

# **NEPC Review: Changes in the Performance of Students in Charter and District Sectors of U.S. Education: An Analysis of Nationwide Trends (Program on Education Policy and Governance at Harvard University, September 2020)**



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**December 2020**

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## Acknowledgements

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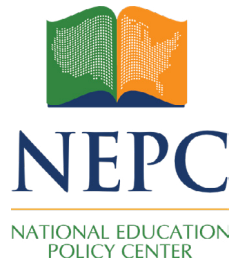
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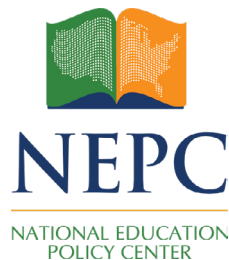
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## Executive Summary

The Program on Education Policy and Governance (PEPG) at Harvard University recently published a research study titled *Changes in the Performance of Students in Charter and District Sectors of U.S. Education: An Analysis of Nationwide Trends*. Using National Assessment of Educational Progress (NAEP) reading and math test results for seven different cohorts of fourth and eighth graders, the study compares student performance trends in the charter and district sectors between 2005 and 2017. Based on the comparisons of overall performance changes as well as subgroup analysis by student ethnicity, socioeconomic status, region, and locale, the study concludes that charter schools had enhanced performance relative to that of district schools. However, because NAEP does not track the performance of individual students over time, the analysis of performance trends of different cohorts does not allow causal conclusions about the relative effectiveness of the charter and district sectors in raising student achievement. In addition, the study suffers from several methodological weaknesses around sampling, control of extraneous variables, and determination of statistical significance. Due to these limitations, the study fails to advance our knowledge of charter school effectiveness and offers no solid base for policy recommendations regarding whether charters merit more or less investment, nor any insight into what practices and changes might benefit the charter sector.



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## I. Introduction

Recently, the Program on Education Policy and Governance (PEPG) at Harvard's Kennedy School published *Changes in the Performance of Students in Charter and District Sectors of U.S. Education: An Analysis of Nationwide Trends*<sup>1</sup> in the PEPG Working Papers Series, authored by M. Danish Shakeel and Paul E. Peterson. The paper has also been published in the *Journal of School Choice*.<sup>2</sup> Using NAEP data, the study compares the national performance trends in the charter and district sectors between 2005 and 2017.

Since the inception of charter schools three decades ago, one central question remains whether enrolling charter schools has a positive effect on student performance. Estimating the effects of charter schools is not easy, because students are not randomly assigned to attend charter or traditional district schools. Students who choose to go to charter schools may be systematically different in many ways from those who remain in district schools, a situation commonly referred to as “selection bias.” For instance, if charter schools draw more motivated or able students than district schools, then the better performance in charter schools does not imply that charter schools are better at raising student performance but simply shows that their students were better prepared to begin with.<sup>3</sup> To date, numerous studies have tried to compare the relative effectiveness of charter schools and traditional district schools. This body of research, including experimental lottery studies and studies relying on advanced statistical techniques, have strived to eliminate the selection bias and make meaningful “apples-to apples” comparisons between the charter and district sectors.<sup>4</sup> So far, the evidence on whether charter schools outperform district schools remains mixed.

This study adopts a different approach. Rather than examining whether charter or district schools are more effective in improving student achievement over time, it simply compares national trends of student test scores of the two sectors.

## **II. Findings and Conclusions of the Report**

Using NAEP reading and math test results for seven different cohorts of fourth and eighth graders between 2005 and 2017, the study not only compares the performance changes between the charter and district sectors for each subject at each grade level, but also examines differences by students' ethnicity, socioeconomic status (SES), region, and locale.

The study finds:

- Overall, average cohort performances in math and reading in the fourth and eighth grades improved over the period for both the charter and district sectors.
- Compared to district cohorts, steeper upward mean performance trends are found in the charter sector.
- Larger sector differentials are found for African American students, low-SES students, and students in the Northeast.
- No significant trend differences are found for Hispanic and Asian American students, suburban students, and students in the West.

Based on these findings, the report tentatively concludes that charter schools have enhanced performance relative to that of district schools, and it posits that the district sector's political resistance to charters has recently slowed their expansion.

## **III. The Report's Rationale for Its Findings and Conclusions**

This study compares the performance trends of different student cohorts in the district and charter sectors. Since it does not address the selection bias and lacks information on key educational inputs (i.e., how schools allocate their educational resources, such as per-pupil spending, class size, and teacher quality), the statement that "inferences about changes in school production factors remain uncertain" in the abstract is an appropriate assessment. However, a careful reading quickly uncovers strong claims that either go beyond the empirical findings or are based on inaccurate descriptions of the results, such as "two thirds of the difference in trend lines for the two sectors may tentatively be attributed to enhanced charter performance relative to that of district schools."<sup>5</sup> It attributes the slowdown of the recent charter school expansion to the resistance from the district sector. Further, it uses the example of transistor radios and television sets ultimately replacing vacuum tube devices in the market to speculate that charter schools will eventually drive district schools out of the business.

