



Economic Impacts of Transportation Investment

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Transportation Investment Grows the Economy

Short Run Impacts

- Increase Demand
- Jobs
- Output
- Wages
- Value Added

Long Run Benefits

- GDP Growth
- Increase Competitiveness
- Productivity Gains
- Raise Standard of Living
- Grow Income & Profits



Transportation Investment Grows the Economy

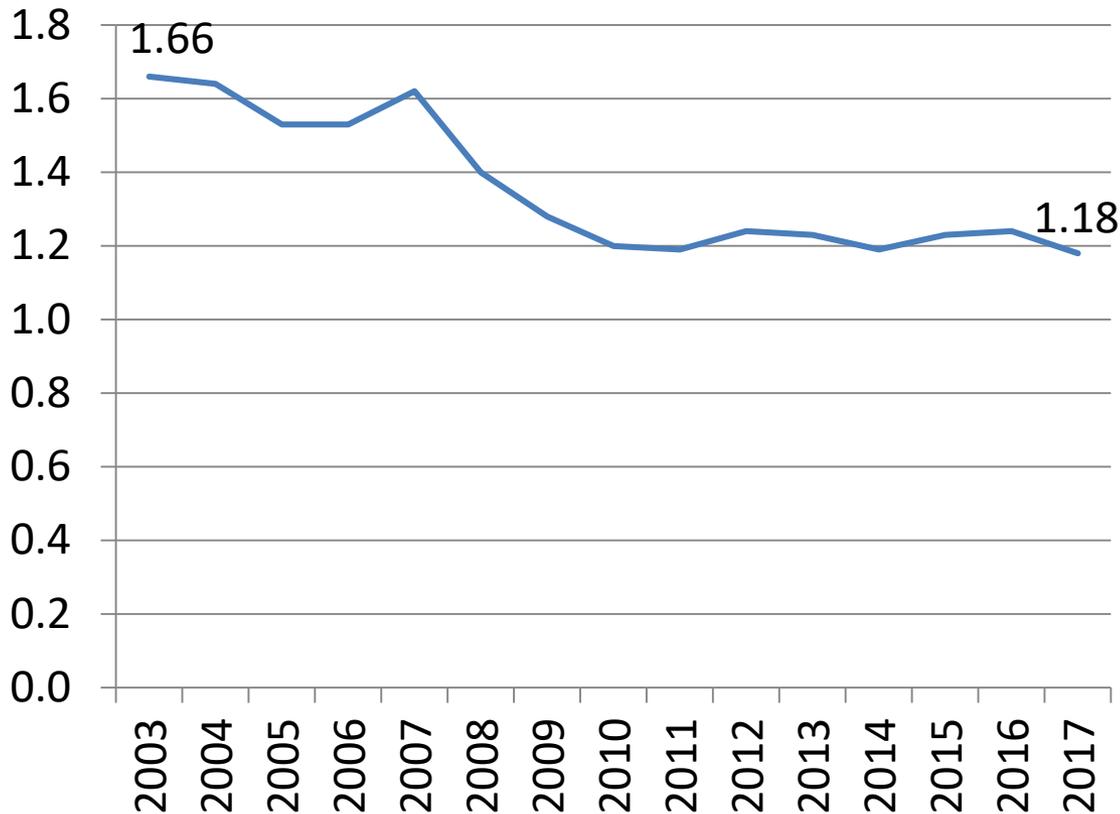
Opportunity Cost

- Loss of potential economic activity
- Increased Cost for Businesses
- Potential Deteriorating Conditions
- Fewer Improvements Made
- Missed Business Opportunities



Transportation Investment Improves Safety

North Carolina Highway fatalities per 100 million VMT



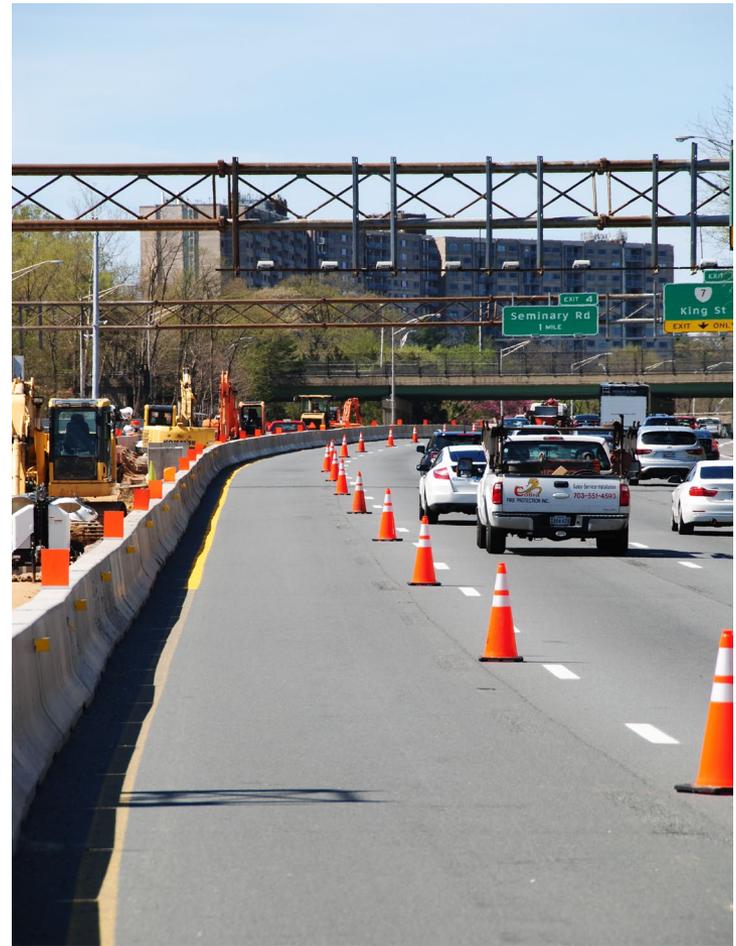
About 2/3 of highway fatalities due to roadway conditions and related factors

— NC Highway fatalities per 100 million VMT

Economic Impact of Transportation Construction

\$7.4 Billion

2019 public and private transportation construction and maintenance investment in North Carolina



Economic Impact of U.S. Transportation Construction

Transportation
construction generates
\$15 billion in total
annual economic
activity in
North Carolina



