CTPP Status Report

Winter 2014

U.S. Department of Transportation
Federal Highway Administration (FHWA)
Bureau of Transportation Statistics (BTS)
Federal Transit Administration (FTA)

AASHTO Standing Committee on Planning
TRB Census Subcommittee

COUNTY-TO-COUNTY WORKER FLOW TABLE BASED ON 2009-2013 Five-YEAR ACS

Census Bureau, independently of the AASHTO's CTPP program, will be producing a county-to-county commuting flow file for the 2009 to 2013 five-year ACS. It will include total flows and a short list of travel modes: drive alone, carpool, transit, and other. It is expected to be available approximately May of 2015. Census Bureau is also making progress in producing the relevant transportation tables as part of their standard products.

ACS Content Review

Julie Parker, Bureau of Transportation Statistics
Julie.parker@dot.gov

Earlier this year, Federal agencies participated in the 2014 American Community Survey (ACS) Content Review to help inform and shape the content of the 2016 ACS. Of obvious importance to the transportation community was the Journey to Work (JTW) questions that detail specific attributes of the commuting patterns of the American public, and that provide the foundation for the special tabulations used to produce the Census Transportation Planning Products (CTPP). The review process involved updating statutory and regulatory authority pertaining to the use of ACS questions, as well as justifying the needs for these questions in terms of the users and uses; frequency of use, funding formulas, and amounts allocated as a result of their use; required geographic specificity; etc. Program and legal staff from multiple U.S. DOT agencies participated in this extensive review, and were further supported by an outpouring of support and cited uses from state and local agencies, as well as other organizations.

Special focus was placed on those ACS questions previously identified as "problematic" and thus were proposed for potential removal from the survey. One particular JTW question, "*What time did this person usually leave home to go to work last week*?" was included on this list.

Federal agency input was collected through August and the Census Bureau subsequently used this information to categorize each ACS question based on the level of usefulness and cost, as defined by these four categories:

1. High Benefit and Low Cost;
2. High Benefit and High Cost;
3. Low Benefit and Low Cost; and
4. Low Benefit and High Cost.

Questions without a direct mandatory linkage and that fell into the *Low Benefit* categories were identified for potential removal. All JTW questions were considered *High Benefit* and therefore were excluded from potential removal. However,

seven questions on the ACS were identified as *Low Benefit* and had no cited statutory need. Questions currently being considered for removal are:

- Housing Question No. 6 – Business/Medical Office on Property: *Is there a business (such as a store or barber shop) or a medical office on this property?*
- Person Question No. 12 – Undergraduate Field of Degree (this question focuses on this person's Bachelor's degree): *Please print below the specific major(s) of any Bachelor's degrees this person has received.*
- Person Question No. 21a – Get Married: *In the past 12 months did this person get married?*
- Person Question No. 21b – Get Widowed: *In the past 12 months did this person get widowed?*
- Person Question No. 21c – Get Divorced: *In the past 12 months did this person get divorced?*
- Person Question No. 22 – Times Married: *How many times has this person been married?*
- Person Question No. 23 – Year Last Married: *In what year did this person last get married?*

The Federal Register Notice featuring the results of 2014 ACS Content Review and proposed changes was released on October 31, 2014, with a public comment period that extends until December 30, 2014. In addition to the seven ACS questions proposed for removal, the public is invited to comment on all questions on the American Community Survey. This notice and more detailed information can be found at: https://www.Federalregister.gov/articles/2014/10/31/2014-25912/proposed-information-collection-comment-request-the-american-community-survey-content-review-results.

Once the Federal Register Notice comment period has closed, the Census Bureau will assess all comments and publish a final Federal Register Notice with a 30-day public comment period in early 2015.

For more details on the ACS Content Review please visit the web site: http://www.census.gov/acs/www/about_the_survey/acs_content_review/.

Census Transportation Planning Product (CTPP) Update

Penelope Weinberger, AASHTO
Pweinberger@aashto.org

The CTPP Oversight Board held a special meeting on December 3, 2014 to discuss the long-range vision and near-term strategy for the program. Former AASHTO Standing Committee on Planning chair, Deb Miller, facilitated the discussion. Topics on the agenda included:

- Roles and responsibilities of the Oversight Committee;
- How can or should the Oversight Committee serve as stewards and advocates for transportation data users; and
- The CTPP program budget, including new data products, training, and research.