## **IV. The Report's Use of Research Literature**

Although the report provides an overview of the history and background of charter schools, it does not lay the groundwork for why charter schools may or may not do better than district schools at raising student achievement. Given the controversial (and political) nature of the topic, providing balanced perspectives of both advocates and opponents would have been beneficial for readers' own assessment of the study.

The report cites only two recent empirical studies, whose conclusions are mostly consistent with its own findings; it largely ignores other studies yielding different results. Over the past two decades, a large body of literature has focused on comparisons of the effectiveness of charter and district schools, including lottery-based studies that randomly assign students to charter and district schools, and studies using various sophisticated statistical approaches to minimize selection bias (e.g., fixed effects models, matching procedures, and instrumental variable approaches).<sup>6</sup>

Because one of the advantages of this study is providing national evidence for different regions and various student subgroups, a review of the literature by geographic area or by subcategories would have been helpful. More detailed discussion of the strengths and weaknesses of different data sources and empirical approaches across studies might also have helped readers understand discrepancies in the findings and this study's contribution to the literature. Additionally, the review of the literature focuses primarily on recent findings on charter school performance, which gives an impression of a lack of conversation with previous studies. Because this study examines the "trends" of school performance, it is important to address what previous researchers found and connect the stories to build more comprehensive perspectives.

It should be noted that the study makes an incorrect statement about charter schools. On p. 2, it states: "District schools are governed by school boards or other official governing bodies, while charters are governed by nonprofit organizations authorized by a public agency." In fact, some charters are part of a for-profit charter management organization or network of schools that are managed by a central agency. Others may be an independent or stand-alone charter school.

## **V. Review of the Report's Methods**

NAEP does not track the performance of individual students over time. For example, the cohort of fourth graders sampled in 2013 are not the same cohort sampled in 2015, because the fourth graders in 2013 had moved into sixth grade in 2015. Since a different set of students is involved in each administration of the NAEP, it is not possible to say that better performance of one year's cohort reflects a gain in learning from the previous year. Thus, the biggest limitation of the study lies in its inability to draw causal conclusions about the relative effectiveness of charters and district schools in raising individual students' achievement, the focus of much previous research. In addition to this overarching concern, other issues are evident in sampling, student characteristics controls, and the assumptions about

statistical significance.

As the report points out, the sample of charter students is not necessarily nationally representative because of NAEP's sampling frame. The study compares students' racial/ethnic demographic information between the NAEP samples and NCES census data to show the representativeness of charter students. However, similar comparison for other subgroups (SES, region, locality, etc.) was not provided, giving an impression that the preliminary analysis is incomplete. In addition, even if the charter samples are nationally representative, it should be noted that comparing them with all students in the district sector might not be ideal because not all states had charter schools, and within a state, charter schools tend to locate in certain neighborhoods.

This study controls for limited background characteristics, such as race/ethnicity, gender, free and reduced-price lunch status, and SES. Readers would have benefited from an explanation of how such factors influence performance, how they differ in the two sectors, and why it is important to control for them. More importantly, however, the study does not include special education or English Language Learner (ELL) status as controls "because the two sectors may have different definitions of these concepts."<sup>7</sup> This issue is poorly handled. Compared to the district sector, charters tend to have different proportions of these students,<sup>8</sup> which can influence the performance gap between the two sectors. Thus, some effort should be made to address these differences.

The trends have been estimated with a quadratic function, instead of using a straight line, to allow for nonlinear changes over time – for example, that student performance of both sectors improves faster in early years than in the later period. There are seven data points between 2005 and 2017 for each sector. Trying to fit a quadratic line through these few points may lead to an overly sensitive analysis that is heavily dependent on these data points so that it fails to capture the true relationship. For instance, the true relationship may still be linear, but non-linearity is detected due to some random errors. Because the study does not report the estimates for coefficients for the quadratic function, it is hard to judge if the quadratic function should be preferred to a linear approximation. In fact, much of the discussion in the results does not rely on the non-linearity assumption. It is simply the difference between 2005 and 2017. Some sensitivity analyses based on linear models could be helpful.

The report asserts that "All differences between student performance at charter and district schools for each subject at each grade level are assumed to be statistically significant if the differences in the point estimates for each trend exceed the joint standard errors of the two estimates."<sup>9</sup> These statements need more explanation. Since all the fitted point estimates are based on separate models corresponding to different sectors and different subgroups, it is impossible to directly determine the statistical significance of the differences of these point estimates. Then, how are the joint standard errors calculated? Why are they not reported in Tables 3 through 8? Which differences are statistically significant, and which ones are not? Without the information, it is difficult to assess the report's interpretation of the difference between the two sectors.



