



Main Menu

[Home](#)
[Business](#)
[Careers](#)
[Education](#)
[Industry Trends](#)
[Job Openings & Info](#)
[Unemployment Rates](#)
[Wages & Income](#)
[Green Info](#)
[Publications](#)
[Español](#)
[Blog](#)

Data Tools

[Occupations](#)
[Employment & Labor Force](#)
[Business & Employers](#)
[Education](#)
[WIRED](#)

 SHARE
 




Oregon's Unemployment Rate and Jobs Numbers - Two Measures of the Labor

by *David Cooke, Tracy A Morrisette*

Published Aug-22-2012

Each month, the Oregon Employment Department releases a report on Oregon's labor market containing two widely monitored

indicators: total [nonfarm payroll employment](#) (the number of jobs) and the [unemployment rate](#). Although these two economic indicators are published together in the same press release, at times they report conflicting messages about the health of Oregon's labor market. For example, both the unemployment rate and the jobs numbers may decline in the same month. This will prompt questions such as "how can unemployment decline when there are fewer jobs available?" This article examines the relationship between total nonfarm payroll employment and the unemployment rate, identifying the source of each indicator and exploring reasons why conflicting messages may show up in month-to-month changes in these data series.

Total nonfarm payroll employment is produced each month by the [Current Employment Statistics](#) (CES) program and the unemployment rate is produced by the [Local Area Unemployment Statistics](#) (LAUS) program. These programs are part of the Federal-State cooperative agreements between State agencies and the U.S. Department of Labor's [Bureau of Labor Statistics](#) (BLS).

Job Numbers and the Unemployment Rate are Based on Separate Surveys

The primary reason that the jobs numbers (total nonfarm payroll employment) and the unemployment rate do not always agree in their respective month-to-month changes is that they are developed from two separate surveys that serve different purposes. These separate surveys gather information from different sections of the economy - the jobs numbers are based on a survey of businesses and the unemployment rate is developed from a survey of households. In addition to a difference in universe, the two surveys differ in reference periods, definition of employment, sample sizes, and other methodologies.

[Job Numbers and the Unemployment Rate are Based on Separate Surveys](#)
[LAUS and CES Programs Use Different Concepts of Employment](#)
[LAUS and CES Data Initially Reported in 2012 are Preliminary](#)
[Interpreting Month-to-Month Changes](#)
[Interpreting Long-Run Trends](#)
[Conclusion](#)

For this reason, comparisons between the two are not apples-to-apples.

The jobs numbers are from the CES survey, which is also known as the establishment survey. This is a survey of nonagricultural employers (including government) designed to gather data on the employment, hours, and earnings of workers on nonfarm payrolls. Workers are counted as employed if they worked or received pay during the [pay period](#) that includes the 12th day of the month. Pay periods vary by firm; some firms pay weekly, some biweekly, some semimonthly and some monthly. The CES survey is a count of jobs; workers with multiple jobs are counted in each establishment that reports them. In Oregon, the CES sample size is roughly 8,300 establishments.

The unemployment rate is a product of the LAUS program and is primarily based on the [Current Population Survey](#) (CPS). The CPS is also known as the household survey. The CPS gathers information on the [labor force](#) activity during the week that contains the 12th day of the month of people who are in the civilian noninstitutional population (individuals aged 16 years and older who are neither in an institution nor on active duty in the armed forces). Individuals are classified as employed, [unemployed](#), or not in the labor force based on their activities during the reference week. In Oregon, the CPS sample size is roughly 1,000 assigned households.

The primary purpose of the CES survey is to estimate a count of jobs on the payrolls at business establishments each month; in contrast, the primary purpose of the LAUS program is to estimate an unemployment rate each month. Each survey is designed around these different purposes.

LAUS and CES Programs Use Different Concepts of Employment

Both the LAUS and CES programs develop an estimate of employment for Oregon. These two measures of employment do not always move in perfect tandem, since in addition to originating from different surveys, a different definition of employment is used in each survey. The primary reason for the differing behavior is that LAUS (household) employment is more broadly defined than CES employment. The household survey definition includes agriculture, self-employment and unpaid family workers - three groups excluded from the CES definition. The biggest factor in definitional differences is in the agriculture and self-employment groups. For Oregon in 2011, non-agricultural self-employment consisted of 8.4 percent of total household employment and agriculture accounted for 4 percent of [total employment](#). Trends and changes in these two industries show up in LAUS employment, but are not reflected in CES employment as they are out-of-scope for that measure.

Another factor contributing to differing results is that LAUS counts people at their place of residence while CES counts jobs by location of firm. These differences have implications for how cross-state commuters are included in these data sets. In Oregon, this is important since a large population center in the Portland-Vancouver-Hillsboro [Metropolitan Statistical Area](#) spans across the border into Washington. As the CPS is a household survey that captures statistics based on place of residence and the CES is an establishment survey that tallies job counts based on place of work, people who commute to jobs in or out of Oregon will be counted differently in the two surveys. An individual may be counted in one state for the purposes of LAUS/CPS and another state for the purposes of CES. For example, a person living in Vancouver and working in Portland is included in Oregon CES data but excluded from Oregon LAUS/CPS data.

