



Predicting Math 22 Finals Scores

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Goals and Hypotheses

- Determine factors influencing final performance
- Determine if those factors or finals results differ by gender
- Hypothesis: **positive** correlation between previous scores and final score

Factors Considered

- Homework Average % (excluding lowest)
- Midterm 1 Score (out of 100)
- Midterm 2 Score (out of 100)
- Gender
- 100 person data set

Preliminary Model

Final Score

$$= \alpha + \beta_0 * \textit{Gender} + \beta_1 * \textit{AvgHW} + \beta_2 * \textit{Midterm 1 Score} + \beta_3 * \textit{Midterm 2 Score}$$

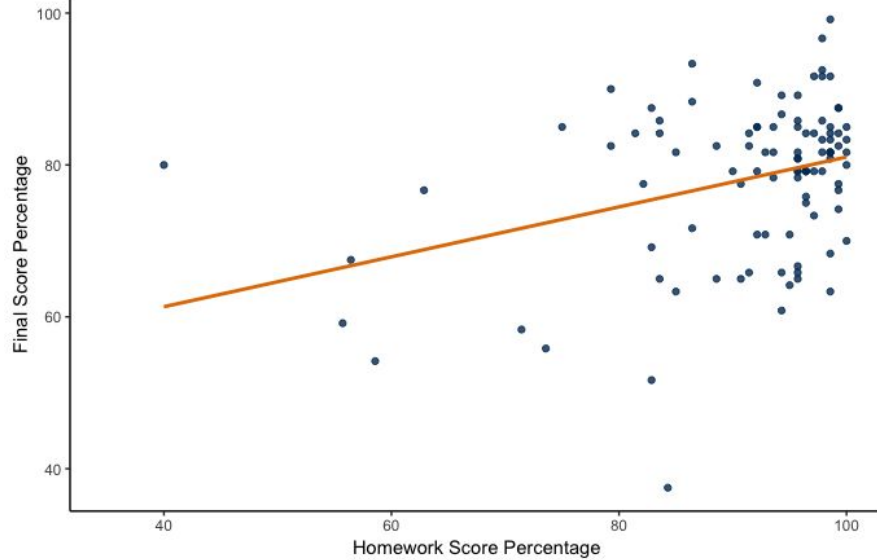
DEMO!!!

- Female
- Homework = 95%
- Midterm 1 = 83%
- Midterm 2 = 81%
- Final = ????

Homework Effect

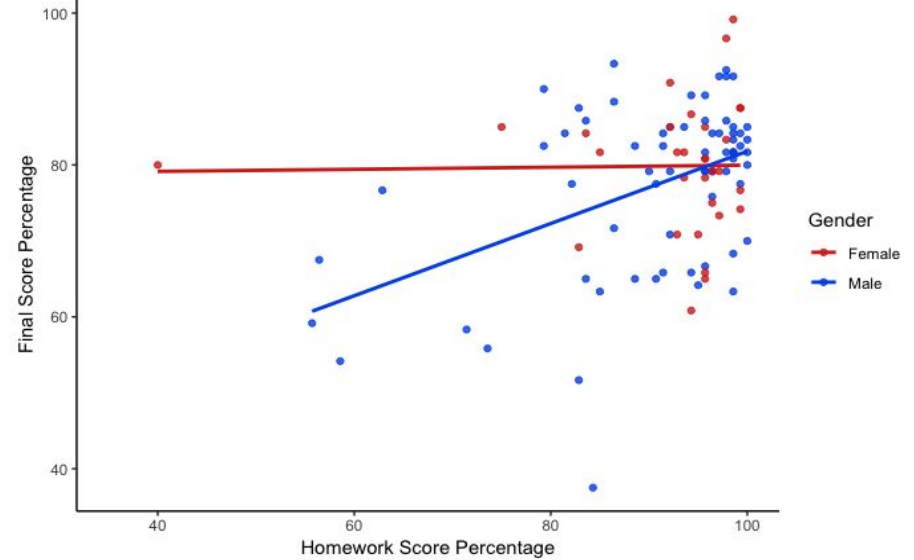
Correlation between Average Homework Score and Final Score

The lowest homework score is dropped.



