Newark Enrolls:
A Principled Approach to Public School Choice
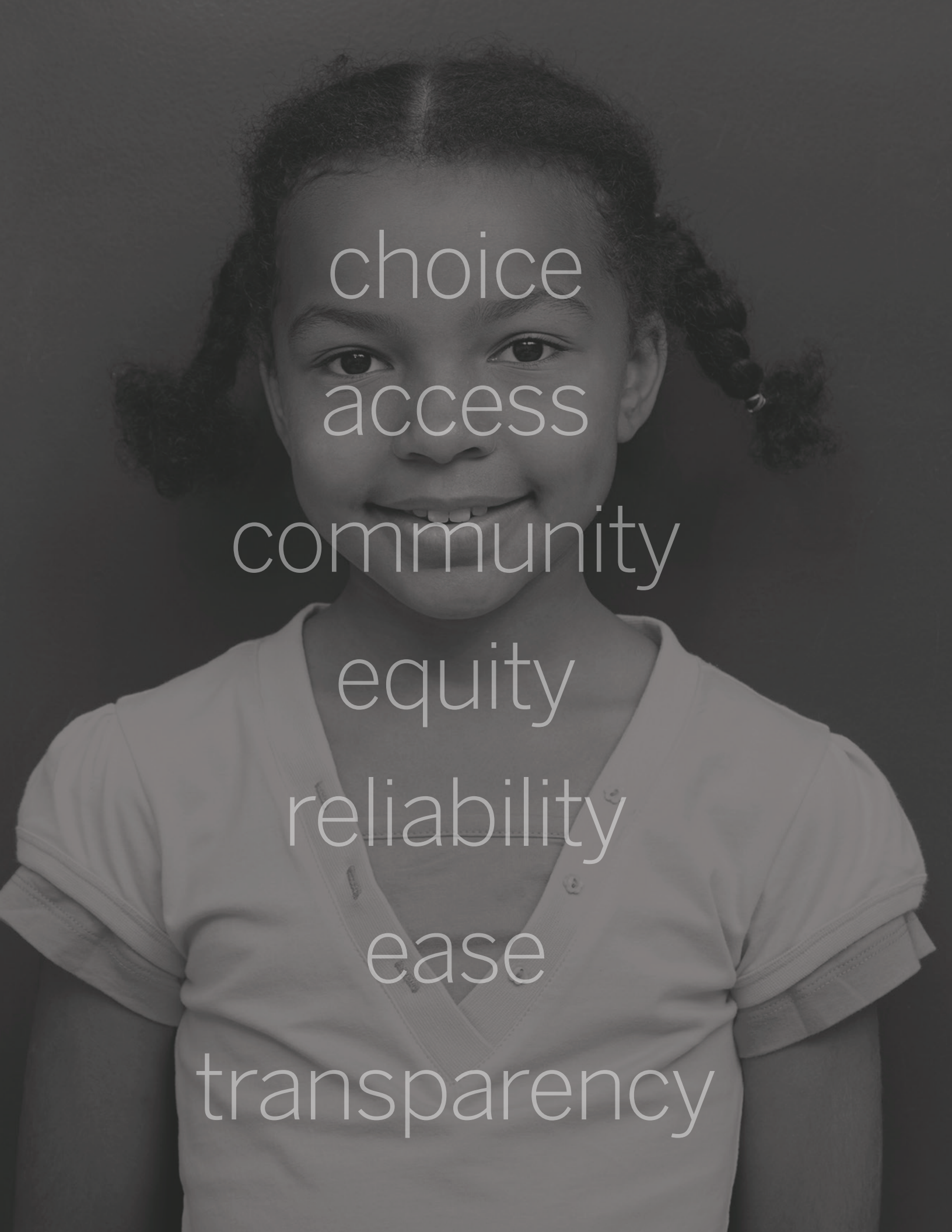
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choice

access

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equity

reliability

ease

transparency

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Executive Summary

School choice, a long-standing facet of the American educational landscape, enables families to select the educational setting that best meets their children's needs. Since the 1970s, school choice options have increased, especially within public education, with the creation of new types of schools. If not carefully managed, however, school choice can reinforce existing inequities. Private schools, for instance, are largely limited to families who can afford their tuition. Public schools in well-off neighborhoods are limited to families who can afford to live nearby. The entry process into magnet and charter schools privileges families with time to research schools, complete and submit applications, and arrange interviews or auditions. In enrollment systems that lack a transparent process, personal connections can be used to gain entry into highly sought-after schools.

Universal enrollment is one mechanism that cities like Camden, Denver, Newark, and New Orleans have adopted to address inequity in public school choice. Universal enrollment systems feature a single application and timeline that families follow to apply to traditional, magnet, and charter schools. Families have access to centrally published information about schools, and placement is governed by clearly defined rules that are applied using a computer algorithm.

Newark Public Schools (NPS), in partnership with most of the city's charter schools, developed a universal enrollment system during the 2013-14 school year to enroll students in schools for the 2014-15 school year. The system, known as Newark Enrolls, has been guided by seven principles: choice, access, community, equity, reliability, ease, and transparency. Since it was launched, approximately 9,000 students per year – including over 75% of students enrolling in Newark's traditional transition grades of kindergarten and ninth grade – have applied through Newark Enrolls.

With four enrollment cycles completed and over 36,000 students placed, the Newark community is now in a position to assess the impact of Newark Enrolls. In the following report, the Center for

Public Research and Leadership at Columbia University and MarGrady Research use quantitative and qualitative data to examine enrollment patterns and practices under Newark Enrolls.

A summary of the report's key findings follows:

Most students who apply through Newark Enrolls are matched to one of their top choices.

Newark Enrolls allows families to rank up to eight schools. In the 2016-17 school year, 53% of all applicants received their first choice school and 73% were matched with one of their top three schools. These numbers were highest in kindergarten, with 85% of applicants receiving their first choice school and 95% of applicants receiving one of their top three choices. Match rates were lower in ninth grade, where most applicants ranked one of Newark's highly competitive magnet high schools as their first choice.

Students who want to attend school in their neighborhood are still able to do so. However, as Newark Enrolls has made it easier to apply to schools in other neighborhoods, there has been a modest increase in the average distance between a student's home and school.

In the 2016-17 school year, 98% percent of kindergarten students who ranked a school in their neighborhood first were matched to a school in their neighborhood, and most of the remaining 2% were matched to their second choice outside of their neighborhood. At the same time, a substantial share of students ranked a school outside their neighborhood as their first choice. Since Newark Enrolls launched, students now travel longer to get to school. On average, kindergartners now live approximately 0.20 miles farther away from school (a 48%

increase since 2012-13), and ninth graders now live approximately 0.21 miles farther away from school (a 16% increase since 2012-13).

Special education students and those who are free lunch eligible have greater access to high-demand schools – like Newark's magnet and charter schools – than before Newark Enrolls.

Prior to Newark Enrolls, special education students had limited access to many of Newark's most popular schools. To address this inequity, the Newark Enrolls algorithm includes a priority for special education students applying to schools where they are underrepresented. This priority has been remarkably successful at improving special education students' access to high-demand schools and creating a more equitable distribution of special education students across schools. A similar priority for free lunch students has led to modest gains in access and equity, though the distribution of free lunch students across schools was fairly equitable prior to Newark Enrolls.

NPS schools now receive more reliable information about student enrollment at the beginning of the year, and the number of "no shows" has declined.

In the absence of a centralized enrollment process, some families would hold offers at multiple schools into the beginning of the school year. As a result, schools did not have accurate information about who would arrive on the first day. Since the launch of Newark Enrolls, information on student enrollment has become more reliable. The share of students who appear on a roster yet never show up has declined by 39%. During the school year, more students remain enrolled in their school and there are fewer transfers between NPS schools.

Since it launched, Newark Enrolls has made the application process easier and more transparent in a number of ways.

Newark Enrolls has eased the process of exercising school choice by reducing the number of applications families need to complete. In the 2016-17 school year, over 7,000 families – representing 76% of the applicant pool – applied to more than one school. These families have to fill out fewer applications because Newark Enrolls exists. Newark Enrolls also made the process more transparent by introducing a clearly defined set of rules for applying to and being matched with schools representing 96% of the public-school seats in Newark. It has also provided families with more consistent and widely available information about schools, including data on school performance and seat availability.

Newark, like a growing number of cities, adopted universal enrollment as a mechanism to lessen the impact that existing inequities have on school choice. Overall, the report's findings suggest Newark Enrolls has achieved this goal. The universal enrollment system follows a clearly defined set of principles, which have led to the implementation of transparent citywide policies and practices that have increased choice while respecting community. Families of high-needs students have greater access to high-demand schools, and schools have more reliable data about their incoming student population. However, these achievements were not immediate. Many lessons were learned along the way, and there remains room for improvement.

As NPS transitions to complete local control, the following report presents information about the impact of Newark Enrolls on school choice and enrollment trends in most of the city's public schools. In doing so, the report highlights strengths in the implementation of Newark Enrolls and opportunities for continued improvement.

About the Authors

The Center for Public Research and Leadership at Columbia University

The Center for Public Research and Leadership (CPRL) is a partnership of university-based professional schools that works to revitalize public education while reinventing professional education.

CPRL provides talented education, law, management, and policy students with rigorous coursework and skills training and engages them in research and consulting projects to ready them for challenging careers enhancing the education sector's capacity to improve the outcomes and life chances of all children, particularly those of color, from low-income households, or otherwise traditionally underserved.

CPRL's professional services are highly rated by the organizations it serves and run the gamut from evaluative research to strategic initiatives to enhance organizational learning to content areas such as personalized and socio-emotional learning, teacher preparation and retention, early childhood education, and school integration.

To date, CPRL has completed more than 100 research and consulting projects; formed partnerships with two dozen professional schools; and prepared more than 300 students, with some 70% of its graduates serving public education and allied organizations.

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Kimberly Austin, PhD, is an engagement manager at CPRL and education researcher. Through her work at CPRL, Austin has managed projects related to organizational change in schools, charter networks, and districts, spanning a number of content areas. Before joining CPRL, she was a member of the founding faculty and researcher at Relay Graduate School of Education in New York City where she taught general pedagogy coursework and contributed to the independent school of education's institutional research agenda. Austin also worked at the UChicago Consortium on School Research and the Urban Education Institute at the University of Chicago, conducting research on program design, implementation, and impact, among other topics. Austin started her career as an early elementary teacher, teaching in urban and suburban classrooms. She earned a BS in journalism from Northwestern University and a MA and PhD in sociology with a focus on organizational change in urban education from the University of Chicago.

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MarGrady Research

MarGrady Research helps education leaders make better decisions to improve the lives of students. MarGrady Research does this through rigorous analysis of data, clear and insightful presentation of results, and the development of lasting partnerships with school districts, foundations, and other education organizations.

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Introduction

In the United States, families have long exercised choice regarding their children's education. Choice enables families to select schools that best meet their children's learning and developmental needs, which can be especially beneficial for students who qualify for special education and free lunch, along with other high-needs student populations.[1] For most of the country's history, however, school choice has been linked to families' ability to pay private school tuition[2] or to move to neighborhoods with more desirable public schools.[3] Financial inequality has produced inequity in families' ability to exercise choice and contributed to increased school segregation by income. [4][5]

Over the last 40 years, states and districts have increased choice among public schools through the creation of magnet, charter, and other specialized schools and through district-led open enrollment processes, among other approaches. These efforts, however, have at times created new inequities.

Families with greater access to information about schools and enrollment deadlines and those with more time and capacity to complete and submit applications are in a better position to exercise choice more effectively. Families also use whatever personal connections they have to help their children secure a seat in high-demand schools,[6] which benefits some families more than others.

And families can maximize the likelihood of landing a spot for their children in preferred schools by juggling multiple offers and waitlists, leaving schools with unreliable enrollment information and favoring families with greater knowledge of the procedures and timelines different schools use.

To address these equity issues, a number of school districts, including Camden, Denver, Newark, and New Orleans, have adopted universal enrollment, also known as common enrollment, as a centralized admissions process defined by a common set of policies, procedures, and practices governing admission to traditional, magnet, and charter schools.[7] Families participate in the universal enrollment process by submitting a single application with a ranked list of schools in which the family is prepared to have a child enroll. After the application deadline closes, a computer program matches students to schools using an algorithm designed to place students in their highest choice school that has available space.

Newark adopted universal enrollment – known as Newark Enrolls – during the 2013-14 school year to enroll students in schools in the 2014-15 school year.

Through Newark Enrolls, families use a single application to apply to any of the city's traditional public and magnet schools and most of the city's charter schools.

[1]   In their analysis of special education in the context of school choice, Julia Cullen and Stephen Rivkin (2003) point out that the potential of school choice to benefit high-needs students depends on the effective implementation of equity policies. Source: Cullen, J. B., & Rivkin, S. G. (2003). The role of special education in school choice. In The Economics of School Choice (pp. 67-106). University of Chicago Press.

[2]   Murnane, R.J., & Reardon, S.F. (2017). Long-term trends in private school enrollments by family income (CEPA Working Paper No.17-07). Stanford Center for Education Policy Analysis. Retrieved here: http://cepa.stanford.edu/wp17-07

[3]   Lareau, A. (2014). Schools, housing, and the reproduction of inequality. In A. Lareau and K. Goyette (Eds.) Choosing homes, choosing schools. New York: Russel Sage Foundation.

[4]   Murnane, R.J., & Reardon, S.F. (2017). Long-term trends in private school enrollments by family income (CEPA Working Paper No.17-07). Stanford Center for Education Policy Analysis. Retrieved here: http://cepa.stanford.edu/wp17-07

[5]   Moe, T. (2008). Beyond the free market: The structure of school choice. BYU Law Review, (2): 557-592.

[6]   In one study on Denver's charter admission practices, it was found that 30% of students received a placement in charter schools through personal connections. Source: Gross, B. & Campbell, C. (2017). A guide to unifying enrollment: The what, why, and how for those considering it. Center on Reinventing Public Education. Retrieved here: https://www.crpe.org/sites/default/files/crpe-guide-unifying-enrollment.pdf Relatedly, in New Orleans one-third of principals admitted that prior to the adoption of its universal enrollment process, they used enrollment practices that kept out certain categories of students. Source: Harris, D. N., Valant, J., & Gross, B. (2015). The New Orleans OneApp. Education Next, 15(4),17-22.

