



CTPP Status Report



U.S. Department of Transportation
Federal Highway Administration

AASHTO Standing Committee on Planning
Federal Transit Administration



TRB Census Subcommittee
Bureau of Transportation Statistics

Census Transportation Planning Products (CTPP) Highlights

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The 2012–2016 CTPP Data

As of April 2019, the 2012–2016 CTPP data set has been released to the public and available on the following websites:

- CTPP data website:
<https://ctpp.transportation.org/2012-2016-5-year-ctpp/>.
- CTPP FTP site:
<ftp://data5.ctpp.transportation.org/2012-2016/>.

Since the data release, the CTPP committee has been busy developing training materials, planning in-person training classes, and providing technical support to users on accessing and utilizing the new data. If you encountered any issues accessing the new data or have any questions, please feel free to reach out to pweinberger@ashto.org.

Another effort underway involves the past CTPP data set for 2000. This data set has undergone processing and restructuring. Internal testing and review of the 2000 CTPP data set is underway, and it will be added to the CTPP data website this summer. Once this is complete, the 2000, 2006–2012, and 2012–2016 CTPP data sets will be in one location for easier access to users.

Training and Outreach

An in-person two-day training class was held in Nashville, TN, on June 12 to 13; and then the training team visited Ohio Department of Transportation (DOT) on June 19. If you are interested in scheduling hands-on full-day training for your organization, please contact: pweinberger@ashto.org.

Since April, the new 2012–2016 CTPP data were highlighted in several conference presentations—GIS for Transportation Symposium in Orlando, FL in April; ACS Users Conference in DC in May; and TRB Planning Applications Conference in Portland, OR in June.

The Program

The CTPP Oversight board met in Little Rock, AR, on August 20th to 22nd, to discuss training, outreach, research, and solicitation, among other business items.

CTPP Place of Work Allocation for Small Areas

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The 2012–2016 CTPP data provide information on both workers' home and work locations. Respondents in the workforce are asked about their principal workplace during the referenced week. The standard ACS geocoding operation first attempts to code workplace location at the place level (municipality, Census-designated place, remainder of county, or remainder of

minor civil division); and second at the Census block level. For about a 25-percent of work records, the workplace address given by the respondents is either incomplete or cannot be linked to a specific address, block, or tract.

This may occur for a variety of reasons, including incomplete workplace address information provided from the respondent, or inability of the geographic coding system to find a match between the employer name and street address responses. When a geocoding match is not found due to insufficient address information, respondents' workplace location is imputed to the place level (i.e., city or town), resulting in an assigned workplace location for places and higher geographies (such as counties, MCDs, states, etc.) for all workers. This level of imputation is reflected in standard ACS workplace-level tables routinely produced by the Census Bureau.

Given that some worker records are missing for smaller geographies, such as tract and Traffic Analysis Zones (TAZ), the sum of the worker counts for these smaller geographies will differ from the single estimate for a larger geographies, such as county. For example, District of Columbia has a total of 818,920 workers according to the county-level estimate, but the sum of the workers among the county's tracts is 639,615, missing 22 percent of their workers due to missing workplace address information. This information applies to both Part 2 (workplace) and Part 3 (flow) of the 2012–2016 CTPP and 2006–2010 CTPP.

For the previous 2006–2010 CTPP data, a place of work (POW) extended allocation system was developed and implemented by the Census Bureau to improve workplace allocation data. The POW extended allocation process imputed an additional 13.5 percent of POW blocks, increasing the overall completion rate to 91 percent. See more details on POW extended allocation here:

https://www.fhwa.dot.gov/planning/census_issues/ctpp/status_report/sr0912.cfm.

Given that the sum of worker counts at tract or TAZs may not add up to the county-level estimates, users need to be cautious while utilizing and aggregating the 2012–2016 CTPP worker estimates at small geographies (tracts and TAZs). As stated above, the POW extended allocation was applied to the previous 2006–2010 CTPP, but **not** the current 2012–2016 CTPP data. Therefore, users must be aware that the 2012–2016 CTPP small area estimates are based on ACS records that were coded to the block level without allocation. For any given tract or TAZ, this represents a subset of all worker records.

Analyzing Public Transit Equity Using CTPP Flow Data

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Background and Objective

Transportation improvements confer benefits and burdens to system users and nearby residents. Burdens include emissions, noise, vibration, and visual intrusion, among others. The benefits encompass *accessibility*—the ability to reach desired opportunities. Transportation equity analyses investigate how benefits and burdens are distributed across demographic groups and over space.

The CTPP is a powerful source of data that can be used to understand equity-related conditions and impacts. The Part 3 flow data are particularly helpful for equity analysis because they quantify travel demand between origin-destination pairs, and can be used to compute accessibility metrics. These can subsequently be compared for different demographic groups and places.

