

# National Household Travel Survey Data for Benchmarking and Transferred Data

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for

The Statewide Peer Exchange, Sep 23-24 2004

*First...*

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# About the National Household Travel Survey

# Survey Overview

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- ✦ **Target Population:** U.S. residents in households (including all ages). There are 69,817 households, 160,755 people and 642,292 un-weighted trips in the dataset.
- ✦ **Survey Method:** RDD list-assisted sample; pre-contact letter with incentive; telephone recruit--travel-diary mail out—telephone retrieval using Computer Assisted Telephone Interviews (CATI)
- ✦ **Information Collected:** All trips for all purposes for all modes on an assigned day for all people in the household. Long-distance trips (over 50 miles from home) for the previous four weeks.

# What is included in the Survey?

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- **Demographic information, worker and immigrant status, general occupation, web-use, etc.**
- **Vehicle information and fuel cost/efficiency**
- **Time of day and purpose for work and non-work travel, mode, occupancy, transit access and egress**
- **“Usual” travel to work matching census, with more detail on work-at-home**

# A few insights... from 2001 NHTS

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## National Household



## Travel Survey

# A Nation of Workers

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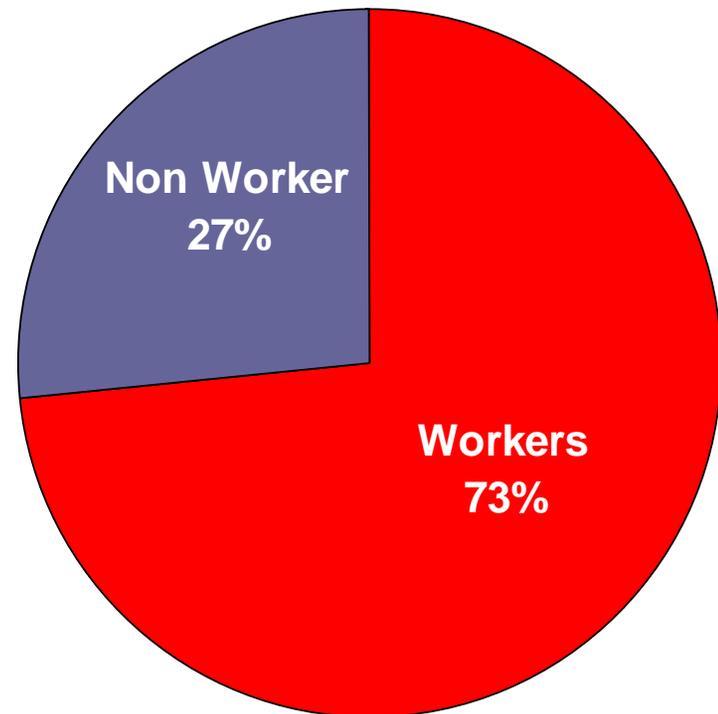
Two-thirds of U.S. adults 16+ are workers (67%)

145 million out of 216 million adults are workers

Workers travel more than non-workers

73 percent of total miles

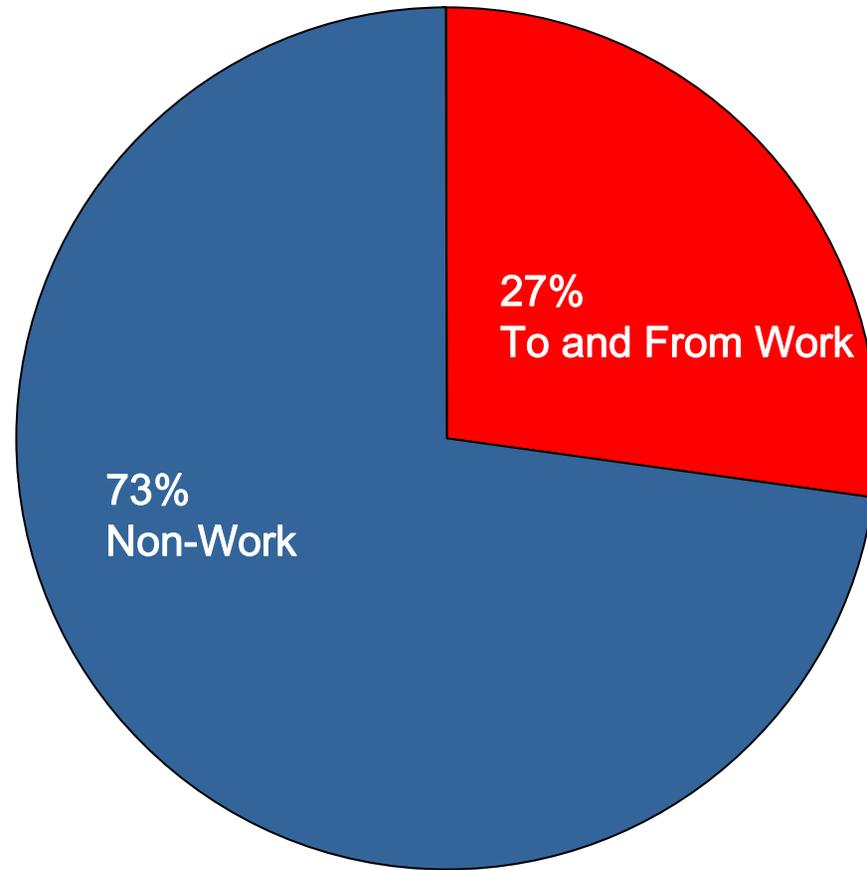
Each worker travels on average 15 more miles per day (1.85 billion more miles a year)



