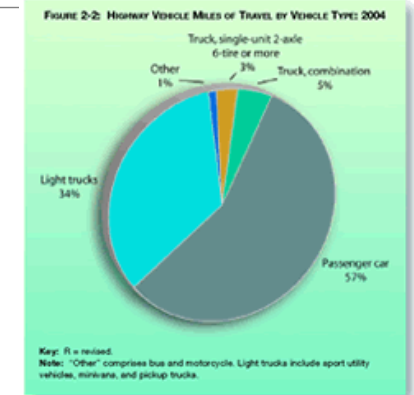
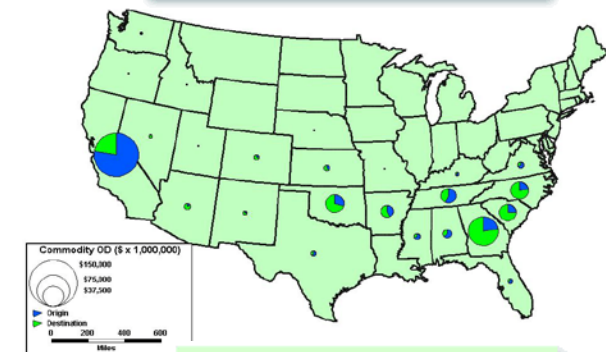
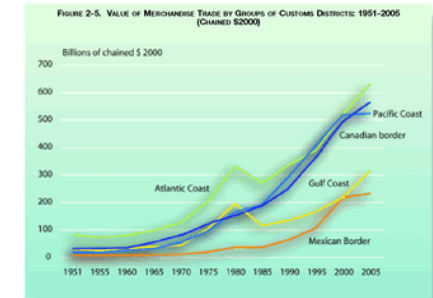
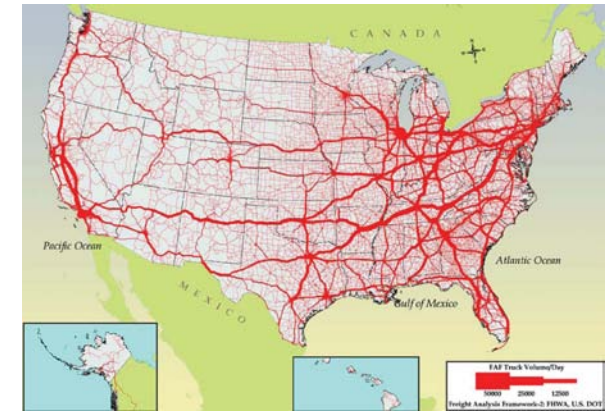


# Needs for Multimodal Long Distance Passenger Travel Data

Tianjia Tang and Rolf R. Schmitt  
FHWA



June 7, 2011



# *The basic context*

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- To understand what transportation does for and to society, we need comprehensive picture of
  - Who travels, where, why, and how
  - What is moved, where, why, and how
- The comprehensive pictures are too big to be taken by any any single source of data
- A comprehensive picture has been developed for freight and a similar picture is needed for passenger travel

