



# CTPP Status Report



U.S. Department of Transportation  
Federal Highway Administration  
AASHTO Standing Committee on Planning



TRB Census Subcommittee  
Bureau of Transportation Statistics  
Federal Transit Administration

## Census Transportation Planning Product (CTPP) Highlights

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We are excitedly gearing up for our conference:

### **Applying Census Data for Transportation: 50 Years of Transportation Planning Data Progress**

**November 14-16, 2017**

**Kansas City, MO**

[www.trb.org/conferences/census2017.aspx](http://www.trb.org/conferences/census2017.aspx)

With workshops, technical sessions, commissioned papers, and a scavenger hunt, it's going to be an excellent meeting of the minds! Visit the conference website for the program, other information, and to register.

Immediately following the conference, and informed by it, the Oversight Board will hold its annual meeting, also in Kansas City, to decide on its next solicitation, among a myriad of other business items.

The Board welcomes two new members, Thomas Hill of Florida Department of Transportation (DOT) and Jacob Gonzalez of the Benton-Franklin Council of Governments (COG) in Washington State. We thank outgoing members Regina Colson and Brian Lasagna for their dedicated service!

When is the new data coming? Our tabulation is being processed at the Census Bureau, and the 2012 to 2016 CTPP is expected to be available in late 2018 and released to the public in early 2019.

## **NHTS 2016 Update**

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### **What is the NHTS?**

The National Household Travel Survey (NHTS), administered by the Federal Highway Administration (FHWA), is a periodic national survey providing travel behavior data to transportation planners and policy-makers in the United States.

### **NHTS 2016**

The 2016 NHTS is the eighth and most recent survey in the NHTS series, which began in 1969. The public dataset includes household demographics, daily travel details such as the trip mode, trip purpose, travel time, vehicle miles traveled (VMT), vehicle/fuel type, telecommuting, transit transfers, etc.

### **SURVEY PLAN & DATA COLLECTION**

Data collection for the 2016 NHTS commenced in April 2016 and continued until April 2017. The survey plan used a two-stage approach, an address-based sampling frame, and a multiple-mode data collection effort. The first stage, recruitment, used the mail out - mail back mode; households were randomly selected and received a four-page introductory package encouraging participation. Approximately 930,000 recruitment surveys were mailed, out of which around 253,000 were returned.

Volunteer households that mailed back the completed recruitment survey were sent travel logs, commencing the second stage, travel diary. Household members (ages 5+) were asked to complete logs for the assigned travel day (24-hour) and enter their diary information via web or phone at the retrieval phase. This is the first NHTS survey effort to use respondent web-based data entry as a response choice.

As with previous NHTS, the 2016 NHTS included an add-on program. Thirteen participants joined the pooled-fund add-on program, including Arizona, California DOT (Caltrans), Georgia, Maryland, New York, North Carolina, South Carolina, Texas, Wisconsin, Des Moines Area MPO, Indian Nations COG, Iowa Northlands Regional COG, and North Central Texas COG.

The sample size goals for the 2016 NHTS were 26,000 households for the national portion and 103,112 for the add-on portion. In total, 129,689 household interviews were completed, providing an overall response rate of 14 percent and representation in all 50 states.

### **CONTENT CHANGES IN NHTS 2016**

Based on input received from the user community, the 2016 NHTS questionnaire captured data on the use of emerging modes, fuel types, ridesharing, walking/biking for exercise, online purchases and deliveries, number of transfers and amount of time spent on transit, and health conditions. The survey also inquired – when people ages 80+ reported they don't travel – as to the reasons why.

### **STATUS & EXPECTED RELEASE**

The data are currently in the processing phase and slated for release in January 2018.

### **UPCOMING EVENTS**

Learn more about the NHTS at the upcoming [TRB Census Data for Transportation Conference](#) (November 2017 in Kansas City). Conference plans include an NHTS update session and a panel session providing a retrospective view on the past and continuing value that the NHTS brings to transportation planning efforts in the U.S. NHTS sessions are also planned for the TRB Annual Meeting (January 2018 in Washington D.C.).