Economic Impact of Transportation Construction

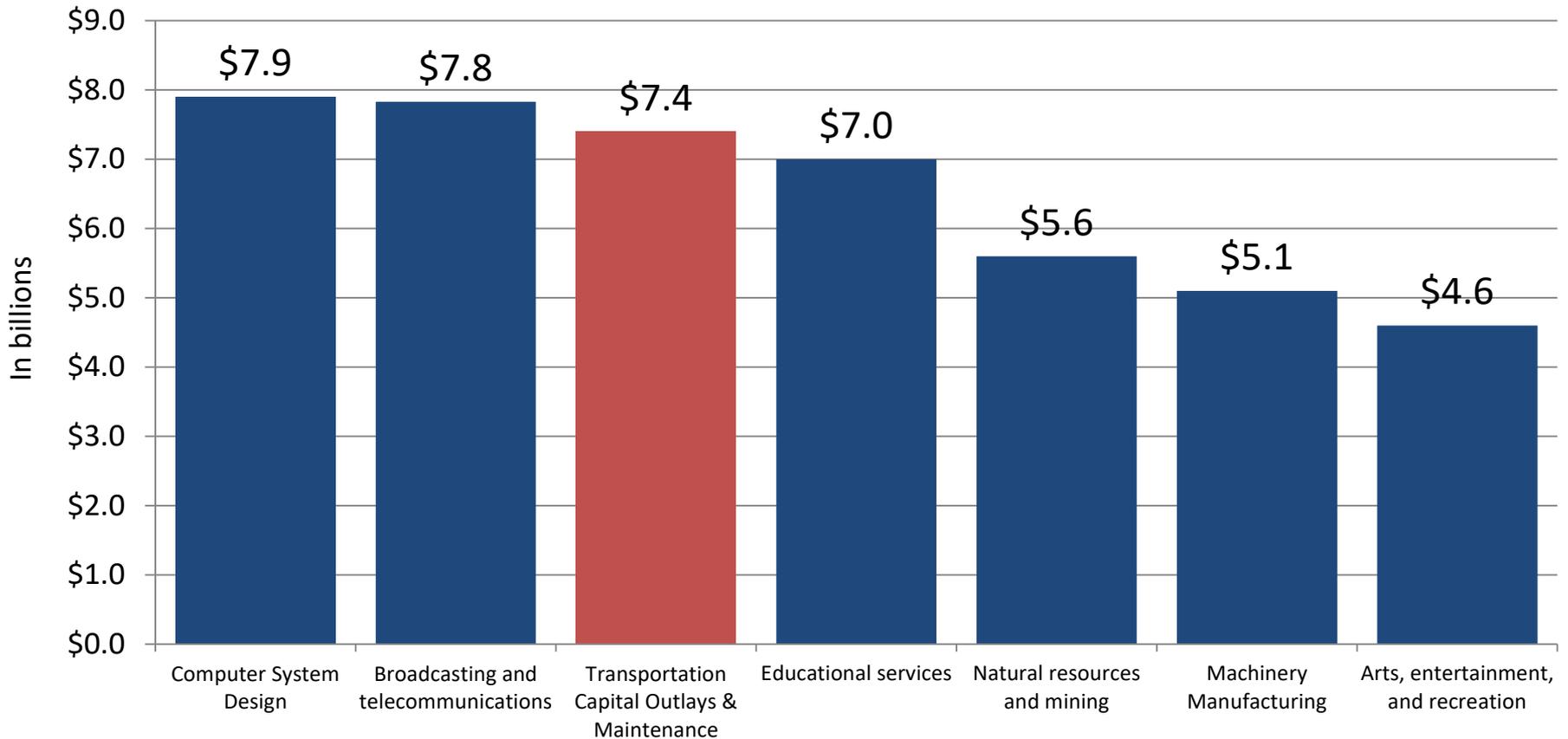
Transportation
construction
contributes
\$8 billion
to state GDP

