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Approaches to Making Infrastructure Spending More Productive

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The Macroeconomic Effects of Federal Investment

Federal investment—whether in infrastructure, research and development, or education and training—affects the economy mainly by changing **overall demand** in the short term and private-sector **productivity** in the longer term.

CBO's Interpretation of the Empirical Literature on Long-Term Economic Effects of Federal Investment

The ratio of output to total government fixed assets is about 1.3

The long-term elasticity of private-sector output with respect to public capital is roughly 0.06

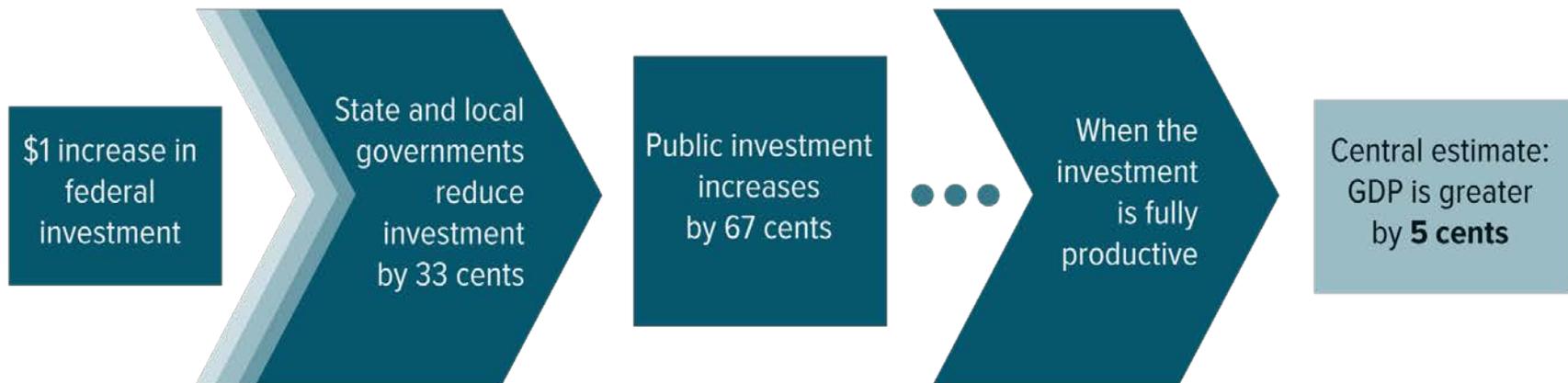


A \$1 increase in public capital ultimately raises output by 8 cents

How much a boost in federal investment increases the size of the public capital stock, on net, depends mainly on two factors.

- *The response of state and local governments.* Acknowledging great uncertainty, CBO estimates that **one-third** of the change in the typical dollar of federal investment is **offset** by changes in investment by state and local governments.
- *How quickly that capital depreciates.* The typical dollar of federal investment depreciates at an annual rate of **2 percent**, CBO estimates.

The Effect on Output of an Increase in the Typical Kind of Federal Investment



In CBO's assessment, there is roughly a two-thirds chance that the effect on GDP would be between **zero** and **10 cents**.

Estimates for typical investment should not be used to infer the effects of particular investment proposals.

- Some investments start improving productivity soon after they are made, whereas others take much longer.
- Similarly, some investments have stronger effects on productivity than others do.
- The way that states, local governments, and private entities adjust their own investment spending and borrowing in response to changes in federal investment can also vary, depending on the proposal.

When possible, CBO's analyses of proposals reflect specifically estimated effects on timing, productivity, and responses of other investors.

- In many cases, however, empirical evidence is scant—particularly about the productivity effects of some kinds of investment and about investors' responses.
- In such cases, CBO uses the estimated effect of typical federal investment.

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The construction of the Interstate System has been associated with sizable gains in productivity, especially for industries that use the road system intensively.

However, subsequent capital spending on roads has had a much **smaller impact**.

