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Reflect on the Question

Analyze the Data

Draw Conclusions

## Primary Research Question

How have the world record times for the men's and the women's mile event changed over the years?

## Analysis

Let's break this question down into the different descriptive statistics that you will need to construct your answer. Be sure that your R output includes all of the following components.

1. Create a subset of the data that contains World Record cases for the men's Mile event.
2. Create a subset of the data that contains World Record cases for the women's Mile event.
3. Create a scatterplot for each relationship of Mile time and year: one for men and one for women.
4. Confirm from these plots that a linear model is appropriate.
5. Run a linear model for each event and then interpret the results. Be sure to calculate R-squared values for each model.

(1/1 point)

Which scatterplot shows a **stronger** linear relationship between World Record times in the Mile and Year:

Men's

Help

Show Answer

*You have used 1 of 1 submissions*

On average, how many *seconds* do men trim off the world record time in the Mile each year? (Round to three decimal places)

0.393

0.393

Final Check

Save

Show Answer

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(1/1 point)

On average, how many *seconds* do women trim off the world record time in the Mile each year? (report to three decimal places)

0.973

0.973

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(1/1 point)

How many **years** would you predict it would take for the men's mile record to decrease by one full second? Use the model equation to help you answer the question.

☐ About 18 years☒ About 2.5 years☐ About 3.5 years☐ About 4 years

Show Answer

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(1/1 point)

How many **years** would you predict it would take for the women's mile record to decrease by one full second? Use the model equation to help you answer the question.

- ☐ About 8 years
- ☐ About 4.5 years
- ☐ About 2 years
- ☒ About 1 year 

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(1/1 point)

What proportion of variance in the men's World Record times in the Mile can be explained by year? (report to 3 decimal places)

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(1/1 point)

What proportion of the variance in women's World Record times in the Mile can be explained by year? (report to 3 decimal places)

0.896

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(1/1 point)

Which of the following is a reasonable conclusion to draw from this analysis?

- ☐ A linear model is a good fit for describing the decrease in record time for the Mile for men, but not for women.
- ☐ We cannot fit a linear model to either the men's or the women's mile.
- ☒ World record times in the Mile have decreased linearly over the last several decades for both men and women.



Show Answer

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