# Poverty and Buffalo: Beyond the Headlines

On August 28, 2007 the U.S. Census Bureau released statistics on poverty and earnings in the United States. These statistics were based on results from the 2006 American Community Survey (ACS) which is an ongoing (continuous measurement) survey conducted by the Bureau.

The Buffalo News published a front page story on August 30, 2007 with the following headline "Buffalo falls to second-poorest big city in U.S., with a poverty rate of nearly 30 percent".

The Census Bureau did not rank Buffalo the second poorest large city in the U.S. The Buffalo News did. While this story raises the awareness of poverty in Buffalo, it contains many misrepresentations of the Census statistics and does a disservice to the residents of Buffalo and western New York in its comparisons with other cities in the country.

The authors define big cities as *"American cities with a population of more than 250,000"*. The July 1, 2006 population estimate for the City of Buffalo is 276,059[1]. However, the universe upon which the poverty statistics are generated is "Population for whom poverty status is determined" which in Buffalo is 250,339 +/- 7,237. In other words, the population in Buffalo for whom poverty status is determined is between 243,102 and 257,576 which places Buffalo on the cusp of the big city definition. Detroit, the big city with the "worst" poverty rate according to the article, has a July 1, 2006 population estimate of 871,121. Detroit is more than three times the size of Buffalo. The remainder of this article compares Buffalo poverty statistics to big cities as defined in the article, but also to medium cities, those with a July 1, 2006 population estimate between 100,000 and 250,000, and small cities, those with a July 1, 2006 population estimate between 50,000 and 100,000.

Estimates produced from the American Community Survey are based on a sample of responses from the population. These estimates are, therefore subject to variability. The margin of error allows interpretation of the range of values that contain the true value. For example, Buffalo's 2006 estimate of the proportion of persons living below poverty level is 29.9% with a margin of error of 2.6%[2]. So, we are 90% confident that the true proportion of people living below poverty level falls between 27.3% and 32.5%. The 90% level of significance is the Census standard. However, using different levels allows us to state that we are 95% confident that the true proportion of people living below poverty level falls between 26.3% and 33.0%. To be more confident in our estimate, the range containing the possible true poverty rate increases.

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[1] Census Bureau Population Estimates http://www.census.gov/popest/cities/tables/SUB-EST2006-01.xls, last accessed 9/19/2006.
[2] Source: U.S. Census Bureau Table GCT1701: Percent of People Below Poverty Level in the Past 12 Months (For Whom Poverty Status is Determined): 2006

Consider Cincinnati, OH a city slightly larger than Buffalo, with 2006 estimate of the proportion of persons living below poverty level of 27.8% and margin of error of 2.4%. We are 90% confident that the true proportion of people living below poverty level in Cincinnati falls between 25.4% and 30.2%. We can see that the true poverty level for Buffalo and Cincinnati may fall into the overlap of these city's 90% confidence intervals, e.g. between 27.3% and 30.2%, which implies that the true poverty level for these two cites is no different. However, in statistics we conduct a hypothesis test to determine if the two estimates are equal. The ACS is a large random sample so we use the z-statistic. The z-statistic confirms that we reject (estimates not equal) or fail to reject (estimates may be equal) the null hypothesis. In other words, if the z-statistic falls between -1.65 and 1.65, we are 90% confident that there is no difference in the poverty levels of Buffalo and Cincinnati. The z-statistic for the Buffalo-Cincinnati comparison is -0.98. Hypothesis tests comparing estimates from other cities to Buffalo's resulted in the following conclusions.

There are 46 places in the U.S. and Puerto Rico whose poverty rate is not statistically significantly different from the poverty rate in Buffalo. The big cites of Detroit, MI, Cincinnati, OH, Cleveland, OH, Miami, FL and St. Louis, MO have the same poverty rate as Buffalo when sampling error associated with the 2006 ACS is considered. In fact, the poverty rate in these big cities is no different from the poverty rate in Buffalo at a 90% level of significance. Each of these big cities is significantly bigger than Buffalo, with Detroit the largest and Cincinnati the closest in size to Buffalo with a population estimate of 332,252. (See Figures 1 and 2 for a graphical comparison of a few "large" cities.)