# *The importance of long distance passenger travel*

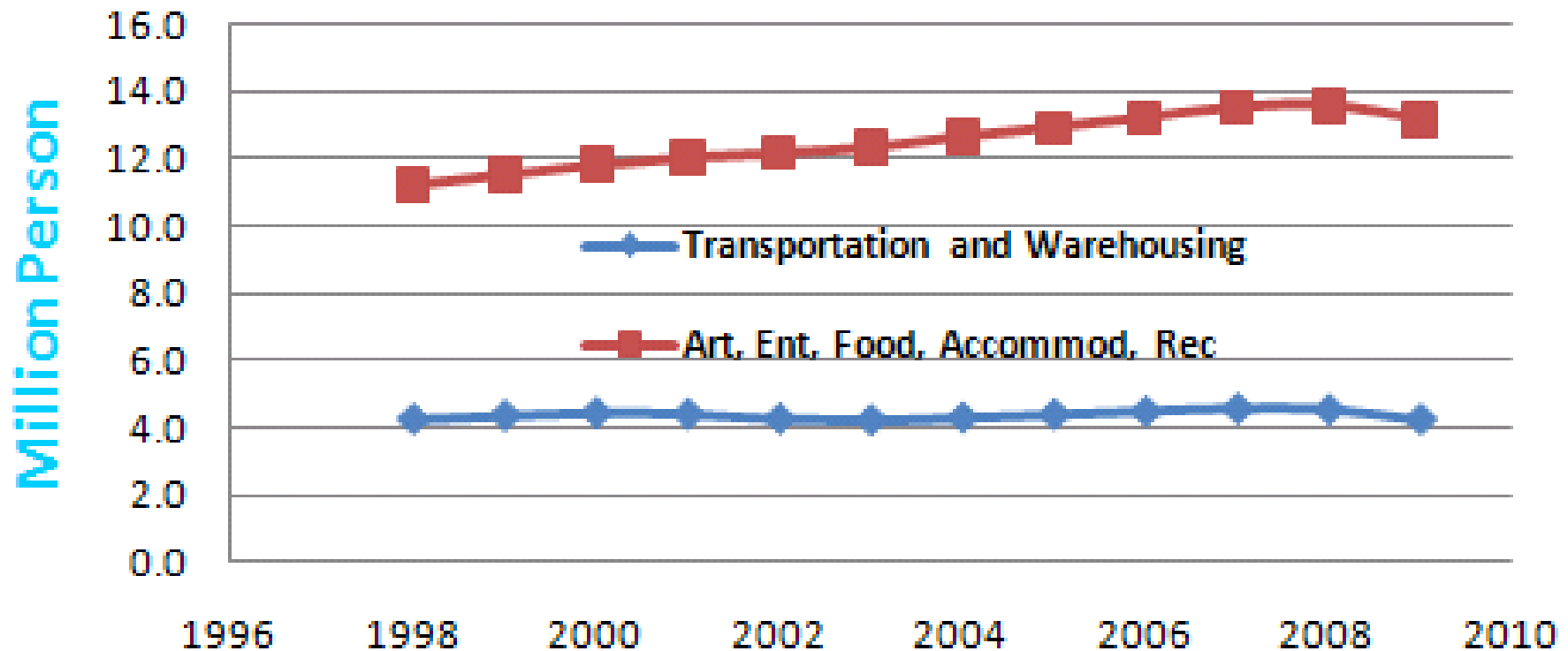
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- Long distance passenger travel
  - Supports the economy by linking businesses
  - Supports the local economy through tourism
  - Links far flung families and friends
- Long distance passenger travel contributes to local congestion, safety exposure, and emissions
- Local congestion impedes long distance passenger travel

