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NEPC Review:

BACK TO THE STAFFING SURGE (*EDCHOICE, MAY 2017*)

Reviewers:

Joydeep Roy, Visiting Columbia University
William J. Mathis, University of Colorado Boulder

July 2017

Summary of Review

A recent report from EdChoice documents two staffing trends in public schools. After a temporary pause during the Great Recession, school staffing in the U.S. resumed an upward trajectory, and hiring tilted toward non-teaching personnel as compared to teachers. The report concludes that staffing growth outpaces enrollment growth and that there has been no corresponding increase in student performance. The report then recommends increasing teacher pay, at the expense of non-teaching staff, and school choice. While the data on staffing trends are obtained from NCES publications, the report's discussion of inputs, outcomes, and policy approaches is poorly grounded, leading to unsupported conclusions and policy prescriptions. It does not examine why there has been a staffing surge or whether it reflects a valid use of personnel. It evaluates the effectiveness of school staffing changes using *concurrent* achievement and finance measures, and it fails to acknowledge that educational outcomes have steadily improved, even though any benefits of staffing increases will be lagged and only show up gradually over time. The report presents no logical relationship between staffing trends and the solutions proposed. As a result, the report is irrelevant and is devoid of any important policy implications.



Kevin Welner
NEPC Director

William Mathis
Managing Director

Don Weitzman
Academic Editor

Alex Molnar
Publishing Director

National Education Policy Center

School of Education, University of Colorado
Boulder, CO 80309-0249
Telephone: (802) 383-0058

Email: NEPC@colorado.edu
<http://nepc.colorado.edu>

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This review is one of a series made possible in part by funding from the Great Lakes Center for Education Research and Practice.

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GreatLakesCenter@greatlakescenter.org

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I. Introduction

A 2012 report, *The School Staffing Surge: Decades of Employment Growth in America's Public Schools*,¹ and a 2013 companion report, *The School Staffing Surge: Decades of Employment Growth in America's Public Schools, Part II*,² both authored by Benjamin Scafidi and published by The Friedman Foundation for Educational Choice (now EdChoice), analyzed the growth in public school personnel relative to the increase in student numbers since 1992. The reports stated that between fiscal years (FY) 1992 and 2009, the number of K-12 public school students nationwide grew 17% while the number of full-time school employees increased 39%. Among school personnel, the number of administrators and other non-teaching staff rose at a faster rate than that of teachers. The reports assert that this hiring surge was not accompanied by improvements in student outcomes and speculates on how much money could have been saved if staff-to-student ratios remained the same.

In May 2017, EdChoice published a third report, *Back To The Staffing Surge*, again authored by Benjamin Scafidi,³ added more recent data—through FY 2014 or 2015, as available. The basic arguments remain the same: that American public schools are indulging in a hiring surge, that this surge is targeted more toward non-teaching staff rather than teachers, and that it has had no real impact on student achievement. The report offers a state-by-state analysis of recent hiring of non-teachers and teachers, comparing, among other things, student-teacher ratios to ratios of students to all other staff without providing any theoretical underpinnings for such an exercise. It also estimates the amount of money that would be saved if recent expenditures on non-teaching staff were to be diverted to teacher salaries or school choice initiatives. Like its predecessors, the current report recommends expanded school choice, in the form of vouchers for private schools as well as educational savings accounts; yet the evidence indicates that private and charter schools enjoy higher staff-to-student ratios without showing demonstrably superior test results.

Recent research finds that while educational attainment is up, achievement gaps by income are on the rise – in many cases accompanied by a considerable rise in school segregation.⁴

Against this backdrop, serious attempts to understand K-12 education spending and its consequences should be lauded. A thought-provoking study that explored the causes and consequences of hiring growth in recent years, the hiring of more non-teachers as compared to teachers, and the stagnation of teacher salaries – particularly examining the variation across states and over time – could have made a significant contribution. Instead, after documenting the trends in teacher and non-teacher hiring, the current report simply asserts that the documented employment growth is problematic and uses this as a springboard to recommend favored policies. These reports also mistakenly argue that there has not been any measurable student progress in the U.S. over the last few decades, despite proliferating evidence to the contrary.⁵

II. Findings and Conclusions of the Report

Between FY 1992 and FY 2014, inflation-adjusted per-student spending increased by 27 percent, the report asserts, but real average salaries for public school teachers actually fell by 2 percent. The author terms this the “Great Teacher Salary Stagnation.” During this period there was a 36 percent increase in school personnel with only a 19 percent increase in student enrollment. Most of the increase in school staff was comprised of non-teachers. Public schools increased their teacher corps by 28 percent between FY 1992 and FY 2014 while the number of non-teachers increased by 45 percent.

