Trends in Travel and Implications

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BSCE University of Wisconsin Madison
MSCE & PhD Northwestern University

Greater Cleveland Regional Transit Authority 1980-1984
Dallas Area Transit Authority 1984-1988
Center for Urban Transit Research 1988-present

Numerous TRB and APTA committees
Journal of Public Transportation, Editorial Board
Transportation, Editorial Board
HART Board 1999-2006, 2008 - present
Hillsborough County Metropolitan Planning Organization Board 2003-2005
Produced the long-range travel demand forecast model for the Congressional National Surface Transportation Policy and Revenue Study Commission in 2007

The opinions expressed are solely those of the author and are not meant to represent positions of CUTR, USF, or HART.
Disclaimer

We haven’t been able to predict

- Who will win the next election,
- Which movie or TV show will be popular,
- What will be the hot Christmas gift, or,
- Which stocks (if any) will do well this year.

The level of understanding and the amount of data regarding travel behavior has never been better, yet we shouldn’t apologize for uncertainty regarding future travel forecasts.

But we should plan for uncertainty.
What Share of Travel is for Work?

Less Than 20%
What Share of Florida Households Have No Workers?

About 30%
What is the Average Commute time in Florida?

About 26 Minutes
What Share of Travel is on Transit in Florida?

About 1%
Outline

- Theory of Travel Behavior
- Trends and Future Travel Demand?
- Key Implications
Social and Economic Interactions Create Demand for Travel

Growth in

- Income
- Knowledge

Specialization in

- Employment
- Consumption
- Social relationships
- Time use

Growth in

- Person Travel
- Commerce
- Communication

Polzin, CUTR 2010
Conceptual Framework for Thinking About Travel Demand

Legal/Political Climate  Culture  Technology  Security  Economy

Socio-Demographic Conditions
- Household/Person Characteristics
  - Income/wealth levels and distribution
  - Age/activity level
  - Culture/values
  - Racial/ethnic composition
  - Immigration status/tenure
  - Gender
  - Family/household composition
  - Housing location

Business, Governance, Institutional Context
- Scale of activity concentration
- Economic structure of service delivery

Travel Demand
- Local person travel
- Tourism/long trips
- Freight
- Commercial Travel

Land Use Pattern
- Regional/national distribution
- Density
- Mix of land uses
- Urban form
- Urban design
- Contiguosness of development

Transportation Supply/Performance
- Modal Availability
- Modal Performance
  - Cost
  - Speed/congestion
  - Safety, security
  - Reliability
  - Convenience
  - Image, etc.
  - Multi-tasking opportunities

Travel Impacts:
1. Change trip frequency
2. Change destination
3. Change Mode
4. Change Path

Polzin, CUTR 2009
What is Changing?

Demographic
- aging population
- saturation of female labor force participation
- changing household composition
- reduced immigration
- slowing migration
- exhaustion of suburbanization?

Other
- environment/climate concerns
- growing congestion
- evolving technology impacting travel
- etc.

Economic
- high unemployment
- declining wealth
- polarization in income distribution
- higher fuel prices and price uncertainty
- globalization
- shift from incurring to paying off debt

“Without data, you're just another person with an opinion.”
Incremental Annual Change in VMT

The chart shows the incremental annual change in VMT (vehicle miles traveled) from 1970 to 2010. The changes are measured in millions of miles, with positive values indicating increases and negative values indicating decreases. The chart highlights significant changes in VMT over the years, with notable increases in the late 1980s and early 1990s, and a significant decrease in 2000, followed by a sharp decrease in 2008.
Trip Rate and Length

![Graph showing trip rate and length with data points and labels from 1977 to 2008.](image_url)
NPTS and NHTS Work Trip Walking Mode Shares

Walk is 10.95% of all trips in 2008
Census/ACS Work Trip Percent Walking Mode Share

- Walking Mode Share (2009 ACS):
  - 2009 ACS: 2.86%

- Percent Walking to Work:
  - 1960: 10.40%
  - 1970: 7.40%
  - 1980: 5.60%
  - 1990: 3.90%
  - 2000: 2.90%
  - 2010: 2.86%
Carpooling Mode Share