2001 NHTS Person Miles by Worker Status

# Most Travel by Workers is not for Work...

Percent of Work and Non-work Miles by Workers 16+



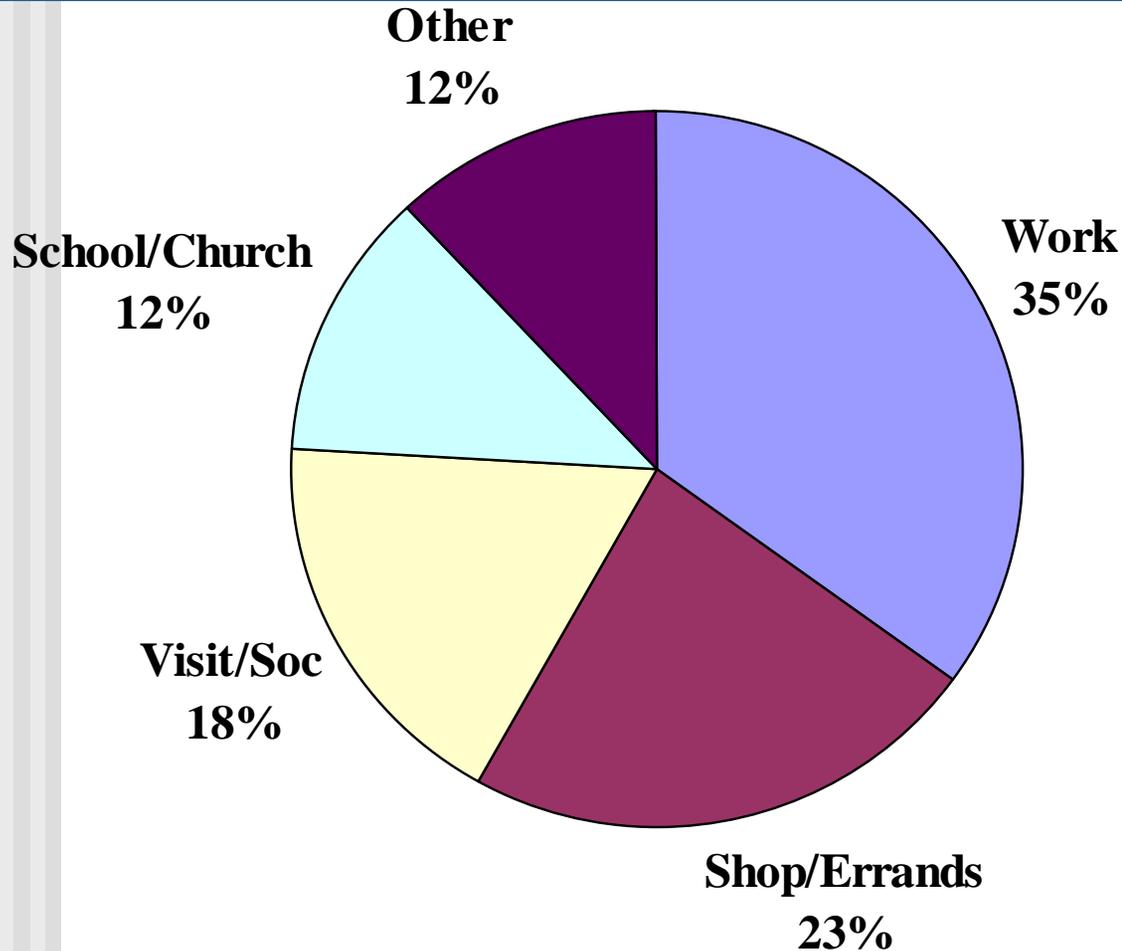
# Are there any 'Usual' Days?