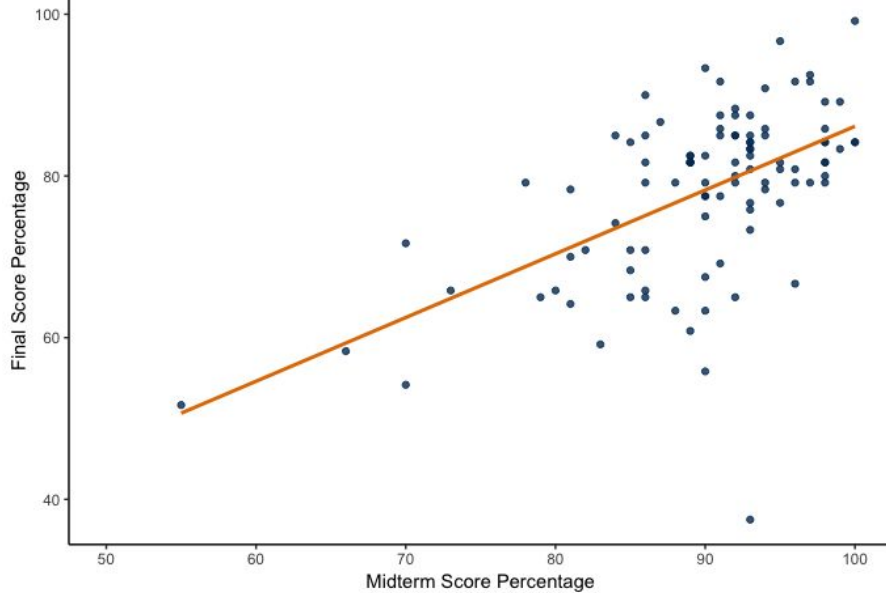
Correlation between Average Homework Score and Final Score

