



# CTPP 2000 Status Report

April 2006

U.S. Department of Transportation  
Federal Highway Administration  
Bureau of Transportation Statistics  
Federal Transit Administration  
In cooperation with the TRB Census Subcommittee

## New Criteria for 2010 Census Geography Expected Summer 2006

In the summer of 2006, the Census Bureau (CB) will be releasing criteria for defining Census geography via the Federal Register. Criteria will be listed for 2010 statistical geographic areas: Census Tracts, Block Groups (BGs), Census County Divisions (CCDs--defined in 22, mostly southern and western states), and Census Designated Places (CDPs), all defined as part of the CB's Participant Statistical Areas Program (PSAP). The CB anticipates releasing the notices in two pairs: Tracts and BGs together, followed by notices for CCDs and CDPs. We will post these criteria to the CTPP listserve.

As a first step prior to publication of FRs, the CB's Statistical Areas Committee will review proposed criteria. CB Staff are discussing the possibility of increasing minimum population for a block group from 300 to 1,200 people. The minimum population for a tract is 1,500, maximum is 8,000 and optimal population is 4,000. Tracts from year 2000 whose population range falls in the optimum range should not be changed. Mergers should be allowed for tracts whose population is below the minimum, and tracts with more than 9,000 people would be split internally. As far as possible, CB prefers to maintain geographic consistency over time.

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## What's going on at the U.S. Census Bureau?

### 2007 Budget

The Census Bureau is working with the Congress on budget planning. The process is moving ahead as anticipated and the Census Bureau is confident the money needed to conduct the 2007 ACS, including Group Quarters as in 2006, will be allocated.

### National Content Test

The Census Bureau is testing new questions and rewording of existing questions for potential inclusion in the 2008 ACS. Potential changes could include detailed migration changes, marital history, and health insurance coverage along with some changes to the questions on working last week. This question could affect the number of counted workers from ACS. Other changes being tested relate to the layout of the actual questions. Once the results are analyzed, there will be more information available on what changes will be implemented.

### Census Guidebook

The Census Guidebook on using ACS data is still forthcoming. In the meantime, check out "The Guide" section of the ACS website available at:

[http://www.census.gov/acs/www/Products/users\\_guide/index.htm](http://www.census.gov/acs/www/Products/users_guide/index.htm). You can find out more information about the survey itself as well as the data products available.

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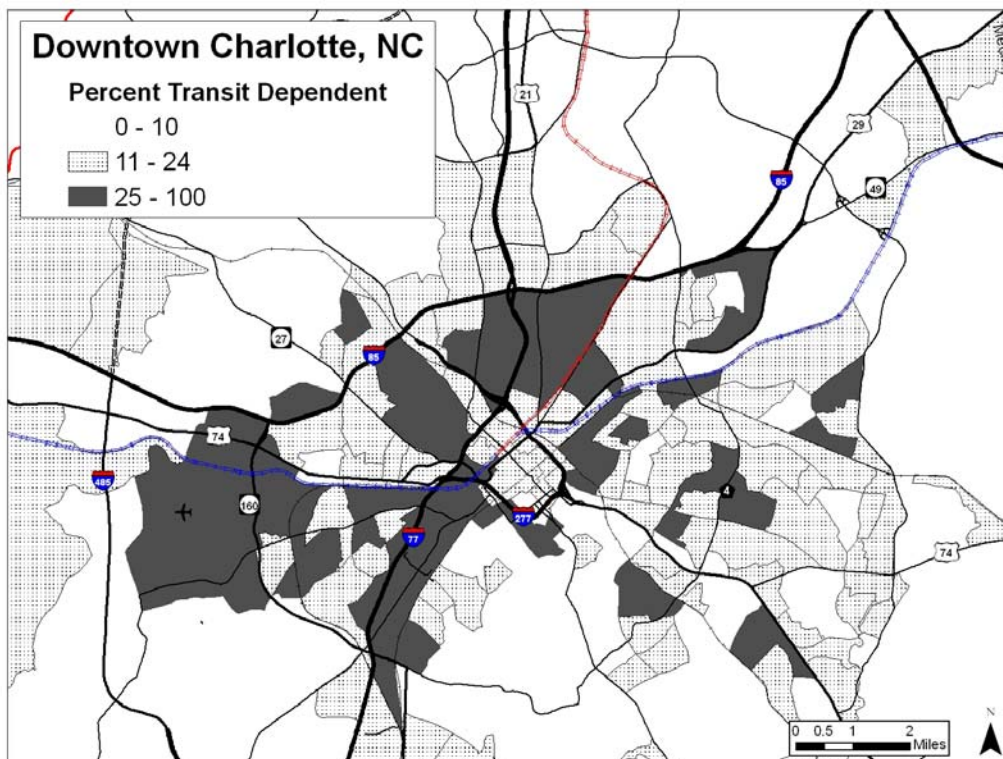
## Calculating/Analyzing Transit Dependent Populations Using 2000 Census Data and GIS

