



# ***Broadband and Economic Growth***

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# Outline

- Does the United States have a broadband problem?
- Does broadband stimulate jobs or economic growth? If so, how?
- Does broadband stimulus money create jobs or economic growth?

# Problem?



“It is unacceptable that the United States ranks 15th in the world in broadband adoption. Here, in the country that invented the Internet ...”

Pres. Elect Barack Obama 12/7/08



Problem?

## OECD Ranking

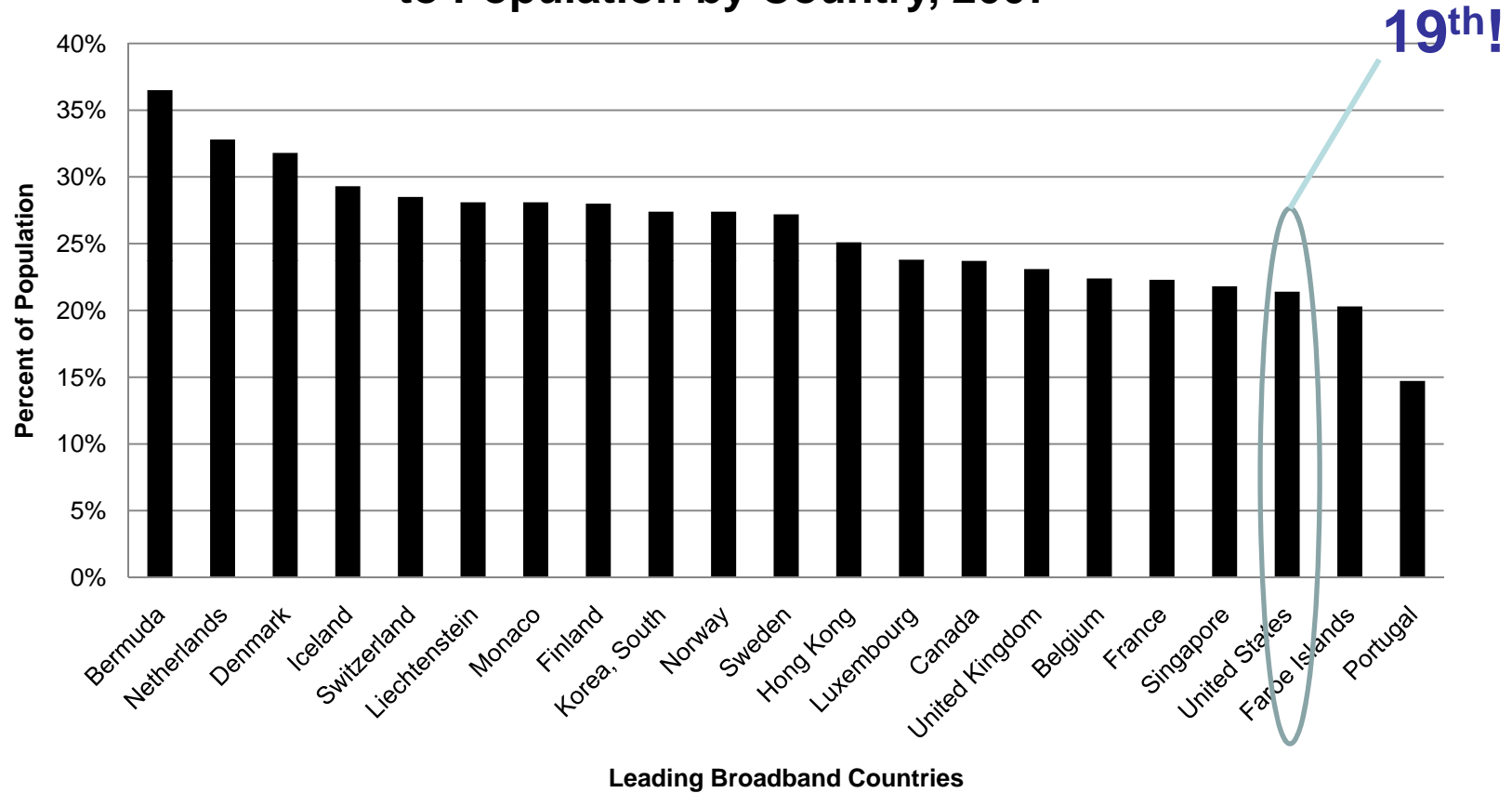
- Measures broadband subscribership per 100 inhabitants
- The U.S. ranks 15<sup>th</sup> among 30 countries (June 2008).