The report says that if non-teaching staff had increased at the same rate as the number of students over this period there would have been almost \$35 billion in annual recurring savings, for a cumulative total of \$805 billion over the 12-year period. It then speculates on alternate educational uses for this money: every public school teacher could be given a permanent \$11,000 raise, or 4 million students might be given \$8,000 in education savings accounts to offset tuition payments at private schools, future college tuition, or other educational services.

The report argues that “the increases in public school employment since 1992 do not appear to have had any positive returns to students as measured by test scores and graduation rates.” (p. 2) It claims that student achievement, as measured by NAEP test scores for 17-year-old American public school students, remained flat during this costly staffing surge – pointing out that nationally, reading scores fell by four points between 1992 and 2008 (out of a maximum 500) while mathematics scores remained unchanged. Note, however, that once the change in NAEP assessment formats in 2004 is accounted for, the decline in reading scores for 17-year-olds between 1992 and 2012 is only one point while mathematics scores improved by one point over the same period.⁶ The author discounts the evidence that high school graduation rates have been rising over this period (1991 to 2009) by referring to claims that earlier periods of staffing surge were not accompanied by similar increases in graduation rates. In fact, the high school graduation rate in the U.S. reached an all-time high of 83 percent on-time graduation for the 2014-2015 school year, marking the fifth straight year it increased.⁷ The author concludes that staff increases have not been productive and that dramatically different policies need to be implemented.

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

This new report repeats the findings of its predecessors and presents an array of new comparative staffing ratios, contrasting the rates of hiring for teaching and non-teaching staff between states and highlighting how much money states could have been saved if they had diverted the money spent on non-teaching staff to teachers' salaries. No evidence, either positive or negative, is presented showing the impact of non-teaching staff on student achievement. The implicit rationale underlining the current report is that instructional expenditures are *always* more effective in raising student achievement, irrespective of time, place, and educational environment, and that the trend of higher growth in non-teaching personnel over the last two decades indicates bureaucratization and "non-productive" spending. The report also reiterates the claim made in the earlier reports that there has not been any measurable progress in student achievement during the last few decades. No acknowledgment is made of the diverse roles that non-teaching staff perform – from cooks and janitors to playground monitors to professional staff like guidance counselors and social workers (who often have similar educational qualifications and certification requirements to teachers) - many of which would not be expected to have an immediate effect on test scores.

IV. The Report's Use of Research Literature

The report's use of research literature is incomplete in several crucial areas. Important topics which should have been addressed, but were not, include the role of non-instructional staff, trends in academic achievement, educational spending, special education placements and staffing. It makes unsupported assumptions about the role and value of staff and incorrectly assumes that these personnel should have a direct and immediate effect on test scores.

The primary omissions:

Omission 1: The Role and Importance of Non-instructional Staff

Central to this report is the growth in support staff, which it basically dismisses as irrelevant. The non-teaching staff working in schools is comprised of a diverse group of workers who do not necessarily have a direct or immediate effect on test scores but whose presence is important.

As Susanna Loeb put it:⁸

To paint a picture of adults in schools: among academic staff, certainly teachers are central, but librarians (or library media specialists), English as a Second Language or bilingual teacher aides, special education instructional aides, and a variety of other instructional aides also work directly with students. Among administrative staff, schools have principals, but they also have vice or assistant principals, secretaries and other clerical support staff, instruc-

tional coordinators and supervisors such as curriculum specialists, and a variety of non-instructional aides. Schools also employ health services staff such as school or guidance counselors, nurses, social workers, psychologists, and speech therapists; and they employ basic services staff such as food service personnel, custodial, maintenance and security personnel, and special education and library media non-instructional aides. Many more adults work in the central office of school districts, especially in large school districts.