Todd Alan Steiss, Senior Planner, Parsons Brinckerhoff ([steiss@pbworld.com](mailto:steiss@pbworld.com))

Identifying transit dependent populations is an important tool for determining where new transit service should be provided or how existing systems can be modified to better serve the population in need. Unfortunately there are no clear guidelines on how to calculate a single value that represents those that are transit dependent. Groups often considered transit dependents include the elderly, the young, low income individuals, and households without vehicles available. The census provides data on groups that maybe considered transit dependent but often these groups overlap. While presenting this information independently is useful, it is advantageous to have a composite value that describes where “transit dependent” populations live. So rather than focus on why individuals are transit dependent, a more basic method is to determine where there is a limitation of vehicles available.

The census sample data at the block group level (SF3) provides the aggregate number of vehicles available for households. The number of persons in households that are eligible to drive can be derived by subtracting the group quarters population from the total population age 16 and over. This assumes that most persons in group quarters are of driving age (some exceptions may exist). Using this basic concept, the following formula can be applied to determine the transit dependent population age 16 and over that lives in households:

- Household Drivers = Population Age 16 and over – Persons in Group Quarters
- Transit Dependent Population (16+ within households) = Household Drivers – Autos Available



This changes the focus from the reasons why individuals may not drive (age, income, mobility) to identifying where there are limited vehicles available for individuals to use. Areas that have the largest disparity between auto drivers and autos available are more likely to be transit dependent than areas that have nearly a one to one ratio between auto drivers and autos available. And for those areas that do have a large disparity between drivers and autos available, there may be multiple reasons why this disparity exists. It could be due to age, income, mobility, or a combination of factors. The results however provide a more simplified way to determine where transit is most needed regardless of the individual's constraints.

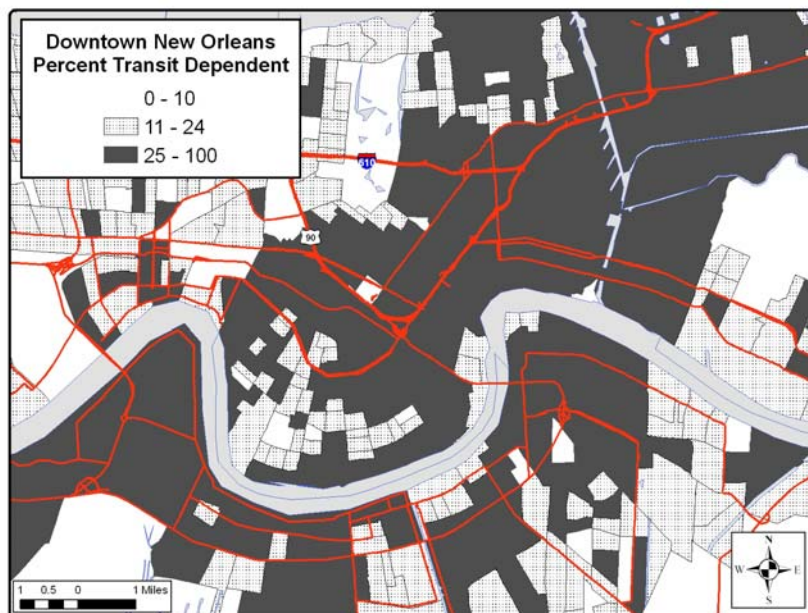
The above calculation may be best for commuter rail or express bus planning since it focuses on the workforce population. For light rail and local bus planning, the inclusion of children that are dependent enough to use transit (age 12 to 15) and non-institutional group quarters populations should be considered. Both groups can be derived from the census and added to the previous calculation without double counting.