Problem?

But actually, we are not even that high  
when non-OECD countries are included

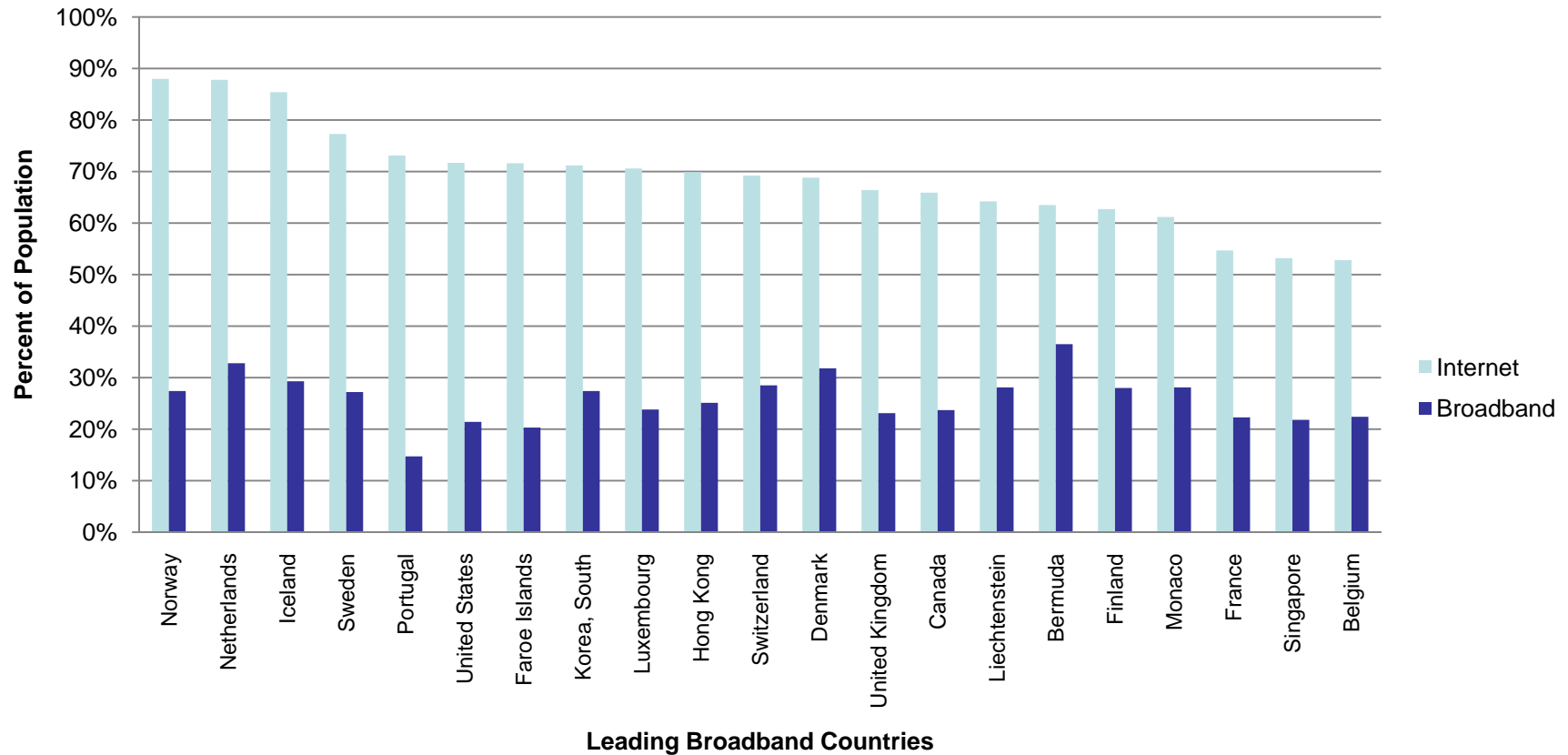
# Problem?