Statistics on staffing has its limitations, particularly in its ability to disaggregate non-teaching staff by their various duties and responsibilities. These non-teaching staff not only include other professional staff, many working in an educational capacity (principals and assistant principals, guidance counselors, school psychologists) but also others working in a non-educational capacity. Using the federal 2007-08 *Schools and Staffing Surveys*, Loeb finds that⁹

On average, schools employ approximately one full time academic teacher for each group of 16 students. ... While fewer non-teaching academic staff, such as teacher aides, work in schools, there has still been about one for approximately every 27 students. In comparison, one administrative staff works with every 83 students, one health staff works with every 161 students, and one basic services staff works every 73 students, on average. These numbers have been relatively constant over time, with the number of students per teacher dropping in the 1990s from approximately 17 to 16, then dropping to 15.3 in 2008 but returning to about 16 by 2011. The number of non-teaching academic staff showed an even larger drop in the 1990s but also remained more constant in the more recent years, though the federal data on non-teaching staff is not as up-to-date.

School staffing decisions have important implications for the success of students. Not all spending is equal, particularly in terms of influencing immediate student test scores, the sole metric that this paper uses. Non-teaching staff contribute in myriad ways to student success, but the report blurs these distinctions and calls for diverting money from teachers towards non-teachers irrespective of the circumstances. As Loeb concludes:¹⁰

It is a mistake to conclude that the best way to improve schools is necessarily to reduce the number and quality of non-teaching staff and focus only on teachers. The devil is in the details of who does what for whom, rather than in the broad categorization of staff as teachers or non-teachers.

Omission 2: Claimed Lack of Progress in Student Achievement

The author states, “Generally, test scores have been flat during the staffing surge, and graduation rates initially fell when staffing was increasing rapidly, increased slightly during later staffing increases, and – perhaps surprisingly – increased rapidly when staffing was declining.” (p. 18).

The report shows that 17-year-olds¹¹ have flat scores, but a careful look at the NAEP Long Term Trends (LTT) reveals nuances that have been overlooked. There was a large sustained rise in scores during the 1970s and 1980s, a period which saw significant catch-up by Black and Hispanic students in particular (see <https://nces.ed.gov/nationsreportcard/pubs/main2012/2013456.aspx>). This convergence happened just before test-based accountability and privatization became dominant in the 1990s. Note also that, using the new assessment format, national language arts scores went up from 283 to 287 between 2004 and 2012, although the increase in mathematics was marginal (from 305 to 306).

Further, between 1978 and 1999, public and private school students both gained seven points in mathematics, though the latter group made greater gains in reading. Conventional thought is that mathematics scores are more influenced by schools while reading scores are more influenced by external factors. The report also opines that we should ignore LTT test score results for ages nine and 13, as these are rendered ineffectual by apparent lack of improvement later at age 17. Note, however, that there were significant improvements in performance at these earlier ages, which are likely to positively influence later cohorts' educational attainment..

Trends in college entrance tests – in participation as well as test performance – provide insights on high school outcomes.¹² Overall, 1,744,000 students took the SAT or the ACT in 1980. By 2000 this number had gone up by 33 percent to 2,325,000. There was a further 35 percent increase between 2000 and 2010 – in each case, the increase in test-taking was significantly larger than the growth in population. While this increase in test-takers occurred, performance was stable or increasing.¹³ Participation in both SAT and ACT went up sharply for disadvantaged minority students, who were becoming increasingly ambitious in their college plans, and was not accompanied by declines in scores.

Omission 3: The Positive Effects of Educational Spending

The author's central claim is that we have not seen test score increases even though spending has increased dramatically. Two recent major national studies highlight the importance of school spending on both test scores and later life outcomes. Lafortune, Rothstein and Schanzenbach compare student test scores in 26 states that have reformed their school finance systems since 1990 with 23 states that have not.¹⁴ Taking advantage of individual student-level NAEP assessment data that contain information on test-takers' race and income, the authors find that states that increased aid to their lowest-income school districts saw greater academic improvement. Note that these gains were in the 1990s and 2000s, the focus of the current report.