... accounting for
1.4% of total GDP



Economic Impact of Transportation Construction

Annual Industry Contributions to North Carolina GDP, 2018

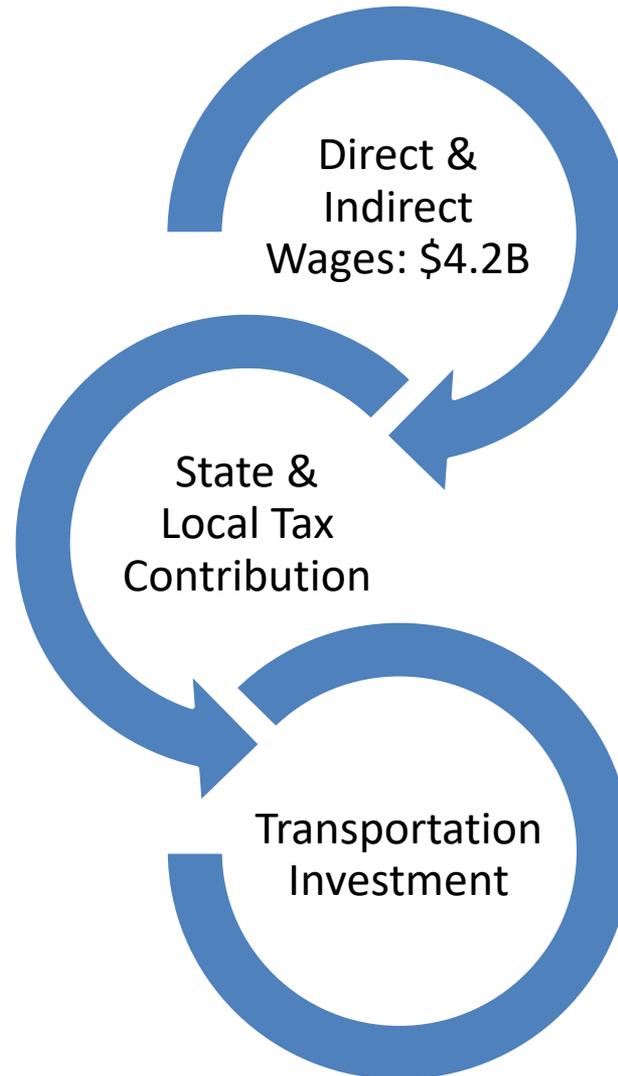


Economic Impact of U.S. Transportation Construction

Transportation
Construction
supports
over 110,000
jobs in
North Carolina



Wage & Tax Impacts of Transportation Construction



Additional Employment Impacts

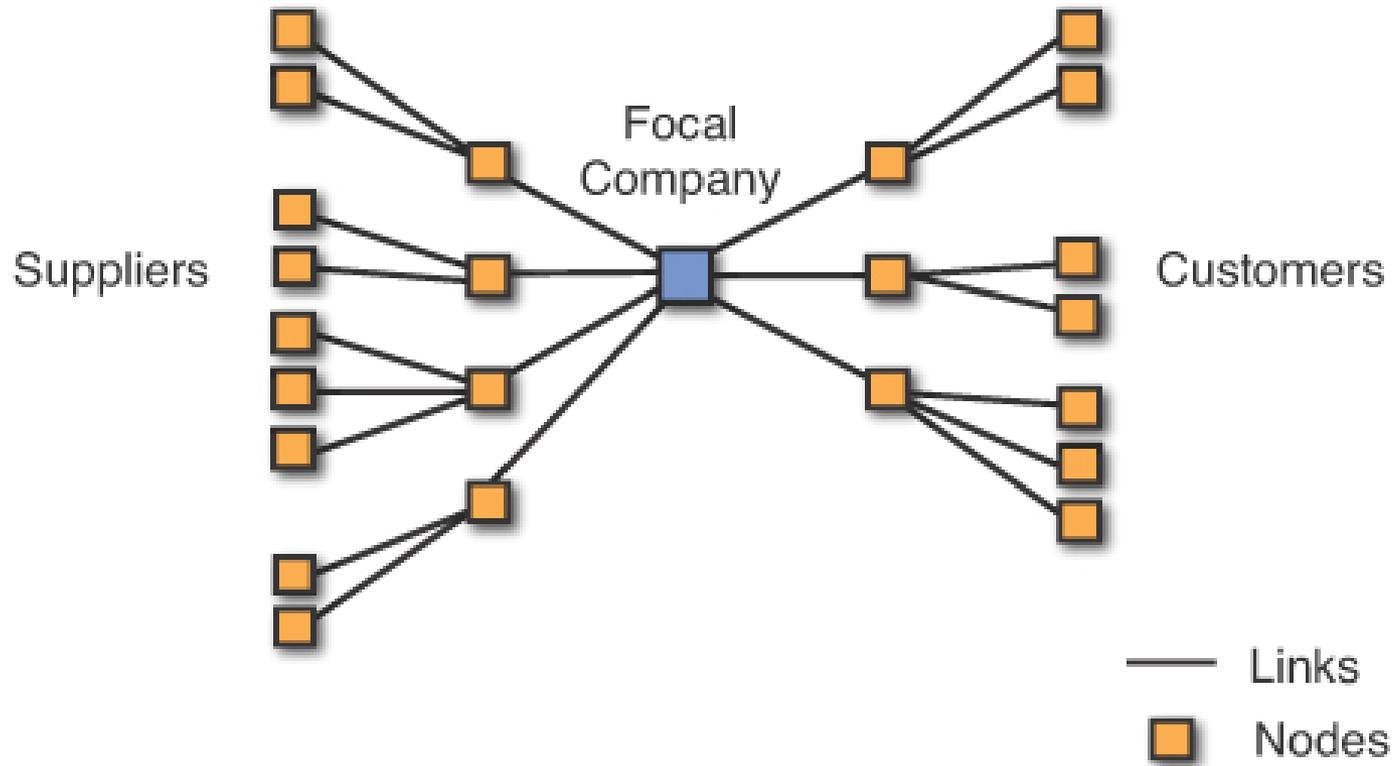
Over 2 million jobs in tourism, manufacturing, agriculture, mining, retailing and other industries are dependent on North Carolina's infrastructure network.



Transportation Investment - Long Run Benefits

- Creates tangible assets that are long-lived
- Access to jobs
- Market access for businesses
- Reduced operating and production costs
- Agglomeration Economies

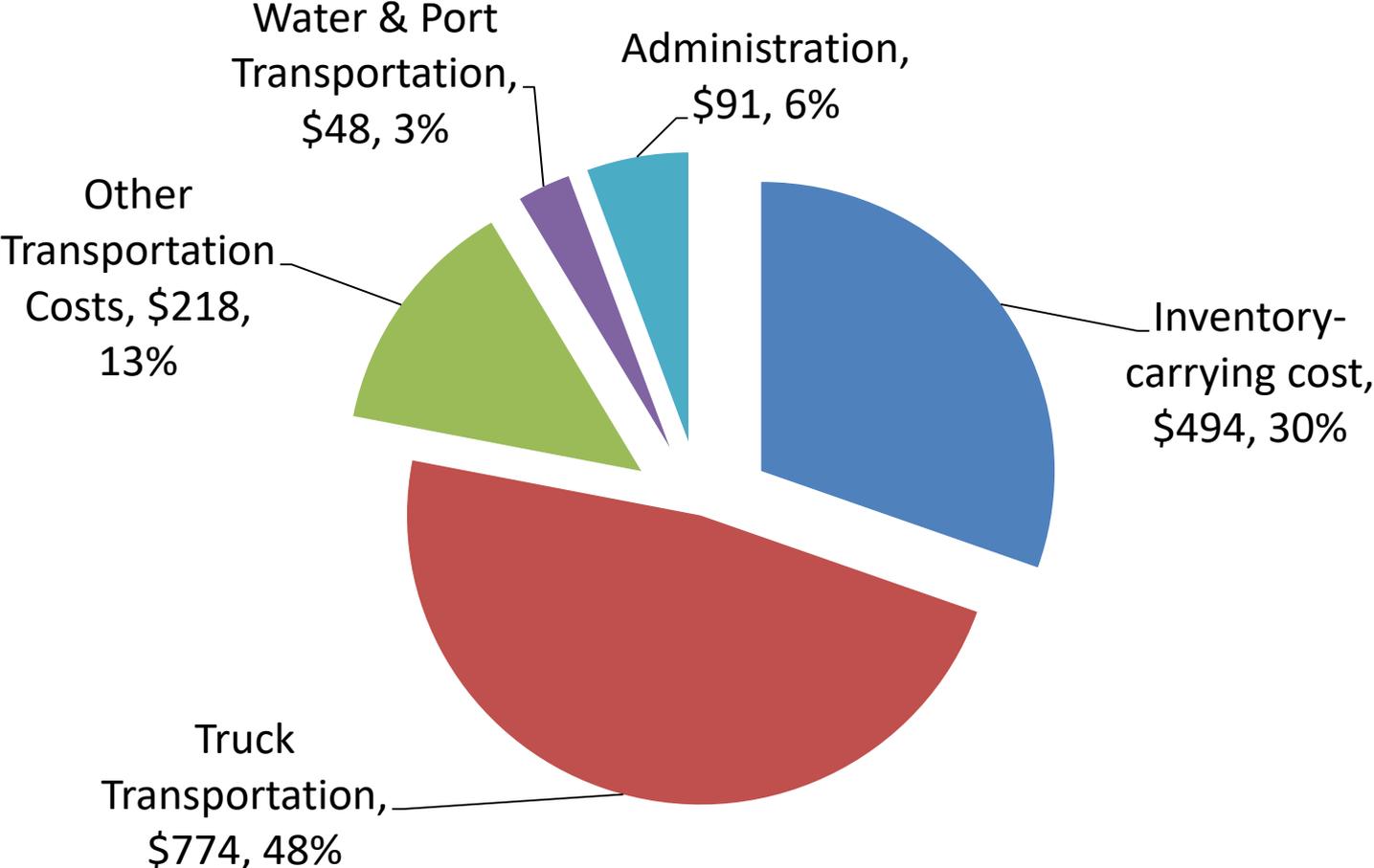
Benefits for Businesses, Employees and Consumers



Source: Definitive Guide to Transportation, The Principles, Strategies and Decisions for the Effective Flow of Goods, FT Press