# The importance of long distance passenger travel

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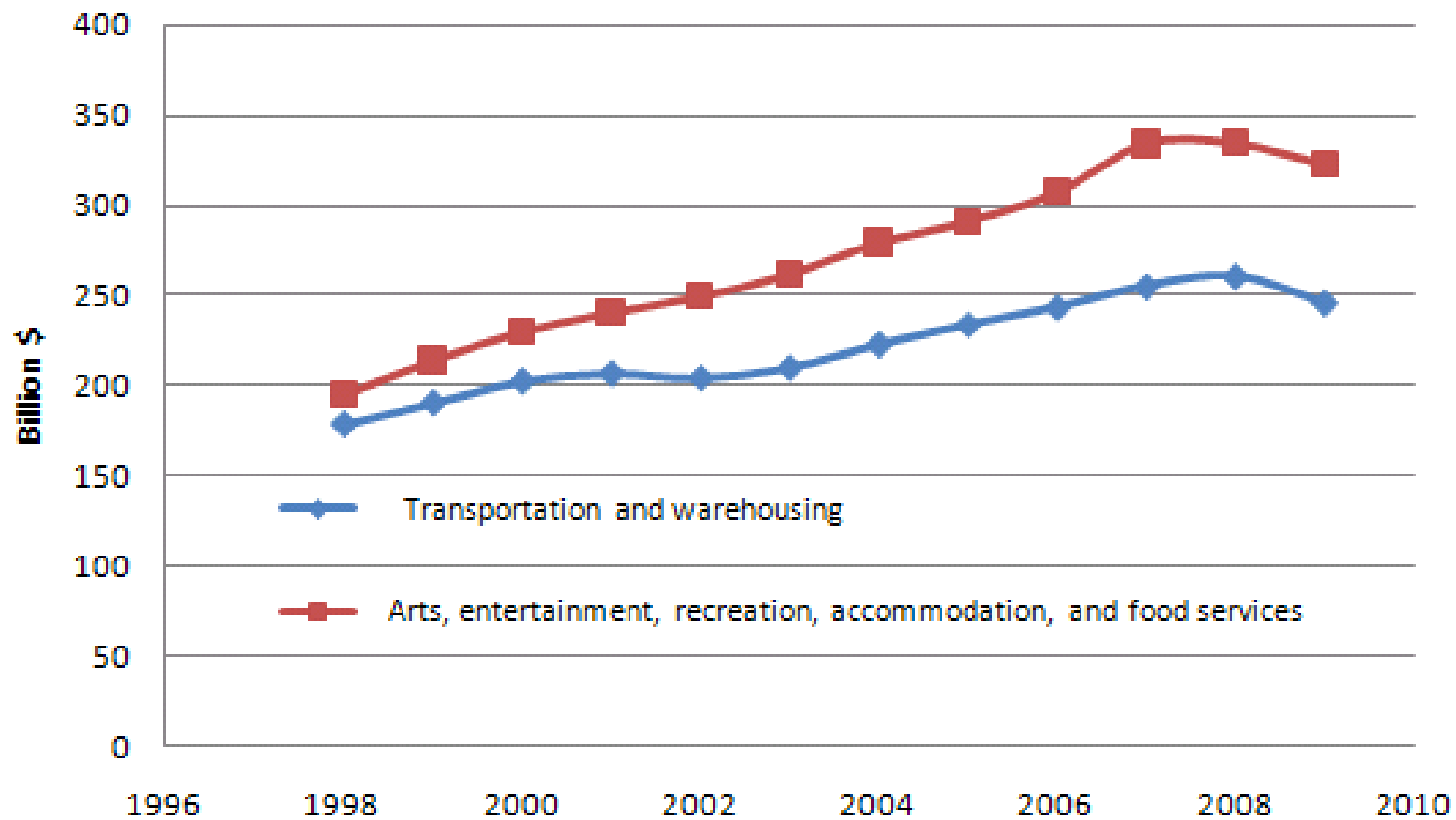
## Employment by Industry