These results come close on the heels of another study which examined the relationship between court-ordered school funding increases and longer-term adult outcomes.¹⁵ Jackson, Johnson and Persico found that for poor children, a 20 percent increase in per-pupil spending for each of the 12 grades leads to 0.9 more years of education, a 20 percentage-point reduction in adult poverty, and 25 percent receiving higher earnings. This study is particularly noteworthy because it shows the long time lag between the implementation of finance reform and the appearance of positive benefits. In another important study, Chetty *et al.* use

data from the Tennessee Project STAR - where students and their teachers were randomly assigned to classrooms from kindergarten to third grade – and find that students in small classes and students with a more experienced teacher in kindergarten were significantly more likely to exhibit positive outcomes such as attending college and higher earnings.¹⁶

Omission 4: Non-Instructional Spending in Charter Schools

Using a unique dataset recently made available by the U.S. Department of Education, Weber and Baker (forthcoming)¹⁷ compare spending across charter schools and traditional public schools. Charter schools spend less per pupil on instructional salaries compared with traditional public schools. Furthermore, for-profit charters spend less than nonprofits. This new evidence sits atop earlier literature which found that despite autonomy, charter schools often have higher administrative costs than traditional public schools – and EMO-operated charters have even greater administrative expense.¹⁸

Omission 5: Special Education and Other Required Services in Public Schools

While learning remains the most vital outcome, public schools provide a plethora of services beyond the classroom – providing both a larger array of services and serving more students as compared to private schools.¹⁹ These services run the gamut from remedial, bilingual, ESL and medical services to gifted and talented support. This has been a long-standing difference between private and public schools. Of particular note is the difference in serving students with disabilities and English-language learners (ELLs) or limited-English proficient (LEP) students. As an example, in 2011-12, 98 percent of public schools had at least one student with an Individual Education Plan because of special needs, while only 64 percent of private schools had a least one student with formally identified disabilities. The difference with respect to the incidence of English-language learners is stark. In 2011-12, 74 percent of all public schools had at least one ELL/LEP student, compared to only 16 percent of private schools.²⁰ Note also that these large differences existed in the past - in 1993-94, 89 percent of public schools offered services to students with disabilities compared to only 25 percent of private schools.²¹ The goal of ensuring that every child has access to the best opportunities in life, irrespective of their disability status, was recently affirmed by a unanimous verdict of the United States Supreme Court.²²

V. Review of the Report's Methods

The report relies on descriptive data from the U.S. Department of Education—in particular, various editions of the *Digest of Education Statistics*. These statistics are available for all states except South Carolina.

Interestingly, the *Digest* shows no sharp increase in the relative numbers of either admin-

istrative staff or support staff compared to instructional staff since 1970, despite employing the same data that the author does. In 1969-70, the shares of school district administrative staff, instructional staff and support staff were 1.9 percent, 67.1 percent and 30.9 percent; in Fall 2014 the respective shares were 2.4 percent, 67.2 percent and 30.4 percent. The main difference was an increase in the share of instructional aides and a corresponding decline in the share of teachers – note that both are categorized as instructional staff.²³ The half-point increase in district staff may be due to increasing state and federal requirements but does not appear to indicate an unbalanced staffing surge. The author does not explore causes.

As the report recommends privatization options, it is instructive to compare staffing ratios over time across traditional public schools, charter schools and private schools and to disaggregate not only by type of staffing but further disaggregate support staff by the nature of service they provide (Table 1). Staffing ratios – the number of students per staff – are in general much higher in private schools than in traditional public schools. In 2003-04, there were 14.6 students per teacher in traditional public schools, compared to 10.8 in private schools. Between 2003-04 and 2011-12 this gap widened. The same is true for principals, librarians, school counselors and support services professional staff. The only two cases where student-to-staff ratios went down in traditional public schools are vice principal/assistant principal/school head and instructional coordinator/supervisor/curriculum specialist, and in the latter case there was also a big decline in private schools.

If public schools have erred by hiring more non-instructional staff in recent years, private schools have made that error to a greater extent.

Table 1. Students per Staff in Traditional Public Schools, Charter Schools and Private Schools, 2003-2004, 2007-2008 and 2011-2012

	<i>Students per</i>									
	Teacher	Principal	Vice principal and assistant principal/school head	Instructional coordinator and supervisor, such as curriculum specialist	Library media specialists/librarians	School counselors, excluding psychologists and social workers	Student support services professional staff	Nurse	Psychologists	Speech therapist or pathologist
2003-2004										
All Public Schools	14.6	540	728	830	582	398	134			
Traditional Public Schools	14.6	546	731	839	579	397	134			
Charter Schools	14.9	289	531	478	817	482	119			
Private Schools	10.8	183	382	626	321	358	124			
2007-2008										
All Public Schools	14.2	536	649	662	594	386	134	608	791	530
Traditional Public Schools	14.2	546	650	671	590	386	135	608	794	533
Charter Schools	14.5	295	602	412	812	407	103	585	676	446
Private Schools	10.6	185	346	569	333	367	122	468	1304	852
2011-2012										
All Public Schools	14.6	551	653	708	630	409	140	608	805	531
Traditional Public Schools	14.6	559	655	715	621	408	141	602	802	528
Charter Schools	15.8	409	594	559	1042	452	135	825	907	614
Private Schools	9.6	174	355	506	318	338	122	453	1302	2345