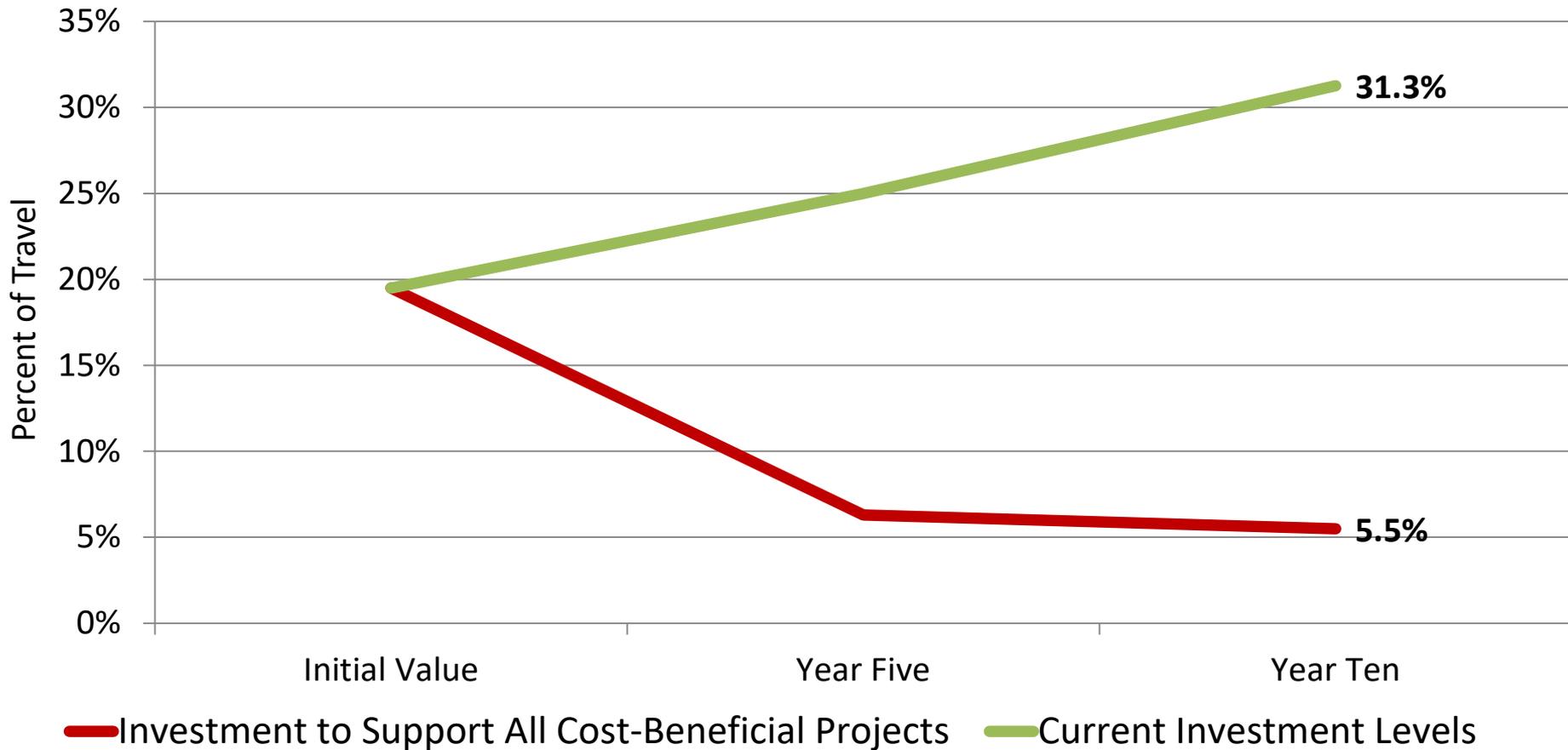
U.S. Businesses Spend \$1.6 trillion on Logistics

U.S. Logistics Costs 2018, in billions



Source: *The 30th Annual State of Logistics Report*, CSCMP 2019

Opportunity Costs - North Carolina Percent of Total Travel on Deficient Highways

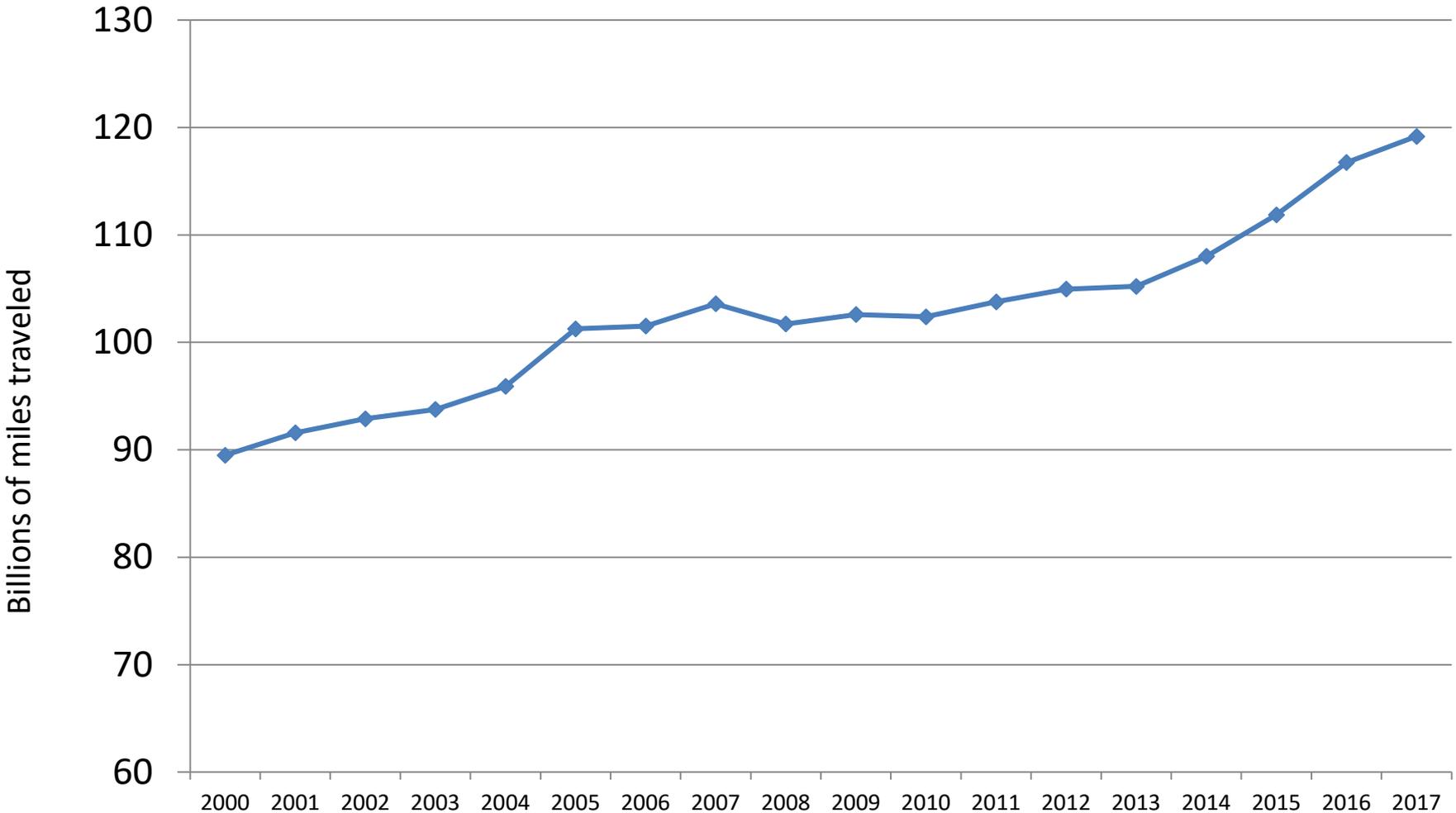


Source: ARTBA analysis based on U.S. Department of Transportation HERS model. Actual results depend on selection of projects within the model, based on cost-benefit ratio, which will likely be different from actual project selection. Does not include local spending.