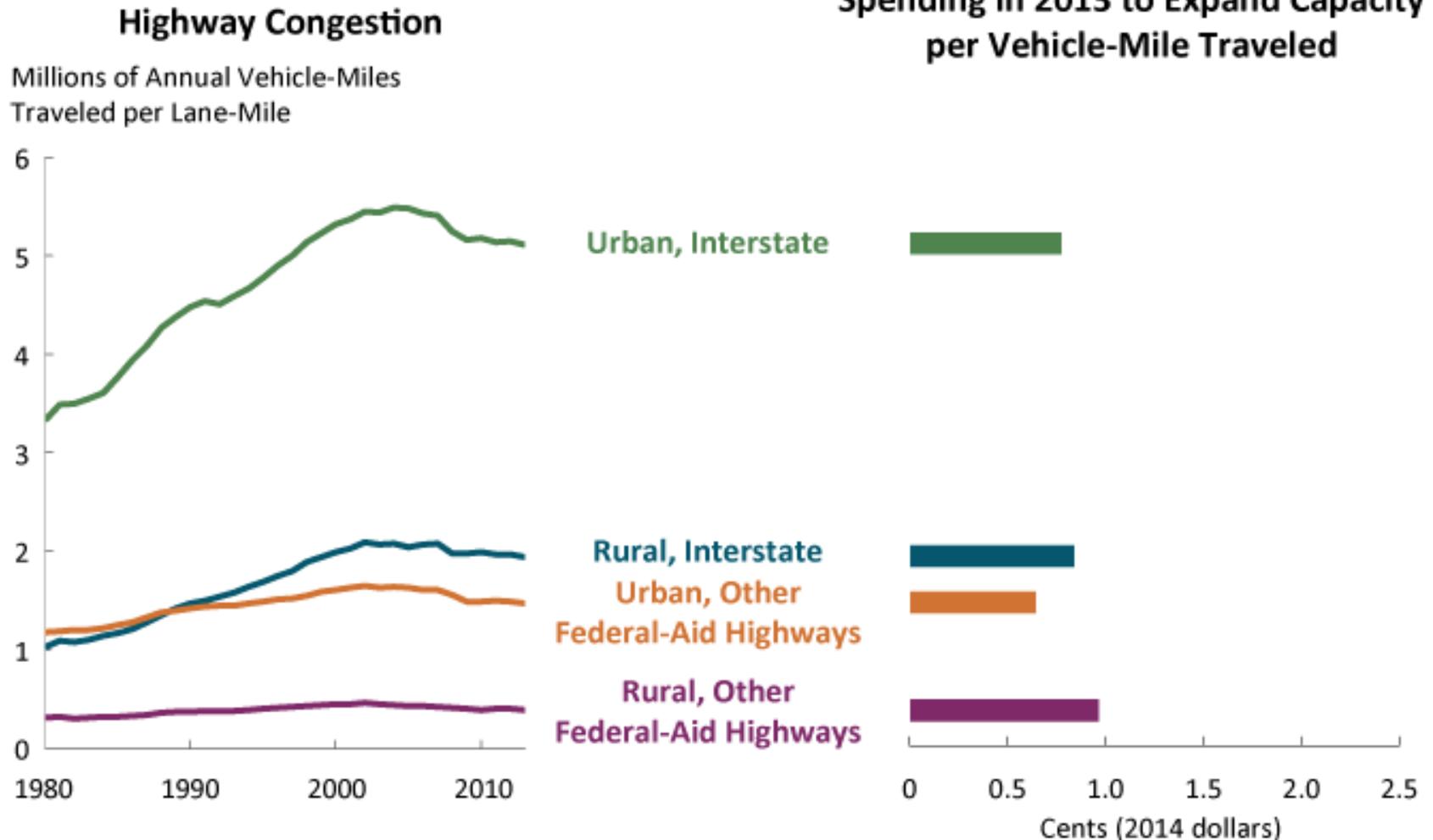
Research highlights particular contributions of infrastructure investment to economic activity.

- Projects serving ports and airports may increase international trade.
- Facilitating growth of urban (or metropolitan) areas may increase interactions among businesses and individuals (agglomeration effects).
- Repairing and rehabilitating existing roads may preserve public capital stock.

Greater emphasis on those types of investment could increase the productivity of federal spending.

The allocation of federal highway funding is only loosely related to how heavily highways are used.

