

# Investigating the impact of postexam grade-adjustment practices in introductory physics

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We thank Erin Murray for her assistance in accessing and preparing the data for this project.



#### Grades matter



Ost 2010; Simmons and Heckler 2020

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# Grades have patterns of inequities

Matz et al. 2017, Whitcomb, Cwik, and Singh 2021, Castle et al. 2024

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#### Inequities as a result of course structure

"We conclude that there are likely systemic biases, in introductory physics classes, that act against some underrepresented demographic groups. These biases are easily seen by comparing outcomes between different systems of teaching and assessment and these biases can likely be removed with appropriate structural changes at the level of a course that importantly—do not impact the educational standards of the course." – Webb & Paul

Webb and Paul, 2023

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 Percent
 F
 D
 C
 B
 A

 4.0
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- What about the weight of *each* exam?



# How does changing the weight each exam has in the final course grade affect equity gaps?



#### Data

- Winter 2017 Fall 2019
- Grades:
  - Midterm exam 1
  - Midterm exam 2
  - Midterm exam 3
  - Final exam



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- Exams make up 36% of final grade
- Final exam makes up 16% of final grade













# Most students earn similar grades across exams (or do worse)



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- Let's apply these to our data!



#### Average total exam score with no modifications





#### Increase in exam scores





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#### Also increase, but again, not as much





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Replacing the lowest exam score with the final exam score and weighing each exam differently in the total exam score also increased the total exam score, but not as much.



### What about equity though?

Salehi et al (2019)

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# None of the modifications seem to close the equity gaps.



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# None of the modifications seem to close the equity gaps here either.



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