CTPP Status Report

January 2012

U.S. Department of Transportation
Federal Highway Administration
Bureau of Transportation Statistics
Federal Transit Administration
AASHTO Standing Committee on Planning
In cooperation with the TRB Census Subcommittee

Census Transportation Planning Products (CTPP) AASHTO Update

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The CTPP Oversight Board met in October following the Census Data Conference held in Irvine, California. One big decision the board made was to extend the CTPP program for another year, through 2013. The funds are available and the need is certainly there, as the CTPP tabulation based on five-year ACS is not expected to be delivered until 2013. We are reviewing proposals for Commuting in America IV and expect a product which includes a web-based portal for information on commuting trends.

The CTPP training team continues to "spread the word" by visiting states and MPOs to provide day-and-a-half-long training, and attending conferences and meetings with workshops and presentations, covering what the CTPP is, how to best use it, and caveats for use. Additional ways to learn about CTPP products and issues are through the e-Learning modules http://ctpp.training.transportation.org/. Topics include ACS, CTPP based on ACS, Geography, Margins of Error, and changes to the CTPP related to the discontinuation of the Census Long Form. More e-Learning modules are expected soon.

Using Census Data for Transportation Applications Conference

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A TRB-sponsored "Using Census Data for Transportation" conference held in October 2011 affirmed the critical importance of demographic, mode, and travel flow data from the U.S. Census Bureau for transportation planning applications. Presentations from the conference are available at http://www.trb.org/conferences/Census2011.aspx. Katie Turnbull from TTI is preparing the conference summary.

Nearly 120 Federal, state, MPO, consultant, and academic participants shared their experiences in using census data and identified opportunities for overcoming issues and improving census data for decision-making. Presentations demonstrated the value of census data for planning, policy, travel demand modeling, environmental justice, and transit studies.

Participants heard how Census Bureau's (CB) American Community Survey (ACS) standard tables are being integrated and supplemented with data from the Census Transportation Planning Products (CTPP) program, the Longitudinal Employer-Household Dynamics (LEHD) program, and an increasing number of private and publicly available data sources.

Data providers, researchers, and technical experts shared how they are dealing with data issues and challenges and discussed new products and processes to improve the utility and availability of census data products. Breakout sessions identified themes to guide future census data efforts:

- Census data are critical for current planning and are expected to be even more vital for addressing future livability, sustainability, energy, and environmental issues.
- There is a need for more coordination within and among Federal, state, and local agencies in providing travel data.
- Journey to work data needs to be better integrated with the National Household Travel Survey (NHTS) to provide an understanding of all travel.
- Enhanced data access tools for microdata records and tables are needed for state and regional planning.
- Better training on census data limitations is needed to support effective data use.
- Private data sources offer promising alternatives to supplement existing sources.

Research Areas (selected):

- Develop a system for user-defined tables with access to privacy-protected ACS microdata records;
- Add neighborhood/land use characteristics, as contextual variables to ACS microdata records;
- Work with CB on combining ACS with administrative records for transportation-specific applications;
- Fusing public and private data sources such as cell phone tracking to link sociodemographic characteristics with travel behavior; and
- Transfer data from national resources to state and local areas.

The next two articles are based on presentations from the conference.

The Use of ACS and Decennial Census Data Products in the Demographic Forecasting Process at NCTCOG

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Demographic Forecasting at NCTCOG

The travel demand model at the North Central Texas Council of Government (NCTCOG) covers the metropolitan planning area (MPA) that includes 12 counties with a total area of about 10,000 square miles, as shown in Figure 1. The total population of the region has grown from 5,199,317 in year 2000 to 6,417,724 in year 2010, a total increase of 23.43 percent, as shown in Table 1. NCTCOG has historically used the DRAM/EMPAL model for the distribution of the population and employment control totals in the region. In the recent update to the demographic forecasts the G-LUM open-source application written in MATLAB script (www.mathworks.com) at The University of Texas at Austin (http://www.ce.utexas.edu) was used. The travel model at NCTCOG has 5,386 traffic survey zones (TSZ) and 242 demographic forecasting districts. Note that the 2010