Although Part 3 contains much useful information from an equity analysis perspective, it does not include origin-destination flows cross-tabulated simultaneously by mode and race/ethnicity. This crosstab is particularly important because Title VI of the 1964 Civil Rights Act prohibits discrimination on the basis of “race, color, or national origin”; and travel

times between origin-destination pairs depend critically upon mode.

Here, we demonstrate a reproducible method that can be used to generate synthetic flow tables that include the desired cross-tabulation using the 2006–2010 CTPP data. We also provide some evidence using CTPP Part 1 Residence and Part 2 Workplace data, demonstrating that there are substantial differences between the public transit commuting patterns of people of color as compared to the white population. The case study area is Harris County, Texas, which contains the City of Houston. Houston METRO operates fixed-route transit service in the region, and has undertaken a number of high-profile operational and capital improvements over the past decade, including a major bus network redesign and several light-rail lines.

Methodology and Results

Basic differences between demographic groups can be gleaned from the CTPP Part 1

and Part 2 data. Figure 1 shows a dot density plot based on Part 1 data, where one dot equals 10 commuters using public transit. The figure illustrates that, while transit commuters originate from across the County, the dots are not uniformly mixed, and there are generally more commuters who are nonwhite. Because of the substantial overlap of destinations in the downtown and Medical Center neighborhoods, Figure 2 shows people of color and white residents separately. The difference in commute destinations between these two demographic groups is stark. While the two neighborhoods already mentioned constitute major trip generators, commute destinations for people of color are much more widely dispersed compared to those for white residents. These differences will likely affect calculated levels of service for both groups.

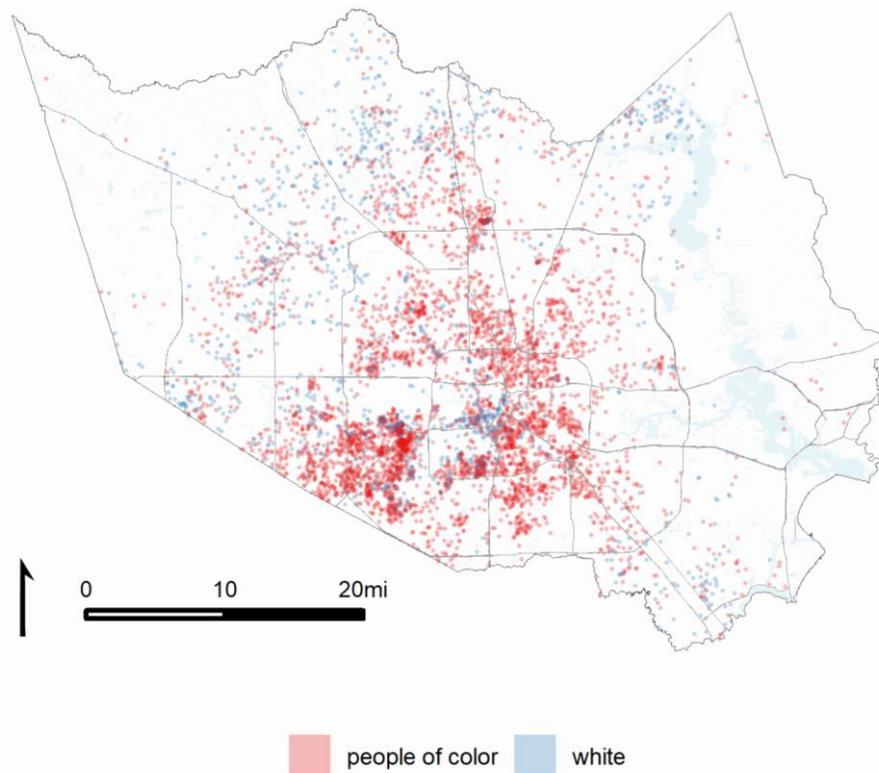


Figure 1. Location of public transit commuters originating in Harris County, Texas, at their place of residence, shown separately for white residents and people of color. One dot = 10 commuters. Source: 2006–2010 CTPP Part 1.