## **VI. Review of the Validity of the Findings and Conclusions**

Due to the limitations of NAEP data and research design, the study is unable to address selection bias, the key issue for internal and external validity of all charter effectiveness studies. So, the causal conclusion “the rate of relative improvement in the charter sector is likely due both to increasing selectivity and to enhanced charter performance . . . consistent with expectations”<sup>10</sup> is misleading, because the study neither addresses the “increasing selectivity” issue, due to the descriptive nature of the study, nor shows “enhanced charter performance” because the interpretation of the results is often inconsistent with what the numbers in tables actually show, and swift claims and generalizations are made based on less-than-clean results. For instance, in Table 4, there are many places where the average cohort performance of Hispanic and Asian students at charters, especially for eighth graders, are falling behind that of the district sector. Overlooking these opposite trends, the study focuses only on the average combined performances and concludes that Hispanic and Asian students are advancing steadily in both sectors with little difference between them.

The study also claims that the students in the lowest SES quartile produce larger gains than the students from the top quartile, and this is more so for the charter than for the district sector and concludes that, “this finding is generally consistent with research on charter effects, which for the most part report more positive results for disadvantaged students.”<sup>11</sup> This is an overstatement because Table 5 shows very mixed findings on the relative performance of the two sectors. Mixed findings on differences between two sectors on high-income and low-income students are also evident in Table 6, especially on math performance.

Negative signs also appear in the West (Table 7), indicating charters’ underperformance in the West and contradicting the report’s conclusion of “no difference in improvement rates between the two sectors in the West.”<sup>12</sup> Further, in explaining the regional variation, it says, “the irony may once again be explained by the differential threat charters pose to district schools in various parts of the country. Where charters are improving at a more rapid rate than district schools, the districts are more likely to mobilize their considerable political resources in opposition.”<sup>13</sup> These statements seem baseless because the study does not offer any direct evidence on these issues.

## **VII. Usefulness of the Report for Guidance of Policy and Practice**

Although the study provides some interesting results in its comparison of national performance trends in the charter and district sectors, no causal inferences can be drawn. In addition, the study does little to help stakeholders understand which charter schools, using which methods, might be more effective for which students, in which locale. The findings of this study, therefore, offer no solid base for clear policy suggestion as to whether more or less investment should be made for charters and what effective practices and changes will benefit charter schools.



Finally, expansion of charters is often promoted if a cost-benefit analysis indicates that marginal gains outweigh the marginal costs of a project. If the average quality of charters increases due to the closing of poor-quality charters, it should be noted that opening and closing schools is not free. In this sense, charters can constitute an expensive experiment consuming valuable resources that could have been put to other use. If the improvement of charters comes with the greater investment of public resources that could have been allocated to district sectors, strict scrutiny is warranted.

## Notes and References

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- 1 Shakeel, M.D., & Peterson, P.E. (2020). *Changes in the performance of students in charter and district sectors of U.S. education: An analysis of nationwide trends*. The Program on Education Policy and Governance Working Papers Series. Cambridge, MA: Harvard Kennedy School. Retrieved October 20, 2020, from [https://www.hks.harvard.edu/sites/default/files/Taubman/PEPG/research/PEPG20\\_04.pdf](https://www.hks.harvard.edu/sites/default/files/Taubman/PEPG/research/PEPG20_04.pdf)
- 2 Shakeel, M.D., & Peterson, P.E. (2020). Changes in the performance of students in charter and district sectors of U.S. education: An analysis of nationwide trends. *Journal of School Choice*. <https://doi.org/10.1080/15582159.2020.1811467>
- 3 For a discussion on the methodological challenges dealing with the selection bias, see:
 

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- 4 For a review of literature on charter school effectiveness, see Betts, J.R., & Tang, Y.E. (2019). The effects of charter schools on student achievement. In M. Berends, R.J. Waddington, & J.A. Schoenig (Eds.), *School choice at the crossroads: Research perspectives* (pp. 69–91). New York, NY: Routledge.
 

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- 5 Shakeel, M.D., & Peterson, P.E. (2020). *Changes in the performance of students in charter and district sectors of U.S. education: An analysis of nationwide trends* (p. 27). The Program on Education Policy and Governance Working Papers Series. Cambridge, MA: Harvard Kennedy School. Retrieved October 20, 2020, from [https://www.hks.harvard.edu/sites/default/files/Taubman/PEPG/research/PEPG20\\_04.pdf](https://www.hks.harvard.edu/sites/default/files/Taubman/PEPG/research/PEPG20_04.pdf)
- 6 Regarding rigorous empirical studies estimating the effects of charter schools using experimental and quasi-experimental designs, see:
 

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- 8 Epple, D., Romano, R. & Zimmer, R. (2016). Charter schools: A survey of research on their characteristics and effectiveness. In E. Hanushek, S. Machin, & L. Woessmann (Eds.), *Handbook of the economics of education* (pp. 139-208). Amsterdam: North Holland.
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