Reflect on the Question

Lab 5: Track and Field World Records

Every four years, track and field athletes take the world stage at the Summer Olympics. Some of the most exciting events during each Olympics are those in which athletes push the limits of their sport, breaking their own personal best records, national records, or even world records. We have compiled the world record times for track events like

the 100m dash and record distances for field events like the shotput into a single dataset. This dataset includes information on the person who broke the record, his/her nationality, where the record was broken, and the year it was broken. Note that not all world records are broken during the Olympics, with many occurring in regional or national competitions.

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problem

1/1 point (graded)

Review of Linear Modeling

In this lab, you will use **linear modeling** to answer a question of interest. Let's start by remembering what it means to fit linear models.

1a. When fitting a model to data, what should you do **first** to examine the data?

- (•) Create a scatterplot of the two variables of interest. ✔
- ( ) Generate a histogram to determine the shape of the distribution.
- ( ) Run a linear model and look at the R-squared value.
- ( ) Visually examine the dataset to see what kinds of patterns are visible.

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

problem

1/1 point (graded)

1b. When fitting a linear model, what will tell you the **proportion of variance** in the dependent variable that can be explained by the independent variable?

- (•) the R-squared value ✔
- ( ) the intercept estimate
- ( ) the correlation
- ( ) the slope estimate

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✔ Correct (1/1 point)

problem

1/1 point (graded)

Lab Preparation

In this lab you will be working with world record data in various track and field events.

1. Open RStudio. Make sure you've installed the **current version** of the SDSFoundations package.
2. Type `library(SDSFoundations)` This will automatically load the data for the labs.
3.Type `WR <- WorldRecords` This will assign the data to your Workspace.

Alternatively, you can use follow the steps in the "Importing a Data Frame" R tutorial video, and use the WorldRecords.csv file. (Right-click and "Save As.") Make sure to **name** the dataframe "WR" when importing.

1. Open RStudio.
2. Click on "Import Dataset" button at the top of the workspace window. Choose *"from text file."*
3. Click on the location of the WorldRecords.csv file you just downloaded.
4. Click on the WorldRecords.csv file. Then, click Upload.

Feel free to use the script from the week's PreLab, which you can modify for use in this Lab.

2. You will be answering one of the following questions in lab. Which of these questions might be answered using **linear modeling**?

- (●) How have world record times for the men's and women's mile event changed over the years? ✔
- ( ) What did the distribution of heights look like in the last men's polevault competition?
- ( ) How do the men's and women's fastest times in the mile compare?
- ( ) Who holds the current world record for the 800m?

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✔ Correct (1/1 point)