Because this article was written before the meeting occurred, I cannot report on the outcomes. Look for a spring update on the results of this meeting.

The CTPP research project: Assessing the Utility of the 2006 to 2010 CTPP Five-Year Data is underway. You may have participated in the project's survey. The project held a peer exchange in Atlanta, Georgia on October 20, 2014. Fifteen people from MPOs, academia, and consulting gathered to discuss the nature of CTPP data; software and support; what can be done to improve the program; and what

CENSUS POSTER SESSION
Event Number: 374
Event Title: Applications for Small-Area American Community Survey and Census Transportation Planning Package Data: New Data, New Challenges
Event Date: 01/12/2015 2:00 p.m. to 3:45 p.m.
Event Location: Convention Center, Hall E
Sponsored By: Urban Transportation Data and Information Systems (ABJ30)

CENSUS SUBCOMMITTEE MEETING
Event Title: Census for Transportation Planning Subcommittee, ABJ30(1)
Event Date: 01/14/2015 10:15 a.m. to 12:00 p.m. (105 minutes, 1 hour, 45 minutes)
Event Location: Marriott Marquis, Liberty K (M4)
Sponsored By: Urban Transportation Data and Information Systems (ABJ30)

tools or training can be developed to help the user community. The final research report is due out by Fall of 2015. The results of this project will guide future efforts of the CTPP program.

CTPP is looking forward to seeing all of you at TRB, please feel free to drop in to the ABJ30(1) Census for Transportation Planning Subcommittee meeting to learn more and meet us in person. That meeting is scheduled for Wednesday, January 14, 10:15 a.m. to 12:00 p.m.

Web Application to Examine Commuting in Baltimore Region

Austin Williams, Baltimore Metropolitan Council
awilliams@baltometro.org
Mara Kaminowitz, Baltimore Metropolitan Council
mkaminowitz@baltometro.org

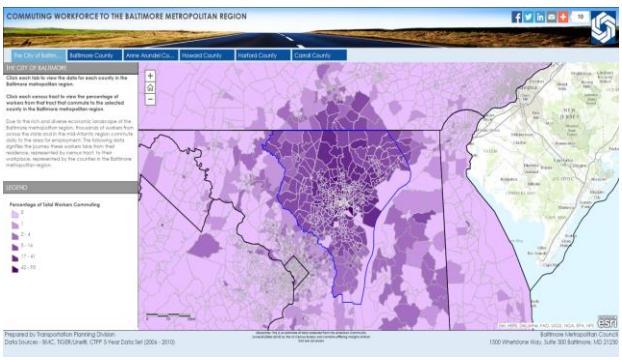


Figure 1. Web Mapping Application

Thousands of workers from across Maryland and in the mid-Atlantic region commute daily to work in the Baltimore region. The release of the CTPP Five-Year Data Set (2006 to 2010) provides small-area data that enables the examination of regional commuter patterns at a fine level of detail. The Baltimore Metropolitan Council (BMC) created an interactive web mapping application to assist planners, transportation professionals, and the general public in visualizing journey-to-work data from the U.S. Census Bureau tract of residence to the county workplace.

The web map application, called Commuting Workforce to the Baltimore Region, used both graphic and tabular data from the Census and AASHTO's Census Transportation Planning Products. The graphic data came in the form of boundary files, which outlined the various tracts associated with the study area. The study area comprised of Maryland and its surrounding states. BMC staff members downloaded the TIGER/Line files from the Census' FTP site, while obtaining the raw commuting data through the Census Transportation Planning Products web application housed at the AASHTO web site.

BMC staff members selected geographies, using the Census Transportation Planning

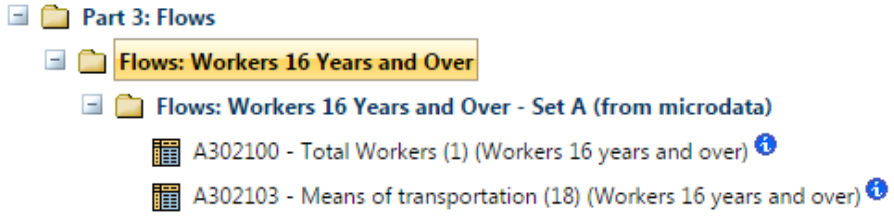


Figure 2. Table Selection

Products web application, which included every tract within a certain state for the residences and every tract within the Baltimore region for the workplace. We decided to divide the region into six different subsets to match the six counties within the region. Because of download limits and other logistical considerations, this approach was more efficient than trying to download the data for the entire State. To compare these tracts, the table "A32100 – Total Workers (1) (Workers 16 Years and over)" was selected under the *Part 3: Flows* heading. This allowed viewing of the raw tabular data for a tract-to-tract comparison of commuting.

