



# Global Infrastructure: Trend Monitor

North American Roads Edition: Outlook 2009–2013

ADVISORY

*The Global Infrastructure: Trend Monitor* is a groundbreaking series of publications allowing infrastructure investments to be compared across geographies. This second edition investigates the current and future state of investment in North America's roads over the medium term and reveals those markets with the most attractive investment potential.



## Foreword

Few would disagree that North America's road infrastructure is underfunded. Whether constructing new roads or maintaining and repairing existing ones, investment is required on a considerable scale.

It remains to be seen whether the current economic slowdown will result in a boom time for the continent's roads, as governments seek to invest in infrastructure as a fiscal stimulus measure as well as to improve long-term productivity. The initial signs are positive, with the federal governments of Canada, Mexico, and the United States seemingly prepared to increase the levels of funding available.

Taking into account the policies of the Obama administration in 2009, or the effects of the "Build Canada Plan" and "National Infrastructure Program" initiatives in Canada and Mexico, respectively, this is an exciting time to be involved in North American infrastructure. Challenges and opportunities abound for governments and the private sector alike, with potential changes to the current investment model encouraging greater participation by private capital.

This edition of *Global Infrastructure: Trend Monitor* provides estimates of the size and growth prospects of road investment in Canada, Mexico, and the United States, aiming to highlight those states that might warrant closer attention. We hope you find this publication interesting and useful.

**Stephen Beatty**  
KPMG Global Infrastructure,  
Americas Leader

**Kai Rintala**  
KPMG Global Infrastructure,  
Head of Infrastructure Intelligence

## Contents

1. Foreword
2. Key findings
3. Important notes
4. Canada
5. Mexico
6. United States
7. Method
8. Appendices



## Key Findings

### Canada

#### Model Outputs

- Four provinces—Alberta, British Columbia, Ontario and Quebec—are expected to continue to attract nearly 90 percent of Canadian road investment.

#### Insights

- Growing calls for increased investment in transportation related investment at all levels of government—municipal, provincial, and federal.
- Investment is likely to focus on projects of both local and national importance, with new road construction being limited to the major urban areas.
- A strong appetite for alternative funding and development models such as P3/PPP.<sup>1</sup> Several road and transit-related projects have been developed as PPPs, with more envisioned for the future
- Institutional investors, such as pension funds, are leaders in the secondary infrastructure asset market, both domestically and abroad.

### Mexico

#### Model Outputs

- Road expenditure is predicted to shrink by an average of 8.6 percent per annum between 2009 and 2013, taking the total expenditure in 2013 to US\$773 million.
- Six of the 32 states are forecast to constitute 45 percent of Mexican road investment during the same period (2009–2013).

#### Insights

- A “National Infrastructure Program” launched in 2007 is expected to result in billions of U.S. dollars in additional investment across the country.
- The economic slowdown has resulted in some delays to the road reprivatization program.

<sup>1</sup> Public Private Partnerships

## United States

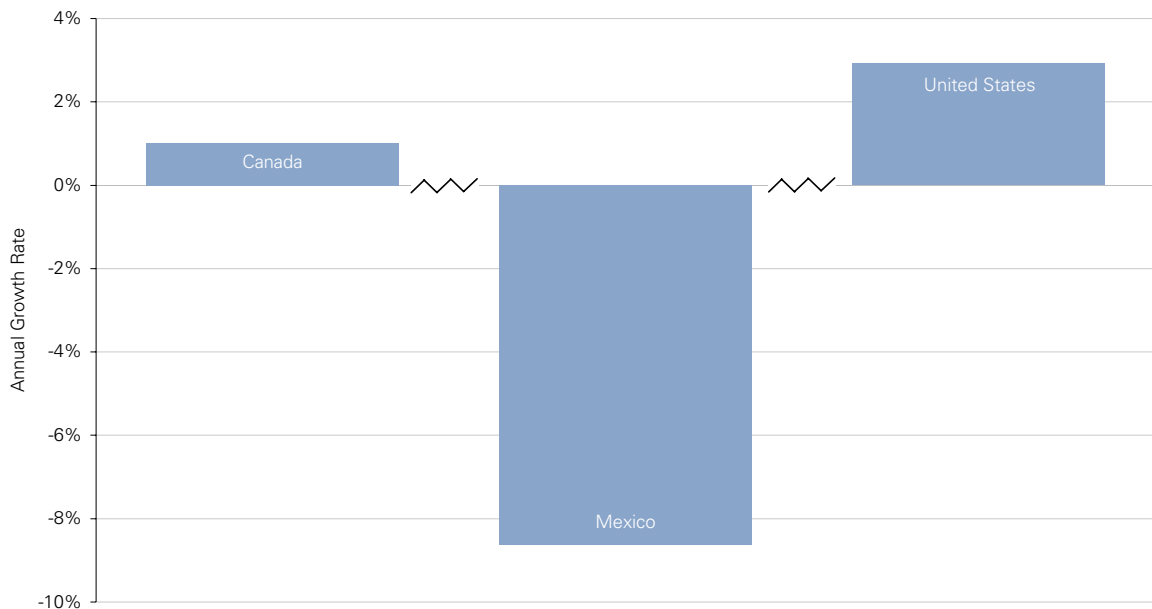
**Model Outputs**

- California, Florida, and Texas lead the states in terms of combined public and private investment in road infrastructure and are projected to maintain their dominance through the medium run.
- District of Columbia, North Dakota, South Dakota, Wyoming, and Vermont are forecast to invest the least in US\$ in road infrastructure.

**Insights**

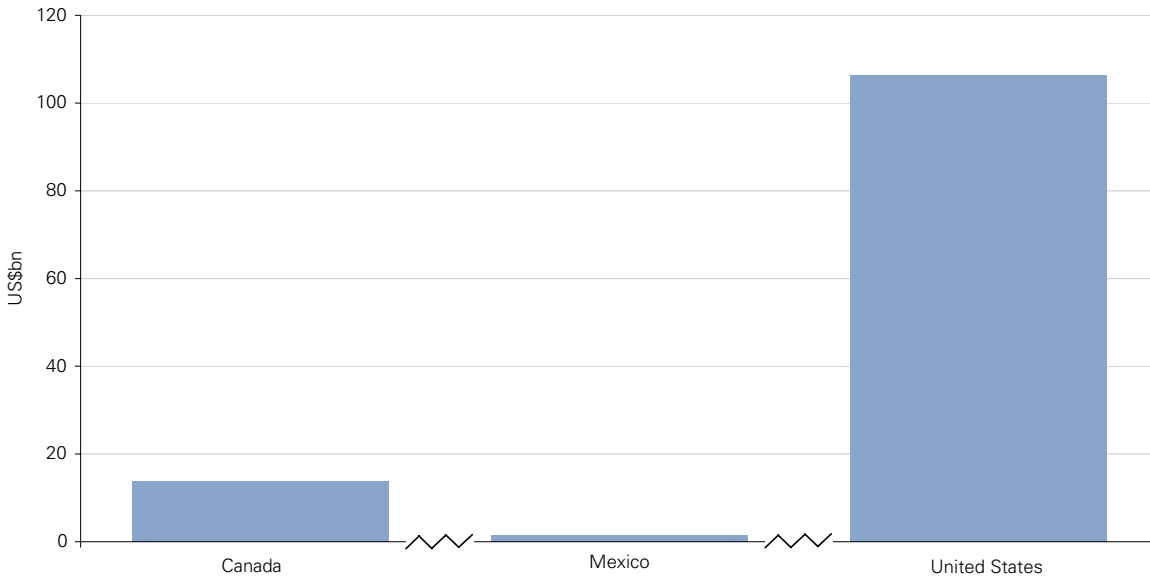
- There is significant need for investment in highway infrastructure in the United States, not only to increase new capacity, but also to bring the 50-year-old interstate highway system up to an appropriate condition for the demands of users.
- Existing funding mechanisms, which primarily consist of user fees and taxes, have been insufficient to cover the infrastructure funding needs.
- With this in mind, the Obama administration has taken the strategic step of placing infrastructure investment in a prominent position in the American Recovery and Reinvestment Act (Recovery Act). The Recovery Act alone will not solve the infrastructure issue, but it may provide the catalyst that helps to redefine the way in which infrastructure is addressed.
- A key emphasis of the infrastructure stimulus is ensuring that there is transparency and accountability in the spending process, with rigorous scrutiny in determining the candidate projects.
- To the extent that the stimulus program creates opportunities for co-investment with the private sector, public capital can be freed up to address additional pressing needs.
- With regard to private investment in infrastructure, over the last few years, there have been two types of players from the government side:
  - Virginia, Texas, and Florida have been the dominant players when it comes to utilizing private investment to fund new capacity.
  - The City of Chicago and the State of Indiana have led the way in terms of private sector investment in operation and maintenance of existing assets.
- In the lead up to 2013, states like California, New York, Georgia, Nevada, and Michigan are looking very seriously at joining the list of states using private investment for road infrastructure.