Source: Bitterman, A., Gray, L., & Goldring, R. (2013). *Characteristics of Public and Private Elementary and Secondary Schools in the United States: Results From the 2011-12 Schools and Staffing Survey (NCES 2013-312)*. Washington, DC: U.S. Department of Education. Retrieved May 31, 2017, from <http://nces.ed.gov/pubsearch>

Keigher, A. (2009). *Characteristics of Public, Private, and Bureau of Indian Education Elementary and Secondary Schools in the United States: Results From the 2007-08 Schools and Staffing Survey (NCES 2009-321)*. Washington, DC: U.S. Department of Education.

Strizek, G.A., Pittsonberger, J.L., Riordan, K.E., Lyter, D.M., & Orlofsky, G.F. (2006). *Characteristics of Schools, Districts, Teachers, Principals, and School Libraries in the United States: 2003-04 Schools and Staffing Survey (NCES 2006-313 Revised)*. Washington, DC: U.S. Department of Education.

The report makes a methodological error when it evaluates the effectiveness of school staffing changes using *concurrent* achievement and finance measures. The impact of recent staffing trends will only be felt gradually over time - the short-term time frame employed in the report yields incomplete estimates at best and has the potential to give seriously misleading results.

VI. Review of the Validity of the Findings and Conclusions

The primary shortcoming of this report is its failure to examine why there has been a staffing surge and whether it reflects a valid use of personnel. The report also fails in the assumption that the value of all school staff is best measured by short-run test scores.

The conclusions rely on statistical trends in staffing over time which, upon examination, do not support the author's interpretations.

- While the recommendation to increase teacher pay may be welcomed by teachers, its relationship to improved education – when it is accompanied by cuts in non-teaching staff - is not demonstrated.
- The school privatization recommendations bear no relationship to the issue of staffing. Further, private and charter schools are more richly staffed than traditional public schools.
- Recent evidence on privatization also fails to show that privatization holds general promise for improving education (see Appendix A.)

VII. Usefulness of the Report for Guiding Policy and Practice

Over the last 60 years and more, significant progress has been made in improving student achievement. The current report highlights important recent trends in school staffing patterns in the nation's public schools. However, it inappropriately interprets these patterns as a symptom of inefficiency in resource allocation, without offering any detailed analysis of underlying causes and consequences, and it mistakenly calls for centralized top-down solutions. In particular, there is no convincing linkage made between the report's calls for more school choice and vouchers as a remedy for over-staffing or better education. Indeed, private schools have richer staff-to-student ratios, both for teaching and non-teaching staff.

Continuing examination of staffing complements is welcome. But neither the analysis nor the solutions presented in this report advance our understandings or provide viable solutions.

Appendix A

Recent Evidence on Vouchers and Charter Schools

The current report, like its previous versions, urges policymakers to divert money towards school choice, though the prescription has been enlarged to include broader educational choice (in the form of educational savings accounts) that can pay for college. The author mentions (endnote 22): “The empirical evidence, on balance, shows that the limited parental choice programs that exist today have led to better outcomes for students who choose schools and who remain in public schools”. However, this is an incomplete as well as faulty reading of the literature. Examples:

