

# If telecommunication is such a great substitute for travel, why does travel keep increasing?

Internet (ICT)  
has this quality



Implication



Travel impact

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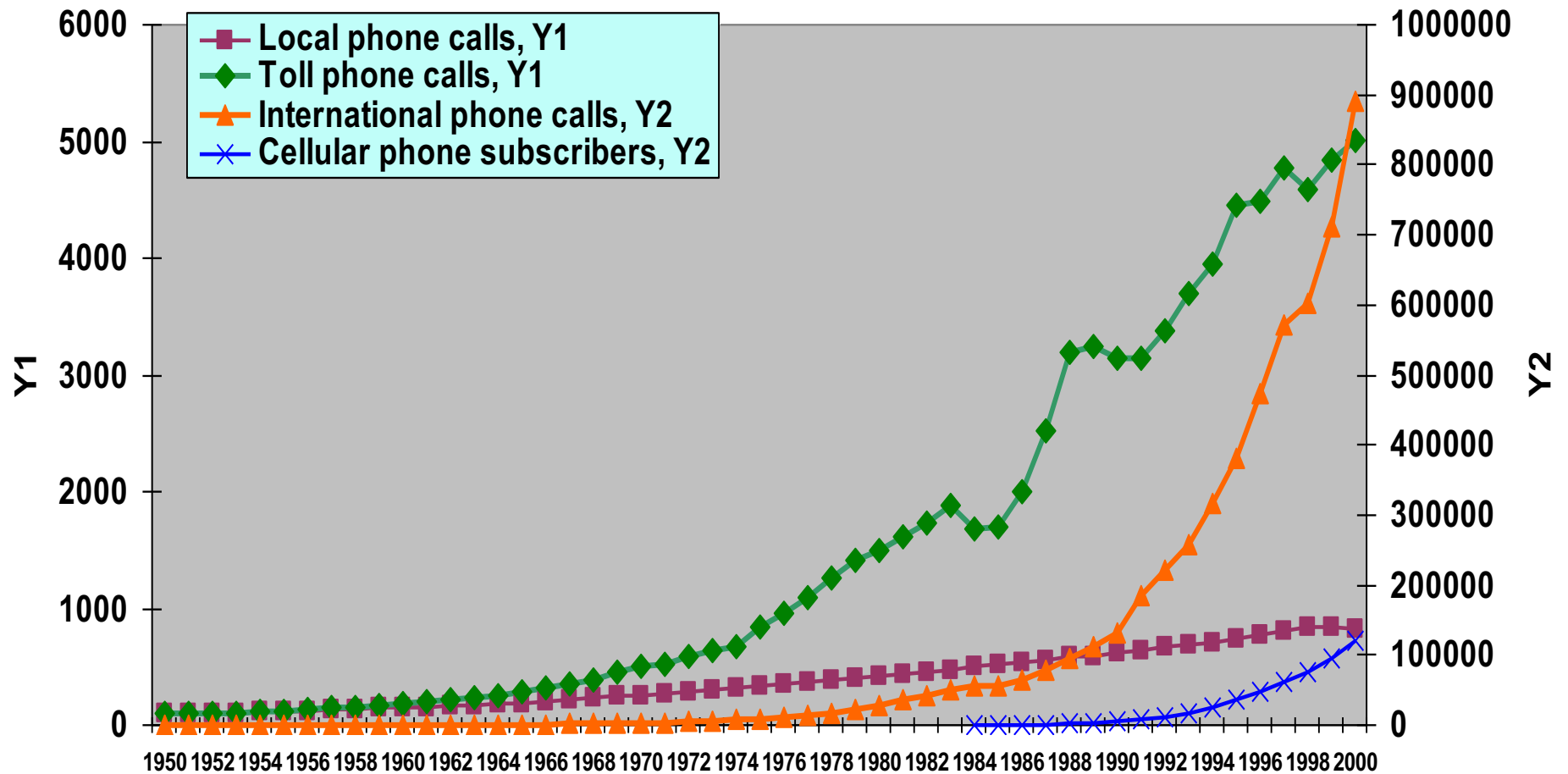
ARPA-E, mini-workshop on telepresence

