American Community Survey
And
Cambridge Demographic Update
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Cambridge Demographic Brown Bag

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What is the American Community Survey

- The American Community Survey (ACS) replaces the Census Bureau's long form questionnaire, used to collect socioeconomic data about persons and households as part of the decennial census.
- The ACS surveys 1 in 40 households each year, over 5 years 1 in 8 households. In contrast , the decennial census long form surveyed 1 in 6 households.
- ACS data is released in 1, 3 and 5 year increments. By 2010 the Bureau will use ACS to make detailed socioeconomic information available down to the blockgroup level on an annual basis
- Places with more than 65,000 residents – including Cambridge - have new ACS data released every year, as well as three and five year estimates.
- Places with 20,000 or more residents have estimates released every 3 and 5 years.
- Smaller places, including all census tracts and blockgroups, have estimates released every 5 years

Margin of Error Matters

- Because the ACS is a survey with more limited sampling than the long form Census questionnaire, all ACS data is released with 10% margins of error.
- A variety of factors affect the magnitude of the margin of error
  - The bigger the sample the smaller the margin of error
  - The smaller the estimated subgroup, the bigger the margin of error
- The end user should view ACS estimates as ranges with confidence intervals, rather than specific points.
- Question now – Not whether there is a difference but when is a difference statistically significant?

Example of Margin of Error

	2000 Census		2007 ACS		
	Value	10% MOE	Value	10% MOE	Z Value
Less Than High School	10.4%	0.6%	5.1%	1.4%	5.73
High School or Equal	12.2%	0.6%	13.7%	2.9%	0.84
Some College or Associates	12.2%	0.6%	10.8%	2.3%	0.96
Bachelors or Higher	65.2%	1.0%	70.4%	6.7%	1.26

- The only difference here that is statistically significant is the difference between those with less than a high school education in 2000 and 2007.
- For that item the Z value, which is a test of statistical significance, is greater than 1.645. When Z exceeds 1.645 you can state that there is a 90% chance the difference is real and not an artifact of sampling.
- Spreadsheet with statistical tests: http://www.trbcensus.com/notes/StatisticalCalculationsMenu.xls

Place of Residence Has Changed

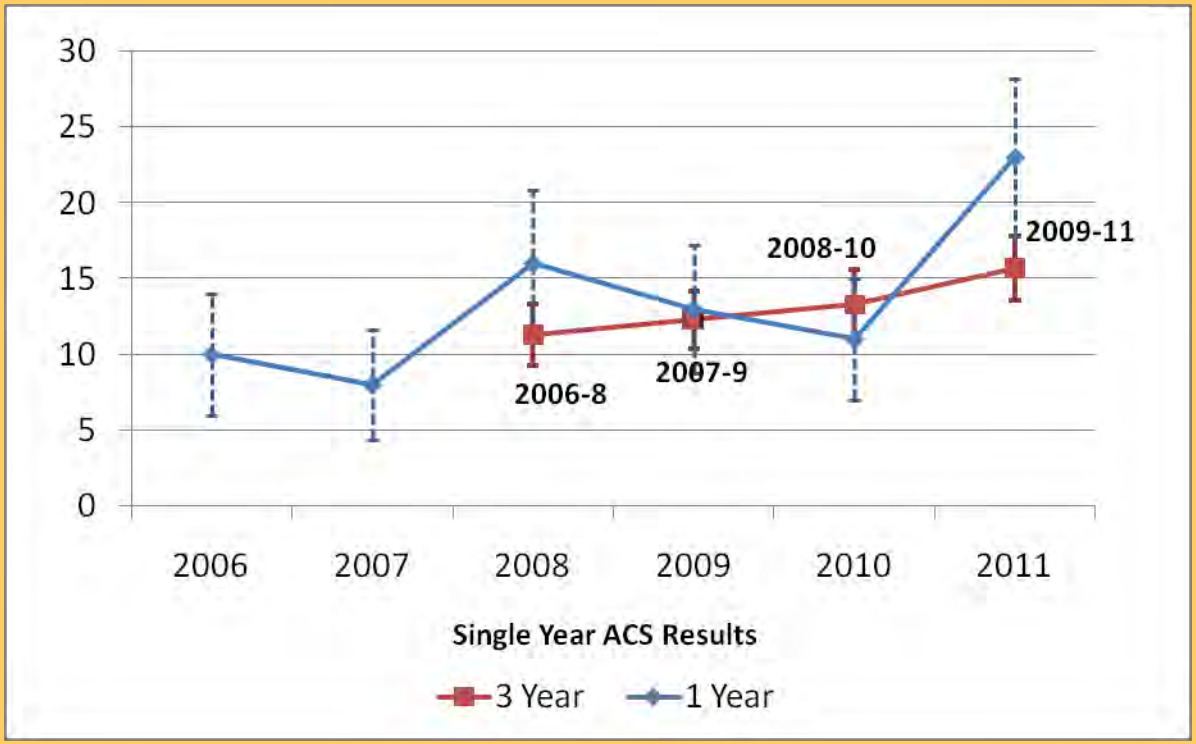
- Decennial census asks for your current residence as of the date of the Census - April 1 of census year.
- ACS asks for your usual residence over the past two months.
  - Defined as where you have lived over past 2 months
  - Think of this as asking the question at 12 different times, one for each month.
  - How are ACS estimates affected if you are counted while spending the summer by the lake?
  - How are ACS estimates affected if you are not counted where you spend most of the year?