<i>"Usual" Mode is</i>	<i>On Travel Day Took:</i>					
	<b>Drove Alone</b>	<b>Drove w/ Others</b>	<b>Took Transit</b>	<b>Walked</b>	<b>Biked</b>	<b>No Report/ Other</b>
<b>Drove Alone</b>	89.8%	9.4%	0.1%	0.4%	0.1%	0.2%
<b>Carpool</b>	22.6%	74.5%	1.0%	1.4%	0.3%	0.2%
<b>Transit</b>	8.4%	10.0%	69.3%	8.5%	0.4%	3.3%
<b>Walk</b>	10.3%	9.0%	2.7%	77.3%	0.2%	0.5%
<b>Bike</b>	8.1%	10.1%	1.4%	7.7%	72.7%	0.1%

(comparison of 'usual' commute mode with mode to work on the travel day, 2001 NHTS)

# People take transit for many purposes...

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**....Not Just  
Commuting**

# How do States and MPOs Currently Use NHTS data?

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1. Benchmark or ***default values*** from national estimates or areas of similar size or geography (Only valid for 5 MSA sizes or 9 census divisions)
2. The ***Add-On Program***: local areas can purchase supplemental national samples
3. The ***Transferability Project*** uses census characteristics to 'transfer' travel estimates to local areas

# For benchmarking locally collected data and using default rates:

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- Based on NHTS nation-wide estimates
- Based on data from NHTS households that are from MSAs of similar size:
  - 3 mil. + , 1-3 mil. , 500K-1 mil. , 250K-500K and <250K
- Based on data from NHTS households that are from the same Census Region (4) or from the same Census Division (9)

# National Household Person and Vehicle Trip Rates

	<i>Person Trips/Day</i>	<i>Vehicle Trips/Day</i>	<i>P-trips/ V-Trips</i>
Work and Work Rel	1.9	1.6	1.2
Shop	2.1	1.3	1.6
Fam/Pers	2.3	1.5	1.6
Soc/Rec	2.7	1.2	2.3
Misc	1.4	0.5	3.0
<b>All</b>	<b>10.4</b>	<b>6.0</b>	<b>1.8</b>

# National Household-based Person Trips By Type

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<b>Income</b>	<b>HBW</b>	<b>HBO</b>	<b>NHB</b>	<b>All</b>
<\$35K	0.4	3.3	4.0	7.7
\$35-60K	0.7	4.8	6.0	11.5
\$60-80K	0.9	5.8	7.2	13.9
\$80K+	0.9	6.3	8.0	15.1
ALL	0.6	4.4	5.5	10.6

# Add-On Component

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- In 2001, over 40,000 household samples purchased by local planning agencies:
  - State Add-Ons
    - Hawaii, Kentucky, New York, Texas, and Wisconsin
  - MPO Add-Ons:
    - Baltimore MD, Des Moines IA, Lancaster County PA, and Oahu HI.

***You can be an add-on for the 2007-2008 NHTS!***

# Add-on Benefits:

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- ✓ No local staff work to write RFP, review proposals, manage and administer contract
- ✓ Final product is quality-tested file that is weighted, edited, documented and ready-to-run
- ✓ Local control over sample size and strata
- ✓ Trip origins and destinations geocoded with high accuracy
- ✓ National sample cases in your area included without additional cost
- ✓ Local funding match has been historically waived

# Transferability Project

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## Objectives:

- ✓ Determine how NHTS data can be “transferred” to States and MPOs esp. areas smaller than the NHTS sample design allows, and
- ✓ Determine the reliability of the transferred information.

# Feasibility Test:

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The transferability project identified the household characteristics available from Census that were correlated to travel:

- ✓ Area Type (urban, suburban, rural)
- ✓ Median Household Income
- ✓ Vehicle Ownership
- ✓ Employment Rate

# Approach:

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1. Categorize all of the census tracts around the country into “homogeneous” clusters with respect to travel determinants.
2. Find NHTS households in these clusters based on the census tract where the household is located.
3. Calculate cluster-specific travel estimates based on data collected from NHTS households
4. Calculate total census tract-specific travel demand.

