Range estimates in the ORS dataset

The Occupational Requirements Survey (ORS) publishes job-related information on physical demands; environmental conditions; education, training, and experience; as well as cognitive and mental requirements. The job requirements reflect those necessary for workers to perform critical tasks in support of the critical job functions, and not the capabilities of individual workers.

Estimates are available through the Excel dataset and the database query tools, and where possible, estimates are published as point values. Ranges represent estimates where the precise value cannot be published. The use of ranges maximizes the number of published estimates and provides additional detail on job requirements in the economy.

These are common cases in which estimates are published as ranges instead of point estimates.

1. If an estimate's value is less than 0.5 percent or greater than 99.5 percent. These are denoted by footnote 1, less than 0.5 percent, and footnote 36, greater than 99.5 percent. Estimates that would have been previously published as 100.0 percent are now captured in the greater than 99.5 percent range.

2. If an estimate does not meet certain publication criteria related to reliability and confidentiality. The BLS is committed to producing high quality data and upholds the BLS Confidentiality Pledge and Federal Laws regarding respondent confidentiality. If an estimate does not meet the reliability standards or could breach survey respondent confidentiality, the point estimate will not be published. The estimate may instead be published as a range estimate.

Range estimate methodology

When estimates are published as ranges, the range incorporates the point estimate's standard error to form a one-sided 90-percent confidence interval, rounded to the nearest 5 percent.[1] This approach provides users with some information without revealing the underlying point estimate. Because the confidence interval is produced using the standard error associated with the underlying point estimate, range estimates have no associated standard errors published. Below are the formulas used to build the less than and greater than range estimates. These formulas can also be applied to estimates that are provided as a point estimate with a standard error.

- Constructing a **less than** range = Estimate + (Standard error * 1.645), rounded **up** to the nearest 5 percent
- Constructing a **greater than** range = Estimate – (Standard error * 1.645), rounded **down** to the nearest 5 percent

Table 1. Available range values for percentage of worker estimates

Footnote code	Less than	Footnote code	Greater than
1	< 0.5 percent	**26**	> 50 percent
16	< 5 percent	**27**	> 55 percent
17	< 10 percent	**28**	> 60 percent
18	< 15 percent	**29**	> 65 percent
19	< 20 percent	**30**	> 70 percent
20	< 25 percent	**31**	> 75 percent
21	< 30 percent	**32**	> 80 percent
22	< 35 percent	**33**	> 85 percent
23	< 40 percent	**34**	> 90 percent
24	< 45 percent	**35**	> 95 percent
25	< 50 percent	**36**	> 99.5 percent

Source: U.S. Bureau of Labor Statistics, Occupational Requirements Survey

Range estimates will not be published if they encompass more than 50 percent of the distribution, meaning that **less than** ranges only capture values 50 percent and below and **greater than** ranges only capture values 50 percent and above. Ranges such as greater than 20 percent or less than 60 percent will not be published because they represent more than 50 percent of the distribution. Table 1 provides a list of ranges published in the ORS dataset and their respective footnote codes.

Ranges denoting an estimate value less than 0.5 percent or greater than 99.5 percent do not incorporate a confidence interval. Standard errors are not available when estimates are equal to 0 and 100 percent, and as a result a confidence interval cannot be created.

Examples of range estimates

Ranges will be denoted by the footnotes shown in Table 1 when viewing the estimates through the database query tools. The range estimates will be displayed in the Estimate column, while also being footnoted, in the Excel dataset.

In some cases, ranges fill in information that would be blank. For example, 77.3 percent of umpires referees, and other sports officials had no minimum education requirement and 22.7 percent required a high school diploma. These two estimates sum to 100 percent. A range of less than 0.5 percent range is published for the remaining minimum education requirements. See Table 2.

Ranges are used to provide additional detail on job requirements. For pharmacy technicians, the majority of workers required a high school diploma (86.7 percent). An additional 1.7 percent of workers had no minimum education requirement and 5.9 percent required an associate's degree. These three estimates sum to 94.3 percent of workers; the remaining 5.7 percent of workers are spread across the other minimum education requirements. Based on the published range of less than 10 percent of workers requiring an associate's vocational degree and less than 0.5 percent of workers in the remaining education levels, much of the 5.7 percent of workers would require an associate's vocational degree.

Additionally, greater than 99.5 percent of lawyers required a professional degree. All other education levels were required for less than 0.5 percent of workers meaning very few, if any, lawyers required a degree other than a professional degree.

Table 2. Percentage of workers by minimum education requirements, 2023

Occupation	No minimum education	High school diploma	High school vocational	Associate's degree	Associate's vocational	Bachelor's degree	Master's degree	Professional degree	Doctorate degree
Umpires, referees, and other sports officials	77.3	22.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pharmacy technicians	1.7	86.7	<0.5	5.9	<10	<0.5	<0.5	<0.5	<0.5
Lawyers	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	>99.5	<0.5

Source: U.S. Bureau of Labor Statistics, Occupational Requirements Survey

Additional resources:

- Latest news release
- Archived ORS news releases
- Handbook of Methods
- Collection manuals
- Factsheets

Articles:

- All The Economics Daily (TED) articles on ORS
- Minds at work: what's required according to the Occupational Requirements Survey (PDF)
- A look at teachers' job requirements, employer costs, and benefits (PDF)
- Occupational Requirements Survey: Third wave testing report (PDF)
- Occupational Requirements Survey: results from a job observation pilot test
- The Occupational Requirements Survey: estimates from preproduction testing

For additional information on occupational requirements see the ORS homepage or download the ORS complete dataset to explore the latest estimates.

[1] A *confidence interval* is a set of values that an estimate is expected to fall between even if the data were collected from a different sample of the same occupations. For more information on confidence intervals, see https://www.bls.gov/opub/hom/topic/error-measurements.htm.