In addition to those mentioned above, other differences include:

- The CPS survey has an age minimum (age 16 and over) while the CES survey does not.

- Employment and unemployment levels in CPS/LAUS are based on population controls from the [Census Bureau](#). Employment levels in CES are based on benchmark levels set by job counts from the QCEW (Quarterly Census of Employment and Wages) program.
- The CPS and CES surveys use different data collection methods.
- Different sample sizes. Oregon's CPS sample consists of about 1,000 households. The CES sample consists of roughly 8,300 business establishments.
- LAUS and CES data have different seasonal patterns and use different [seasonal adjustment](#) methods.

LAUS and CES Data Initially Reported in 2012 are Preliminary

The 2012 data published by the Oregon Employment Department and the BLS for all states during 2012 and January 2013 are preliminary. These initial estimates will be revised near the beginning of 2013 in an annual procedure often referred to as "benchmarking." In CES, the benchmark revision process involves calibrating the initial series with information from the QCEW program. QCEW, another Federal-State cooperative program, is a quarterly count of employment and wages based on employers who report to the [Unemployment Insurance](#) (UI) tax programs. QCEW is a more complete count of employment than the sample-based CES estimates. In LAUS, the annual revision process involves re-processing the initial time series model estimates using more complete input data and new population controls.

Interpreting Month-to-Month Changes

Side-by-side comparisons of monthly changes in LAUS and CES data can show conflicting results at times. Both the LAUS and CES data sets are estimates developed from a sample of households and firms within a larger population. Sample-based estimation has important ramifications for the interpretation of LAUS and CES data, especially in drawing conclusions about what month-to-month changes mean with respect to Oregon's economy. The "margin of error" often associated with sample-based estimates such as LAUS and CES data is an important indicator as to whether changes in numbers from month-to-month are significant in magnitude.

For LAUS data, standard errors are available for the estimated levels and changes. Standard errors can be converted into "margin of error" type estimates, such as error ranges and significance-of-change tests. Currently for Oregon, the 90 percent confidence interval around Oregon's [seasonally adjusted](#) unemployment rate is plus-or-minus 0.8 percentage point. For changes in data between months, a one-month change in Oregon's seasonally adjusted unemployment rate would have to be at least 0.3 percentage point to be significant at the 10 percent level and an over-the-year change would have to be 1.1 percentage points or greater to be statistically significant.

For Oregon's CES total nonfarm payroll employment in, for example, May 2012, the seasonally adjusted over-the-month change would need to be greater than 5,200 jobs to be considered statistically significant at the 10 percent level. For example, the May preliminary estimate was for a gain of 6,900 jobs. This was a significant change since it was greater than 5,200. However, during a slow economic expansion, most months see employment growing or shrinking by less than 5,200. Therefore, most monthly changes in total nonfarm payroll employment aren't statistically significant.

BLS could tighten up the margin of statistical significance by increasing the survey sample size. For example, if they were to survey double the number of businesses each month, then a change of say, 3,800, would be statistically significant.

Keep in mind that the error range we're dealing with here relates only to sampling error. There are other error components to the CES survey. One such component is error associated with what is known as the "birth-death model." This is a model that imputes employment changes due to new businesses forming, and firms going out of business. In routine economic times, this error component is relatively small. However, after-the-fact analysis by BLS showed that during the severe economic downtrend of late 2008 and early 2009, the error associated with the birth-death factors caused an overstatement of employment of roughly 8,000 jobs over the course of six months.

What these "margin of error" type estimates communicate about the accuracy of the LAUS and CES data are the size of changes between months necessary to be "economically meaningful." Monthly changes within the margin of error do not necessarily indicate that a turning point in the economy has occurred since changes of this size are not statistically significant, meaning they are fairly typical based on the historical monthly variation in the series. For this reason it could be said that these small changes indicate that the data are "essentially unchanged" from the prior month. More information can be gathered from examination of seasonally adjusted data over longer periods of time.