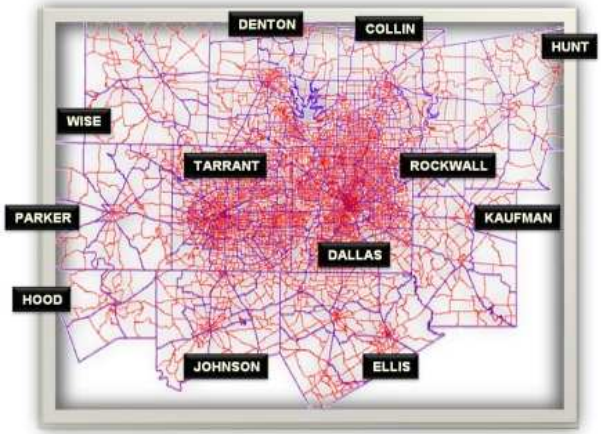

Figure 1. Map of 12-county MPA.

Decennial Census and ACS (2005-2009) population data was not available until after the completion of the forecasting process. The population and employment control totals used in the forecasting process were purchased from the Perryman Group in year 2007 and verified

against the other available data sources (State Data Center, Texas Water Development Board, NCTCOG historical datasets, and ACS data). The 2000 household dataset was created based on the Decennial Census data and modified based on local input. However, the 2000 employment and 2005 household and employment datasets were constructed based on an in-house development monitoring program.

Table 1. Total Population Growth by County

	County Total Population (Decennial Census)					
County	**Census 2000**	**Census 2010**	**Difference**	**Percent Total Growth**	**Percent Simple Annual Growth**	**Percent Share of Total Growth**
Collin	491,675	782,341	290,666	59.12	5.91	23.86
Dallas	2,218,899	2,368,139	149,240	6.73	0.67	12.25
Denton	432,976	662,614	229,638	53.04	5.30	18.85
Ellis	111,360	149,610	38,250	34.35	3.43	3.14
Hood	41,100	51,182	10,082	24.53	2.45	0.83
Hunt	76,596	86,129	9,533	12.45	1.24	0.78
Johnson	128,811	150,934	22,123	17.17	1.72	1.82
Kaufman	71,313	103,350	32,037	44.92	4.49	2.63
Parker	88,495	116,927	28,432	32.13	3.21	2.33
Rockwall	43,080	78,337	35,257	81.84	8.18	2.89
Tarrant	1,446,219	1,809,034	362,815	25.09	2.51	29.78
Wise	48,793	59,127	10,334	21.18	2.12	0.85
Total	**5,199,317**	**6,417,724**	**1,218,407**	**23.43**	**2.34**	**100.00**

Household Size

The household population in year 2005 and all forecast years were calculated based on the estimated number of households (HH) and the average HH size in each corresponding year. Therefore, it was necessary to first obtain the average HH size in year 2005 and to establish a method for calculating the future average HH sizes. The census data products indicate that the average HH size in the NCTCOG region increased from 2.70 in year 2000 (Decennial Census) to 2.81 in year 2005 (ACS 2005). This increase was considered significant and therefore triggered the need for reviewing the historical trend of the average HH size in the region based on the data available in the Census Fact Book and the Decennial Census, as shown in Figure 2. We also compared the average HH sizes based on the 1990 and 2000 Decennial Census against the values reported by ACS products, as shown in Figure 3.

These comparisons did not show a logical pattern that could be used for forecasting the future HH sizes in the region. However, it did show differences in the average HH size between urban and rural counties and that the

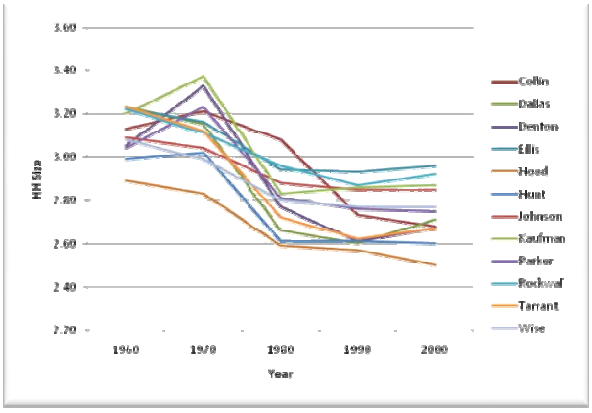

Figure 2. Historical change in average HH size.

