Getting to Know CTPP ACTS

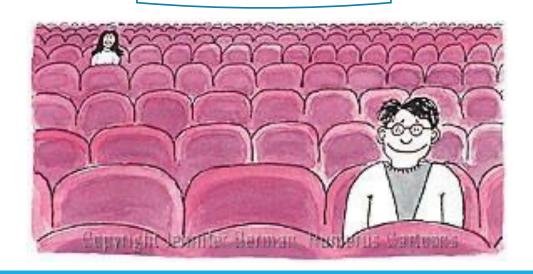
AASHTO Census Transportation Solutions

Designed by the transportation community to help with your planning needs



TEMPO Executive Directors Fall Meeting Fall 2023

ACTS Presentation



What is the CTPP ACTS?

AASHTO Census Transportation Solutions Program

AASHTO sponsored Technical Services Program funded by member State Transportation agencies

Operates with cooperation from FHWA, OST-R (BTS), FTA, Census Bureau, MPOs and TRB

The ACTS Program includes:

- Census Transportation Planning Products Data Products
- Training and Technical Assistance
- Research and Outreach



Guided by an AASHTO Oversight Board

States

(Region I)

Thomas Hill, FL (Region II)
Habte Kassa, GA (Region II)
Sam Granato, OH (Region III)
Delwar Murshed, WA (Region IV)
Tammye Fontenot, TX (Region IV)
Denise Whitney Dahlke, OR (Region IV)

MPO/RPO/TPO/Transit

Arash Mirzaei, NCTCOG Catherine Tulley, SPC MaryAnn Waldinger, COMPASS Laurent Ahiablame, CMAP Rea Donna Jones, Texarkana MPO Petya Maneva, MAG Somayeh Moazzeni, DART Jonathan Lupton, Metroplan Chair: Samantha Biddle, MD (Region I)
Vice Chair: Guy Rousseau, ARC
AASHTO Liaison: Penelope Weinberger

18 voting members, 9 states and 8 MPOs 2 transit

Liaisons

Charlynn Burd, Census Bureau Thomas Marchwinski, FTA Joseph Hausman, FHWA Brian McKenzie, Census Bureau

Clara Reschovsky, OST-R, BTS

AASHTO Staff

Penelope Weinberger Kyla Elzinga

Subject Matter Experts

Association Adjuncts

AMPO NARC NADO

Technical Adjuncts

Big Changes

New program name and logo

ACTS



New CTPP software

Winter 2023/2024 – with API

New data

2024 – based on 2017 – 2021 ACS

New five-year program – 2025 – 2029





SOLUTIONS

2025–2029 ACTS Program Proposed Funding by State by Population (at 2.7¢)

rroposed randing by state by ropulation (at 2.74)					
State	2022 Population Estimate*	ACTS Five Year Fund Commitment	State	2022 Population Estimate*	ACTS Five Year Fund Commitment
Alabama	5,074,296	\$ 135,488.26	Montana	1,122,867	\$ 29,981.56
Alaska	733,583	\$ 19,587.33	Nebraska	1,967,923	\$ 52,545.31
Arizona	7,359,197	\$ 196,497.17	Nevada	3,177,772	\$ 84,849.37
Arkansas	3,045,637	\$ 81,321.24	New Hampshire	1,395,231	\$ 37,253.92
California	39,029,342	\$ 1,042,118.50	New Jersey	9,261,699	\$ 247,295.69
Colorado	5,839,926	\$ 155,931.27	New Mexico	2,113,344	\$ 56,428.18
Connecticut	3,626,205	\$ 96,822.93	New York	19,677,151	\$ 525,397.61
Delaware	1,018,396	\$ 27,192.09	North Carolina	10,698,973	\$ 285,672.19
District of Columbia	671,803	\$ 17,937.74	North Dakota	779,261	\$ 20,806.97
Florida	22,244,823	\$ 593,956.76	Ohio	11,756,058	\$ 313,897.31
Georgia	10,912,876	\$ 291,383.59	Oklahoma	4,019,800	\$ 107,332.27
Hawaii	1,440,196	\$ 38,454.53	Oregon	4,240,137	\$ 113,215.47
Idaho	1,939,033	\$ 51,773.92	Pennsylvania	12,972,008	\$ 346,364.27
Illinois	12,582,032	\$ 335,951.56	Puerto Rico	3,221,789	\$ 86,024.66

