American Community Survey

Getting the Most Out of ACS

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A Tale of Two American Community Surveys

"It was the best of times, it was the worst of times" Charles Dickens

Best of Times

- Fresh data every year

- Not having to tell clients that you only have data that are seven years old

- Additional products from FactFinder – ranking tables and subject tables

- Data users will have more options for what best suits their needs – single year or multi-year

- Rural Area Profiles proposed for participating States

Worst of Times

- Fresh data every year means having to update your products every year

- Having to calculate statistical significance every time you want to make a comparison of two geographic areas, two time periods, add data items together, calculate a ratio

- Sample size for ACS is much smaller than the decennial (*which was 1 in 6 HH*)– creating a larger sampling error

Worst of Times (cont'd)

- How will the ACS sample size which is based on a set number (3 million addresses yr) reflect growing populations

- Multi-Year estimates in addition to single year estimates *(yes I also had that under best of times)*

- Concerns that including seasonal population, which most likely will be higher income, will affect towns with lower income full time population in applying for grants

Worst of Times (cont'd)

- Explaining to media and other users that they should not just look at the estimate without considering the MOE

- Have you seen the formula for determining statistical significance between two estimates?
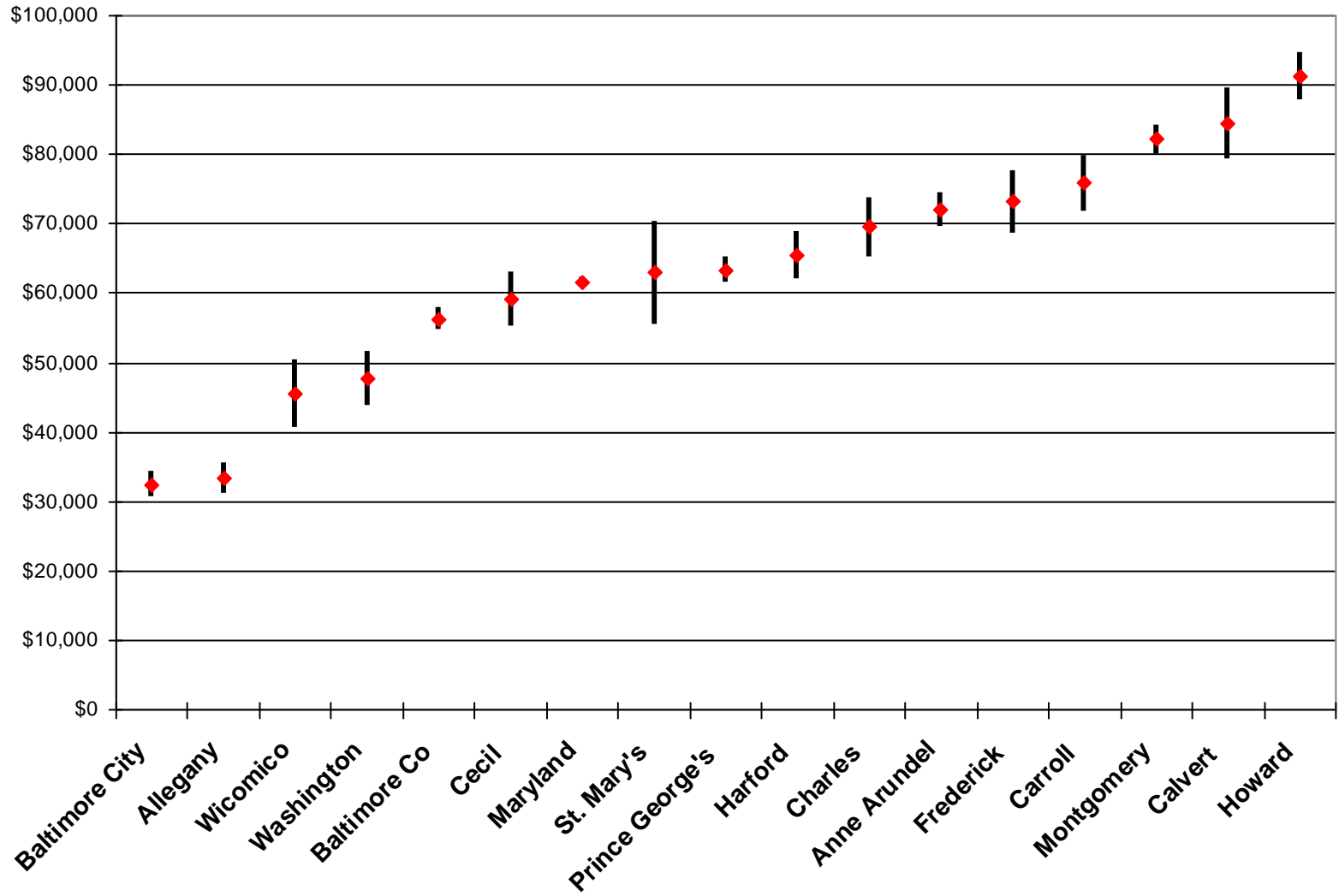
Comparing Two ACS Estimates