Washington, DC

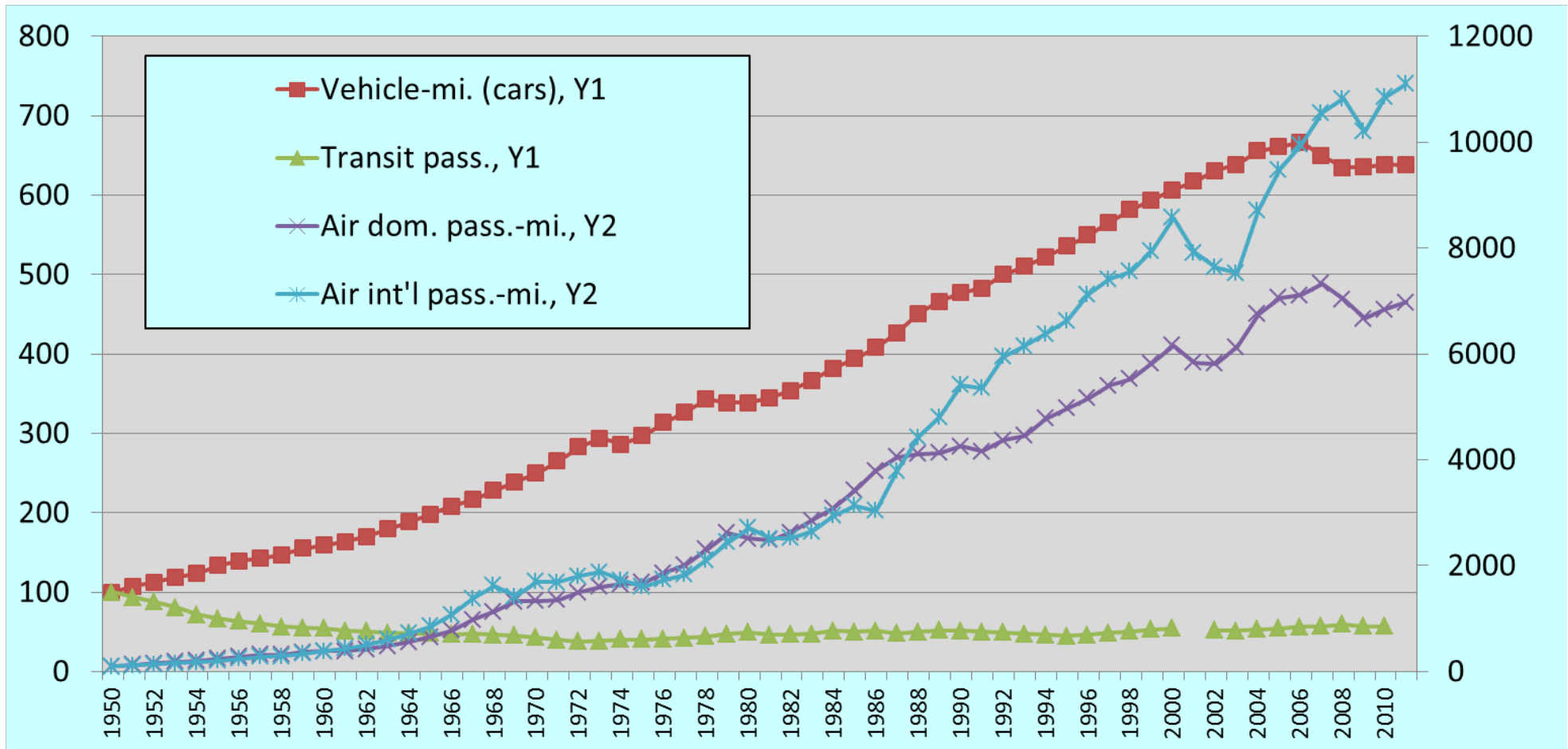
March 21, 2016

# US telecommunication