Indiana	6,833,037	\$ 182,448.23	Rhode Island	1,093,734	s	29,203.68
lowa	3,200,517	85,456.68	South Carolina	5,282,634		141,051.07
Kansas	2,937,150	 78,424.54	South Dakota	909,824		24,293.12
Kentucky	4,512,310		Tennessee	7.051,339		188,277.09
Louisiana	4,590,241	122,563.56	Texas	30,029,572		801,816.55
Maine	1,385,340	36,989.82	Utah	3,380,800		90,270.40
Maryland	6,164,660	164,601.96	Vermont	647,064		17,277.19
Massachusetts	6,981,974	186,424.98	Virginia	8,683,619		231,860.43
Michigan	10,034,113	267,919.83	Washington	7,785,786		207,887.48
Minnesota	5,717,184	\$ 152,653.95	West Virginia	1,775,156	Ş	47,398.26
Mississippi	2,940,057	\$ 78,502.16	Wisconsin	5,892,539	Ş	157,336.09
Missouri	6,177,957	\$ 164,957.00	Wyoming	581,381	\$	15,523.40

Total: \$ 8,985,101.90

^{*}Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia, and Puerto Rico: April 1, 2020 to July 1, 2022. U.S. Census Bureau, Population Division.

Products

Data

- Census Data purchased from Census Bureau (ACS)
 - Current data set is 2012-2016
 - Next data set (2017-2021): anticipated release in 2024

Training

- eLearning
- Live training

Research

- Commuting in America
- Census Data Field Guide
- Long Term Covid-19 Impacts on Travel Behavior

CTPP Data:

What we get that we cannot get from ACS

- 1. Crosstabs relevant to transportation planners
- 2. Workplace based data at small geographies
- 3. Flows from home to work

Training/Technical Assistance

Research - Commuting In America Briefs

The Role of Commuting in Overall Travel

Population and Worker Trends

Population and Worker Dynamics

The Nature and Pattern of Jobs

Job Dynamics

Vehicle and Transit Availability

Consumer Spending on Transportation

How Commuting Influences Travel

Commuting Mode Choice

Commuting Departure Time and Trip Time

Auto Commuting

Transit Commuting

Bicycling and Walk Commuting

Commuting Flow Patterns

The Evolving Role of Commuting

A minute for Commuting in America

Commuting in America series

Traveltrends.transportation.org

Commuting in America 2021



Brief 21.1. The Changing Nature of Work

April 14, 2021

Commuting in America

Brief 21.2 Vehicle **Availability Patterns** and Trends

April 14, 2021

Imminent CIA Briefs

The Evolution of US Households

- The number of people, drivers, households, vehicles, and workers have all increased substantially since 1995.
- In the same time period the amount of travel--measured in person trips, vehicle trips, and household-generated vehicle miles of travel--did not increase or declined slightly.
- On a per-household basis, travel rates have declined about 15 percent since 1995.

Methods of Measurement and Reporting of Emerging Modes of Travel

- MaaS
- Micromobility
- Telemobility

Imminent CIA Briefs

Understanding Geographic and Demographic Variation in Mode Choice and Travel Behavior

Machine learning approaches to classify commuting behavior using individual- and neighborhood-level socio-demographic, geographic, and health factors

Upcoming CIA Briefs

Rural Commute Patterns

Approaches to Examining Equity in Commuting

Census Data Field Guide

The objective of this research is to develop a field guide for the transportation community on how to best use Census data, including the ACS, CTPP, LODES Employment-Household Dynamics (LEHD), and PUMS/PUMA, to address transportation issues.

The field guide is expected to play a critical role in enabling users at all levels to learn about and apply census data and its derivatives—efficiently, empirically, and economically.

Long Term Impacts of COVID 19 on Travel Behavior

Long term impacts of COVID 19 on travel behavior research objectives:

- Gather information about what data sources transportation planners have used and are using to track changes in travel before and during the Pandemic;
- Determine what the data gaps and insufficiencies may be; and
- Identify future data and analysis needs for advancing transportation planning efforts as the Pandemic wanes.

What is CTPP data? Why use it?