**Poverty Rate
ACS 2006**
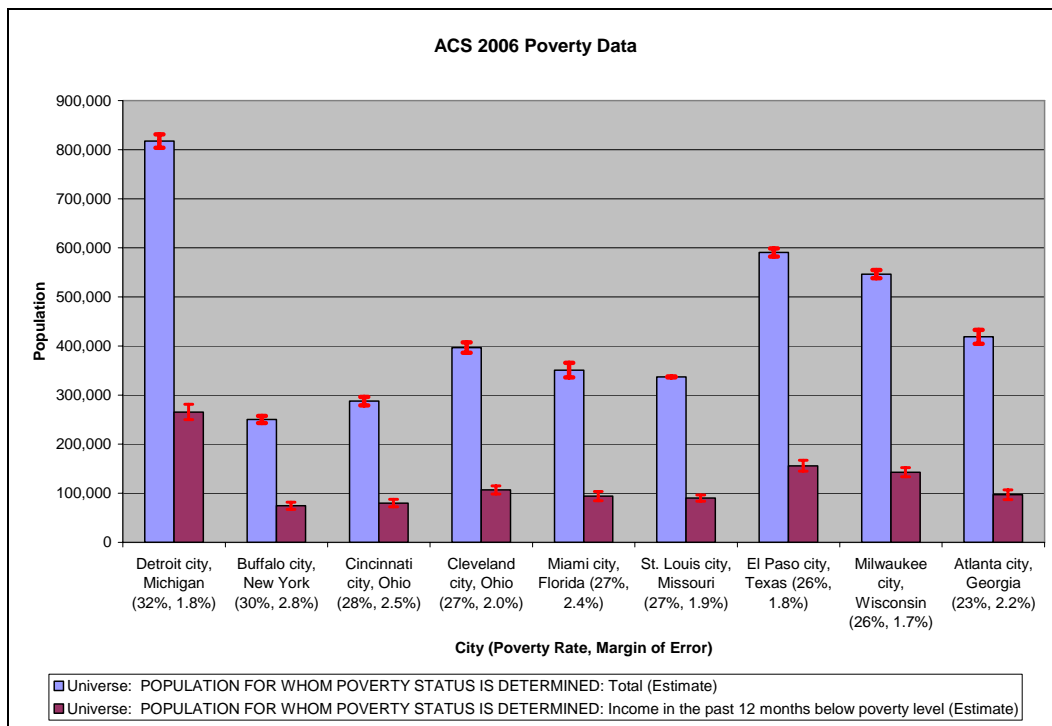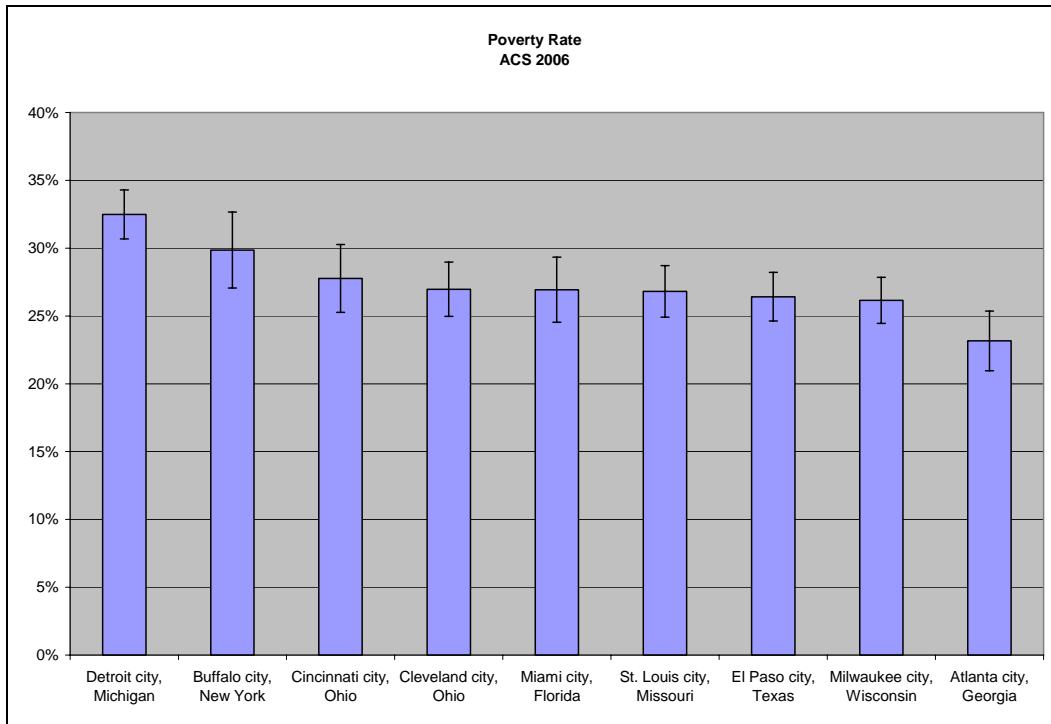


There are 18 medium size cities with a poverty rate that is not statistically significantly different from the poverty rate in Buffalo. Baton Rouge, LA is the largest of these cities with a 2006 population estimate of 229,553 followed by Laredo, TX (215,484) and, Rochester, NY (208,123).

There are 23 small size cities with a poverty rate that is not statistically significantly different from the poverty rate in Buffalo. Four cities in Puerto Rico, two in Texas, one in New Jersey and one in Indiana have <u>higher</u> poverty rates than Buffalo.

The statement in the headline that "Buffalo falls to second-poorest big city in U.S." is inaccurate and misleading.

The Buffalo News article continues with:

> *"New estimates also show Buffalo's median income of $27,850 is the third lowest in the U.S. among large cities, just ahead of Miami and Cleveland."*

There are 31 places in the U.S. and Puerto Rico where median household income is not statistically significantly different from the median household income in Buffalo. The big cites of Detroit, MI, Cleveland, OH, and Miami, FL have the <u>same median household income</u> as Buffalo when sampling error associated with the 2006 ACS is considered. In fact, the median household income in these big cities is no different from the median household income in Buffalo at a 90% level of significance.

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There are 12 medium size cities with median household income that is not statistically significantly different from median household income in Buffalo. Birmingham, AL is the largest of these cities with a 2006 population estimate of 229,424 followed by Rochester, NY (208,123), and Brownsville, TX (172,437).

There are 16 small size cities with median household income that is not statistically significantly different from median household income in Buffalo.

The statement indicating that "Buffalo's median income is the third lowest in the U.S. among large cities" is inaccurate and misleading. In addition, the use of median income as an indicator of poverty is problematic. Median income is a complicated statistic based on self-reported income values. In addition, the estimates do not take in to account cost of living differences in different cities.