North Carolina – Transportation Challenges

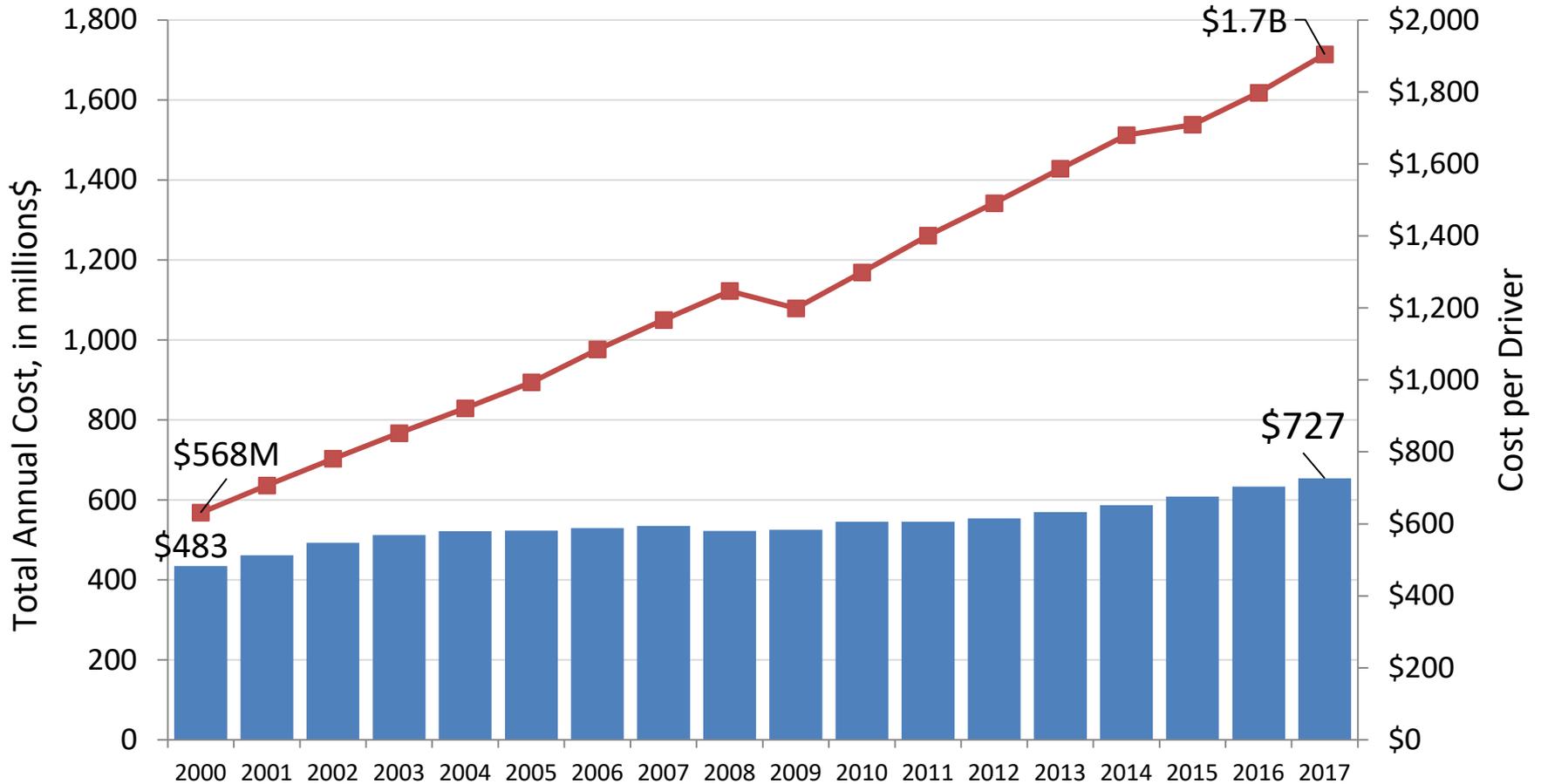
- 6,248 bridges with identified repair at a cost of \$1.9 billion
- 10% of bridges are structurally deficient in poor condition
- 12% of highways need repair
- Growing cost of congestion
- Increasing projections for freight shipments
- Changes in technology and fleet dynamics

Vehicle Miles Traveled in North Carolina



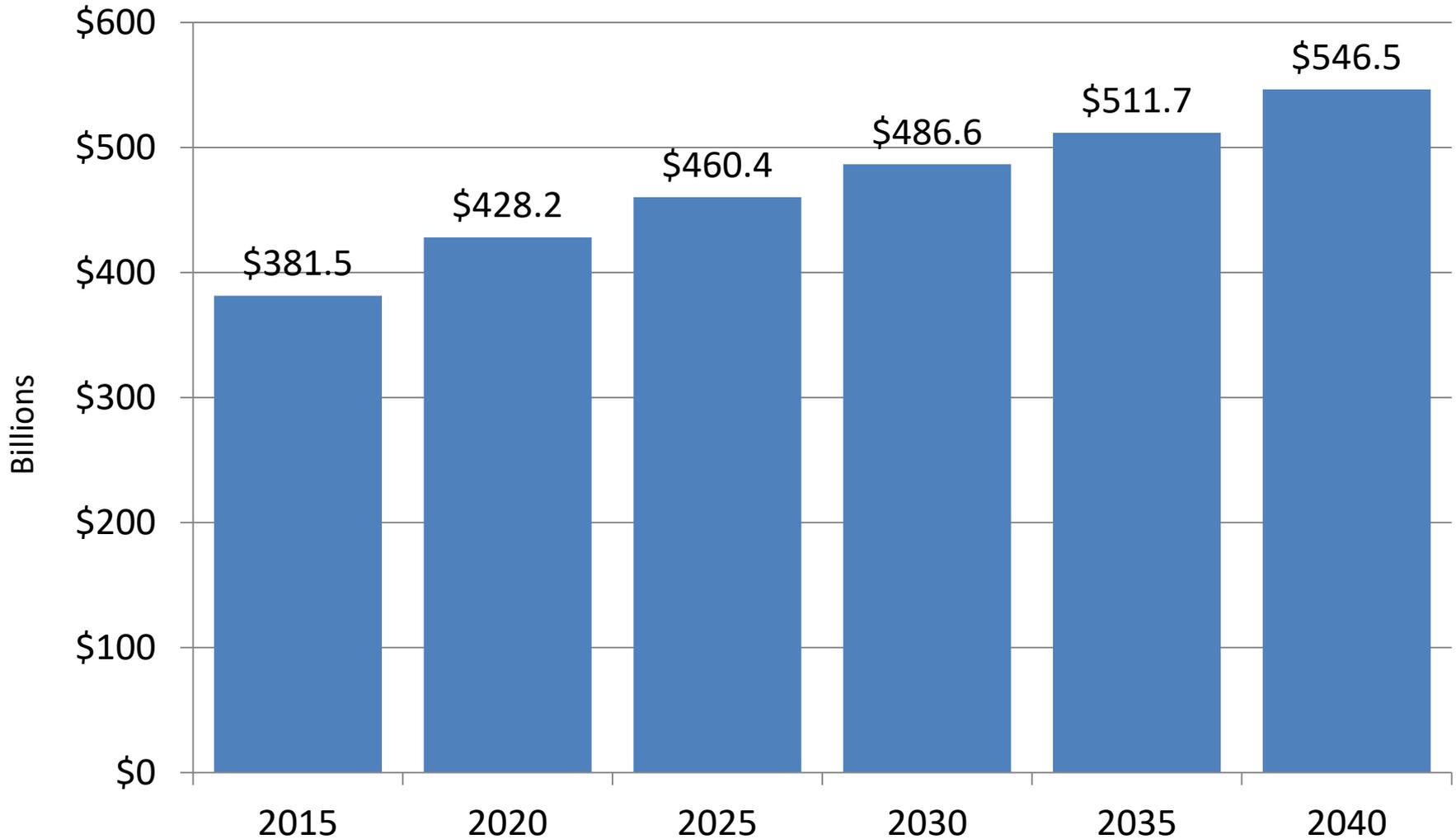
Source: Federal Highway Administration, Highway Statistics Table VM-2

Cost of Congestion in Major Urban Areas



Source: Texas Transportation Institute, Urban Mobility Report data for Charlotte, Greensboro, Raleigh and Winston-Salem.