# Step 1.

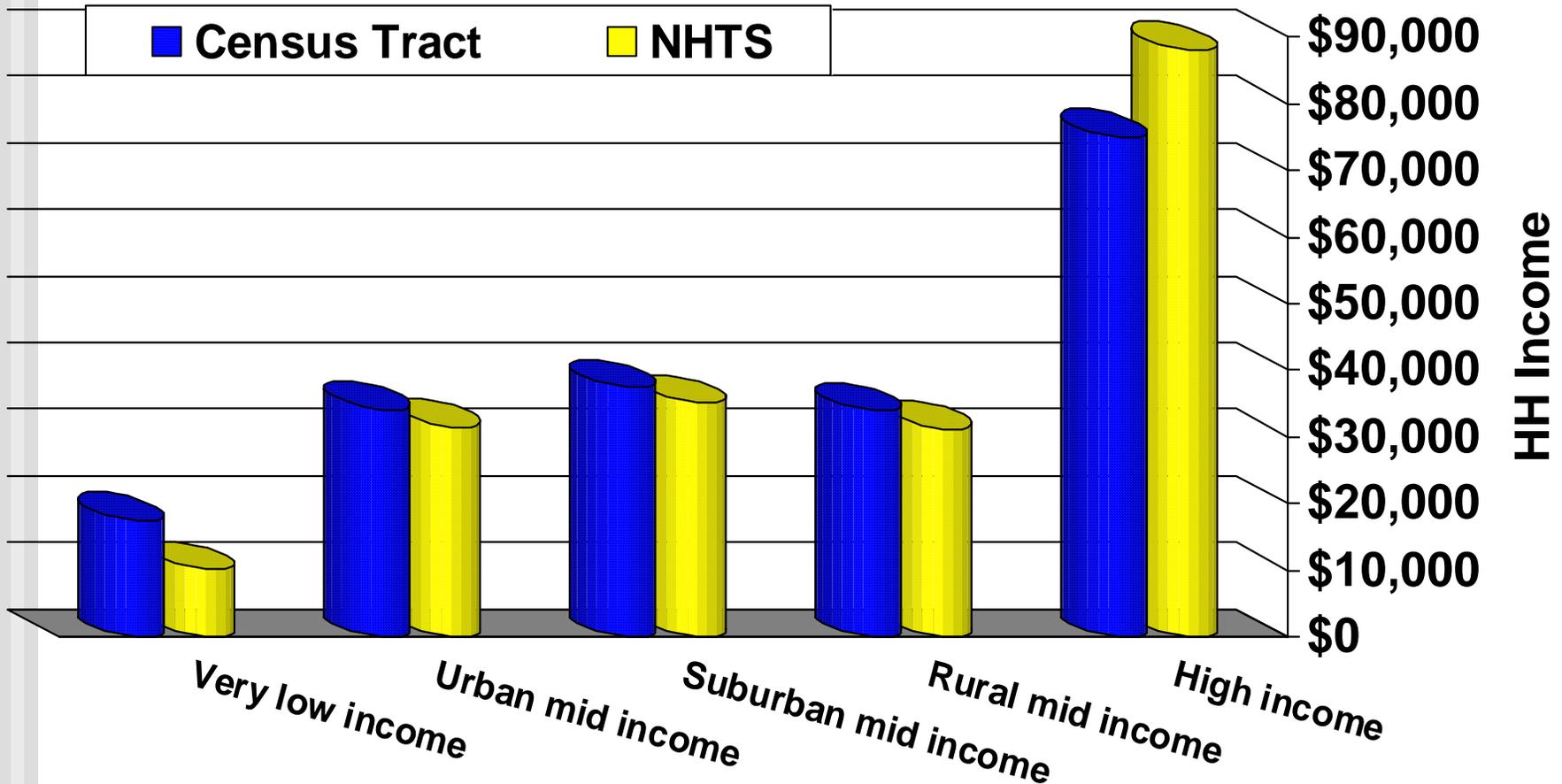
## Categorize Census Tracts into Clusters

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- ✚ There are 61,258 tracts nationwide
- ✚ Manhattan tracts and tracts without any population were excluded (1,430 tracts).
- ✚ Census classifiers:
  - ✚ area type (urban, suburban, rural),
  - ✚ median household income,
  - ✚ vehicle ownership and
  - ✚ employment rate
- ✚ Cluster analysis to minimize the variation within a cluster and maximize the variation between clusters.
- ✚ Result is 11 clusters of census tracts with homogeneous characteristics.

# NPTS households are generally representative of households in the Census cluster, with a few exceptions:

(Percent of households)