## Broadband Rankings Based on Subscriptions Relative to Population by Country, 2007



# Problem?

## Internet and Broadband Subscriptions Relative to Population by Country, 2007



# Problem?

## Observations

Only 12 countries make both lists

Those making both lists are

- Asian (2)
- European (8)
- Islands (3)

Top 20 Internet  
Antigua & Barbuda  
Australia

Top 20 Broadband

Belgium  
Bermuda  
Canada  
Denmark

Denmark  
Falkland Islands  
Faroe Islands

Faroe Islands  
Finland  
France

Greenland  
Hong Kong  
Iceland  
Japan

Hong Kong  
Iceland

Korea, South

Korea, South  
Liechtenstein

Luxembourg

Luxembourg  
Monaco

Netherlands  
New Zealand

Netherlands

Norway  
Portugal

Norway

Sweden  
Switzerland

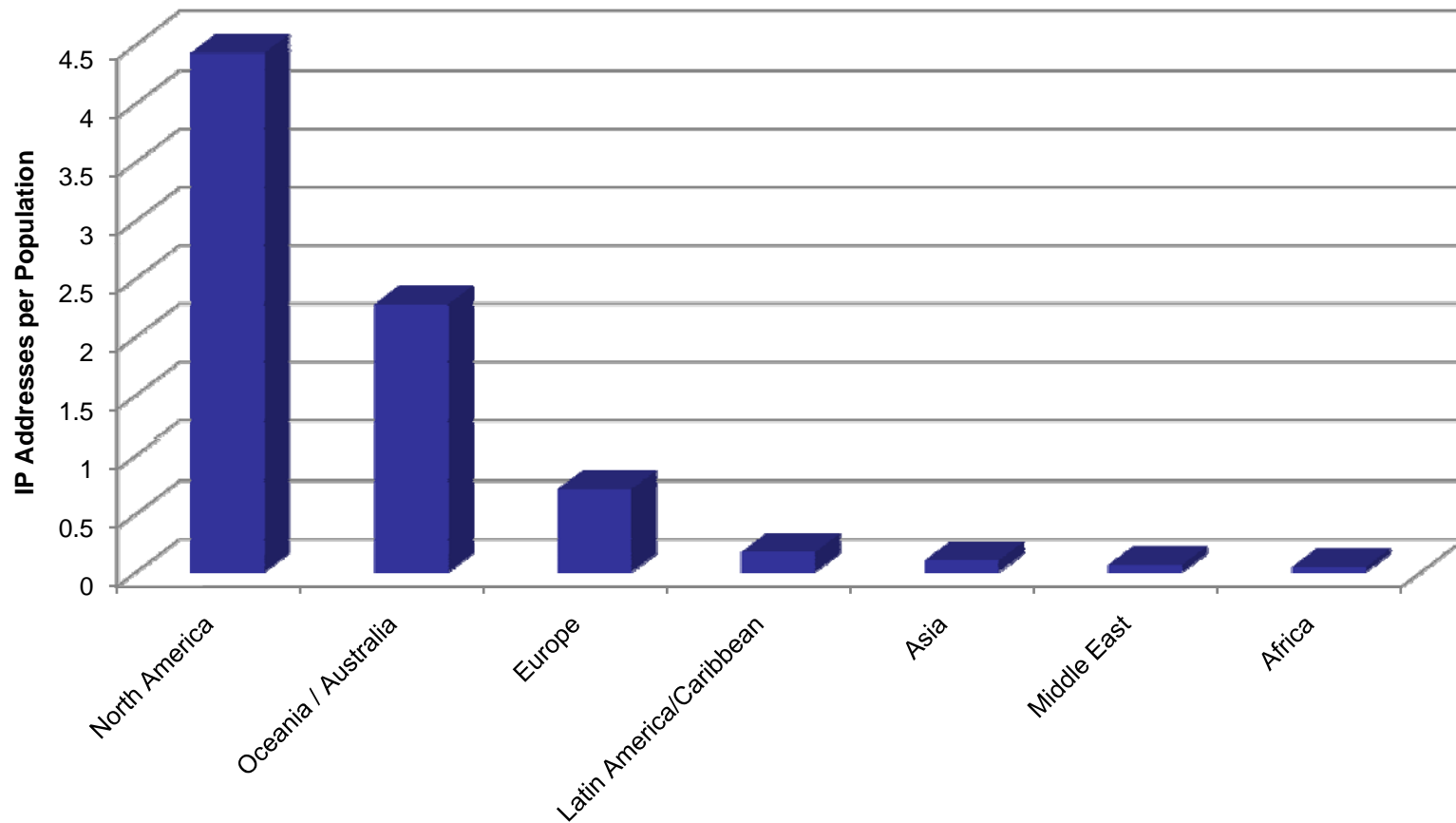
Singapore  
Sweden  
Switzerland

Taiwan  
United Kingdom  
United States

United Kingdom  
United States

# Problem?

## IP Address Density, 2007





Problem?

# The OECD Numbers have Problems

- Wallsten (2008)
  - Separate business/residential; missing connections; household size; inconsistent metrics; actual vs. advertized speeds
- Ford, Koutsky, and Spiwak (2008)
  - Broadband efficiency index; demographics explain most of the penetration

# Problem?

## Connections per Population is a Misleading Ratio

- Households, not individuals, are the main purchasers of broadband connections
- So household size skews ratios
- Even if every household in the U.S. had broadband, we would still be ranked about 15<sup>th</sup> (Ford, 2009)



Growth?

