

Revisions to seasonally adjusted national household survey labor force series effective in January 2022

At the end of each calendar year, the Bureau of Labor Statistics (BLS) reestimates the seasonal factors for the Current Population Survey (CPS, or household survey) series by including another full year of data in the estimation process.

Following this annual reestimation, BLS revises the seasonally adjusted national household survey labor force estimates for the previous 5 years. The revised historical data are released in January each year with the publication of the latest December data.

As a result, each year's data are generally subject to five revisions before the values are considered final. The fifth and final revisions to data for the earliest of the 5 years are usually quite small, while the first-time revisions to data for the most recent years are generally much larger. For the major aggregate labor force series, however, the first-time revisions rarely alter the essential trends observed in the initial estimates. For detailed information about the seasonal adjustment procedures, see www.bls.gov/cps/seasonal-adjustment-methodology.htm.

Revisions to 2021 estimates

This year's revisions incorporate data through December 2021 and provide revised estimates for January 2017 through November 2021 for all previous seasonally adjusted labor force series. (Many data series had large outliers after the onset of the coronavirus (COVID-19) pandemic. Therefore, starting in 2020, BLS staff made some modifications to seasonal adjustment models as needed for series with large outliers. These changes, which are described in the following section, were reviewed as part of the annual reestimation process.)

An important criterion for evaluating alternative methods of seasonal adjustment is how close initial estimates are to the results of subsequent revisions. Users of seasonally adjusted data are often most interested in current information. Thus, it is desirable that the initial seasonally adjusted estimates be as close as possible to the improved estimates made after more data become available. Even though the revisions currently being released for the 2021 seasonally adjusted data are not final, the first revisions are usually the largest and often indicate the direction of subsequent revisions.

Table 1 shows the civilian unemployment rates for January to November 2021, as first published and as revised. The seasonally adjusted unemployment rate was revised slightly for 3 months in 2021. (Note that December 2021 is the final month of the series and has no revision.)

Table 1. Seasonally adjusted unemployment rates in 2021 and change due to revision

Month	As first published	As revised	Change
January.....	6.3	6.4	0.1
February.....	6.2	6.2	0.0
March.....	6.0	6.0	0.0
April.....	6.1	6.0	-0.1
May.....	5.8	5.8	0.0
June.....	5.9	5.9	0.0
July.....	5.4	5.4	0.0
August.....	5.2	5.2	0.0
September.....	4.8	4.7	-0.1
October.....	4.6	4.6	0.0
November.....	4.2	4.2	0.0

Extension of seasonal adjustment to additional series

No new seasonally adjusted series were added for 2022.

Pandemic-related modifications to seasonal adjustment models

The onset of the pandemic early in 2020 had a marked impact on many household survey data series. Since April 2020, BLS staff have tested household survey series for outliers to determine whether any changes were needed to the seasonal adjustment models. BLS staff determined that the vast majority of household survey data series had large outliers and made adjustments as needed to the models used in seasonal adjustment processing to account for them.

Seasonal adjustment factors are either multiplicative or additive. A multiplicative seasonal effect is assumed to be proportional to the level of the series. A sudden, large change in the level of the series will be accompanied by a proportionally large seasonal effect. In contrast, an additive seasonal effect is assumed to be unaffected by the level of the series. In times of relative economic stability, the multiplicative option is generally preferred over the additive option. However, in the presence of a large level shift in a time series, multiplicative seasonal adjustment factors can result in systematic over- or under-adjustment of the series; in such cases, additive seasonal adjustment factors are preferred since they tend to more accurately track seasonal fluctuations in the series and have smaller revisions.

Diagnostic tests show that the possibility of systematic over- or under-adjustments from multiplicative adjustment factors appears unlikely for most series beginning with data for 2021. Therefore, series with diagnostics that exhibit a strong need for multiplicative adjustment were changed back to multiplicative adjustment. Series with a strong need for additive adjustment were set to additive adjustment. Those series without a strong need had their adjustment mode reset to the mode used prior to April 2020.

Ten unemployment series have a hybrid adjustment based on strong pandemic effects that required additive adjustments. From April 2020 through December 2020, the historical factors are additive; the other months for these series have multiplicative factors. The 10 series are:

1. Men, 16 to 19 years
2. Women, 16 to 19 years
3. White men, 16 to 19 years
4. White women, 16 to 19 years
5. Black or African American women, 20 years and over
6. Men, 20 to 24 years
7. Men, 35 to 44 years
8. Women, 16 to 17 years
9. Women, 18 to 19 years
10. Persons unemployed for 5 to 14 weeks

Other changes to seasonal adjustment models

Starting in December 2021, all 163 national CPS series that are directly seasonally adjusted use the SEATS model-based methodology. Previously, only 21 of the series were adjusted with SEATS. For many series, data for December 2016 and earlier were seasonally adjusted using the X-11 methodology.

Availability of revised series

These revised estimates replace the seasonally adjusted estimates previously published. Revised historical seasonally adjusted labor force data are available in various forms on the BLS website at www.bls.gov/cps/data.htm, including text file access at <https://download.bls.gov/pub/time.series/ln/> to all of the revised data. The seasonally adjusted data last published for 2016 and earlier years were not further revised. (Not seasonally adjusted data were not subject to revision.)