



# Investigating Grade Inflation: Connecting Grades, Graduation, and Student Learning

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## State of Higher Education

- Postsecondary graduation rates have continually increased since the 1990s (Denning et al., 2022)
- Graduates are expected to have training in reading, writing and critical thinking
- Yet these skills have been found lacking, leading to young professionals entering the workforce without the qualifications necessary to succeed (U.S. Department of Education)
- Compared to prior cohorts, modern college students spend less time on academic tasks yet receive higher grades (Babcock & Marks, 2011; Kostal et al., 2016)

**Problem:** graduation rates are increasing while students spend less time on academic tasks and lack necessary qualifications for their profession

## Data and Methods

- $N = 6,160$  students assessed at two timepoints
  - Freshman (pre) and Sophomore (post)
- Natural World Test version 9 (NW9)
  - 66-item multiple-choice ( $\alpha = 0.80$ )
  - Measures quantitative and scientific reasoning

Linear regression model: controlling for demographics and baseline score, is learning related to GPA?

$$GPA_i = \beta_0 + \beta_1 sex_i + \beta_2 race_i + \beta_3 pre_i + \Delta NW9_i$$

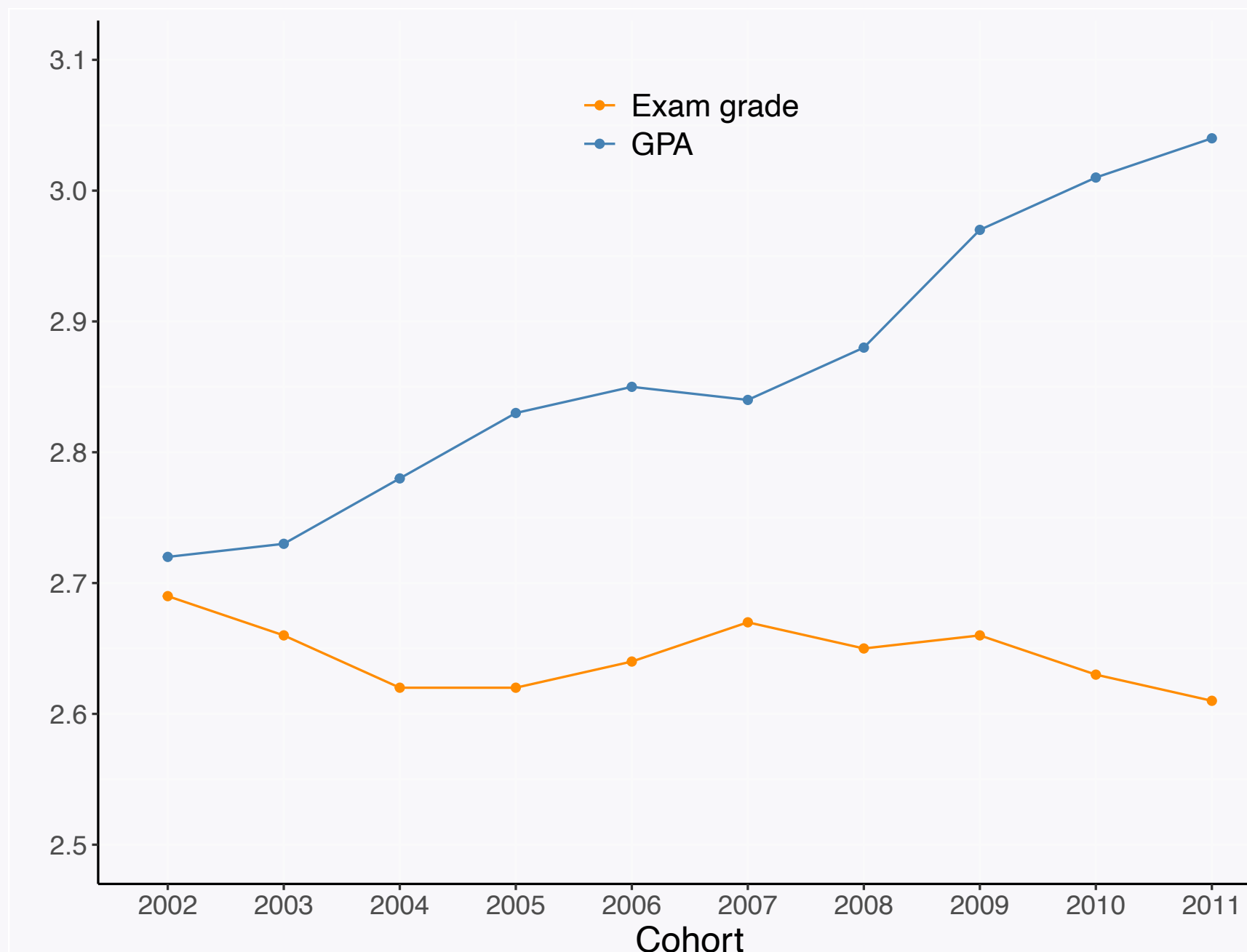
$\Delta NW9$  calculated as  $NW9_{post} - NW9_{pre}$

*Note:* GPA was calculated for courses that aligned with NW9. Sample excluded: 1) transfer students, 2) students who did not take NW9-relevant courses, and 3) students observed at only one timepoint

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## Grade Inflation

- Occurs when students receive grades higher than what their actual performance warrants
- Likely due to student evaluations of teaching (tenure and promotion, sympathy for student)
- When present, grades begin to show ceiling effect



## Results

### Evidence **against** grade inflation

- Males had significantly lower GPAs than females ( $\beta = -0.160, p < .001$ )
- Pre-test score related to GPA ( $\beta = 0.07, p < .001$ )
- Change score related to GPA ( $\beta = 0.004, p < .001$ )
  - Those that learned more had higher GPAs

### Evidence **for** grade inflation

- The overall model had an  $R^2 = 0.01$ 
  - That is, 99% of the variation in GPA is due to something other than improvement in NW9 scores (and other covariates)
- Learning had no meaningful relationship with GPA (Cohen's  $d = 0.04$ )

## Shortcomings in Literature

- Prior research has demonstrated lack of relations between grades and SAT scores, high-school GPA
- Denning et al. (2022) conducted an 'ideal test' by comparing grades awarded with underlying student achievement
  - Cohort-level data from 2001 through 2012
  - Used similar/identical versions of the exam
  - Found that as time went on, final exam scores remained relatively unchanged, while grades increased

**Issue:** without individual-level data, unable to determine the degree to which any single grade or cohort may be inflated

**Solution:** administer the same measure to the same group of students at multiple timepoints (before and after receiving curriculum)

## Limitations

- Particular Mid-Atlantic R2 University in the U.S.
- Likely other important covariates (study habits, motivation)
- Cannot definitively conclude that grade inflation *is* or *is not* occurring

## Implications

- Raises a larger question: proficiency vs. growth?
  - Proficiency partly accounted for with baseline score
- What should underly grades? When are grades 'valid'?
  - Product, Process, and Progress (Lipnevich et al., 2020)
- Encourage institutions and administrators to build such large-scale assessment systems



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