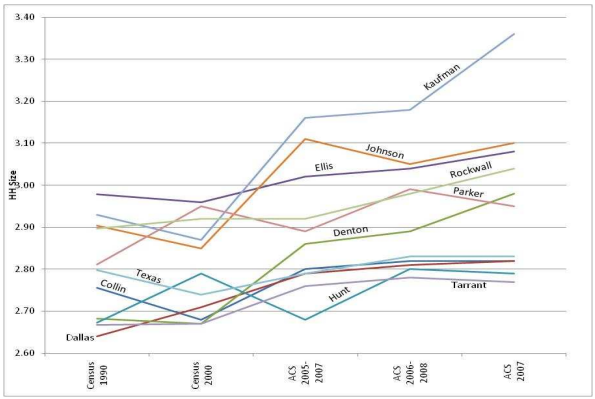

Figure 3. Comparison of average HH sizes in the 12-county MPA.

average HH size becomes more stable as an area becomes more urbanized. The purchased Woods and Poole data indicates that the average HH size for the NCTCOG 16-county area will not exceed 2.70 in the next 20 years. The final HH sizes utilized in the forecasting process were calculated starting from the ACS 2005 values and based on the assumptions listed on the right:

(1) The HH size in the rural counties will become similar to the average of Collin and Denton Counties in 2005 (2.811);
(2) The region's average HH size will increase one percent compared to 2005 (2.820); and
(3) The urban counties' HH size was calculated such that it resulted in the assumed regional average (2.822).

Table 2. Comparison of Average HH Size

	Average HH Size						
State	Census 2000	Census 2010	Percent Difference vs. Census 2000	ACS (2005-2009)	MOE	Percent Difference vs. Census 2000	Percent Difference vs. Census 2010
Nevada	2.62	2.65	1.15	2.66	0.01	1.53	0.38
California	2.87	2.90	1.05	2.91	0.01	1.39	0.34
Florida	2.46	2.48	0.81	2.52	0.03	2.44	1.61
Delaware	2.54	2.55	0.39	2.58	0.01	1.57	1.18
Texas	2.74	2.75	0.36	2.81	0.01	2.55	2.18
Maryland	2.61	2.61	0	2.63	0.02	0.77	0.77
Tennessee	2.48	2.48	0	2.49	0.01	0.40	0.40
Arizona	2.64	2.63	-0.38	2.76	0.01	4.55	4.94
Connecticut	2.53	2.52	-0.40	2.55	0.02	0.79	1.19
Georgia	2.65	2.63	-0.75	2.70	0.01	1.89	2.66
Utah	3.13	3.10	-0.96	3.14	0.02	0.32	1.29
Massachusetts	2.51	2.48	-1.20	2.54	0.01	1.20	2.42
Rhode Island	2.47	2.44	-1.21	2.52	0.01	2.02	3.28
New York	2.61	2.57	-1.53	2.64	0.01	1.15	2.72
District of Columbia	2.16	2.11	-2.31	2.21	0.02	2.31	4.74
New Hampshire	2.53	2.46	-2.77	2.54	0.01	0.40	3.25
Alaska	2.74	2.65	-3.28	2.82	0.01	2.92	6.42
Montana	2.45	2.35	-4.08	2.49	0.01	1.63	5.96
Puerto Rico	2.98	2.68	-10.07	3.21	0.01	7.72	19.78