### North America: forecast average annual growth rate in roads expenditure 2009–2013 (percent)



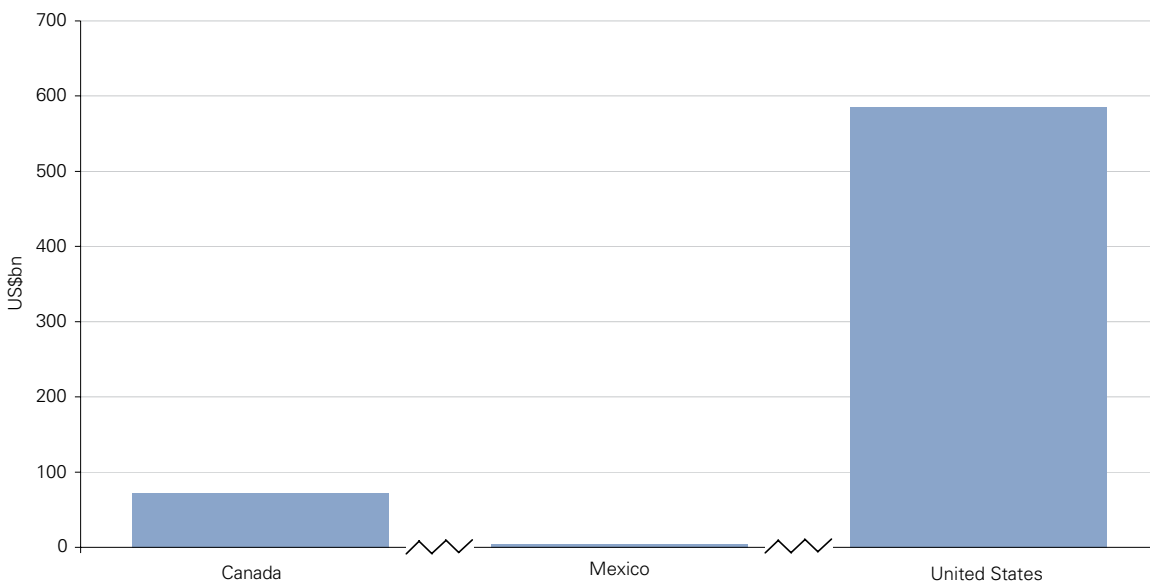
Analysis: KPMG International, refer to "Method" section of this report

### North America: expenditure on roads in 2006 (US\$ billion)



Analysis: KPMG International, refer to "Method" section of this report

### North America: forecast cumulative expenditure on roads infrastructure 2009–2013 (US\$ billion)



Analysis: KPMG International, refer to "Method" section of this report

## Important Notes

### Notes

- 1) This publication distinguishes between “Model Outputs,” oriented commentary that is based on the data collated from stated sources, and “insights,” oriented commentary that is based on the views among KPMG professionals. The limitation of the former is that it does not capture new initiatives or shifts in policy. This may make some of the commentary under the two headings appear contradictory.
- 2) The 2009–2013 data are modeled using the latest actual figures available at the time of writing. (For Canada and the United States, the source data extends to 2006, whereas for Mexico, the last year is 2004.)
- 3) Unless otherwise stated, all figures in this publication are in 2006 U.S. dollars based on exchange rates to facilitate direct comparisons, and they represent all investment, by both the public and the private sector, into construction as well as repair and maintenance of roads infrastructure, including roads and bridges.
- 4) Annual growth rates over the period 2009–2013 are in real terms, i.e. they exclude the impact of inflation.

### Objective

The aim of the *Trend Monitor* is to stimulate an informed debate of global infrastructure opportunities by providing observations and on-the-ground market insights underpinned by econometric modeling.

Existing publications tend to focus on the short-term, identifying opportunities that are about to come to market, or the long-term, estimating the size of the required investment over decades to come. The *Trend Monitor* is purposefully positioned between the two in order to present a medium-term (2009–2013) view of market potential.

Our analysis builds on what we believe to be the most consistent data sources and relies on only a small number of (explicit) assumptions. The publication also leverages the local knowledge of professionals in KPMG’s North American member firms to present a better-informed view of the future.

### Definitions and classifications

Size and prospects of individual states:

- Canada and Mexico
  - “Large” and “Small” – defined by the level of investment in road infrastructure in the respective states in 2006. Large in Canada is above US\$1bn, while Mexico is above US\$50m.

### • U.S.A.

- “Large and growing fast” – large (above US\$3bn in 2006) states where investment is expected to expand relatively rapidly (above 2.5 percent per year) over the period 2009–2013
- “Small and growing fast” – small (below US\$ 3bn in 2006) states where investment is expected to expand relatively rapidly (above 2.5 percent per year) over the period 2009–2013
- “Small and growing slowly” – small states (below US\$ 3bn in 2006) where investment is expected to expand relatively slowly (below 2.5 percent per year) over the period 2009–2013

The term “state” is used throughout this publication to refer collectively to various areas of the respective federal structures of Canada, Mexico, and the United States, whether they are termed “district,” “state,” “province” or “territory.” However, when reference is made specifically to federal structures of Canada, the terms “province” and “territory” are used.

### Method

A detailed overview of the research and analysis method applied can be found in the “Method” section of this report.



## Canada

### Model Outputs

The provinces that received the greatest amount of road investment in 2006 were Alberta, British Columbia, Ontario, and Quebec.

Looking ahead, road expenditure in Canada is predicted to grow by an average of 1.0 percent per annum between 2009 and 2013, taking the total expenditure in 2013 to US\$14.9 billion.

The four largest provinces are expected to continue to be the highest spending regions over the period to 2013, representing close to 90 percent of road investment in Canada, with Ontario and Quebec between them constituting 65 percent of the total. This is largely in line with geographic distribution of population in Canada.

### Insights

Across the country, Canada's road infrastructure is in need of major repair and expansion. Having been characterized in the past by relatively conservative stewardship, the federal infrastructure investment approach is facing growing calls for a significant increase in funding. This is in part a stimulus measure given current economic conditions, but primarily due to a simple need for roads across the country to be upgraded and for new road construction to take place in major urban areas.

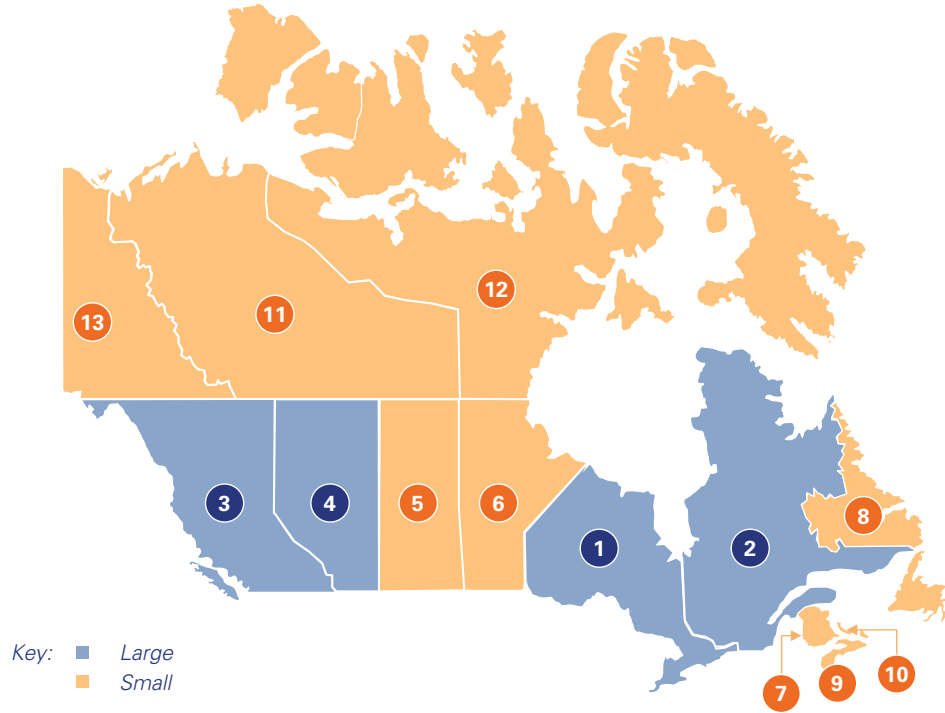
Benefiting from the "Build Canada Plan", the federal government's infrastructure plan, the provinces and territories remain committed to expanding, repairing, and improving the roads and highways system. The most populous provinces, Ontario and Quebec, are arguably where

most investment is required, particularly along the trade corridor that runs from Quebec through Ontario into the United States. These two are likely to receive the lion's share of federal investment as well as potentially implementing their own, province-level investment programs.

Significant interest exists in considering alternative approaches to funding and infrastructure development such as P3/PPP. A number of major roads projects across Canada have been procured through such models over the last ten years.

There is also a large secondary market in Canada for infrastructure assets. Many of the largest pension funds have been leaders in investing in infrastructure assets in Canada and around the world, drawn in part by the relatively steady and predictable cash flows they generate.