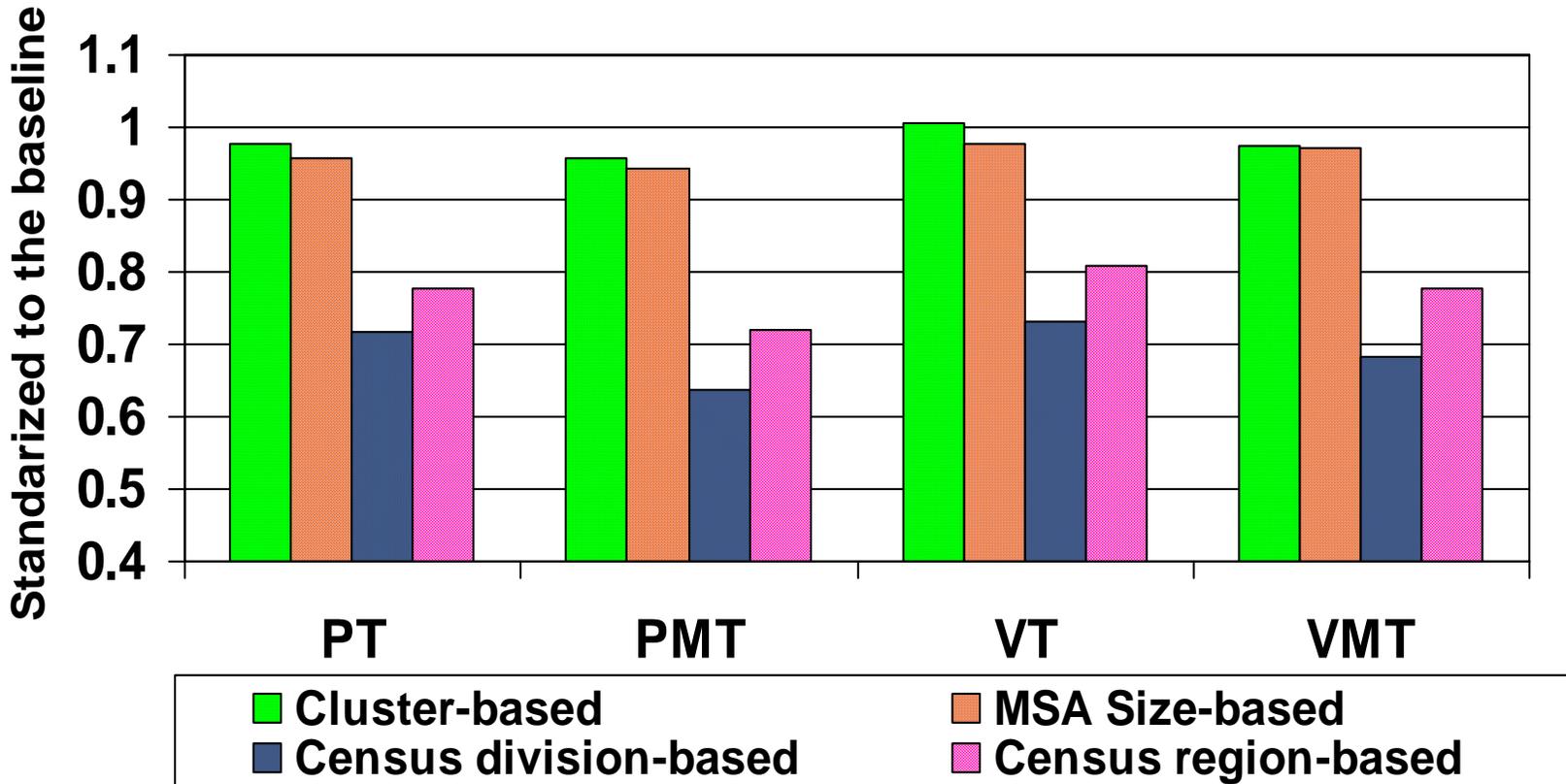


## **Step 2.**

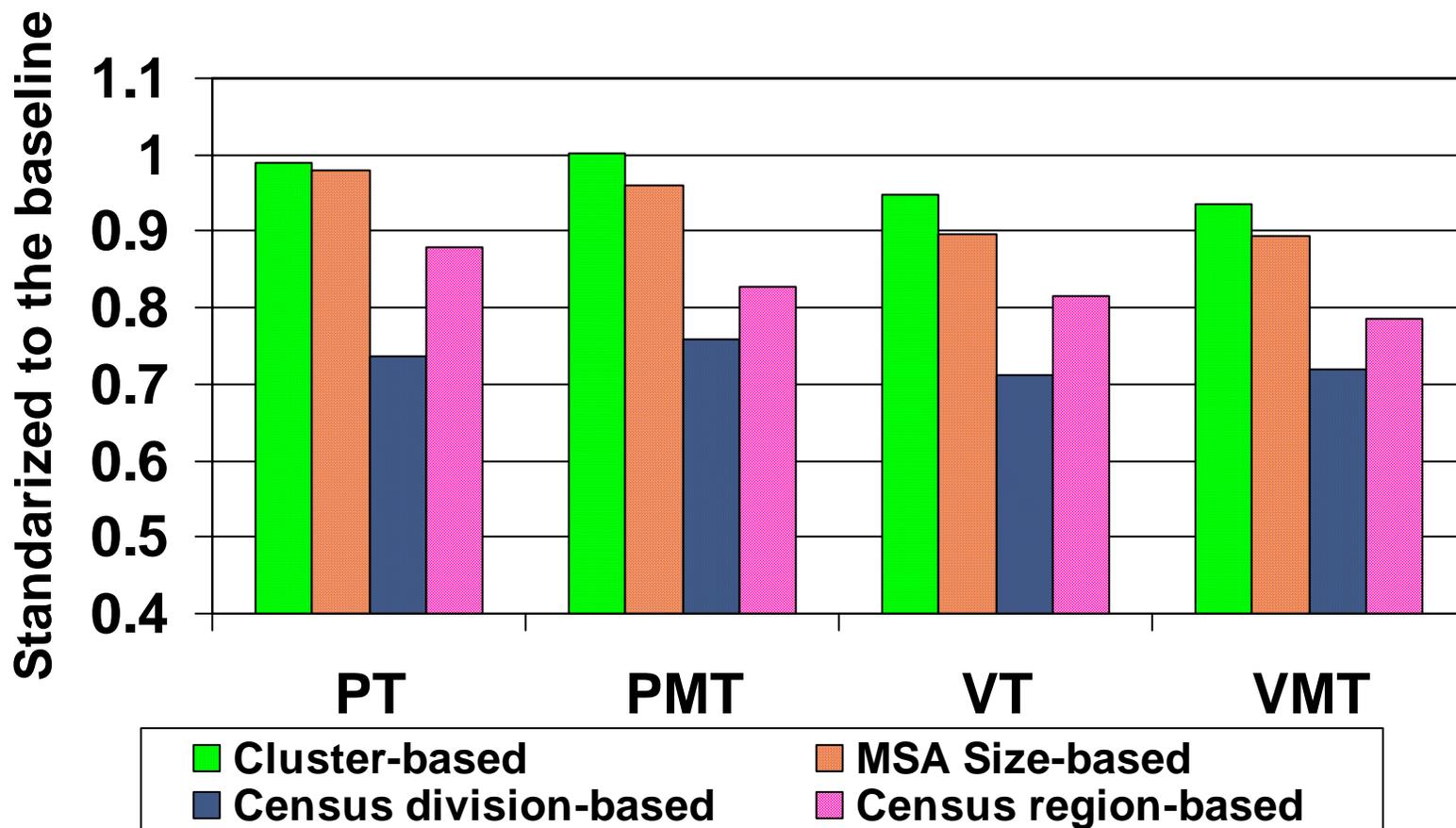
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**Test the reliability of  
