

## Introduction

Modern economic growth and development depends on high-quality infrastructure. This study offers a historical accounting of investment for a broad range of infrastructure and offers a "whole picture" assessment showing the importance of infrastructure to the well-being and growth of the manufacturing economy. It provides new evidence on the state of private-sector infrastructure and the deteriorating state of U.S. public infrastructure.

The study also leverages historical data and previous work concerning the economic costs of degraded infrastructure to consider how an increase in public infrastructure investments would affect economic performance. The analysis uses the Inforum LIFT model to show how infrastructure investments above current funding levels will help to recover nearly a decade of underinvestment in infrastructure, enable higher growth, improve trade performance, expand employment opportunities, and enhance the real value of household incomes.

Capital Spending on Infrastructure in 2012  
Billions of Dollars

Infrastructure	Public - Federal	Public - State & Local	Total Public	Total Private	Total
Highways and Streets	43.9	44.5	88.4	0.6	89.0
Mass Transit	9.1	9.5	18.7	0.0	18.7
Rail	1.0	0.0	1.0	9.5	10.4
Aviation	5.8	9.3	15.2	1.0	16.2
Ports and Inland Waterways	1.3	2.4	3.7	0.0	3.7
Pipelines	-	-	-	16.3	16.3
<b>Total Transportation</b>	<b>61.2</b>	<b>65.8</b>	<b>126.9</b>	<b>27.5</b>	<b>154.5</b>
Water Resources	6.4	0.0	6.4	-	6.4
Water Supply & Waste Disposal	4.4	33.2	37.6	2.2	39.7
Electrical Energy	0.9	9.5	10.4	62.8	73.2
Communications	-	-	-	17.3	17.3
<b>Total Utilities and Other</b>	<b>11.7</b>	<b>42.7</b>	<b>54.4</b>	<b>82.3</b>	<b>136.7</b>
<b>Total Infrastructure Spending</b>	<b>72.9</b>	<b>108.5</b>	<b>181.3</b>	<b>109.8</b>	<b>291.2</b>

Public spending figures are measured in Fiscal Years ending September 30. Private spending figures are measured in calendar years.

## Public Investment by Type

The decline goes beyond the recent recession and includes a period that stretches over the past decade. Expenditure details for the major categories of public infrastructure are shown in the table below, reflecting real spending levels from 2003-2012. Five types of expenditures concern transportation: highways and roads, mass transit, rail, aviation, and ports and inland waterways. The remaining two types concern water infrastructure: water resources and water supply and waste disposal.

In contrast to most of the preceding 45 years, the volume of investment in almost all of the public infrastructure categories contracted significantly from 2003 through 2012. Most alarmingly, the level of real investment in highways and roads was almost 20 percent lower in 2012 compared to 2003.