The 2010 Census and ACS (2005-2009) became available after the forecasts were produced. Hence, they were only used to further verify the changes in the average HH size of the states against the Census 2000 data and to evaluate the difference between the ACS (2005-2009) and 2010 Decennial Census. This comparison indicated that based on the ACS (2005-2009), 19 states have shown an increase in their average HH size, as displayed in Table 2. However, the 2010 Decennial Census indicated that the average HH size only increased in five states: Nevada, California, Florida, Delaware, and Texas. The ACS (2005-2009), overestimated the average HH size with rather small margins of error (MOE) when compared to the 2010 Decennial Census in all the states where it represented an increase in average HH size compared to the 2000 Decennial Census. In four of the states (Nevada, California, Maryland, and Tennessee), the 2010 Decennial Census average HH size was at the lower boundary of the ACS (2005-2009) estimated range.

Population to Employment Ratio

The population to employment ratio (P/E) in the NCTCOG region has been historically around 1.60. It was more conservative for travel model forecasting to assume that it will remain at 1.60 in all forecast years. The control totals as provided by the Perryman Group also followed the same trend in all forecast years. The original NCTCOG calibration dataset for year 2005 was modified such that the total number of households and average HH size matched the ACS 2005 data in the 12-county MPA, and the P/E ratio was 1.60. These adjustments resulted in a reduction of about 200,000 in the household population and an increase of about 300,000 in the number of employees in the region for year 2005 compared to the original 2005 dataset.

Model Validation

The ACS (2005-2009) HH data was used during the calibration and validation of the forecasting model. For this purpose, the estimate of the 2010 HHs was calculated based on the ACS (2005-2009) values grown for six months based on the growth rates observed between ACS 2008 and

ACS 2009, and then compared to the 2010 forecasts. The results of this comparison indicated that the total 2010 HHs resulting from the forecasting process was only 0.49 percent higher than the estimates we had calculated based on the ACS (2005-2009) data, with acceptable errors at the county levels, as shown in Table 3. The 2010 Decennial Census data became available at a later stage in the process (April 2011) and hence only could be used as another comparison point for validating the 2010 forecasts that were prepared based on the ACS (2005-2009) data, as shown in Table 4. This comparison indicated that the forecasted household population for year 2010 was only -0.28 percent different in total compared to the 2010 Decennial Census, with acceptable errors at county levels. We also validated the 2010 HH population forecasts in randomly selected TSZs in a 10-mile radius. All the comparisons indicated that the 2010 forecasts match the available reference data for year 2010 with an acceptable margin of error.

Table 3. Validation of 2010 HH Forecasts

	2010 HH by County			
		ACS (2005-2009)		
County	2010 Forecast	Estimate	Difference	Percent Difference
Collin	273,533	283,400	-9,863	-3.48%
Dallas	858,538	864,039	-5,499	-0.64%
Denton	219,732	223,921	-4,189	-1.87%
Ellis	51,752	50,143	1,610	3.21%
Hood	23,818	18,346	5,472	29.82%
Hunt	34,213	29,941	4,272	14.27%
Johnson	54,405	50,898	3,508	6.89%
Kaufman	31,318	30,991	328	1.06%
Parker	41,042	37,671	3,372	8.95%
Rockwall	26,920	26,458	462	1.75%
Tarrant	653,268	644,410	8,859	1.37%
Wise	21,816	18,895	2,920	15.45%
Summary	273,533	2,279,114	11,251	0.49%

Table 4. Validation of 2010 HH Population Forecasts

	2010 HH Population by County			
County	2010 Forecast	2010 Census	Difference	Percent Difference
Collin	761,378	782,341	-20,963	-2.68%
Dallas	2,397,572	2,368,139	29,433	1.24%
Denton	625,580	662,614	-37,034	-5.59%
Ellis	152,861	149,610	3,251	2.17%
Hood	64,427	51,182	13,245	25.88%
Hunt	90,918	86,129	4,789	5.56%
Johnson	163,748	150,934	12,814	8.49%
Kaufman	95,537	103,350	-7,813	-7.56%
Parker	116,093	116,927	-834	-0.71%
Rockwall	79,234	78,337	897	1.15%
Tarrant	1,785,206	1,809,034	-23,828	-1.32%
Wise	66,908	59,127	7,781	13.16%
Summary	6,399,461	6,417,724	-18,263	-0.28%

