NHTS National Household Travel Survey
Our Nation's Travel

2017 NHTS Compatibility with Prior Data

(Version 2, August 2020[1])

Since 1969, the Federal Highway Administration (FHWA) has been collecting travel behavior data to answer evolving questions related to how, why, when, and where people travel through a probability-based random sampling survey approach. The 2017 National Household Travel Survey (NHTS) is the eighth and most recent survey in this series and the results will be used to inform transportation policy and planning efforts at the Federal, state, and local levels.

The survey documents the demographic, attitudinal and travel behavior for all members of 129,969 households, as collected from April 2016 to April 2017. Daily travel details provide insights into work and school commutes, non-emergency medical trips, shopping trips, and even how travel differs in the summer and on weekends as compared to the typical weekday when school is in session. When statistically weighted to adjust for survey biases, the data demographically represents all Americans and is appropriate for analysis at the national and census region levels. The 2017 weights were developed at a higher aggregate geography than prior surveys, and when combined with changes in survey methods, there are some specific areas users should be aware of as they begin to use the data and conduct trend analyses.

Survey Methodology Changes

While many of the same data has been collected over the past 50 years, the survey methods used to obtain these results were updated for the 2017 survey. This included the use of an address-based sample and providing respondents the option to report their travel by phone or online (as compared to the in-person and telephone methods used in the past). With the telephone surveys, interviewers prompt respondents for short trips or stops made along the way (such as to get gas on the way to work). Online surveys, however, did not include these prompts and as a result, that data may under-report these types of trips (this phenomenon is still under investigation).

Trip Length Determination and Vehicle Miles of Travel (VMT)

With the advancement in technology, the survey design also included a real-time on-line geocoding tool. Trip locations were entered directly into the system and for the first time in the NHTS program history, trip length was derived based on shortest-path algorithms and not reported by the respondents. A preliminary assessment of the difference between self-reported and derived trip lengths for vehicle trips determined that the derived trip lengths are about 10% shorter than the self-reported trip lengths collected in prior surveys. Research continues into this issue, and in the meantime, users are cautioned against trending trip length for 2017 against prior survey data.

[1] Version 1 of this document was referred to as *NHTS Technical Release Notes*.

These shorter derived trip lengths impact Vehicle Miles Traveled (VMT) and Person Miles Traveled (PMT) metrics. Using the trip lengths as determined by the 2017 on-line geocode method, our initial analysis shows a slight decrease in national VMT between the 2009 and 2017 NHTS surveys. Incorporating a 10% adjustment to the 2017 trip lengths does yield an increase in the 2017 NHTS VMT that is higher than the 2009 value. This is consistent with the increase from 2009 to 2016 (the latest available data) in FHWA's Highway Performance Management System (HPMS), although the VMT increase shown in the NHTS data (after adjusting the 2017 trip lengths) would still be slightly less than the increase observed in the HPMS data. This adjustment can be found in the TRPMILAD variable in Version 1.2 of the NHTS trip file.

Transit Trips

The number of transit trips reflected in the weighted and expanded 2017 data are higher than the 2016 National Transit Database ridership levels. The factors influencing these differences are under investigation but are tied somewhat to the incidence of transit usage captured in daily travel surveys such as the NHTS, the construction of the weights, differences in measurement of what a transit trip is here in the survey as compared to NTD ridership levels, and how linked and unlinked passenger trips are reported. The NHTS team is performing further analysis on this regard.

Walk Trips

The margins of error for walk trip mileage are higher in 2017 than in prior surveys. These differences in MoE appear to be related to outlier walk trips in the 2017 NHTS. The maximum TRPMILES value for walk trips in 2009 is 46, while the maximum in 2017 is 2648.443. There's a total of 41 trips in the 2017 data that are above that 2009 max of 46. Should trip mileage of walk trips be relevant, users might consider capping the maximum walk trip at some value that fits their analysis.

Fuel Economy and Associated Data

For the 2001 and 2009 NHTS, the U.S. Energy Information Administration (EIA) produced estimates of fuel economy for each vehicle in the vehicle file. Alongside these estimates, estimated annual fuel use (in gallons) and annual fuel cost (in dollars) were computed. The fuel economy estimates were based on the CAFE database created by the National Highway Traffic Safety Administration (NHTSA) in conjunction with the Environmental Protection Agency (EPA). Since the CAFE estimate is, in part, a regulatory tool that "reflects various credits, incentives, and adjustments available to automakers,[2]" this estimate was then adjusted to reflect real-world use.

For the 2017 NHTS, the FuelEconomy.gov database was used. These numbers are designed to give consumers real-world estimates, and thus are reasonably comparable, without adjustment, to the adjusted CAFE estimates applied in 2001 and 2009. Caution is still advised in interpreting any differences between 2009 and 2017, however, since the source databases are different.

[2] https://nepis.epa.gov/Exe/ZyPDF.cgi/P100IENA.PDF?Dockey=P100IENA.PDF, accessed November 11, 2019.