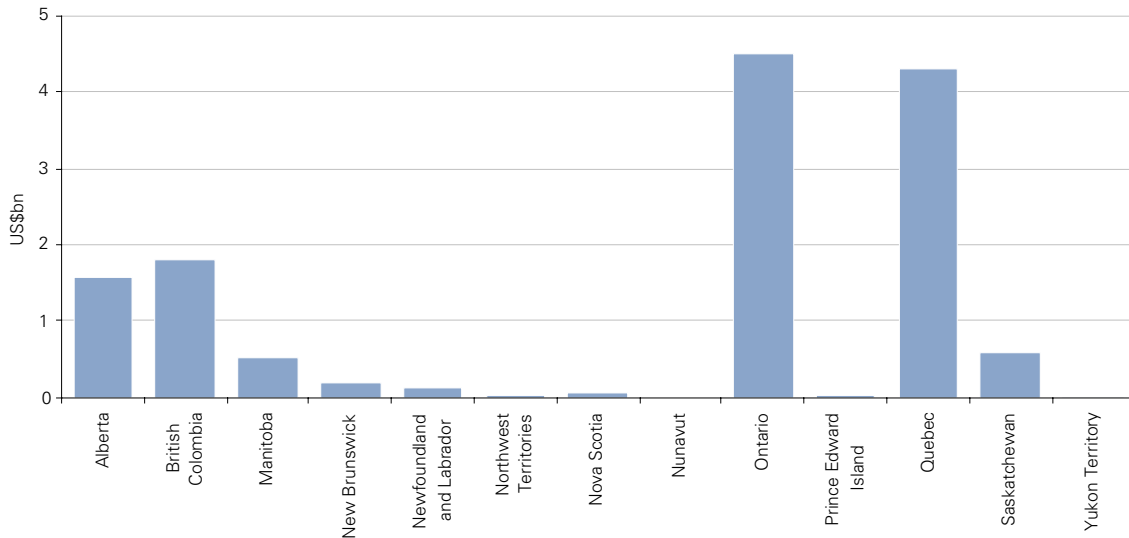
Canada: expenditure on roads in 2006 by province and territory (percentage of total)



1. Ontario	32.9%	8. Newfoundland and Labrador	0.8%
2. Quebec	31.4%	9. Nova Scotia	0.5%
3. British Columbia	13.2%	10. Prince Edward Island	0.1%
4. Alberta	11.5%	11. Northwest Territories	0.02%
5. Saskatchewan	4.3%	12. Nunavut	0.01%
6. Manitoba	3.7%	13. Yukon Territory	0.01%
7. New Brunswick	1.5%		

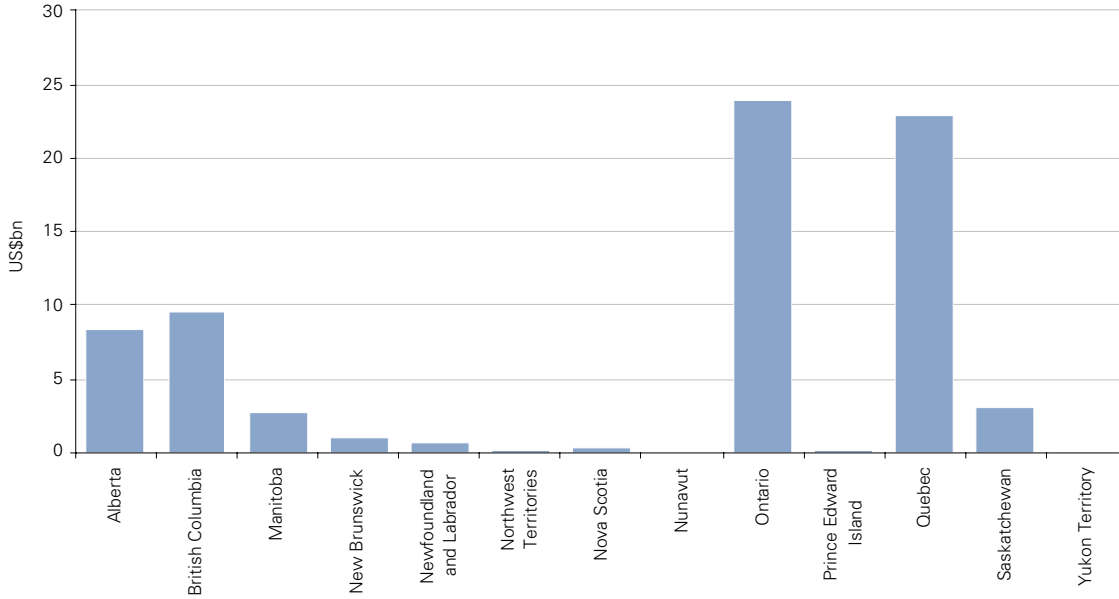
Analysis: KPMG International, refer to "Method" section of this report

Canada: expenditure on roads in 2006 (US\$ billion)



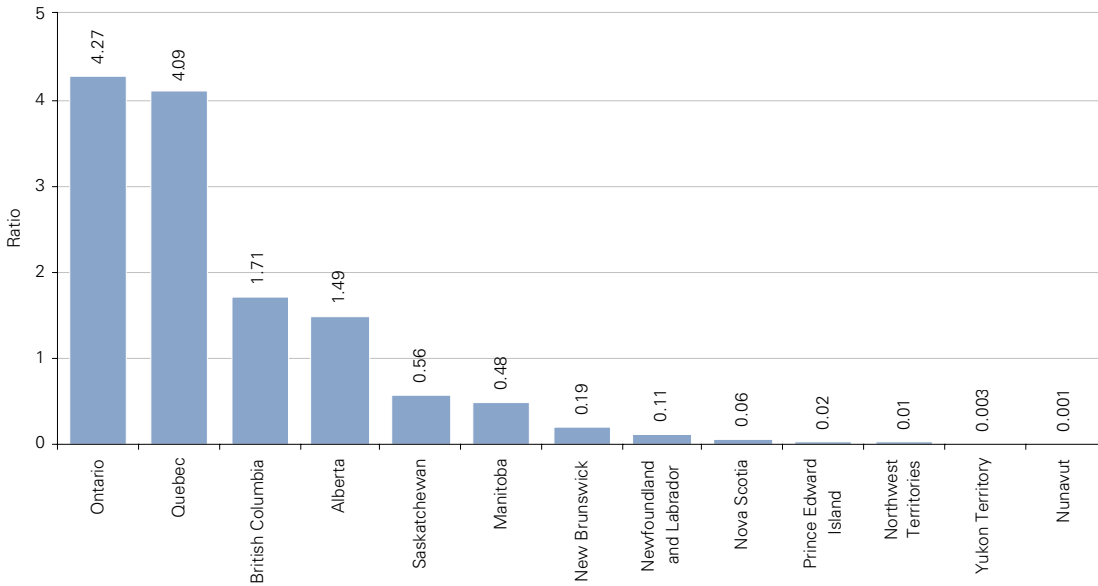
Analysis: KPMG International, refer to "Method" section of this report

### Canada: forecast cumulative expenditure on roads infrastructure 2009–2013 (US\$ billion)



Analysis: KPMG International, refer to "Method" section of this report

### Canada: ratio of forecast cumulative expenditure on roads infrastructure 2009–2013 to the forecast average for all provinces and territories



Analysis: KPMG International, refer to "Method" section of this report



## Mexico

### Model Outputs

The greatest levels of road investment in 2006 were witnessed in the states of Jalisco, Guanajuato, Mexico state, Puebla, Veracruz, and the Federal District (where Mexico City is located). These states represent 45 percent of the Mexican population and are hubs of industrial, economic and trade activity.

The six states mentioned above are expected to continue to provide the greatest road investment opportunities, though overall road expenditure is forecast to shrink by 8.6 percent over the period 2009–2013.

### Insights

While Jalisco, Guanajuato, Mexico state, Puebla, Veracruz, and the Federal District combined are forecast to represent 45 percent of the road infrastructure

investment in 2009–2013, KPMG’s professionals’ insight suggests that the industrialized state of Nuevo Leon and the developing states of Chiapas and Oaxaca are likely to experience significant growth in road investment. This is due to Nuevo Leon’s proximity to the United States and high industrialization levels, the close proximity of the Central America trade corridor to Chiapas and Oaxaca, and the government’s agenda to improve general living and economic standards in Chiapas and Oaxaca.

### National Infrastructure Program

The government launched its National Infrastructure Program in July 2007, a medium-term investment initiative that includes, among several infrastructure projects, the regional rollout of the FARAC highway concession packages (see the following).

The National Infrastructure Program contains billions of dollars,<sup>2</sup> worth of transport projects. Specific emphasis is expected to be placed on the modernization and construction of highways and rural roads, in addition to the maintenance of existing roads.

### FARAC

Known by its Spanish acronym FARAC, the road reprivatization scheme is likely to have a significant impact on the sector. As part of this program, the Mexican Ministry of Communications and Transportation is in the process of auctioning its second and third packages of highway concessions.

At the time of writing, the effects of the economic slowdown had caused the tender process to be delayed. It is estimated that seven packages remain to be put out to tender.