The Value of North Carolina Truck Freight Shipments



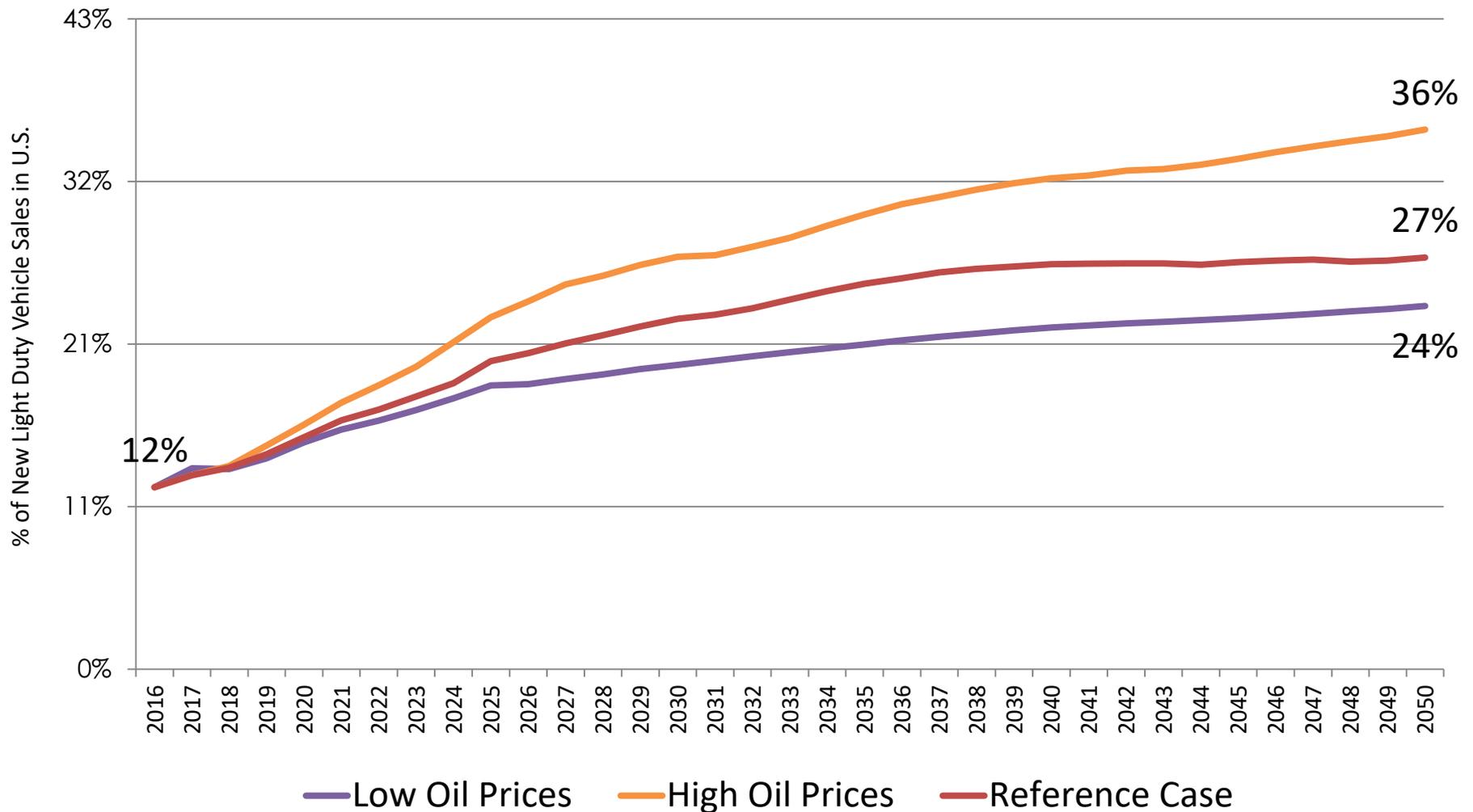
Source: U.S. Department of Transportation Freight Analysis Framework

