

Webinar Transcript

Forecasting Data to Inform Continuous Improvement Goals

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Hello! Welcome to this webinar on forecasting data to inform continuous improvement goals. This webinar is being offered by the Kentucky Department of Education's Office of Continuous Improvement and Support.

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The objectives for this webinar are on the screen. By the end of this presentation, participants will be able to...

- Explain why data forecasting may be beneficial to schools,
- Build a forecast table in Excel, and
- Use a forecast table to inform continuous improvement goals and decisions.

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Data forecasting is a data analysis technique that uses historical data to predict future outcomes. Excel includes many built-in tools to review past data and make predictions. In this webinar, we will be using Excel's "Forecast Sheet" tool, which uses a statistical method called exponential smoothing to create predictions.

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Data forecasting is a valuable skill for education leaders to learn and it is easier than you might think! Data forecasting can help you make predictions about future student performance or identify trends early enough to impose interventions on negative trends or bolster support for positive ones. Data forecasting can also be used to set better-informed continuous improvement goals. This may be especially important for educators during the 2020-2021 school year as the COVID-19 accountability waver has created gaps in annual student performance data.

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Let's take a look at the four-step process for creating a forecasting table in Excel.

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The first step is to gather historical data for the variable you want to examine. You should create a table in Excel that looks like the one on the screen. This table has two columns, one for the year and one for the variable. In this instance, we are looking at the percent of middle school students who score proficient or distinguished on the state reading assessment in Kentucky for the associated years.

It is important to note here that Excel will only perform this function on time series data, so you must format your years like you see on the screen. In this instance, we have chosen to list the year in which the data was released. Excel will not perform the analysis on hyphenated dates.

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Once you have your historical data in one place, simply highlight the table, open the “Data” ribbon, and select the “Forecast Sheet” button.

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Once you select the “Forecast Sheet” button, you will see the “Create Forecast Worksheet” window. Review the options on this page to make sure they work for you. You can adjust the number of years for your predictions forwards or backwards or change the confidence interval. If you are not yet comfortable with this tool or do not have any preferences, you can simply leave the default settings as they are. When you are ready to go, click “Create” in the bottom right hand corner.

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Excel will return the results to you first in a table like the one on the screen. You can see that it has displayed all of the historical data as well as three new columns with predictions. The table will automatically overlap its predictions with the last year of historical data. This table has returned predictions for the next four years. We can see that in column C, Excel has displayed the exact forecast predictions, followed by predictions set by the lower confidence boundary and the upper confidence boundary. It is likely that the actual score will fall somewhere within these two boundary limits. For example, based on this output, we would expect that the percentage of middle school students scoring proficient or distinguished on the state reading assessment in 2020 to be between 61.1 percent and 63.9 percent. It is most likely to be around 62.5 percent.

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Excel will also return a line graph like the one on the screen. You can see that the historical data is reported in blue while the predictions begin with the orange lines. This is simply a visual representation of the information on the previous table.

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Now that you have seen the predictions, you can use them to guide your decision-making and goal-setting. Here are a few things to keep in mind as you do so. First, statistical projections are not guaranteed outcomes. While these projections show likely outcomes, they should not be considered equal to the rigor of an actual data point collected by the state assessments. The Kentucky Department of Education does not consider statistical projections to be valid measures of school progress and does not use statistical projections for the purposes of school ratings or accountability measures.

This forecasting method works best when it has a lot of historical data to work with. The more data you can feed into the model the stronger your predictions will be. Do not skimp on your data collection. Take time to find all of the data you have access to.

It is also important to consider some of the limitations of this model. First, the COVID-19 pandemic and the rapid transition to remote learning experienced in the spring of 2020 has had an unpredictable impact on student outcomes. This model is unable to account for that unknown impact. Additionally, this model is not sophisticated enough to account for other causal variables, such as the effectiveness of an individual teacher or mid-year changes to instructional practices or school policies. These results should not be used to adopt or abandon strategies, programs, curriculum or policy.

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Thank you for viewing this webinar. For more information about setting continuous improvement goals, please visit the Kentucky Department of Education website at www.education.ky.gov or call the KDE Office of Continuous Improvement and Support at (502) 564-2116.