Interpreting Long-Run Trends

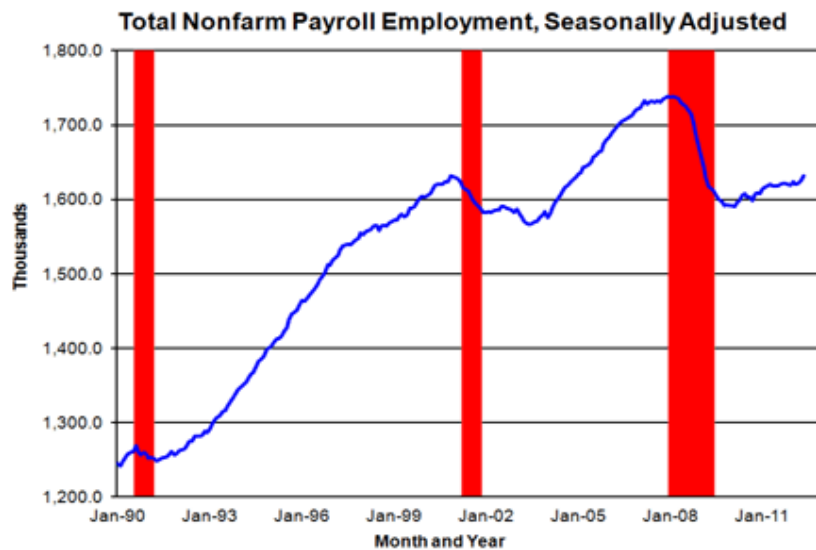
During the housing and credit bubble, the CES data showed a rapid and steady expansion of nonfarm jobs. Seasonally adjusted employment grew rapidly from 1,566,700 in June 2003 to 1,728,300 in February 2007. Then, a slowdown in growth took hold for about a year. This was followed by the plunge in employment in late 2008 through late 2009. Since then, employment has generally trended higher at a very slow pace, but has yet to come close to its peak level of more than four years ago.

In general, CES employment is fairly coincident with the [business cycle \(Graph 1\)](#). In other words, [gross domestic product](#) is running in tandem with CES employment. Since we have access to CES estimates about a month after the fact, and since other broad measures of economic activity at the state level, such as GDP (Gross Domestic Product, the value of all goods and services produced in a given geographic area) lag by many more months, it is useful to keep tabs on CES employment trends to get a good read on the recent health of the economy for state and local areas.

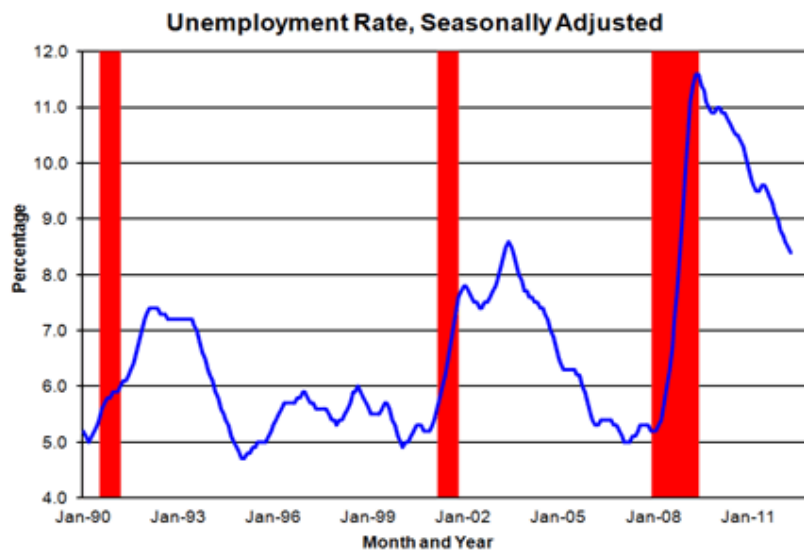
One thing to keep in mind with the CES data is that the numbers are not perfect. CES numbers are subject to revisions. Often, these revisions are quite substantial. We know for example, that in March 2012, Oregon's 2011 annual average nonfarm employment was revised downward by 5,500 jobs or 0.3 percent. This percent revision was fairly typical in magnitude.

Like CES data, LAUS data respond to the business cycle. Oregon's seasonally adjusted unemployment rate increases during recessions, and either declines or hovers in a range of 5.0 to 6.0 percent during expansions ([Graph 2](#)). The gray areas in [Graphs 1 and 2](#) indicate a national [recession](#) as declared by the National Bureau of Economic Research (NBER).

Graph 1



Graph 2



Conclusion

Although CES and LAUS data are sample-based estimates and month-to-month changes are not always statistically significant, these estimates do convey meaningful information about the state of the labor market in the long-run. Both LAUS and CES data series reflect changes in the business cycle, evident in the direction that each series trend over several months during economic expansions and contractions. Therefore, it is more useful to focus on the longer-run changes, or trends, in the LAUS and CES data than on the month-to-month changes, as longer-run changes reflect the influence of the business cycle on the labor market and month-to-month changes are more subject to noisy fluctuations. The "margin of error" estimates are useful to help interpret the significance of monthly changes.

More information about differences between household (CPS) and establishment (CES) statistics for the U.S. can be found on the Bureau of Labor Statistics website.

A summary analysis of recent trends in the two surveys can be found at www.bls.gov/web/empsit/ces_cps_trends.pdf.

A detailed analysis of differences between the two surveys during the 1990s is at www.bls.gov/bls/fesacp2101703.pdf.

Oregon Employment Department
WorkSource Oregon - Oregon.gov - Privacy / Accessibility - PRISM - Need Help?