Real Public Infrastructure Expenditures, 2003-2012

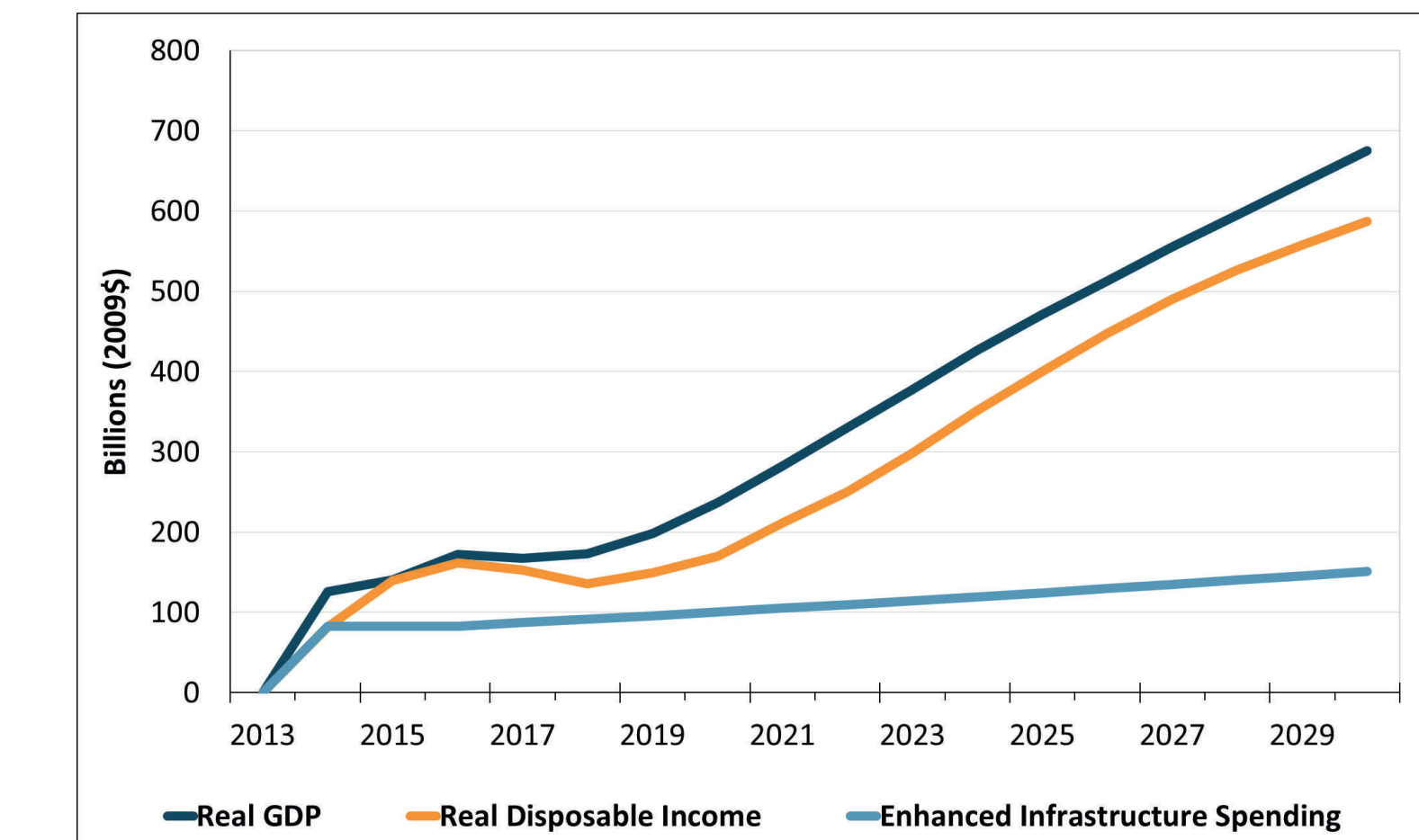
	Billions of 2012\$		Average Annual Percentage Growth	Cumulative Percentage Change
	2003	2012	2003-2012	2003-2012
<b>Real Gross Domestic Product</b>	<b>13,724.40</b>	<b>16,244.60</b>	<b>1.7</b>	<b>18.4</b>
<b>Public Infrastructure Spending</b>	<b>423.87</b>	<b>379.19</b>	<b>-1.2</b>	<b>-10.5</b>
Highways and Streets	193.22	155.98	-2.4	-19.3
Mass Transit	61.43	58.57	-0.5	-4.7
Rail	1.73	1.78	0.3	3.1
Aviation	42.57	36.89	-1.6	-13.4
Ports and Inland Waterways	11.73	9.58	-2.3	-18.3
Water Resources	11.08	11.42	0.3	3.1
Water Supply and Waste Disposal	102.37	104.97	0.3	2.5

## Economic Impact

Compared to a baseline forecast that assumes continued and relatively low levels of public infrastructure investment, the exercise finds the following:

- Greater infrastructure investment would boost jobs by almost 1.3 million by 2015 and 1.7 million by 2017. The real GDP level would rise about 1.3 percent by 2020 and 2.9 percent by 2030. Improved productivity would boost competitiveness, output, and employment, and together with improved labor participation largely would be responsible for the higher GDP.
- Enhanced infrastructure spending would raise real disposable income, the best indicator of net welfare gain, by 1.2 percent in 2015 and 3.4 percent in 2030. Net of investment and after taxes, improvements to all types of infrastructure imply a net gain in real income of \$1,300 per household by 2020 and \$4,400 per household by 2030, measured in 2009 dollars.