### **STAY INFORMED**

To keep up with NHTS announcements, please sign up for the NHTS Listserv at <http://nhts.ornl.gov/>.

## Using CTPP Data for Late-Night Transit Service Planning in San Francisco

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The San Francisco County Transportation Authority (SFCTA), working with other city and transit agency partners and with support from consultants at Nelson\Nygaard, used CTPP data to help evaluate how well the existing late-night transit service was meeting nighttime workers' commute needs and to identify potential improvements. Although late-night transit riders include multiple user groups, the analysis and planning effort focused on late-night workers because they are more likely to be low- and moderate-income than daytime commuters are. Additionally, they may have few other travel options to reach employment; so, transit service provides an important lifeline.

The study team developed a set of service planning metrics to evaluate service availability, productivity, and reliability to users. As part of the availability and coverage analysis, SFCTA used CTPP data to identify worker trip patterns during the late-night period (generally between midnight and 5 a.m.) and determine whether existing transit service was meeting nighttime commute needs. The analysis identified and mapped concentrations of worker home locations and employment locations, then overlaid additional demographic indicators that commuters would be relatively likely to use transit service if it were available. By comparing these identified areas of high demand with maps of existing service, the study team was able to locate gaps in the network where new or adjusted services could address unmet needs.

### METHODOLOGY

The team used CTPP data because it is geographically comprehensive, contains data for areas not currently served by transit, and contains useful demographic and behavioral data.

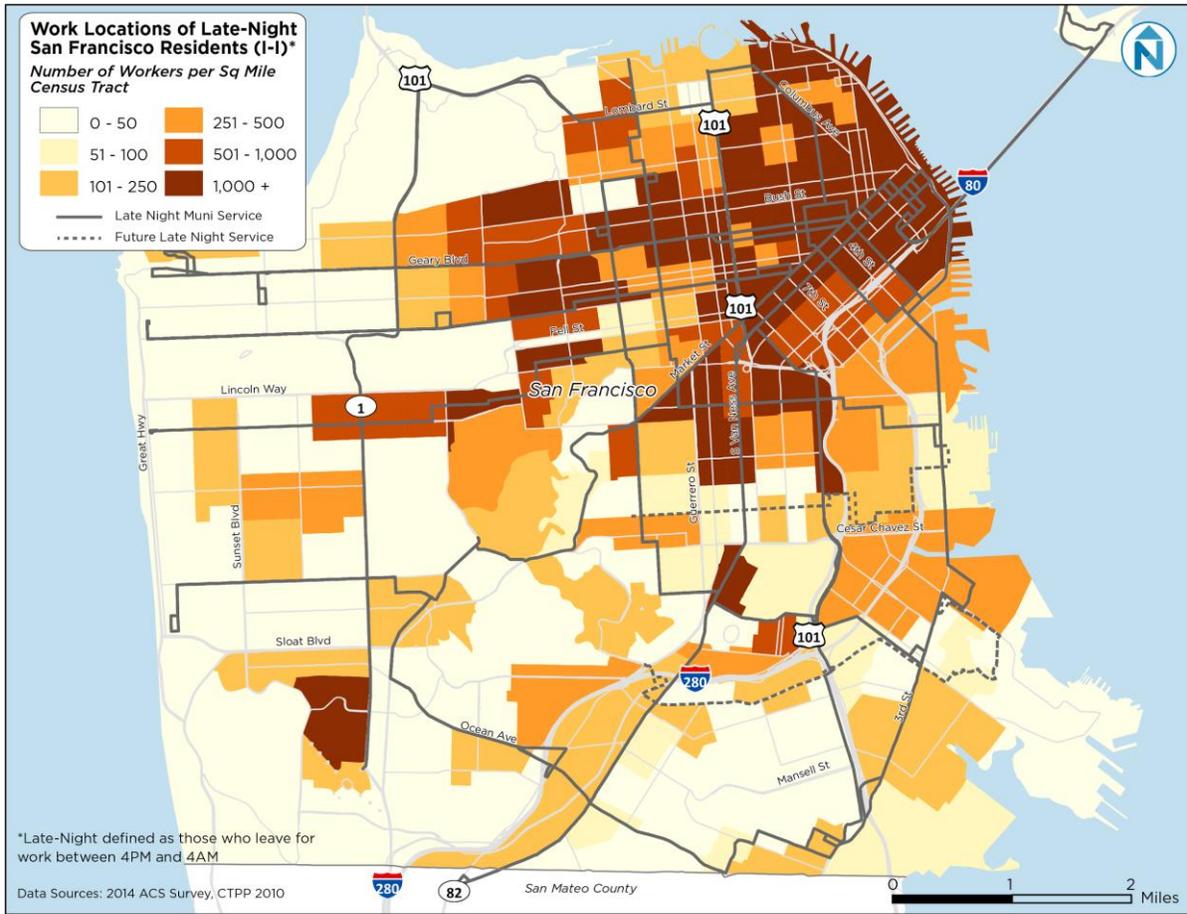
The team defined late-night workers as those who reported their "time leaving home" between 4:00 p.m. and 4:59 a.m., and low-income households as households below 200 percent of the poverty line. Using these definitions, the team developed a transit propensity index (TPI) using late-night workers' home locations, zero-auto households, and low-income households, and calculated this index for all San Francisco Bay Area Census tracts. Workers' job locations were mapped separately, since the additional demographic indicators were not available for the work end of trips.