trends

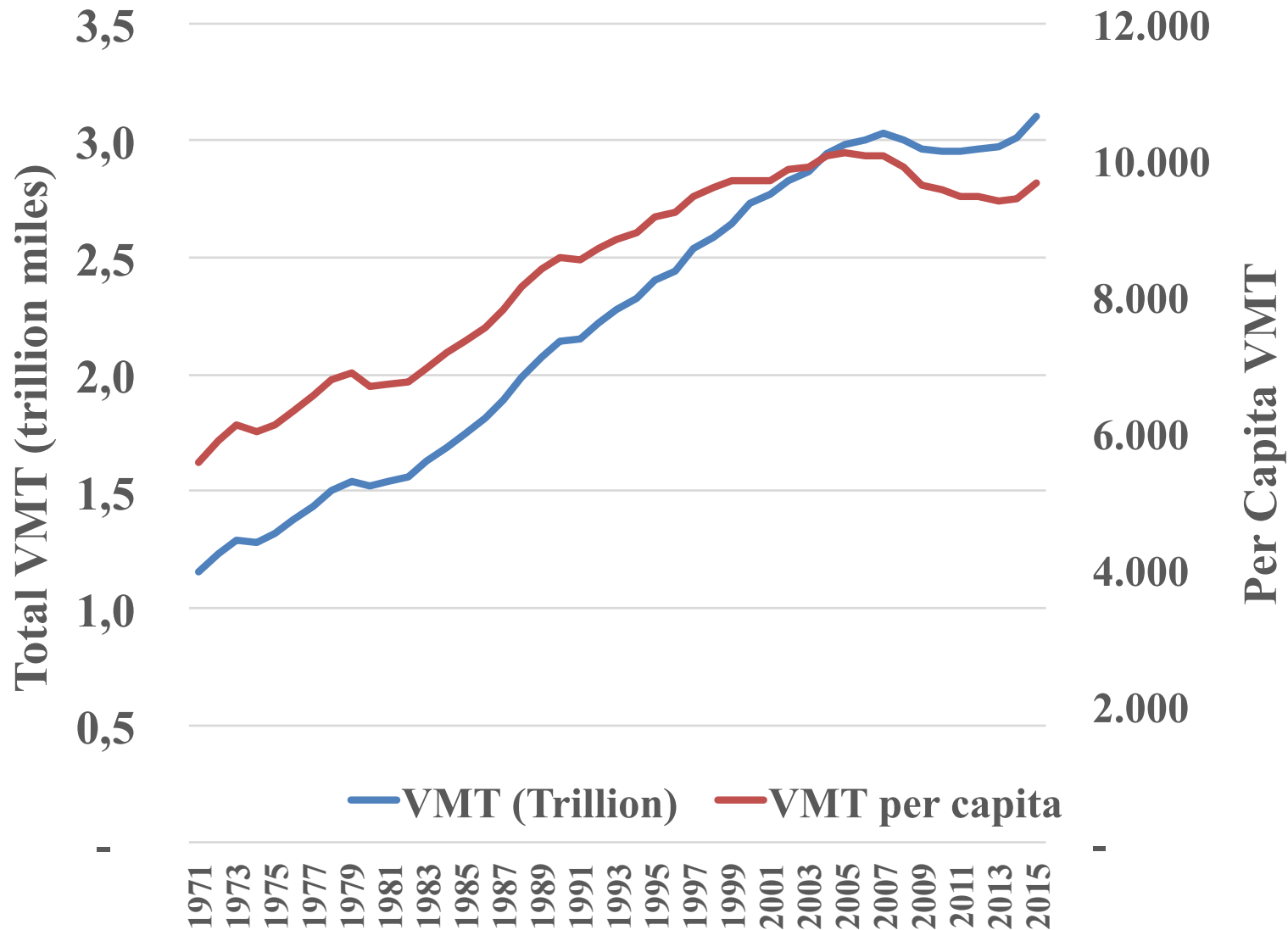
## Telecommunications Trends (1950 = 100)