# Does broadband promote jobs and economic growth?

- Shift jobs from one area or sector to another
  - But not create jobs on net
- Does promote economic growth

## U.S. Study Results

- Gillett et al. 2006
  - Broadband  $\Rightarrow$  job growth, number of businesses, property value. No wage impact.
- Crandall et al. 2007
  - Broadband  $\Rightarrow$  more jobs and increased GDP, particularly in the service sector, such as finance, real estate, and educational services.
  - 1.0% increase in state broadband penetration yields approximately 300,000 jobs
    - magnitude of job impact increases over time



Growth?

# Connected Nation and ConnectKentucky

- Connected Nation (2008)
  - Applying Crandall et al. (2007) found 2.4 million U.S. jobs created or retained
  - Adds savings from health care, less travel time, reduced pollution, and online transactions
- Shideler et al. (2007) ConnectKentucky
  - Broadband availability contributes to employment growth
  - Only accommodations and food services realized reduced employment
  - Too much or too little broadband infrastructure saturation portends lower returns on investment



Growth?

## Lake County, Florida

- Ford and Koutsky (2005)
  - Impact of municipally owned broadband systems on economic growth. Comparisons to other counties.
  - Compares three years prior to and the three years after 2001, the year the broadband network was first used extensively throughout the county
  - Findings suggest 128% growth in gross sales per capita
    - Omits differing impacts of 9-11 and 2004 hurricanes