- In 2011, Indiana introduced vouchers for low-income students, paid for with public school dollars, to attend private, generally religious schools - Indiana’s state-wide voucher program is now the largest of its kind in the country. However, researchers studying the program have not found positive impacts. Though only preliminary results are available, researchers found that students in Indianapolis who left public schools to attend private Catholic schools experienced no benefit in reading but “moderate and statistically significant average annual losses in mathematics compared with the gains they experienced while attending traditional public schools.”²⁴
- In Louisiana, students transferring to a private voucher school from a public school dropped from the 50th percentile in math to the 26th percentile in the first year. Even in year 2, voucher users scored below their control group counterparts by 13 percentile points in math.²⁵
- In Ohio, a statewide study found that “students who use vouchers to attend private schools have fared worse academically” compared to those in public schools.²⁶
- A study of the federally funded voucher program, in Washington, D.C., also found academic declines among students who used a voucher to attend a private school.²⁷
- Epple concludes that, despite vouchers appearing to improve student outcomes in some settings, “the empirical research on small scale programs does not suggest that awarding students a voucher is a systematically reliable way to improve educational outcomes.”²⁸
- Carnoy (2017) comes to the same conclusion “extensive research on educational vouchers in the United States over the past 25 years shows that gains in student achievement are at best small.”²⁹
- In Milwaukee, more than 85 percent of African-American students in in the voucher program attend “intensely segregated” schools. In Ohio, a *Columbus Dispatch* investigation revealed that white students appear to get into private schools using taxpayer-funded vouchers at a higher rate than black students.³⁰
- In Arizona, Welner (2003), based on Wilson (2002) and other studies, concluded that the wealthiest students receive most of the money in the state’s tuition tax

credit program, leading to increased economic segregation.³¹

- Wolf *et al.* (2010) note that a main reason why more students in the Washington DC Scholarship Program did not use a voucher offered to them was a lack of participating schools with services for their learning or physical disability or other special needs.³²
- Since 2009, the Center for Research on Education Outcomes (CREDO) at Stanford University has been producing a series of reports on the relative performance of charter schools – as Maul (2015) shows, the overall thrust of these reports (as well as the literature on charter schools in general) is that there is “essentially zero” difference in overall performance between demographically-similar students in charter schools and in traditional public schools.³³

Notes and Resources

- 1 Scafidi, B. (2012, October). *The School Staffing Surge: Decades of Employment Growth in America's Public Schools*. The Friedman Foundation for Educational Choice. Retrieved May 25, 2017, from <http://www.edchoice.org/wp-content/uploads/2015/07/11-2012-Staffing-Surge-WEB.pdf>
 - 2 Scafidi, B. (2013, February). *The School Staffing Surge: Decades of Employment Growth in America's Public Schools*. The Friedman Foundation for Educational Choice. Retrieved May 25, 2017, from <http://www.edchoice.org/wp-content/uploads/2015/07/2013-2-Staffing-Surge-Part-II.pdf>
 - 3 Scafidi, B. (2017). *Back to the Staffing Surge*. Ed Choice. Retrieved May 13, 2017, from <https://www.edchoice.org/wp-content/uploads/2017/06/Back-to-the-Staffing-Surge-by-Ben-Scafidi.pdf>
 - 4 Reardon, S. (2011). The Widening Academic Achievement Gap Between the Rich and the Poor: New Evidence and Possible Explanations. In G.J. Duncan and R.J. Murnane (Eds.), *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances* (pp. 91-116). New York, NY: The Russell Sage Foundation.
 - 5 Carnoy, M., & Garcia, E. (2017, January 12). *Five key trends in U.S. student performance: Progress by blacks and Hispanics, the takeoff of Asians, the stall of non-English speakers, the persistence of socioeconomic gaps, and the damaging effect of highly segregated schools*. Washington DC: Economic Policy Institute. Retrieved June 5, 2017, from <http://www.epi.org/publication/five-key-trends-in-u-s-student-performance-progress-by-blacks-and-hispanics-the-takeoff-of-asians-the-stall-of-non-english-speakers-the-persistence-of-socioeconomic-gaps-and-the-damaging-effect/>
- See also Bailey and Dynarski who, while documenting the significant increases in postsecondary educational attainment in recent decades, worry about the growing gap between children from high- and low-income families.
- Bailey, M.J., & Dynarski, S.M. (2011). Inequality in Postsecondary Education. In G.J. Duncan and R.J. Murnane (Eds.), *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. New York, NY: The Russell Sage Foundation.
- 6 Digest of Education Statistics 2013, Tables 221.85 and 222.85. Retrieved June 20, 2017, from https://nces.ed.gov/programs/coe/pdf/coe_cnj.pdf
 - 7 Kamenetz, A. (2016, October 17). *The High School Graduation Rate Reaches A Record High - Again*. National Public Radio. Retrieved May 31, 2017, from <http://www.npr.org/sections/ed/2016/10/17/498246451/the-high-school-graduation-reaches-a-record-high-again>
 - 8 Loeb, S. (2016, January 14.). *Half the people working in schools aren't classroom teachers—so what?* Brookings Institution. Retrieved May 31, 2017, from <https://www.brookings.edu/research/half-the-people-working-in-schools-arent-classroom-teachers-so-what/>
 - 9 Loeb, S. (2016, January 14.). *Half the people working in schools aren't classroom teachers—so what?* Brookings Institution. Retrieved May 31, 2017, from <https://www.brookings.edu/research/half-the-people-working-in-schools-arent-classroom-teachers-so-what/>
 - 10 Loeb, S. (2016, January 14.). *Half the people working in schools aren't classroom teachers—so what?* Brookings Institution. Retrieved May 31, 2017, from <https://www.brookings.edu/research/half-the-people-working-in-schools-arent-classroom-teachers-so-what/>