CTPP Data Products

Derived from
US Census Bureau's
American Community
Survey (ACS)

CTPP Program includes:
Data Products
Training and Technical Assistance
Research and Outreach

ACS accumulates data over multiple months and years

Areas over 65,000 people Annual Data
Areas over 20,000 people Supplemental Estimates new in 2016
Tracts and Block Groups 5 Years of data

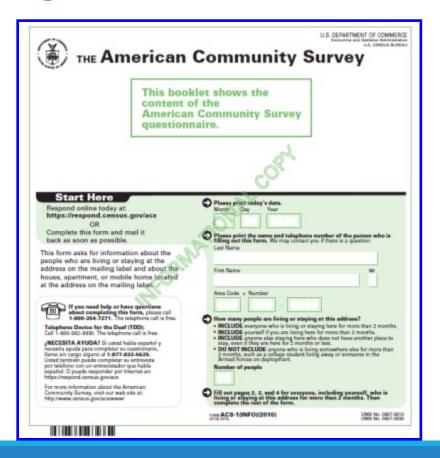
What to Use When

Looking at trends between and within areas

- 5-year ACS
- 1-year ACS
- Supplemental
- CTPP 5-year

	MPO	Chicago	Berwyn	Lyons
MPO 8,577,735	5 Yr 1 Yr Sup CTPP	5 Yr 1 Yr Sup CTPP	5 Yr Sup CTPP	5 Yr CTPP
Chicago 2,746,388	5 Yr 1 Yr Sup CTPP	5 Yr 1 Yr Sup CTPP	5 Yr Sup CTPP	5 Yr CTPP
Berwyn 57,250	5 Yr Sup CTPP	5 Yr Sup CTPP	5 Yr Sup CTPP	5 Yr CTPP
Lyons 10,817	5 Yr CTPP	5 Yr CTPP	5 Yr CTPP	5 Yr CTPP

Collecting the CTPP data



American Community Survey (1 of 2)

Respondent Perspective

On a scale of 0 to 10, how much work is it to complete the ACS form? Why do you say that?

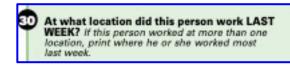
How long did it take to complete the ACS?

Which questions were confusing or difficult to answer?

Data User Perspective

Which questions are likely to be most useful for you? Which questions could be eliminated?

American Community Survey (2 of 2)



_								
•	How did this person usually get to work LAST WEEK? If this person usually used more than one method of transportation during the trip, mark (X) the box of the one used for most of the distance.							
			Car, truck, or van		Motorcycle			
			Bus or trolley bus		Bicycle			
			Streetcar or trolley car		Walked			
			Subway or elevated		Worked at home → SKIP			
			Railroad		to question 39a			
			Ferryboat		Other method			
			Taxicab					

32	ľ	How many people, including this person, usually rode to work in the car, truck, or van AST WEEK?
	F	Person(s)

How would you answer Q31 & Q32? If...

You drove your spouse to their work (2 miles from your home) and then continued on to where you work (10 miles from your home)?

You usually drive to work alone but last week you were traveling on a business trip and rode a shuttle bus from your hotel to a conference center each day?

You were on vacation last week?

You walked to work on Monday, worked at home Tuesday, Wednesday, and Thursday, and drove your car to work on Friday?

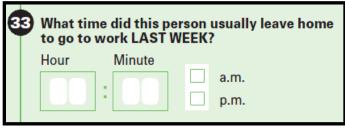
Old & New (beginning 2019) MOT Questions

(ii)	How did this person usually get to work LAST WEEK? If this person usually used more than one method of transportation during the trip, mark (X) the box of the one used for most of the distance.							
	[\Box	Car, truck, or van		Motorcycle			
	[\Box	Bus or trolley bus		Bicycle			
	[Streetcar or trolley car		Walked			
	[\Box	Subway or elevated		Worked at			
	[Railroad		home → SKIP to question 39a			
	[Ferryboat		Other method			
		\Box	Taxicab					

Mode = $\frac{\text{Means of Transportation}}{\text{(MOT) in census speak}}$

3	How did this person usually get to work LAST WEEK? Mark (X) ONE box for the method of transportation used for most of the distance.						
			Car, truck, or van		Taxicab		
			Bus		Motorcycle		
			Subway or elevated rail		Bicycle		
			Long-distance train or commuter rail		Walked		
			Light rail, streetcar, or trolley		Worked from home → SKIP to question 40a		
			Ferryboat		Other method		