Percent Carpooling to Work

- 20.4% in 1970
- 19.7% in 1980
- 13.4% in 1990
- 12.2% in 2000
- 10.7% in 2008
Declining Zero-Vehicle Households

Source: CUTR analysis of NHTS, NPTS, U.S. Census Bureau and 2002-09 ACS
Person Miles of Travel per Hour (speed, all trips)
Where Did the VMT Go?
2001-2008

Population……………………………………... +8.7%
Person VMT…………………………………….. -1.6%
VMT/Population………………………………… -10.4%
Trip Rate………………………………………. -4.4%
Trip Length…………………………………….. -6.2%
SOV Share……………………………………… +6.4%
Travel Speed…………………………………… -6.7%
VMT/Capita, Median Income, Household Wealth and Annual Vehicle Sales Percentage Change

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual VMT % Change</th>
<th>Median Income Change</th>
<th>2009 Dollars</th>
<th>Annual Vehicle Sales Change</th>
<th>Household Wealth</th>
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PMT and VMT per Capita by Age

2001 Per Capita VMT
2001 Per Capita PMT
2008 Per Capita VMT
2008 Per Capita PMT

59
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
90+
### Socio-Demographic Issues

- Aging population
- Different young adult behaviors
- Locked in homes/less mobile
- Income/wealth impact

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#### Conceptual Framework for Thinking About Travel Demand

| Socio-Demographic Conditions | Business, Governance, Institutional Context |
(123,403),(508,776)

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Polzin, CUTR 2009
System Supply Issues

- Future system supply and speed
- Energy and other costs
Impact of Fuel Prices on Travel

Fuel Price

Fuel Supply

Social, Political & Economic Conditions

Auto Travel Cost:
- Vehicle type
- Trip length
- Occupancy

Transit:
- Availability
- Cost
- Time

Public Attitudes:
- Climate change
- Energy Independence
- Environment

Trip Rate, Length and Mode

Vehicle Ownership Choice

Location Choices
Land Use Issues

- Work trip commute appears to be well under 20% of trips and travel.
- Nearly 30% of households have no workers or no commuters (*workers work at home*).
- Fees, homestead tax rules, upside down mortgages, lack of portability of mortgages, etc. impede moving to minimize work trip length.
Social, Professional, and Commerce Relationships are Less Place Based

- Improved transportation (speed, cost, safety, choice)
- Improved communications
- Shorter tenure (jobs and housing)
- Greater work force participation (social relationships less likely to be made over the picket fence or on the front porch)
- Government/business replacing neighbors as safety net
- Economy of scale factors challenge neighborhood-scale businesses and enterprises. (Technology and government regulation enhance the strength of economy of scale)
Activity Scale and Distribution

- The average size of an elementary school in the U.S. has grown from 155 students in 1950 to 445 in 2008.

- There are 6000 fewer grocery stores in America in 2010 compared to 2001.

- In 1970, there were 34 hospitals per million persons. In 2005 there were 24.

- In 1970, there were 30,800 car dealerships. In 2008 there were 20,770. In 2011 there will be far fewer.
Impact of Density

Future high density residents may not behave as in the past.
Where We Live and Where We’d Like to Live

by community type

Current

City, 31%

Small Town, 26%

Suburb, 26%

Rural Area, 16%

Ideal

City, 23%

Small Town, 30%

Suburb, 25%

Rural Area, 21%

Note: “Don’t know/Refused” responses are not reported

Source: Pew Research Center, January 2009
“They said we need high density to make public transit work. “

“No, they said we need public transit to make high density work.”
Thus Future Travel is:

- Travel Desire
  - Population
  - Real Income
  - Wealth
  - Value of Time
- System Supply
  - Modes
  - Speeds
  - Costs
- Land Use
  - Density
  - Mix
- Energy Costs/
  Other Costs
Thank You

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