In light of the recent hurricane, a major issue has been raised as to how to evacuate populated areas that do not have access to a personal vehicle. Identifying the location of transit dependent populations can play a

critical role in hurricane evacuation planning. With this knowledge, local buses can be stationed at key locations to load and evacuate the community.

Key advantages in using this methodology are: 1) the results targets areas where vehicles are less available; 2) it avoids overlapping the count of "potential" transit users; and 3) it provides a single value to represent transit dependent populations. For details on specific tables used for this analysis or any other questions, please contact the Todd Steiss at [steiss@pbworld.com](mailto:steiss@pbworld.com).

An attempt was made to replicate this method for calculating transit dependent populations using CTPP data. While most STF3 data sources could be substituted with CTPP tables, there were some shortfalls. Transit dependent non-drivers age 12 to 15 can be obtained from CTPP Table P1-053 Age by School Enrollment and the driving age population can be obtained from CTPP Table P1-051 Sex by Age. Total vehicles are available from CTPP Table P1-109. Surprisingly there is no CTPP table that allows for the distinction between household population and group quarters population. This raises the question as to how a simple persons per household ratio is derived using CTPP data. To obtain detailed group quarters data at the TAZ level, the best option is to aggregate block level data from STF1 up to the TAZ level.



## Use of CTPP 2000 in FTA New Starts Analysis

By Eric Pihl, FTA

FTA's ongoing research efforts have included the development of a CTPP-based Aggregate Rail Ridership Forecasting Model. This model estimates total unlinked rail transit trips for light rail and commuter rail systems by applying a series of expected rail shares to the amount of total (all mode) travel to work occurring within the rail corridor. The corridor is defined using a series of concentric buffers around each rail station and total travel within these buffers is obtained from the journey-to-work (JTW) flow data from the Year 2000 Census Transportation Planning Package (CTPP 2000).

Commuter rail ridership estimates are also based on the service characteristics of the commuter rail system.

This model is intended to develop order-of-magnitude estimates of ridership for new rail lines in metropolitan areas where no existing fixed guideway transit facilities are present—so called “New” New Starts. The model was calibrated to represent ridership on existing systems throughout the country that are generally similar to these proposed lines. Because “New” New Starts are generally in growing cities without an extensive history of fixed guideway transit, the calibration excluded LRT systems in the very largest metropolitan areas and those that have been in operation for many decades. Commuter rail systems were excluded if they were part of a large network that has been in operation for many decades.

The base travel information for this model is obtained from the CTPP 2000, Part 3 JTW Flow Data. For the rail systems that existed in 2000, the flow data already represented development patterns and travel that may have been encouraged by the rail line itself. For proposed systems, this model provides an estimate of the demand based on existing

development and flows without the rail line. Estimates of future-year demand, should either be adjusted to represent expected growth in the corridor or used as part of the calibration process to adjust conventional travel forecasting models.

The LRT Aggregate Rail Ridership Forecasting Model estimates weekday unlinked trips as follows:

### Weekday Unlinked (Drive Access to Work)

Rail Trips=  $0.030 * \text{CTPP PNR 6 -to-1 Mile JTW Flows (<50K Den)} + 0.202 * \text{CTPP PNR 6 -to-1 Mile JTW Flows (>50K Den)}$

### Weekday Unlinked Other (Non-Drive Access to Work)

Rail Trips=  $0.395 * \text{CTPP 2 -to-1 Mile JTW Flows (<50K Den)} + 0.445 * \text{CTPP 2 -to-1 Mile JTW Flows (>50K Den)}$

Total Weekday Unlinked Rail Trips= Weekday Unlinked Drive Access to Work Rail Trips + Weekday Unlinked Other Rail Trips

Where:

CTPP PNR 6-to-1 Mile JTW Flows (<50K Den) is the total JTW flow for cases where home is within 6 miles of a rail station with Park-Ride facilities, work is within 1 mile of any rail station, and the worker density (from the CTPP) at the work end of the journey is less than 50,000 workers per square mile.

