TMIP

Better Methods. Better Outcomes.

Household Travel Surveys At A Glance

SEPTEMBER 2013

Overview of Surveys

Motivating factors

Metropolitan planning organizations (MPOs) and state departments of transportation (DOTs) use data collected from household travel surveys (HTS) to better understand residents' travel patterns and use the results to update and/or calibrate their travel demand models. Travel behavior trends are examined for forecasting vehicle miles traveled (VMT), greenhouse gas (GHG) emissions, and new public transit investments.

Implementation

Comprehensive one- and two-day travel diaries collect information about the household, its members, and all the trips completed on a pre-assigned travel date. A pilot study is typically used to test the methods and materials, so that the full study benefits from improvements and refinements (e.g., modifications to question wording or response rate assumptions). Planning and public outreach for the HTS is critical because of declining response rates. Outreach methods increasingly include social media posts, videos, project websites, and targeted materials or contacts with certain hard-to-reach populations in the study region.

Methods and Datasets

HTS typically use the following methods:

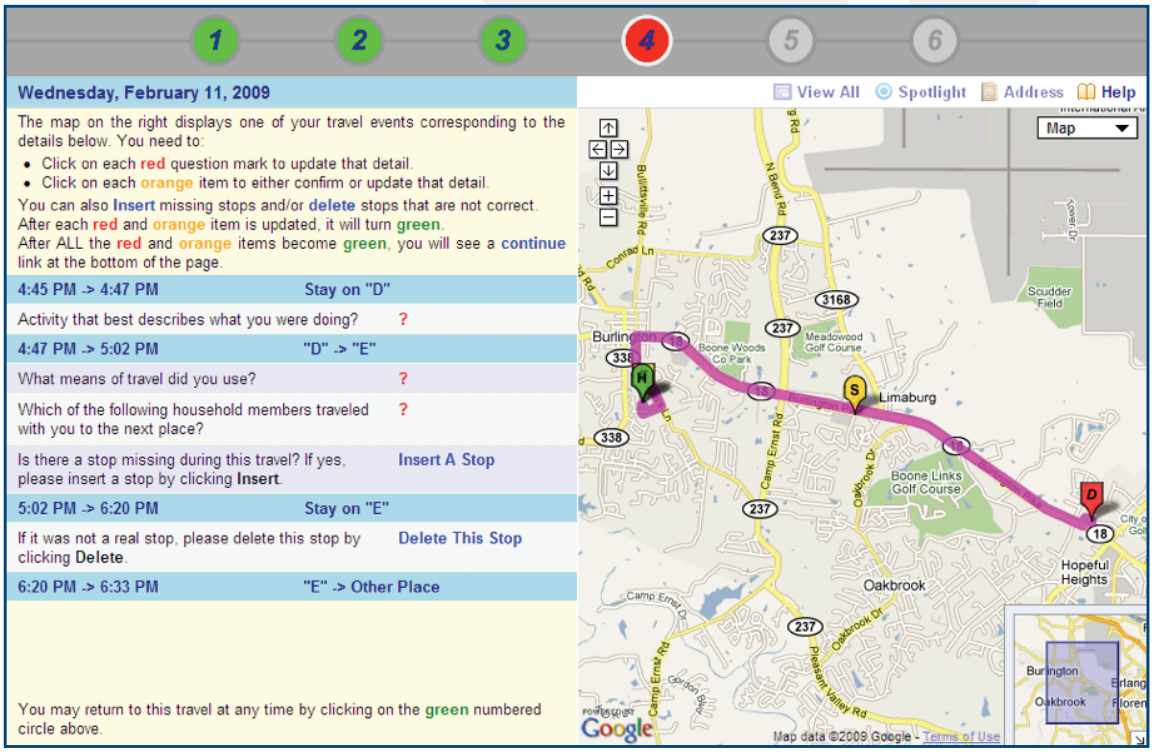
- **Sampling:** Address-based sampling (ABS)
  - Sample is randomly selected from geographic subareas within the study region
  - Oversampling is possible and typically done at the geographic subarea level
  - Non-probability sampling is an option for hard-to-reach groups such as vanpoolers
- **Recruitment:** First-class mail or telephone
  - Households are notified and provided with instructions for how to complete the survey
  - Special incentives for hard-to-reach households, such as zero vehicle, low-income, and large families are often used
- **Data retrieval:** Online survey instrument, paper-based survey, and/or computer-assisted telephone interview (CATI)
  - Most studies provide respondents with at least two of the above options to reduce response bias
- **GPS sub-sample:** Added to an increasing percentage of travel diary data collection efforts (described in more detail on reverse side)