Question Changes and Content Tests





2005-2019

2019

Content Test 2021, Changes 2024

- Taxi, limo, or ride hailing services
- Taxi, ride hailing services

https://www.census.gov/programs-surveys/acs/methodology/content-test.html

Weighting the ACS

Weighted by

Age, Sex, Race, Hispanic Origin



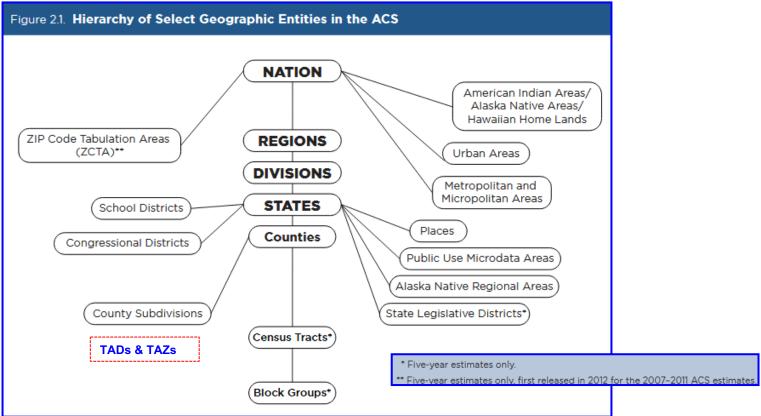
Statistical areas (Tracts, TAZs, TADs) have no control totals for pop and HU estimates

Controlled by

Official Population, Housing Units

at County level, and since 2009, Incorporated Places

ACS and CTPP Data Geography



https://census.gov/programs-surveys/acs/guidance/handbooks.html

CTPP Data is Produced for

Origins and Destinations

Place of Residence Place of Work



Flows from Home to Work

Custom Areas (Local TAZs and TADS)

Unique Universes (e.g. workers in HHs)

Some Key CTPP Data Items Include

- Data on Households
 - Size, income, vehicles per household
- Data on Workers
 - Age and sex, occupations, earnings
- Data on Journey to Work
 - Usual mode to work, commuting time, work departure time
- Data on Workplaces
 - Work locations, times of arrival at work

But what can you use the CTPP data for?



Applications of CTPP Data

- Performance
 Measurement
- Modal Share Analysis
- Equity Analysis
- FTA New Starts/Small Starts
- Travel Demand Modeling
- Policy Impact Analysis
- Livability Analysis

- Corridor Planning
- Air Quality Modeling
- Trend Analysis
- Descriptive Statistics
- Travel Forecasting
- Title VI
- Factoring/Adjusting Surveys
- Data Validation

CTPP 2012 to 2016 Data Product

Derived from ACS Data

Available On-line

Released 4/2019

Includes 12
Tabulation Areas or
Geographies

Product Structure

3-Parts

Part 1- Residence

Part 2- Workplace

Part 3- Flows between Home and Work

On-Line Data Retrieval

Extraction Software Raw Data Download

CTPP Geography

Residence (Part1) & Workplace (Part2) Summary Areas

Nation
State
County
MCD
Place
PUMA/POW PUMA
MSA
MSA Principal City
Tract
TAD
TAZ

- Includes PR except for Nation, TAD and TAZ
- Workplace counties include MEX., CAN., and Other outside US
- States/MPOs defined TADs and TAZs
- PUMAs and POW PUMAs
- MCD Only States:

СТ	ME	MA
MI	MN	NH
Ŋ	NY	PΑ
RI	VT	WI

CTPP Data Product Highlights

Some Key Features

Crosstabs with Mode

- -- Workers in HHs
- --Travel Time (Mean and Median)
- -- Household Income (Median)
- -- Vehicle Availability
- -- Age
- -- Time Leaving Home
- -- Time Arriving at Work
- -- Minority and Poverty Status
- -- Presence of Children
- -- Class of Worker

Special Universes

- -- All Persons
- -- All Workers
- -- Persons in HHs
- -- Workers in HHs
- -- Workers not working at Home

Commuter Flows

- -- Various Attributes
- -- Various Geographies

Other Features

- -- Streamlined Race Tables
- -- HH Lifecycle Tables

Privacy Protected

- -- Tables are Rounded
- -- Disclosure Proofing Applied
- -- Census DRB Approved