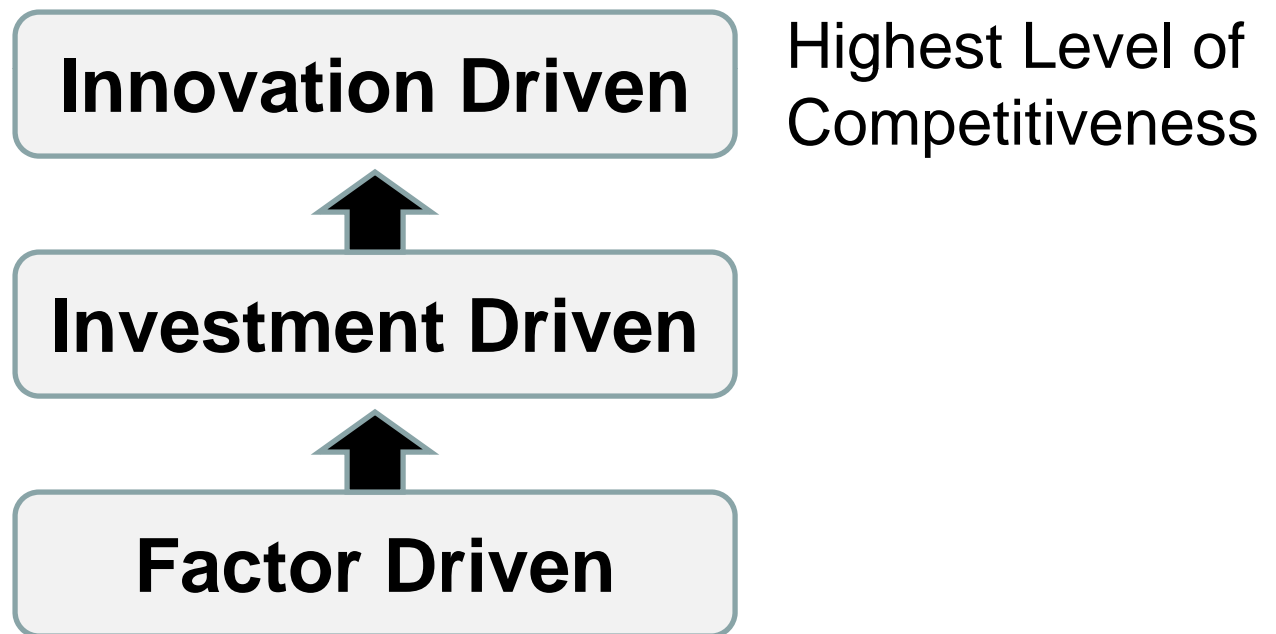
Growth?

## California Study

- Sacramento Regional Research Institute (Van Gaasbeck et al. 2007)
  - Economic impact of broadband on 39 California counties from 2001 through 2006; 92% of the state population
  - Measures broadband use and not deployment
  - Broadband deployment appeared to contribute to employment and total payroll growth
    - Negative impact on number of physical business establishments

Growth?

# Three progressive stages of competitiveness





Growth?