At first, BMC staff members downloaded the data with the geographic boundaries attached. The CTPP software did not work because of a data access issue. Most of the flow data was missing from the GIS files. Therefore, as an alternative, the tabular data was downloaded in its raw format from the CTPP web site and we joined it to the tract boundary layer shape files. We used the join function in ArcMap with the GEOID's of the various tracts. By completing this task, the total workers who lived in one Census tract and worked in another became visible. BMC extract the data for all BMC member jurisdictions.

Once all of the data had been collected and processed the data was published as REST web services using ArcGIS Server. REST is an Internet protocol that allows GIS data to be published on the Internet and added to on-line mapping applications. The services were then added to ArcGIS On-line, ESRI's on-line mapping system, to create the web map application to display that data. A few parameters were determined necessary for the web site, including:

- Quick transitions between data layers;
- An accurate and changeable legend;
- Ability to share the web map through social media; and
- A customizable color and design scheme.

We decided that using a template from ESRI would be the most effective way to create the web map application from both time and effort perspective. These templates allow for some customization and produce a solid base on which to build the web site. The "Story Map Text and Legend" template was selected because it satisfied the project parameters.

Figure 3: ArcGIS On-Line

The process of modifying the template to better visualize the data involved going into the HTML and JavaScript code and manually changing several scripts and CSS files.

We addressed several challenges to move forward on the project. The size of the dataset led to performance issues with the

software that required changing the data format and other adaptive techniques. Finding the right balance between accessibility to a broad audience and creating a more complex application with more utility became a challenge. How to best work with the large margins of error generated a lot of discussion. One concern included that the numbers displayed on the map gave a false sense of precision given the small geographic area of the data. In the end, the final figures show a percentage to compensate for the possible inexactness of the data.

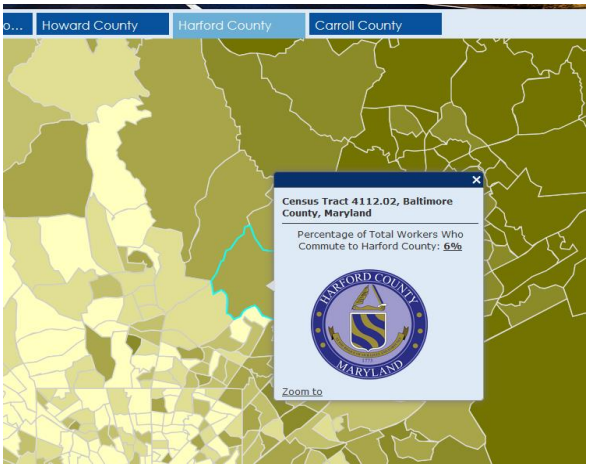


Figure 4. On-Line Map with Data Pop-Up

The Commuting Workforce to the Baltimore Region application can be found at http://gis.baltometro.org/Application/CommuteBMC/index.html. It is part of a larger initiative by the Baltimore Metropolitan Council to leverage the latest on-line technology to make regional data available to the public as well as create tools that will assist planners in studying evidence-based performance measures.

Using CTPP Data to Visualize Commuting Patterns in Southeast Michigan

Jimmy McBroom, Southeast Michigan Council of Governments
mcbroom@semcog.org

SEMCOG (Southeast Michigan Council of Governments) has developed an interactive web tool to display commuting patterns in the seven-county region. This tool allows users to easily visualize commuting patterns using CTPP data from the five-year ACS. The tool allows users to visualize flows between the region's cities, villages, and townships in the context of a regional community boundary map and freeway network. A toggle switch allows the user to choose between visualizing inflows (workers journeying to a selected community) and outflows (journey from a community). Flows to (or from) the selected community are represented with proportionally sized circles over the centroid of the destination or source community, showing the total number of commuters making a particular journey.