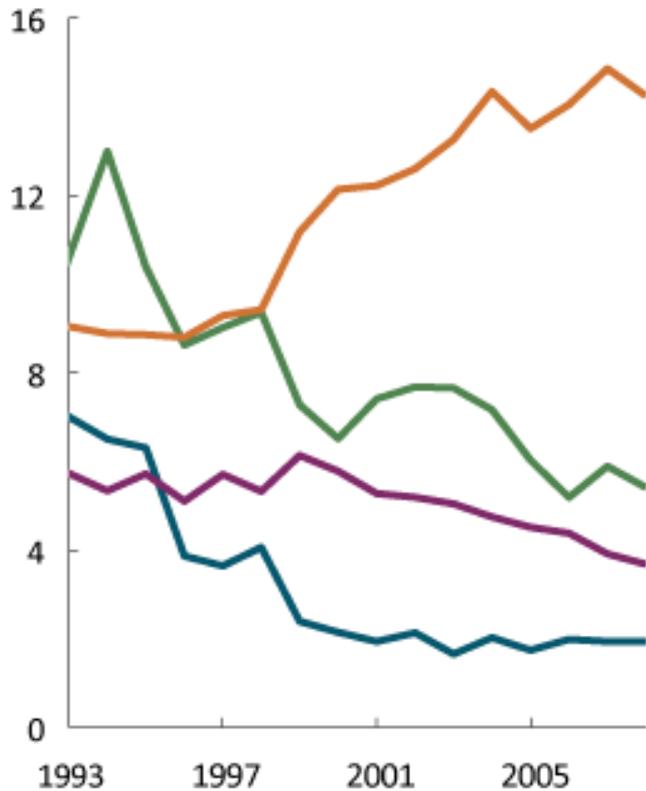
Traffic Congestion and Spending, by Type of Highway



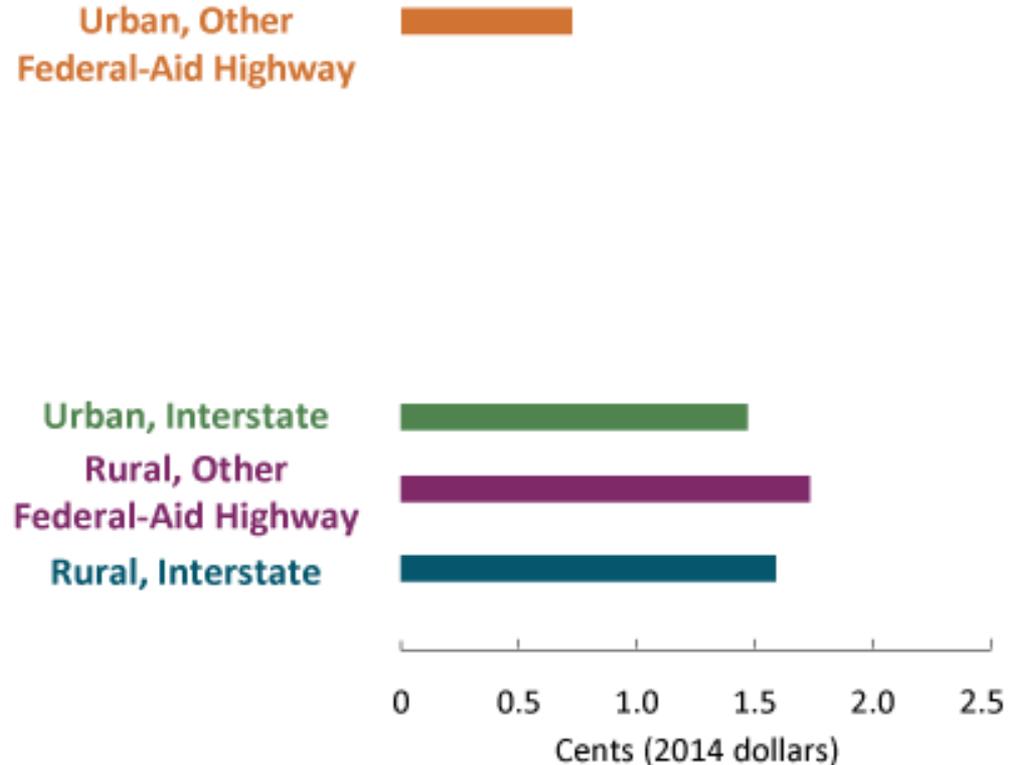
Pavement Condition and Spending, by Type of Highway

Pavement Quality

Percentage of Road Miles With Poor Pavement Quality



Spending in 2013 to Repair Pavement per Vehicle-Mile Traveled



To make federal infrastructure spending more productive for the economy, policymakers could allocate funds in different ways.

- Charging users
- Using benefit-cost analysis
- Linking spending to performance