Socioeconomic data from the ACS: Households by income quartile, vehicles available and household size

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Motivation, 1 of 2

- Ver. 2.2 & 2.3 travel models use a series of demographic sub-models to apportion the number of households per TAZ:
  - households size (1, 2, 3, 4+ persons)
  - household income (four quartiles); and
  - vehicle ownership/availability (0, 1, 2, 3+ vehicle available)
- Last update to these models was done in 2006, using the 2000 CTPP data, so an update is due

Motivation, 2 of 2

- 2000 Census was the last decennial census to include the long form, whose questions formed the basis for the CTPP data used by modelers
- What to do?
  - American Community Survey (ACS):
    - A project of the U.S. Census Bureau that replaces the long form in the decennial census
    - On-going survey of approximately 250,000 households a month
    - Note: ACS does not yet provide socioeconomic info. at fine levels of geography
- Target year for analysis: 2007
  - Base year for Version 2.3 model calibration

The ACS Data Sources

- ACS summary tables were extracted from two data sets
  - One-year data set (2007)
    - For areas with a population of 65,000 or more
    - Most of the jurisdictions within the TPB modeled area satisfy this condition at the county/jurisdiction summary level.
  - Three-year data set (2005-2007)
    - For areas with a population of 20,000 or more
    - Used to cover jurisdictions that do not meet the 65,000 threshold, e.g., King George County, VA; Jefferson County, WV; and the cities of Manassas, Fairfax , and Fredericksburg

Households by income quartile

- HH income sub-model is an aggregate share model used to estimate the share of total households in each of the four income quartiles, given the median HH income for the zone and the regional median
- Based on our 2007 analysis
  - Regional Median: $84,280
  - Regional Mean: $106,780
  - Income quartiles
    - 25% Quartile: Less than $50,000 Point Estimate $46,209
    - 50% Quartile: $50K to < $100K Point Estimate $84,280.
    - 75% Quartile: $100K to < $150K Point Estimate $137,001.
    - 100% Quartile: > $150K
  - Note: All income values in 2007 dollars

Households by household size

- HH size model is also an aggregate share model
- Based on ACS, ave. HH size for the region is 2.66 with a range from 2.2 (DC) to 3.22 (Loudoun Co).
- Based on 2007/08 HTS, ave. HH size for the region is 2.51
- Cause for difference
  - Inconsistent estimation of HH pop. in the ACS
  - In the ACS, HH-based estimates are derived from a household survey, but population-based estimates are derived from independent population totals
    - This can lead to inconsistencies in HH and population estimates

Households by vehicles available

- Veh. Availability model is a multinomial logit model
- Ave. number of vehicles per HH appears to have increased from 1.73 in the 2000 CTPP to 1.84 in the 2007 ACS
- Lowest vehicle ownership rates are found in the inner jurisdictions of DC, Arlington and Alexandria.
  - The highest rates are found in the outer jurisdictions of Fauquier County, King George County, Calvert County, Carroll County, and Spotsylvania County
- Based on the 2000 CTPP and the 2007/08 HTS, it appears that there has been a decrease in the number of zero-vehicle households and an increase in the number of 4+ vehicle households

Summary

- Products of this work
  - 2007 income quartiles
  - 2007 jurisdiction-level control totals for the socioeconomic dimensions used in the demographic models of the Version 2.3 travel model

Conclusion

- Since we will not have 2010 CTPP data, we will use 2007 ACS data instead
- However, there are plans to make CTPP-like data available in the future by aggregating multiple years of data
  - Tests are being conducted (NCHRP 8-79) to make data useful, despite conflicting goals (e.g., disclosure avoidance vs. making sure the data is useful)
  - 5-year (2005-2009) ACS data will not be available until the end of this year or early next year, so the first phase of tests will use the 3-year ACS (2006-2008) data.
  - Rich Roisman, VHB, is working on this and is here today.
- Nonetheless, the current year-2007 ACS data can be used to update key parts of the three demographic sub-models in the travel model