[7]   Gross, B., DeArmond, M., & Denice, P. (2015). Common enrollment, parents, and school choice: Early evidence from Denver and New Orleans. Center on Reinventing Public Education. Retrieved here: https://www.crpe.org/sites/default/files/cpe-report-common-enrollment-denver-no-la.pdf

While administered by Newark Public Schools (NPS), Newark Enrolls exists as a partnership between NPS and the city's charter sector. Since its launch, NPS and its partners have agreed to design and implement Newark Enrolls in accordance with seven principles: choice, access, community, equity, reliability, ease, and transparency.[8]

In fall 2017, the Center for Public Research and Leadership (CPRL) at Columbia University and MarGrady Research agreed to provide an objective assessment of the impact Newark Enrolls has had on enrollment patterns in the city and of the extent to which it has lived up to its seven principles.[9]

In making that assessment, this report considers five questions:

- Is there more choice and access to public schools in Newark today than prior to Newark Enrolls?

- To what extent does Newark Enrolls enable students who want to attend a school in their community to do so?

- Since the onset of Newark Enrolls has there been a more equitable distribution of high-needs students across schools?

- Has Newark Enrolls improved the reliability and stability of student rosters?

- Has Newark Enrolls introduced easier and more transparent processes for school enrollment?

To address these and allied questions, this report draws on research on school choice options, interviews with NPS staff and representatives from the charter school sector, and analysis of data and documentation from both NPS and the New Jersey Department of Education (NJDOE). The report opens with a discussion of the conditions leading to and motivations for Newark Enrolls, along with a description of efforts to increase the program's fidelity to its guiding principles between 2013 and 2017. Next, the report assesses the overall impact of Newark Enrolls on the city's enrollment patterns.

On balance, this report concludes that Newark Enrolls has reshaped enrollment patterns and processes in Newark in ways that are consistent with its guiding principles.

Most students who apply through Newark Enrolls are matched to one of their top choices, and this percentage has increased since the program was launched. Special education students and free lunch eligible students now have greater access to high-demand schools – like Newark's magnet schools – than before Newark Enrolls, and there is a more even distribution of these students across the city's schools. While students can more easily apply to schools outside their neighborhood, and the average distance between home and school has increased, students who want to remain in their community can do so.

NPS schools receive more reliable information about student enrollment at the beginning of the year as a result of Newark Enrolls, and the number of "no shows" has declined dramatically. In a number of ways, Newark Enrolls has made the application process easier and more transparent. This report closes with a discussion of ways Newark's educational community can improve its pursuit of the principles behind Newark Enrolls.

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[8] Newark Public Schools. (2013). Memorandum of understanding.

[9] This study was funded by the Community Foundation of New Jersey.

Enrollment Prior to Newark Enrolls

Universal enrollment was a key component of "a community-wide agenda" that NPS adopted in 2013 "to ensure all students are in excellent schools and thriving communities," among other outcomes.[10] Newark Enrolls served this goal by unifying what had become a fragmented and opaque enrollment process. NPS and its partners also intended Newark Enrolls to address specific inequities and challenges that surfaced as public school choice options increased in the city. The remainder of this section discusses enrollment procedures and problems that existed prior to Newark Enrolls and describes how the principles of Newark Enrolls aimed to address these concerns.

Newark's Motivations for Universal Enrollment

For most of the district's history, a family's address determined their child's school placement, with NPS assigning students to schools based on residential zones. The opening of magnet and charter schools in the 1990s and 2000s ushered in a new era in which Newark families had increased opportunities to exercise choice within the public school system without relocating to a new neighborhood. However, increased options sometimes led to chaotic enrollment processes as more schools adopted a "first come, first served" policy. As one NPS staff member described the situation:

"Schools enrolled their own students. That meant for high demand [schools] without enough capacity to meet that demand, you had people standing outside on sidewalks [in the] early morning sometimes, like concert-goers or [people waiting] for the new iPhone, standing in line in the dark to get a seat at those schools." [11]

As the staff member observed, enrollment procedures prior to Newark Enrolls placed a strain both on schools trying to manage an onslaught of applications and on families forced to stand in line at one or more schools in hopes of obtaining a seat for their children. Worse, allocating open seats purely on a first-come, first-served basis placed families with fewer resources and inflexible work schedules at a disadvantage to others in the search for good public schools for their children.

In the years leading up to Newark Enrolls, the rise of charter schools had an important effect on the educational landscape in Newark. By the 2012-13 school year, one year prior to the announcement of Newark Enrolls, local charter schools' proportion of public school seats had risen to 21%.[12] Entry into charters was largely by lotteries conducted individually by each school, requiring interested families to submit multiple applications and remain active on multiple waitlists in order to get the benefit of the choices available. As one charter school representative said:

10   Newark Public Schools. (2013). Frequently asked questions: One Newark and long-term ward plans. Retrieved here: http://content.nps.k12.nj.us/13A/wp-content/uploads/sites/69/2014/09/OneNewarkLongTermWardPlanFAQ.pdf

11   For a description of this experience see: Lee, E. (2011, April 27). Newark parents wait in line for hours to land children coveted place in Ann Street school. The Star Ledger. Retrieved here: http://www.nj.com/news/index.ssf/2011/04/newark_parents_wait_in_line_fo.html

12   Margolis, J. (2017). Moving up: Progress in Newark's schools from 2010 to 2017. MarGrady Research. Retrieved here: http://margrady.com/wp-content/uploads/2017/10/Moving-Up-Progress-in-Newarks-Schools.pdf

"The whole gaming of the lottery system was definitely happening with [charter] waitlists. Families would be on multiple waitlists. Parents who understood the system would drive across city and fill out all of these applications."

Because the availability of seats, enrollment processes, and the way admissions decisions were made were not transparent prior to Newark Enrolls, families could sometimes draw on personal networks and connections to improve their children's access to seats in high-demand schools. An NPS staff member described this "backdoor enrollment" as follows: [13]

"[The old process] was heavily influenced by people of influence in terms of getting kids into particular schools. If you were first in line you got in, right? If you were last in line, you wouldn't get in? But, if you were a friend of a person of influence, you didn't have to get in the line at all. That was kind of the scenario."

Unequal access to information and enrollment practices like backdoor entry likely contributed to the unequal distribution of student populations between schools. A report published shortly before the launch of Newark Enrolls found that nearly all of the city's special education and free lunch students, as well as high proportions of other high-needs students, attended low-performing district and charter schools. [14] The same report found that less than 5% of these students attended the city's top schools.

A combination of four conditions – the increase in school choice options, families' disparate access to resources and connections that often determined which preferences were met, the challenges families and schools experienced in a chaotic first-come, first-served enrollment process, and the inequitable distribution of student populations – prompted the city's first steps toward a more centralized process.

In school year 2011-12, NPS developed a centralized application for its six magnet high schools in advance of the 2012-13 school year. The following year, all of the district's traditional neighborhood high schools were added to this process. Finally, in the 2013-14 school year, NPS partnered with much of the city's charter sector to launch Newark Enrolls, allowing families with children in all grades to apply to nearly any school in the city – traditional, magnet, or charter.

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13   See footnote 6.

14   Calefati, J. (2012, Dec. 12). Nearly all of Newark's most disadvantaged students attend failing schools. The Star-Ledger. Retrieved here: http://www.nj.com/news/index.ssf/2012/12/highest_need_newark_students_c.html

Overview of Newark Enrolls

Newark Enrolls is the result of a partnership between NPS (which operates Newark's traditional and magnet schools) and operators of the charter schools that have chosen to collaborate in the design and implementation of the universal enrollment process. In an effort to alleviate the inequitable and chaotic conditions that prevailed in Newark's school enrollment process after the initial expansion of school choice, the Newark Enrolls partners committed to seven guiding principles: choice, access, community, equity, reliability, ease, and transparency. Each year, NPS and its partners renew their commitment to these principles and agree to the actions they will take to pursue the principles more effectively. This section describes the Newark Enrolls process and summarizes how this process is designed to advance Newark Enrolls' guiding principles.

The Enrollment Process

As part of Newark Enrolls, families may rank up to eight of the city's traditional, magnet, and participating charter schools in order of preference.[15][16] As is shown in Figure 1, schools representing 96% of the city's enrollment participate in Newark Enrolls. Families complete a single application to apply to any participating school, although families applying to "screened" magnet schools may have to take additional steps, including submitting test scores or attending an interview. Families interested in applying to non-participating charter schools must independently navigate the enrollment process of each such school.

[15] A school's local educational agency (LEA) decides whether to participate in Newark Enrolls and which schools are accessible through the process. For regulatory purposes, the U.S. Department of Education characterizes public school districts, individual charter schools, and charter school networks as "LEAs."

[16] Applicants list specific NPS schools and the LEAs that operate an individual charter school or a network of charter schools. In other words, if a charter school is affiliated with a network and that network is the LEA, applicants select the entire network – not particular schools within that network.

Figure 1 – Schools Participating in Newark Enrolls by Application Year

	Total Schools				Schools Participating in Newark Enrolls				Participation Rate			
	13/14	14/15	15/16	16/17	13/14	14/15	15/16	16/17	13/14	14/15	15/16	16/17
Charter School	21	20	20	19	15	14	14	14	71%	70%	70%	74%
Magnet School	6	6	6	6	6	6	6	6	100%	100%	100%	100%
Traditional School	56	50	50	50	56	50	50	50	100%	100%	100%	100%
Special Education School	3	3	3	3	0	0	3	3	0%	0%	100%	100%
Transfer High School	4	3	3	3	0	0	0	0	0%	0%	0%	0%
Total	**90**	**82**	**82**	**81**	**77**	**70**	**73**	**73**	**86%**	**85%**	**89%**	**90%**

	Total K-12 Enrollment				K-12 Enrollment in Schools Participating in newark Enrolls				Participation Rate			
	13/14	14/15	15/16	16/17	13/14	14/15	15/16	16/17	13/14	14/15	15/16	16/17
Charter School	11,505	13,697	15,406	16,049	9,121	11,458	13,118	14,375	79%	84%	85%	90%
Magnet School	3,287	3,371	3,449	3,447	3,287	3,371	3,449	3,447	100%	100%	100%	100%
Traditional School	29,843	27,181	30,013	29,724	29,843	27,181	30,013	29,724	100%	100%	100%	100%
Special Education School	283	354	364	355	0	0	364	355	0%	0%	100%	100%
Transfer High School	398	135	410	203	0	0	0	0	0%	0%	0%	0%
Total	**45,316**	**44,738**	**49,642**	**49,778**	**42,251**	**42,010**	**46,944**	**47,901**	**93%**	**94%**	**95%**	**96%**

Source: NJDOE, Newark Enrolls. Note: excludes schools that do not serve any K-12 students (like PK-only schools).

Newark Enrolls is more than a unified application, however. It also includes steps to assure that all families know about their school choice options and have the information they need to make decisions about their children's education.

To support families' participation in Newark Enrolls, NPS and its partners have developed a multi-part strategy. First, NPS conducts an awareness campaign before and during each enrollment cycle so that families know they have school choice options. Second, NPS staff, working in collaboration with other educators, provide a set of resources, including a guidebook and a school fair, to help families understand and assess their school choice options. Third, NPS provides personal support during the application process through its Family Support Center. Finally, after the close of an enrollment period, the Family Support Center assists families that are newly entering the system or are unhappy with the schools to which they have been matched.

Families choosing to participate in Newark Enrolls are required to submit an application if they will be attending school for the first time or if they are in the terminal grade of their school – typically, the eighth grade, given the K-8, 9-12 structure of Newark's school system. Although students not in a terminal grade may also choose to submit an application in hopes of moving to a new school, most choose to remain in their current school.

Since Newark Enrolls started, approximately 9,000 students per year – representing 19% of Newark's enrollment – have participated in the process. For the reasons just stated, participation rates are highest for students entering kindergarten (80%) and ninth grade (76%). In other grades, under 10% of Newark students choose to submit an application each year.

Figure 2 – Newark Enrolls Applicants by Grade by Year

Grade	Newark Enrollment				Newark Enrolls Applicants				Applicants/Enrollment			
	13/14	14/15	15/16	16/17	13/14	14/15	15/16	16/17	13/14	14/15	15/16	16/17
K	3,349	3,539	3,606	3,599	2,537	2,451	2,810	2,880	75.8%	69.3%	77.9%	80.0%
9	3,449	3,618	3,616	3,733	2,889	2,801	2,849	2,826	83.8%	77.4%	78.8%	75.7%
Other	40,617	40,468	42,355	43,301	3,404	3,823	3,862	3,799	8.4%	9.4%	9.1%	8.8%
Total	47,415	47,625	49,577	50,633	8,830	9,075	9,521	9,505	18.6%	19.1%	19.2%	18.8%

Source: NJDOE, Newark Enrolls. Note: Newark Enrollment shows the enrollment in Newark in the prior grade the prior year. For kindergarten, this number represents the number of Pre-K four year olds at publicly funded programs (run by NPS or community partners). Newark Enrolls Applicants are those students who submitted an application for a grade between K and 12 and ranked at least one school to which they were eligible to attend. Results exclude students who picked their current school as their first choice. Results exclude students in 2013-14 who participated in the process because their school was closing or being consolidated with another school. Results exclude applicants who were not Newark residents.

While each applicant is allowed to rank up to eight schools, most rank fewer. As is shown in Figure 3, in 2016-17, only 8% of applicants selected eight schools, while more than 60% of applicants ranked three or fewer choices. Students on average ranked 3.4 schools and in most grades applications averaged about three choices per student. The exception was ninth grade, where students ranked an average of 4.5 schools per application, and only 7% of students listed a single school.

borhood. Magnet high schools also give priority to those students they rank higher based on grades, attendance, test scores, and other factors.

In keeping with Newark Enrolls' access and equity principles, the algorithm also applies a priority for high-needs students. Each year, prior to running the match process, NPS reviews the applicant pool and calculates the proportion of each school's entering class of students who would require special

Figure 3 – Number of Choices Made, School Year 2016-17

Grade	1	2	3	4	5	6	7	8	Avg	N
K	29%	19%	21%	11%	6%	3%	2%	8%	3.1	2,880
9	7%	9%	20%	16%	12%	12%	12%	10%	4.5	2,826
Other	34%	22%	18%	10%	4%	3%	4%	6%	2.8	3,799
Total	**24%**	**18%**	**20%**	**12%**	**7%**	**6%**	**6%**	**8%**	**3.4**	**9,505**

Source: Newark Enrolls.

Once the application period closes, students whose families submitted an application are matched with a school. Applicants are matched with their highest choice school that has seats available, after taking into account a student's priority level at each school and – where necessary to break ties – a random number assigned to each student. Many schools give priority to students applying to a school that a sibling attends, and most K-8 schools give priority to students applying to schools in their own neigh-

education services or be eligible for free lunch, if these two groups were not prioritized. For schools that would have a lower proportion of students requiring special education services or qualifying for free than the citywide average, a set of seats are identified for which special education or free lunch students have priority.

