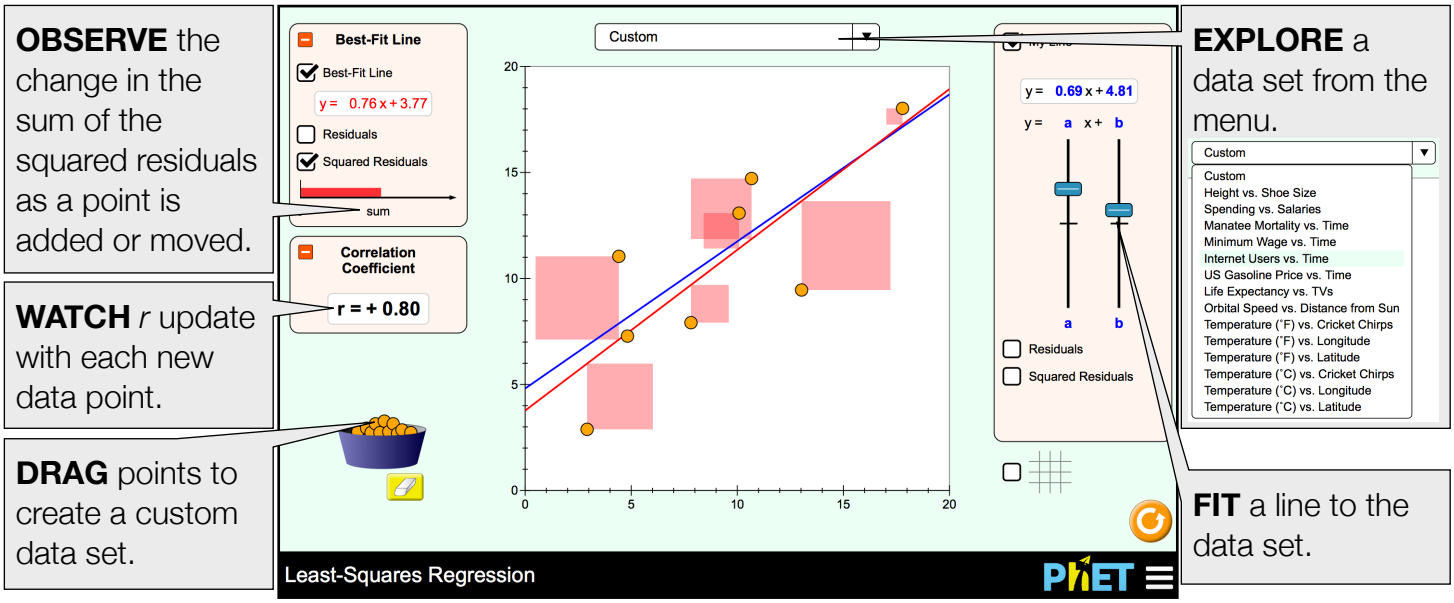
PhET Tips for Teachers — Least-Squares Regression

The ***Least-Squares Regression*** simulation encourages students to explore data on two quantitative variables, interpret the correlation coefficient, fit a linear function to various data sets, understand how to achieve a best-fit line, and determine whether a linear fit is appropriate.



Customization Options

Query parameters allow for customization of the simulation, and can be added by appending a '`?`' to the sim URL, and separating each query parameter with a '`&`'. The general URL pattern is:
`…html?queryParameter1&queryParameter2&queryParameter3`

For example, in Least Squares Regression, if you want to run the sim in Spanish `(locale=es)` and disable external links `(allowLinks=false)` use:
https://phet.colorado.edu/sims/html/least-squares-regression/latest/least-squares-regression_all.html?locale=es&allowLinks=false

Query Parameter and Description	Example Links
`locale` - specify the language of the simulation using ISO 639-1 codes. Available locales can be found on the simulation page on the Translations tab. Note: this only works if the simulation URL ends in "_all.html".	`locale=es` (Spanish) `locale=fr` (French)
`allowLinks` - when `false`, disables links that take students to an external URL. Default is `true`.	`allowLinks=false`

McGarry, August 2023

Suggestions for Use

Sample Challenge Prompts

- Create a custom data set with…
  - a correlation coefficient that is *positive*.
  - a correlation coefficient that is *negative*.
  - a correlation coefficient of *zero*.
- Create a custom data set with a linear association. Try to fit a line to it using the My Line controls, explain how you decided on your final line, then show the Best-Fit Line to see how close you were.
- Create a custom data set and show the best-fit line. Choose a point to drag and observe how it influences the best-fit line.
- For each data set in the menu, determine if a linear fit is appropriate, and justify your answer.
- Why do we call this type of regression “least-squares”?

See all published activities for Least-Squares Regression here.
For more tips on using PhET sims with your students, see Tips for Using PhET.

McGarry, August 2023