CTPP PNR 6-to-1 Mile JTW Flows (>50K Den) is the total JTW flow for cases where home is within 6 miles of a rail station with Park-Ride facilities, work is within 1 mile of any rail station, and the worker density (from

the CTPP) at the work end of the journey is greater than 50,000 workers per square mile.

CTPP 2-to-1 Mile JTW Flows (<50K) is the total JTW flow for cases where home is within 2 miles of any rail station, work is within 1 mile of any rail, and the worker density (from the CTPP) at the work end of the journey is less than 50,000 workers per square mile.

CTPP 2-to-1 Mile JTW Flows (>50K) is the total JTW flow for cases where home is within

2 miles of any rail station, work is within 1 mile of any rail, and the worker density (from the CTPP) at the work end of the journey is greater than 50,000 workers per square mile.

Ridership is present in the following dimensions:

1. Ridership based on directional route miles
2. Ridership based on CTPP model.

## What's going on at Census?

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### Hurricane Impacts

The Census Bureau will produce a special ACS data product designed to reflect characteristics of areas in which Hurricanes Katrina and Rita had a major impact. This product will have two components:

- (a) Characteristics from January through August 2005, and
- (b) Characteristics for September through December 2005.

The Census Bureau's Population Estimates Program produces official estimates of the population size of geographic areas. We expect to release this product in early summer 2006.

### 2005 ACS Data Release Schedule

The 2005 ACS data will be released starting in late August of this year. This release brings the first Puerto Rico data. Group Quarters data is being collected right now and will be part of the release of the 2006 ACS data in fall of 2007.

August 2006: Basic Social and Demographic Data and Economic Data in profiles  
Perhaps PUMS will be released  
(subject to change)

October 2006: Housing Data and Workplace geography tables.

November 2006: Selected Population Profiles.

(All of these dates are subject to change)

## The Use of CTPP Data for Commuter Rail Demand Analysis in Danbury Connecticut

By Bruce Kaplan and Karla Karash, TranSystems Corporation

In 2003 and 2004, TranSystems used CTPP data as part of Phase I of a project considering the feasibility of electrifying Metro-North's Danbury commuter rail line. Connecticut's Housatonic Valley Region experienced rapid population growth and significant changes in journey-to-work patterns between 1990 and 2000. Although ConnDOT incorporated the new Census 2000 demographic data into its state travel demand model, some concerns had been raised regarding the model's representation of the region's changing work trip patterns. These concerns would have been allayed if the new Census 2000 Journey-to-Work (JTW) information were incorporated into the model.



Picture courtesy of Washington Group International

Incorporating the new JTW information might have been a simple modification of the ConnDOT model if the JTW data had been available at the Transportation Analysis Zone (TAZ) level. However, the CTPP JTW information only existed at the more aggregate municipality (town) level and would not have been available at the TAZ level before the completion of Phase I of the study. Hence, the available town level data from the CTPP was used to

adjust the trip tables to ensure that the Phase I ridership forecasts for the Danbury Electrification project reflect the latest information on travel patterns.

The approach that was used involved modifying the model's Home-Based Work (HBW) Production-Attraction table, which to adequately reflect the region's new municipal JTW flows. The Production-Attraction table is a matrix showing the number of trips that start at each home zone and end at each work zone.

ConnDOT provided the Study Team with the HBW Production-Attraction table at the TAZ level from its most recent year 2000 model run, as well as a HBW Production-Attraction table from a base year 1990 run. ConnDOT also provided the Study Team with a geographic file that defined the TAZs used in the model. The HBW Production-Attraction table from year 2000 was modified to adequately represent the new journey-to-work data.

