

W. Frank Barton School of Business

# Center for Economic Development and Business Research

## Kansas Age-Reweighted Employment- Population Ratio



WICHITA STATE  
UNIVERSITY

1845 Fairmount St.  
Wichita KS 67260-0121  
316-978-3225  
[www.CEDBR.org](http://www.CEDBR.org)  
[cedbr@wichita.edu](mailto:cedbr@wichita.edu)

# Kansas Age-Rewighted Employment-Population Ratio

In both Kansas and the United States, both the employment-population ratio and labor force participation rate have declined sharply during the recession in 2008, and the ratio has remained well below pre-recession levels for both geographies. In this article, CEDBR examines to what extent the decline in the employment-population ratio and labor force participation can be attributed to the aging of the workforce.

## Key Findings

- Up to 2 percentage points in the decline in Kansas' employment-population ratio from 2005 to 2015 could be attributed to changing age demographics.
- The age-reweighted employment-population ratio for Kansas fell by 1.9 percent from 2005 to 2015.
- Almost all of the decline in the U.S. employment-population ratio from 2005 to 2015 can be explained by changing age demographics, while changing age demographics can only explain half of the decline in Kansas' employment-population ratio.
- The reweighted employment-population ratio of other Midwestern states such as Iowa and Nebraska tended to outperform the national average from 2005 to 2015, while Kansas' did not.
- The age gap between the reweighted and actual employment-population ratios was 2 percent for the U.S. and Kansas, while Nebraska and Oklahoma had smaller age gaps.

The employment-population ratio is calculated as the fraction of population 16 and over that is currently employed. This measure of economic health provides a broader perspective than the unemployment rate, which only measures the fraction of those workers in the labor force who are unemployed and actively looking for work. Following the 2008 recession, there have been concerns that relying solely on the unemployment rate as a measure of labor market health overestimates the strength of the labor market due to its exclusion of discouraged workers, who are workers currently without any employment who are not actively looking for work. The employment-population ratio includes such workers; when a worker loses their job, regardless of if they are actively looking for new employment, the employment-population ratio is reduced while they are jobless.

As the population ages, we would expect the employment-population ratio for each to decline somewhat, due to older citizens, especially those of retirement age, being less likely to be employed or participate in the labor force. From 2005 to 2015, median age increased from 36.4 to 37.8 years in the U.S., and from 36.1 to 36.2 years in the state of Kansas<sup>1</sup>. Over the same period, the fraction of the population 65 years old or older rose 2.7 percent in the U.S. and 2.2 percent in Kansas.

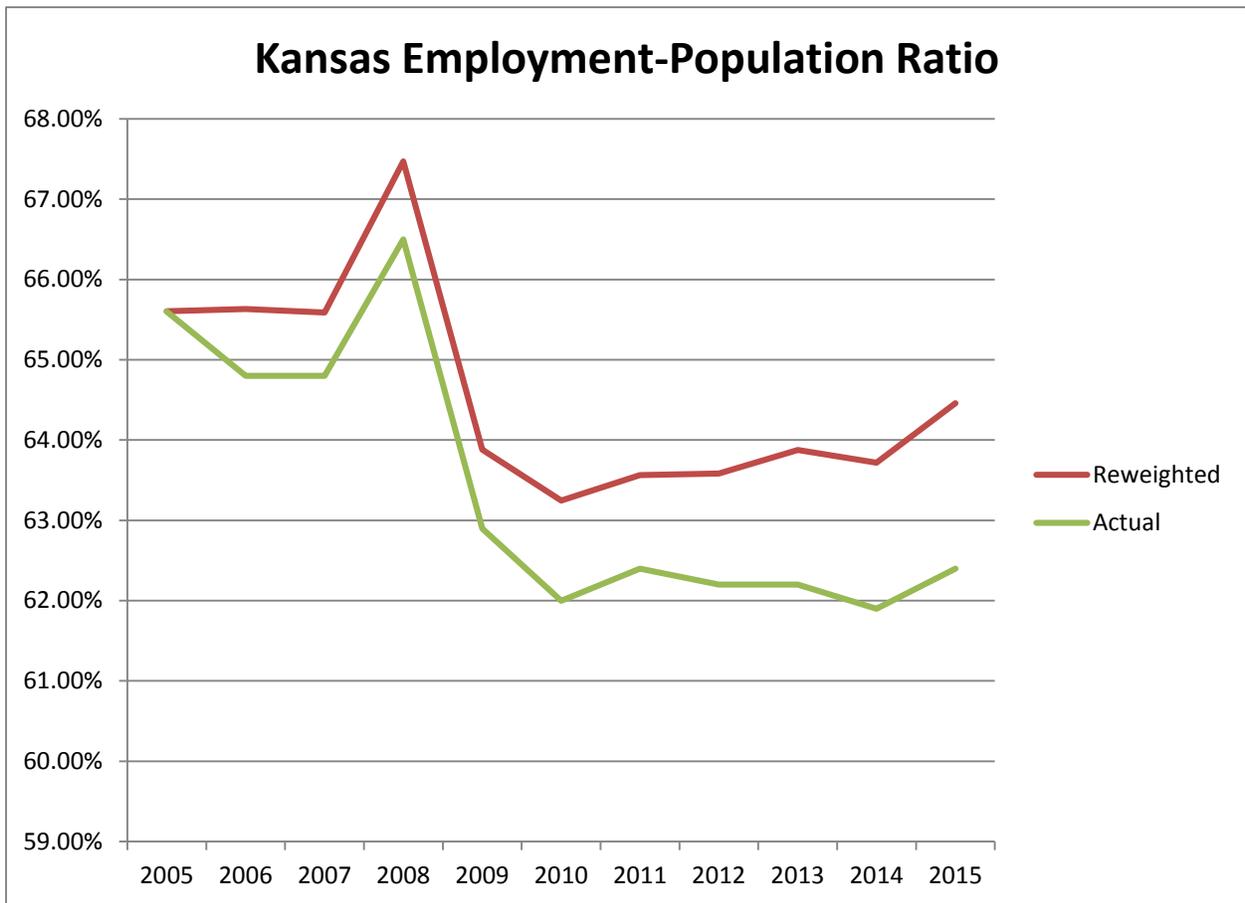
To estimate the effects that the aging of the population has had on the employment-population ratio, the employment-population ratio was calculated for each age-cohort for each year from 2005 to 2015. Then, using those age-cohort employment-population ratios, the population age distribution was held

