

# Beyond Exclusion: The Role of High-Stake Testing on Attendance

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## Introduction

Non-representative patterns of attendance can skew how useful test scores measures are for accomplishing their goal. The main objectives of this paper are the following:

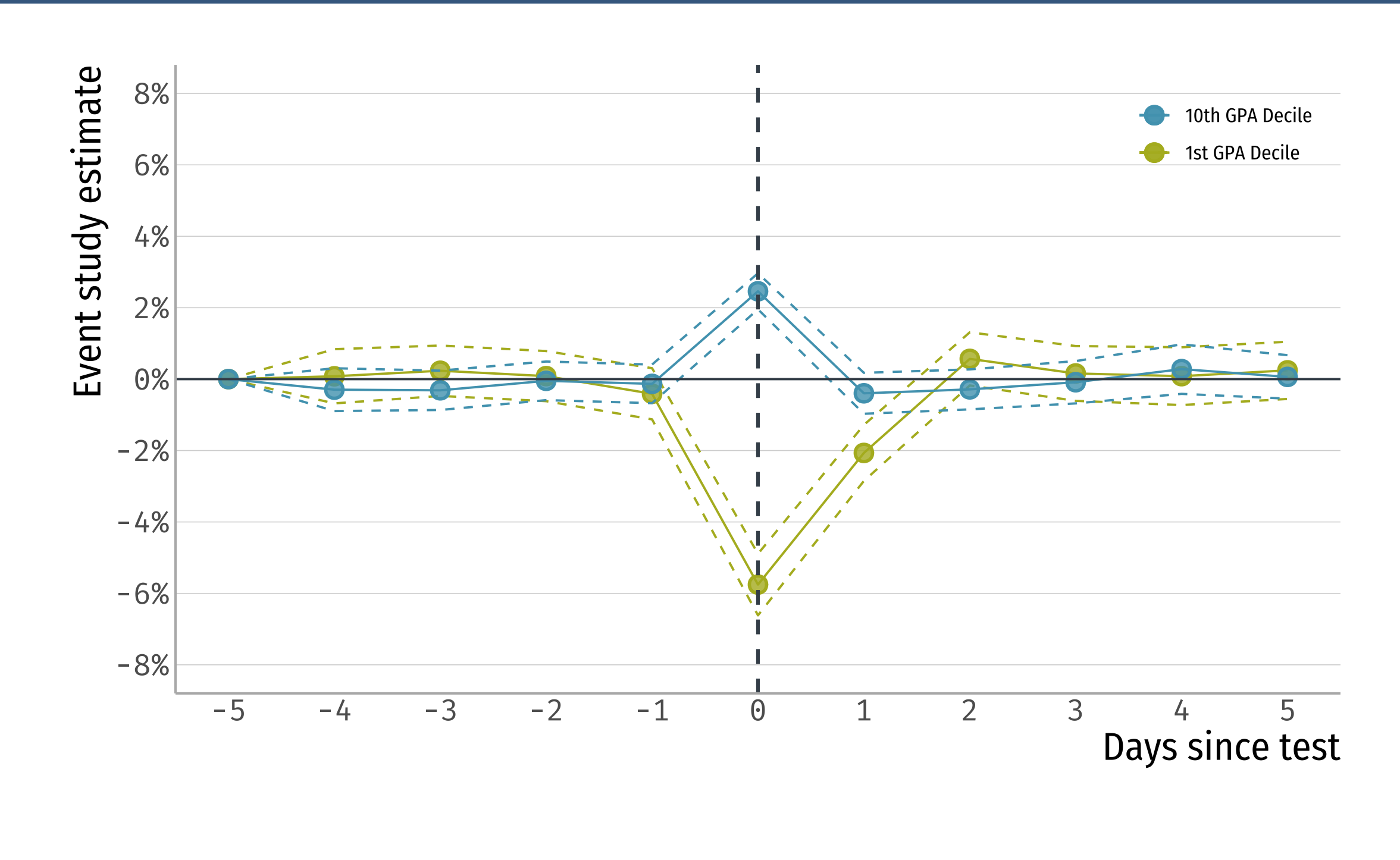
1. Understand the average effect of testing on school attendance across grades and performance
2. Identify schools that incentivize non-representative patterns of attendance by combining causal inference methods and machine learning
3. Help improve current imputation methods

## Methods

### Event Study

- $$Y_{ipsgt} = \sum_{P=1}^5 \sum_{T=-4}^5 \tau^{PT} D_{ipsgt}^{PTG^*} + \gamma_{pt} + \alpha_i + \epsilon_{ipsgt}$$
- $Y_{ipsgt}$ : Attendance (1,0) for student  $i$ , from GPA group  $p$ , in school  $s$  and grade  $g$  for day  $t$ .
  - $D_{ipsgt}^{PTG^*}$ : Indicator variable where  $G^*$  is the tested grade.