In order to assess the power of the TPI to predict likely transit demand, the team estimated the TPI and its components at transit stops with service during the late night period, and paired this with stop-level transit ridership data to develop a linear regression model to predict ridership based on TPI factors. The model also controlled for the day of week and whether the stop was a major transfer stop.

### ANALYSIS RESULTS

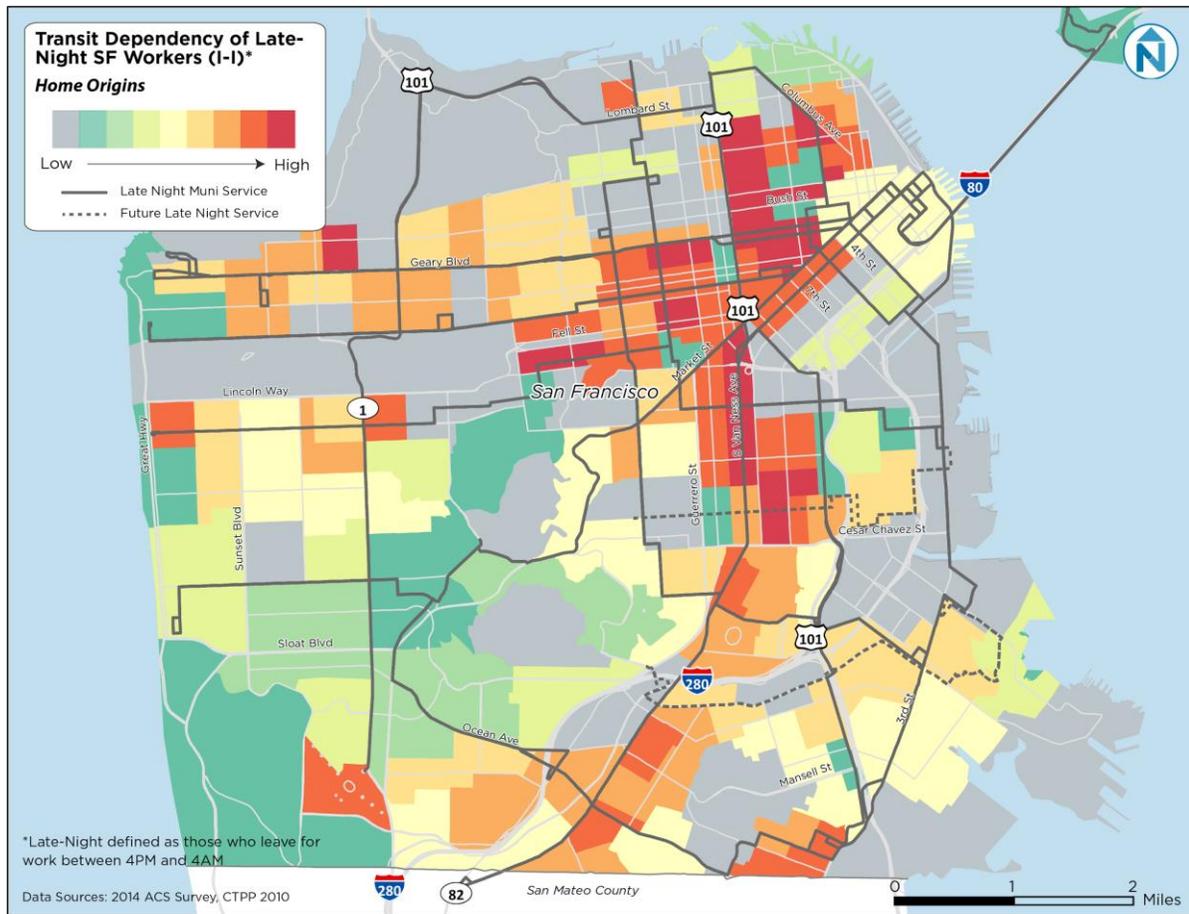
According to CTPP data, there are approximately 43,000 daily commute trips with an origin and/or destination in San Francisco during the late-night period, of which about half occur entirely within the city and the other half are regional. Figure 1 illustrates the density of late-night workers by their work locations (for intra-San Francisco trips only), showing clusters of jobs in the northeastern core of the city and at universities and hospitals scattered elsewhere. Figure 2 shows the transit propensity of late-night workers by their home locations (for intra-San Francisco trips only), showing clusters of transit-dependent workers living in the northeastern core and radiating out along corridors to the west and south. These figures also illustrate areas of high demand but limited coverage in the existing late-night transit network.

