

Presentation Overview

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Project Overview

- Part of the Transit Cooperative Research Program (TCRP) Project B-36: *Methods for Forecasting Demand and Quantifying Need for Rural Passenger Transportation*.
- Identifying passenger transportation needs of residents of rural areas.
- Performed a mobility gap analysis for populations in rural households typically underserved by passenger transportation services.

Why Use NHTS Data?

- NHTS only source of national data on travel for households in rural areas.

NHTS National Household Travel Survey
Our Nation's Travel

U.S. Department of Transportation
Federal Highway Administration

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NHTS Data Center

- 2009 NHTS
- 2001 NHTS
- 2001 NHTS Transferability
- 1995 NPTS
- 1990 NPTS
- 1983 NPTS
- Research Datasets

NHTS Data Center

Citation

To recognize the valuable role of National Household Travel Survey (NHTS) data in the transportation research process and to facilitate repeatability of the research, users of NHTS data are asked to formally acknowledge the data source. Where possible, this acknowledgement should take place in the form of a formal citation, such as when writing a research report, planning document, on-line article, and other publications. The citation can be formatted as follows:

U.S. Department of Transportation, Federal Highway Administration, 2009 National Household Travel Survey. URL: <http://nhts.ornl.gov>.

2009 NHTS - Version 2.1, February 2011

Also see [2009 Publications](#) for documentation.

Datasets

File Format	Download Size (MB)	Installed Size (MB)
SAS Windows Binary (.sas7bdat)	102	674
SAS Transport	98	598

Need and Demand

- **Need**
 - Relates to transportation that is required so that individuals can fulfill life needs and participate in society.
 - Independent of the quality of available transportation.
 - Measured in two ways: people and trips.
- **Demand**
 - Number of trips that will be made using a transportation service offered at a given price and level of service.
 - Measured in trips.

Need – Population Based

- Number of persons residing in households with income below the poverty line

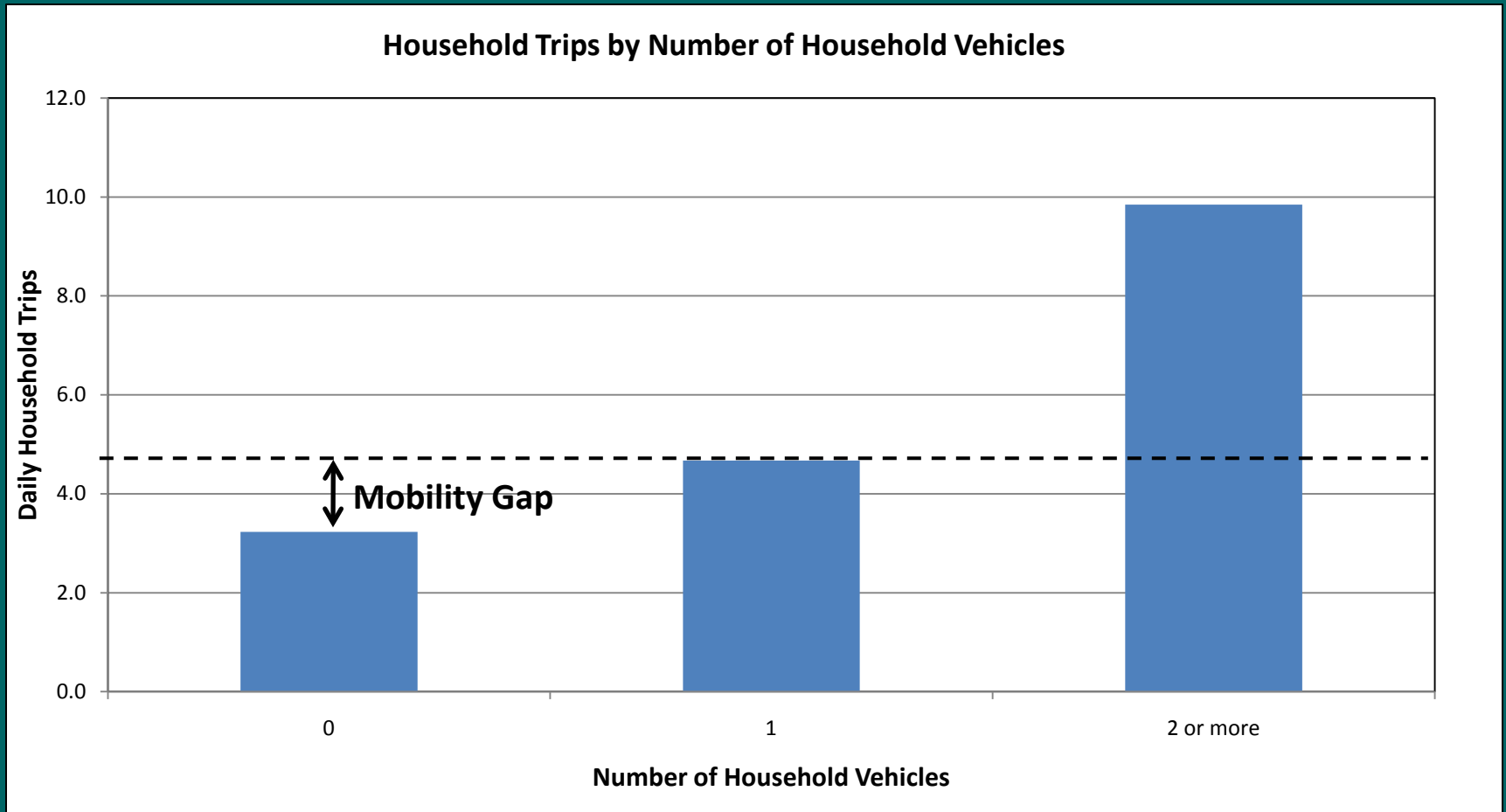
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- Number of persons residing in households owning no vehicle