2010 Decennial Census

Since the 2010 Decennial Census data was not available during the forecasting process, it was not until after the fact that we were able to compare the estimated 2010 HHs based on the ACS (2005-2009) with the actual 2010 Census numbers at the 242 demographics forecasting district level. This comparison showed that the two data sources provide rather comparable data at the region and county levels, as can be seen by reviewing the data in Tables 3 and 4. However, there are some major inconsistencies in the ACS (2005-2009) data in the areas that were of most concern for the region due to their rapid growth or decline in population in the recent years, as shown in Figure 4. The areas shaded in red indicate that the ACS (2005-2009) data underestimated the 2010 household population by more than 20 percent. The dark green areas indicate an overestimation of more than 20 percent. The areas of concern, which are circled in black, include

northern/southern Tarrant County and most of Collin and Denton Counties which experienced a rapid growth in the recent years, and northern Dallas County that experienced some reduction in population and employment in the previous years, as shown in Figure 5. The comparison of Figures 4 and 5 also shows that the ACS (2005-2009) has the tendency to overestimate the HH population in areas with small growth and underestimate it in areas with rapid growth in the DFW area.

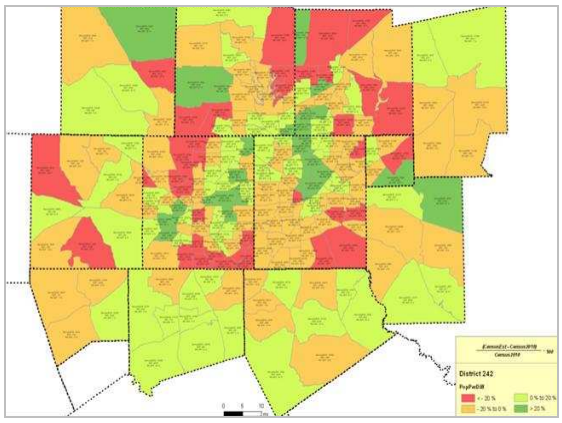

Figure 4. Comparison of HH Population based on ACS (2005-2009) estimates and Census 2010.

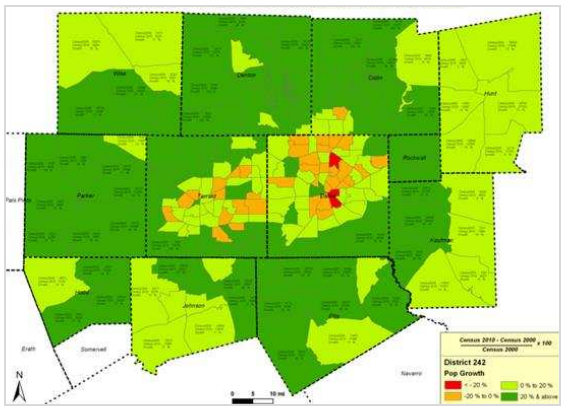

Figure 5. Comparison of HH Population based on 2000 and 2010 Decennial Census.

Nontechnical Issues

Aside from the numerous data-related technical issues that we had to resolve during this process, there were a couple of nontechnical issues, related to the perceived accuracy of the ACS and Decennial Census, which had to be addressed as well: 1) the overall disagreement and resistance of the demographers regarding the use of ACS products due to the sampling nature of it and the associated margins of error; and 2) the disagreement of some local governments with the data published by the Decennial Census products claiming that it underreports the minority population.

Conclusions

The census data products make valuable and up-to-date data available to the transportation community in fairly small geographies. The uniqueness of this data source makes it unrealistic to assume that it will not be used due to the associated accuracy disclaimers. This data is often times used for short-term decisions that have real consequences. Therefore, the need for consistency is an actual issue with which the users are faced. It seems that improvement in the expansion of the data in the subcounty level can improve the usability and credibility of the ACS datasets to a large degree.