travel estimates transferred  
from NPTS Households in  
these Census clusters**

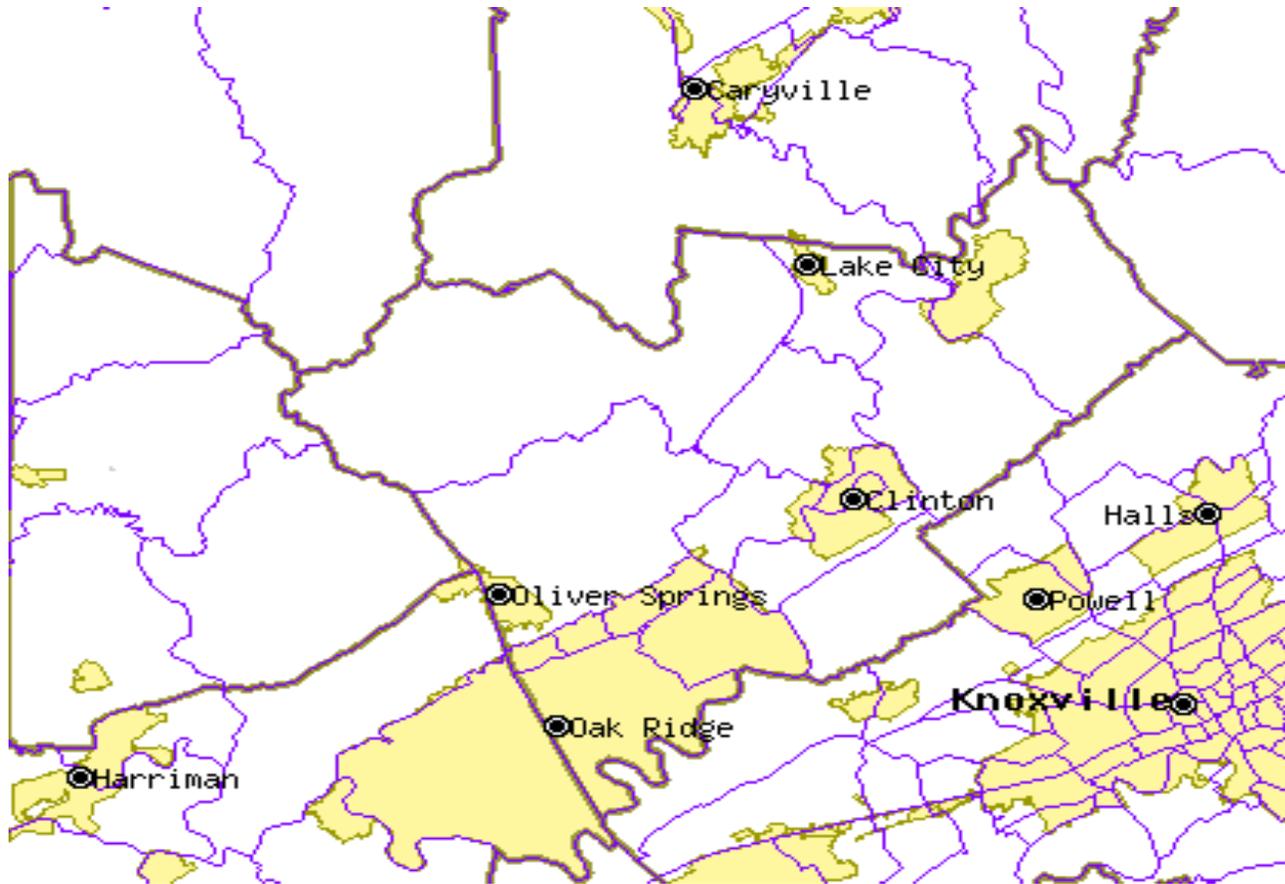
# Results of statistical tests: New York State Add-on