Because the CTPP JTW data is not a precise analog for HBW productions and attractions, the town-to-town JTW data needed to be modified. The two matrices (JTW town-to-town and Production-Attraction HBW TAZ-to-TAZ) needed to have an equal number of total trips in order to remain consistent. [The town-to-town JTW matrix had a greater number of trips than the HBW Production-Attraction matrix.] The total number of trips in each matrix was summed. The JTW town-to-town matrix was adjusted so that its trip totals matched those of the HBW matrix.

The Study Team then used TRANSCAD's tri-proportional routine in conjunction with a doubly constrained growth factor (Fratrar) model routine to update the HBW

Production-Attraction table. The tri-proportional routine allowed us to constrain aggregated zonal pairs (i.e., town-to-town flows) in the matrix. We then matched these aggregated zonal pairs to the adjusted 2000 JTW data by municipality. A new HBW Production-Attraction table was created as a result, that reflects the travel patterns of the CTPP JTW data but maintains consistency with the original total number of trips in the HBW Production-Attraction table.

The new HBW Production-Attraction table was sent to ConnDOT and incorporated into the state travel demand model. The remaining steps of the model, mode choice and network assignment, were then run. The modeled rail boardings at the stations and HBW rail station-to-station Origination-Destination (OD) matrix on the Danbury Line branch were contrasted and compared to the old modeled rail HBW station-to-station OD matrix and boardings for the Danbury branch, as well as the MetroNorth 2003 ticket sales information (OD patterns) and the 2001 MetroNorth station boarding counts. This comparison showed that the adjustment resulted in rail travel that is consistent with the actual recent rail trip data (besides matching the CTPP JTW information from 2000). Based on this

comparison, ConnDOT determined the revised trip table was appropriate for use as the basis for Phase I forecasting.

Since the project was evaluated for the horizon year of 2020, it was not the year 2000 trip table that was most important. The Year 2020 trip table is normally generated by running trip generation and trip distribution steps of the model based on 2020 input data. Doing so captures the influences of changes in the transportation network and land uses on the patterns of travel. But this would negate effect of the adjustments made to the Year 2000 trip table. Another method sometimes used for future forecasts is to expand the current trip table into the future using a Fratar procedure so that the trip generation information is used but the trip distribution matches the current one. This method would be appropriate if we wish to preserve the effects on the trip distribution made to the Year 2000 trip table. The Study Team ran TRANSCAD's Fratar model routine to create this new future year HBW Production-Attraction matrix based on the adjusted Year 2000 trip table and ConnDOT's Year 2020 trip generation results. ConnDOT was then able to run the forecasts (mode choice and assignment) using this adjusted Year 2020 trip table to obtain the Phase I results and provide a sensitivity analysis.

### **Staff Departure**

On April 14, 2006, Clara Reschovsky left the Census Bureau to work for the Metropolitan Washington Council of Governments. Clara has been a key staff of the CTPP Working Group and will be missed. We wish her well in her new position.

## Census Data Subcommittee Meeting at 2006 TRB Meeting: Highlights

By Bob Sicko, Mirai Associates

The Subcommittee on Census Data, ABJ30 (1), met on January 25, 2006 at the Annual Meeting of the Transportation Research Board. Over thirty persons attended, representing Federal and State agencies, MPOs, consulting firms, and academia.

The agenda included an update on current activities from Census Bureau staff and a detailed review of CTPP 2000 provided by staff from the Delaware Valley Regional Planning Commission (DVRPC).

### Review of CTPP 2000

DVRPC staff, Thabet Zakaria, and Scott Brady focused on their experience with CTPP 2000. The DVRPC relies heavily on CTPP for almost all of their planning projects. The evaluation of the CTPP database was done at three levels of geography - the transportation analysis zone (TAZ), municipal/jurisdictional, and county levels.

Before data was used in the analysis it was adjusted to match local information. Place of residence data on population, employed persons, and vehicles available were adjusted using Census 2000 minor civilian division (MCD) and county control totals. Place of work data on employed persons at work were expanded to represent total jobs, using Census 2000 data plus DVRPC research and surveys. The review of the data was very illustrative of the many issues MPO and planning professionals need to be aware of as they use the CTPP.