The analysis identified several areas with significant potential demand but little or no service, including a cluster of late-night commuter jobs along the city's northeastern waterfront and a concentration of both worker home and job locations in the southwestern corner of the city around San Francisco State University. Regionally, the analysis found that the El Camino Real corridor extending southward from the city line is home to many workers and jobs but has no late-night transit service and that a similar gap exists in the East Bay city of Richmond.



**Figure 1. Density of San Francisco late-night workers by work location (intra San Francisco trips) with local late-night transit network**

**Data Sources: 2014 U.S. Census ACS Survey; CTPP 2006 - 2010**



**Figure 2. Density of San Francisco late-night workers by work location (intra San Francisco trips) with local late-night transit network**

**Data Sources: 2014 U.S. Census ACS Survey; CTPP 2006 - 2010**

Based on these results, the study team recommended new late-night transit service along the northeastern waterfront of the city, better connections to the underserved demand cluster in the southwestern corner of the city, and new regional service to fill the identified regional gaps.

**CONCLUSION**

While valuable, the CTPP has some notable limitations. First, the most recent release is comprised of data collected from 2006 through 2010, which means much of the data were collected during the Great Recession and may not capture important changes since then. Next, the CTPP only provides work-trip data, which precludes analysis of recreational or other non-work late-night trips. Furthermore, the data do not include the time a worker departed work and many workers’ shifts are more or less than eight hours, so the authors’ approximation of the number of late-night work trips may be an under- or over-count.

Despite these limitations, the TPI using CTPP data has proven useful for planning San Francisco’s late night transit network. Since the TPI uses readily available data, other cities that have or are considering late-night transit service could easily adapt the index for use in their planning processes. While this process was applied for late-night service, it could be used for analysis of any commuting markets. This methodology is appropriate to plan service if the primary objective is to serve work trips, with the caveat that, depending on when the planning process occurs relative to the latest CTPP update, the data may not be very recent. Still, this methodology could help other cities identify locations and corridors with the highest work trip demand for late night-transit service, and plan that service accordingly.