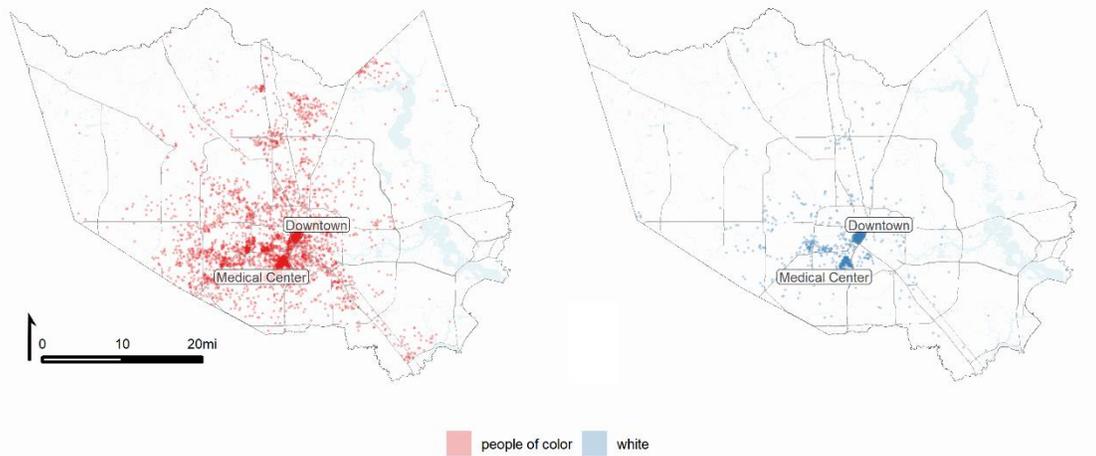


Figure 2. Location of public transit commuters with destinations in Harris County, Texas, at their place of work, shown separately for white residents and people of color. One dot = 10 commuters. Source: 2006–2010 CTPP Part 1.

To shed light on accessibility conditions for these two demographic groups resulting from a service change, we created a synthetic minority status/mode flow table using an iterative proportional fitting (IPF) approach. The IPF procedure was implemented in R and integrates information from all three parts of the CTPP. In effect, the IPF procedure splits the Part 3 table into two—one for the white population, and one for people of color—the two racial groups identified in the CTPP. To create initial seed tables, the overall share of public transit users across the combined statistical area was used, and the rows and columns were balanced so that their sums equaled the Part 3 totals. The general IPF procedure is illustrated in Figure 3.

These synthetic flow tables facilitate the creation of accessibility measures, and illustrate the care that must be taken when assessing levels of service for different demographic groups. Specifically, we assess journey-to-work characteristics for all commuters working in Medical Center. Figure 4 shows the origin locations of all public transit commuters to Medical Center.

While most of the approximately 600 white transit commuters into the neighborhood live relatively close by, many of the 3,300 people of color who commute by transit live relatively further away. Calculating trip characteristics for these two groups using OpenTripPlanner and a GTFS feed created after the System Reimagining reveals that the average peak-period journey time for a person of color making the trip to Medical Center is about 58 minutes, compared to 44 minutes for the equivalent white commuter. Clearly, different public transit investments will benefit each of these groups differently.

Conclusions

The CTPP offers a rich data source that can be used to assess transportation equity conditions in cities and regions across the country. Using the methods developed here, information presently missing from the CTPP can be imputed and used to assess how travel conditions differ across a region while highlighting very real differences across demographic groups.