Includes Margins of Error

-- @ 90% Confidence

Place-of-Work Data

Part 2 Worker Count Alert

Using Part 2 Data

If you sum the workers for all the Tracts in any Place or County you'll find that your tracts totals do not match your Place or County levels



Geocoding

Simply put

Census (historically)
cannot geocode all of work
locations to the Tract,
Block Group or Block



What this Looks Like and What to Do

Workers (Table A202100, CTPP-16)										
Distribution of states based on worker difference	State Total	Counties Summed		Tracts Summed						
		Total	Diff	Total	Difference					
					Number	Percent				
West Virginia	717,985	717,985	0	412,549	-305,436	-43%				
Alabama	1,967,290	1,967,300	10	1,395,853	-571,447	-29%				
Louisiana	2,011,435	2,011,430	-5	1,436,900	-574,530	-29%				
Delaware	433,090	433,095	5	317,820	-115,275	-27%				
Tennessee	2,936,385	2,936,385	0	2,250,425	-685,960	-23%				
Utah	1,355,220	1,355,220	0	1,060,405	-294,815	-22%				
Kansas	1,417,500	1,417,510	10	1,125,635	-291,875	-21%				
Indiana	2,976,720	2,976,740	20	2,401,454	-575,286	-19%				
Wisconsin	2,817,380	2,817,375	-5	2,360,144	-457,231	-16%				
Connecticut	1,738,610	1,738,610	0	1,492,005	-246,605	-14%				
	145,768,970	145,769,040	-70	113,195,887	-32,573,153	-22%				

Example: Berwyn, IL

Workers 16 and Over WORKPLACE	Estimate	MOE	
Tract 8146, Cook, IL	725	171	
Tract 8147, Cook, IL	1,100	266	
Tract 8148, Cook, IL	1,445	331	
Tract 8149, Cook, IL	460	161	
Tract 8150, Cook, IL	375	125	
Tract 8151, Cook, IL	535	154	
Tract 8152, Cook, IL	910	198	
Tract 8153, Cook, IL	395	128	
Tract 8154, Cook, IL	3,020	373	
Tract 8155, Cook, IL	670	279	
Total	9,635	740	
Berwyn city, IL	10,815	875	

So 1,180 workers (11%) work somewhere in Berwyn but could not be coded to a Berwyn Tract

Ed's TWO-Step fix

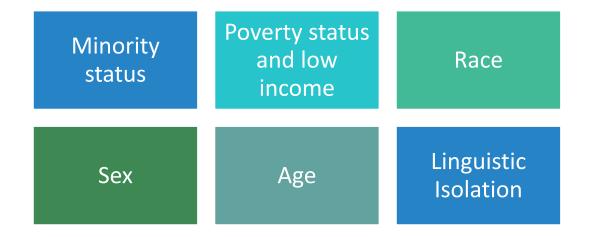
- 1. ID missing workers
- 2. Allocate them based on best info available

CTPP and Other Data Sources

Data Product	Primary Data Source	Use of ACS	Data Collection	Trips Captured	Timeframe	Privacy Limitations	Cost
СТРР	ACS	Dataset development	Continuous survey	Home-Work Commute	5-year period 2-8 years old	Yes	Free to user State sponsored
LEHD / LODES	States' employment data	For synthesizing residences	Establishment survey and data synthesis	Modeled home + work intersections	1-year period 1-2 years old	Yes	Free
LBS /Cell / GPS (Big Data)	Device location traces	Trip definition algorithms	Data tracking and synthesis	All movements sans traveler details	User specified can be < 1 month old	Yes	Project specific, but expensive
Household Travel Surveys	Small sample of travel diaries	Sample design and expansion		All trips with traveler details	Multi-month period 5-10 yr. cycle	Under agency's control	Very expensive

Specific Use Cases

Key Equity Variables in CTPP



Unique Two-way Crossed-tabulations

Population in Poverty by Vehicle Availability

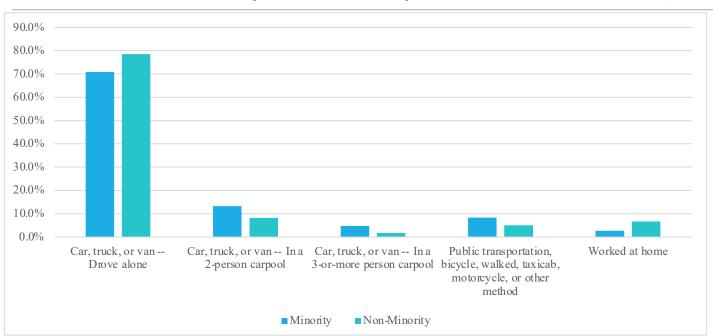
Population in Poverty by Means of Transportation