The tool, which can be accessed at http://semcog.org/mapping/commute_map/index.html, is written in JavaScript using the D3 (http://www.d3js.org) data manipulation library. This library loads a GeoJSON shapefile, containing administrative boundaries and major freeways, in order to display the map. D3 also loads the commuting data (as a.csv) and handles the creation of the circular flow representations upon the selection by the end user. Figure 5 shows the major elements of the tool, including the map, toggle switch, and scrollable bar chart of commuting flows.

This method of visualizing commutes lets the end user easily compare the commute sheds or the employment reach of different communities in the region. For instance, in Figure 6 the inflow and outflow data for the city of Detroit is shown. Approximately 40

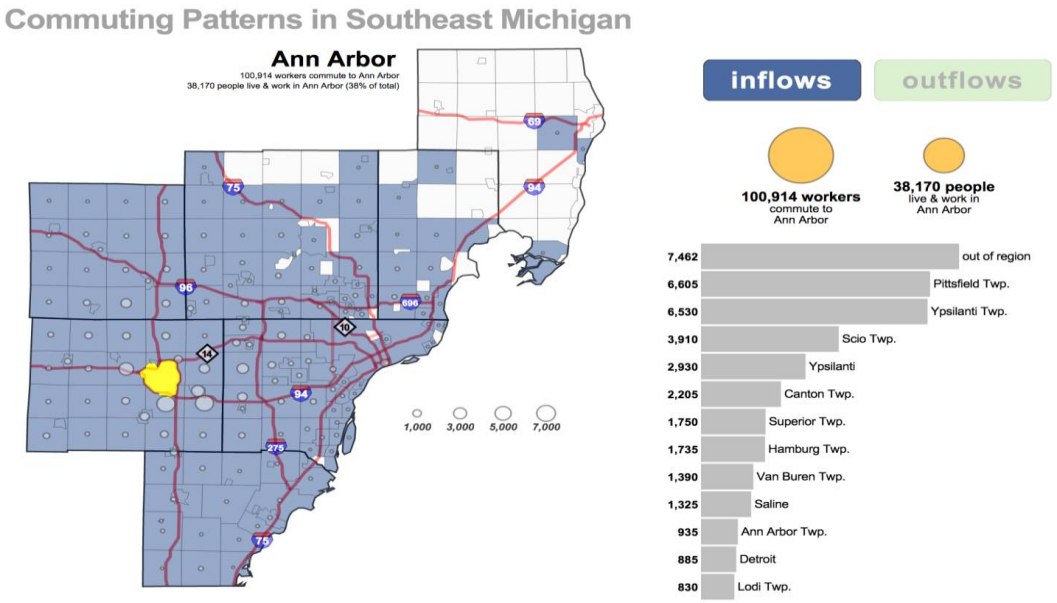


Figure 5: Visualization Tool Interface Showing Inbound Commuters to Ann Arbor, Michigan

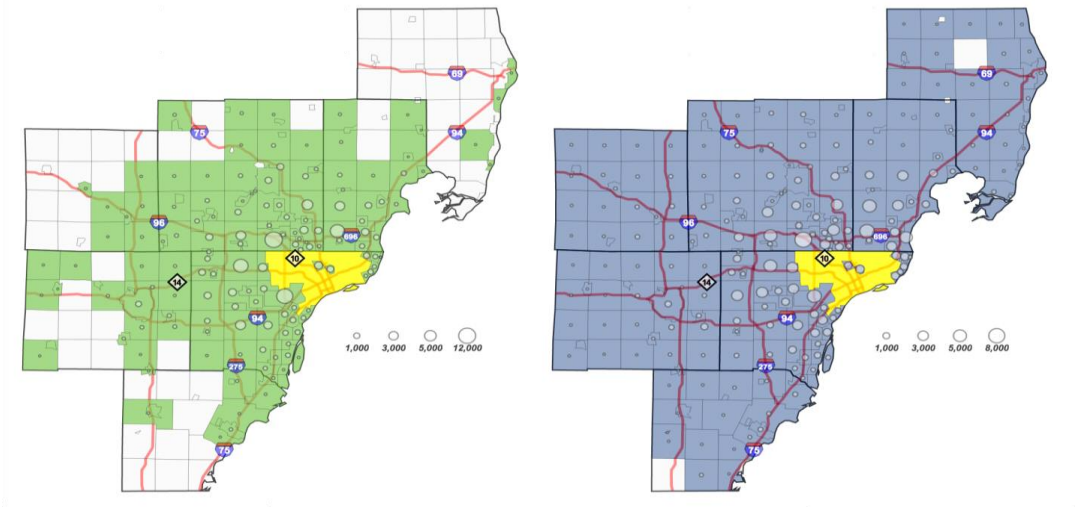


Figure 6: Detroit, Michigan Outbound Commuter Shed (on left) versus Inbound Commuter Shed (on right)