<sup>2</sup> President Calderón (2008) Announcement of National Infrastructure Fund, February 6 2008, Speech, Mexico City, Official Residence

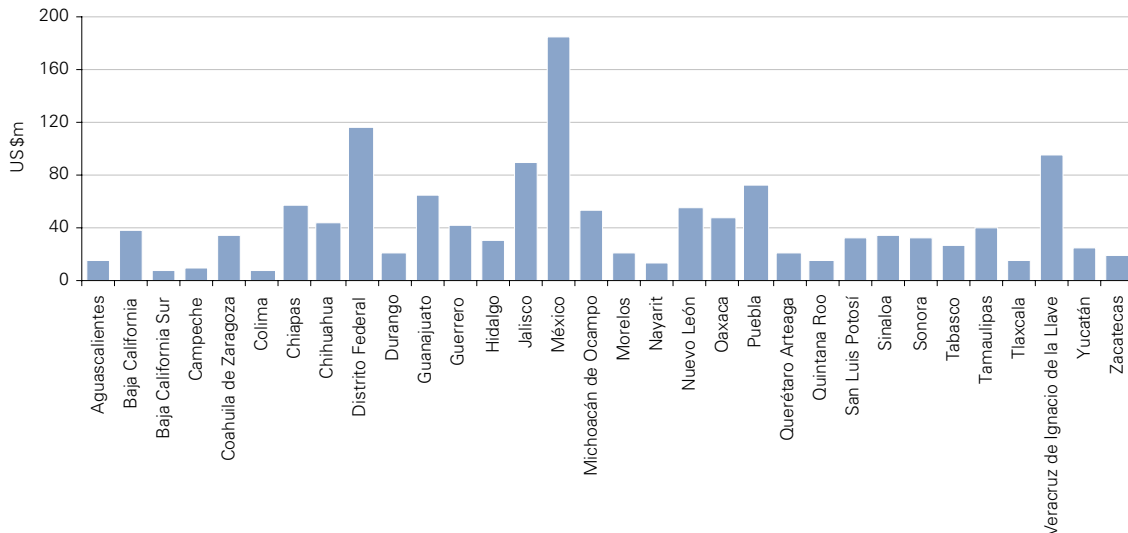
### Mexico: expenditure on roads in 2006 by state (percent of total)



1. México state	13.6%	12. Guerrero	3.0%	23. Querétaro Arteaga	1.5%
2. Distrito Federal	8.4%	13. Tamaulipas	2.9%	24. Durango	1.5%
3. Veracruz de Ignacio de la Llave	6.9%	14. Baja California	2.8%	25. Zacatecas	1.3%
4. Jalisco	6.5%	15. Sinaloa	2.5%	26. Quintana Roo	1.1%
5. Puebla	5.2%	16. Coahuila de Zaragoza	2.4%	27. Tlaxcala	1.0%
6. Guanajuato	4.7%	17. San Luis Potosí	2.3%	28. Aguascalientes	1.0%
7. Chiapas	4.2%	18. Sonora	2.3%	29. Nayarit	0.9%
8. Nuevo León	4.1%	19. Hidalgo	2.3%	30. Campeche	0.7%
9. Michoacán de Ocampo	3.8%	20. Tabasco	1.9%	31. Colima	0.6%
10. Oaxaca	3.4%	21. Yucatán	1.8%	32. Baja California Sur	0.5%
11. Chihuahua	3.1%	22. Morelos	1.6%		

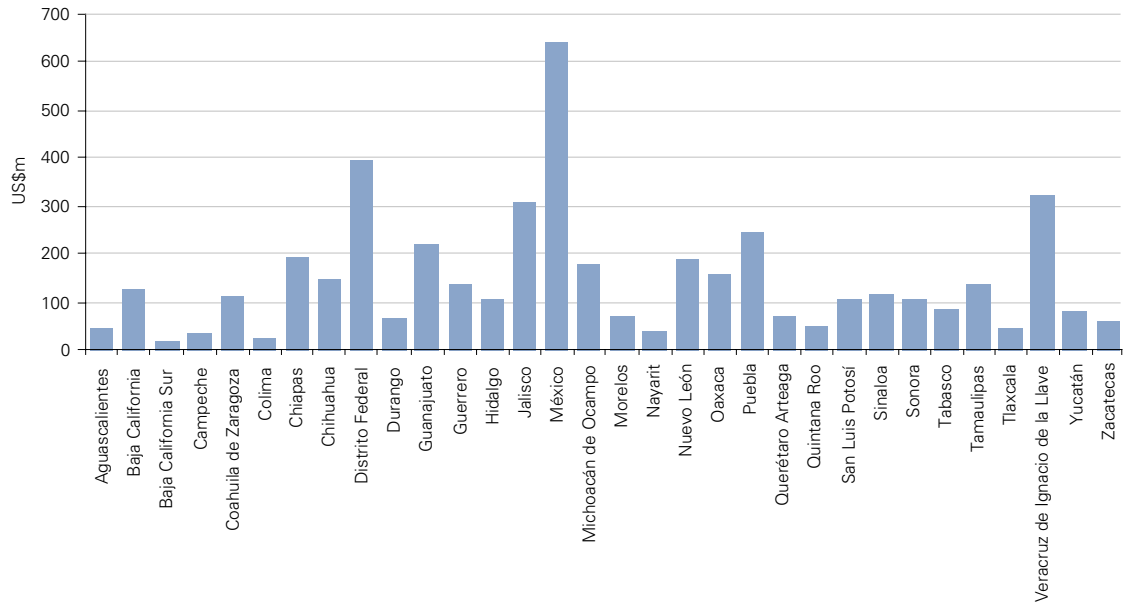
Analysis: KPMG International, refer to "Method" section of this report

### Mexico: expenditure on roads in 2006 (US\$ million)



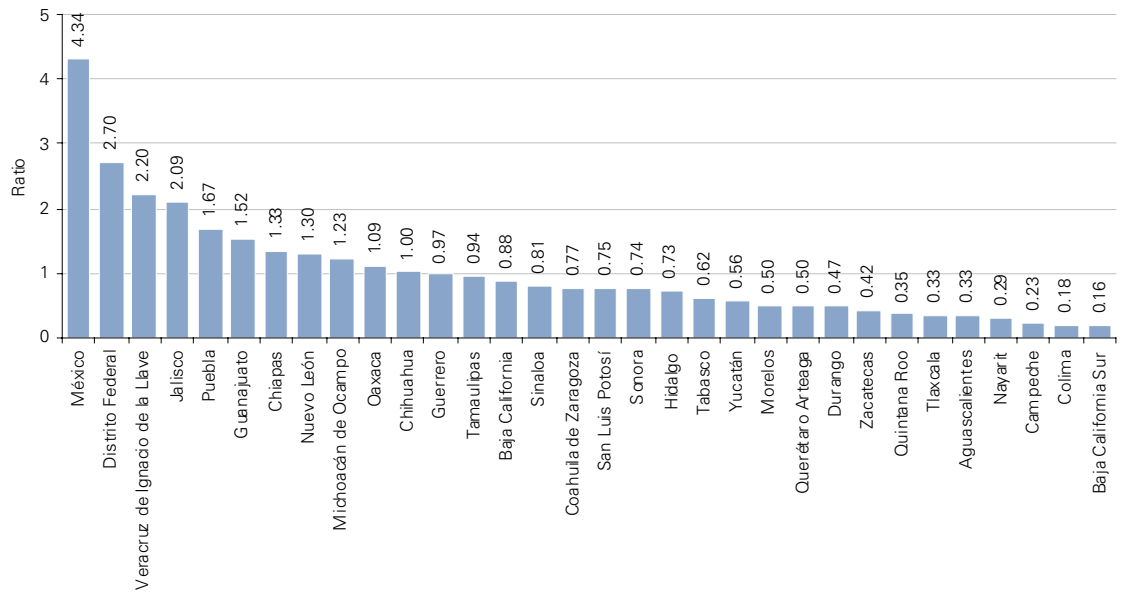
Analysis: KPMG International, refer to "Method" section of this report

### Mexico: forecast cumulative expenditure on roads infrastructure 2009–2013 (US\$ million)



Analysis: KPMG International, refer to "Method" section of this report

### Mexico: ratio of forecast cumulative expenditure on roads infrastructure 2009–2013 to the forecast average for all states



Analysis: KPMG International, refer to "Method" section of this report



## United States

### Model Outputs

Road expenditure in the U.S. is predicted to grow by an average of 2.9 percent per annum in real terms between 2009 and 2013, taking the total expenditure in 2013 to US\$124.8 billion. This excludes the impact of any enhanced focus on infrastructure investment, such as that being promoted by the Obama administration, and so actual investment may ultimately be higher.

Some U.S. states are forecast to experience relatively slow rates of growth in road infrastructure investment. While this may be because they already invest at high levels and have well-developed infrastructures, it is more likely that they are simply less able to afford the funding required.

California, Texas, and Florida attract the lion's share of road investment and look set to continue to dominate funding

through to 2013. The greatest growth rates are expected in Alaska, District of Columbia, Florida, Hawaii, and Virginia.