Recommendations made by DVRPC staff include:

- Re-interviewing for nonresponse,
- Involving MPOs in place of work geocoding, increased public relations programs,

- Procedures that protect confidentiality while maintaining data quality.

DVRPC staff concluded that CTPP Parts 1 and 2 were of good quality data and useable, but that much of Part 3 flow data were unusable due to the effects of Census Bureau disclosure rules.

Nanda Srinivasan, Cambridge Systematics Inc., provided an overview of the CTPP User Survey. The survey highlighted similar issues expressed by DVRPC staff, including late delivery of data, and the effect of disclosure rules on data usability. Users liked CTPP Content, technical support, and communication via the CTPP Status Report.

### Update on ACS

Lisa Blumerman (CB) provided an update on ACS activities, including release of data for states affected by hurricanes. CB secured funding to fully implement ACS in 2005.

### Other Data Committees

I also attended meetings of other data related committees to get a sense of how the major changes in the type of data being released from the Census Bureau may affect the data needs. There seems to be a growing need for small to mid-size planning agencies to use small area data, yet there is little understanding of using ACS versus the traditional CTPP product. The travel demand modeling community is promoting the nascent methodology of activity-based modeling. The key census product used in their work is the PUMS data set. There was some discussion on the potential usability of an ACS PUMS data set.



## New Criteria for 2010 Census Geography to be posted in Fed Reg, Summer 2006

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In late 2007, the Census Bureau will identify primary participants who will be in charge of developing these geographies. The Census Bureau would like regional entities with a focus on multiple counties as primary participants in reviewing and updating boundaries for these statistical geographies in their areas. These regional entities could then work with other local entities to define the geography. MPOs, being regional entities, are perfectly situated to be the primary participants in the definition of regional small geography.

In Summer 2008, CB anticipates sending primary participants a PC based

application to aid the review and update of Tracts , BGs, CCDs, and CDPs. The application will have modules and data for the update process. The same software will be used for other statistical area updates. We currently expect that the TAZ geography delineation to take place immediately after the tract definitions.

For more information on proposed criteria for Tracts, BGs, CCDs, and CDPs, as well as PSAP plans for the 2010 Census, please contact Mike Ratcliffe, Vince Osier, or April Avnayim, Geography Division, Census Bureau, at 301-763-3056.

The table below shows a list of other small geography defined by local partners.

Area	Description	Defined by
Census blocks	A geographic area bounded by visible and/or invisible features shown on a map prepared by the U.S. Census Bureau. A block is the smallest geographic entity for which the Census Bureau tabulates decennial census data.	Census Bureau with input from tribal officials and State Redistricting Data Program participants
Census block groups (BGs)	A statistical subdivision of a census tract consisting of all census blocks whose numbers begin with the same digit in a census tract.	Local partners (government agencies, regional organizations, other data users)
Census tracts	A small, relatively permanent statistical subdivision of a county or statistically equivalent entity, delineated for data presentation purposes. Census tract boundaries are delineated with the intention of being stable over many decades.	Local partners (government agencies, regional organizations, other data users)
Census designated places (CDPs)	A geographic entity with a concentration of population, housing, and commercial structures that is identifiable by name, but is not within an incorporated place.	Local partners (government agencies, regional organizations, other data users)
Census county divisions (CCDs)	A statistical subdivision of a county established in 22 States that do not have minor civil divisions (MCDs).	Local partners (government agencies, regional organizations, other data users)

## **CTPP Hotline – 202-366-5000**

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CTPP Website: <http://www.dot.gov/ctpp>

TRB Sub-committee on census data: <http://www.trbcensus.com>

FHWA Website for Census issues: <http://www.fhwa.dot.gov/planning/census>

CTPP 2000 Profiles: <http://www.transportation.org/ctpp>

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

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## **CTPP Listserve**

The CTPP Listserve serves as a web-forum for posting questions, and sharing information on Census data. Currently, over 700 users are subscribed to the listserv.

To subscribe, please register by filling a form posted at:

<http://www.chrispy.net/mailman/listinfo/ctpp-news>

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

For questions on the listserv, please e-mail Ed Christopher at [edc@berwyned.com](mailto:edc@berwyned.com).