

2007-2015 Hunger Factors Index | Prepared by Howard Fleeter | October 10, 2016

Every four years the Ohio Association of Foodbanks, in conjunction with Feeding America, prepares a study of Hunger in Ohio that provides a profile of the persons and families seeking food assistance in the state. The most recent study, “Hunger in Ohio 2014”, released in fall 2014 shows that Ohio’s network of foodbanks provides emergency food assistance to an estimated 2 million Ohioans annually, more than 1 out of every 6 of the state’s residents.

While the Hunger in Ohio study provides invaluable information regarding the need for food assistance in Ohio, the study is only conducted every four years. The “Hunger Factors Index” shown below provides a simple way to evaluate how the underlying economic factors that influence hunger and food insecurity have changed in Ohio on an annual basis since the onset of the recession of 2008 and 2009. The inclusion of data from the year 2000 also provides a benchmark prior to the recession of 2001.

The methodology used in the Hunger Factors Index utilizes three key economic variables identified by Feeding America’s “Map the Meal Gap” analyses as being linked to food insecurity. These variables are:

- Median household income
- Poverty rate
- Unemployment rate

The table below provides a summary of these 3 economic indicators in Ohio in 2000 and from 2007 through 2015, along with Ohio’s rate of food insecurity as annually computed by the US Department of Agriculture, and Ohio’s Supplemental Assistance Nutrition Program (SNAP) participation rate over the same time frame.

Table 1: Economic Indicators Influencing Hunger in Ohio, 2000 & 2007-2015

	2000	2007	2008	2009	2010	2011	2012	2013	2014	2015
Ohio Median Income (Current \$)	\$39,584	\$46,597	\$47,988	\$45,395	\$46,275	\$45,090	\$46,289	\$48,081	\$49,283	\$51,075
Ohio Median Income (2007 \$)	\$47,854	\$46,597	\$46,214	\$43,873	\$42,875	\$42,170	\$42,290	\$42,794	\$43,162	\$44,860
% Poverty	11.1%	13.1%	13.4%	15.2%	15.8%	16.4%	16.3%	16.0%	15.8%	14.8%
% Unemployment	4.0%	5.6%	6.6%	10.2%	10.0%	8.7%	7.4%	7.4%	5.8%	4.9%
Food Insecurity*	9.8%	12.2%	13.3%	14.8%	16.4%	15.5%	16.1%	16.0%	16.9%	16.1%
SNAP Participation %*	6.7%	9.5%	10.3%	12.5%	14.5%	15.5%	15.7%	15.75%	15.0%	14.3%

* Note that the 2000 Food Insecurity & SNAP Participation data is actually from 2002.

The effects of the 2008-2009 recession in Ohio are clearly evident from examining the data in Table 1. Median income in current dollars (i.e. unadjusted for inflation) has fluctuated from 2007 through 2015. However once median income is expressed in constant 2007 dollars each year (by using the CPI to adjust for inflation), a clear pattern is revealed showing median income falling each year through 2011 before increasing from 2012 onward. The 2012 increase was very small, while the increases in both 2013 and 2014 were roughly 1%. However, 2015 median income in constant 2007 dollars increased by nearly 3.5% from 2014.

Over the same time frame, poverty and unemployment both increased in the aftermath of the recession, however their pattern of recovery has differed markedly. The unemployment rate has fallen sharply since 2010, with the current rate below 5% - less than half of the recession era levels of 10.3% in 2009 and 2010. In contrast, the poverty rate showed little improvement through 2014 (the 15.8% rate in 2014 was the same as in 2010), while finally showing a significant decline in 2015 to 14.8%. Note however, that the 2015 poverty rate is still 1.7 percentage points higher than the pre-recession poverty rate of 13.1% in 2007. Finally, Ohio's rate of Food Insecurity and SNAP participation both increased dramatically in 2010 and each remains far above the pre-recession level of 2007. Combining these 5 measures into a single "Hunger Factors Index" allows for a simple comparison of how these underlying economic conditions have changed since the recession.

In addition, comparison of data from the 2007-2015 period with data from 2000 shows that even in 2007 (the year prior to the most recession) underlying economic conditions in Ohio had not recovered to pre-2001 recession levels. The 2001 recession ended the longest expansionary period in U.S. history (10 years) and thus might represent a "high water" mark for American prosperity.