Point vs. Period Estimates

- ACS estimates represent average values over a period of time, not beginning, mid-point or end values
- Traditional decennial census estimates are largely point estimates; they estimate the value of a variable on Census Day.
- Comparing point and period estimates is not apple to apple (though it may be good enough for most purposes). Better to compare periods.
- As discussed, seasonal populations can distort results
- Time sensitive data poses a problem. For example, what is a 3 year vacancy rate or a median rent when all months are given equal weight? Is this useful? Can you compare this measure to traditional point measures? Real life examples:
  - Housing market data included in a CHAS
  - Low and moderate income data used to determine CDBG eligibility
  - Home/place of work flows used to build Journey to Work tables

Which ACS Data Set to Use?

- 1 year ACS more timely but less accurate, 3 and 5 year more like a lagging indicator of change, trade off of frequency versus reliability of data
- Overlapping time periods will correlate since they share some of the same data, this can provide a false picture of lack of statistically significant differences. Better to compare non-overlapping periods



Comparing Data - Dos & Don’ts

- Comparing ACS estimates
  - Take into account Margin of Error. Test for statistically significant differences
  - Don’t make a big deal about small differences
  - Look at the trend, is it worth watching?
  - Do related measures move in parallel? (e. g. poor children and poverty rate, Hispanic origin and speak Spanish at home)
  - If you compare areas do so over the same time period
  - Don’t compare data for an area using overlapping periods
- Comparing Census 2000 and ACS - Some topics are best compared with caution or not at all: http://www.census.gov/acs/www/UseData/compACS.htm
- Bottom Line: There is a lot more to think about than in the good old days

Issue - Population Controls

- The ACS includes counts of population subgroups which are largely misleading. ACS data is more useful when looking at measures of characteristics, such as proportions, or figures that do not relay on population counts, like median income or average household size.
- ACS counts at county level are controlled to official population estimates issued by the Census Bureau.
- At sub-county level the county population is apportioned based on the share counted by the ACS. This step tends to underestimate the population in larger places. In addition, the population estimates issued for Cambridge are themselves problematic.

Cambidge Population	
Census 2000	101,355
Census Bureau 2007 Population Estimate	101,388
2007 ACS	95,736
2005-2007 ACS	91,867

Issue - Income

- Income questions are different:
  - Census 2000: What was your income last year?
  - ACS: What was your income over the preceding 12 months
- ACS really is measuring income over a 23 month period by asking what was your income over the past twelve months at 12 different points in times over a single year
- All ACS results are adjusted using the Consumer Price Index to constant dollar values for December of the year surveyed.
- 3 and 5 year estimates are adjusted to current values for the end of the survey period .
- Comparisons of ACS and Census 2000 income are not really apple to apple but close enough as long as you make the appropriate CPI adjustment.