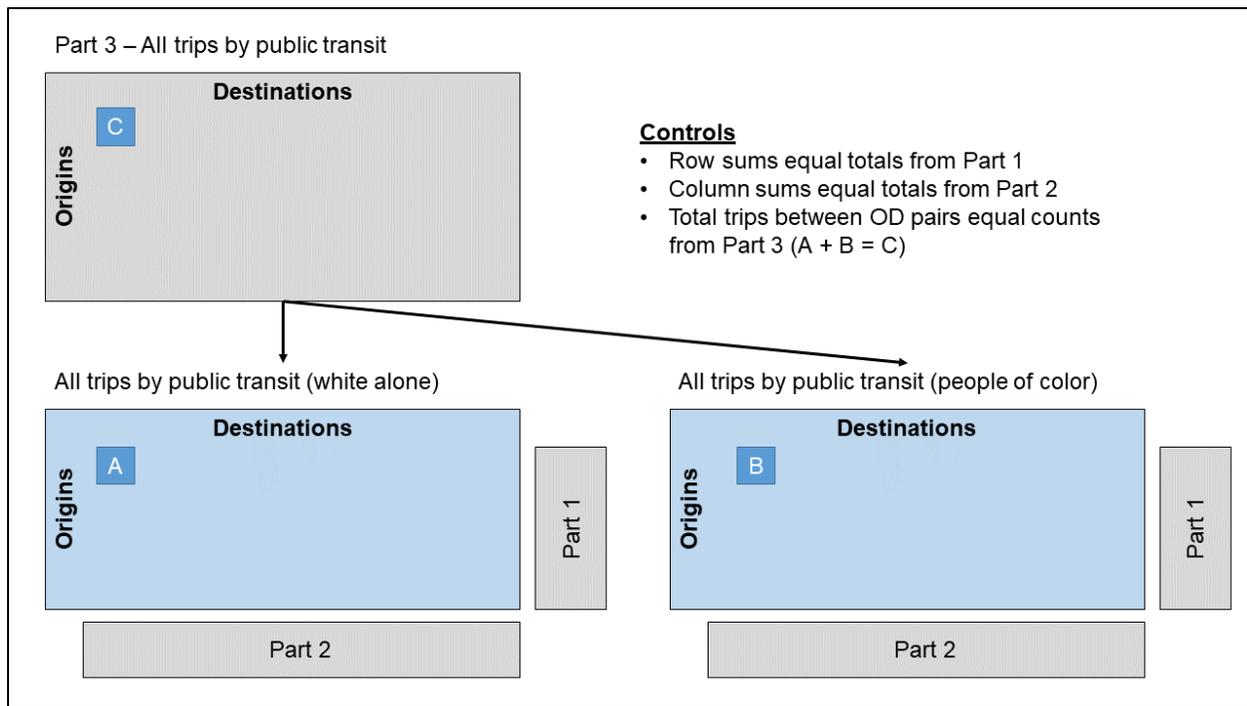


Figure 3. Approach to defining constraints using CTPP data. Grey boxes represent available input data and relevant CTPP “part,” while blue boxes represent the synthetic data to be created.

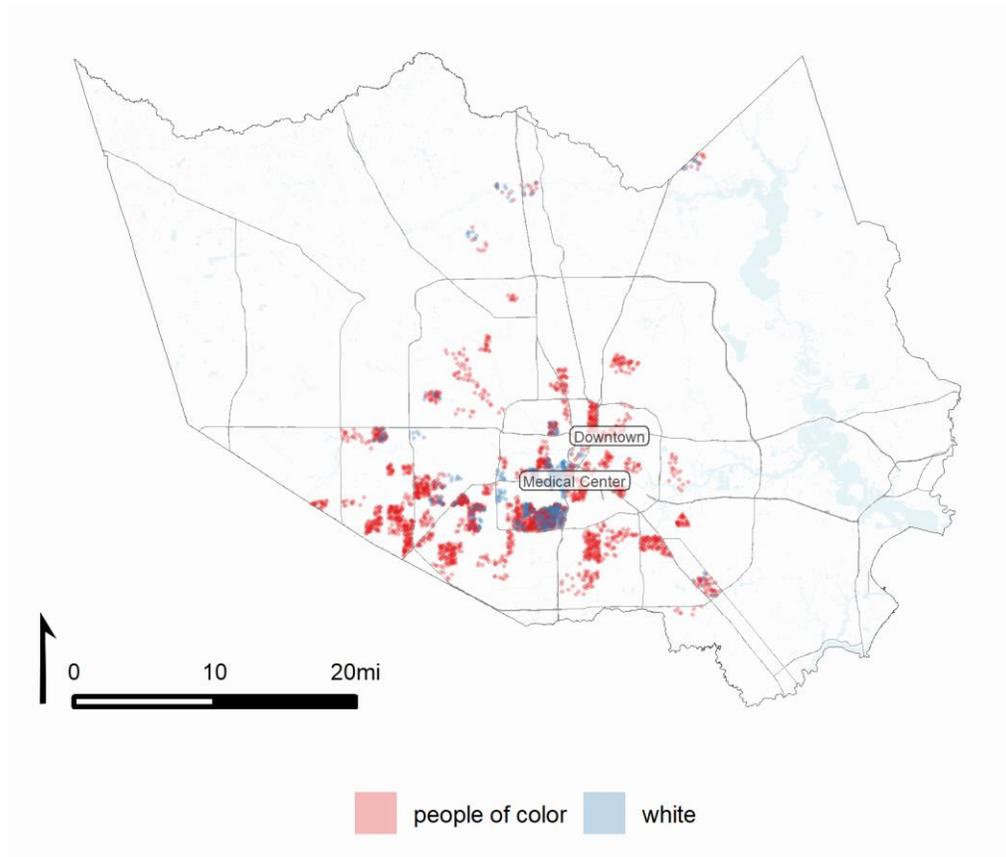


Figure 4. Location of public transit commuters with destinations in the Medical Center neighborhood, shown separately for white residents and people of color. One dot = 10 commuters. Source: 2006–2010 CTPP Part 1.

CTPP Contact List

Email: CTPPSupport@camsys.com

2012–2016 CTPP Data: <https://ctpp.transportation.org/2012-2016-5-year-ctpp/>

CTPP website: https://www.fhwa.dot.gov/planning/census_issues/ctpp/

FHWA website for Census issues: https://www.fhwa.dot.gov/planning/census_issues

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

2006–2010 CTPP Data: <https://ctpp.transportation.org/ctpp-data-set-information/5-year-data/>

1990 and 2000 CTPP data downloadable via Transtats: <https://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.