- Given that estimates should now be viewed as ranges with confidence intervals
- When is a difference between two estimates "statistically significant?"
- There is the "easy way" and the (more correct) "hard way"
- Then, there is an easy way to do the hard way

Comparing Two Estimates

- If have two estimates, need to determine if the apparent differences are "real"

- Quick and dirty method is to "eye ball" whether the confidence intervals overlap

2005 Median Household Income & Benefit Estimates *

Comparing Two Estimates
(the easy way)

- If the confidence intervals of two estimates do **_not_** overlap, then the two estimates are statistically different

- If the confidence intervals of two estimates do overlap, then the two estimates are not statistically different (maybe)

Comparing Two Estimates

- Need to do a formal test of statistical significance if the confidence intervals do overlap

Statistical Testing - Steps

1. Calculate the difference in the estimates
2. Calculate the standard errors of each estimate
3. Calculate the standard error of the difference
4. Calculate the MOE of the difference
5. Compare the difference between the estimates to the MOE of the difference

Statistical Testing - Steps

6. If the difference in the estimates is greater than the MOE of the difference, then you conclude that the two estimates are statistically different

7. If the difference in the estimates is less than the MOE of the difference, you conclude that the two estimates are not statistically different.

Standard Error – Sum

□ $SE(X_1 + X_2 + \ldots + X_n)$

$$= \sqrt{[SE(X_1)]^2 + [SE(X_2)]^2 + \ldots + [SE(X_n)]^2}$$

If you want to add/collapse categories (i.e. ages) you would have to calculate a new SE – the HARD WAY

Standard Error – Proportions

$P = X / Y - X$ is a
    subset of Y

$$SE(P) = \frac{1}{Y} \sqrt{[SE(X)]^2 - \frac{X^2}{Y^2}[SE(Y)]^2}$$

If you wanted to create a ratio – again you have to go through this each time – the HARD WAY

Does It Need to Be So Hard?

Should Everyone Have to Do This?

- NY SDC developed spreadsheets with examples for calculating the MOE and SE for summing/subtracting, calculating a new ratio.

- MD SDC developed a spreadsheet for our affiliates to compare two areas to determine statistical significance

The EASY WAY - formulas are in the spreadsheet – just input your numbers

Proposed Application
for ACS Website

Instead of users each trying to figure out the HARD WAY or trying to develop spreadsheets to calculate the statistical significance perhaps the Census Bureau ACS site could have a section that allows data users to input their numbers depending on whether they are summing or subtracting categories; calculating ratios or just comparing two different geographies

Concerns

- Funding issues
  - Increasing sample size takes money
  - Money for ACS Methods Panel analysis cut this FY – more analysis needed, not less. These analyses focus on data collection efficiencies and questionnaire content
  - How will State and Federal programs handle funding and policy decisions for areas with large MOEs and for areas that may fall in and out of the funding "window" annually?