- 11 For ease of comparison, this section focuses on the NAEP LTT scores for 17-year-olds, the same metric used in the report. For trends in achievement of 9-year-olds and 13-year-olds in NAEP LTT, see reviews of earlier Staffing Surge reports.
- Roy, J. (2012, December 4). *Review of "The School Staffing Surge."* Boulder, CO: National Education Policy Center. Retrieved May 25, 2017, from <http://nepc.colorado.edu/thinktank/review-school-staffing>
- 12 SAT numbers are obtained from annual issues of the College-Bound Seniors: Total Group Profile (National) Reports published by the College Board. ACT numbers are from Annual national reports issued by the ACT, <http://www.act.org/newsroom/data/>
- 13 One exception is SAT critical reading, where scores have gone down since 2003-04. But SAT participation surged by 32 percent between 2000 and 2013, and the decline in math scores is modest.
- 14 Lafortune, J., Rothstein, J., & Schanzenbach, D.W. (2016, February). *School Finance Reform and the Distribution of Student Achievement*. NBER Working Paper No. 22011.
- 15 Jackson, C.K., Johnson, R.C., & Persico, C. (2016). The Effects of School Spending on Educational and Economic Outcomes: Evidence from School Finance Reforms. *The Quarterly Journal of Economics* (2016), 131(1), 157-218.
- 16 Chetty, R., Friedman, J. N., Hilger, N., Saez, E., Schanzenbach, D. W., & Yagan, D. (2011). How Does Your Kindergarten Classroom Affect Your Earnings? Evidence from Project Star. *The Quarterly Journal of Economics*, 126(4): 1593-1660.
- 17 Weber, M., & Baker, B. (forthcoming). Do For-Profit Managers Spend Less on Schools and Instruction? A National Analysis of Charter School Staffing Expenditures. Forthcoming, *Educational Policy*.
- 18 Arsen, D.D., & Ni, Y. (2012). Is administration leaner in charter schools? Resource allocation in charter and traditional public schools. *Education Policy Analysis Archives*, 20, Article 31.
- Izraeli, O., & Murphy, K. (2012). An Analysis of Michigan charter schools: Enrollment, revenues, and expenditures. *Journal of Education Finance*, 37, 234-266.
- 19 In some cases, such services are legally required of public schools - but not private schools - by federal and state laws. It is also true that private schools generally serve a much less disadvantaged student body compared to public schools, so that the academic and health needs of students in private schools may be considerably lower. (That said, availability of adequate resources to fund extra services may be more of an issue with public schools.)
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DOCUMENT REVIEWED:

Back to the Staffing Surge: The Great Teacher Salary Stagnation and the Decades-Long Employment Growth in American Public Schools

AUTHOR:

Benjamin Scafidi

PUBLISHER/THINK TANK:

EdChoice

DOCUMENT RELEASE DATE:

May 8, 2017

REVIEW DATE:

July 5, 2017

REVIEWERS:

Joydeep Roy, visiting Columbia University;
William J. Mathis, University of Colorado
Boulder

E-MAIL ADDRESSES:

jr3137@tc.columbia.edu; wmathis@sover.net

PHONE NUMBERS:

(202) 821-2572; (802) 383-0058

SUGGESTED CITATION:

Roy, J. & Mathis, W.J. (2017). *Review of "Back to the Staffing Surge."* Boulder, CO: National Education Policy Center. Retrieved [date] from <http://nepc.colorado.edu/thinktank/review-staffing>