percent of Detroit's workforce commutes from inside the city, and most of the remainder commutes from nearby suburbs. As the region's central city, however, virtually all communities in the region have some workers commuting to Detroit for work. The outbound data show a different story: just over half of Detroit's workers commute outside the city, and the majority of those commuters do not travel far to their jobs. Thus, in the overall regional commuting pattern, Detroit is more of an employment destination than a source of employees.

Some aspects of the data needed to be addressed before publishing the tool. Because of the ACS survey methodology and possibly Census Disclosure Review Board rules, there were several cells that have insignificant flow estimates (less than five) associated with very large margins of error. In order to accurately represent commute sheds, these flows were excluded from the map and table. Additionally,

flows to or from communities outside of the SEMCOG region were combined into one "out-of-region" data point for better legibility. The visualization of commuting patterns, aside from reinforcing the overall interconnectivity of the SEMCOG region, is applicable to a variety of use cases. Daytime population and characteristics can be inferred from commute sheds. Local governments could use the data to conceptualize how commuters travel on their local road network. Municipal leaders can identify interconnected population and workforce clusters, bolstering the case for cross-border collaboration. Other data sets, such as commuting mode share, could be combined with this data to provide further insight into regional commuting habits.

How Hard is it to Count Workers? Self-Employment Data in Nonemployer Statistics and in American Community Survey

Elaine Murakami, FHWA
elaine.murakami@dot.gov
Tarannum Rima, Cambridge Systematics, Inc.
trima@camsys.com

Self-employed workers can simply be defined as individuals who work for themselves, not for any legal entities. There are two categories of self-employment: incorporated and unincorporated. Incorporated self-employed workers are people who incorporated their businesses with legal entities. On the other hand, workers whose businesses are not incorporated with a legal entity are considered as unincorporated self-employed individuals.[1] An individual can be involved in both incorporated and unincorporated self-employed businesses at the same time. For example, a person who files Federal income tax for his/her unincorporated business also can receive income from an incorporated business. This provides complexity in distinguishing number of people involved in incorporated self-employment from that in unincorporated self-employment. Another twist to this is that salaried employees also can have an unincorporated side businesses.

Self-employment data is reported by nonemployer statistics. Nonemployer statistics is an annual series sponsored by Census Bureau which provides the number of businesses with no paid employee that are subject to Federal income tax. The source of this data is primarily the annual or quarterly business income tax returns submitted to Internal Revenue Service (IRS) and maintained in Census Bureau's Business Register. The IRS tax form for self-employed is Schedule C form available at http://www.irs.gov/pub/irs-pdf/i1040sc.pdf. The nonemployer statistics are available at the national, state, county, metropolitan statistical area, and combined statistical area geographic levels. Since the data are based on administrative records, the data accuracy is higher than that from any other sources. It gives the number of unincorporated business establishments. An unincorporated self-employed worker can be involved in multiple businesses for which he/she needs to file multiple tax forms. Therefore, nonemployer statistics does not give the number of self-employed individuals.

The self-employment data is not available from Longitudinal Employer-Household Dynamics (LEHD) data. American Community Survey (ACS) provides estimates of self-employment. ACS five-year 2006 to 2010 estimate shows that seven percent of U.S. workers are nonincorporated self-employed and three percent of the workers are incorporated self-employed. The rest of worker population consists of waged

[1] Hipple, Steven F. "Self-Employment in the United States." *Monthly Labor Review.* September 2010. http://www.bls.gov/opub/mlr/2010/09/art2full.pdf.

employees. The total U.S. worker population includes about 180.8 million people age 16 and older. According to ACS data, about 163 million people claim themselves as waged employees and 18 million people claimed themselves as self-employed.