# Results of statistical tests: Massachusetts State Add-on



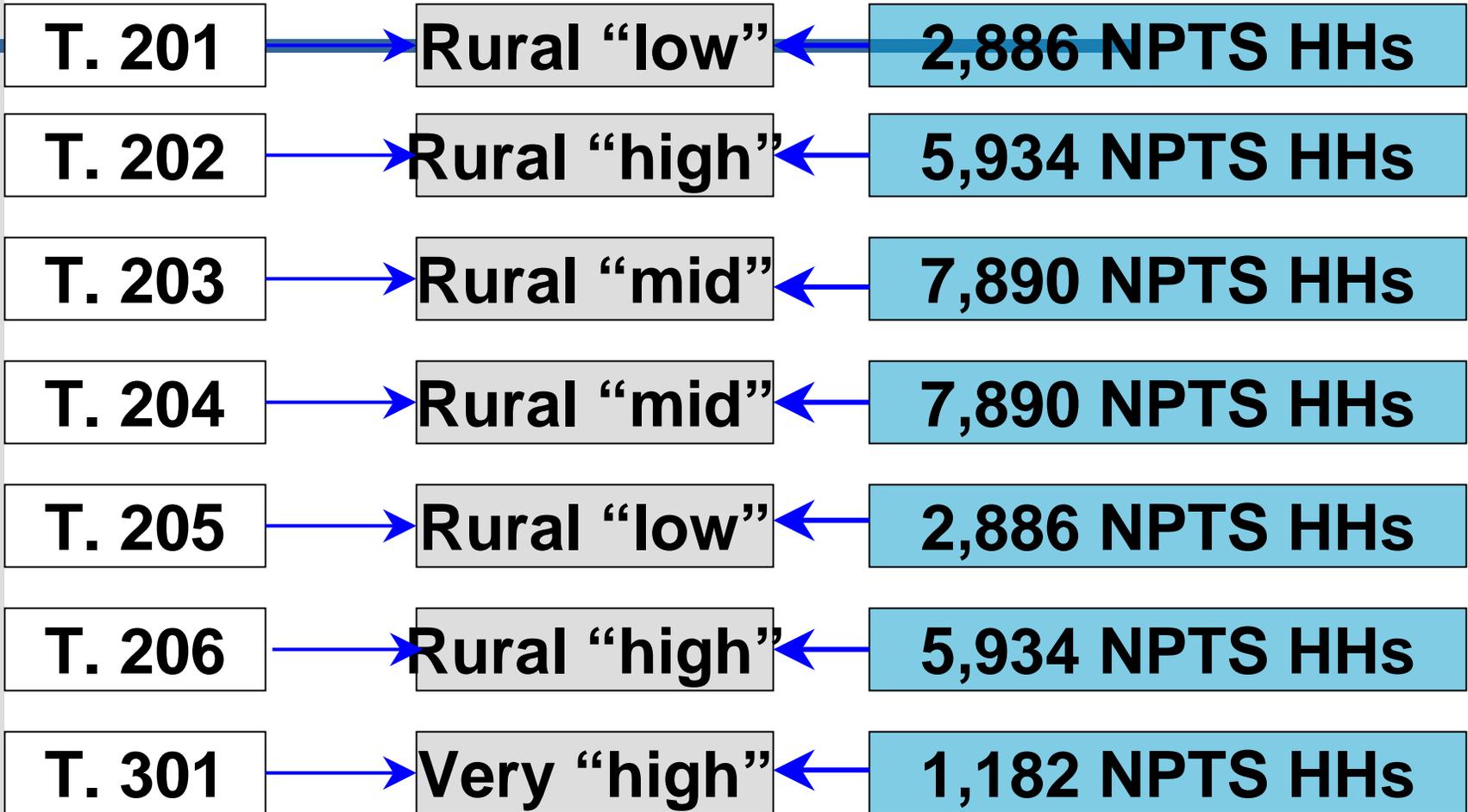
# Transferred Travel Estimates for Oak Ridge, TN (an example of how this works):