# *The importance of long distance passenger travel*

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## GDP by Industry

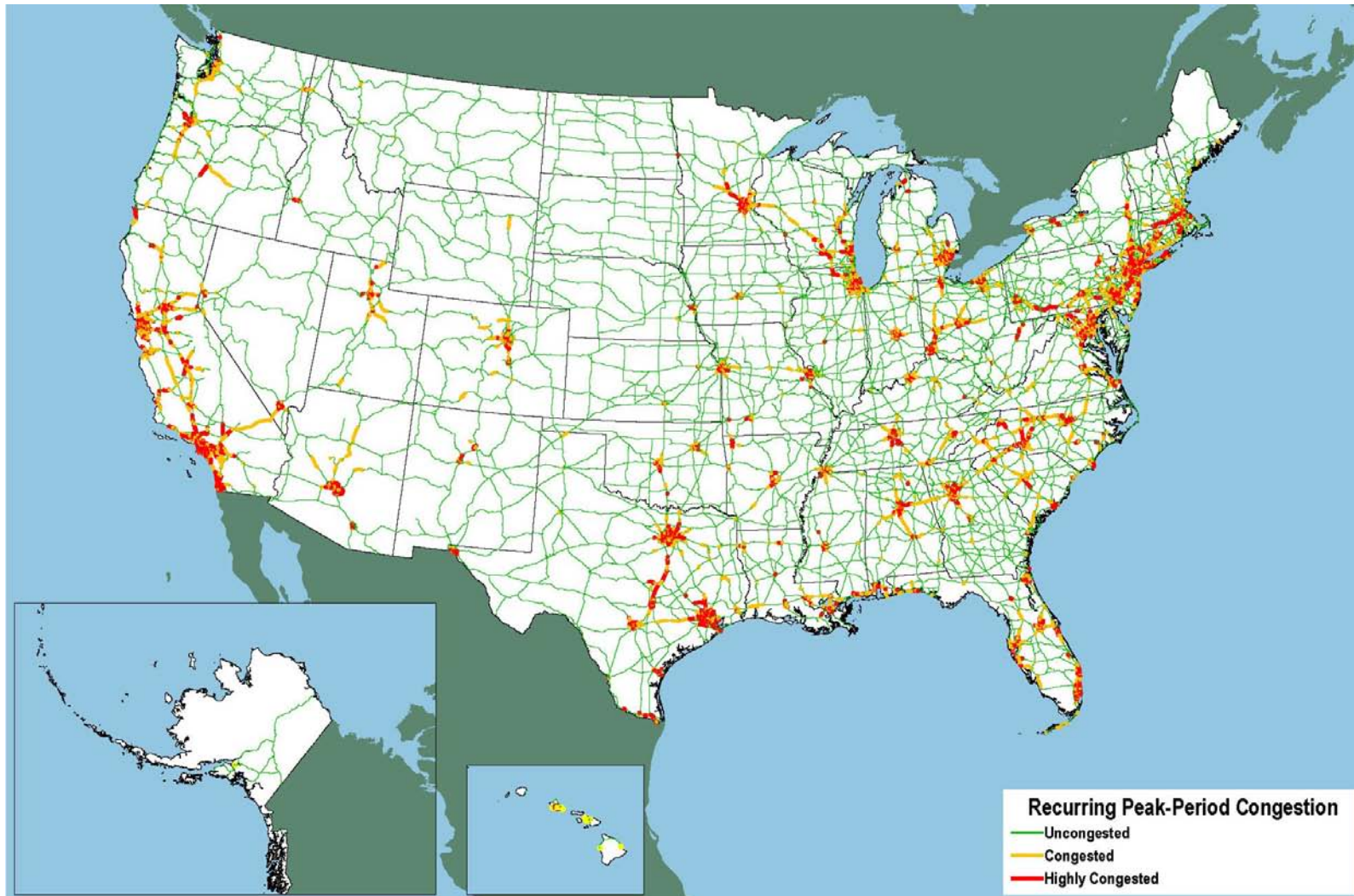


# *The importance of long distance passenger origins and destinations*

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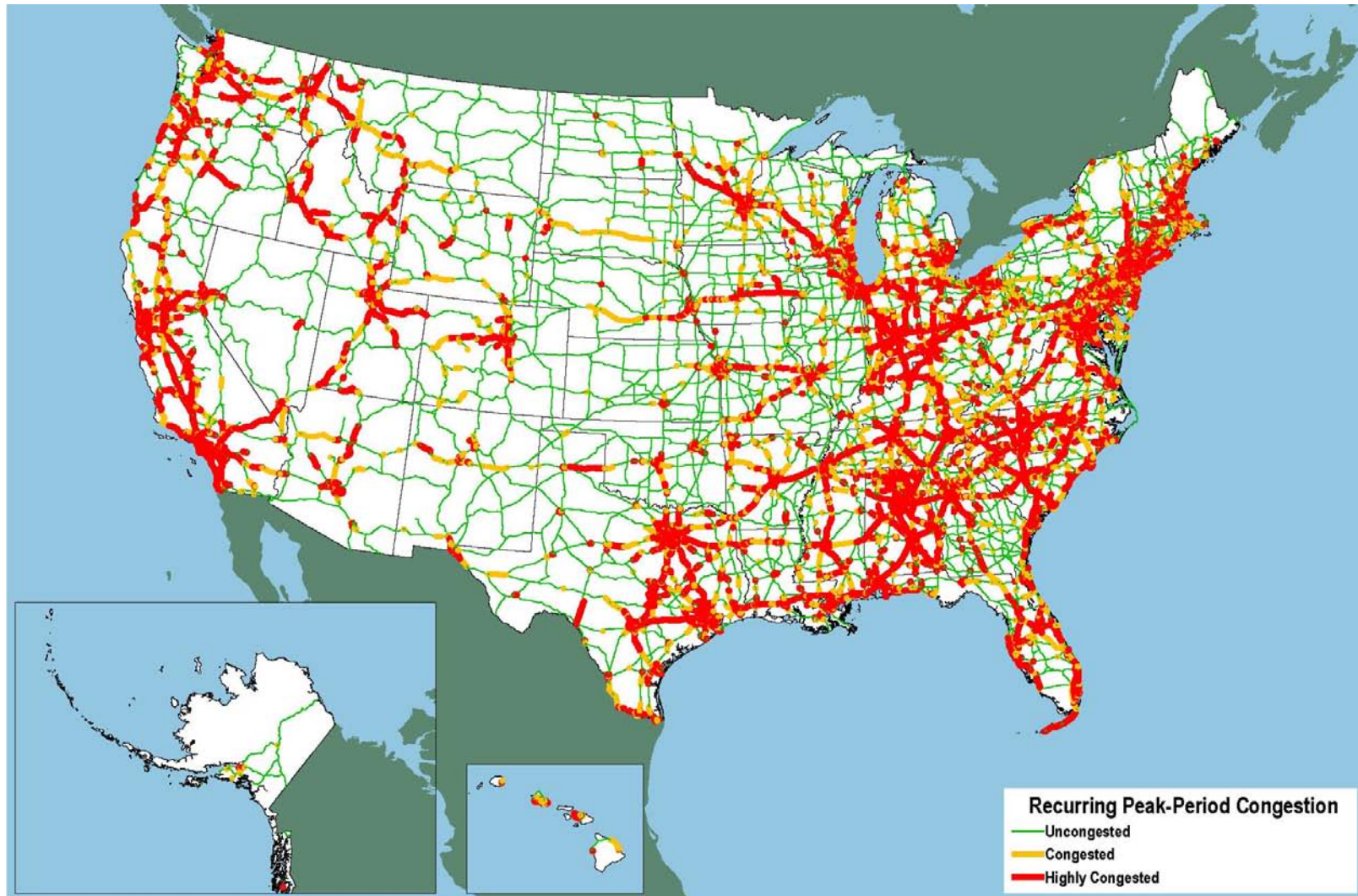
- Defines markets for major transportation facilities and services
  - Airports and air carriers
  - Highways, regular route and charter bus operators
  - Intercity rail
- Defines facilities and corridors of national significance
- Identifies potential congestion on rural portions of intercity links