A Preview of Small Area Transportation Data from the American Community Survey

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This report describes a preliminary look at ACS data on Means of Transportation to Work and Travel Time to Work at the block group level. The findings are a useful preview of what users can expect from ACS-based CTPP for very small areas.

Even after combining five years of data collection, the ACS sample used to provide small area data is considerably smaller than that of the Census Long Form – with 2005-2009 ACS data based on responses from only 7.6 percent of housing units, compared with 15.8 percent from the 2000 Census Long Form. As shown in **Table 5**, the ACS data for over 90 percent of block groups are based on fewer than 100 interviews.

Given the relatively small ACS sample, large margins of error (MOE) are expected, and **Table 6** shows how often each cell in the Means of Transportation table has an MOE larger than the estimated value. The table also reveals that in many of these cases, the cell value was zero (as expected since many modes are rare in many

areas). And as **Table 7** illustrates, for a block group in Orange County, California, the ACS reports large MOEs for cells with a zero estimate. Travel Time to Work reflects a more even distribution, with fewer zero values, and as shown in **Table 8**, MOEs often exceed cell values even where cell values are greater than zero. In other words, the large MOEs cannot be blamed entirely on cells with zero or very small values.

Table 9 shows an unusually high number walking to work in another Orange County, California block group, leading one to wonder if it might be an ACS error. But given the location at the University of California, Irvine, and the fact that the 2000 Census showed a similar distribution, the preponderance of walkers is plausible.

With a sample smaller than that of the Census Long Form, one would expect a higher frequency of zero values in the ACS block group data, and **Table 10** confirms this tendency for Travel Time to Work. For example, for travel time "Less than 5 Minutes," the ACS reports 80,253 block groups with a value of zero compared with only 53,328 for the 2000 Census Long Form.

An examination of uncommon transportation modes confirmed that the ACS puts large numbers in expected areas. For example, block groups with the highest percent of workers commuting by "subway or elevated" were found in counties, including New York, Bronx, Queens, and Kings in New York. Workers commuting by "ferryboat" were most common in block groups in Hudson, New Jersey, Kitsap, Washington, and Richmond, New York. Just as important, the ACS seems not to show large numbers using uncommon modes in areas where they would not be expected. But there are occasional exceptions, as illustrated by **Table 11** – which shows a conspicuously large number of workers (618) commuting by bicycle in a block group in Larimer County, Colorado.

Unlike the UC Irvine block group, where the large number of walkers could be expected (and was backed by the 2000 Census), there is no apparent explanation for the dominance of bicycles in the Larimer County block group (and 2000 Census provides no backup). The more likely explanation is that the ACS captured one or a few bicycle commuters, and weighted up to 618. But why would ACS weight to such an unrealistically large number? The probable explanation is that overestimation in this block group (and presumably others) compensates for a large number of block groups that actually have one or a few bicycle riders, but show zero because none were captured in the ACS sample. In other words, overestimation of this type is the flip side to the large number of zero cells reported by the ACS, and enhances the accuracy of ACS data for aggregate areas. **And recall that the Census Bureau recommends that ACS block group data be used only for aggregate areas**.

A broader assessment of the ACS block group data was provided by computing the index of dissimilarity (IOD) between ACS distributions and those from the 2000 Census. A measure of the difference between 2 percent distributions, the IOD ranges from 0 for distributions that are identical, to 100 for distributions that have nothing in common (where 100 percent of records in one distribution would have be in a different category to replicate the percent distribution of the other). Differences are expected between ACS and 2000 Census distributions, but there should be considerable similarity, and it can be useful to see where consistency is greatest.

As summarized in **Table 12**, the mean IOD is consistently lower for Means of Transportation than for Travel Time – probably because the dominance of "drive alone" is reflected in both ACS and the 2000 Census. For all block groups, the IOD was 15.1 for Means of Transportation and 30.7 for Travel Time. Limiting to block groups with stable population (change less than five percent from 2000 to 2010) reduces the IODs only slightly. It is when limiting to block groups with 100 or more ACS interviews that the IODs drop sharply to 8.2 and 18.3. Block groups in counties with populations of 500,000 or more actually have the highest IODs at 17.2 and 32.2. With large metropolitan counties typically of interest to transportation planners, one might wonder why consistency with 2000 Census is relatively low in these areas.