## 2015 Employment Data for Florida

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Employment data are a critical to understanding travel demand and performing transportation planning and analysis. In past years, the Florida DOT procured point-level employment data from vendors such as InfoGroup and distributed it to Florida DOT partners and stakeholders. For developing its 2015 employment data, Florida DOT adopted a synthetic approach. The objective of the task was to produce employment data by industry at the smallest possible geography. Following are the data sources used:

- **InfoGroup Data:** The 2014 InfoGroup employment data file was a key input, providing point-level employment by 3-digit North American Industrial Classification System (NAICS) industry grouping.
- **Longitudinal Employer Household Dynamics (LEHD) Data.** The LEHD program is part of the Center for Economic Studies at the U.S. Census Bureau. The program produces new, cost effective, public-use information combining federal, state and Census Bureau data on employers and employees under the Local Employment Dynamics (LED) Partnership. At the time of executing this task, the 2015 LEHD data was unavailable (it was released in October 2017). Therefore, 2013 and 2014 LEHD data were used. The LEHD is the only public source of employment data that provides information at small geographies (census block) by 2-digit NAICS industry grouping. These data were important for computing annual growth rates by census block and industry category.
- **BEBR Series 411 County Employment Data:** The Bureau of Economic and Business Research (BEBR) housed at the University of Florida produces an employment data series at the county level. After investigating a variety of data sources published by BEBR, the Series 411 county employment data were found to be most consistent with the 2014 InfoGroup data in terms of overall total employment. Series 411 reports the average annual number of full-time and part-time jobs in each county (by place-of-work). In Series 411, all wage and salaried jobs are counted, with full-time and part-time jobs being counted with equal weight. The U.S. Bureau of Economic Analysis (BEA) is the source for these data and they are not available by industry grouping.

### DATA DEVELOPMENT METHODOLOGY

As a first step, and to support the final product requirements, the 2014 InfoGroup data were aggregated to census block by 2-digit and 3-digit NAICS grouping. 2-digit NAICS aggregation ensured consistency with the LEHD data. 3-digit NAICS aggregation provided the distribution of 3-digit NAICS employment within each 2-digit NAICS category.

The Workplace Area Characteristics (WAC) file of the 2013 and 2014 LEHD data were used for this work. The WAC files are available at the 2-digit NAICS level for the following: all jobs, all primary jobs, all private jobs, private primary jobs, all federal jobs, and all federal primary jobs. For the purposes of this project, the all jobs and all federal jobs files were used to get a complete picture of employment at the census block level.

For each census block and 2-digit NAICS in the 2013 and 2014 LEHD datasets, the growth from 2013 to 2014 was computed. Given that the 2015 LEHD was unavailable, it was then assumed that the growth in employment from 2014 to 2015 at the census block and 2-digit NAICS segment would be the same as the growth in employment in the segment from 2013 to 2014. As a check, this growth was compared to the BEBR Series 411 growth in county employment from 2014 to 2015. If the LEHD-derived county growth rate was higher than the BEBR county growth rate, the growth rate was capped to the BEBR county growth rate. This was done primarily because at the census block level employment numbers are small and therefore tend to magnify the growth rate. For example, if Census Block 120010017022004 in Alachua County shows retail trade growing from 12 employees in 2013 to 15 employees in 2014; the computed growth rate is  $(15-12)/12 = 25\%$ . Growth rates of such magnitude, when applied without any caps across all census blocks and 2-digit NAICS categories across the state would lead to wildly

overinflated 2015 employment. Another check made was that if the employment for a particular census block and 2-digit NAICS segment was greater in 2013 compared to 2014, it was assumed that no growth took place from 2014 to 2015 for that segment (rather than bringing a negative growth rate forward).