Newark Enrolls Match Algorithm

The Newark Enrolls match process is driven by four factors:

Student Choice
the ranked list of up to eight schools to which each student applies.

School Capacity
the number of seats available at each school in each grade.

Priorities
some students are given priority at some schools (see below for a list of priorities).

A Random Number
assigned to each student at the beginning of the process.

Newark Enrolls has four sets of priorities that come into play for some students at some schools.

Sibling Priority
All NPS K-8 schools, traditional NPS high schools, and charter schools give priority to students who have a sibling already enrolled in the school. Magnet schools do not give sibling priority. [1]

Geographic Priority
All NPS K-8 schools and many charter schools give priority to students who live in the neighborhood surrounding the school.[2] As of 2016-2017, high schools do not give geographic priority, but NPS seeks to place any unmatched high school student in a school near his or her home.

High-need Student Priority
All schools give priority for special education and free lunch students if those students are underrepresented in the school's applicant pool. This priority only applies to a set of seats at the school, with that set of seats sufficient to raise the proportion of high-needs students in the entering class up to the citywide average.

Student Rank
Magnet schools put students in priority order by ranking them based on grades, attendance, PARCC scores, and sometimes an audition or interview.

[1] In addition to the sibling priority, Newark Enrolls now also has program called Sibling Link. For siblings who are applying through Newark Enrolls at the same time, a parent can choose to "link" their applications, increasing the odds that they are placed at the same school (though potentially at a lower ranked choice).

[2] Charter schools funded through the Charter School Program, a federal grant program, cannot apply a geographic preference.

The algorithm works as described below:

The steps described below all take place nearly instantaneously in a single run of a computer program.

First, every student is considered at the school he or she ranked first. If all schools have fewer students ranking them first than there are seats available in that school, the algorithm stops, and the match is final. However, when schools have more students ranking them first than seats available, the algorithm continues. In such a case, the students who have ranked each school first are lined up, first in priority order and then by their random number. The students with the highest priority – and within a priority group, the best random number – are provisionally admitted to the school. This admission is "provisional" because each student may later be moved down in the line by a student with a higher priority level or better random number who did not match to his or her top-ranked school.

Those students not admitted to their top-ranked school are now considered at the school they ranked second, along with all students provisionally admitted in the prior step. In schools with more students to consider than there are seats available, the students are lined up again, first in priority order, then by their random number. As before, the students with the highest priority – and within a priority group, the best random number – are provisionally admitted to the school.

In this step of the algorithm, it is important to note that applicants who ranked a school first and applicants who ranked a school second (but who have already been rejected from their top-ranked school due to limited space) are treated the same. The algorithm does not prioritize applicants who rank a school first over applicants who rank a school second, which is what allows Newark Enrolls to recommend that families rank schools in their true priority order. Ranking a popular school first does not hurt a student's chances of admission to a lower-ranked school.

At this stage, students who remain unmatched are now considered at the next lower-ranked school on their application, along with any students provisionally admitted in an earlier round. This process continues until either all students have been admitted to a school that is not over capacity or the remaining students have no additional schools ranked on their application. At this point, the computer match is finalized. Newark Enrolls staff then manually assign any unmatched students to a school close to their home with space available.

In response to family and community feedback, the Newark Enrolls algorithm has undergone modest changes since the process first launched. These include adjustments in how families express their desire to enroll siblings in the same school, as well

as an increase in the percentage of seats that prioritize students living in a designated geographic zone from 75% in the first and second enrollment rounds to 85% in the third round and 100% in the 2016-2017 application round.

NPS and the participating charter sector have sought to design Newark Enrolls – including its awareness campaign, application process, and match procedures – in a manner that achieves its guiding principles and in so doing alleviates the conditions that prompted universal enrollment in the first place. These designs are summarized in Figure 4.[17]

[17]   Figure 4 reports the guiding principles as stated in the Memorandum of Agreement signed between NPS and other participating local educational agencies in the charter sector.

Figure 4 – Summary of Newark Enrolls by Guiding Principle

Guiding Principle	Conditions Prior to Newark Enrolls	How Newark Enrolls Addresses These Conditions
Choice The primary determinant of where students enroll in school should be the choice that they and their families make for which school can best meet their needs	• Most students were assigned to a school based on their home address • Choice existed for magnets and charters, but each school or network of charter schools ran its own enrollment process	• Introduces a single application and timeline for all traditional and magnet schools as well as most charter schools • Enables families to prioritize schools in their neighborhood and to apply to schools in other neighborhoods • Enables families to prioritize schools based on preferences to place siblings in the same school
Access Students with the highest need should have greater preference to attend a school of their choice, whether it is in their neighborhood or not	• Special education students were placed based on availability of appropriate programs, and appropriate programs were often concentrated in a small number of schools • Neither special education nor free lunch students had any priority to attend schools of their choice, and accurate and clear information about programming was difficult to find	• Provides an admissions priority for special education students and free lunch students at all participating schools • Provides data to support opening additional special education programs to provide more options to special education students • Has coincided with an increase in staffing and professional development to support a greater range of special education students
Community All else equal, students should be able to attend a school close to where they live if that is their preference	• This principle was prioritized above all else • Most students were assigned to a school based on their home address	• Applies a priority in which a proportion of seats in traditional schools are allocated to students who live in the neighborhood. (In the first two years, the neighborhood priority was for 75% of the seats in the school. The priority increased to 85% of the seats in Year 3 and 100% of the seats in Year 4.)
Equity The distribution of high-needs students should be equitable across all local educational agencies (LEAs) in Newark	• The distribution of special education students across Newark's schools was uneven • In 2013-14, 5% of magnet school ninth graders required special education services, compared to 13% of ninth graders at charters and 23% of ninth graders at traditional high schools • There was some unevenness in the distribution of free lunch students	• Implements an admissions priority for special education students and free lunch-eligible students • Has coincided with an increase in schools' capacity to serve special education students

Figure 4 – Summary of Newark Enrolls by Guiding Principle (Continued)

Guiding Principle	Conditions Prior to Newark Enrolls	How Newark Enrolls Addresses These Conditions
Reliability LEAs should be able to rely on the enrollment results they get for planning and budgeting, knowing that students are not holding offers at multiple schools	• Students commonly held offers at multiple schools and did not decide which to attend until the day school opened • On average, 14% of students on NPS's rosters on the first day of school never showed up	• Gives families one offer based on their ranked preferences and requires them to accept the offer in advance to enable schools to know which students are enrolled • Has an online program that was launched in Year 4 to allow families to transfer schools – prior to the coming school year – if there is space available
Ease Families should have to manage only one timeline and one application to enroll their children in school	• Families had to apply separately to traditional public schools, magnet schools, and each charter LEA • Successfully navigating various timelines and processes required a significant know-how and investment of time	• Allows families to submit one application on a unified timeline for 96% of public school seats in Newark • Allocates dedicated staff and other resources to support families in the enrollment process
Transparency All participating LEAs, whether district or charter, should share a common set of rules and preferences that are clearly communicated to families	• NPS and each charter LEA operated its own admissions processes, published its own materials, and created its own admissions priorities • There is evidence that some schools of choice allowed "backdoor" enrollment, giving well-connected students admissions advantages	• Assures that admissions to all participating schools occurs according to a common set of rules and procedures tied to a single matching algorithm that treats all students and families the same regardless of family connections and resources • Conducts an awareness campaign to inform families about Newark Enrolls, which includes a school fair • Publishes a guidebook with detailed information on the process and on each participating school • Hosts an online Family Enrollment Portal, which launched in Year 4, that allows families to see what seats are available in each school

Methods and Data

NPS and its partners hoped that, by following the guiding principles of Newark Enrolls, they would introduce a more equitable, efficient, and fair enrollment process. To assess the impact Newark Enrolls has had on enrollment, this report uses a combination of quantitative and qualitative information. The quantitative information includes student-level data from Newark Enrolls and NPS and school-by-grade-level data from the NJDOE. The qualitative information includes a review of documents and data collected from interviews with NPS staff and charter representatives.

Newark Enrolls choice data

NPS provided student-level choice data for all four of the annual enrollment periods during which Newark Enrolls has operated. This report refers to the first round, which occurred during the 2013-14 school year and enrolled students for the 2014-15 school year, as either the 2013-14 or Year 1 round. The report refers to the fourth round, which occurred during the 2016-17 school year and enrolled students for the 2017-18 school year, as either the 2016-17 or Year 4 round.

In each year, the data provided contained a list of students who applied during the process, a code for each school they ranked first through eighth on their application, and a code for the school to which they were assigned at the end of the process.[18] The data also had information on applicants' current school (if applicable), the grade they applied to, their special education status, and their free lunch status. The data also contained the "hub," or geographic priority boundary, assigned to an applicant. An applicant's hub is used in the neighborhood analysis and corresponds to the area surrounding the applicant's residence.

In the first and second years of Newark Enrolls, the process had two application periods. Applicants

who were unmatched or unsatisfied with their match after the first period could participate in the second round. Beginning in Year 3, Newark Enrolls had only one application period. In the interest of consistency over time, analyses in this report use the choices from the first application round in all years. In the Year 1 enrollment period, the data also contained a flag to indicate whether an applicant's current school was affected by closure or consolidation. Since neither school closures nor consolidations had a material impact on applicants in subsequent years, in the interest of consistency, the 2013-14 analyses exclude applicants whose schools were affected by closure or consolidation.

The Newark Enrolls choice data were used to analyze four of the seven guiding principles: choice, access, community, and ease.

NPS enrollment and address data

NPS provided student-level enrollment data from the student-level master file for the school years 2011-12 to 2016-17. These files included all students enrolled in NPS schools (i.e., traditional and magnet schools) in either October or June of a given school year. For each school year – and for both October and June within the school year – the data included each student's school, grade level, race, free lunch status, reduced-lunch status, special education status, and English language learner (ELL) status, among other variables. This file has one record per year per student. Students can be linked across years using a common student identifier.

NPS also provided the "Students" and "Re-enrollments" tables from PowerSchool, which NPS has used as its student information system since the 2010-11 school year. The "Students" table has the most recent enrollment record for every student who has been enrolled in an NPS school (i.e., traditional and magnet) since 2010-11. The "Re-enrollments" table has all prior enrollment records for all students who have been enrolled in an NPS school since 2010-11. When combined, these tables

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[18]   If a charter LEA operates more than one school, applicants select only the LEA through Newark Enrolls, not the specific school. See footnote 16 for additional details.

have a record of every student's entry into or exit from an NPS school, which supports the analysis of students' within-year mobility. Finally, NPS provided a separate file with the home addresses of all enrolled students for the last five years (i.e., from 2012-13 to 2016-17). These data were geocoded using ArcGIS and a New Jersey Address Locator.[19] Between 88% and 89% of all student addresses in each year were geocoded.[20]

The NPS enrollment and address data were used to analyze the guiding principles of access (as measured by distance) and reliability.

NJDOE enrollment data

The NJDOE provided school-by-grade enrollment data for the school years 2012-13 to 2016-17 for all schools in Newark (i.e., traditional, magnet, and charter schools). For each year, school, and grade combination, the NJDOE provided enrollment counts by race, gender, special education status, ELL status, free lunch status, and reduced-lunch status.

The NJDOE enrollment data were used to analyze the guiding principle of equity.

Qualitative data

The authors of this report analyzed more than 300 documents related to Newark Enrolls, including guidebooks, presentations, technical "how-to" guides, press releases, and media reports. After reviewing the documents for accuracy, the authors used the documents to create a timeline for Newark Enrolls from Year 1 through Year 4. The authors also used the documents to construct the history and timeline of changes made to the Newark Enrolls application and match process.

The authors recruited and selected 11 interviewees of whom nine were NPS district-level staff and two were local charter representatives. Interviewees were identified using a snowball sampling technique. [21] [22] Following this technique, the authors first gathered recommendations of potential interviewees from district leaders involved in the design and implementation of Newark Enrolls and gathered recommendations for subsequent interviewees. The interviews were semi-structured and lasted approximately 45-60 minutes. Codes were developed to analyze the interviews using both deductive and inductive approaches. A set of these codes were based on the seven principles that guide Newark Enrolls and were used, along with other codes, to categorize responses in the interviews. Using the codes, the authors looked for themes and identified patterns in the responses.

The authors also reviewed the results of NPS's 2016-17 Post Application Survey.[23] This optional survey was taken by 2,034 Newark parents after filling out an application for their children online. Survey questions asked about the ease of navigating the online application, the parent's reason for submitting an application, and other topics.

The qualitative data were used to analyze all seven of the guiding principles: choice, access, community, equity, reliability, ease, and transparency.

[19]   Manieri, J. (n.d.). ArcGIS, Address Locator. Accessed on 12/3/2017 at https://www.arcgis.com/home/item.html?id=9524b51e309441b3be-7c6a75a301cb42

[20]   Some addresses could not be geocoded because the Address Locator used could not resolve the address into longitude and latitude (due to non-standard address formatting or other reasons).

[21]   Weiss, R. S. (1995). Learning from strangers: The art and method of qualitative interview studies. New York: Simon & Schuster.

[22]   Morgan, D. L. (2008). The SAGE encyclopedia of qualitative research methods. Three Oaks, CA: SAGE Publications.

[23]   This survey is actually called the 2017-18 Post Application Survey, but to be consistent with the year naming conventions in this report, it is referred to here as the 2016-17 Post Application Survey because it was administered after the 2016-17 application process.

Findings

Newark Enrolls is designed to address a set of conditions that complicated families' abilities to exercise school choice.

The universal enrollment system also aimed to address inequities that emerged as a result of differences between families' access to information, time, and personal networks and to provide schools with the reliable enrollment data they need to plan their operations.

A commitment to alleviating the disruptive and unfair conditions that had previously characterized NPS's system of school choice generated the seven principles that guide the design and implementation of Newark Enrolls: choice, access, community, equity, reliability, ease, and transparency.

This section assesses whether Newark Enrolls has changed enrollment patterns and practices in Newark consistent with these principles.

Choice

The primary determinant of where students enroll in school should be the choice that they and their families make for which school can best meet their needs.