The survey instruments typically collect the following information:

- **Household data** (e.g., location, number of vehicles and members)
- **Person data** (e.g., age, employment status, relationship)
- **Vehicle data** (e.g., year, make, and model of each vehicle)
- **Trip data** (e.g., start time, duration, mode, purpose)

Example Survey Interface with GPS Trip Data

The image to the right is a screen capture of an example web-based survey instrument. This particular prompt asks the respondent to provide details corresponding to the trip captured by GPS data.



For more information on the Peer Review Program please contact Sarah Sun, TMIP Outreach Manager sarah.sun@dot.gov

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FHWA-HEP-13-038

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GPS Data

For the last decade, about 20 of the larger agencies have included a 5% or 10% GPS sub-sample as part of their region's HTS. The primary purpose of the GPS sub-sample has been to generate trip rate correction factors for the other sampled households and account for trip under-reporting often found in diary-based HTS. The GPS approach is typically conducted as follows:

- Households are assigned to a GPS subsample and recruited into HTS
- Households are sent wearable GPS or vehicle-based GPS devices and each household member is asked to use the device for a pre-defined number of days
- Households return devices so that data can be downloaded and processed
- Respondents complete the "recall survey" to verify and provide additional data about their trips collected on the wearable device

Most recently, tests on using 100% GPS-only diaries have been conducted in Ohio, and smartphones with embedded GPS and accelerometers are now being tested.

Household Travel Survey References

The following list of references can be used to learn more about the topic of HTS: methods, developments/technologies, trends, and data uses.

National Household Travel Survey (NHTS):
http://tinyurl.com/7nfgfew

Transportation Research Board's (TRB) Travel Survey Methods Committee:
http://tinyurl.com/ohtd7bb
http://tinyurl.com/km9f5oh

Texas A&M Transportation Institute's (TTI) Household Travel Survey Symposium:
http://tinyurl.com/lz5k826

Recent publications on survey methods:

- Stopher et al (2008). NCHRP Report 571: Standardized Procedures for Personal Travel Surveys.
http://tinyurl.com/ky5gfqt
- Stopher (2012). Collecting, Managing, and Assessing Data Using Sample Surveys. http://tinyurl.com/l2o3akw
- Zmud, Lee-Gosselin, Munizaga, Carrasco (Eds.) (2013). Transport Survey Methods - Best Practice for Decision Making.
http://tinyurl.com/llzmj29

RECENTLY COMPLETED PROJECTS | 2011-present

YEAR	AGENCY/PROJECT	STATE	SAMPLE SIZE	GPS SAMPLE	MODEL TYPE
2011	Genesee Transportation Council (GTC)	NY	3,671	NO	Trip
2011	Atlanta Regional Commission (ARC)	GA	10,278	YES	Trip/Activity
2011	Southeastern Wisconsin Regional Planning Commission (SEWRPC)	WI	16,500	NO	Trip
2011	New York Metropolitan Transportation Council (NYMTC)	NY	18,966	YES	Activity
2011	Metropolitan Washington Council of Governments (MWCOG)	DC	4,800	NO	Activity
2012	Twin Cities Metropolitan Council	MN	10,362	YES	Activity
2012	Wasatch Front Regional Council (WFRC) and Utah DOT	UT	9,159	NO	Trip
2012	Metrolina Regional Household Travel Survey	NC	4,231	NO	Activity
2012	Nashville Area Metropolitan Planning Organization	TN	6,500	YES	Activity
2013	California Department of Transportation (CA DOT)	CA	42,000	YES	Activity

ONGOING/UPCOMING PROJECTS

YEAR	AGENCY	STATE	SAMPLE SIZE (EST)	GPS SAMPLE	NOTES
2012	Delaware Valley Regional Planning Commission (DVRPC)	PA	10,000	YES	Data collection began Fall '12
2013	Thurston Regional Planning Council (TRPC)	WA	2,500	NO	Data collection Fall '13
2013	Fairbanks Metropolitan Area Transportation System (FMATS)	AK	TBD	TBD	Data collection Fall '13
2013	Memphis Urban Area MPO	TN	TBD	TBD	Data collection Fall '13

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