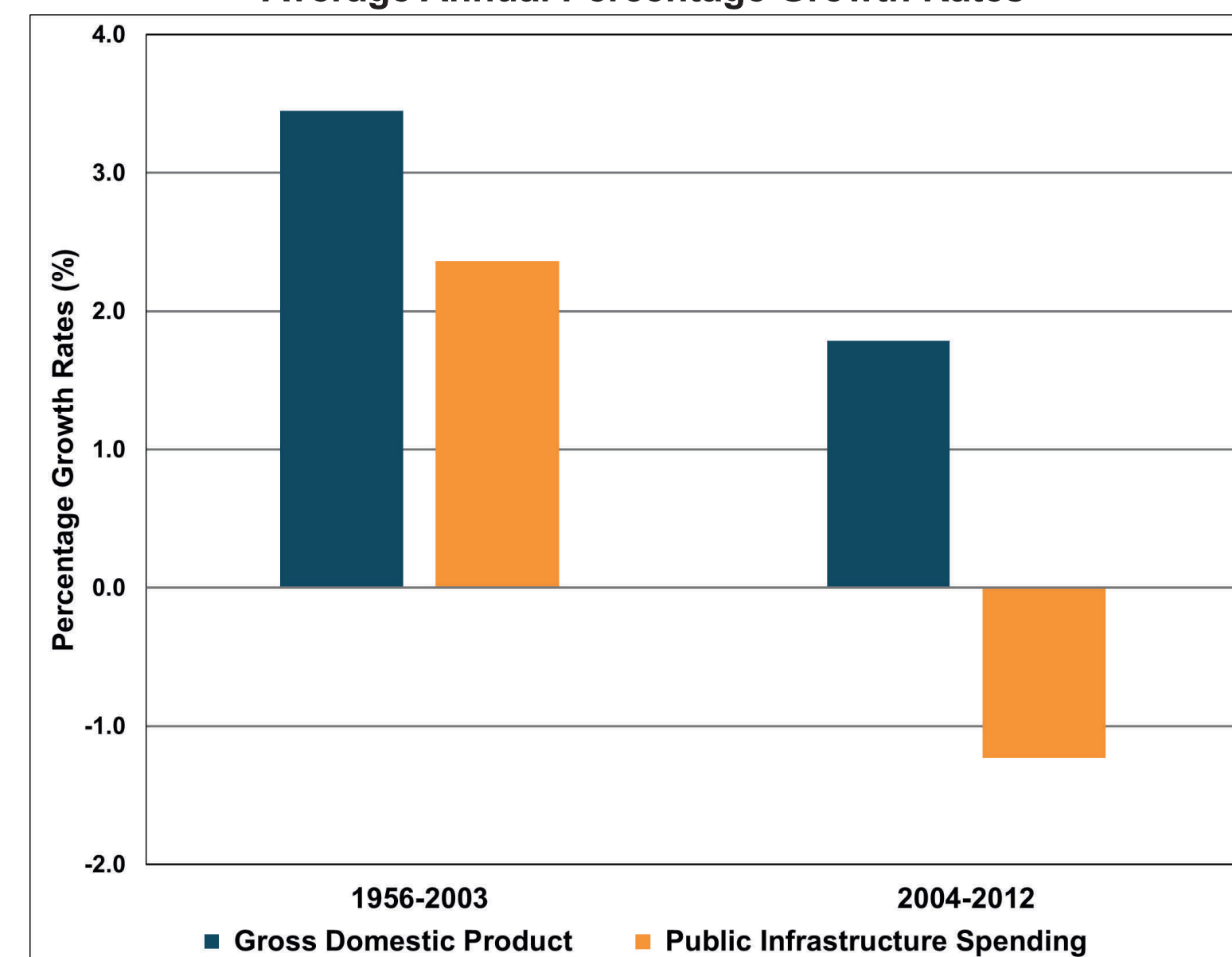
Changes to Infrastructure Investment, Real GDP, and Real Disposable Income, High Investment Case vs. Low Investment Case, 2014-2030



## Aggregate Public Investment

The average annual growth of real GDP and real public infrastructure spending over two intervals, 1956-2003 and 2004-2012, is shown in the figure below. In the almost 50 years through 2003, infrastructure investment rose, albeit at an average rate of about 1 percent lower than GDP growth. Over the past nine years, GDP has grown more slowly on average. Perhaps not coincidentally, real infrastructure spending has contracted sharply by more than 1 percent per year during this period, and this investment expenditure has lagged GDP growth by a whopping three percentage points on average.