What is Mobility Gap?

- **Mobility Gap** - difference between the number of trips made by persons residing in households with access to a personal vehicle and those without.
 - Measured in trips per day.
- Represents the full unmet trip need compared to those with relatively free/unrestricted mobility.
- Can be used to estimate the proportion of unmet need that is served or to set goals based on proportion served.

Mobility Gap



Mobility Gap and Need

- **Mobility Gap** shows the transportation **needs** of individuals in the geographic locations analyzed.
- **Need** – the number of people in a given geographic area likely to require passenger transportation service so they can fulfill life needs and participate in society.
- Mobility gap can be used to measure need.

Analysis

- Tested if vehicle ownership most appropriate measure of mobility gap.
- Examined trip rates for rural households:
 - All rural households.
 - Age of household residents.
 - Income (as a percent of poverty level).
 - Vehicle ownership.
 - Cross-tabulations - age by income, age by vehicle ownership, etc.
- Nation and 9 Divisions.
- 2001 and 2009 data.

NHTS Data Sets Used

- Household file
- Person file
- Travel Day trips file

Data files	Information included	Record level	ID Variables	Weight variables ^{1,0}
Household file	Data unique to a household, or questions asked once for each sample household. Questions from interview sections: Number of vehicles Person Data, Telephone Data, Type of Residence, Location of Home, Household Income, Education of Household Respondent.	One record per household	HOUSEID	WTHHFIN
Person file	Data determined once for each completed person interview. Questions from interview sections: Age, Driver Status, Race & Ethnicity of Household Respondent Travel to Work, Miles driven, Customer Satisfaction, Born in US, Education, Person Income, Medical Condition, Internet Use.	One record per person	HOUSEID and PERSONID	WTPERFIN
Vehicle file	Data relating to each of the household's vehicles. Questions from interview section: Vehicle Data, Type of Residence, Verified Vehicle Data, Annualized Vehicle Miles, Household Income.	One record per vehicle	HOUSEID and VEHID	WTHHFIN
Travel day trip file	Data about each trip the person made on the household's randomly-assigned travel day. Questions from interview section Person Data, Travel Day Data.	One record per travel day person trip	HOUSEID, PERSONID, and TDTRPNUM	WTRDFIN