Once the growth rates were developed using the above method, they were applied to the aggregated 2014 InfoGroup data. The outcome at this stage is 2015 employment data at the census block and 2-digit NAICS segment. However, given the need for data at the 3-digit NAICS level, further data processing was done. For each census block, the distribution of 3-digit NAICS to 2-digit NAICS employment from the 2014 InfoGroup data was applied to the derived 2-digit NAICS 2015 employment (at the census block level) and the resulting 3-digit NAICS 2015 employment was obtained. The final product was the 2015 3-digit NAICS employment at the census block level.

Final adjustments were made to the derived 2015 employment data to make it consistent with the 2015 BEBR Series 411 county employment data. (An exact match is not obtained due to rounding errors). The resulting dataset is now finding use in statewide planning and analysis work.

**RESULTS**

The results are highlighted in Figure 3. For each of the seven Florida DOT administrative districts, a comparison is shown between the aggregated synthetically-derived 2015 employment data and the 2014 InfoGroup data at the 2-digit NAICS segment. As the figure shows, the trends in employment by employment category and district are consistent. **Figure 4** provides a key to the location and county composition of districts. Table 1 shows the NAICS 2 digit codes and their descriptions along with Industry categories used in Florida models (Industrial, Commercial, and Service).



**Figure 3. Employment comparison by Florida DOT District and NAICS 2-digit segment**



**Figure 4. Florida DOT Districts and county composition**

**Table 1. NAICS-2 descriptions and industry category classifications**

| NAICS Code | Description                                                              | Florida DOT Industry Category |
|------------|--------------------------------------------------------------------------|-------------------------------|
| 11         | Agriculture, Forestry, Fishing and Hunting                               | Industrial                    |
| 21         | Mining, Quarrying, and Oil and Gas Extraction                            | Industrial                    |
| 22         | Utilities                                                                | Industrial                    |
| 23         | Construction                                                             | Industrial                    |
| 31-33      | Manufacturing                                                            | Industrial                    |
| 42         | Wholesale Trade                                                          | Commercial                    |
| 44-45      | Retail Trade                                                             | Commercial                    |
| 48-49      | Transportation and Warehousing                                           | Service                       |
| 51         | Information                                                              | Service                       |
| 52         | Finance and Insurance                                                    | Service                       |
| 53         | Real Estate and Rental and Leasing                                       | Service                       |
| 54         | Professional, Scientific, and Technical Services                         | Service                       |
| 55         | Management of Companies and Enterprises                                  | Service                       |
| 56         | Administrative and Support and Waste Management and Remediation Services | Service                       |
| 61         | Educational Services                                                     | Service                       |

| <b>NAICS Code</b> | <b>Description</b>                            | <b>Florida DOT Industry Category</b> |
|-------------------|-----------------------------------------------|--------------------------------------|
| 62                | Health Care and Social Assistance             | Service                              |
| 71                | Arts, Entertainment, and Recreation           | Service                              |
| 72                | Accommodation and Food Services               | Service                              |
| 81                | Other Services (except Public Administration) | Service                              |
| 92                | Public Administration                         | Service                              |

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CTPP 2006-2010 Data: <http://ctpp.transportation.org/Pages/5-Year-Data.aspx>

CTPP website: [http://www.fhwa.dot.gov/planning/census\\_issues/ctpp/](http://www.fhwa.dot.gov/planning/census_issues/ctpp/)

FHWA website for Census issues: [http://www.fhwa.dot.gov/planning/census\\_issues](http://www.fhwa.dot.gov/planning/census_issues)

AASHTO website for CTPP: <http://ctpp.transportation.org>

1990 and 2000 CTPP data downloadable via Transtats: <http://transtats.bts.gov/>

TRB Subcommittee on census data: <http://www.trbcensus.com>

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## CTPP Listserv

The CTPP Listserv serves as a web-forum for posting questions, and sharing information on Census and ACS. Currently, more than 700 users are subscribed to the listserv. To subscribe, please register by completing a form posted at: <http://www.chrispy.net/mailman/listinfo/ctpp-news>.

On the form, you can indicate if you want emails to be batched in a daily digest. The website also includes an archive of past emails posted to the listserv.