# US travel trends (1950 = 100)



# US vehicle-miles traveled (VMT)



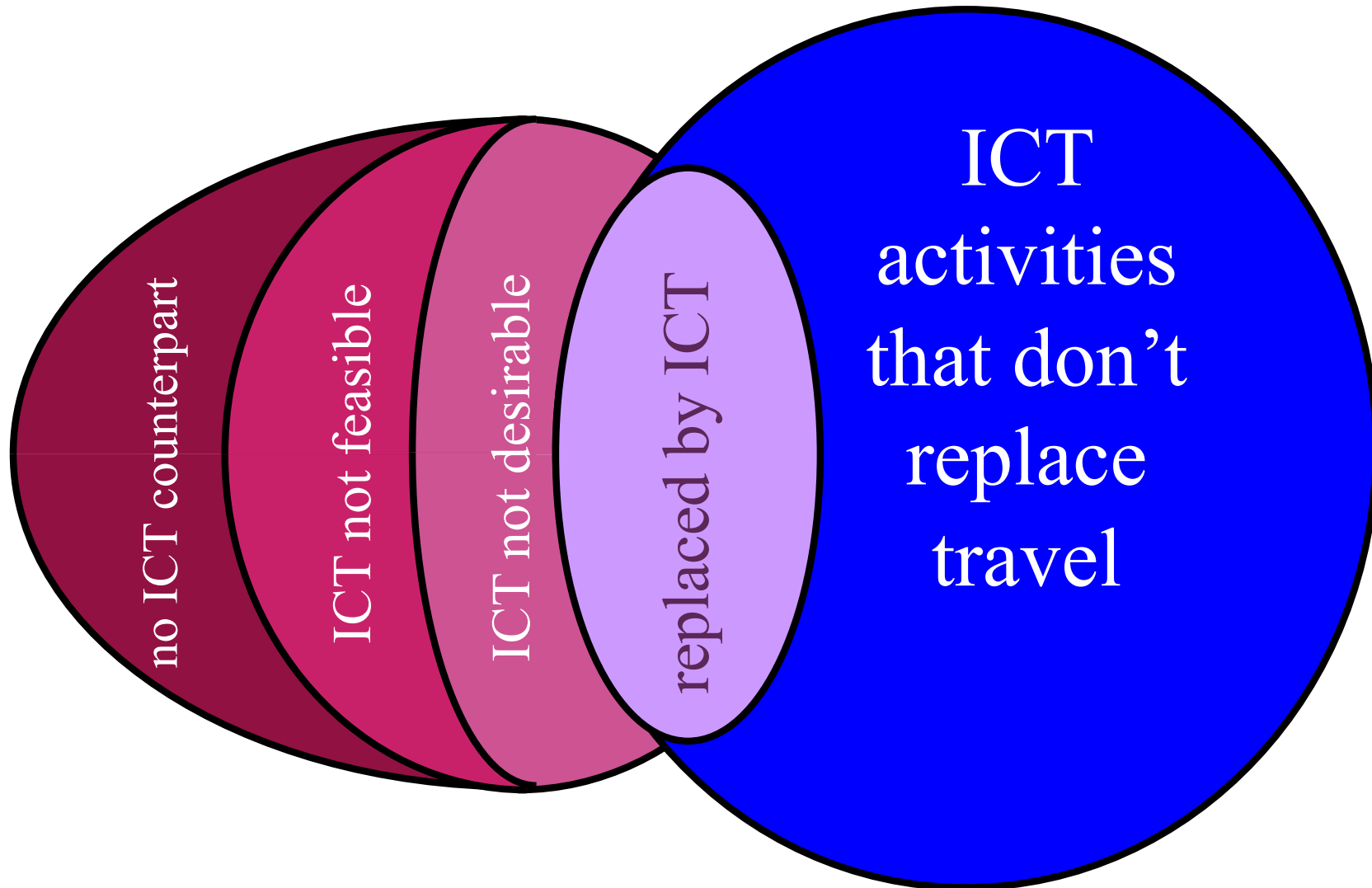
Source: FHWA and Census data; 2015 data based on monthly-updated moving annual-average VMT data from FHWA