---

<sup>1</sup> All data in this article is from the U.S. Census Bureau's American Community Survey's one year estimates.

constant at 2005 levels to simulate what the overall employment-population ratio would have been if the population had not aged, but the age-cohort employment ratios still varied.

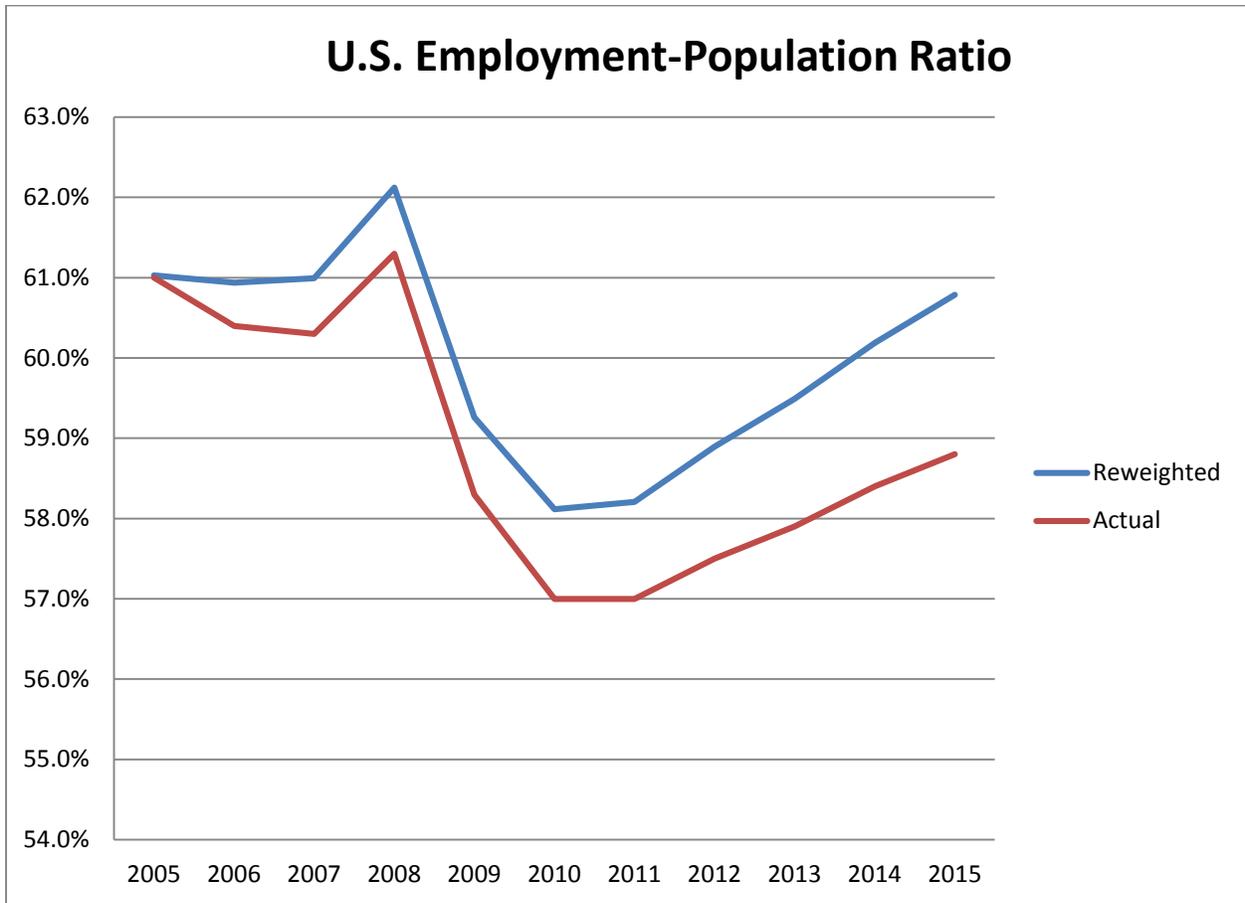
This reweighting of the employment-population ratio provides an estimate as to the effects of aging on the ratio. However, if the age distribution had remained constant over the last decade instead of varying, it is likely that the age-cohort employment-population ratios would have responded to that change by behaving differently, most likely by declining more than they actually did during the 2008 recession. The reweighted employment-population ratios are best thought of as an estimate of the upper limit of the effect of aging on the employment-population ratio, as it is unlikely that prime-age worker's age-cohort employment-population ratio would have increased if there were more prime-aged workers in a given year.