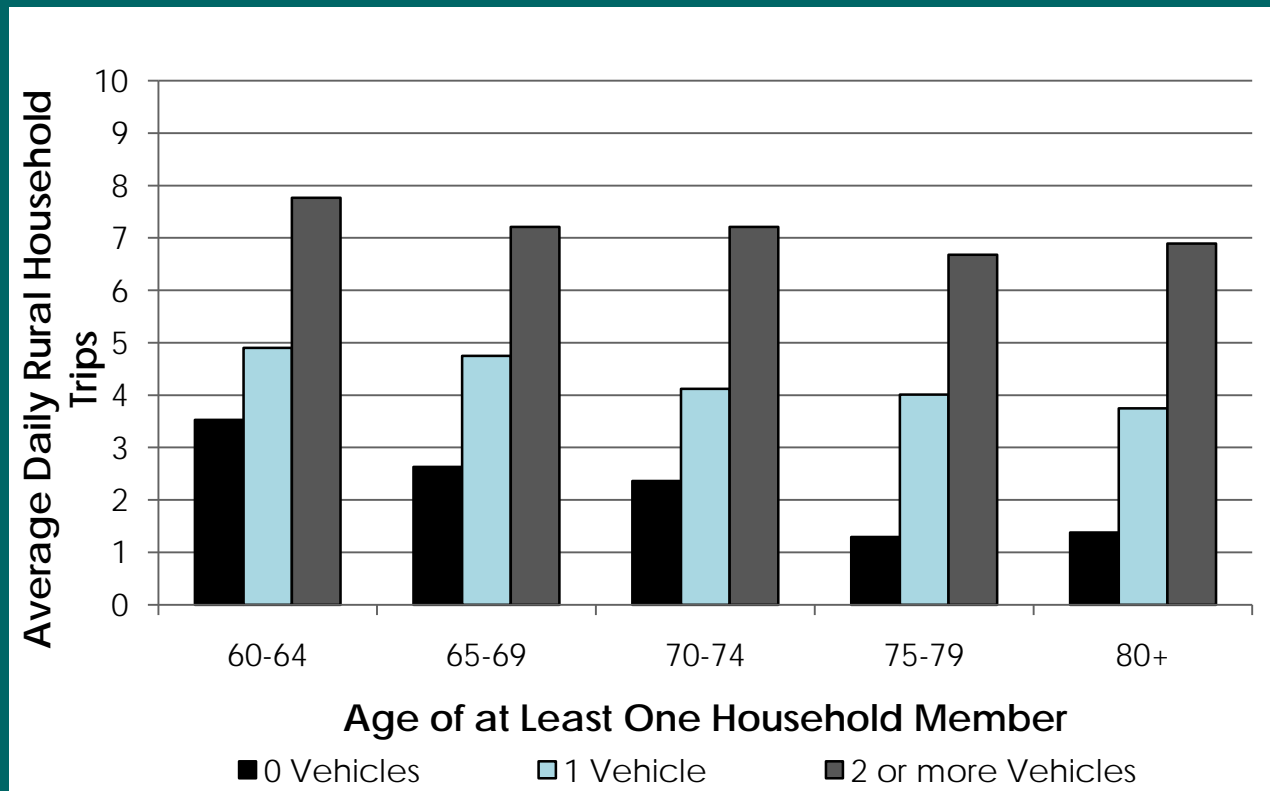
Source: 2009 NHTS User's Guide

Methodology

- Used rural data out of the NHTS data files (URBRUR = 02).
- **Age ranges:** 60-64, 65-69, 70-74, 75-79, 80+
- **Percent of Poverty** calculated separately:
 - Used Census poverty threshold by HH size.
 - Linked poverty threshold to each HH based on the HH size.
 - Percent of poverty = income/poverty level.
 - Imported back into Access to be incorporated with the other tables.
- **Vehicle Ownership:** 0, 1, 1+ vehicles per HH.