By Gender

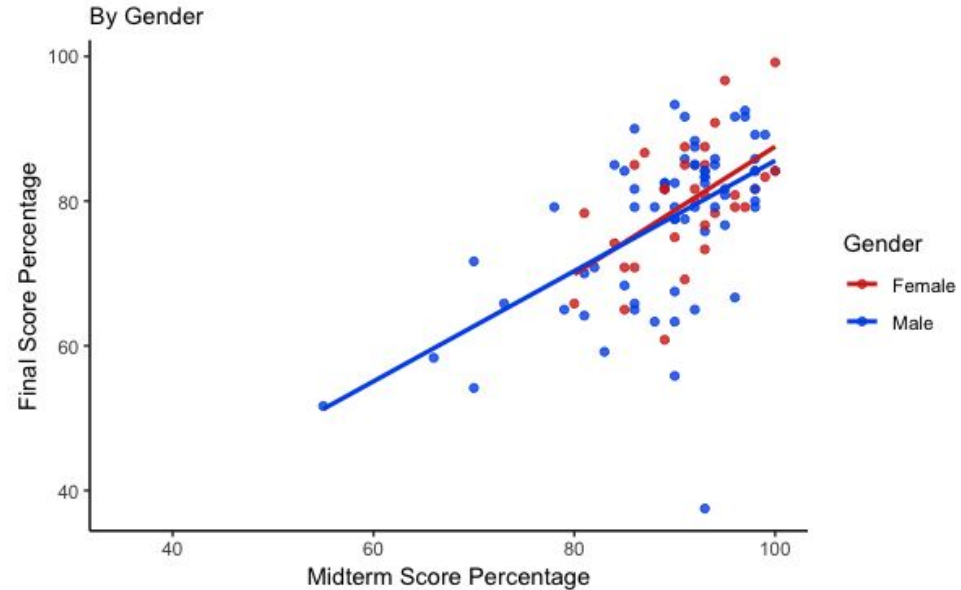


Midterm 1 Effects

Correlation between First Midterm Score and Final Score

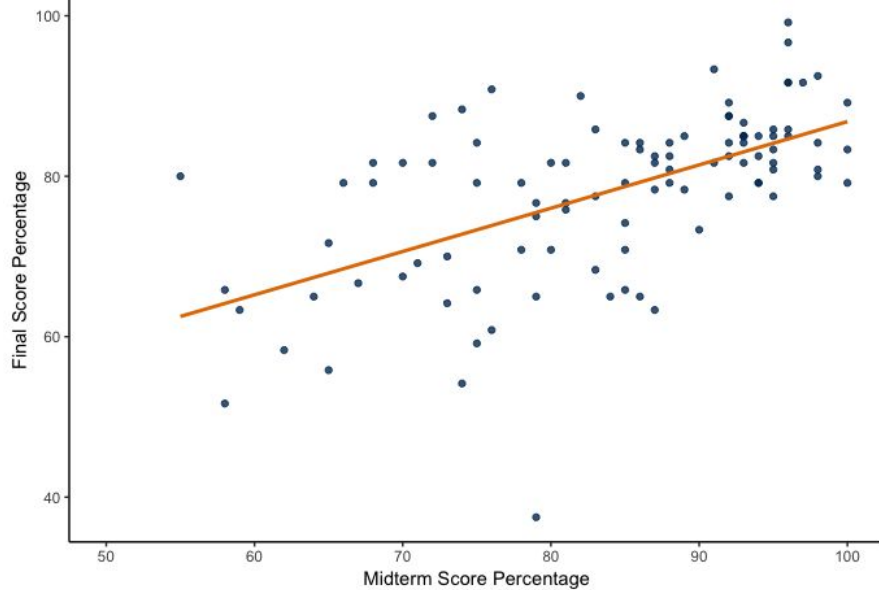


Correlation between First Midterm Score and Final Score



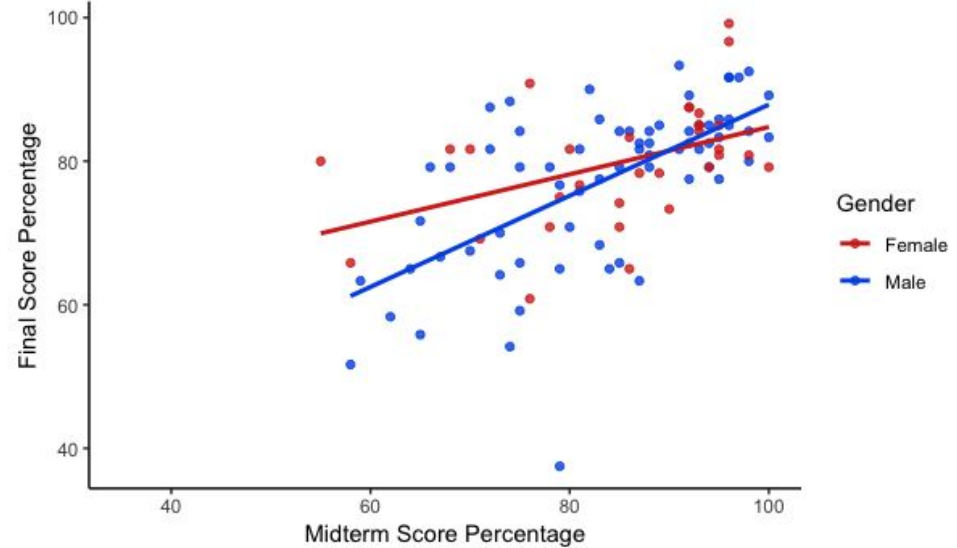
Midterm 2 Effects

Correlation between Second Midterm Score and Final Score

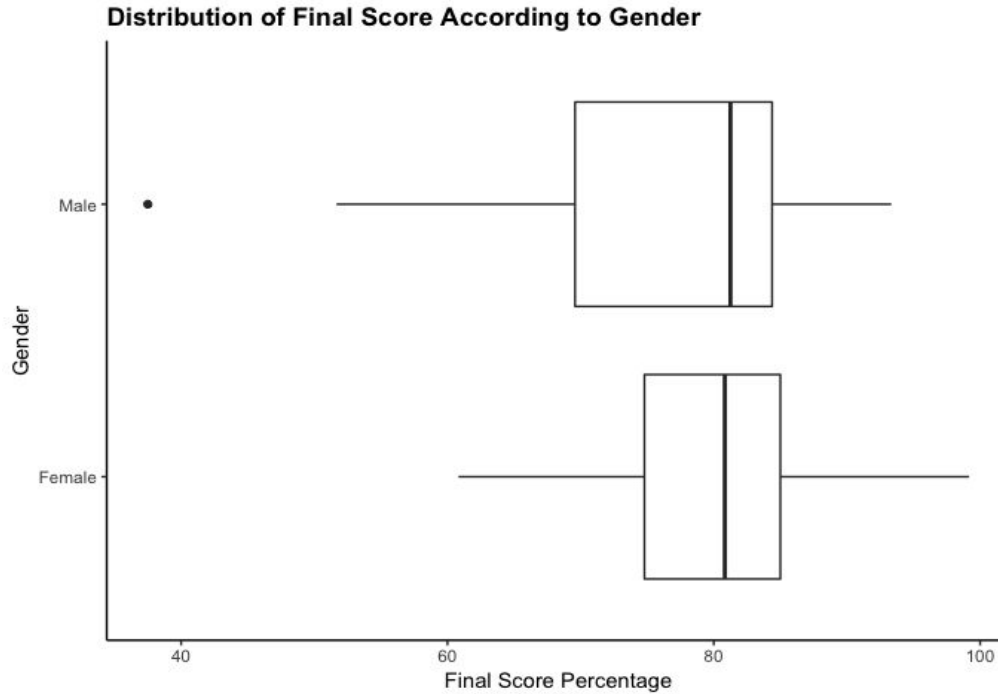


Correlation between Second Midterm Score and Final Score

By Gender



Gender Effects



Final Regression

Final Score

$$\begin{aligned} &= -0.23 - 0.77 * \textit{Gender} + 0.08 * \textit{AvgHW} \\ &+ 0.49 * \textit{Midterm 1 Score} + 0.33 \\ &* \textit{Midterm 2 Score} \end{aligned}$$

Possible Explanations

- Homework
 - Keeping up, you can refer to notes/ask for help, doesn't differentiate as well
- Gender
 - Distribution was unequal
- Midterm 1
 - Doing well/studying time mimics final

Demo Results!

75%...

- This is not what we expected!

Limitations of Results

- Specific Data Set
 - Mid 1 Avg = 90
 - Mid 2 Avg = 84
 - Final Avg = 78
- 95% CI
- NROs
- Lack of Factors Mentioned Earlier

Final Score

$$\begin{aligned} &= -0.23 - 0.77 * \textit{Gender} + 0.08 * \textit{AvgHW} \\ &+ 0.49 * \textit{Midterm 1 Score} + 0.33 \\ &* \textit{Midterm 2 Score} \end{aligned}$$