Not only low-performers attend less on the day of the test, but high-performers attend more



Using machine learning methods we can also identify schools more likely to incentivize low-attendance on bottom performers

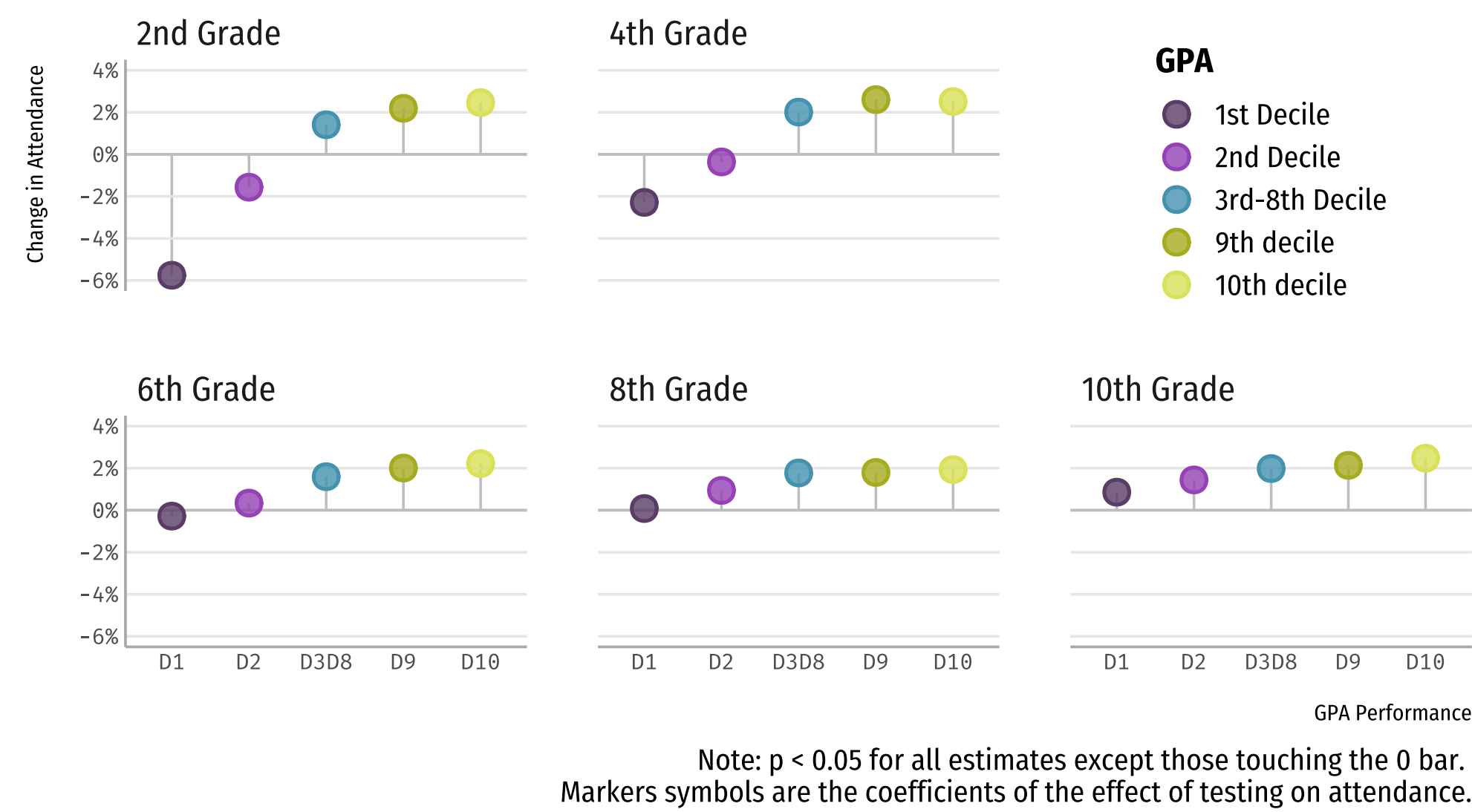


## Prediction of counterfactual attendance

- XGBoost for large student panel of daily attendance
  - Includes FE by day of the week, school, grade, and student. Also includes sibling's attendance (if any) and attendance lag.
- Identify types of schools by clustering on  $Obs\ Att - Predicted\ Att$  using K-means.
- Test different imputation policies and its consequences.

## Results

Students skip school on the day of the test. In lower grades, lower-performers attend less and higher-performers attend more, compared to a regular day. In higher grades, we only observe action at the top of the distribution



There is important heterogeneity between schools.

We use K-means analysis to identify clusters of schools according to their difference between predicted and observed attendance distribution. We find two main clusters, where one of them incentivizes the exclusion of lower-performers. Those schools are more vulnerable and have overall lower performance.

In terms of imputation:

- Overall imputation to match school population increases disparities
- Imputation to match predicted distribution is inbetween no imputation and imputation for all.