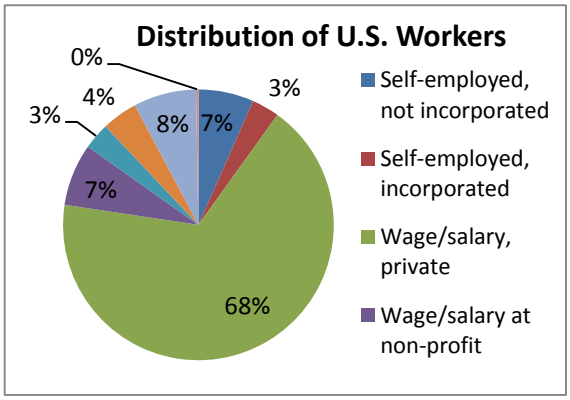
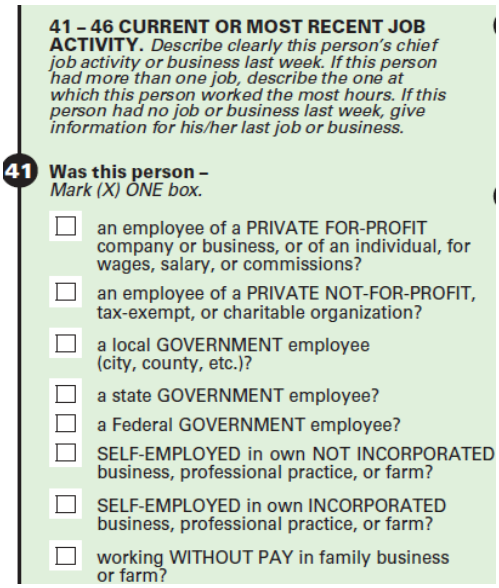


Figure 7: Distribution of U.S. Workers by Employment Types

ACS estimates provide information on the characteristics of self-employment. The ACS form asks people whether they are self-employed or salaried-employees and it provides estimates of self employment at different geographic levels such as state, county, census tract, and metropolitan statistical area. Figure 8 shows the survey question that is used to identify the type of employment.



41 – 46 CURRENT OR MOST RECENT JOB ACTIVITY. *Describe clearly this person's chief job activity or business last week. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give information for his/her last job or business.*

41 **Was this person –**
Mark (X) ONE box.

- ☐ an employee of a PRIVATE FOR-PROFIT company or business, or of an individual, for wages, salary, or commissions?
- ☐ an employee of a PRIVATE NOT-FOR-PROFIT, tax-exempt, or charitable organization?
- ☐ a local GOVERNMENT employee (city, county, etc.)?
- ☐ a state GOVERNMENT employee?
- ☐ a Federal GOVERNMENT employee?
- ☐ SELF-EMPLOYED in own NOT INCORPORATED business, professional practice, or farm?
- ☐ SELF-EMPLOYED in own INCORPORATED business, professional practice, or farm?
- ☐ working WITHOUT PAY in family business or farm?

Figure 8: ACS Question on Type of Employment

The ACS form asks people to check one item in question 41 based on their last week's chief employment activity. If the last week's major employment activity of an individual is self-employment then the person will check one of the boxes of self-employment (incorporated/not-incorporated). Moreover, if a person is an employee of a legal employment entity and receives most of his/her income from salary then he/she will check one of the options for salaried employees. The salaried employees can receive income from proprietary businesses. Since their primary source of income is the salaried job, they do not claim themselves as self-employed. However, these people file taxes for their business incomes and are included in nonemployer statistics. That means nonemployer statistics may include people who claim themselves as salaried employee in the ACS form. The nonemployer statistics reported about 22.1 million nonemployer establishments in the year 2010. On the other hand, ACS five-year estimate (2006 to 2010) reported about 12 million people as self-employed nonincorporated. The discrepancy between the two numbers can be explained by couple of facts:

1. There are people whose primary sources of income are not unincorporated businesses and have to file income tax forms for the proprietary businesses; and
2. A self-employed individual can be involved in multiple businesses and each of the businesses may require filing of income tax forms.

The source of income information in the ACS data indicates that waged employees may receive income not only from wages but also from business and other sources such as retirement, Social Security, investment, supplemental, welfare, etc. Among the waged employees, around two percent of people receive income from some kind of businesses. On the other hand, among the self-employed workers, about 35

percent of people receive some portion of their income from wages. Some self-employed individuals also receive income from other sources such as retirement, Social Security, investment, supplemental, welfare, etc. ACS data shows that the people who claim themselves as waged employee and earn from both businesses and salaried jobs receive 70 to 84 percent of their income from salary. On the other hand, people who choose self-employment on the ACS form and have salaried income receive about 55 percent of their income from salary. Figure 9 shows the distribution of income source between wage and business for both waged and self-employment at different income levels. The chart indicates that wages are the major source of income at all income levels.