# Why hasn't travel declined in step with the increase in ICT use?

4 reasons why ICT doesn't *decrease* travel

4 reasons why it may actually *increase* travel

# Reasons why ICT does not reduce travel

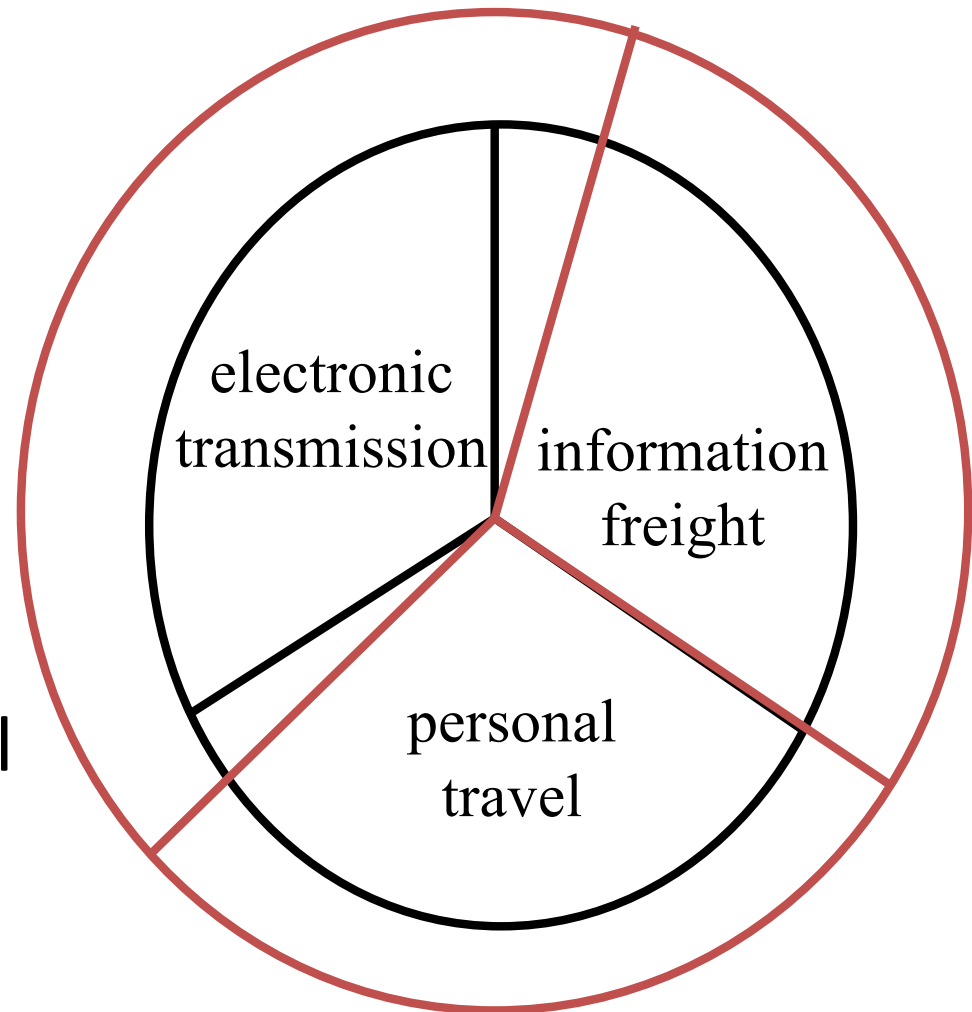


# What are some autotelic motivations to travel?

- curiosity
- adventure-seeking
- variety-seeking
- independence
- control
- conquest
- status
- therapy (mental/physical)
- buffer
- escape
- exposure to the environment/information
- scenery, other amenities
- synergy
- physical exercise
- “need for speed”
- nostalgia, habit

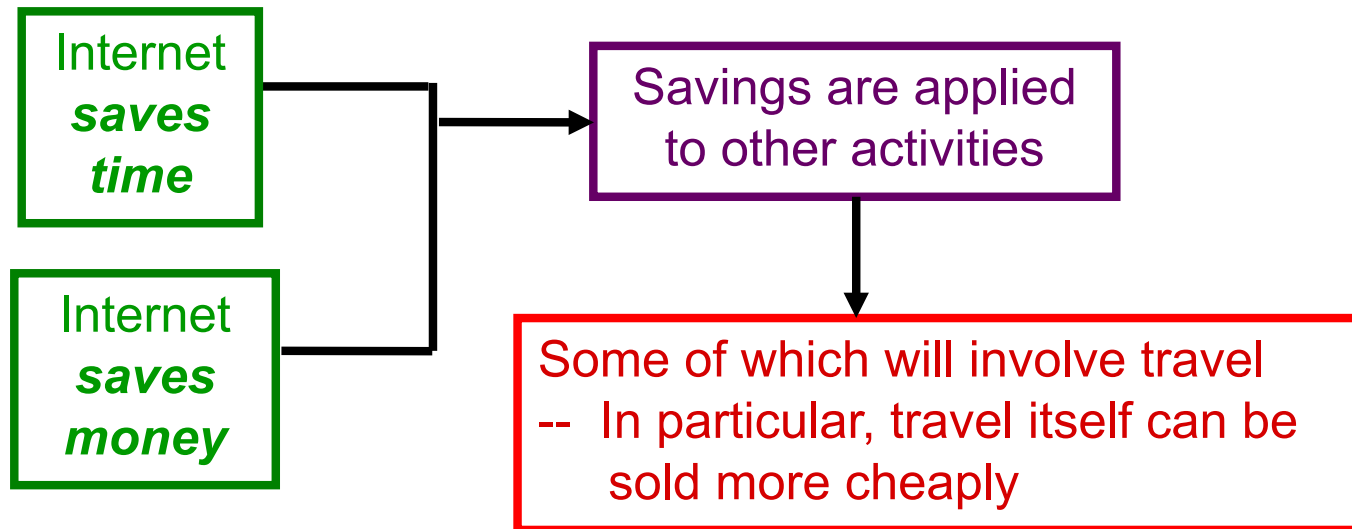
# Most ICT activities don't replace travel