The relatively large IODs in large metropolitan counties might be a byproduct of a small town bias in the ACS sample. The ACS samples heavily in small towns to the detriment of the

sample allocated to small statistical geographies in large metropolitan areas. Consequently, while 9.3 percent of households responded to ACS nationwide, the percent was only 7.7 for block groups in counties with populations of 500,000 or more.

Frequency of updates is a highly touted ACS benefit, and a review of ACS data confirms its ability to add value in areas with rapid population growth. For example, **Table 13** shows the ACS Means of Transportation distribution for a block group that was part of Denver's former Stapleton Airport, and was developed following the 2000 Census. The census counted zero households in 2000, but 4,084 by 2010.

The preliminary analysis suggests a mix of strengths and limitations for small area ACS data. Users can expect large margins of error, but many are of little consequence, as they relate to reasonable estimates of zero or very small numbers. For small areas, the number of ACS interviews (unweighted sample housing units) might provide a better sense for data quality than the MOEs. The ACS certainly estimates "zero" in many cells that should have small numbers, and occasionally inflates cell values to unrealistically high levels. But some of the most questionable estimates for individual block groups contribute to enhanced accuracy for aggregate areas. Transportation planners might prefer that more ACS samples be allocated to small statistical geographies in metropolitan areas (as opposed to small towns), but the benefits of frequent updates are apparent in areas with rapidly changing populations. In short, both challenges and opportunities are apparent in the ACS block group journey to work data, and users are likely to encounter similar challenges and opportunities in the forthcoming ACS-based CTPP data.

Table 5. Block Groups by Number of ACS Interviews: 2005-2009

ACS Interviews	N	Pct
Missing (no ACS)	1,533	0.7
N suppressed (1 or 2)	801	0.4
3-9	2,982	1.4
10-19	24,527	11.7
20-49	115,865	55.5
50-99	48,002	23.0
100-199	13,303	6.4
200-499	1,711	0.8
500 or more	73	0.0
Total	208,797	100.0

Table 6. Percent of Block Groups with Margins of Error Greater Than Cell Values for Means of Transportation to Work

Means of Transportation	Pct MOE GT Cell Value	Pct Cell Value = 0
Total Workers	1.6	0.7
Drive alone	3.3	1.1
Carpool	49.2	11.1
Bus or trolley bus	90.1	63.7
Streetcar	99.9	98.3
Subway	95.6	89.4
Railroad	97.5	89.8
Ferryboat	99.9	99.3
Taxicab	99.8	96.5
Motorcycle	99.7	90.3
Bicycle	98.8	86.1
Walk	88.6	51.2
Other means	98.1	74.7
Worked at home	76.5	34.6

Table 7. Means of Transportation to Work for Block Group 0630.04 3 In Orange County, California

Means of Transportation	Workers	MOE
Total Workers	271	+/- 114
Drive alone	207	+/- 91
Carpool	19	+/- 30
Bus or trolley bus	0	+/- 132
Streetcar	0	+/- 132
Subway	0	+/- 132
Railroad	0	+/- 132
Ferryboat	0	+/- 132
Taxicab	0	+/- 132
Motorcycle	0	+/- 132
Bicycle	0	+/- 132
Walk	0	+/- 132
Other means	15	+/- 25
Worked at home	30	+/- 34

Table 8. Percent of Block Groups with Margins of Error Greater Than Cell Values for Travel Time to Work

Travel Time to Work	Pct MOE GT Cell Value	Pct Cell Value = 0
Total	1.7	0.8
LT 5 minutes	80.7	39.2
5 to 9 minutes	44.7	12.2
10 to 14 minutes	32.0	6.9
15 to 19 minutes	29.8	6.0
20 to 24 minutes	33.4	7.5
25 to 29 minutes	65.7	24.4
30 to 34 minutes	39.4	9.7
35 to 39 minutes	85.3	46.5
40 to 44 minutes	80.5	40.4
45 to 59 minutes	61.2	22.7
60 to 89 minutes	72.3	31.8
90 or more minutes	88.4	49.3

