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The effects of making performance information public: Regression discontinuity evidence from Los Angeles teachers

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ABSTRACT

This paper uses school-district data and a regression discontinuity design to study the effects of making teachers' value-added ratings available to the public and searchable by name. We find that classroom compositions change as a result of this new information. In particular, high-scoring students sort into the classrooms of published, high-value added teachers. This sorting occurs when there is within school-grade variation in teachers' value added.

1. Introduction

Performance information is publicly available in a variety of settings. Increasingly, and perhaps most controversially, performance information has been made public in the education sector. Many school districts, including the two largest districts in the country, New York City and Los Angeles, make school report cards available online, and the non-profit *GreatSchools* has formulated and published ratings online for more than 200,000 schools across the country.[1] In a number of places, including districts in Florida, Cleveland, New York and Los Angeles, individual teacher performance information has also been made public. The impacts of making this information public in the education context are of particular importance because researchers have quantified the significant social and economic value generated by high-quality teachers and schools (Chetty, Friedman, & Rockoff, 2014; Deming, 2011; Hanushek, 2011; Jackson, 2012; Rockoff, 2004).

This paper uses a discontinuity in the publication of teacher ratings in Los Angeles Unified School District (LAUSD) to study the effects of making performance information public on teacher retention, student sorting, and test scores. In August of 2010, the *Los Angeles Times* (*LA Times*) published teacher ratings for third through fifth grade teachers in Los Angeles Unified School District (LAUSD). These ratings were based on the newspaper's calculation of teachers' value added. An independent contractor for the *LA Times* computed these scores for English and math using student-level regressions.

That year, the *LA Times* heralded its ratings with a front-page article and provided free access to the value-added scores and ratings via an online, searchable database. The subsequent year, 2011, the *LA Times* published scores based on data through spring 2010 for almost all third-, fourth-, and fifth-grade teachers (almost) irrespective of the number of students the teacher had taught previously.[2] However, in the initial year, only teachers who had taught at least 60 students with test scores and lagged test scores between spring 2003 and spring 2009 were published in the *LA Times*. We use this threshold to identify the effects of ratings publication on classroom outcomes.

The release of this information could affect how students sort into teachers' classrooms. Both parents and teachers can influence this allocation, and previous research shows parents' demand for higher test scores (Black, 1999; Figlio & Lucas, 2004). Principals may adhere to parent requests for their children to be placed with preferred teachers (Hui, 2013). Experienced teachers may also be able to successfully lobby the administration for good students or to have "problem" students placed elsewhere (Pop-Eleches & Urquiola, 2013). Clotfelter, Ladd, and Vigdor (2006) suggest that, in aggregate, more

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[1] See www.greatschools.org.
[2] The calculations excluded teachers who had taught ten students or fewer.

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able students are more likely to be placed with high-quality teachers and Jacob and Lefgren (2007) found that even low-income parents petition schools for their children to have higher value-added teachers.

Publishing teacher ratings could also affect teacher retention within schools and the district. Bates (2016) showed how the release of value-added information could reduce informational asymmetries between principals and teachers, promoting within-district mobility for high value-added teachers and out-of-district mobility for low value-added teachers. Cullen, Koedel, and Eric (2017) similarly found that the informing principals in Houston about teacher effectiveness increases the rate of exit from the district by lower-rated teachers. Rockoff, Staiger, Kane, and Taylor (2012) found that principals update their beliefs about teachers' performance when provided information on their value-added. This occurs despite principals' strong prior beliefs about teachers' value-added that correlate with estimated value-added. Rockoff et al. (2012) also found that subsequently low value-added teachers were more likely to exit the school district. Lastly, Adnot, Thomas, Veronica, and James (2017) showed that, while teacher turnover correlates negatively with student performance, a teacher performance-assessment and incentive program helped District of Columbia Public Schools identify and replace low-rated teachers, which led to increases in student performance.

We find that publication causes students with high test scores to sort into classrooms with high value-added teachers compared with similar teachers whose value-added score is *not* published. For instance, a one standard deviation increase in a teacher's value-added causes the math test scores of incoming students to be three tenths of a standard deviation higher on average than those of a similar teacher whose rating is not published. This finding is consistent with students and parents who value academic performance seeking out higher rated teachers, though schools could shift students across classrooms as well. We also find a similar observed effect when we use teacher quality ratings that are relative to teachers within the same grade level and school instead of overall teacher value-added. This suggests that sorting will exist as long there is variance among the set of possible teachers for students. Finally, we find evidence that low-rated teachers are more likely to exit the district as a result of publication compared with similar unpublished teachers.