### Insights

Expenditure across the U.S. on road infrastructure (both new build and maintenance) has not kept up with demand in recent decades<sup>3</sup>. Key political and financial drivers are creating an environment that is encouraging private sector investment, particularly highway infrastructure projects in a variety of states. However, laws enabling private sector investment in infrastructure projects are as yet unavailable in almost half of the states.

### Political Drivers

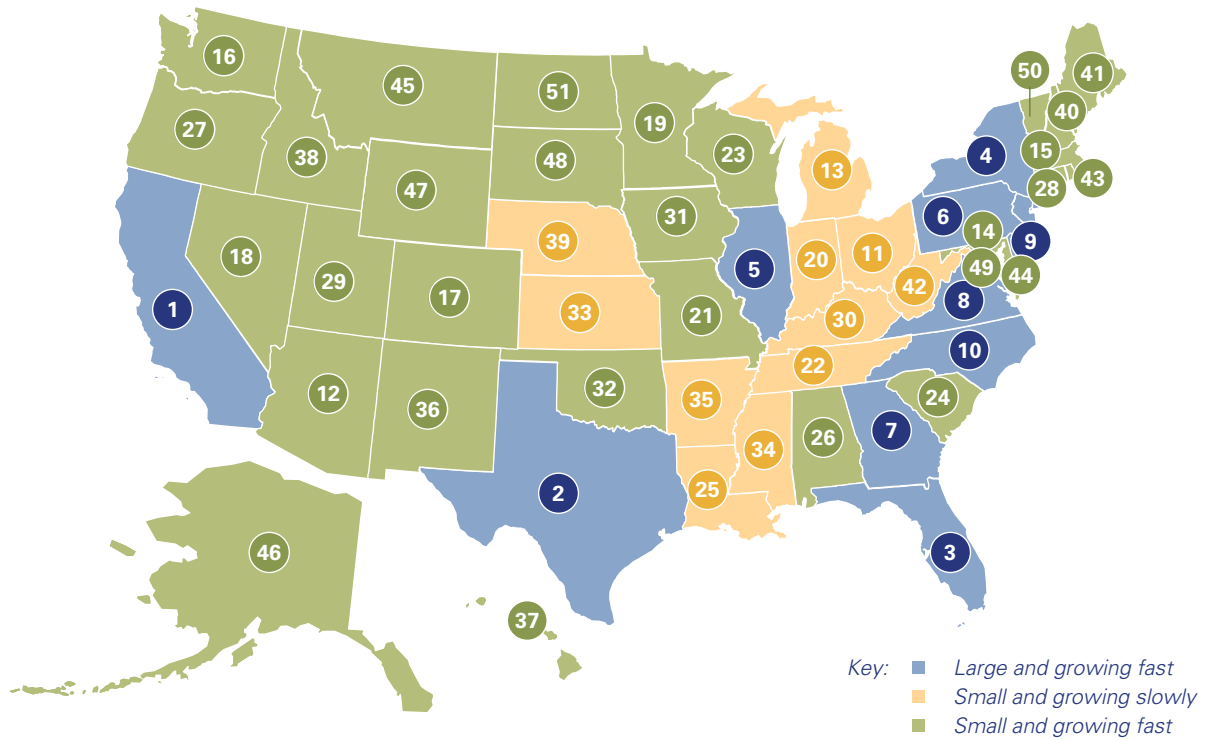
Over the last 12 months, a number of events have brought the need for infrastructure investment into focus. These include the tragic collapse of the I-35W bridge in Minneapolis, the Federal Highway Trust Fund running out of money,

and the upcoming federal reauthorization as well as the economic crisis. These four issues together have created enough drivers to bring infrastructure near the top of the Obama administration's priorities. The bridge collapse highlighted the real need to bring aging infrastructure up to modern standards. The federal surface transportation bill reauthorization and declining gas tax revenues (in real terms) have focused key federal, state and local leaders on the growing infrastructure funding gap. The economic crisis has reduced states' tax receipts, and impacted spending budgets, while also highlighting the need to find fast ways to create jobs and pump money into the economy. Investment in infrastructure is currently viewed as a vehicle to help stimulate the economy.

As this document goes to print, the Obama administration's economic stimulus plan has been signed into law. This stimulus

<sup>3</sup> Report Card for America's Infrastructure, American Society of Civil Engineers, 2005.

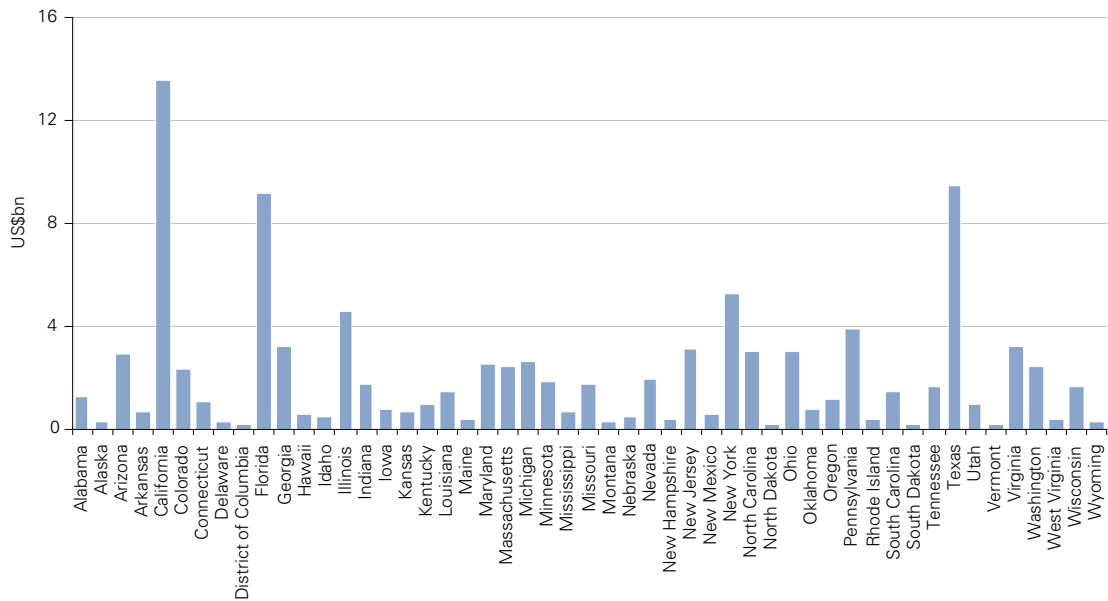
United States: expenditure on roads in 2006 by state (percent of total)



1. California	12.8%	14. Maryland	2.5%	27. Oregon	1.1%	40. New Hampshire	0.4%
2. Texas	8.9%	15. Massachusetts	2.3%	28. Connecticut	1.0%	41. Maine	0.4%
3. Florida	8.6%	16. Washington	2.3%	29. Utah	1.0%	42. West Virginia	0.4%
4. New York	5.0%	17. Colorado	2.2%	30. Kentucky	0.9%	43. Rhode Island	0.4%
5. Illinois	4.3%	18. Nevada	1.8%	31. Iowa	0.8%	44. Delaware	0.3%
6. Pennsylvania	3.7%	19. Minnesota	1.7%	32. Oklahoma	0.8%	45. Montana	0.3%
7. Georgia	3.1%	20. Indiana	1.7%	33. Kansas	0.7%	46. Alaska	0.3%
8. Virginia	3.0%	21. Missouri	1.7%	34. Mississippi	0.7%	47. Wyoming	0.3%
9. New Jersey	2.9%	22. Tennessee	1.6%	35. Arkansas	0.6%	48. South Dakota	0.2%
10. North Carolina	2.9%	23. Wisconsin	1.6%	36. New Mexico	0.6%	49. District of Columbia	0.2%
11. Ohio	2.8%	24. South Carolina	1.4%	37. Hawaii	0.5%	50. Vermont	0.2%
12. Arizona	2.8%	25. Louisiana	1.4%	38. Idaho	0.5%	51. North Dakota	0.2%
13. Michigan	2.5%	26. Alabama	1.2%	39. Nebraska	0.5%		