Population in Poverty by Time Leaving Home

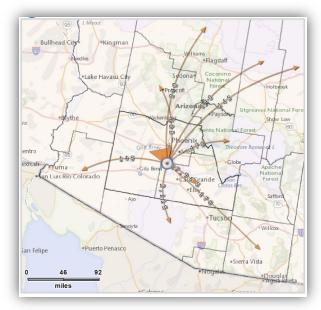
Minority Population by Means of Transportation

And more...

Mode Share by Minority Status – MAG (AZ)



Minority Commute Flows – MAG



Outbound commuting flows for minority communities



Inbound commuting flows for minority communities

CTPP to Understand Impacts of Route Change – New York City Transit

Background

- Proposed change to 25%+ of route length
- Q: Is the change disproportionately borne by low-income and minority ridership?

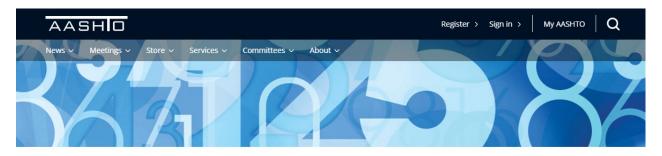
CTPP Data Used

- JTW flow data for low-income and minority tracts
- Identify the top 3 markets within service areas



Resources

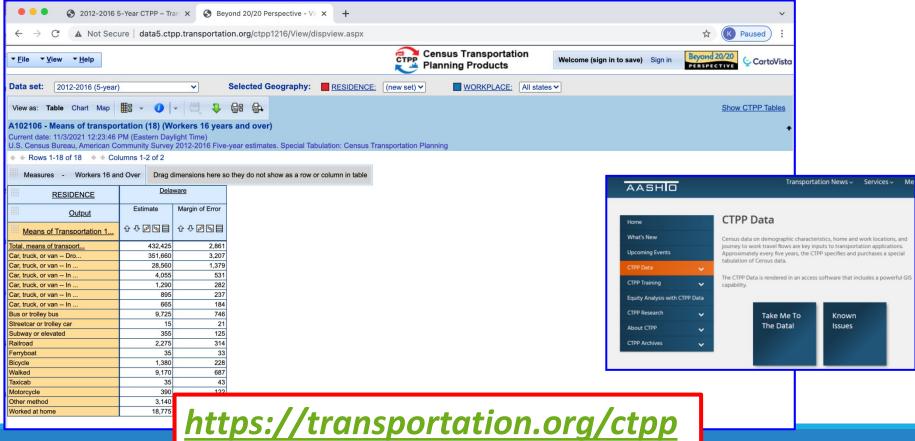
AASHTO CTPP Website





https://transportation.org/ctpp

AASHTO Website – Get the Data Here!!!



Structured Query

Map Select

Select from the drop-down menus in the below 3-step process to define the parameters for your query. Select "Retrieve Data run the query and view all relevant data.