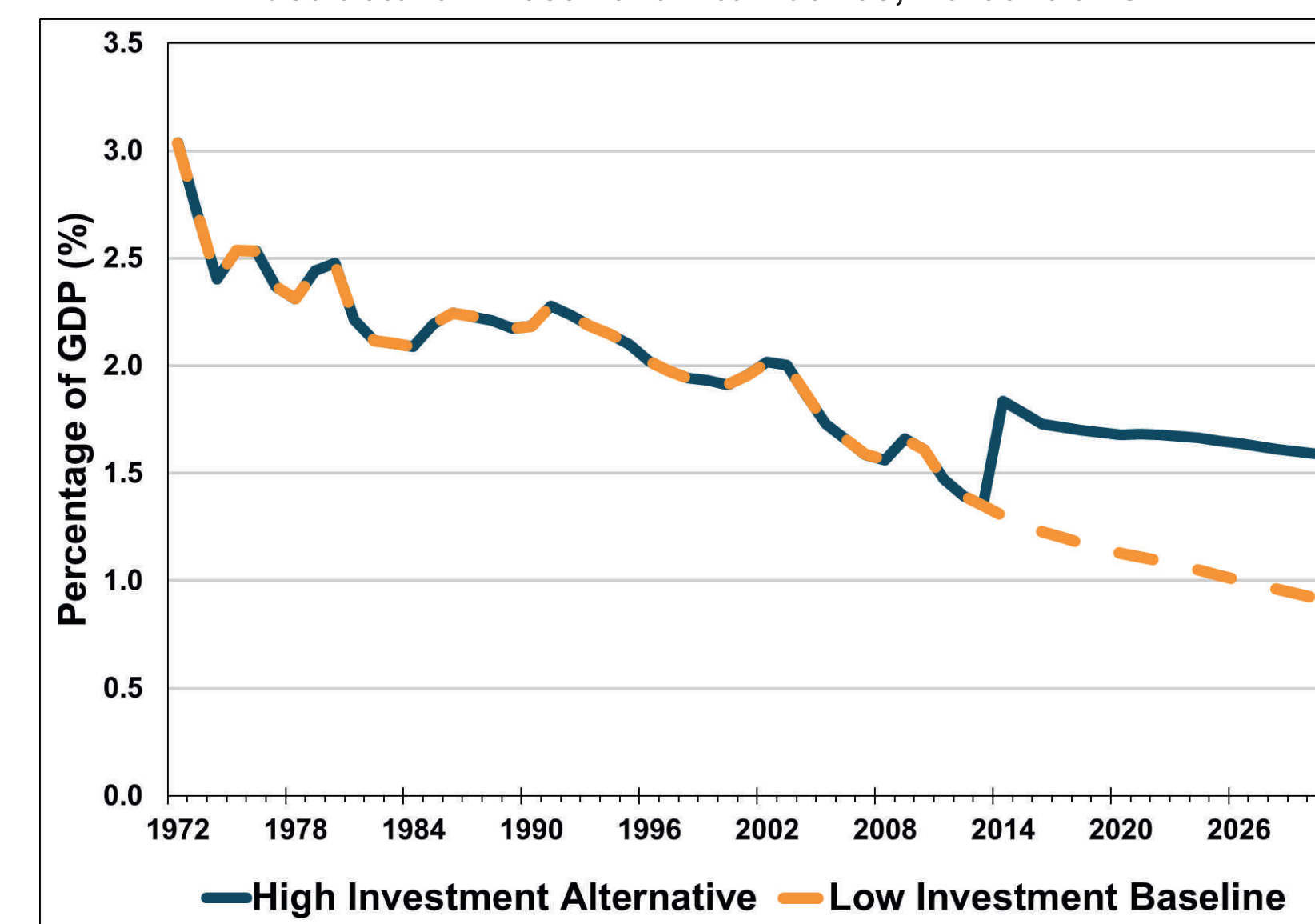
Real Public Infrastructure Expenditures, Average Annual Percentage Growth Rates



## Higher-Investment Simulation

To make up for the almost decade-long decline in infrastructure capital spending, a more focused and results-driven effort that expands and sustains higher levels of investment from all public and private infrastructure sources would have positive short- and long-term economic returns. Historical data and previous studies were leveraged to analyze how an increase in public infrastructure investments would affect economic performance. This modeling exercise contemplates an addition to investment of about \$83 billion in constant 2009 dollars (about \$100 billion per year in today's dollars), or about 0.6 percent of GDP.

Infrastructure Investment Alternatives, Percent of GDP



## Conclusion and Policy Comments

As multiple sectors of public infrastructure show signs of aging and decay with no solutions in sight, we are at an appropriate juncture to consider a highly focused infrastructure effort designed to improve safety, increase competitiveness, and improve economic throughput. Accelerated private- and public-sector efforts to develop infrastructure, including a significant supply of new spending, allows the pursuit of three economic objectives at once:

- New funding will help the United States catch up from a well-documented backlog of deferred infrastructure projects that have accumulated over the past 10 years, including maintenance, repair, and new capacity. Many of the critical problems already are identified. It is urgent to take immediate action on long-standing and stalled projects.
- A new national infrastructure strategy that embraces proven innovations in finance and regulatory reform as well as construction and operational efficiencies can help to lower operating costs, increase profitability, mitigate logistical challenges, attract economic development, and provide a catalyst for businesses to invest in new expansion and growth.
- Greater infrastructure investment will improve an economy that continues to suffer from high unemployment and lackluster growth.

The necessity of new investment does not mean we should persist with the same old policies and practices. Critical reforms and innovative approaches are necessary for investing, funding, delivering, and operating infrastructure. A more focused and outcome-driven infrastructure effort is needed, and new ideas can and should accompany any increase in investment. Strong support exists within the business and manufacturing communities for building a more competitive, nationwide infrastructure network.