Newark Enrolls sought to preserve choice where it existed (as to charter and magnet schools), expand choice where it did not exist (as to traditional public schools), reduce the time spent exercising choice, and put all families on a level playing field. Ninety percent of Newark's public schools – representing 96% of the city's enrollment – participate in Newark Enrolls. Students may rank up to eight schools on a single application, listing them in their order of preference.
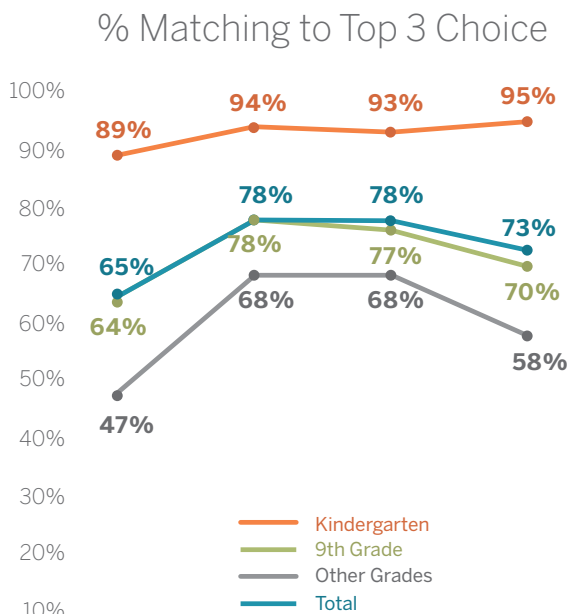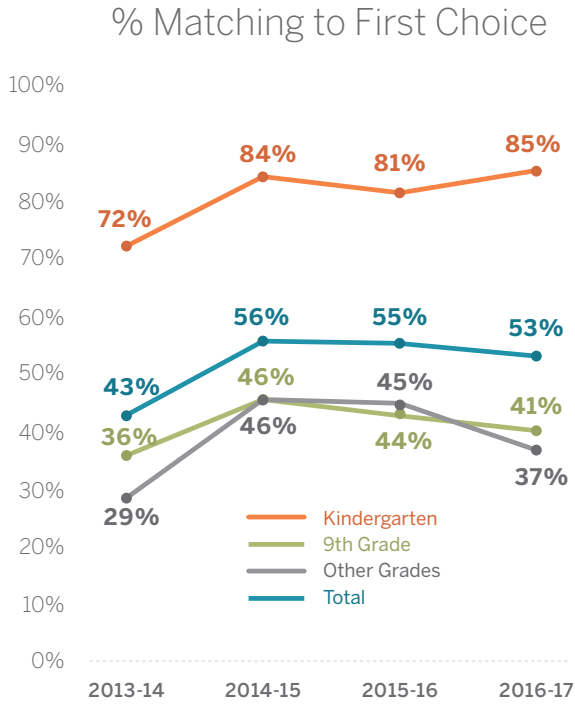
As shown in Figure 5, most students match to one of their top choices. In the 2016-17 process, 53% of applicants matched to their first choice, and 73% of applicants matched to one of their top three choices. In kindergarten, the match rates were the highest, with 85% of applicants matching to their first choice school and 95% matching to one of their top three choices. In ninth grade, 41% of applicants matched to their first choice and 70% matched to one of their top three choices. In non-transition grades – where relatively few seats are available at popular schools – 37% of applicants matched to their first choice school and 58% matched to one of their top three choices.

Figure 5 – Final Placement by Student Rank, School Year 2016-17, Grades K-12

Grade	1	2	3	4	5	6	7	8	MB	NA	Top 3	N
K	85%	8%	2%	1%	0%	0%	0%	0%	1%	4%	95%	2,880
9	41%	16%	13%	6%	4%	2%	1%	0%	1%	15%	70%	2,826
Other	37%	15%	7%	3%	1%	1%	0%	0%	25%	11%	58%	3,799
Total	**53%**	**13%**	**7%**	**3%**	**2%**	**1%**	**0%**	**0%**	**11%**	**10%**	**73%**	**9,505**

Source: Newark Enrolls. Note: grade is the grade to which a student is applying. "MB" means the student was matched back to his or her school. "NA" means the student was not matched.

Figure 6 – First Choice and Top Three Match Rates by Year, Grades K-12

% Matching to First Choice

- Kindergarten
- 9th Grade
- Other Grades
- Total

% Matching to Top 3 Choice

- Kindergarten
- 9th Grade
- Other Grades
- Total

Source: Newark Enrolls.

As is shown in Figure 6, match rates improved between the first and second years of the Newark Enrolls. NPS staff attribute these gains primarily to more accurate yield forecasting – i.e., the use of the prior year's data to make predictions about the proportion of admitted students who will enroll in a school – which allows more aggressive overmatching of seats. Since the second year of Newark Enrolls, the match rate has stabilized in kindergarten and declined slightly in other grades, particularly in the 2016-17 process.

One reason that fewer than half of ninth grade students match to their top choice is that most students rank a highly competitive magnet school first. As shown in Figure 7, 68% of students applying for a ninth grade seat ranked a magnet school first, compared to 20% who ranked a traditional NPS school first and 10% who ranked a charter first. In kindergarten, where magnet schools are not an option, students ranked a charter school first approximately as often as they selected a traditional school first. Students applying in grades one through six – who are generally requesting to transfer in the middle of elementary school – more often gave top ranking to a charter than to a traditional school.

Given the popularity of Newark's six magnet high schools, it is not surprising that these schools tend to admit the lowest proportion of their applicants. In Figure 8, across all grades, NPS magnet schools admitted 31% of their applicants who ranked them first, while Newark's charter schools admitted 55% of applicants who ranked them first, and traditional district schools admitted 69% of such applicants.

Enrollment in "high-demand" schools (those with more applicants listing the school as their first choice than there were available seats) has grown over time.[24] Figure 9 shows the enrollment trajectory for schools that participated in Newark Enrolls

[24] To study at the popularity of different schools and types of schools, this analysis uses each applicant's top-ranked school. This provides a straightforward way of weighting each applicant equally – since every applicant has exactly one top-ranked school – and focuses the results on those schools that applicants most want to attend.

Figure 7 – Top-Ranked School Type by Grade, School Year 2016-17, Grades K-12

Source: Newark Enrolls.

Charter ⬛ NPS Magnet ⬛ NPS Traditional ⬛ NPS Sp. Ed. ⬛ NA
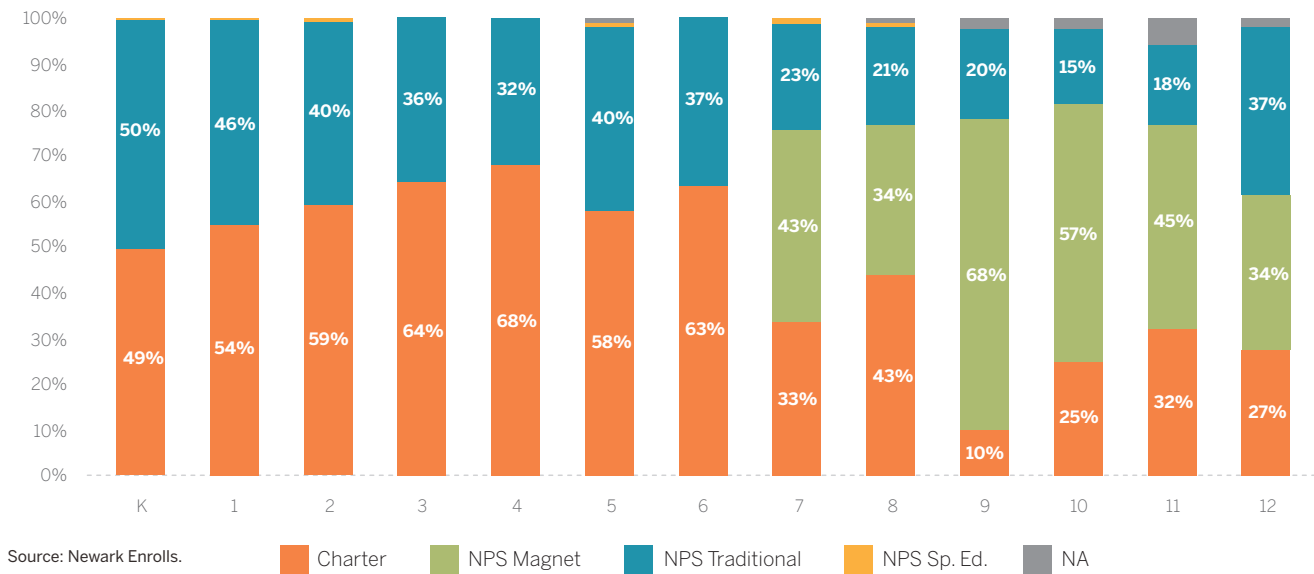
split into two categories: high-demand schools that turned away some first choice applicants in 2016-17, and low-demand schools that admitted all first choice applicants in 2016-17.
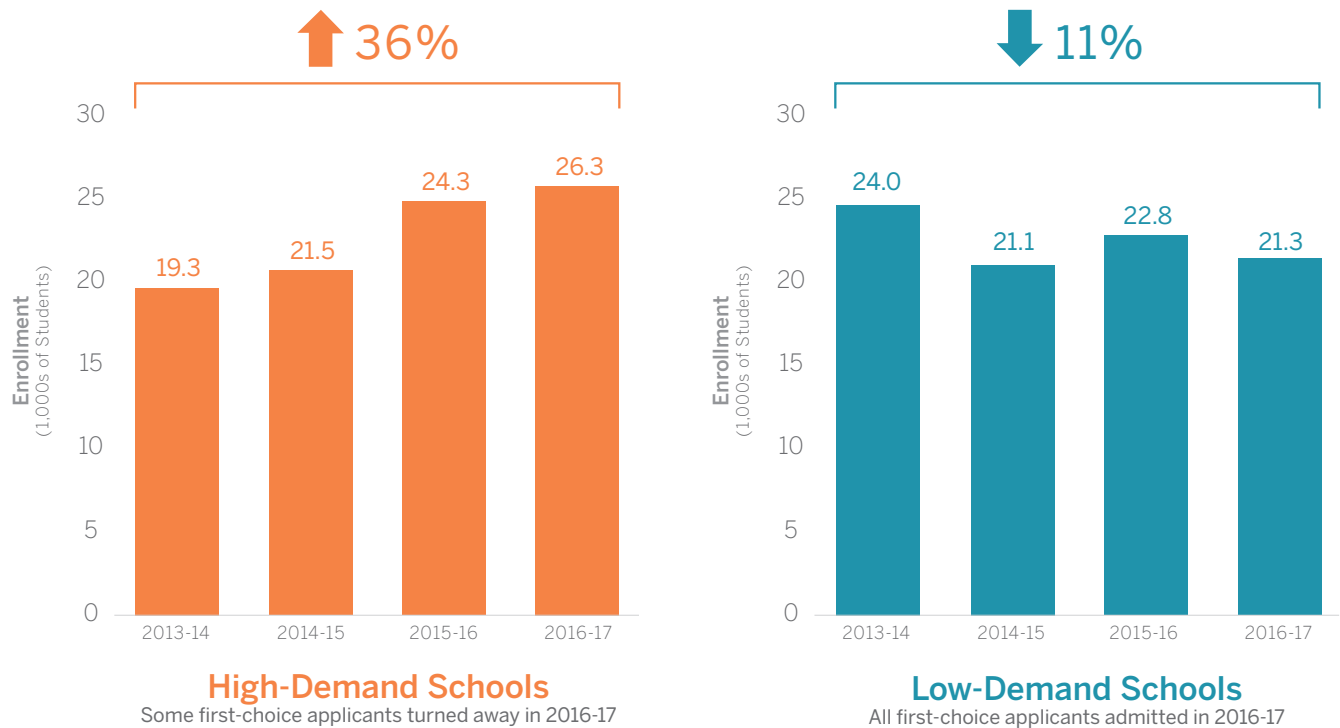
As Figure 9 shows, enrollment in high-demand schools has increased by 36% since Newark Enrolls started, while enrollment in low-demand schools has decreased by 11%. Nearly 7,000 more Newark students attend high-demand schools today than in 2013-14. Because no new high-demand schools have opened since Newark Enrolls started, the increase in enrollment is entirely attributable to an increase in seats available in the most popular NPS schools and charter LEAs. The biggest gains have come from two large and popular charter LEAs – North Star Academy and KIPP New Jersey – which together account for enrollment growth of nearly 3,300 seats at high-demand schools. Through Newark Enrolls, families have been able to choose the schools they are most interested in and, over the past four years, more students have been able to enroll in these schools.

Figure 8 – Admission Rate to Applicants' Top-Ranked School, School Year 2016-17, Grades K-12
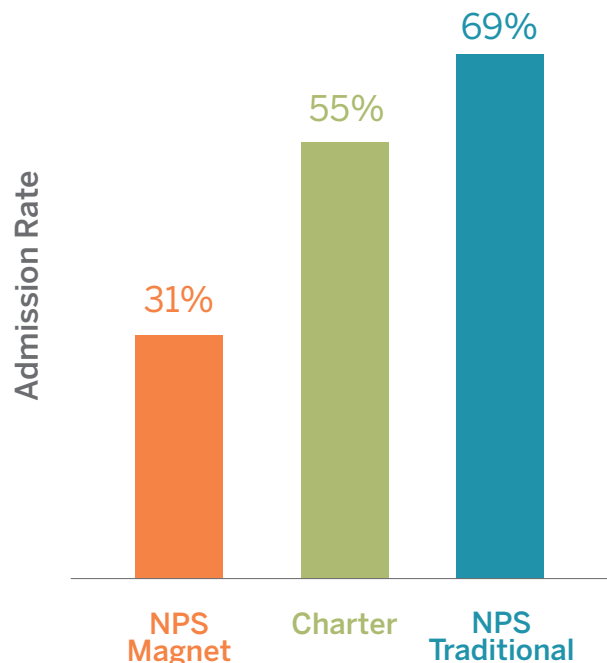
Source: Newark Enrolls.

Figure 9 – Enrollment Trends by School Demand, School Year 2016-17, Grades K-12

⬆36%

Enrollment
(1,000s of Students)

19.3   21.5   24.3   26.3

2013-14   2014-15   2015-16   2016-17

High-Demand Schools
Some first-choice applicants turned away in 2016-17

⬇11%

Enrollment
(1,000s of Students)

24.0   21.1   22.8   21.3

2013-14   2014-15   2015-16   2016-17

Low-Demand Schools
All first-choice applicants admitted in 2016-17

Source: Newark Enrolls and NJDOE.

Key Findings (Choice)

- In 2016-17, 53% of applicants in Newark Enrolls got their top choice and 73% got one of their top three choices. These numbers were highest in kindergarten, where 85% of applicants got their top choice and 95% got one of their top three choices.

- The share of applicants matching to a top choice increased in the first years of the program's operation, due mainly to more accurate yield forecasting, and has leveled off more recently.

- The number of seats available in high-demand schools has grown to allow for an increase in enrollment of nearly 7,000 students (a 36% gain) since 2013-2014.