Select a CTPP Dataset and Focus



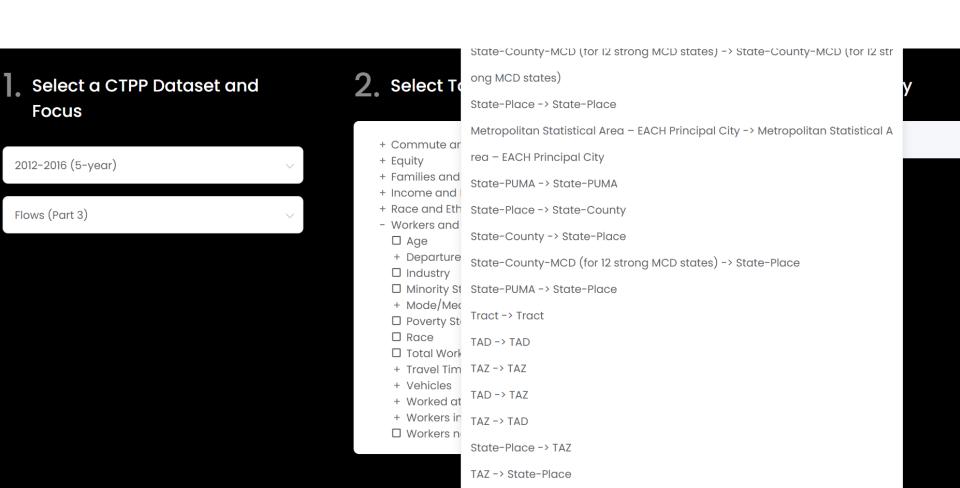
2. Select Topic(s) of Interest

- + Commute and Time
- + Equity
- + Families and Households
- + Income and Poverty
- + Race and Ethnicity
- + Workers and Employment

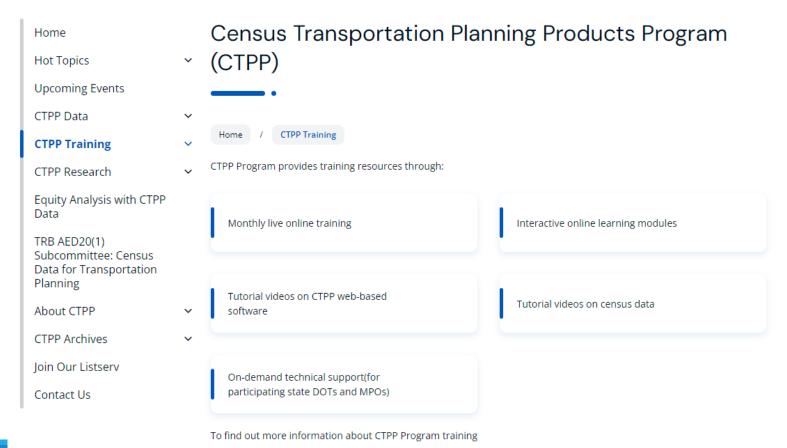
3. Select a Geography

Select a Summary Level

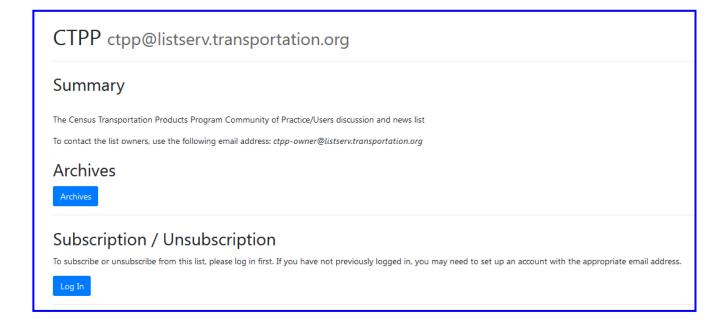
Datriava Data



AASHTO CTPP Training



CTPP List Serv



https://listserv.transportation.org/mailman3/lists/ctpp.listserv.transportation.org/

Transportation Research Board (TRB) Subcommittee:

Census Data for Transportation Planning



using 06-2010 data.

https://transportation.org/ctpp/trb-aed201

- CTPP = Census Transportation Planning Products. Beginning with the implementation of the ACS the last "P" was changed from "Package" to "Products". This reflects the fact that the CTPP refers to the collection Census data products used by the transportation planning community. Prior to the implementation of ACS, CTPP 2000 referred to a single package of data also known as the "Journey to Work" Package. In 1980 this data was known as the "UTPP" (Urban Transportation Planning Package), and as the "UTP" (Urban Transportation Package) in the 1970 Census. There was no "lourney to Work" special tabulation from the 1960 Census. Data in these products are provided at the small area of residence, the small area of work, and small area-to-small area commuter flows. With the change to the ACS there are two main CTPP products, a three-year tabulation using 2006-2008 data and a 5-year tabulation
- PUMS, PUMA = Public Use Microdata Sample, Public Use Microdata Area. The Census Bureau's PUMS program provides individual census records, or microdata, though at fairly large geographic areas. There is a 5-percent PUMS file, based on 5-percent of all census responses, at the regular PUMA level (designated areas of 100,000+ population); and a 1-percent "national" PUMS file, based on 1-percent of all census responses, at the "super PUMA" level (designated areas of 400,000+ population).
- ACS = American Community Survey The Census Bureau's American Community Survey program is intended as the replacement for the standard decennial census long form. This "continuous measurement" program is projected to begin full-scale implementation in January 2003. Large area (65,000+ population) data will be provided annually through the ACS program. Small area (census tract) data are based on an accumulation of five years of ACS data.