# Oakridge Census Tracts

# Census Cluster

# Available Households in Census Cluster



# Apply the trips per HH from NPTS to Oak Ridge Census tracts:

Tract 201

Rural "low"

2,886 NPTS HHs



624 HHs × 3.595 person trips/HH = 2,243 total person trips



360 HHs × 8.011 person trips/HH = 2,884 total person trips



172 HHs × 12.022 person trips/HH = 2,068 total person trips



122 HHs × 15.606 person trips/HH = 1,904 total person trips



71 HHs × 19.3 person trips/HH = 1,370 total person trips

# Estimate the total person trips for Oak Ridge, TN:

T. 201	→	10,470 person trips
T. 202	→	23,600 person trips
T. 203	→	17,600 person trips
T. 204	→	18,000 person trips
T. 205	→	15,000 person trips
T. 206	→	10,500 person trips
T. 301	→	10,500 person trips

**= 105,700  
Person  
Trips**

## Step 3. Beta Testing

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*[www-cta.ornl.gov/npts](http://www-cta.ornl.gov/npts)*

# Conclusion

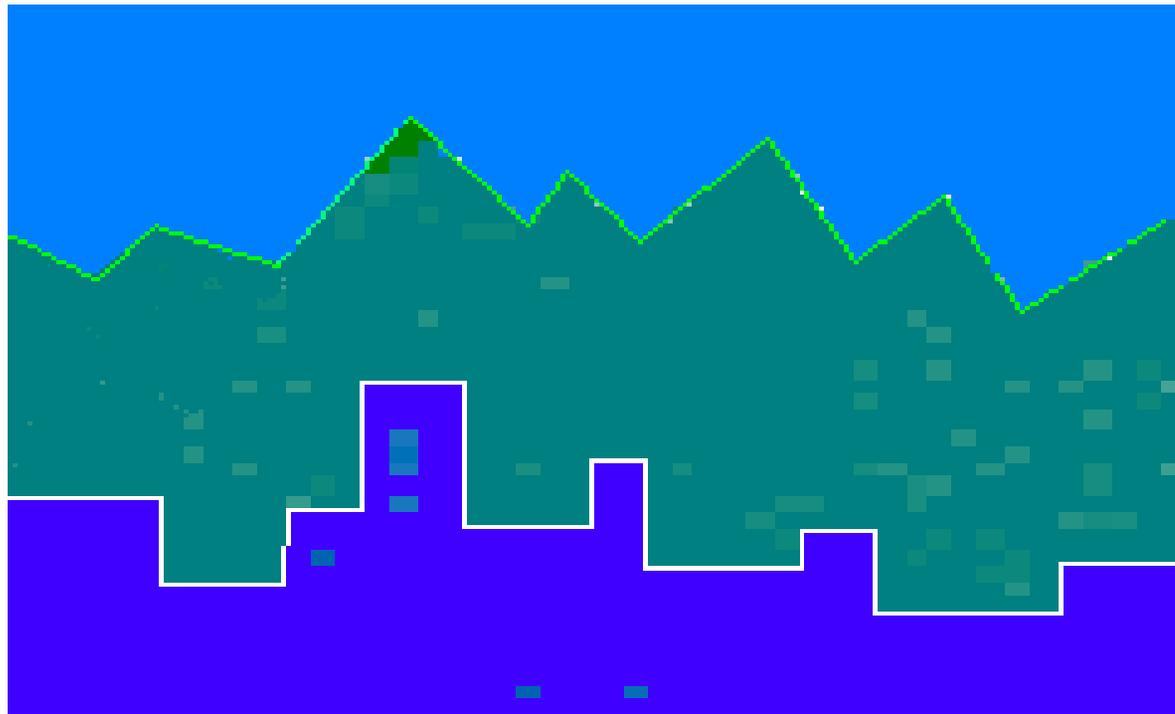
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Four ways to get data:

1. Conduct local household travel surveys
2. Purchase ***add-on*** samples to national survey
3. Use ***transferable*** estimates from census clusters
4. Use ***default values*** from areas of similar size or region of country

*<http://nhts.ornl.gov>*

## National Household



**Travel Survey**