Analyze the Data

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.

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problem

1/1 point (graded)

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

Men's ✔

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problem

0 points possible (ungraded)

2. 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 ✖ **Answer:** 0.393

-0.393

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Answers are displayed within the problem

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problem

1/1 point (graded)

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

.973 ✔

.973

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problem

1/1 point (graded)

4. 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

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problem

1/1 point (graded)

5. 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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problem

1/1 point (graded)

6. What proportion of variance in the men's World Record times in the Mile can be explained by year? *(Round to three decimal places)*

0.977 ✔

0.977

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problem

1/1 point (graded)

7. What proportion of the variance in women's World Record times in the Mile can be explained by year? *(Round to three decimal places)*

0.896 ✔

0.896

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problem

1/1 point (graded)

8. 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. ✔

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