FHWA Website



merican Community Survey

ensus Transportation Planning roducts (CTPP)

Data Products

Training

CTPP Status Report

Contacts

Related Links

Archives

nvironmental Justice

ongitudinal Employment and lousehold Dynamics (LEHD)

ensus Urbanized Areas and NPO/TMA Designation

tandard Decennial Census roducts

rchives

FHWA → Planning → Census Issues

Census Transportation Planning Products

About CTPP

The CTPP is a cooperative program funded by State Departments of Transportation that produces a set of special, transportation-focused tabulations using large sample surveys conducted by the U.S. Census Bureau. From 1970 to 2000, the CTPP and its predecessor, the Urban Transportation Planning Package (UTPP), used data from the decennial Census long form. The decennial census long form was then replaced with a yearly survey called the American Community Survey (ACS), which provides additional transportation-related data that was once part of the Census long form. The data is released in 1-and 5-year datasets. The CTPP utilizes this data to generate their special tabulations currently and in future datasets.

The first CTPP release to use the ACS is the 2006-2008 dataset. The dataset uses the 3-year ACS data and is restricted to geographic units with a population of 20,000 or greater (counties and places). The 2006-2010 CTPP uses 5-year ACS data and includes smaller geographic units, such as census tracts and Transportation Analysis Zones (TAZs), The most recent CTPP release is the 2012-2016 data set, which is available on the American Association of State Highway and Transportation Officials (AASHTO) website: https://ctpp.transportation.org/.

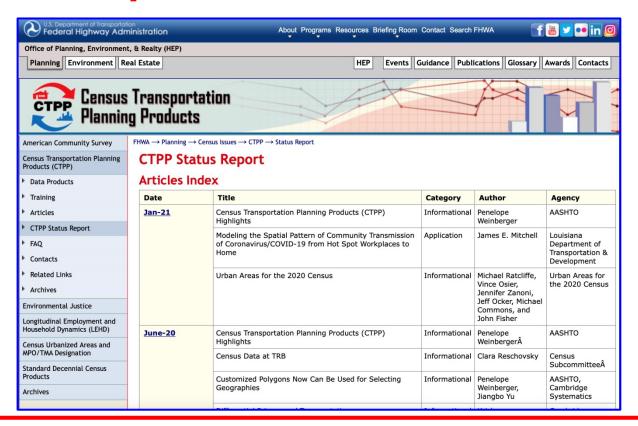
The CTPP tabulations include three geographies:

- Part 1: Residence-based tabulations summarizing worker and household characteristics
- · Part 2: Workplace-based tabulations summarizing worker characteristics
- Part 3: Worker flows between home and work, including travel mode

To learn more and access CTPP data products, visit the Data Products page.

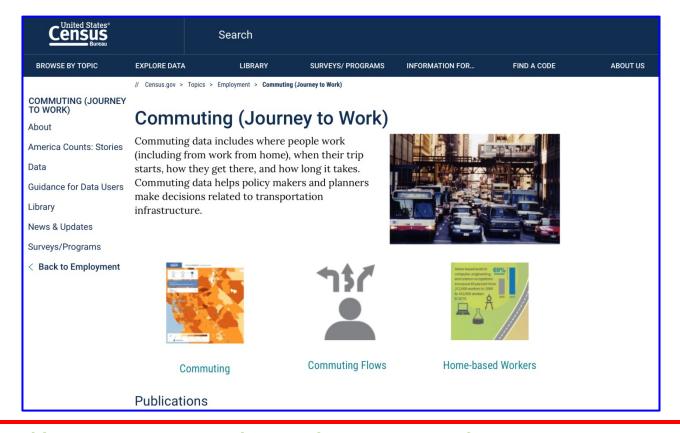
https://www.fhwa.dot.gov/planning/census issues/ctpp

"Status Report" Newsletter



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

Census Bureau Journey to Work Data



https://www.census.gov/topics/employment/commuting.html

Special Staff and Contacts

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Questions?