Using ACS data, the worker population can be grouped by their personal characteristics, such as age, sex, race, geographic location, income level, etc. Figure 10 shows the distribution of self- employed workers and waged workers by their age groups respectively. The distribution of self-employed workers shows that the majority of the self-employed workers are aged between 36 to 65 years. The waged workers distribution shows that the percent of waged workers starts declining after age 55 and it diminishes after age 85.

Both nonemployer statistics and ACS include data on self-employment. The nonemployer statistics provides number of unincorporated business establishments, whereas ACS data provides estimates on the number self-employed workers. Census Bureau's Business Register maintains the records on tax returns. Using the personal identification information recorded from Census Bureau's Business Register, it may be possible to get a more accurate count of unincorporated self-employed workers. The distribution of self-employed workers by their socioeconomic characteristics such as income, age, sex, race, etc., can be estimated from ACS data. The careful application of these distributions can reveal some interesting facts about self-employment.

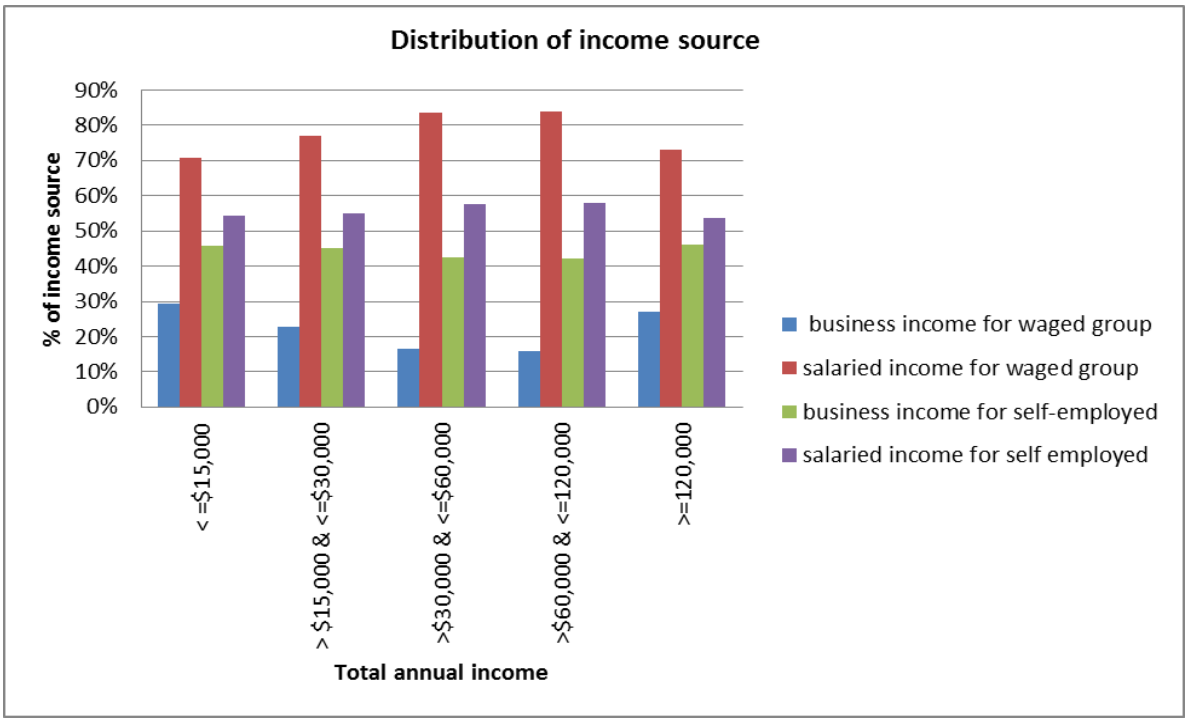


Figure 9: Distribution of Source of Income for People who Receive Income from both Business and Salary

