

# Trump and Democrats Agree to The New York Times Pursue \$2 Trillion Infrastructure Plan

### Lawmakers question price tag of Trump's SOTU infrastructure pitch



INSIDER

BUSINESS fix its failing infrastructure

Dems eye infrastructure to deliver early win if they take the House

The US will need to invest more than \$4.5 trillion by 2025 to

By ELANA SCHOR and SEUNG MIN KIM | POLITICO 01/31/2018 12:52 AM EST

Trump promised \$1.5 trillion in infrastructure spending. He's 1 The Washington Bost percent of the way there.

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### Yet We Know Little About How Much We Get Per Dollar Spent

- Question of enormous import
  - US spends over \$400 billion per year on infrastructure
  - And some would like to spend much more
- The more infrastructure costs, the lower the power of additional spending

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• Widespread perception that costs are high in the US

## Why Do We Know So Little?

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- Data are limited
- International comparisons are difficult to interpret
- Even domestic comparisons are difficult
- What is a piece of "infrastructure"?

### Has per-unit infrastructure spending increased in the US?

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Where and why?

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### **Our Contributions**

Focus on Interstate construction: limit analysis to relatively homogeneous good

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- 1. Show a large increase in spending per mile over time
  - Generate new evidence
  - Date increase in spending to early 1970s onward

# **Our Contributions**

Focus on Interstate construction: limit analysis to relatively homogeneous good

- 1. Show a large increase in spending per mile over time
  - Generate new evidence
  - Date increase in spending to early 1970s onward
- 2. Assess which pieces of evidence are consistent with spending growth
  - · Per-unit costs of labor and materials unlikely to have driven increased spending
  - Increases in income account for roughly half of spending increase
  - Citizen voice: Change in institutions, c. 1970, that give citizens tools to modify government behavior

## Light-Speed Relevant Background

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#### Interstates are the Second Half of the Twentieth Century

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- 1956 Federal-Aid Highway Act provides interstate funding
  - Plans a 41,000 mile system
  - · Virtually all funding limited to initially determined routes
  - Feds pay 90%, states pay 10%
  - Similar federal standards for construction in all states and time
- Construction largely complete by 1993

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System is fixed  $\rightarrow$  States choose how much to spend, not how many miles to build

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### How States Get Money

- Feds authorize spending in amount of gas tax revenue
- Apportion spending
  - Divide tax revenue each year between states based on estimated "cost to complete"

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• Feds reimburse states when they spend money

### Part 1: Spending Per Mile Increases

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### Spending Increase Statistically Significant From Early 1970s Onward



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### Spending Increase Persists Controlling for Physical and Human Geography



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#### Spending Increases in Almost All States, Controlling for Geography



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### Part 2: What Explains This Increase?

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### What Explains this Increase?

We look at hypotheses with

- 1. Little support in the data
- 2. Some support in the data
- 3. Weak or insufficient evidence to draw conclusions

#### How Do We Measure Impact on Change?



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### 2.A. Hypotheses With Limited Support in the Data

#### Hypotheses with Limited Support in the Data

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- Geographically difficult segments built later
- Time invariant features
- Per-unit input prices: labor, material and land
- Changes in federal Interstate standards

### Interstate Spending Per Mile, Indexed to 100 in 1961



### Materials Prices are Roughly Flat Over the Period



#### Wages Are Flat, Too $\rightarrow$ Input Prices Cannot Explain Increase



### 2.B. Hypotheses With Some Support in the Data

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• Citizen voice

### Baseline: Spending per Mile Increases by \$7.3 Million, 1970 Onward



### Controlling for Income Reduces Spending Increases by Half



### Controlling for Housing Value Reduces Spending Increases by Half



### Controlling for Income and Housing Value Explains All the Increase



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#### Highway Miles Get More Stuff that Costs Money: Here Wiggliness



Similar pattern for number of lanes and bridges per mile

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# Citizen Voice

- Rise of institutions that allow for greater citizen voice in government
- Date to late 1960s and early 1970s
- An amalgam of the environmental movement, civil rights movement, and growing homeowner organization
- Plus changes in judicial doctrine and statute give citizens more tools to challenge government decisions
- Key dates include
  - 1970: National Environmental Policy Act mandates environmental review
  - 1971: Overton Park v. Volpe increases ability to challenge federal agency discretion via courts

#### If Increase in Citizen Voice Plays a Key Role We Expect

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• Elected officials more responsive to citizens after 1970

#### Very Little Use of "Environ..." Near "Interst..." in 1950s Number of Times Stem "Environ" Appears within 100 Words of "Interst" Divided by Number of "Interst"



#### Use of "Environ." Near "Interst..." Rises with NEPA Passage Number of Times Stem "Environ" Appears within 100 Words of "Interst" Divided by Number of "Interst"



#### Prevalence of "Environ.." Near "Interst..." Remains Permanently Elevated Number of Times Stem "Environ" Appears within 100 Words of "Interst" Divided by Number of "Interst"



### 2.C. Hypotheses With Inadequate or Insufficient Evidence

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### Baseline Increase of \$7.3 Million per Mile



### Measures of Government Quality Unrelated to Spending Increase



### Measures of Labor Strength Unrelated to Spending Increase

Baseline
Has State Env. Protection Act
Land Use Cases per 10k People
Bond Score
Num of Local Governments
Right to Work Law
Share Unionized
Share Voting Dem. Pres. Candidate
2 4 6 additional spending per mile, \$2016 millions

# In Sum

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This knowledge helps us weigh benefits of infrastructure against substantial costs