



University Transportation Research Center - Region 2

Final Report

The Effects of Public-Private Partnerships on Traffic Safety: Evidence from Mexico”

Performing Organization: Cornell University

December 2014



Sponsor(s):
University Transportation Research Center - Region 2

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The Region 2 University Transportation Research Center (UTRC) is one of ten original University Transportation Centers established in 1987 by the U.S. Congress. These Centers were established with the recognition that transportation plays a key role in the nation's economy and the quality of life of its citizens. University faculty members provide a critical link in resolving our national and regional transportation problems while training the professionals who address our transportation systems and their customers on a daily basis.

The UTRC was established in order to support research, education and the transfer of technology in the field of transportation. The theme of the Center is "Planning and Managing Regional Transportation Systems in a Changing World." Presently, under the direction of Dr. Camille Kamga, the UTRC represents USDOT Region II, including New York, New Jersey, Puerto Rico and the U.S. Virgin Islands. Functioning as a consortium of twelve major Universities throughout the region, UTRC is located at the CUNY Institute for Transportation Systems at The City College of New York, the lead institution of the consortium. The Center, through its consortium, an Agency-Industry Council and its Director and Staff, supports research, education, and technology transfer under its theme. UTRC's three main goals are:

Research

The research program objectives are (1) to develop a theme based transportation research program that is responsive to the needs of regional transportation organizations and stakeholders, and (2) to conduct that program in cooperation with the partners. The program includes both studies that are identified with research partners of projects targeted to the theme, and targeted, short-term projects. The program develops competitive proposals, which are evaluated to insure the most responsive UTRC team conducts the work. The research program is responsive to the UTRC theme: "Planning and Managing Regional Transportation Systems in a Changing World." The complex transportation system of transit and infrastructure, and the rapidly changing environment impacts the nation's largest city and metropolitan area. The New York/New Jersey Metropolitan has over 19 million people, 600,000 businesses and 9 million workers. The Region's intermodal and multimodal systems must serve all customers and stakeholders within the region and globally. Under the current grant, the new research projects and the ongoing research projects concentrate the program efforts on the categories of Transportation Systems Performance and Information Infrastructure to provide needed services to the New Jersey Department of Transportation, New York City Department of Transportation, New York Metropolitan Transportation Council, New York State Department of Transportation, and the New York State Energy and Research Development Authority and others, all while enhancing the center's theme.

Education and Workforce Development

The modern professional must combine the technical skills of engineering and planning with knowledge of economics, environmental science, management, finance, and law as well as negotiation skills, psychology and sociology. And, she/he must be computer literate, wired to the web, and knowledgeable about advances in information technology. UTRC's education and training efforts provide a multidisciplinary program of course work and experiential learning to train students and provide advanced training or retraining of practitioners to plan and manage regional transportation systems. UTRC must meet the need to educate the undergraduate and graduate student with a foundation of transportation fundamentals that allows for solving complex problems in a world much more dynamic than even a decade ago. Simultaneously, the demand for continuing education is growing – either because of professional license requirements or because the workplace demands it – and provides the opportunity to combine State of Practice education with tailored ways of delivering content.

Technology Transfer

UTRC's Technology Transfer Program goes beyond what might be considered "traditional" technology transfer activities. Its main objectives are (1) to increase the awareness and level of information concerning transportation issues facing Region 2; (2) to improve the knowledge base and approach to problem solving of the region's transportation workforce, from those operating the systems to those at the most senior level of managing the system; and by doing so, to improve the overall professional capability of the transportation workforce; (3) to stimulate discussion and debate concerning the integration of new technologies into our culture, our work and our transportation systems; (4) to provide the more traditional but extremely important job of disseminating research and project reports, studies, analysis and use of tools to the education, research and practicing community both nationally and internationally; and (5) to provide unbiased information and testimony to decision-makers concerning regional transportation issues consistent with the UTRC theme.