The Buffalo News article comments that "*While Rochester and Syracuse weren't ranked among the nation's largest cities, the poverty rates in those two cities are almost identical to Buffalo's.*" Statistically speaking, the poverty rate in those two cities is identical to Buffalo's.

The Buffalo News article states that "*Buffalo's poverty rate rose sharply from 26.6 percent in 2005 to 29.9 percent in 2006.*" This statement is inaccurate and misleading since the authors do not consider the sampling error associated with the surveys. The 2005 poverty rate is 26.6 percent with a margin of error of 2.8 percent. The 2006 poverty rate is 29.9 percent with a margin of error of 2.8 percent. There is no change in the poverty rate in Buffalo between 2005 and 2006 at a 90% level of significance.

The Buffalo News article continues that "*When it comes to children, Buffalo again ranks second in the nation behind Detroit, with nearly 43 percent of the city's kids living in poverty, census estimates show.*"

There are 59 places in the U.S. and Puerto Rico where the percent of children under 18 years below poverty level in the past 12 months is not statistically significantly different from the child poverty rate in Buffalo. The big cites of Detroit, MI, Cincinnati, OH, Cleveland, OH, Atlanta, GA, St. Louis, MO, Milwaukee, WI, El Paso, TX, and Miami, FL have the same child poverty rate as Buffalo when sampling error associated with the 2006 ACS is considered. In fact, the child poverty rate in these big cities is no different from the child poverty rate in Buffalo at a 90% level of significance. Again, each of these big cities is significantly bigger than Buffalo, with Detroit the largest and Cincinnati the closest in size to Buffalo with a population estimate of 332,252.

There are 20 medium size cities with a child poverty rate that is not statistically significantly different from the child poverty rate in Buffalo. Baton Rouge, LA is

the largest of these cities with a 2006 population estimate of 229,553 followed by Birmingham, AL (229,424) and, New Orleans, LA (223,388).

There are 31 small size cities with a poverty rate that is not statistically significantly different from the poverty rate in Buffalo.