Table 9. Means of Transportation to Work for Block Group 0626.14 2 in Orange County, California. ACS 2005-2009 and 2000 Census

Means of Transportation	Workers	MOE	2000 Census
Total Workers	4,289	+/- 1,286	4,121
Drive alone	1,138	+/- 307	1,456
Carpool	198	+/- 153	180
Bus or trolley bus	22	+/- 26	16
Streetcar	0	+/- 132	0
Subway	0	+/- 132	0
Railroad	28	+/- 32	0
Ferryboat	0	+/- 132	0
Taxicab	0	+/- 132	0
Motorcycle	15	+/- 24	18
Bicycle	534	+/- 321	506
Walk	2,169	+/- 891	1,815
Other means	0	+/- 132	0
Worked at home	185	+/- 213	130

Table 10. Block Groups with Workers but Zero in the Travel Time Cell

Travel Time to Work	2005-2009 ACS	Census 2000 SF3	ACS Increase
LT 5 minutes	80,253	53,328	26,925
5 to 9 minutes	23,839	10,387	13,452
10 to 14 minutes	12,766	4,458	8,308
15 to 19 minutes	11,033	5,352	5,681
20 to 24 minutes	14,151	4,995	9,156
25 to 29 minutes	49,332	26,079	23,253
30 to 34 minutes	18,696	6,610	12,086
35 to 39 minutes	95,559	66,290	29,269
40 to 44 minutes	82,696	56,001	26,695
45 to 59 minutes	45,850	23,259	22,591
60 to 89 minutes	64,843	35,692	29,151
90 or more minutes	101,444	57,749	43,695

Table 11. Means of Transportation to Work for Block Group 0016.04 1 in Larimer County, Colorado

Means of Transportation	ACS	MOE	2000 Census
Total Workers	1,235	1,463	139
Drive alone	387	207	119
Carpool	218	324	6
Bus or trolley bus	0	123	0
Streetcar	0	123	0
Subway	0	123	0
Railroad	0	123	0
Ferryboat	0	123	0
Taxicab	0	123	0
Motorcycle	0	123	0
Bicycle	618	967	0
Walk	0	123	0
Other means	0	123	0
Worked at home	12	19	14

Table 12. Mean Index of Dissimilarity for Block Groups – 2005-2009 ACS vs. 2000 Census. Means of Transportation and Travel Time

Block Group Type	Means of Transportation	Travel Time
All Block Groups	15.1	30.7
Pop change less than 5 pct	14.2	29.7
100+ ACS Interviews	8.2	18.3
In county with Pop 500,000+	17.2	32.2

Table 13. Means of Transportation to Work for Block Group 0041.05 2 in Denver Colorado: 2005-2009 ACS and 2000 Census

Means of Transportation	2000 Census	ACS	MOE
Total Workers	0	4,177	+/- 237
Drive alone	0	3,221	+/- 221
Carpool	0	207	+/- 84
Bus or trolley bus	0	94	+/- 68
Streetcar	0	0	+/- 123
Subway	0	18	+/- 24
Railroad	0	0	+/- 123
Ferryboat	0	0	+/- 123
Taxicab	0	0	+/- 123
Motorcycle	0	0	+/- 123
Bicycle	0	50	+/- 34
Walk	0	68	+/- 49
Other means	0	43	+/- 34
Worked at home	0	476	+/- 124

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E-mail: ctpp@dot.gov

CTPP Listserv: http://www.chrispy.net/mailman/listinfo/ctpp-news

CTPP Web site: http://www.dot.gov/ctpp

FHWA Web site for Census issues: http://www.fhwa.dot.gov/planning/census

2005-2007 ACS Profiles: http://ctpp.transportation.org/profiles_2005-2007/ctpp_profiles.html

AASHTO Web site for CTPP: http://ctpp.transportation.org

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

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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, over 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.

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