# Highway congestion: 2007





# Highway congestion: 2040





# *Understanding long distance passenger origins and destinations*

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- To support major investments in
  - Airport capacity
  - Highway capacity, including toll roads
  - High-speed rail
- To analyze potential effectiveness of regulations and potential diversion among intercity modes
  - Safety: the example on child seats on airplanes
  - Emissions

# *Creating the picture of long distance passenger origins and destinations*

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## ● Data from surveys

- National Travel Survey and American Travel Survey
- National Household Travel Survey
- Long distance travel in local surveys

## ● Data from administrative records

- Airline ticket sample
- Amtrak tickets
- Border crossing counts

## ● Data from roadside counts

- Highway Performance Monitoring System

# *Creating the picture of long distance passenger origins and destinations*

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## ● Major gaps

- Origins and destinations of private motor vehicles
- The resurgent intercity bus industry and charter buses
- General aviation
- Domestic travel of international visitors

## ● Untapped data

- Tabulations of credit card expenditures
- Smart phone tracking
- Multi-regional license plate matching
- Electronic toll collection

# *Creating the picture of long distance passenger origins and destinations*

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## ● Integrating existing data with models

- Combining vehicle counts, old geographical patterns from the American Travel Survey, and long distance travel in local surveys for highway travel
- Adding airline and rail data to fill out the modes

## ● Measuring long distance travel in the future

- Surveys to establish the universe and key behaviors for models
- Explore new data sources to fill in details

# *The challenges of surveys*

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- Long distance travel is different from local travel
  - Different trip purposes and different modes of travel
  - Different frequencies: daily versus seasonal or infrequent
- Long distance travel surveys are expensive
  - The American Travel Survey would cost more than \$25 million today
- Can long distance and local travel surveys be measured together?
  - Combining the American Travel Survey and National Household Travel Survey did not work

# *The challenges of data from administrative records and high tech*

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- More observations of a narrower slice
  - Example: GPS can give us speeds and location but little else
  - How do we link narrower slices together without common variables?
- The potential for error
  - Unlike surveys, no standard methods for estimating error
  - How to determine potential bias?
  - How to remove spurious observations without compromising serendipity?
- Privacy and confidentiality



# *Overcoming the challenges is important*

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- Statistics shall save us from doing what we do in wrong places.
  - Abraham Lincoln, speech in favor of public improvements to transportation, U.S. House of Representatives, June 20 1848