From 2005 to the 2008 recession, Kansas had an employment-population ratio that varied from 64.8 percent to 66.5 percent. In the seven years since the recession, the ratio has fallen and stayed below 63 percent, remaining relatively flat with a low of 61.9 percent and a high of 62.9 percent. The reweighted employment-population follows a similar general outline, while being higher for every year after 2005 since the reweighted employment-population ratio reflects the relative youth of and higher fraction of the population that was prime working age in 2005. Following the recession, the reweighted

employment-population ratio slowly increases, from a low of 63.3 percent in 2010 to 64.5 percent in 2015.

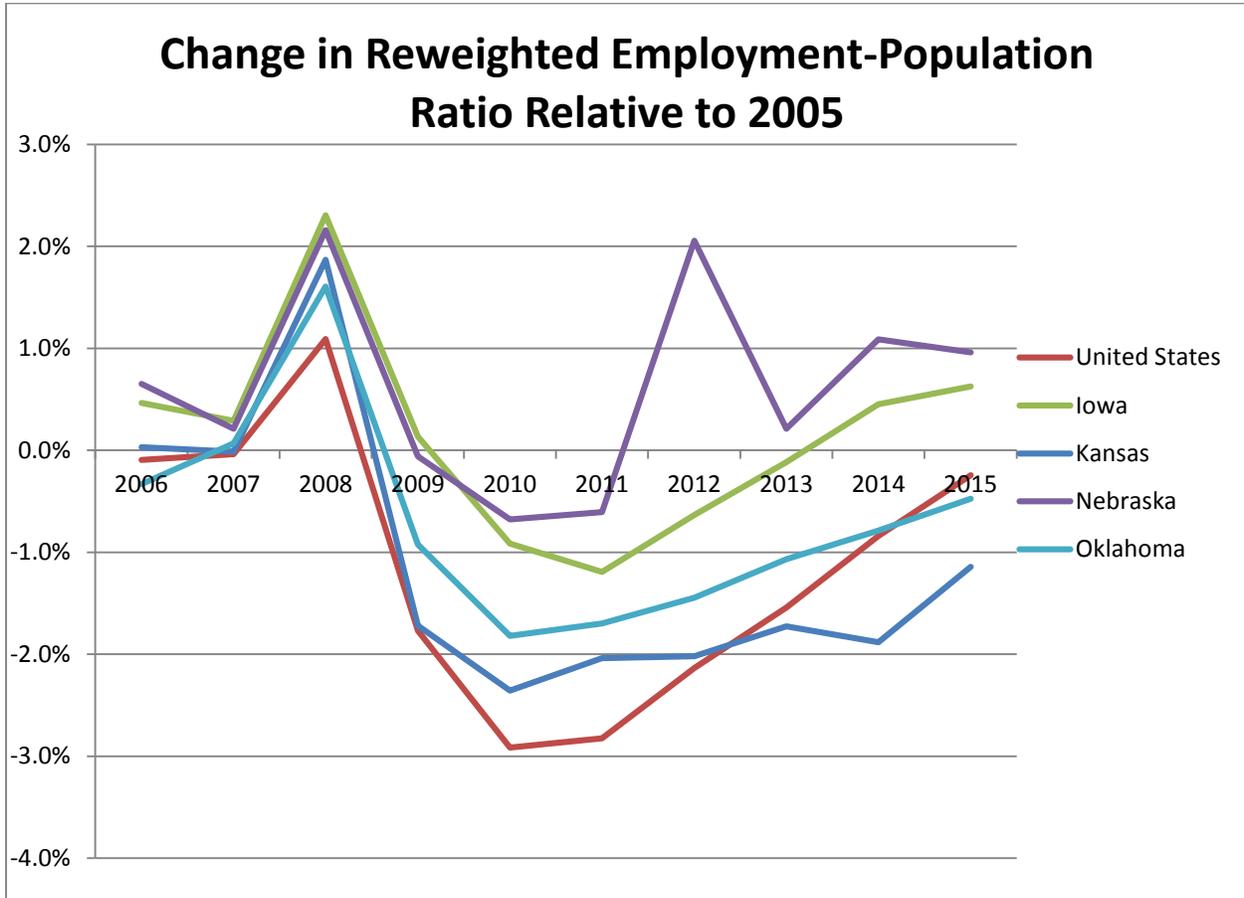
While the actual Kansas employment-population ratio in 2015 was 3.2 percentage points lower than it was in 2005, the reweighted Kansas employment-population ratio had only fallen 1.1 percentage points, relative to its 2005 level. This suggests that up to 2 percentage points of the decline in the employment-population for Kansas in this period could be attributed to changing age demographics, while the remainder of the decline reflects changing economic conditions.