Access & Community

Students with the highest need should have greater preference to attend a school of their choice, whether it is in their neighborhood or not. All else equal, students should be able to attend a school close to where they live if that is their preference.

Prior to universal enrollment, Newark's enrollment system for traditional district schools prioritized community above all else. Students, especially in the lower grades, were expected to attend a school close to their home, and most did. However, as data from Newark Enrolls has demonstrated, not all students are interested in attending a school in their neighborhood.

In 2016-17, Figure 10 shows that 47% of Newark students applying for a kindergarten seat ranked a neighborhood school first, while 15% ranked a non-neighborhood school first. The remaining 38% ranked either North Star or KIPP first, which do not provide geographic priority. [25] Among those applying to a school that provided geographic priority, roughly a quarter chose a school outside of their neighborhood.

As Newark Enrolls provided students with easier access to schools outside their neighborhood, the average distance between a student's home and school increased. As shown in Figure 11, the distance between school and home for the average NPS kindergartener increased by 48% over the last five years, from 0.41 miles in 2012-13 to 0.61 miles in 2016-17. The percentage of kindergarten students who lived more than a mile away from their school doubled, from 8% to 16%. In ninth grade, the average distance increased by 16%, from 1.34 miles to 1.55 miles, and the percentage of students living

### Figure 10 – First Choice School for Kindergarten Applicants, 2016-17 School Year
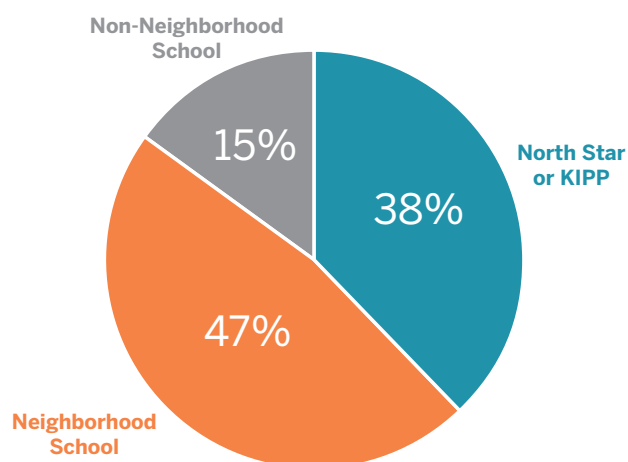
Source: Newark Enrolls.

more than two miles from their school increased from 24% to 34%. In kindergarten, the largest increase took place in 2014-15, the first year when students were placed through Newark Enrolls. In ninth grade, the largest increase took place in 2013-14, when students were first able to use a single application to apply to any NPS high school.[26]

While more students are now attending schools outside of their neighborhood, those who want to attend schools in their neighborhood still can. Most K-8 schools that participate in Newark Enrolls give priority to students who live near the school. The share of a school's seats to which this geographic priority applies has risen from 75% when Newark Enrolls was launched in 2013-14 to 85% in 2015-16 and 100% in 2016-17. In order to implement this priority, Newark Enrolls has divided the city into between eight and 11 hubs, or neighborhoods,

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[25]   While both KIPP and North Star are considered individual "schools" in state data, in the Newark Enrolls match, and in this analysis, they would more accurately be described as charter networks that operate a number of school buildings in Newark. Because students apply to the LEA through Newark Enrolls and not to individual school buildings, the Newark Enrolls data do not permit a determination of whether students are applying to a school in their neighborhood or not.

[26]   It is also possible that some of the increase in distance was due to school closures, many of which took place between 2012-13 and 2014-15. As shown in Figure A1 and the accompanying discussion in the appendix, analyses suggest that school closures accounted for at most half of the increase in distance observed during this time period (and likely less).

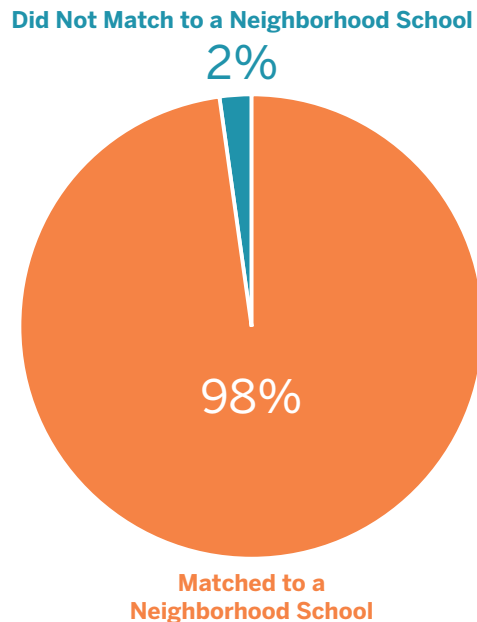## Figure 11 – Distance from Home to NPS School by Year, Grades K and 9
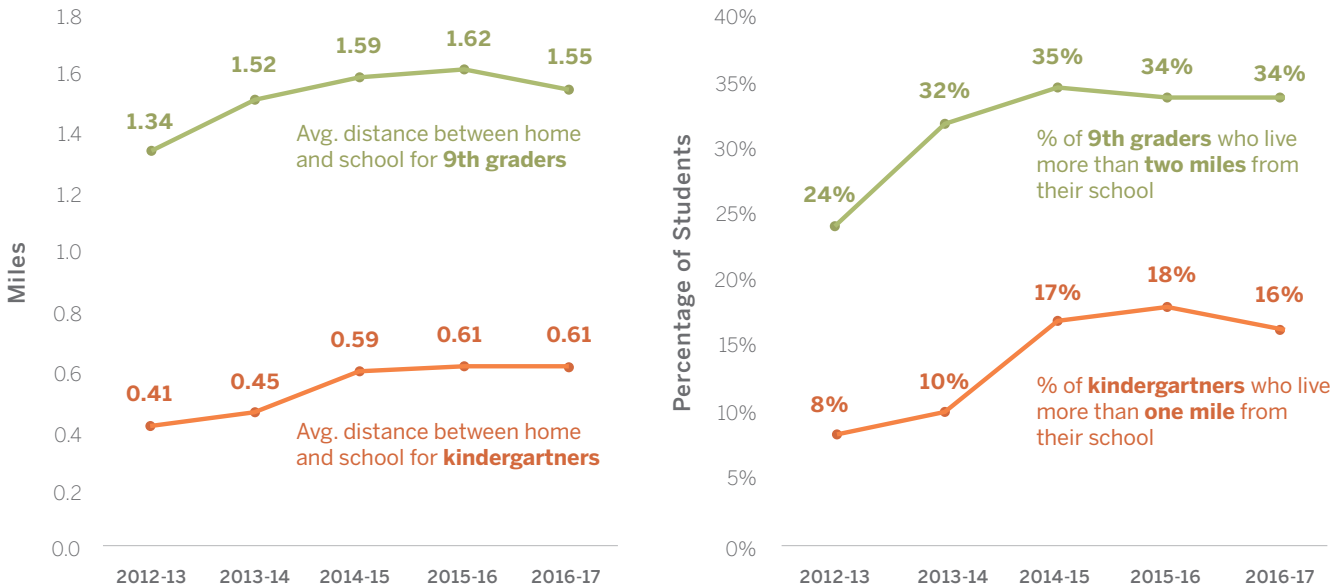
Source: Analysis of NPS enrollment and address data. Note: distance is calculated using the Haversine formula and represents distances "as the crow flies."
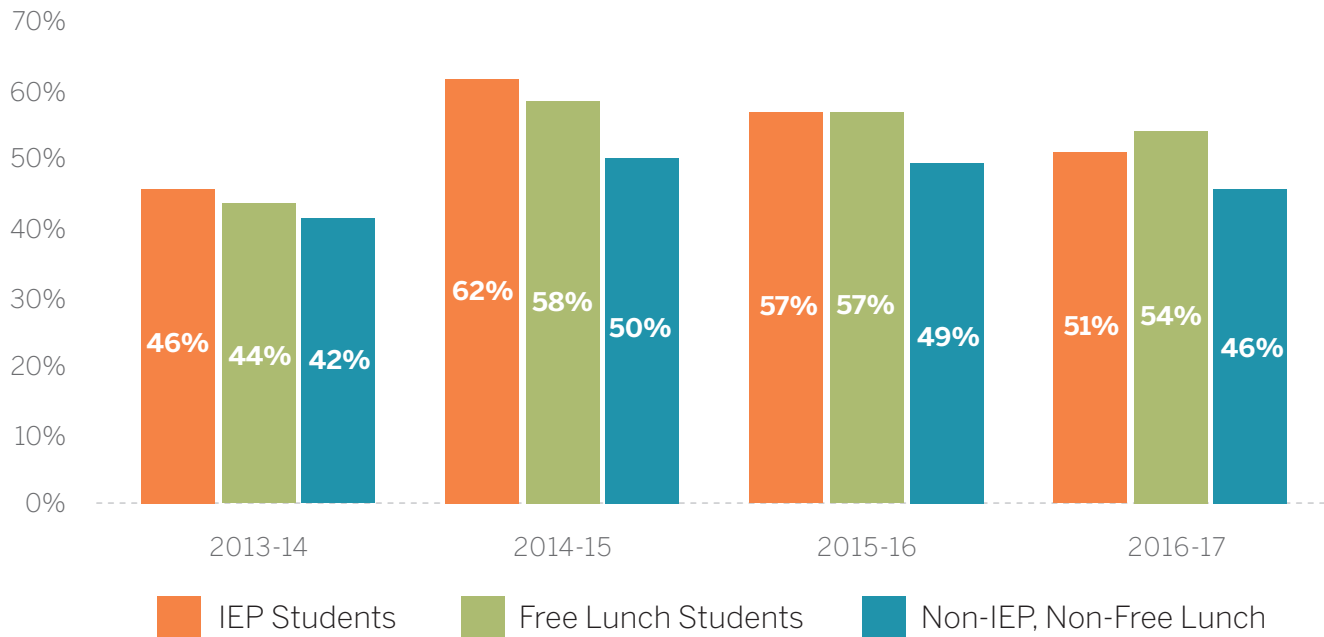
depending on the year. Students who live in the neighborhoods thus defined are given priority in admissions over students who do not live in the neighborhood. This priority is implemented second, after the sibling priority.

As shown in Figure 12, in 2016-17, 98% of kindergarten applicants who ranked a school in their neighborhood first matched to a school in their neighborhood.[27] Of the 31 students that year who chose a neighborhood school but did not match to one, 20 matched to a non-neighborhood school they chose second, seven matched to a non-neighborhood school they chose in ranks 3-5, three were not matched to a school they chose and were assigned to a school close to their home with space available, and one was matched back to the student's pre-kindergarten school. Since Newark Enrolls launched, the vast majority of students who want to attend a school in their community have been able to. In addition to improving access to schools outside

27 This percentage has risen over time from 94% in 2013-14 to 97% in 2014-15 and 2015-16 to 98% in 2016-17.

Figure 12 – Match Results for Kindergarten Applicants Who Ranked a Neighborhood School First, 2016-17 School Year

Did Not Match to a Neighborhood School

2%

98%

Matched to a Neighborhood School

Source: Newark Enrolls.

Figure 13 – Match Rate to First Choice School by Year, Grades K-12

Legend: IEP Students · Free Lunch Students · Non-IEP, Non-Free Lunch

Source: Newark Enrolls.

of an applicant's neighborhood, Newark Enrolls also targeted two groups of high-needs students that were underrepresented in the city's most popular schools. The first group was special education students, defined as students with Individualized Education Programs (IEPs). The second group was high-poverty students, defined as students qualifying for free lunch based on their family income. Since its inception, the algorithm for Newark Enrolls has provided a priority for both groups of students if they were "underrepresented in [a] school's applicant pool relative to the citywide average."[28]

As is shown in Figure 13, in every year since Newark Enrolls started, the first choice match rate for special education and free lunch students has been higher than the first choice match rate for other students. In 2016-17, 51% of special education students matched to their first choice school, compared to 54% of free lunch students and 46% of other students. The differences were similar in prior years, though special education students have sometimes had a higher match rate than free lunch students. [29] The match results observed here are similar if one looks at specific school types, particularly charter schools (for both groups of students) and magnet schools (for special education students).[30] Consistent with its guiding principle, Newark Enrolls appears to provide high-needs students with greater access to schools.

29   The two groups are not mutually exclusive, as some special education students qualify for free lunch and some free lunch students require special education services. The non-special education, non-free lunch group shown in the figure is mutually exclusive from the two other groups.

28   NPS documentation on the Newark Enrolls algorithm.

30   See details in Figure A2 in the appendix.

Key Findings (Access & Community)

- Newark Enrolls has made it easier for applicants to apply to schools outside of their neighborhood, and students are now traveling farther to go to school. Since Newark Enrolls launched, the average distance between a student's home and school has increased by 0.20 miles (48%) in kindergarten and by 0.21 miles (16%) in ninth grade.

- Nearly all kindergarten applicants who want to attend a school in their neighborhood are able to do so. In 2016-17, 98% of kindergarten applicants who chose a school in their neighborhood first were matched to a school in their neighborhood, and most of the remaining 2% were matched to their second choice outside of their neighborhood.

- Special education and free lunch students are more likely to be admitted to their top choice than other students.

Equity

The distribution of high-needs students should be equitable across all LEAs in Newark.

Prior to Newark Enrolls, the distribution of special education was uneven across schools. In 2013-14, for example, 5% of ninth graders at magnet schools required special education services compared to 13% of ninth graders at charter schools and 23% of ninth graders at traditional schools. As shown in Figure 14, these percentages changed dramatically with the launch of Newark Enrolls, which provided a priority for special education students. In 2014-15, the percentage of ninth graders in magnet schools who required special education services more than doubled from 5% to 13%. The same percentage in charter schools increased from 13% to 16%, while

the percentage in traditional high schools declined.

Despite these improvements, there remains inequity in the distribution of special education students. Traditional high schools continue to enroll a higher share of special education students than do charters or magnet schools, and the gap has grown slightly over the last two years. [31]

Newark has also shown improvement in equity when looking at individual schools. Figure 15 shows

[31] Figure A3 in the appendix shows the same data for every grade, K-12, for both special education and free lunch students. The special education results for Newark's other entry grade, kindergarten, show that Newark's traditional schools continue to enroll a higher share of special education kindergarteners than Newark's charter schools, though the gap has closed slightly. The free lunch data are somewhat noisier, perhaps due to NPS's pursuit of Community Eligibility for free and reduced-price lunch students (discussed later in this section). Nonetheless, there is a general pattern of convergence in the percentage of free-lunch students between sectors, particularly in 9th grade.