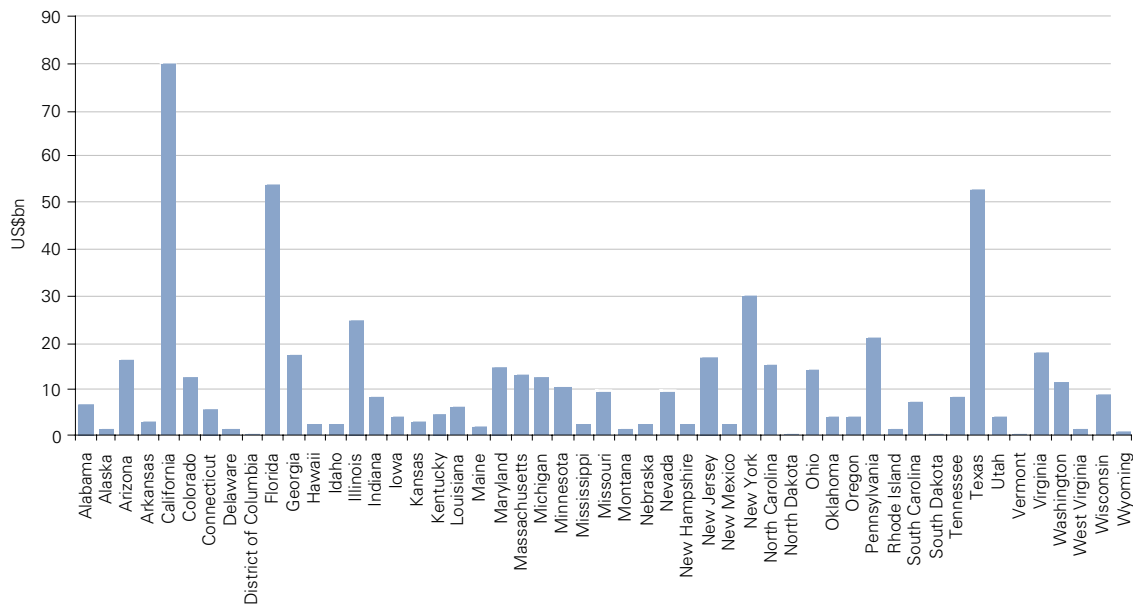
Analysis: KPMG International, refer to "Method" section of this report

### United States: expenditure on roads in 2006 (US\$ billion)



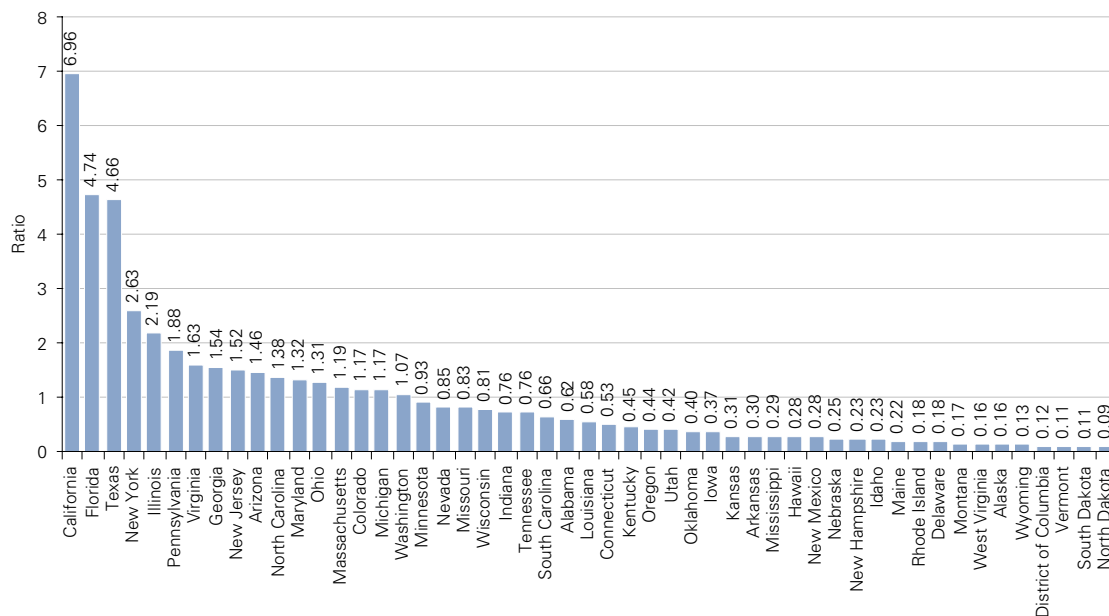
Analysis: KPMG International, refer to "Method" section of this report

### United States: forecast cumulative expenditure on roads infrastructure 2009–2013 (US\$ billion)



Analysis: KPMG International, refer to "Method" section of this report

## United States: ratio of forecast cumulative expenditure on roads infrastructure 2009–2013 to the forecast average for all states



Analysis: KPMG International, refer to "Method" section of this report

package contains a short-term capital injection for "shovel-ready" projects together with a more long-term plan of sustained investment in infrastructure projects. However, there remains uncertainty in other areas. The federal reauthorization process is underway and racing towards the September 30th expiration date for Federal-aid programs and policies. There is also talk of a national infrastructure bank augmenting current federal programs such as TIFIA and private activity bonds.

As all of this goes on, the cost of the required infrastructure continues to rise. For this reason, it is important that the new administration looks to leverage the available funds by augmenting federal funds with private sector equity and debt.

### Financial Drivers

The current situation in the financing markets is not helping the scarcity of funding for infrastructure. Traditionally, road infrastructure projects in the United States have been financed via a mix of federal and state funds together with tax-exempt bonds raised in the municipal bond markets.

The credit crisis has left a lasting impact on the municipal finance market, with

serious illiquidity in the short- and long-term tax-exempt bond markets. Troubled monoline insurers are struggling to maintain their coveted AAA ratings, and confidence in the rating agencies has suffered. This has exacerbated the already dwindling pool of financial resources that a state normally has to fund large projects.

This has created an investment opportunity for a number of pension funds, private equity funds, developers, and construction companies who see infrastructure as a steady asset class. In the United States, there are currently hundreds of billions of equity-chasing potential investments in PPP/P3 infrastructure projects. This equity can potentially be leveraged with commercial bank debt to pay for capacity enhancement or long-term capital replacement worth more than double the equity amount.

In the roads market, these investors are looking at three broad categories of investment:

1. Greenfield projects, such as new toll roads, have been prevalent in states in the south and the west with high population growth and space to build such as Texas, Florida, and California.

2. Managed lanes projects, such as high-occupancy toll (HOT) lanes, are gaining traction in densely populated areas such as northern Virginia and in the northeast.

3. The leasing of existing toll roads to the private sector has also seen two benefits passed to public agencies:

- The passing over of the burden of operation and maintenance payments to the private sector for the term of the lease
- An up-front payment from the private sector paid to the public in return for the right to earn tolls for the period of the concession

The city of Chicago and the state of Indiana pioneered the early asset lease projects.

It seems clear that with considerable equity-chasing projects, the private sector will likely play a small but growing role in the deployment of capital into the roads market over the coming years. This is particularly the case in light of a second wave of states—including New York, Michigan, Nevada, California, North Carolina, and Georgia—starting to regard this delivery model as increasingly viable.

### Qualitative Assessment of Investment Climate by State

The table below shows additional information on the U.S. states based on our qualitative assessment. We believe that these two categories—legislative environment, and transportation priorities—are fundamental in assessing which states provide significant potential for private investment in roads. For each category, we have identified key indicators.

Categories	Indicators	Definition
Legislative Environment	Existing	Legislation enabling innovative finance and project delivery mechanisms exists.
	Pending	Legislation enabling innovative finance and project delivery mechanisms does not exist but is being discussed and has been proposed and is under review.
	Nonexisting	Legislation enabling innovative finance and project delivery mechanisms does not exist.
	Prohibited	Legislation prohibiting innovative finance and project delivery mechanisms exists.
Transportation Priorities	Maintenance	Investment in ongoing maintenance of existing infrastructure assets.
	Rehabilitation	Investment in capital improvement programs for the recovery of existing infrastructure assets original functionality.
	Capacity Expansion	Investments in new transportation assets or in the expansion of existing transportation assets.
	Congestion Reduction	Investments aimed to reduce traffic congestion through new tolling strategy such as managed lanes or new tolling technology such as information technology systems.
	Safety Improvement	Investment in capital improvement programs specifically aimed to improve road safety conditions, such as horizontal and vertical signs and guardrails.

## Qualitative assessment of investment climate by state

State	Legislative Environment Existing/ Pending/Nonexisting/Prohibited	Transportation Priorities
Alabama	Existing	Maintenance, Capacity Expansion
Alaska	Nonexisting (project-based PPP authorization)	Capacity Expansion
Arizona	Existing	Maintenance, Rehabilitation, Capacity Expansion
Arkansas	Nonexisting	Maintenance, Capacity Expansion
California	Existing	Rehabilitation, Capacity Expansion, Congestion Reduction, Safety Improvement
Colorado	Existing	Capacity Expansion
Connecticut	Nonexisting	Rehabilitation, Maintenance, Congestion Reduction
Delaware	Existing	Rehabilitation, Maintenance
Florida	Existing	Capacity Expansion, Congestion Reduction, Safety Improvement
Georgia	Existing	Capacity Expansion, Congestion Reduction, Safety Improvement
Hawaii	Nonexisting	Rehabilitation, Maintenance
Idaho	Nonexisting	Capacity Expansion, Congestion Reduction
Illinois	Existing	Maintenance, Rehabilitation, Congestion Reduction
Indiana	Existing	Capacity Expansion Congestion Reduction
Iowa	Nonexisting	Maintenance, Rehabilitation, Safety Improvement
Kansas	Nonexisting	Maintenance, Rehabilitation, Safety Improvement
Kentucky	Pending	Maintenance, Rehabilitation, Capacity Expansion, Congestion Reduction, Safety Improvement
Louisiana	Existing	Maintenance, Rehabilitation, Capacity Expansion, Safety Improvement