- The travel share of the communications pie *may* be decreasing
- but the whole pie is expanding so much, that
- in absolute terms, travel is still increasing



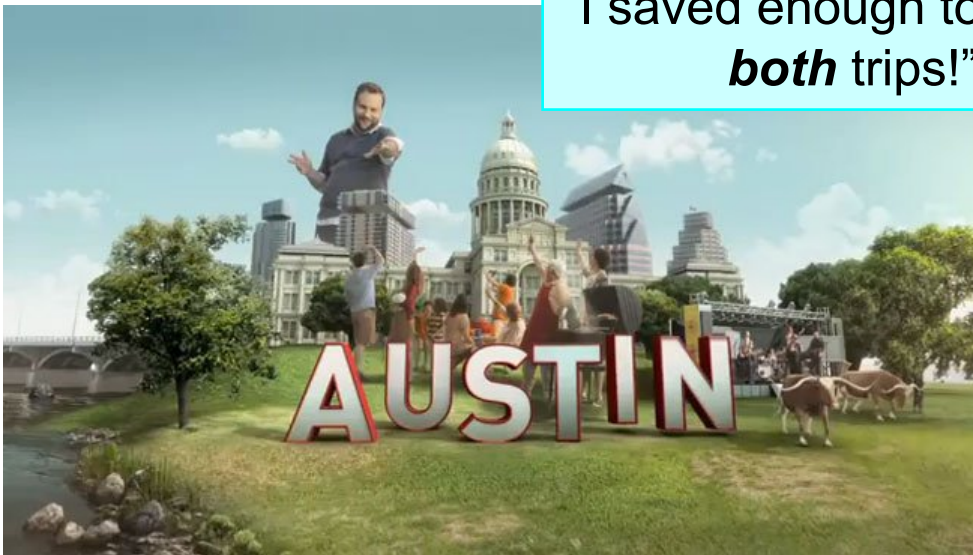


# 1. Time/Money Savings

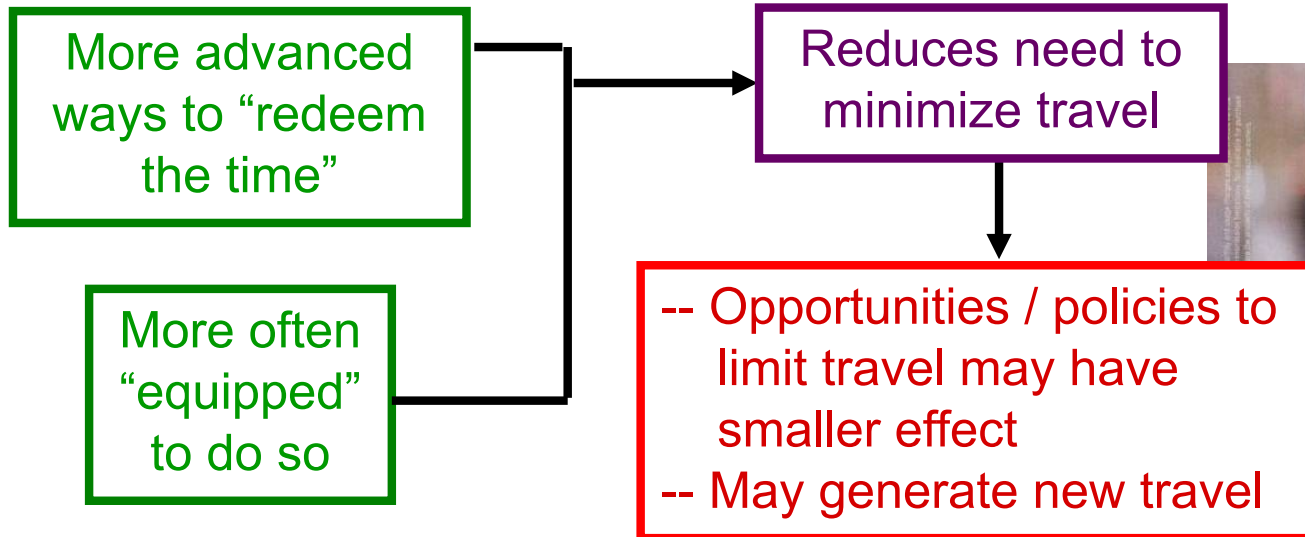


**Hotwire**

“By booking with Hotwire, I saved enough to swing **both** trips!”



# 2. Increased Productivity/Enjoyment of Travel Time



My commute is 25 e-mails long.

You can leave for work at the same time, but get to your desk earlier. With mMode only from AT&T Wireless, you can read your e-mail from the sidewalk and check your calendar from the bus. And you can do it all on the screen of your phone. You'll be the first to reply, not the last to know. So when plans change, you can make new ones.

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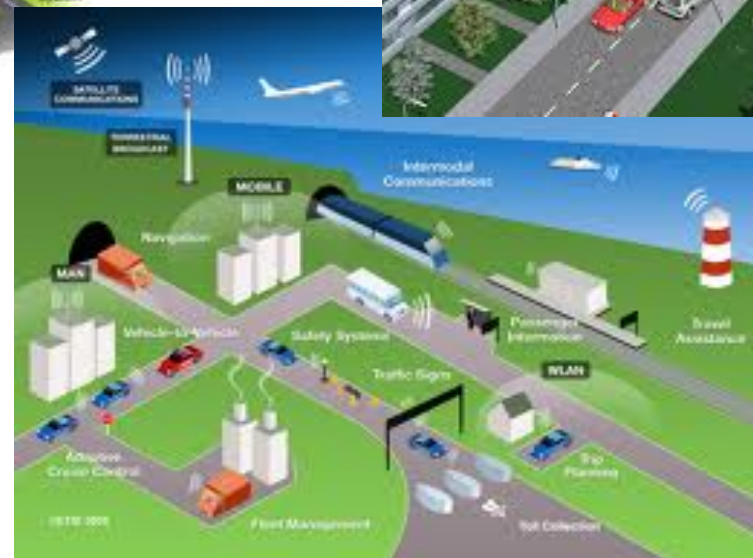