Figure 14 – Share of Ninth Grade Students Requiring Special Education Services
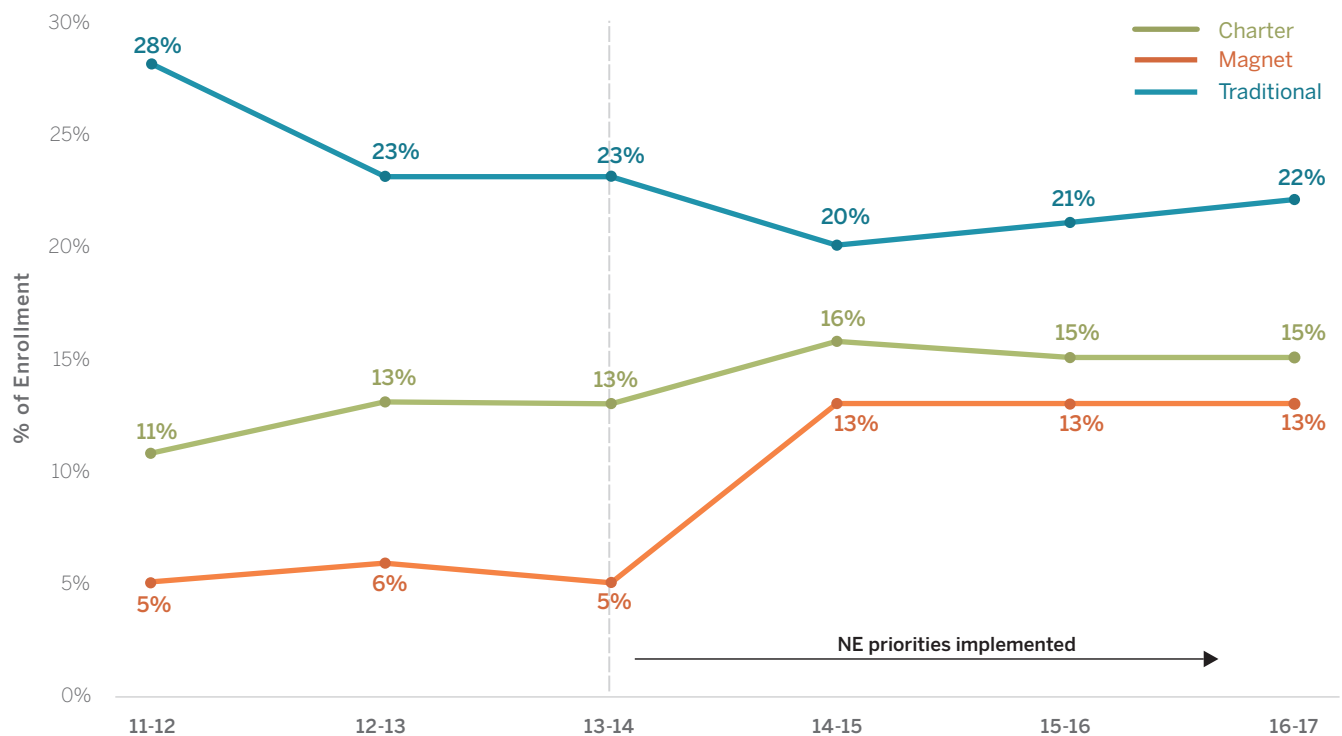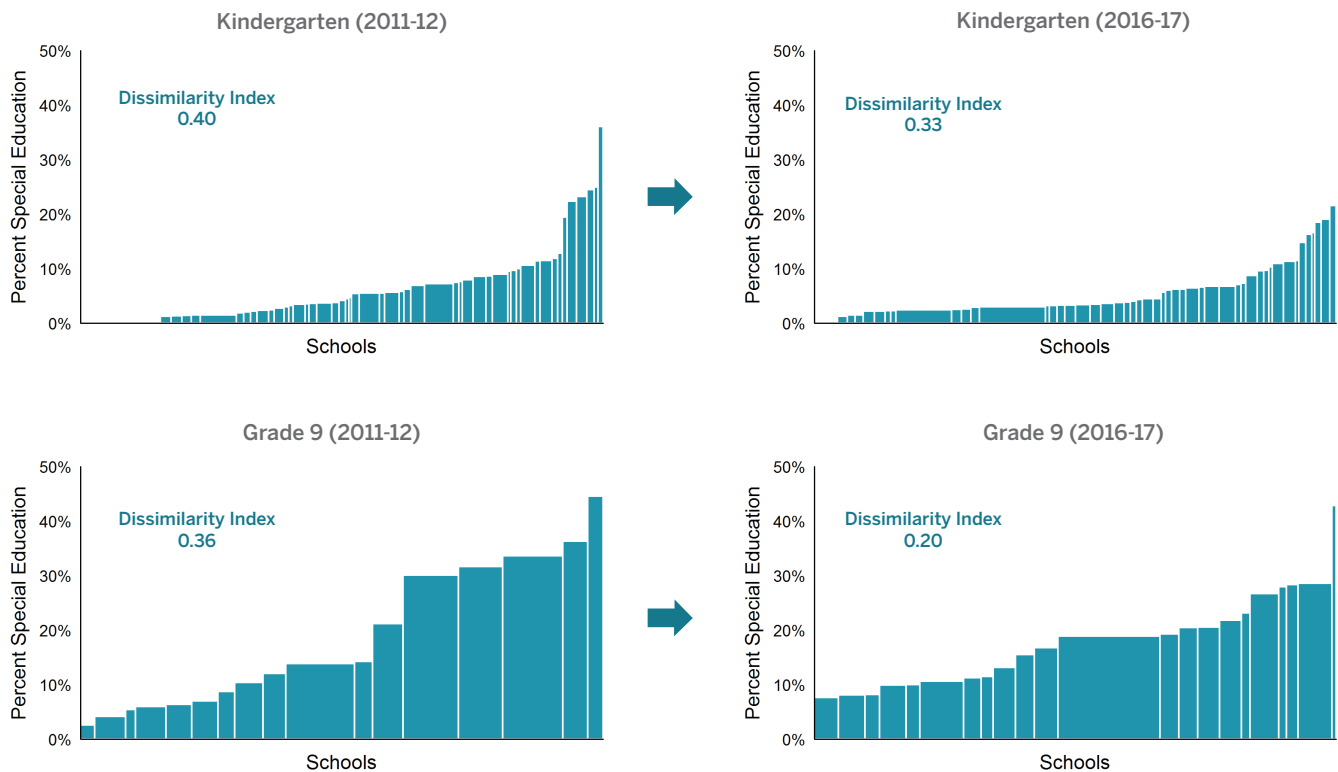

Source: School-by-grade enrollment data from the NJDOE.

the distribution of students who receive special education services by school in two years: 2011-12 and 2016-17. Each bar represents a separate school, inclusive of traditional district, charter, and magnet schools. The width of the bar is based on the enrollment of the school, and the height of the bar is based on the percentage of students who receive special education services. The top two graphs show that the share of kindergarten students receiving special education services has become more even, or equitable, between 2011-12 and 2016-17. The bottom two graphs show the same trend from ninth grade students. Figure A4 in the appendix displays the same graphs for free lunch students, revealing a fairly even distribution of students by school prior to Newark Enrolls.

To quantify the change in equity brought about by Newark Enrolls, the authors calculated the dissimilarity index, a common measure of residential and school segregation.[32] The dissimilarity index measures the proportion of one group of students (e.g., special education students) who would have to move schools to ensure that all schools in the district had the same percentage of that group. The index ranges from zero, representing a perfectly even distribution, to one, when a particular group makes up 100% of the population of one or more schools and 0% of the population of all other schools. In 2011-12, the dissimilarity index for kindergarten

[32] See Elizabeth Roberto (2016) for a discussion of the Dissimilarity Index and other measures of segregation. Source: Roberto, E. (2016). The Divergence Index: A Decomposable Measure of Segregation and Inequality. Working paper. Retrieved here: https://arxiv.org/pdf/1508.01167.pdf

Figure 15 – Percent Special Education by School, Grade 9, School Year 2011-12

Source: School-by-grade enrollment data from the NJDOE. Note: the dissimilarity index represents the share of special education students who would have to move schools to ensure an even distribution of special education students across all schools. Includes only traditional, magnet, and charter schools with at least 15 students in the grade being analyzed.

special education students in Newark was 0.40, indicating that 40% of special education students would need to change schools to ensure that all schools had the same percentage of special education students. The corresponding number for ninth grade students was 0.36. The initial distribution of free lunch students by school was substantially more even, with a 2011-12 dissimilarity index of 0.22 in kindergarten and 0.25 in ninth grade.[33]

As Figure 16 shows, the dissimilarity index for special education students in Newark declined after the special education priority was put into effect. In kindergarten, the dissimilarity index in the three years after the priority was implemented was, on average, 20% lower than the dissimilarity index in the three years prior. In ninth grade, the dissimilarity index was, on average, 40% lower than the dissimilarity index in the three years prior.

[33]   See Figure A4 in the appendix for graphs showing the distribution of free lunch students by school.

By comparison, the average dissimilarity index in grades 3-8 and 12 was down, on average, by 14% over the same time period. Since post-priority entry grade students had not yet aged up into grades 3-8 and 12, they provide something of a control group. Because the special education priority would primarily affect these grades through student transfers, only a modest, gradual decline in the dissimilarity index would be expected in those grades, consistent with the results shown in Figure 16.

Figure 17 shows trends in the dissimilarity index for free lunch students in kindergarten and grade 9, with the special education dissimilarity index shown as a reference. In these graphs, the dissimilarity index for free lunch students starts below that for special education students and declines by less. In kindergarten, the dissimilarity index for free lunch students has been roughly flat over the past six years, though it has remained below the comparable number for special education students in all

Figure 16 – Dissimilarity Index for Special Education by Year, Grades K-12
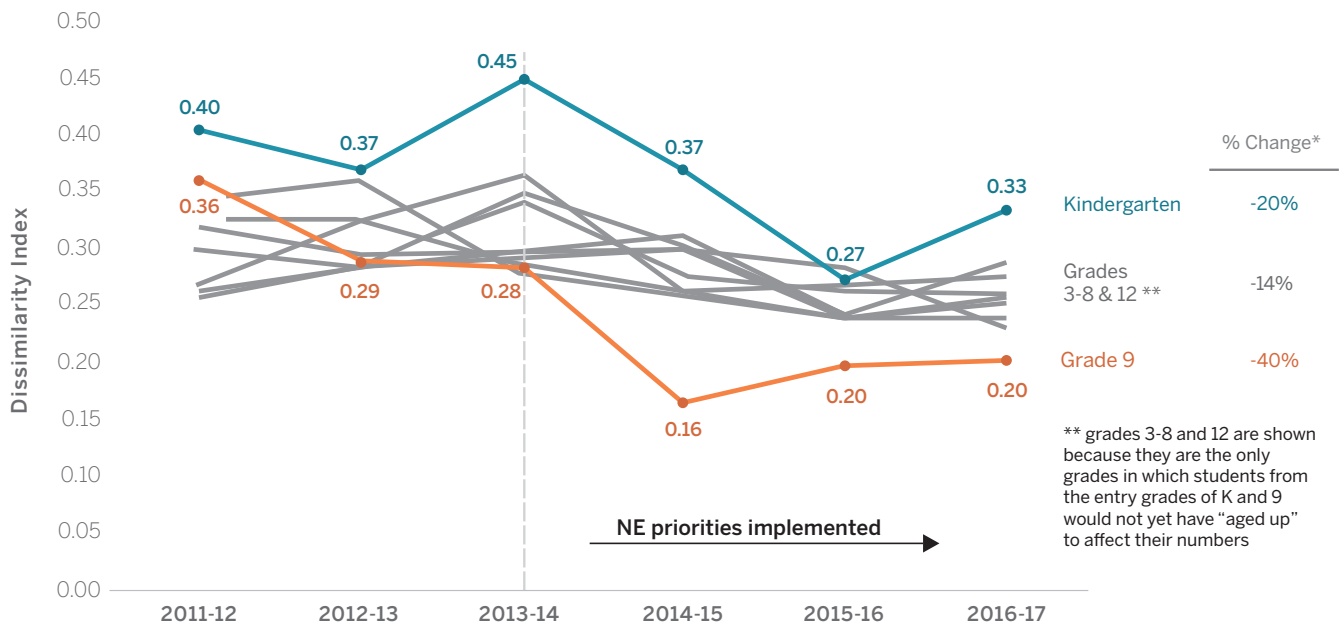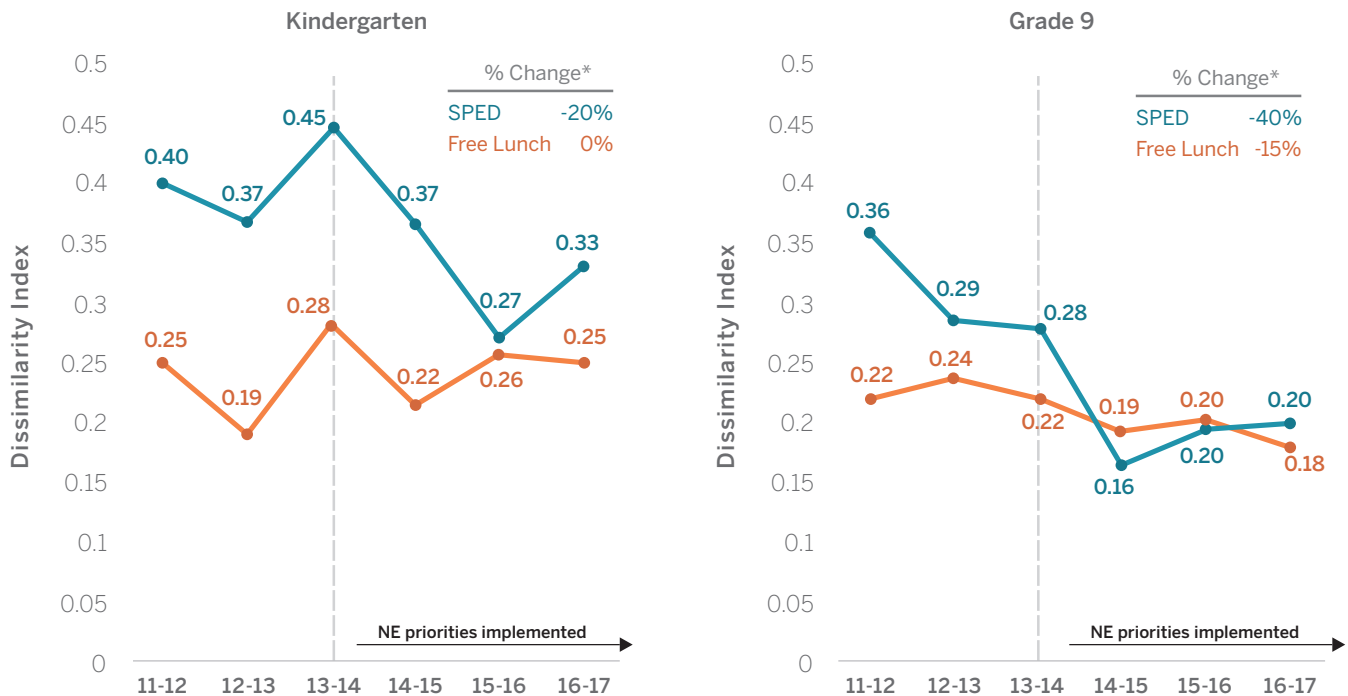

Source: School-by-grade enrollment data from the NJDOE. Note: the dissimilarity index represents the share of special education students who would have to move schools to ensure an even distribution of special education students across all schools. Includes only traditional, magnet, and charter schools with at least 15 students in the grade being analyzed.

years. In ninth grade, the dissimilarity index for free lunch students has declined by 15%, on average, over the past six years. Since Newark Enrolls launched, the ninth grade dissimilarity indices for the two student groups have been roughly equal.