In a paper related to ours, Imberman and Lovenheim (2016) examined whether housing markets responded to the publication of additional school performance information in Los Angeles by the *LA Times*. They found that this new information on schools' value-added is not capitalized into housing prices. However, parents may have responded to the publication of performance information in other ways. For instance, to the extent that parents can influence teacher assignment *within* a school academically oriented parents may push for their children to be assigned to high-rated teachers.

Lastly, Pope (2014) has concurrently written about the publication of teachers' value-added in Los Angeles, which was made available around the same time as our paper. Pope uses an event-study design to analyze the impacts of publication on students' test scores, while controlling for classroom composition (e.g. through students' prior test scores). He does not, however, find evidence of student sorting using this research design. Pope uses different variation than we do: he relies on across-time variation in classroom characteristics among the same group of teachers before and after publication. Our paper uses within-year variation in classroom composition. By comparing published to unpublished teachers within the same year, we estimate the net change between these teachers' classrooms. This implies our results reflect a different estimand than Pope's event-study analysis of published teachers. For instance, our findings potentially capture high-scoring students moving out of unpublished, highly-rated teachers' classrooms and into published, highly-rated teachers' classrooms. A related caveat to our analysis is that the sample of teachers for our regression-discontinuity estimates are slightly less experienced (14 years versus 12 years) than the overall sample, and less likely to be tenured (95% compared to 91%). This implies our estimates may not extrapolate to the set of all teachers, though our sample is nonetheless highly experienced and overwhelmingly tenured, like the overall sample.

The rest of this paper proceeds as follows. In Section 2 we provide background information on the release of teachers' value-added scores. In Section 3 we discuss the data and the empirical strategy. Sections 4 shows effects of publication, and Section 5 concludes.

2. Background

In August 2010, the *LA Times* published teacher value-added scores for third- through fifth-grade teachers in the Los Angeles Unified School District. The *LA Times* hired Dr. Richard Buddin, a senior economist at the RAND Corporation, to construct the scores. Details on Buddin's methodology can be found in his white paper on the subject (Buddin, 2010). Buddin used methods commonly found in the literature: linear regression with teacher fixed effects controlling for student covariates (Jackson, Rockoff, & Staiger, 2014).[3] The value-added scores were based on student test score data from the 2002–2003 through 2008–2009 academic years obtained by the *LA times* via a Public Records Act request. A later release of the value-added scores was updated to include test score data from 2009-2010 school year as well.

The *LA Times* heralded its ratings with a front-page story and then provided the public with an online database of teachers and their corresponding value-added scores.[4] This database is searchable by teacher name and school. Access to the website is free, with no registration required. Fig. 1 shows how the results are presented for a sample teacher. The evaluation of a teacher consists of an overall score as well as a score for math and English. Scores are divided into five rating categories: "Least Effective," "Less Effective," "Average," "More Effective" and "Most Effective." These categories correspond to quintiles in the calculated value-added scores. The publication of the value-added scores was teachers' first exposure to numerical ratings as LAUSD had not previously computed scores of this type.

The publication of the value-added scores received widespread coverage, and there is substantial evidence that the public was aware of their release. The *LA Times* published 37 articles related to the value-added scores in the subsequent nine months following the initial release (Imberman & Lovenheim, 2016). The scores were covered nationally by outlets such as the *New York Times, Washington Post, National Public Radio*, and *Fox News*. Locally, the scores received attention from both English- and Spanish-language news and radio stations, suggesting that knowledge of the scores extended across race and language barriers. The online database received over 230,000 page views on its first day (Song, 2010). While there was widespread coverage of the scores, their publication upset many teachers (Lee, 2011). Both the LAUSD teachers' union and the American Federation of Teachers criticized the *LA Times* for the release of the value-added scores. Teachers engaged in a series of protests against the *LA Times* culminating with a march on the *LA Times* building on September 14, 2010.

The initial release of the value-added scores was limited to teachers who had taught 60 or more tested students between the 2002–2003 and 2008–2009 academic years. Students needed to have at least one year with a test score and a lagged test score to be counted.[5] This 60-student cutoff provides a natural experiment. Teachers right below the cutoff should be similar to those just above the cutoff, which allows us to use a

[3] Buddin used similar value-added scores previously in a 2009 *Journal of Urban Economics* article coauthored with Gema Zamarro.

[4] http://projects.latimes.com/value-added/ .

[5] The 60-student number was chosen because of concerns from the *LA Times* that scores for those teachers with fewer than 60 students would be unreliable. (This is not standard practice.) The concerns about reliability proved to be unfounded and even if they were not, given our regression discontinuity design there is no reason to believe that expected precision or bias change discontinuously around the 60-student cutoff.