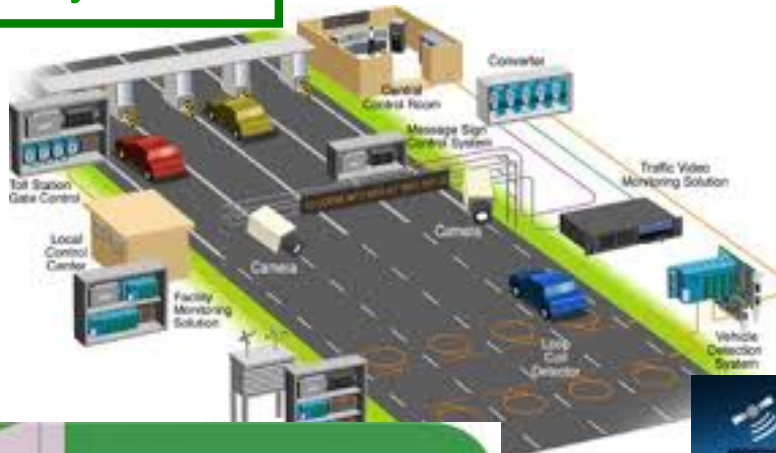
reachout with mMode<sup>™</sup>  
on the wireless service America trusts<sup>™</sup>

# 3. Increased Efficiency of the Transportation System

ICT increases effective capacity of the system

Travel is effectively “cheaper”, therefore more attractive

Demand for travel increases



# Triple convergence

- Besides inducing *entirely new trips*,
- Additional highway network capacity (or lower costs) stimulates three kinds of adjustments to *existing travel*:
  - *Time of travel*: some trips that had moved off-peak now return to the peak
  - *Route*: some trips that had diverted to longer but faster routes now return to the route with increased capacity
  - *Mode*: some trips that had switched from car to transit now switch back
- Congestion may soon be as bad as before, but now accommodating more traffic