In order to combine these 5 disparate measures into a single index, it is necessary to first transform the inflation-adjusted median income measure so that it is both in similar units of measurement to the other factors and also moves in the same direction as the other three measures (higher median income is "good" while higher poverty, unemployment and food insecurity are "bad"). Ohio Median Income is transformed by comparing it to the inflation-adjusted national average Median Income in 2007 (\$50,740). In 2007 Ohio's inflation-adjusted median income of \$46,597 was 8.17% below the national average. This differential increased steadily through 2011 when Ohio's inflation adjusted median income of \$42,170 was 16.89% below the 2007 national average. The differential has narrowed since 2011, with Ohio's 2015 inflation-adjusted median income of \$44,680 now only 11.94% below the 2007 national average. These figures are shown in Table 2.

Table 2: Ohio Inflation-Adjusted Median Income vs. 2007 U.S. Median Income

	2000	2007	2008	2009	2010	2011	2012	2013	2014	2015
Ohio Median Income vs. 2007 U.S. Median	5.69% below	8.17% below	8.92% below	13.53% below	15.50% below	16.89% below	16.65% below	15.66% below	14.94% below	11.94% below

The 2007 national average is used as the consistent point of comparison because it is an absolute change in inflation adjusted income levels - not a relative one - that influences food insecurity (this means that a family whose income decreases 20% will still have a harder time putting food on the table even if the national average income also falls 20%). The increase in this income gap from 8.17% to 16.89% in 2011 indicates the extent to which the purchasing power of the typical Ohioan was eroded due to the recession. The subsequent narrowing of this gap from 2012 to 2015 similarly shows the extent to which purchasing power has increased in Ohio as the state has recovered from the effects of the recession. By way of comparison, Ohio’s inflation-adjusted median income in 2000 was only 5.69% below the 2007 national average.

Once the ratio of Ohio’s median income to the 2007 national median income is computed, the 5 measures are all in comparable terms and can be averaged into an index. Three versions of the resulting index values are shown in Table 3. The first row shows the index if only median income, poverty and unemployment are used as factors, with each factor given equal weight in the index. The lower the index value, the better are economic conditions, while the higher the index the worse economic conditions have become. An index value of zero would represent, no poverty, no unemployment, and an Ohio median income equal to that of the 2007 national average.

A second way to compute the index is to include the USDA food insecurity measure along with the 3 economic factors. The results of the 4-factor index are shown in the middle row of Table 3. Again, the higher the index value, the worse are the economic conditions impacting hunger.

A third way to compute the index is to include both the USDA food insecurity measure and Ohio’s SNAP participation rate along with the 3 economic factors. The results of the 5-factor index are shown in the bottom row of Table 3.

Table 3: “Hunger Factors Index” With and Without Food Insecurity Rate and SNAP Participation Rate

	2000	2007	2008	2009	2010	2011	2012	2013	2014	2015
Hunger Factors Index	7.06	8.96	9.64	12.98	13.77	14.03	13.45	13.05	12.18	10.55
Hunger Factors Index with Food Insecurity	7.74	9.77	10.56	13.43	14.43	14.37	14.11	13.79	13.36	11.94
Hunger Factors Index with Food Insecurity & SNAP %	7.46	9.71	10.46	13.25	14.43	14.62	14.43	14.18	13.68	12.42

All three versions of the Hunger Factors Index show the same fundamental result:

Economic conditions which influence hunger and food insecurity worsened significantly in the aftermath of the 2008-09 recession, with conditions continuing to worsen even after the recession's official end in 2009. Ohio's unemployment rate is the only measure that has returned to pre-recession levels, beginning to decrease in 2011 and reaching 4.9% in 2015 (unemployment in Ohio has remained low at 4.7% in August 2016). These levels are actually below the 5.6% unemployment rate in 2007, although part of the reason for that is a decline in the number of people actively looking for work. At the same time, poverty, food insecurity, SNAP participation and inflation-adjusted median income all remain far below pre-recession levels, despite noticeable improvement in each of these measures in 2015. ***The Hunger Factors Index trends shown above indicate that the needs of those individuals who suffer from the effects of food insecurity and hunger in Ohio continue to be severe despite recent economic improvements.*** Inclusion of the Ohio Food Insecurity rate in the second index and SNAP participation in the third version of the index shows the same general pattern as in the index without each of those measures.

In addition, comparison of the 2000 and 2007 figures in Table 3 show that underlying economic conditions in Ohio prior to the 2008 recession had deteriorated compared to economic conditions in 2000. This suggests that by the onset of the 2008 recession Ohio was still recovering from the 2001 recession.

Finally, urban food prices in the Midwest were relatively stable from 2007-2011 increasing by an average of 3.2% per year, and have increased by an average of only 1.7% per year from 2011 through 2015. The modest increase in food prices suggests that no adjustment in the index is indicated at the present time.