Qualitative assessment of investment climate by state, *continued*

State	Legislative Environment Existing/ Pending/Nonexisting/Prohibited	Transportation Priorities
Maine	Existing	Maintenance, Rehabilitation
Maryland	Existing	Maintenance, Capacity Expansion, Congestion Reduction, Safety Improvement
Massachusetts	Pending	Capacity Expansion, Congestion Reduction, Safety Improvement
Michigan	Existing	Maintenance, Capacity Expansion, Congestion Reduction
Minnesota	Existing	Maintenance, Rehabilitation, Safety Improvement
Mississippi	Existing	Maintenance, Capacity Expansion
Missouri	Existing	Maintenance, Rehabilitation, Congestion Reduction, Safety Improvement
Montana	Nonexisting	Maintenance, Rehabilitation, Capacity Expansion, Safety Improvement
Nebraska	Nonexisting	Maintenance, Rehabilitation, Capacity Expansion, Congestion Reduction, Safety Improvement
Nevada	Pending	Capacity Expansion, Congestion Reduction
New Hampshire	Nonexisting	Maintenance, Capacity Expansion
New Jersey	Nonexisting	Maintenance, Rehabilitation, Congestion Reduction, Safety Improvement
New Mexico	Nonexisting	Maintenance, Capacity Expansion, Safety Improvement
New York	Existing	Maintenance, Congestion Reduction, Safety Improvement
North Carolina	Existing	Maintenance, Rehabilitation, Congestion Reduction, Safety Improvement
North Dakota	Nonexisting	Maintenance
Ohio	Nonexisting	Maintenance, Rehabilitation

Qualitative assessment of investment climate by state, *continued*

State	Legislative Environment Existing/ Pending/Nonexisting/Prohibited	Transportation Priorities
Oklahoma	Nonexisting	Maintenance, Rehabilitation, Capacity Expansion
Oregon	Existing	Maintenance, Rehabilitation, Capacity Expansion
Pennsylvania	Pending	Maintenance, Rehabilitation, Capacity Expansion, Safety Improvement
Rhode Island	Pending	Maintenance, Rehabilitation, Capacity Expansion, Congestion Reduction, Safety Improvement
South Carolina	Existing	Maintenance Capacity Expansion Congestion Reduction
South Dakota	Nonexisting	Maintenance, Rehabilitation
Tennessee	Existing	Maintenance, Rehabilitation, Capacity Expansion, Congestion Reduction, Safety Improvement
Texas	Existing	Maintenance, Rehabilitation, Capacity Expansion, Congestion Reduction, Safety Improvement
Utah	Existing	Capacity Expansion, Congestion Reduction, Safety Improvement
Vermont	Nonexisting	Maintenance, Capacity Expansion, Congestion Reduction, Safety Improvement
Virginia	Existing	Maintenance, Rehabilitation, Capacity Expansion, Congestion Reduction, Safety Improvement
Washington	Existing	Maintenance, Rehabilitation, Safety Improvement
Washington, DC	Nonexisting	Maintenance, Rehabilitation, Safety Improvement
West Virginia	Existing	Rehabilitation, Capacity Expansion, Safety Improvement
Wisconsin	Existing	Maintenance, Rehabilitation, Capacity Expansion, Safety Improvement
Wyoming	Nonexisting	Maintenance, Capacity Expansion, Congestion Reduction

## Method

The basis of the facts and commentary set out in this publication is a combination of data from external sources and insights from KPMG's member firms' professionals.

This type of data has in many cases, has not been readily available and, as such, is produced using an econometric model, utilizing data sourced externally and a limited number of explicit assumptions.<sup>4</sup> The data sets are presented in the Appendices.

Our forecasts of the future size of the distinct road markets in 96 states across North America encompass expenditure at all levels of government as well as the private sector on building and maintaining road infrastructure, including roads and bridges.

Our modeling relies on past trends to predict the future and does not attempt to capture the undercurrents of political risk, financial and other market fluctuations, or sudden spikes in infrastructure activity.

The process of data gathering and presentation was as follows:

### Canada and Mexico

- Gross Fixed Capital Formation (GFCF) data for Canada (1998–2006) and Mexico (2001–2004) was obtained from the Organization of Economic Co-operation and Development (OECD).
- The GFCF was converted to 2006 prices using data from the U.S. Bureau of Economic Analysis (BEA).
- The GFCF was multiplied by 0.019 to establish historical capital expenditure

on new roads received by contractors. This ratio is based on the average ratio of U.K. *Construction Statistics Annual* (U.K. Department of Business Enterprise and Regulatory Reform) roads data to GFCF for 1998–2006. We believe U.K. *Construction Statistics Annual* to represent an international yardstick benchmark for infrastructure estimating purposes.

- Capital expenditure on new roads was multiplied by 1.85 to include repair and maintenance. This ratio was derived from the *U.K. Construction Statistic Annual*.
- Capital expenditure on roads received by contractors was multiplied by 3.6 to include the expenditure on design and professional services, land, plant, and materials. This ratio was derived from the *U.K. Construction Statistics Annual* and *U.K. Quarterly Capital Expenditure Inquiry* (U.K. Office of National Statistics), used to calculate GFCF expenditure.
- The forward-looking expenditures up to 2013 were estimated by linear extension of the line of best fit for the historical data.
- The road infrastructure spending in each Canadian state was modeled based on the proportion of that state's total infrastructure spending as a percentage of national total infrastructure spending. This data was obtained from Statistics Canada.
- Road infrastructure spending per state in Mexico was calculated on the basis of population per state. The population

data was obtained from the National Institute of Geographical Statistics

### United States

- Investment in highways and streets data (1993–2006) was obtained from the U.S. Census Bureau.
- This data was converted to 2006 prices using data from BEA.
- Capital expenditure on new roads was multiplied by 1.85 to include repair and maintenance. This percentage was derived from the *U.K. Construction Statistics Annual*.
- BEA construction output by state was used to calculate the share of total construction of each state per annum. This percentage share was used to divide national annual roads infrastructure data to find the annual roads infrastructure output by each state.
- The forward-looking expenditures up to 2013 were generated by extrapolating the trends for each state.

It should be noted that the numbers for Canada, Mexico, and the United States are not directly comparable as different sources and methods have been used in producing them. Additionally, following feedback on the European Transport edition, we have improved our model and consequently the outputs are not directly comparable. The numbers for North American roads represent all expenditure, including design and professional services, land, equipment and raw materials. Those for European Transport represented construction industry's value added, i.e. share of that expenditure.

<sup>4</sup> KPMG's Global Infrastructure: Trend Monitor has been produced in collaboration with Dr Stephen Gruneberg.

# Appendices

## Appendix 1a

Historical and forecast future roads infrastructure investment in Canada  
(in \$ millions at 2006 prices)

Province or territory	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ontario	4111	4266	4280	4258	4408	4502	4504	4506	4567	4636	4685	4733	4782	4831	4880
Quebec	3934	4082	4095	4075	4218	4308	4310	4312	4389	4436	4483	4529	4576	4623	4669
British Columbia	1648	1710	1716	1707	1767	1805	1806	1806	1839	1858	1878	1897	1917	1936	1956
Alberta	1433	1487	1492	1484	1537	1570	1570	1571	1599	1616	1633	1650	1667	1684	1701
Saskatchewan	535	555	557	554	573	586	586	586	597	603	609	616	622	628	635
Manitoba	465	483	484	482	499	510	510	510	519	525	530	536	541	547	552
New Brunswick	186	193	193	192	199	203	203	204	207	209	212	214	216	218	220
Newfoundland and Labrador	106	110	110	110	113	116	116	116	118	119	120	122	123	124	125
Nova Scotia	62	64	64	64	66	68	68	68	69	70	70	71	72	73	73
Prince Edward Island	15	15	15	15	16	16	16	16	16	17	17	17	17	17	17
Northwest Territories	13	13	13	13	14	14	14	14	14	15	15	15	15	15	15
Yukon Territory	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Nunavut	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

## Appendix 1b

Historical and forecast future roads infrastructure investment  
in Mexican states (in \$ millions at 2006 prices)

State	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Aguascalientes	18	17	17	16	15	14	13	12	11	11	10	9	8
Baja California	49	46	44	43	39	37	35	33	31	28	26	24	21
Baja California Sur	9	8	8	8	7	7	6	6	5	5	5	4	4
Campeche	13	12	12	12	10	10	9	9	8	7	7	6	6
Coahuila de Zaragoza	43	40	39	38	34	33	31	29	27	25	23	21	19
Colima	10	9	9	9	8	7	7	7	6	6	5	5	4
Chiapas	74	70	67	66	59	57	53	50	46	43	39	36	32
Chihuahua	56	53	50	49	44	43	40	37	35	32	30	27	24