Issue – Suppression of Data

- This is a issue that will become more important as the Census Bureau prepares to release the first ACS data sets for small geographic areas, including Census Tracts.
- The driving reason is the concern that through the use of public records and ACS tables, data mining techniques can identify specific information about specific individuals, compromising their privacy.
- What this means in practice:
  - Expect MANY tables at the Census Tract level to be completely suppressed.
  - The level of census information to which we have become accustomed may no longer be available
  - Transportation planners take note - Journey to Work flow file will be severely redacted

Where to find ACS data

- ACS data is available through the Census Bureau's American Factfinder web site:
- http://factfinder.census.gov/home/saff/main.html?_lang=en
- The Factfinder website is a good resource for several Census data sets, including Census 2000 and the Economic Census.
- There are several different types of data tables available from the ACS: Data Profiles, Subject Tables and Detailed Tables.
- For more information about the ACS:
  - Census Bureau ACS web site: http://www.census.gov/acs/www/index.html
  - http://mcdc2.missouri.edu/pub/data/acs/Readme.shtml
  - http://mcdc2.missouri.edu/pub/data/acs/prbThe_American_Community.pdf

Age - Youth and 65+

	2000 Census	ACS	Value	10% MOE	Z Value
Under 5	4.1%	2007	4.6%	1.2%	0.69
Under 5	4.1%	2005-7	5.0%	0.7%	2.12
5 to 17	9.2%	2007	9.7%	1.7%	0.49
5 to 17	9.2%	2005-7	8.5%	0.7%	1.65
55 to 64	6.8%	2007	10.5%	1.7%	3.62
55 to 64	6.8%	2005-7	10.3%	0.6%	9.66
Over 65	9.2%	2007	10.3%	1.3%	1.40

- Do these changes make sense in light of other data?
- Note how using the 2005-7 ACS leads to more significant results.

Diversity

	2000 Census		2007 ACS		
	Value	10% MOE	Value	10% MOE	Z Value
Hispanic Origin	7.4%	0.0%	4.8%	1.5%	2.86
Foreign Born	25.9%	1.0%	28.2%	4.1%	0.91
Born in Asia	9.1%	0.5%	11.5%	2.4%	1.62
Born in Africa	1.7%	0.2%	4.2%	2.6%	1.59
Born in Latin America or Caribbean	7.4%	0.5%	4.6%	1.6%	2.77
Speak Spanish	6.8%	0.5%	4.2%	1.4%	2.89
Speak French	5.1%	0.5%	4.7%	1.8%	0.34
Speak Chinese	3.7%	0.5%	5.9%	1.9%	1.86

Education - 2007 decline in LT HS

	2000 Census Value	10% MOE	ACS	Value	10% MOE	Z Value
Less Than HS	10.4%	0.6%	2007	5.1%	1.4%	5.73
HS or Equal	12.2%	0.6%	2007	13.7%	2.9%	0.84
Some College or Associates	12.2%	0.6%	2007	10.8%	2.3%	0.96
Bachelors or Higher	65.2%	1.0%	2007	70.4%	6.7%	1.26
Less Than HS	10.4%	0.6%	2005-7	6.1%	0.9%	6.55
HS or Equal	12.2%	0.6%	2005-7	12.4%	1.4%	0.27
Some College or Associates	12.2%	0.6%	2005-7	11.7%	1.4%	0.59
Bachelors or Higher	65.2%	1.0%	2005-7	69.8%	3.5%	2.08

Income

	2000 Census		2005-7 ACS		
	Value	10% MOE	Value	10% MOE	Z Value
Median Household Income	$59,704	$1,853	$58,457	$2,699	0.63
Median Family Income	$73,945	$3,408	$79,533	$5,796	1.37
Per Capita Income	$38,745	$819	$40,086	$1,683	1.18

- All 2000 income figures are adjusted to 2007 values using the Consumer Price Index
- No significant change in median or per capita income.
- Does this make sense in light of the apparent decline in adults with less than a high school education?

ACS Housing Tenure - a Mess

	2000 Census		2005-7 ACS		
	Value	10% MOE	Value	10% MOE	Z Value
Owner Occupied	32.3%	0.0%	39.2%	2.2%	5.14
Renter Occupied	67.7%	0.0%	60.8%	2.5%	4.52

- Is this accurate?
- Recent analysis of Assessing data and housing permits shows 27.8% owner occupied and 72.2% renter occupied.
- Some of the discrepancy is result of applying Census rules to Assessing data to determine what is a housing unit, which leads to labeling a substantial number of graduate dorms as housing (and not group quarters)
- Truth is likely somewhere in between.