Project No: UTRC Emerging Scholar Project

Project Completion Date: December 2014

Project Title: The Effects of Public-Private Partnerships on Traffic Safety: Evidence from Mexico"

Project's Website:

<http://www.utrc2.org/research/projects/effects-public-private-partnerships>

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Sponsor:

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16. Abstract The use of public-private partnerships (PPPs) worldwide to facilitate private-sector participation in a variety of transportation infrastructure delivery tasks is growing. Tasks increasingly allocated to the private sector include the design, construction, operation, maintenance, and financing of large transportation facilities. Although academic literature on PPPs is burgeoning, there has been little empirical examination of the effects of private operation and maintenance of roads on road safety. We help to address that gap by constructing a large dataset on privately managed roads in Mexico. Data on the management of federal roads is available from Mexico's National Institute of Statistics and Geography website. It allows us to relate a variety of traffic incidents, including all accidents, fatal accidents, car collisions, and fixed object collisions, with the type of management on federal toll roads in Mexico. Management types include <i>federal</i> management of federal toll roads, <i>state</i> management of federal toll roads, and <i>private</i> management of federal toll roads. Our data are in a panel format at the municipality level from 1997 to 2009, yielding 1,967 unique observations. We employ a variety of panel data techniques, including, locality-fixed effect, time-fixed effects, and robust standard errors, while controlling for several key independent variables. Our estimates indicate that private management of federal roads in Mexico does not have a statistically significant effect on any safety measure. We conclude by cautioning the reader on the limitations of our dataset.			
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UNIVERSITY TRANSPORTATION RESEARCH CENTER RESEARCH BRIEF

PROJECT TITLE: THE EFFECTS OF PUBLIC-PRIVATE PARTNERSHIPS ON TRAFFIC SAFETY: EVIDENCE FROM MEXICO

PRINCIPAL INVESTIGATOR: DR. RICK GEDDES

INSTITUTION: CORNELL UNIVERSITY

COMPLETION DATE: AUGUST 31, 2014

SPONSOR: UNIVERSITY TRANSPORTATION RESEARCH CENTER (UTRC)

Public-private partnerships (PPPs) are growing in use worldwide as the approach of choice for facilitating cooperation between the public and the private sectors in delivering transportation infrastructure. There are a wide variety of possible PPP contracts in use. The most basic is the design-build, under which the private partner exploits synergies between the design of a facility and its construction in project delivery. There is relatively little transfer of risk from taxpayers to private partners under this contract type. The most complex is the design-build-finance-operate-maintain contract (DBFOM). In this type of PPP, the private partner provides end-to-end infrastructure delivery and operational services, implying significant risk transfer.