North Carolina Household Expenditures

AVERAGE MONTHLY HOUSEHOLD EXPENDITURES

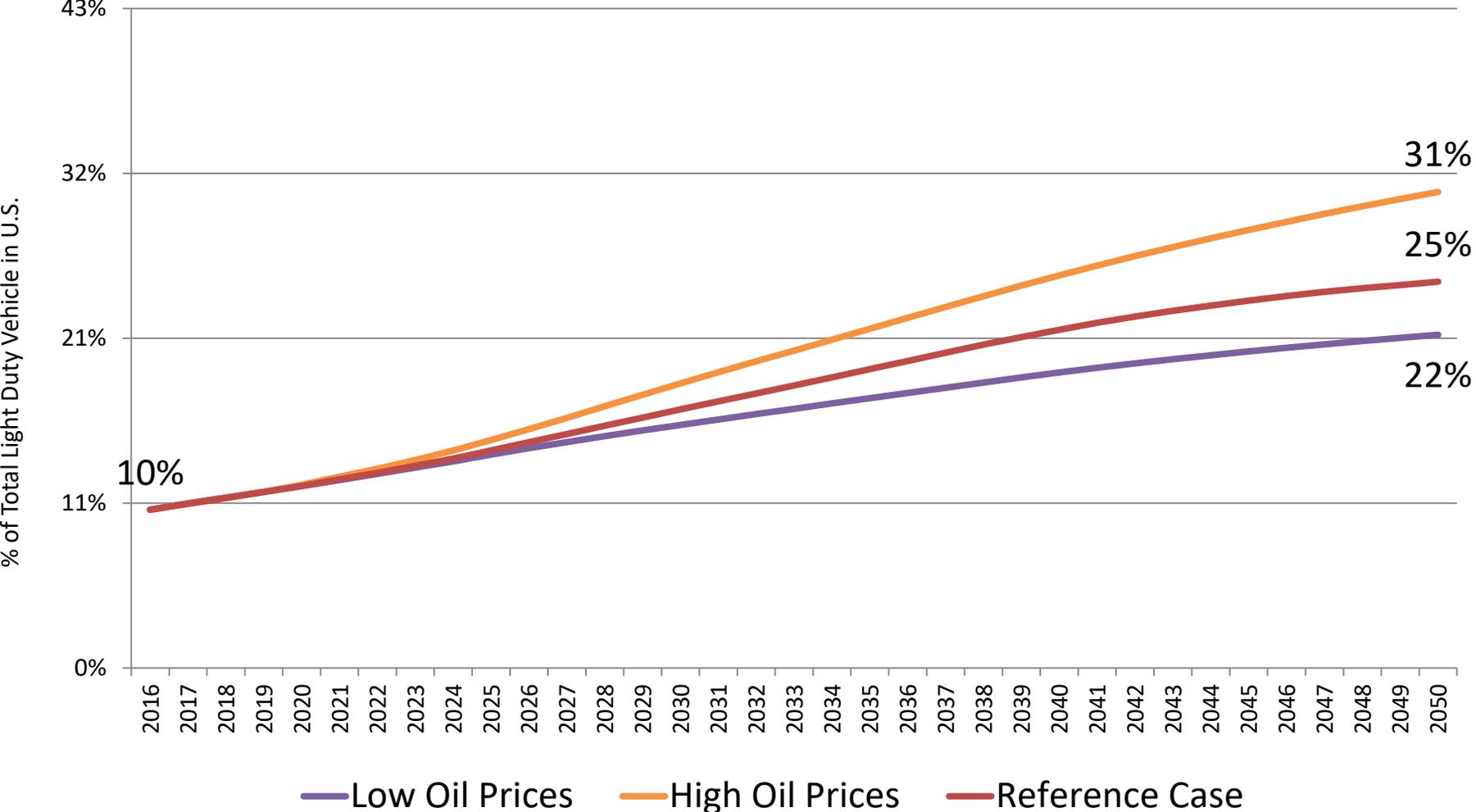


Future Trends: Share of New Sales of Alternative-Fuel Light-Duty Vehicles Will At Least Double



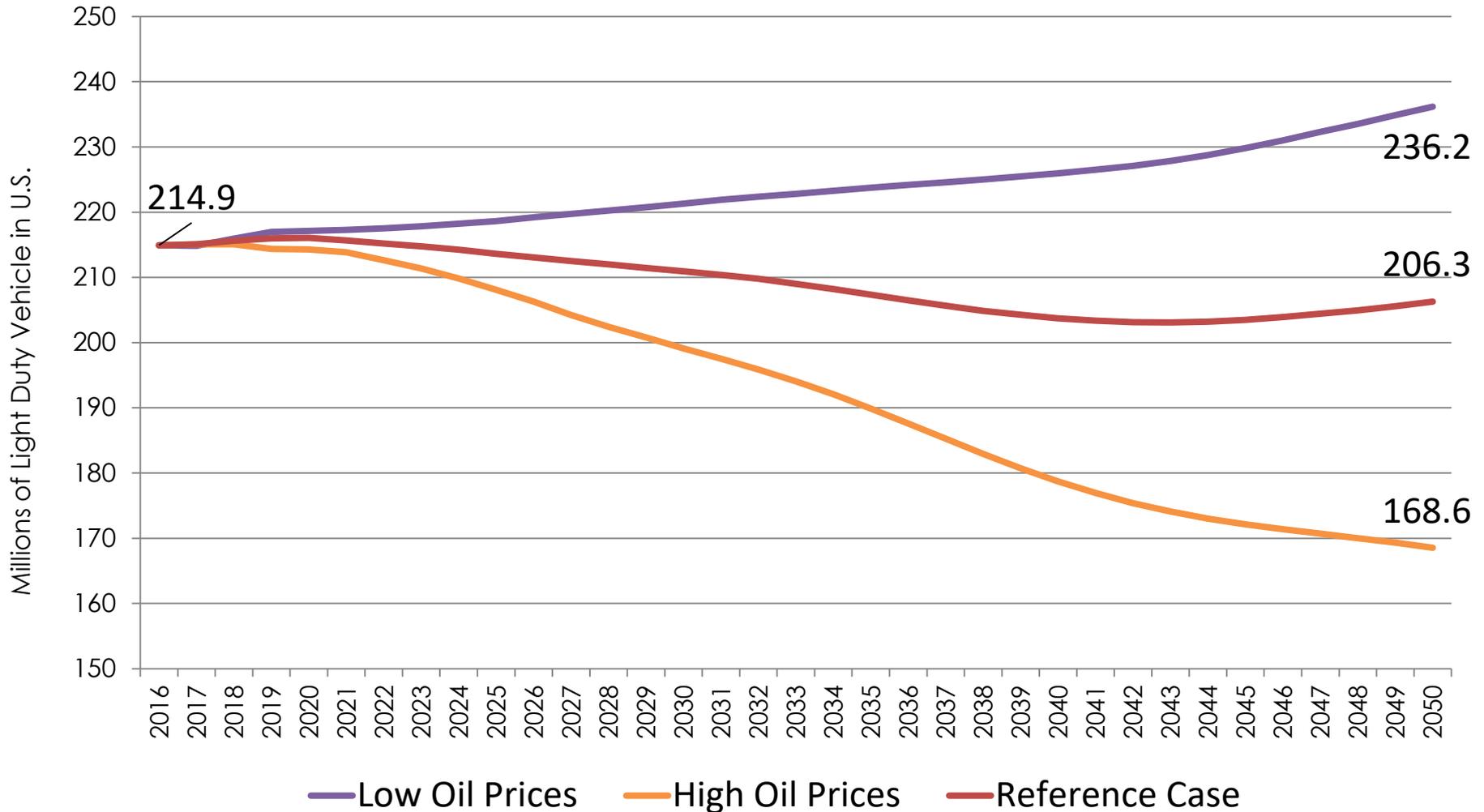
— Low Oil Prices — High Oil Prices — Reference Case

Future Trends: Total Stock of Alternative-Fuel Light-Duty Vehicles Will Continue to Grow