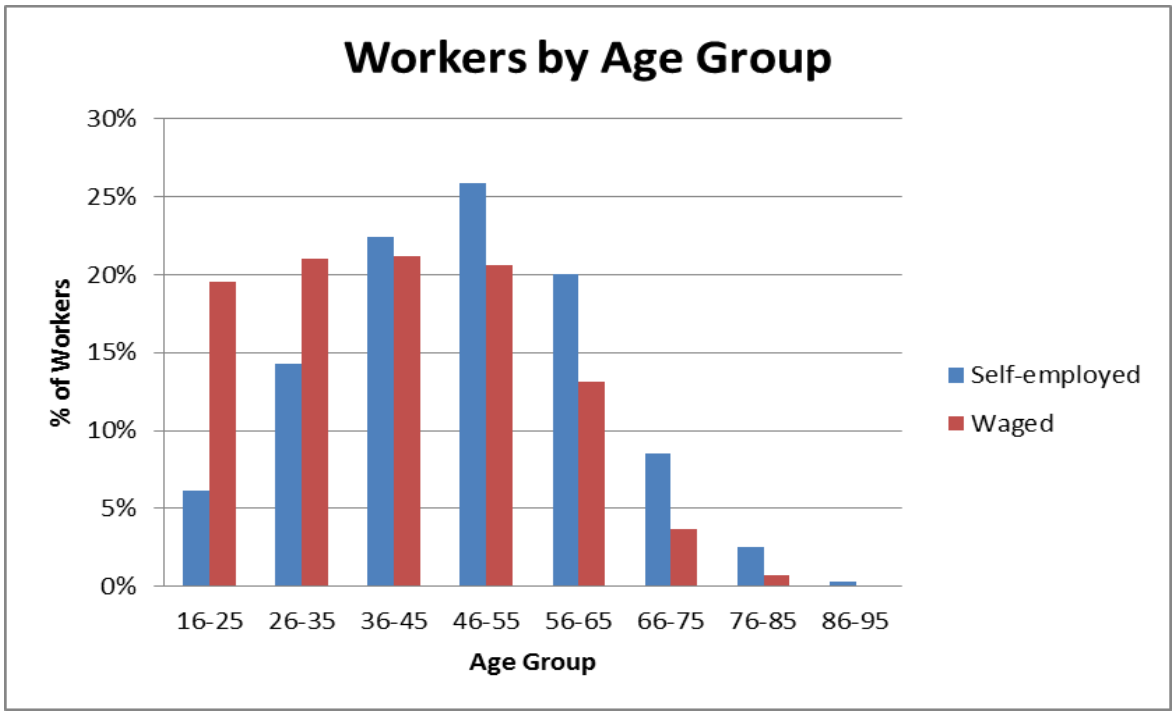


Figure 10: Distribution of Workers by Age Group (source: ACS Five-Year 2006 to 2010)

CTPP Contact List

CTPP Hotline: 202/366-5000
Email: ctpp@dot.gov
CTPP 2006-2010 Data: http://ctpp.transportation.org/Pages/5-Year-Data.aspx
CTPP web site: http://www.fhwa.dot.gov/planning/census_issues/ctpp/
FHWA web site for Census issues: http://www.fhwa.dot.gov/planning/census_issues
AASHTO web site 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

AASHTO
Penelope Weinberger
PH: 202/624-3556
Email: pweinberger@aashto.org

Tracy Larkin Thomason, NVDOT
Chair, CTPP Oversight Board
PH: 702/385-6500
Email: Tlarkin@dot.state.nv.us

Susan Gorski, MI DOT
Vice Chair, CTPP Oversight Board
PH: 517/335-2958
Email: gorskis@michigan.gov

Census Bureau: Social, Economic, and Housing Statistics Division
Brian McKenzie
PH: 301/763-6532
Email: brian.mckenzie@census.gov

FTA
Ken Cervenka
PH: 202/493-0512
Email: ken.cervenka@dot.gov

BTS
Julie Parker
PH: 202/366-6373
Email: Julie.parker@dot.gov

FHWA
Elaine Murakami
PH: 206/220-4460
Email: elaine.murakami@dot.gov

Ed Christopher
PH: 708/283-3534
Email: ed.christopher@dot.gov

TRB Committees
Stacey Bricka
Texas A&M Transportation Institute
Chair, TRB Urban Data Committee
PH: 512/407-1123
Email: s-bricka@ttimail.tamu.edu

Clara Reschovsky
TRB Census Subcommittee Co-Chair
PH: 202/962-3332
Email: creschovsky@mwcog.org

Mara Kaminowitz
TRB Census Subcommittee Co-Chair
PH: 410/732-0500
Email: mkaminowitz@baltometro.org

CTPP Technical Support
JingJing Zang
CTPPSupport@camsys.com

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.