Over the last decade, the United States has had a lower employment-population ratio than Kansas, with a peak of 61.3 percent, as compared to Kansas' peak of 66.5 percent, both achieved in 2008. The employment-population ratio fell in the U.S. following the 2008 recession, similar to the decline in Kansas in the same period. The U.S. ratio fell to a low of 57 percent, but then began to recover after the recession, reaching 58.8 percent in 2015, still 2.2 percent below its 2005 level.

After reweighting the U.S. employment-population ratio for the changing age distribution, the U.S. ratio increased because the U.S. population has aged, similar to the Kansas population. The reweighted employment-population ratio dropped 4 percent during the recession, and in 2015 the reweighted ratio had recovered to 60.8 percent, only 0.2 below the level in 2005. This suggests that almost the entirety of the decline in the U.S. employment-population ratio could be attributed to the changing age

distribution of the U.S. workforce. This is in contrast to the reweighted Kansas ratio, where only about half of the decline in the employment-population ratio could be attributed to the changing age distribution of the Kansas population. In both cases, the reweighting adjusts the employment-population ratio by approximately 2 percentage points in 2015 relative to 2005.



The above graph shows how the age-reweighted employment-population ratio has changed, relative to 2005, for Kansas, several similar surrounding states, and the U.S. Since the age-reweighted employment population ratio holds the age demographics of each geography constant over time, the changes over time in the graph above were likely attributable to other non-aging related factors, such as local economic conditions.

For Kansas, the reweighted employment-population ratio increased, relative to 2005, from 2006 to 2008, and then declined following the recession. By 2015, the reweighted employment-population ratio for Kansas was still 1.1 percent lower than it was in 2005 and 3 percentage points below its pre-recession peak in 2008.

The overall U.S. reweighted employment-population ratio dropped more sharply than Kansas' in 2009 and 2010, falling 2.9 percent relative its 2005 level. Following the recession, the U.S. reweighted ratio also grew more rapidly than Kansas' did following the recession, and by 2015 it was only 0.2 percent below its 2005 level.

The other Midwestern states included tended to outperform the U.S. in terms of their reweighted employment-population ratio. In both Iowa and Nebraska, the reweighted employment-population ratio exceeded the 2005 level by 2015, though both still remain lower than their 2008 peak. Throughout much of this period, Oklahoma's reweighted ratio had fallen less than the U.S.'s, but was still lower than its 2005 level. In 2015, for the first time since 2005, Oklahoma's reweighted ratio was lower than the U.S.'s and was also 0.5 percent below Oklahoma's 2005 level.

For each Midwestern state included, the reweighted employment-population ratio was approximately 1.5 to 2 percentage points higher in 2015 than the actual employment-population ratio, suggesting that the aging of the workforce may have reduced the employment-population by up to that much. The effect was largest in states that aged the most rapidly from 2005 to 2015. Oklahoma had the smallest change, with a 1.7 percent gap due to aging, while Iowa had the largest changes, with 2.3 percent gaps between the reweighted and actual ratios. The U.S. and Kansas each had a 2 percent gap between the reweighted and actual ratios.

Overall, this suggests that, even after adjusting for Kansas' aging demographics, Kansas employment has not rebounded as strongly following the recession as other Midwestern states or the United States as a whole.