utah Code Ann. § 63G-6-503; § 63G6a-103; § 6 3G-6a702; § 63G6a-703; § 63G-6a-707	Authorizes the state DOT to accept proposals for, and enter into, tollway development agreements with public or private entities to study, predevelop, design, finance, acquire, construct, reconstruct, maintain, repair, operate, extend or expand tollway facilities. Defines the terms that must be included in such agreements. Tollway development agreements must be approved by the Utah Transportation Commission. Allow for solicited and unsolicited proposals.

Source: (USDOT FHWA 2018c)

Virginia

Table 73 Virginia P3 Statute

Statute	Summary
Va. Code §§ 33.2-1800	The Public-Private Transportation Act of 1995 (subsequently modified) is a comprehensive P3 statute intended to encourage private investment in transportation facilities. Authorizes a private entity to develop and/or operate a qualifying transportation facility, subject to approval from and a comprehensive agreement with the responsible public entity. Contains detailed implementation guidelines, including specific requirements for comprehensive agreements. Stipulates the powers and duties of a private entity in a P3 and provides financing mechanisms. Allows for solicited and unsolicited proposals.

Source: (USDOT FHWA 2018c)

Washington

Table 74 Washington P3 Statute

Statute	Summary
Wash. Rev. Code §§ 47.29.010 to 900	Authorizes the state DOT to enter into P3s for transportation projects, whether capital or operating, where the state's primary purpose for the project is to facilitate safe transportation of people or goods via any mode of travel. Defines terms that must be included in agreements. Requires review by and approval of the Transportation Commission for P3 contracts or agreements. Requires an advisory committee for any project that costs $300 million or more. Authorizes the DOT to solicit or accept unsolicited proposals after Jan. 1, 2007, for eligible transportation projects.

Source: (USDOT FHWA 2018c)

West Virginia

Table 75 West Virginia P3 Statute

Statute	Summary
WVa. Code §§ 17-28-1 to 12	Authorizes Division of Highways to enter into comprehensive agreements with private entities to acquire, construct or improve transportation facilities. Sets guidelines for soliciting proposals. Specifies what comprehensive agreements shall contain. Allows a private developer to charge user fees if they are consistent with the rate of return specified in the agreement; requires the schedule and amount of initial user fees and any fee increase to be approved by the Commissioner of the Division of Highways. Original bill expired in 2011 and was reenacted in 2013.

Source: (USDOT FHWA 2018c)

Wisconsin

Table 76 Wisconsin P3 Statute

Statute	Summary
Wis. Stat. Ann. § 84.01 (30)	Authorizes the state DOT to enter into build-operate-lease or transfer agreements with private entities for construction of transportation projects and for maintenance or operation of projects that are not purchased by the state upon their completion. Lists specific provisions that must be included in every agreement. An agreement may not be entered into unless the DOT determines that it advances the public interest and the private entity meets certain criteria.

Source: (USDOT FHWA 2018c)