In addition to the use of Census statistics in telling the story, the Buffalo News article contains several quotes from authoritative figures, including a regional economist from the Buffalo branch of the Federal Reserve Bank of New York, the director of the Regional Institute at the University of Buffalo, the president of the Food Bank of Western New York, the president and chief executive of the Buffalo Urban League, the Buffalo Superintendent of Schools, and the Mayor

While the recent Census Bureau statistics certainly indicate that the City of Buffalo has considerable poverty problems to address, there is no indication that Buffalo is alone in this struggle in our nation.  In fact, Buffalo is among a fairly substantial group of small, medium, and large cities throughout the nation suffering from poverty related problems.  Considering the number of people living below the poverty level, as opposed to the poverty rate, Buffalo is far from the top of this list. Poverty is a national problem.

Better information, or understanding of the statistics, may encourage policy makers from these cities to collaborate, share ideas, and strategize on possible solutions to fight and win this battle.  Portraying Buffalo in isolation is inaccurate and unproductive as well as demoralizing to this community. In a second front page article on poverty in Buffalo appearing in the News on 8/31/2007 entitled "Mayor Brown says Buffalo is 'turning a corner' in fight against poverty" by Brian Meyer, the second to last sentence:

> *Brown underscored the need to forge partnerships with the state and federal governments to fight poverty — alliances that would bring new resources to the challenge.*

reinforces this argument.

The authors of the Buffalo News article were contacted concerning the misleading use of statistical information in their article.  The communication included a statistical analysis with source information from the Census tables used in the analysis.  The response received by one of the authors was:

> Thank you. Few of us are statisticians, and understand the nuances of measurement-taking. So we take the results at face value, which do provide calculable information, but apparently not, as you suggest, as accurate a picture as suggested. Nonetheless, these are the rankings

> the U.S. governent (sic) uses, and we feel bound by them. (email
> received from Mark Sommer 8/31/2007 11:02 am)

The other author responded as follows:

> One of the problems we have as reporters is trying to find experts who
> are on top of this data, particularly locally, and can speak about it
> intelligently.
>
> The Census Bureau goes through a lot of trouble to provide this
> information, but I have found it is not so easy to access, which can be
> frustrating. (email received from Jay Rey 9/05/2007 11:13 am)

Regular users of Census data are quite familiar with the abundance of resources the Bureau provides to assist the public with using and understanding their data. Unfortunately, this is not enough to prevent the problems demonstrated above.

Another example of poor communication of Census data was found a few days later in a Buffalo News article entitled "An aging population puts financial strain on local governments and non-profit groups" By David Robinson 9/5/07. The article primarily summarized information found in a report produced by Buffalo Branch of the Federal Reserve Bank of New York. An example of a misleading statement in this article is:

> *That elderly population tends to be located mostly in upstate cities
> and in older first-ring suburbs, such as the Town of Tonawanda
> and Cheektowaga, where a quarter of all residents were age 60 or
> older at the time of the 2000 Census.*

According to Table P8. SEX BY AGE [79] - Universe: Total population of Census 2000 Summary File 3 (SF 3), only around 7% of the population in Cheektowaga CDP and 11% of the population in Tonawanda CDP were age 60 and older at the time of the 2000 Census. The Federal Reserve Bank report uses Census data from forty nine counties in upstate New York. The analysts identify places as first ring suburbs, then, presumably, derive the total population age 60 plus and the total population in all first-ring suburbs in the forty nine counties, the ratio of which is about 25%. Individual places designated as first ring suburbs may have a higher or lower proportion of elderly residents. In the case of Cheektowaga and Tonawanda, their ratios are significantly lower than 25%.

The Buffalo News reporter frequently mentions the Buffalo-Niagara region several times in the article and quotes many local sources, giving the impression that the statistics generated for upstate New York are directly transferable to western New York.

All of these articles have generated discussion throughout the western New York community, with the poverty ranking becoming an unfortunate sound bite. The poverty articles were the top item for responses on the editorial page of the

Sunday (9/9/2007) Buffalo News edition. The News web site blog contains many, many comments from past and present citizens of the region regarding the continuing economic downfall of Buffalo.

My questions are:

- Are these isolated examples of misuse of Census (ACS) data or does this happen frequently in the media?

And

- What can and should be done to prevent the misuse and miscommunication of statistics by the media?