# 4. Time- and Space-Defying Information/Transaction Capabilities



## Personal

Greater awareness of/  
accessibility to people,  
places, activities, events,  
information, goods, &  
services

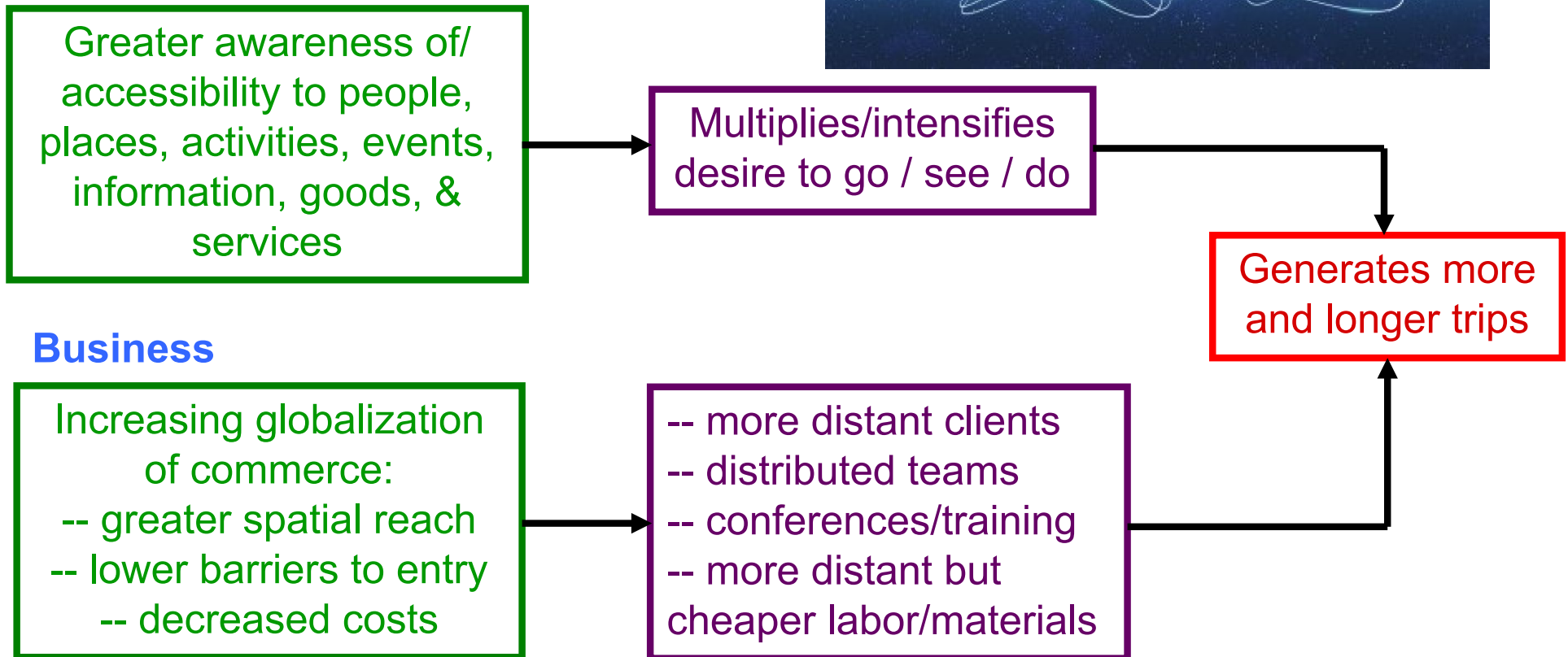
Multiplies/intensifies  
desire to go / see / do

Generates more  
and longer trips

## Business

Increasing globalization  
of commerce:  
-- greater spatial reach  
-- lower barriers to entry  
-- decreased costs

-- more distant clients  
-- distributed teams  
-- conferences/training  
-- more distant but  
cheaper labor/materials



# For more information

- **Mokhtarian, PL** (2009) If Telecommunication is Such a Good Substitute for Travel, Why Does Congestion Continue to Get Worse? *Transportation Letters* **1(1)**, 1-17.
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- **Choo, S & PL Mokhtarian** (2007) Telecommunications and Travel Demand and Supply: Aggregate Structural Equation Models for the U.S. *Transportation Res A* **41(1)**, 4-18.
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