There are at least three reasons why the priorities built into Newark Enrolls may have been less effective in reducing inequity for free lunch students than for students receiving special education services. First, there was less inequity prior to Newark Enrolls. With most students in most schools qualifying for free lunch, the distribution of free lunch students across schools in Newark was already fairly even prior to the implementation of Newark Enrolls.

Second, shortly after Newark Enrolls was implemented, NPS began to pursue Community Eligibility for free and reduced-price lunch students. Schools taking part in the Community Eligibility pilot provide free lunch to all students, regardless of whether they qualify as low-income and have filled out a free lunch form. Because this program removed any incentive on the part of schools to track eligible low-income students – enabling the schools to avoid putting the onus on families and students to identify themselves as low-income – the free lunch counts at some schools dropped substantially. To the extent that the low lunch counts at these schools do not reflect the actual poverty level in the school, it is likely that the distribution of free lunch schools in Newark is now more even than it appears.

Figure 17 – Dissimilarity Index for Special Education and Free Lunch Students by Year, Grades K and 9

Source: School-by-grade enrollment data from the NJDOE. *% Change compares the three-year average before the NE priorities were implemented (2011-12 to 2013-14) with the three-year average after the NE preferences were implemented (2014-15 to 2016-17). Includes only traditional, magnet, and charter schools with at least 15 students in the grade being analyzed.

Third, Newark Enrolls was accompanied by other efforts to redistribute special education students, which took multiple forms. District-operated and charter schools developed more precise and targeted definitions of the special education services available at individual schools. Additionally, some schools developed new special education programs to better serve students. Finally, Newark Enrolls generated efforts to increase all schools' capacity to serve special education students. Schools are now expected to employ a resource teacher who can work directly with students whose IEPs specify such an intervention and are set up to provide in-class, or "push-in," support – steps adopted since the onset of Newark Enrolls.

Transportation practices in Newark also provide important context for these findings. NPS and charter school LEAs provide busing only for special education students who are entitled to transportation assistance on their IEPs. Non-special education students do not receive assistance to enable them to travel to a school outside their neighborhood. Other studies of universal enrollment[34] [35] have shown that transportation needs factor importantly into school choice decisions.

Finally, it is important to note that special education and free lunch status are not the only dimensions along which there is an uneven distribution of students across schools. As shown in Figures A6, A8, and A9 in the appendix, the distribution of students by ELL status, also known as Limited English Proficiency status, in Newark is substantially more uneven than it is by special education and free lunch status. The Newark community should consider whether it would be valuable to use priorities built into Newark Enrolls to address this inequity and others.

Key Findings (Equity)

- Magnet schools and charter schools enroll a higher proportion of special education students than they did prior to Newark Enrolls.

- The distribution of special education students among schools has become more equitable since Newark Enrolls launched.

- The distribution of free lunch students among schools was fairly equitable to begin with and has improved slightly in ninth grade.

[34] Gross, B., DeArmond, M., & Denice, P. (2015). Common enrollment, parents, and school choice: Early evidence from Denver and New Orleans. Center on Reinventing Public Education. Retrieved here: https://www.crpe.org/sites/default/files/cpe-report-common-enrollment-denver-no-la.pdf

[35] Campbell, C., Gross, B., Hernandez, J., McCann, C. & Yatsko, S. (2016). Unifying enrollment in Camden: How families experienced the new enrollment system. Center on Reinventing Public Education. Retrieved here: https://www.crpe.org/sites/default/files/crpe-unifying-enroll-ment-in-camden.pdf

Reliability

LEAs should be able to rely on the enrollment results they get for planning and budgeting, knowing that students are not holding offers at multiple schools.

Prior to Newark Enrolls, some students would start the year holding admissions offers from multiple schools. As a result, schools were uncertain about which students would appear in September. This made it difficult for schools to schedule classes, deploy the right number of teachers, and appropriately budget other resources for the school year.

One goal of Newark Enrolls was to increase stability for schools by providing greater and earlier insight into their incoming class in entry grades and their

returning class in all other grades. Newark Enrolls pursued this goal by providing a centralized match process for all applicants, including transfer students, and by ensuring that all students receive only a single offer to a participating school.

One measure of instability is the number of students who leave their initially assigned school during the first part of the school year. For NPS schools, these student exits are tracked in Power-School. Figure 18 shows the number of exits from NPS schools by year as a share of total enrollment.

As Figure 18 shows, the number of NPS students exiting their school in September declined after Newark Enrolls launched. The decline was particularly notable for exits dated on the first day of

## Figure 18 – NPS School Exits as a Share of Enrollment by Year, Grades K-12
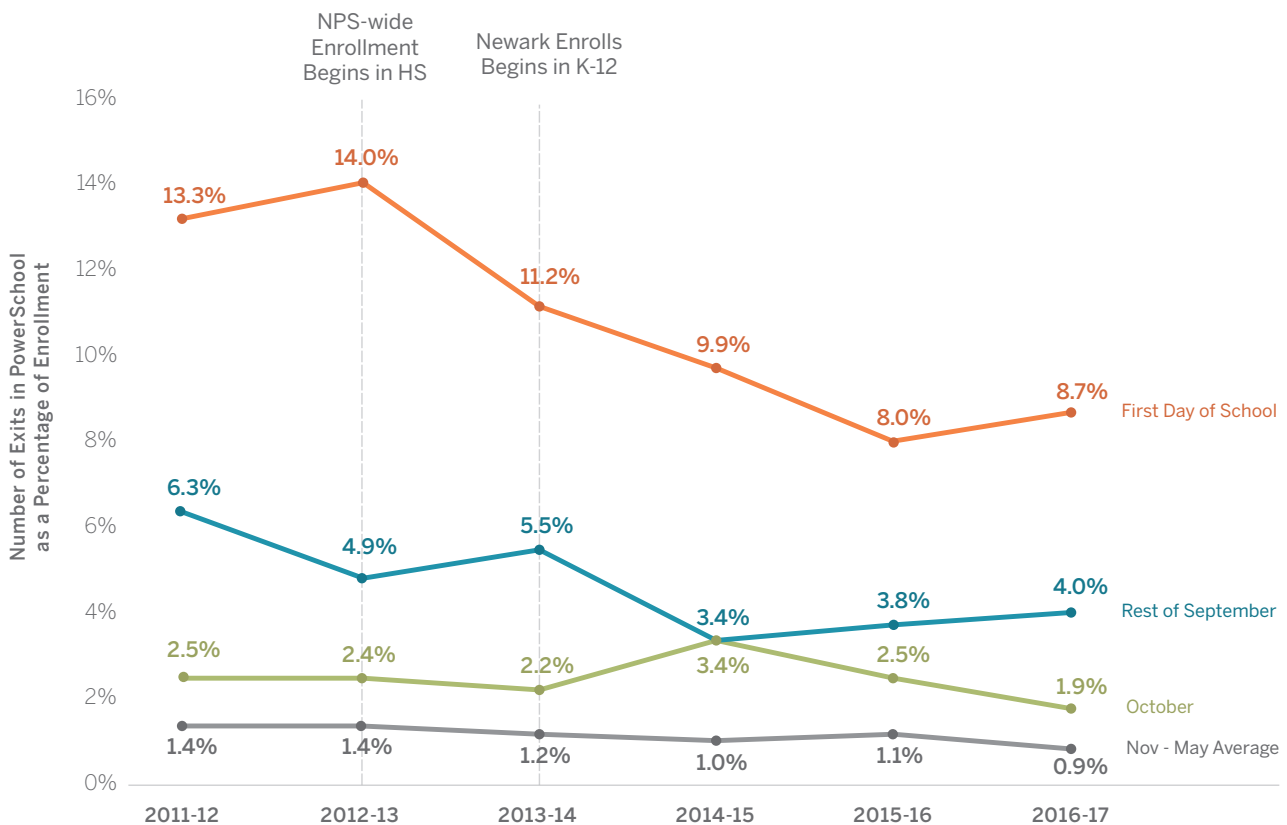
Source: NPS PowerSchool. Note: exits are for students in grades K-12 in Traditional Schools or Magnet Schools only. Share of exits is equal to the total number of exits divided by total K-12 enrollment.

school, which dropped from 14% of all students in 2012-13 to less than 9% of all students in both 2015-16 and 2016-17, a 39% reduction.[36] These exits typically reflect students who are on a school's roster but who never show up, leading school staff to backdate their exit to the first day of school. The share of students who exit their school later in September also declined after Newark Enrolls was implemented, though from a lower base. On the whole, Figure 18 indicates that the implementation of Newark Enrolls coincided with a substantial improvement in student stability near the beginning of the year at NPS schools.[37]

between October and June has risen from approximately 90% in 2011-12 to nearly 93% in 2016-17. This increase has been driven both by a fairly consistent decline in the share of students transferring within NPS and by a somewhat less consistent decline in the share of students leaving NPS schools.

The October enrollment snapshot data from NPS can also be used to calculate year-round stability. Figure 20 shows the share of kindergarten students enrolled at a school in October of one year who are still enrolled in the same school in October of the following year.[39] For example, the October 2011 column shows

Figure 19 – NPS Enrollment Stability between October and June, Grades K-12
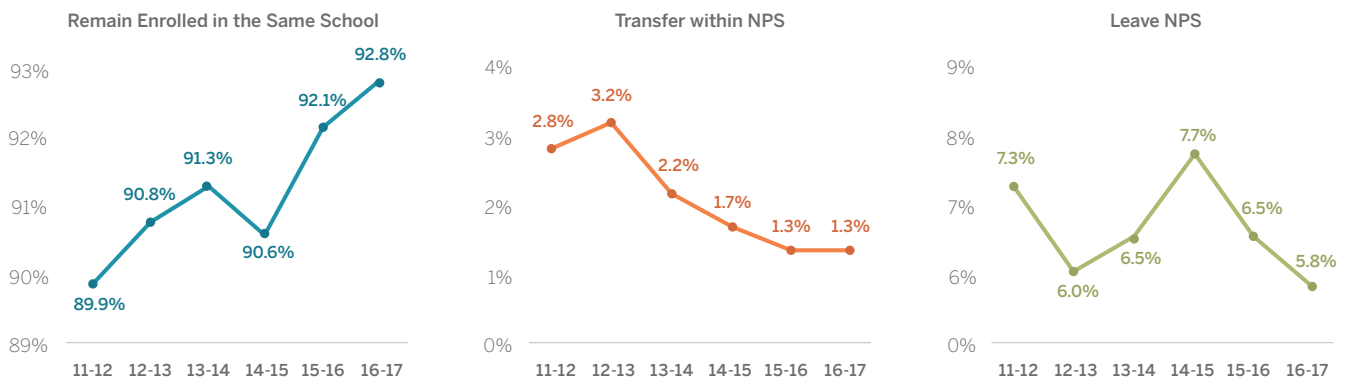
Source: NPS Enrollment Data.

Another set of data – student-level enrollment files – make it possible to analyze stability between October and June. NPS collects a snapshot of student enrollment in October and June of each year. Figure 19 compares the October and June snapshots in each year and tags every student as either remaining in the same school, transferring schools within NPS, or leaving NPS.[38] As the figure reveals, student stability

that 76.9% of kindergartners enrolled in an NPS school in October of 2011 were still enrolled in the same NPS school one year later, in October of 2012.

During that same time period, 9.7% of kindergarten students transferred to another NPS school, and 13.4% of kindergarten students left NPS entirely. Since Newark Enrolls was launched, the year-round re-enrollment rate has increased slightly and the within-NPS transfer rate at NPS schools has declined modestly.

36   The 39% reduction is the reduction from the two-year average at the beginning of the period – 2011-12 and 2012-13 – to the two-year average at the end of the period – 2015-16 and 2016-17.

37   The authors only had access to student-level registration data from NPS schools, so the authors were unable to conduct a similar analysis with charter schools.

38   Because only NPS and not charter LEA data are available for this analysis, it is impossible to distinguish between students who transfer to charters and those who leave the public schools in Newark entirely.

39   To avoid measuring the effect of school closures on stability, only schools that were open in all years are included in this analysis.

Figure 20 – Stability from October to October, Kindergarten
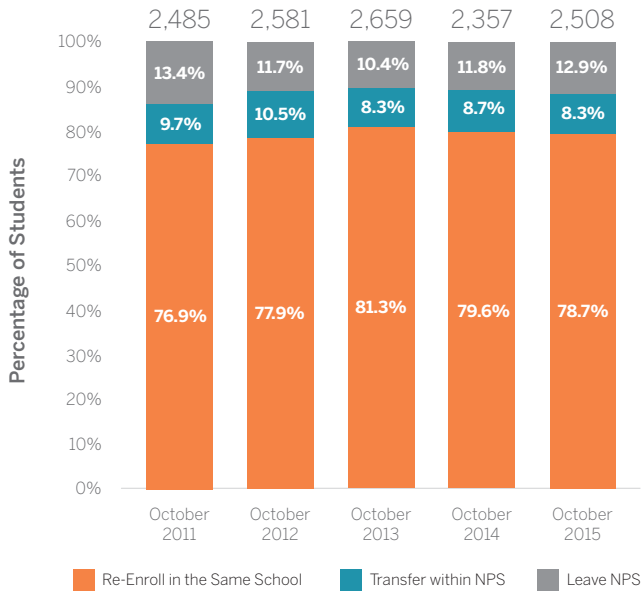
Source: NPS enrollment data.