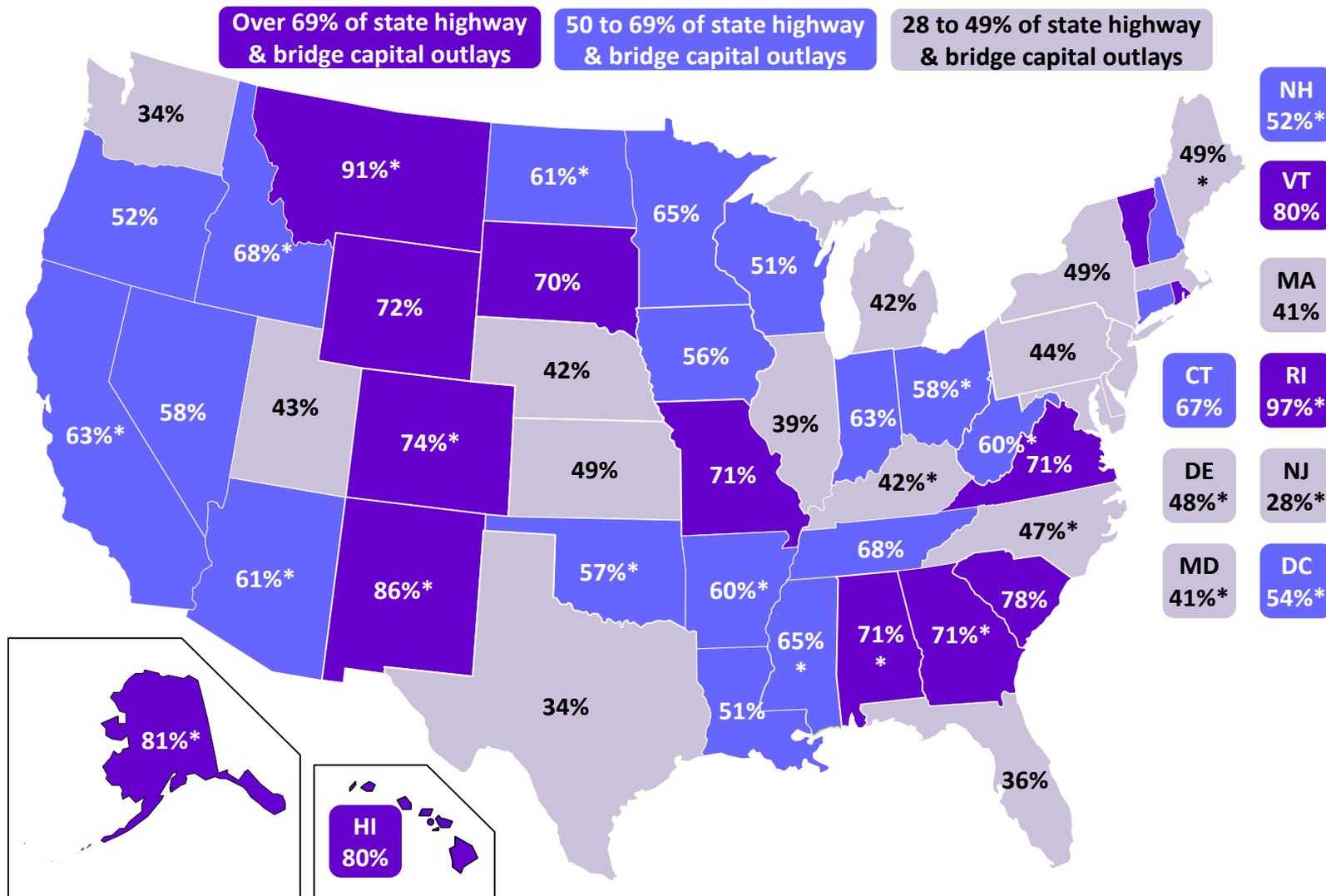
Source: ARTBA analysis of U.S. Energy Information Administration, Annual Energy Outlook 2018. Three scenarios are reference case, low oil prices and high oil prices with clean power plan.

Future Trends: Number of Gasoline Internal Combustion Engine Light-Duty Vehicles



Source: ARTBA analysis of U.S. Energy Information Administration, Annual Energy Outlook 2018. Three scenarios are reference case, low oil prices and high oil prices with clean power plan.

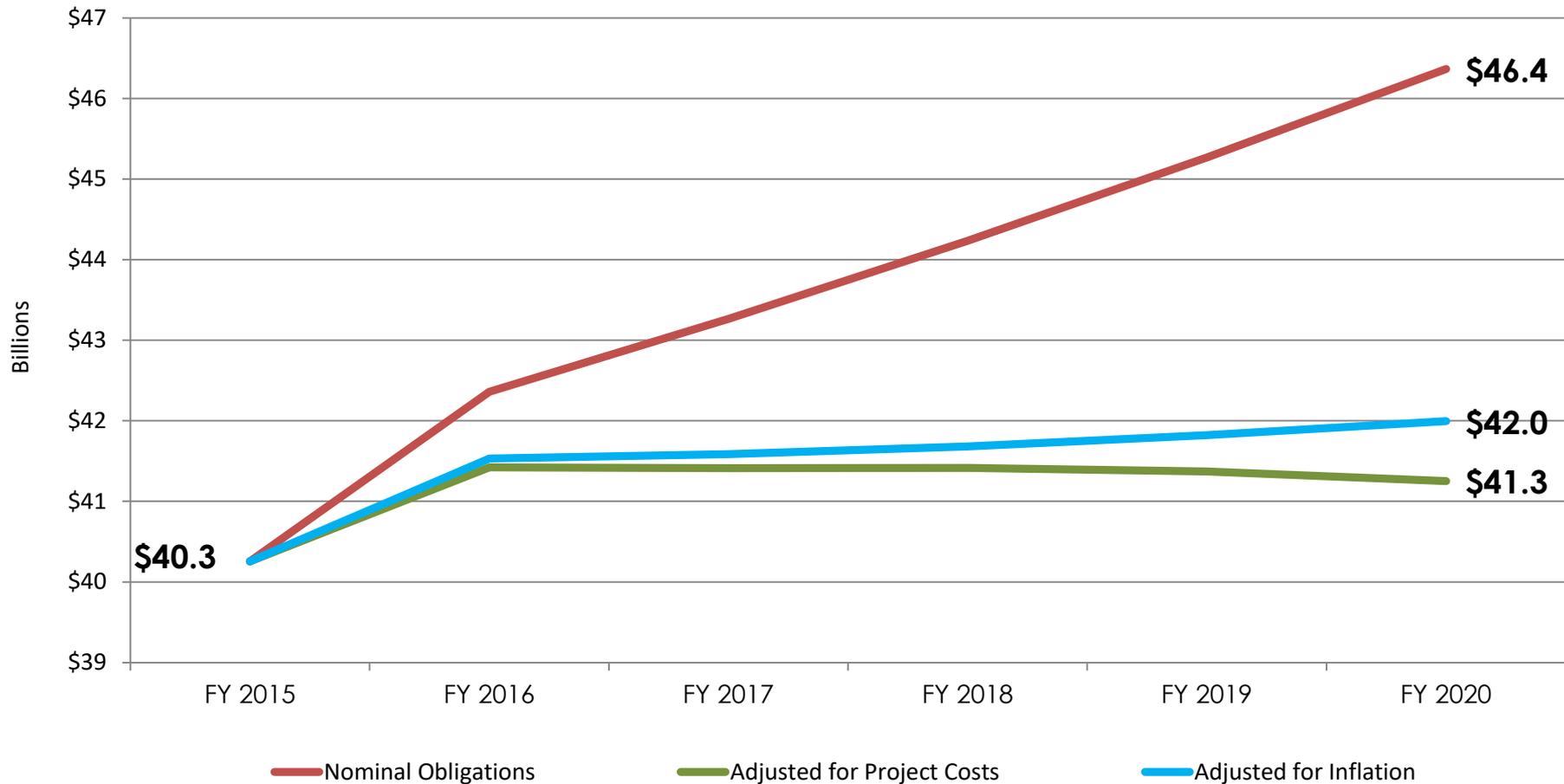
Federal funds, on average, provide 51% of annual State DOT capital outlays for highway & bridge projects



Source: ARTBA analysis of FHWA Highway Statistics data, total ten year average 2006-2015 from tables SF-1 and SF-2. The percent is the ratio of federal aid reimbursements to the state and total state capital outlays and is indicative of the importance of the federal aid program to state capital spending for highways and bridges. Does not include local capital spending. Federal highway reimbursements are primarily used for capital outlays, including construction, right of way and engineering, but are also used for debt service for GARVEE bonds.

* States that have issued GARVEE bonds before 2014.

FAST Act Obligations for the Federal Aid Highway Program



Source: ARTBA analysis of the FAST Act. Project costs are expected to grow in line with historical averages according to the ARTBA price index, which takes into account changes in material prices, industry wages and overall inflation. Inflation forecast of 2% from CBO's August 2015 report An Update to the Budget and Economic Outlook: 2015 to 2025.



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