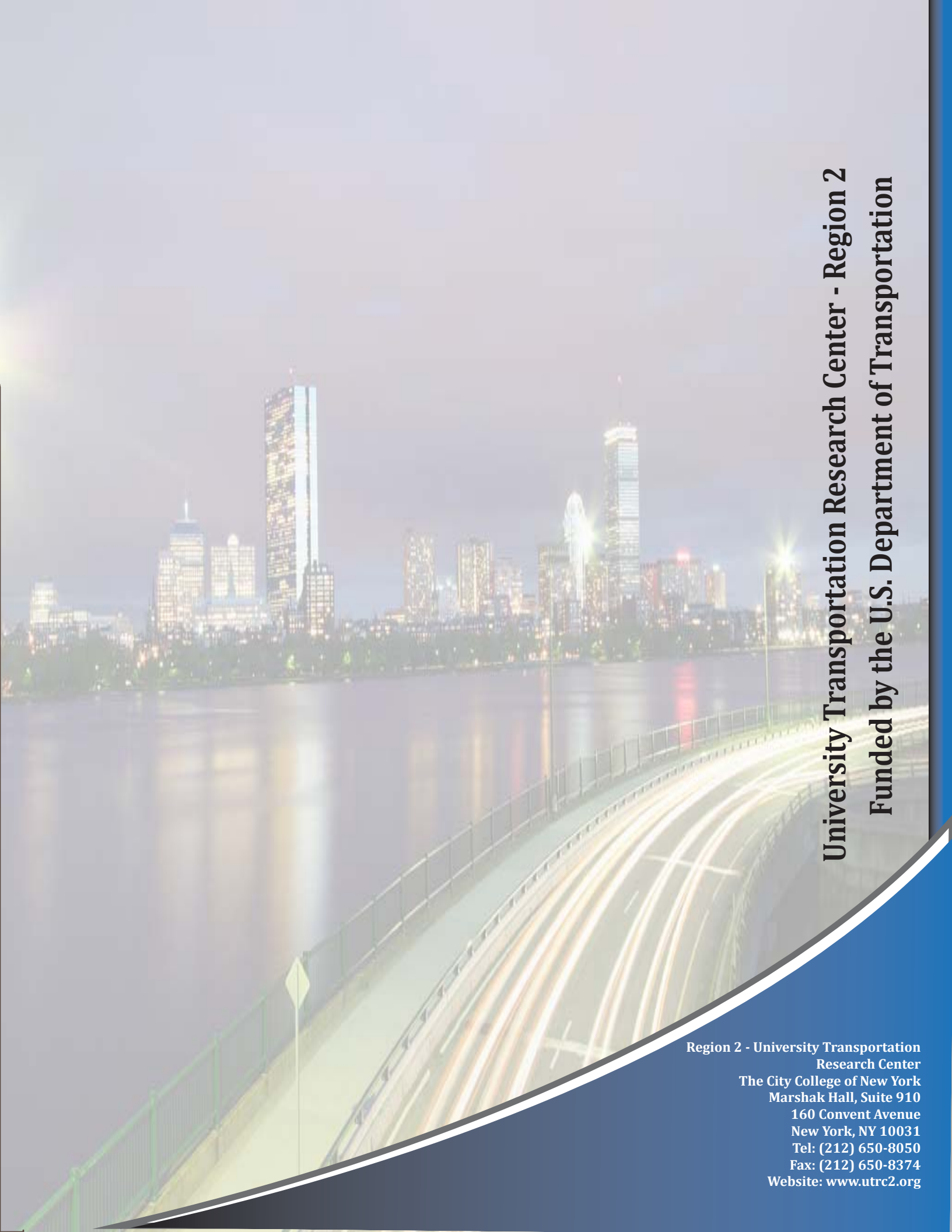
The international academic literature on PPPs is burgeoning along with PPP use. However, there has been little rigorous empirical examination of the interactions between PPPs and road safety. We here examine the effects of private versus public operation and maintenance of roads on traffic safety. We assess the empirical effect of partnering with the private sector through PPPs that are focused mainly on the operational and maintenance (O&M) components. Specifically, we consider the impact of contracting with private partners to provide the operation and maintenance of Mexican federal roads using PPP concession contracts. Mexico offers an appealing research setting for examining the effect of PPPs on road safety. Mexico went through several phases of private participation in the operation and maintenance of its federal roads, which allows us to examine the effect of differing forms of road management over time and across geographic regions. We are able to examine a variety of traffic incidents, including all accidents combined, fatal accidents, car collisions, and fixed object collisions, on federal roads in Mexico. We obtained data on the management of federal

roads using Mexico's National Institute of Statistics and Geography website. Those data allow us to correlate the type of road management with traffic safety on particular road sections while controlling for variation in several key independent variables. Specific management types examined include federal management of federal toll roads, state management of federal toll roads, and private management of federal toll roads.

The collection of data from that source resulted in a panel data set with observations at the municipality level from 1997 to 2009. This yields 1,967 unique observations. To our knowledge, this is the largest (and perhaps only) data set yet assembled to examine the effect of road management type on traffic safety.

There are several possible channels through which managerial type may impact road safety. According to one theory, the profit-maximizing incentives associated with private road operation may cause private firms to reduce investments in road safety to sub-optimal levels. This will increase accidents. Under a second view, private road operation injects the capital, expertise and concern for reputation that will lead to improved safety. Theory thus does not provide unambiguous predictions regarding the effect of managerial form on road safety. It remains an inherently empirical question.

We employ a variety of panel data techniques, including, municipality-fixed effect, time-fixed effects, and robust standard errors, while controlling for key independent variables. Our estimates indicate that private management of federal roads in Mexico has little effect on our measures of road safety, but caution the reader on the limitations of our data while calling for further study.

A long-exposure photograph of a city skyline at night, reflected in a body of water. In the foreground, a bridge or highway has light trails from moving vehicles. The sky is dark, and the city lights are bright and colorful.

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