Least Ambitious of Times
Radical thoughts

Do we need to have 3 year estimates each year and 5 year estimates (for tracts and BGs) each year? How about "independent" 3 year and 5 year estimates? Five year estimates would be released every 5 years so there would be separate 5 year aggregations to compare (i.e. no overlap of years).

By 2010 we will have 5 year estimates for every geography every year, we will have 3 year estimates for every geography over 20,000 every year and we will have single year estimates for every geography over 65,000.

Invest the extra money in increasing the sample size.

ACS Newsletter Prepared by a Metropolitan Council of Government

OUR CHANGING REGION

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

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AMERICAN COMMUNITY SURVEY
U.S. CENSUS BUREAU

2006 COG Region Population Totals More Than 4.5 Million

Welcome to the first in a series of COG reports based on the 2006 American Community Survey. The report provides estimates of demographic, social, and economic characteristics of the COG region and the Washington MSA.

What is the American Community Survey?

The American Community Survey (ACS) is a new nationwide survey from the U.S. Census Bureau designed to provide communities a fresh look at how they are changing. The ACS collects information such as age, race, income, commute time to work, home value, veteran status, and

Total Population

Jurisdiction	Population; Estimate
District of Columbia	581,530
Frederick County	222,938
Montgomery County	932,131
Prince George's County	841,315
Maryland Suburbs	1,996,384
City of Alexandria	136,974
Arlington County	199,776
Fairfax County	1,010,443
Loudoun County	268,817
Prince William County	357,503
Northern Virginia	1,973,513
COG Region[1]	4,551,427
Washington MSA[2]	5,288,670

[1]Does not include Virginia independent cities
[2]Washington-Arlington-Alexandria, DC-VA-MD-WV MSA

The total population in the COG region totals 4,551,427. The most populous jurisdiction is Fairfax County with more than one million people, followed by Montgomery County with more than 932,000 people, and Prince George's County with more than 841,000 people.

Households by Type

Jurisdiction	Total Households; Estimate	Family Households				Nonfamily households		
		Family Households	Married-couple families	Married-couple families: With own children under 18 years	Female Householder with own children under 18 years	Nonfamily households	Householder living alone	Householder 65 years and over living alone
District of Columbia	250,456	43%	22%	7%	8%	57%	47%	11%
Frederick County	79,983	71%	58%	29%	6%	29%	21%	7%
Montgomery County	341,438	70%	55%	28%	6%	30%	25%	8%
Prince George's County	300,177	66%	40%	19%	11%	34%	28%	5%
Maryland Suburbs	721,598	69%	49%	24%	8%	31%	26%	7%
City of Alexandria	61,519	42%	33%	10%	3%	58%	49%	8%
Arlington County	85,337	46%	36%	16%	4%	54%	46%	7%
Fairfax County	363,328	68%	55%	26%	5%	32%	27%	6%
Loudoun County	83,011	69%	59%	35%	5%	31%	28%	4%
Prince William County	122,335	77%	58%	32%	8%	23%	18%	4%
Northern Virginia	715,530	65%	52%	26%	5%	35%	30%	6%
COG Region[1]	1,687,584	63%	46%	22%	7%	37%	31%	7%
Washington MSA[2]	1,942,516	65%	48%	23%	7%	35%	29%	7%

[1]Does not include Virginia independent cities
[2]Washington-Arlington-Alexandria, DC-VA-MD-WV MSA
[3]Family households consist of households of two or more people where one or more members are related to the head of household by birth, marriage, or adoption.
[4]Non-family households includes those households composed of persons who do not live in group quarters or with a relative, and includes house-

It appears that for each of the household types by county the estimate is taken and added together for the three counties to use as numerator – no additional statistical analysis was done to factor in MOEs