Historical and future forecast roads infrastructure investment in the Mexican states (in \$ million at 2006 prices), continued													
State	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Distrito Federal	151	141	136	133	120	115	108	101	94	87	79	72	65
Durango	26	24	23	23	21	20	19	17	16	15	14	13	11
Guanajuato	85	79	76	75	67	64	60	57	53	49	45	41	37
Guerrero	54	50	48	48	43	41	39	36	33	31	28	26	23
Hidalgo	41	38	37	36	32	31	29	27	25	23	21	19	18
Jalisco	117	109	105	103	93	89	83	78	72	67	62	56	51
México	242	227	218	214	192	185	173	162	150	139	128	116	105
Michoacán de Ocampo	69	64	62	61	54	52	49	46	43	39	36	33	30
Morelos	28	26	25	25	22	21	20	19	17	16	15	13	12
Navarrit	16	15	15	14	13	13	12	11	10	9	9	8	7
Nuevo León	73	68	65	64	58	55	52	48	45	42	38	35	31
Oaxaca	61	57	55	54	48	46	43	40	38	35	32	29	26
Puebla	93	87	84	82	74	71	67	62	58	53	49	45	40
Querétaro Arteaga	28	26	25	24	22	21	20	18	17	16	15	13	12
Quintana Roo	20	18	18	17	16	15	14	13	12	11	10	9	8
San Luis Potosí	42	39	38	37	33	32	30	28	26	24	22	20	18
Sinaloa	45	42	41	40	36	34	32	30	28	26	24	22	20
Sonora	41	39	37	37	33	32	30	28	26	24	22	20	18
Tabasco	34	32	31	30	27	26	25	23	21	20	18	17	15
Tamaulipas	52	49	47	46	41	40	37	35	32	30	28	25	23
Tlaxcala	18	17	17	16	15	14	13	12	11	11	10	9	8
Veracruz de Ignacio de la Llave	123	115	111	109	98	94	88	82	76	71	65	59	53
Yucatán	31	29	28	28	25	24	22	21	20	18	17	15	14
Zacatecas	24	22	21	21	19	18	17	16	15	14	12	11	10

State	Historical and forecast future roads infrastructure investment in the United States (in \$ millions at 2006 prices)																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Alabama	909	912	945	970	999	1011	1012	1063	1213	1326	1256	1296	1336	1376	1416	1456	1496
Alaska	217	205	201	203	218	244	259	270	308	309	313	326	338	351	363	376	389
Arizona	1326	1406	1499	1626	1708	1816	1832	2024	2502	2969	2731	2888	3044	3200	3357	3513	3670
Arkansas	510	488	490	510	516	548	522	535	622	669	630	646	662	678	694	710	726
California	7250	7656	8155	8877	9426	9707	9974	10857	12468	13561	13379	14031	14683	15335	15987	16639	17291
Colorado	1347	1473	1569	1786	1854	1910	1769	1886	2146	2342	2317	2409	2502	2594	2687	2779	2872
Connecticut	816	814	826	867	891	915	884	977	1082	1103	1094	1126	1158	1190	1222	1254	1287
Delaware	245	239	257	249	258	272	276	301	353	362	353	366	379	392	406	419	432
District of Columbia	94	99	100	119	134	162	170	163	173	219	214	227	240	253	266	279	292
Florida	3807	3945	4094	4483	4873	5329	5846	6464	7880	9160	8659	9217	9775	10334	10892	11450	12009
Georgia	2141	2229	2386	2463	2482	2496	2515	2661	3003	3247	3126	3229	3331	3434	3536	3639	3741
Hawaii	337	308	290	320	326	368	399	417	513	569	532	559	586	613	640	667	694
Idaho	381	355	357	361	377	351	351	379	455	551	468	481	495	509	523	536	550
Illinois	3282	3250	3361	3551	3655	3845	3877	3846	4198	4600	4483	4617	4751	4885	5019	5153	5286
Indiana	1573	1563	1506	1483	1463	1499	1522	1566	1703	1777	1675	1694	1714	1734	1754	1774	1794
Iowa	621	627	617	584	590	616	631	671	758	851	771	792	812	833	854	875	896
Kansas	599	589	603	616	602	591	590	597	667	732	673	683	693	703	713	723	732
Kentucky	856	846	857	873	877	873	873	890	975	1004	972	987	1001	1015	1030	1044	1059
Louisiana	1065	1143	1079	1069	1052	1065	1073	1073	1162	1466	1249	1272	1295	1317	1340	1362	1385
Maine	233	250	286	307	322	327	349	359	388	416	427	446	465	483	502	521	540
Maryland	1552	1539	1609	1701	1814	1929	2000	2127	2401	2605	2564	2680	2796	2912	3028	3143	3259
Massachusetts	1689	1730	1805	1915	2101	2130	2034	2117	2292	2419	2438	2514	2569	2665	2740	2816	2891
Michigan	2426	2465	2556	2672	2563	2561	2442	2507	2677	2618	2625	2638	2652	2666	2680	2693	2707
Minnesota	1298	1351	1438	1519	1566	1623	1643	1699	1790	1850	1903	1963	2022	2081	2140	2199	2259
Mississippi	492	529	510	496	477	523	497	490	582	702	604	617	630	644	657	671	684

Historical and future forecast roads infrastructure investment in the United States (in \$ million at 2006 prices), continued

State	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Missouri	1306	1280	1354	1411	1450	1457	1459	1490	1655	1777	1721	1768	1814	1861	1908	1954	2001
Montana	200	203	203	204	217	225	246	264	313	354	329	345	361	376	392	408	423
Nebraska	393	408	425	428	416	428	446	465	503	536	519	532	545	559	572	586	599
Nevada	1235	1211	1155	1085	1061	1088	1194	1369	1692	1949	1678	1746	1814	1882	1950	2018	2086
New Hampshire	291	310	309	307	350	376	378	398	439	448	461	479	497	515	533	551	570
New Jersey	2136	2091	2079	2205	2423	2541	2505	2617	2857	3128	3058	3167	3276	3386	3495	3604	3713
New Mexico	365	357	345	370	399	398	413	440	517	597	547	570	593	616	639	663	686
New York	3531	3670	3846	4143	4392	4529	4500	4564	4937	5279	5319	5497	5676	5854	6032	6210	6389
North Carolina	2072	2149	2235	2294	2339	2290	2248	2388	2715	3068	2830	2912	2994	3076	3158	3240	3321
North Dakota	145	147	160	146	141	142	150	166	183	205	186	191	196	201	206	211	216
Ohio	2612	2607	2646	2670	2603	2643	2614	2682	2874	2991	2872	2904	2936	2988	3001	3033	3065
Oklahoma	545	557	590	611	672	648	660	662	751	847	806	834	861	889	917	944	972
Oregon	1072	987	941	951	892	864	828	881	1027	1193	986	990	994	998	1002	1006	1011
Pennsylvania	2673	2649	2734	2842	2962	3068	3148	3210	3598	3930	3793	3923	4052	4182	4311	4441	4570
Rhode Island	264	266	286	277	280	287	314	314	348	379	363	375	386	397	409	420	431
South Carolina	1056	1077	1085	1080	1088	1102	1128	1175	1308	1501	1367	1405	1443	1480	1518	1556	1594
South Dakota	146	146	149	158	160	167	173	180	203	225	214	222	230	238	246	254	262
Tennessee	1261	1269	1295	1336	1281	1286	1316	1372	1545	1717	1580	1619	1657	1696	1735	1773	1812
Texas	5056	5432	5745	6331	6636	6936	7088	7073	8115	9483	9051	9462	9873	10284	10695	11106	11517
Utah	663	653	661	657	634	649	621	683	816	1025	853	880	907	934	960	987	1014
Vermont	121	130	134	135	151	159	163	182	201	212	213	223	233	243	253	263	273
Virginia	1844	1795	1866	2007	2149	2289	2341	2571	2935	3210	3132	3283	3434	3586	3737	3888	4039
Washington	1572	1650	1720	1747	1689	1704	1707	1823	2094	2414	2182	2249	2316	2384	2451	2518	2586
West Virginia	353	321	294	292	315	295	289	311	356	415	353	368	363	369	374	379	384
Wisconsin	1236	1254	1323	1349	1368	1417	1437	1481	1614	1685	1672	1718	1765	1811	1858	1904	1951
Wyoming	154	156	165	170	185	197	192	193	226	289	257	269	280	292	304	315	327

KPMG's Global Infrastructure professionals provide objective advisory support to our member firms' clients through the lifecycle of complex infrastructure projects.

Our teams have extensive local and global experience advising infrastructure contractors, operators and investors, and government organizations in the following areas:

- Planning, structuring, and management of new infrastructure investments
- Procurement and financing support
- Improvement and monitoring of construction and operations
- Restructuring of distressed projects
- Investment due diligence assistance
- Infrastructure-related audit, tax, accounting, and compliance issues.

For additional information regarding our services and capabilities, please e-mail us at [infrastructure@kpmg.com](mailto:infrastructure@kpmg.com).

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

KPMG member firms ability to deliver some specific services may be limited in individual countries by local laws and governance restrictions.

© 2009 KPMG International. KPMG International is a Swiss cooperative. Member firms of the KPMG network of independent firms are affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved. Printed in the United States.

KPMG and the KPMG logo are registered trademarks of KPMG International, a Swiss cooperative. Designed and produced by KPMG LLP (U.S.)'s National Design Proposal & Production Services

Publication name: Infrastructure trend monitor  
Publication number: 44670NYO  
Publication date: March 2009