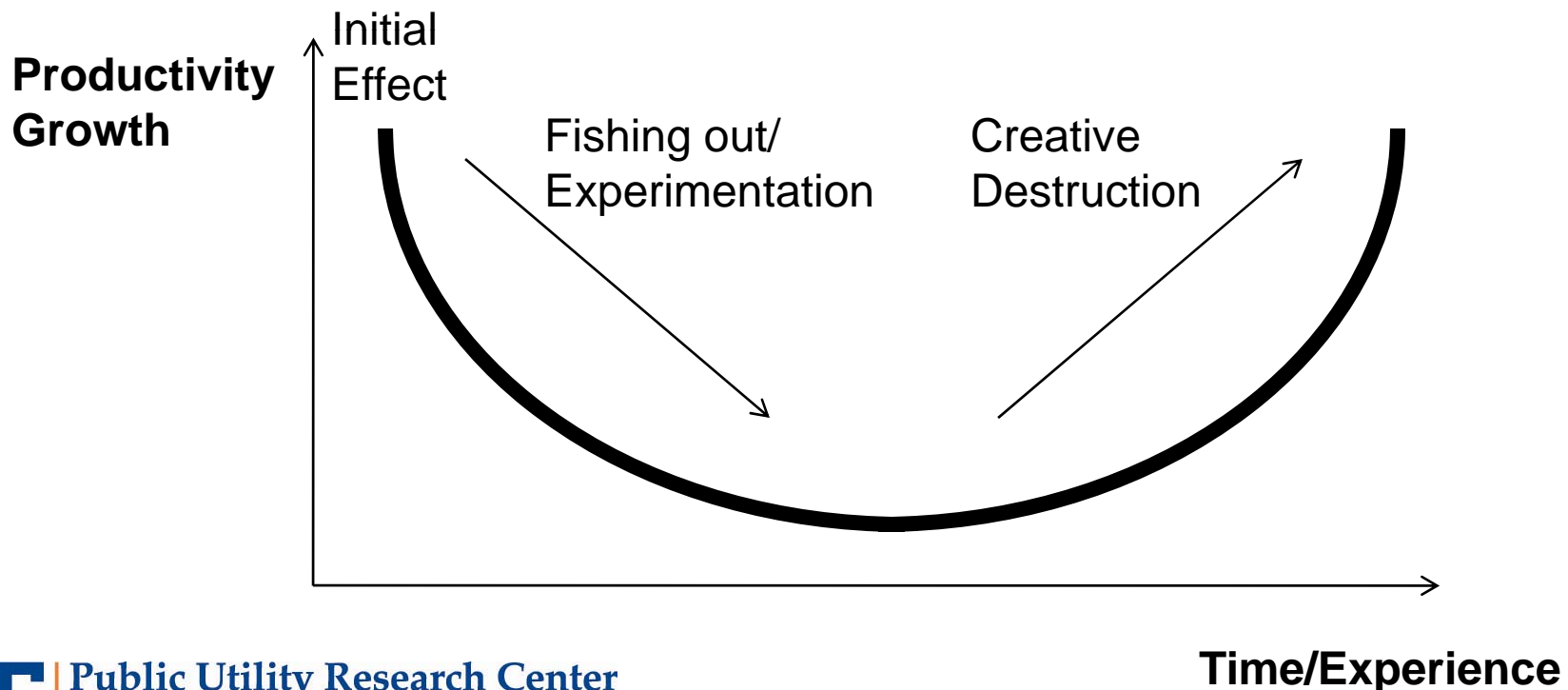
# Short and Long Term Views

- Short term
  - ICT lowers costs, drives investment, increases labor productivity
- Long term
  - ICT enables innovations into new things and new ways that have not existed before

# Growth?

## Van Ark and Inklaar (2005)

- European ICT productivity gains lagged US gains, 1995-2004





Growth?

# Keys to Broadband Centric Economic Growth

- Experimentation with new ways
- Adoption driven by
  - New Value (customer perspective)
  - Economical Cost (producer perspective)
- Destruction of old ways



Stimulus?

## Stimulus Subsidies?

- Managed effectively, will increase broadband penetration
  - Mapping  $\Rightarrow$  awareness  $\Rightarrow$  supply and demand
  - Subsidies change the cost/benefit ratios
- But the subsidies come from somewhere
  - Taxes  $\Rightarrow$  loss of growth elsewhere
  - Borrowing  $\Rightarrow$  loss of growth in future
  - Inflation  $\Rightarrow$  loss of economic confidence



Stimulus?

## US Broadband Challenges

- Policy essential: Whether the U.S. will continue on a path of creative destruction or move to a path that is less adaptive
- Secondary challenge: Broadband policies only relate to pipes or also embrace other dimensions of advanced communications



# Conclusion

- Does the United States have a broadband problem?
  - No, but could improve
- Does broadband stimulate jobs or economic growth? If so, how?
  - Economic growth, primarily through creative destruction
- Does broadband stimulus money create jobs or economic growth?
  - Unlikely to have a net impact, but it will have a measurable impact



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