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Demo: The Method of Least Squares

In this video, we use the Demonstrate Regression teaching module to illustrate the concept of least squares. We will use a simple example for illustration with the default population characteristics and only 10 observations.

The Fit My Line option fits a line at the mean of the response. When I select Fit My Residuals, we can see the errors or residuals for this line.

I'll change this option to Show My Squares. Notice that the residuals are now displayed as squares. The larger the area of the square, the larger the error.

At the ends of the line are grabbers that enable you to move this line. As I change the slope and intercept of the line, the areas of the squares change. The sum of all of the areas is displayed as the blue bar, labeled SSE, or Sum of Squared Errors.

I'll drag the line and try to get the SSE values as low as possible. This is essentially the method of least squares. Statistical software does this behind the scenes when we fit a line to data.

To see how well our line compares to the least squares line, I'll select Fit LS Line. My approximation was pretty close, but the least squares line has a smaller sum of squared errors. So it does a better job of choosing the best values for the intercept and the slope.

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