Results – Trips by Age by Vehicle Ownership

- Vehicle Ownership is more important than age when assessing need



Source 2001 NHTS data

Results – 2001 Data

Division	States	Trips per Rural Household Per Day		
		Vehicles Available		Gap
		0	1	
National		3.3	5.4	2.1
Division 1:	ME, VT, NH, MA, CT, RI	*	5.3	*
Division 2: Middle	NJ, NY, PA	3.1	5.9	2.7
Division 3: East North Central	WI, MI, OH, IN, IL	3.3	4.9	1.6
Division 4: West North Central	ND, SD, NE, KS, MO, IA, MN	2.3	5.1	2.8
Division 5: South Atlantic	MD, DE, WV, VA, NC, SC, GA, FL	3.1	5.5	2.4
Division 6: East South Central	KY, TN, AL, MS	3.1	4.9	1.8
Division 7: West South Central	OK, AR, TX, LA	3.7	5.2	1.5
Division 8: Mountain	ID, MT, WY, CO, UT, NE, AZ, NM	5.2	6.4	1.2
Division 9: Pacific	WA, OR, CA, AK, HI	3.3	5.8	2.5

Results – 2009 Data

Division.	States	Trips per Rural Household Per Day		
		Vehicles Available		Gap
		0	1	
National		3.2	4.7	1.5
Division 1:	ME, VT, NH, MA, CT, RI	3.3	5.0	1.7
Division 2: Middle	NJ, NY, PA	3.5	4.8	1.3
Division 3: East North Central	WI, MI, OH, IN, IL	2.7	4.1	1.4
Division 4: West North Central	ND, SD, NE, KS, MO, IA, MN	2.4	4.5	1.7
Division 5: South Atlantic	MD, DE, WV, VA, NC, SC, GA, FL	3.2	4.5	1.2
Division 6: East South Central	KY, TN, AL, MS	2.7	4.1	1.4
Division 7: West South Central	OK, AR, TX, LA	2.9	4.9	2.0
Division 8: Mountain	ID, MT, WY, CO, UT, NE, AZ, NM	5.2	6.0	0.8
Division 9: Pacific	WA, OR, CA, AK, HI	3.8	4.9	1.1

Results – 2001 vs. 2009 Data

Division	States	Trips per Rural Household Per Day		
		Gap		Change
		2001	2009	
National		2.1	1.5	-0.6
Division 1:	ME, VT, NH, MA, CT, RI	*	1.7	*
Division 2: Middle	NJ, NY, PA	2.7	1.3	-1.4
Division 3: East North Central	WI, MI, OH, IN, IL	1.6	1.4	-0.4
Division 4: West North Central	ND, SD, NE, KS, MO, IA, MN	2.8	1.7	-1.1
Division 5: South Atlantic	MD, DE, WV, VA, NC, SC, GA, FL	2.4	1.2	-1.2
Division 6: East South Central	KY, TN, AL, MS	1.8	1.4	-1.4
Division 7: West South Central	OK, AR, TX, LA	1.5	2.0	-0.5
Division 8: Mountain	ID, MT, WY, CO, UT, NE, AZ, NM	1.2	0.8	-0.4
Division 9: Pacific	WA, OR, CA, AK, HI	2.5	1.1	-1.4

Conclusions

- Data confirm there is a decline in the daily trip rate for individuals as they age
 - However, the data do not fully support the use of age as a primary indicator of need.
- Poverty and the lack of auto ownership are the more significant indicators of need.

Conclusions

- The NHTS provides data that can be used to assess travel needs for specific populations across the nation and for subregions
- The daily trip rate for rural households lacking cars appears to have been stable between 2001 and 2009
- The daily trip rate for rural households with one car appears to have declined between 2001 and 2009

Questions?

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Thank you!