Independent of the results above, interviewees noted that, with the onset of Newark Enrolls, students have been more likely to remain in the same school in non-transition grades. Observers offered three theories to explain this phenomenon. One common theory is that Newark Enrolls allows families to exercise school choice and select the schools they prefer. Because unhappiness with assigned schools generates transfers and instability, the simple act of allowing school choice promotes the opposite.

A related theory posits that the Newark Enrolls application process helps families make more informed school choices. The guidebook gives families information about schools, and the Family Support Center serves as a resource for child-specific questions about the enrollment process. According to this theory, improved fit between students and schools promotes stability.

A third theory is that Family Support Center staff help families and schools resolve issues underlying students' initial desire to transfer, rather than simply transferring the students when they ask. One staff member affiliated with the Family Support Center said:

"I think what we've realized is that when families come into the support center for a transfer…it's probably rooted in something much deeper than wanting a different school or moving across town…We've spent a lot of time probing more deeply with what the issue was and connecting them with the right people in [the] district who can help them or help support them."

Key Findings (Reliability)

- Student rosters at NPS schools have become more stable and reliable since Newark Enrolls started.

- The share of students who are on the roster of an NPS school at the beginning of the year and never show up has declined by 39%.

- During the school year, more NPS students remain enrolled in their school and fewer transfer within NPS.

Ease & Transparency

Families should have to manage only one timeline and one application to enroll their children in school. All participating LEAs, whether district or charter, should share a common set of rules and preferences that are clearly communicated to families.

Prior to Newark Enrolls, students interested in applying to multiple public schools in Newark had to fill out multiple applications. Because these applications varied in their timelines and requirements, families had to invest significant time in researching their options and managing the process. For example, they often had to stand in line at multiple schools for seats available only on a first-come, first-served basis. Moreover, the number of available seats in different schools and the processes used to make enrollment decisions were not transparent. Interviewees acknowledged that there were various forms of "backdoor enrollment" prior to universal enrollment.

Since its launch, Newark Enrolls has brought ease and transparency to the enrollment process in a number of ways. First, families have to fill out fewer applications than they otherwise would. While data on the number of applications families submitted prior to Newark Enrolls are not readily available, Figure 21 shows the number of different district and charter schools to which families apply today. A total of 7,189 applicants, representing 76% of the applicant pool, chose to apply to more than one school. Had Newark Enrolls not existed, these families would have had to fill out multiple applications and appear at multiple schools to make the choices they make on one application today. Ninety-five percent of the roughly 2,000 families who filled out the 2016-17 Post Application Survey reported that it was easy or very easy to navigate the application online.[40]

[40] This question asked families to select a number from 1 (not easy to navigate) to 4 (very easy to navigate). In the sentence above, the authors are considering the option 3, which 12% of respondents selected, to be "easy." The authors are considering option 4, which 83% of respondents selected, to be "very easy."

Figure 21 – Number of Applications to NPS and Charter Schools (2016-17)

		Number of Charter School LEAs on Application									
		0	1	2	3	4	5	6	7	8	Total
Number of NPS Schools on Application	0		1,094	492	356	189	77	51	23	76	2,358
	1	1,222	295	221	130	64	40	20	57		2,049
	2	886	296	134	61	43	42	54			1,516
	3	996	202	100	68	53	46				1,465
	4	496	143	108	95	85					927
	5	243	117	133	101						594
	6	111	110	111							332
	7	68	118								186
	8	78									78
	Total	4,100	2,375	1,299	811	434	205	125	80	76	9,505

Source: Newark Enrolls.

Second, Newark Enrolls has increased transparency around the admissions process for high-demand schools. Before Newark Enrolls, NPS, independent charter schools, and charter networks ran their own admissions processes. Today, schools representing 96% of public school seats in Newark share a common timeline and application. Once a student applies through Newark Enrolls, the process for matching students to schools is governed by a clearly defined set of rules that apply equally to all families and appear to be implemented with fidelity.[41] In 2017, NPS increased transparency by launching the "Family Enrollment Portal," which allows families to see the seats remaining in each school. As one charter representative said:

"This idea of transparency of high-quality seats and access to them is important...making sure parents know [that] kids and families do not have to go to [a] zone school because that's where they live. They have choice and options throughout the entire system."

Third, NPS has sought to clearly communicate and widely distribute information about schools through annual guidebooks, knowledgeable enrollment center staff, and extensive publicity. One NPS staff member described this transparency as integral to universal enrollment, saying:

"If you're going to have a process that makes it easier to apply to schools, you should also have a source of information to learn about them. Getting information, communication to families, trying to make things as transparent as possible, which was also inspiration for the [parent] portal. All of those things informed how we designed [the platform for seat-tracking and school-facing enrollment systems] and the communications things that went with it."

Since Newark Enrolls started, the district has published a guidebook that has grown from a 16-page guide with directory information and a performance category for each school in Year 1, to a 148-page guide with full-page summaries of each participating school in Year 4. These summaries have a brief description of the school along with standardized information on school performance, school uniforms, community partnerships, clubs, sports, and before- and after-school options. As of the most recent year, the guidebook also reports the percentage of applicants who ranked the school as their top choice and were matched to it the prior year. This information gives applicants a better sense of the likelihood of matching with the school.

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[41] The authors did not conduct a full audit of the Newark Enrolls matching algorithm as part of this project. The analyses the authors have conducted, however, suggest that Newark Enrolls appears to be implementing the algorithm as advertised. For example, a student who does not get into her first choice (School A) can be admitted to her second choice (School B) over a student who ranks School B first, assuming the first student has a higher geographic priority or a better random number. This result is consistent with Newark Enrolls' guidance to "rank up to 8 schools on the application in order of preference" because families do not have to worry that ranking a popular school first will hurt their chances of admission to a school ranked lower on their application.

Limitations

Interviewees reported, however, that the match process, particularly the algorithm it uses, is perceived as confusing or opaque by some families. As one NPS staff member said, "When people hear that word [algorithm] it is very scary." The staff member continued, parents wonder, "Why is a mathematical program determining the future of my child?" NPS staff have worked to address these concerns with clear, straightforward documentation about Newark Enrolls. In 2016-17, NPS commissioned a nine-minute animated video to explain the process in an engaging way.[42] Nonetheless, finding a clear and concise way to explain the algorithm to a new set of families every year remains a central challenge in improving transparency.

Key Findings (Ease and Transparency)

- Over 7,000 families – representing 76% of the applicant pool – have to fill out fewer applications because Newark Enrolls exists.

- Newark Enrolls has increased transparency in a number of ways, including greater consistency in the application process and improved communications materials.

- However, some families continue to find the algorithm to be confusing and opaque.

While this report presents the most comprehensive analysis of the impact of Newark Enrolls on school enrollment in the city to date, there are several limitations to consider.

First, in the quantitative analysis, some student-level data were unavailable for charter schools, so conclusions in those areas can only be drawn for NPS schools.

Second, in the qualitative analysis, interviews were not conducted with school leaders, teachers, or families. Direct parent feedback came through analysis of data from NPS's Post Application Survey, and indirect parent feedback came through interviews with district staff who meet regularly with families.

Third, since Newark Enrolls was launched alongside other initiatives, as well as school closures and consolidations, isolating the impact of Newark Enrolls is sometimes challenging.

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[42] Newark Enrolls (n.d.). About universal enrollment. Retrieved here: http://newarkenrolls.org/about-universal-enrollment/

Conclusion

In 2013, NPS and most of the city's charter schools created a universal enrollment system to address the inefficiencies and inequities present in the prior system. The result, Newark Enrolls, was to be guided by seven principles: choice, access, community, equity, reliability, ease, and transparency.

The evidence presented here shows that the changes in enrollment practices and patterns in Newark since 2013 have been consistent with those guiding principles. Whereas before, there was no publicly available information on the number of students admitted to their preferred schools, today we know that most students match to one of their top *choices.* Special education and free lunch eligible students have greater *access* to the city's most popular schools – including magnet schools – and there is now a more *equitable* distribution of special education students across all of the city's schools. While not all students want to attend a school in their *community*, nearly all who do are matched to a school in their neighborhood. NPS schools receive more *reliable* information about their incoming and returning students at the beginning of each year, and the number of "no shows" has dropped dramatically. In the most recent year of the process, over 7,000 students had to fill out fewer applications than they would have had to prior to Newark Enrolls, *easing* the process for many families. Since its inception, Newark Enrolls has been *transparent* by informing families of their right to school choice and giving them timely and accurate information to make those decisions.

Despite these positive changes, this study points to at least two areas for improvement. While Newark Enrolls has made progress in creating a more equitable distribution of special education and free lunch students across schools, these may not be the only populations to preference through universal enrollment. Data reveal other dimensions, including ELL status, along which there is more segregation in Newark's schools. The Newark community, in accordance with federal and state policies, should consider whether it would be valuable to use priorities built into Newark Enrolls to decrease segregation along other dimensions.

Furthermore, some families continue to express concern that the process – particularly the algorithm – used to match students is not fully transparent. Newark has made important strides in more clearly explaining the algorithm and should continue to do so. Other districts with similar choice processes have developed practices and procedures that Newark could consider. In New Orleans, for example, parents can now request a "Pathway Report," which explains in detail their "child's path through the computer matching program, showing exactly why the child did or did not get in to each school."[43]

Newark families chose schools before Newark Enrolls, they choose schools now, and they will continue to choose schools in the future. The question, therefore, is not whether families will choose schools, but how and how fairly. Newark Enrolls created an infrastructure for school choice that has a number of benefits. It is guided by a clear set of principles – choice, access, community, equity, stability, ease, and transparency – that address many of the inequities that uneven access to choice had created. It has facilitated the implementation of citywide policies – for example, improved access for special education students – that would be difficult in a more laissez faire system. And, it has created a wealth of data about the school options that families want for their children.

After two decades of state control, NPS is transitioning back to full local control. During this period, the Board of Education and the new Superintendent no doubt will evaluate all aspects of NPS's operations, including the way in which school choice is exercised. During this process, the Board and NPS leadership should establish a clear set of principles – whether those currently outlined by Newark Enrolls or others – and continue to monitor progress against those principles. As the Newark community considers what comes next, this report can contribute to the discussion by sharing some information about what has worked well – and what has worked less well – in the implementation of Newark Enrolls.

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[43] Dreilinger, D. (2016, Nov. 29). OneApp changes for 2017: Here's what you need to know. The Times-Picayune. Retrieved here: http://www.nola.com/education/index.ssf/2016/11/oneapp_2017_changes.html

Appendix

Figure A1
Change in Average Distance Between Home and School, 2012-13 to 2014-15, NPS Only[46]
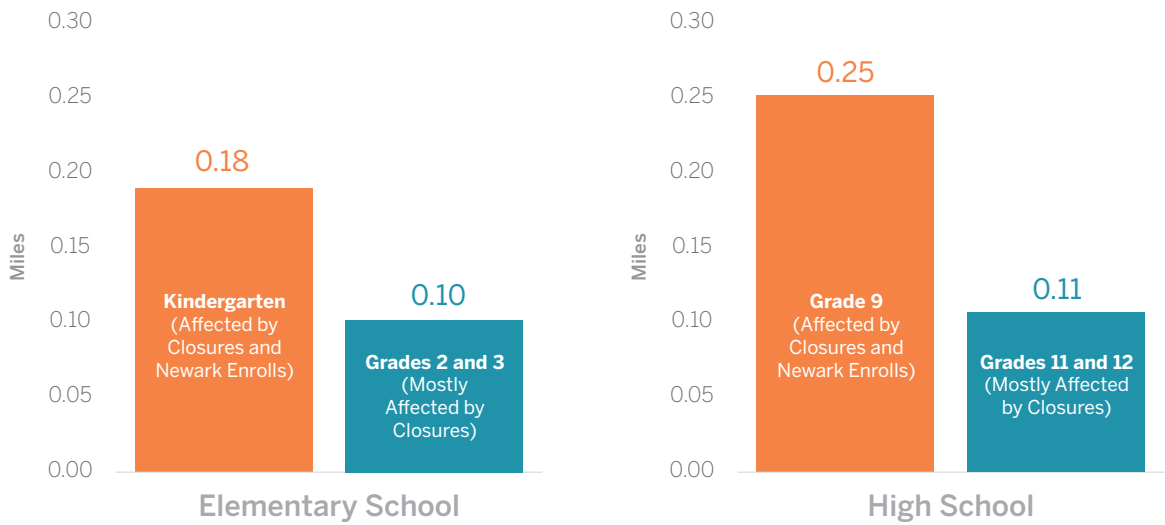
	Elementary School			High School	
Avg. Distance (12-13)	0.41	0.43		1.34	1.33
Avg. Distance (14-15)	0.59	0.53		1.59	1.44

[46] Source: Analysis of NPS enrollment and address data. Note: To estimate the share of the increase in distance due to school closures, the authors compared the increase in distance for kindergarten and grade 9, shown in Figure 13, to the increase in distance for non-transition grades. For kindergarten, grades 2 and 3 served as the comparison grades, as these grades would be in the same school – so affected by closures – but not yet affected by universal enrollment (except through infrequent transfers). For high school, grades 11 and 12 served as the comparison grades, as these grades would be affected by closures, but not yet affected by universal enrollment (again, except through transfers). Figure A1 shows that the increase in distance for kindergarten between 2012-13 and 2014-15 (0.18 miles) was almost twice as large as the increase in distance for grades 2 and 3 (0.10 miles) during the same period. Likewise, the increase in distance for ninth grade between 2012-13 and 2014-15 (0.25 miles) was more than twice as large as the increase in distance for grades 11 and 12 (0.11 miles). This analysis suggests that school closures accounted for at most half of the increase in distance observed during this time period. (This estimate is conservative because Newark Enrolls likely affected the distance traveled in non-transition grades to a degree.)

Figure A2
Match Rate to First Choice School by Student Type and School Type (2013-14 to 2016-17)

Match Rate to First Choice School
(All Schools)

Match Rate to First Choice School
(Charter Schools)

Match Rate to First Choice School
(NPS Magnet Schools)

Match Rate to First Choice School
(NPS Traditional Schools)

Source: Newark Enrolls. Note: Results only include students who made at least one valid choice to a school where the student is eligible to attend. Results exclude students in 2013-14 who participated in the process because their school was closing or being consolidated with another school. Rank is based on a student's first round choices in years when there were two rounds (13-14 and 14-15). The student categories above are non-exclusive (e.g. some IEP students qualify for free lunch, etc.).

Figure A3
Share of Students Requiring Special Education Services or Qualifying for Free Lunch by Grade by Year by School Type

Special Education % of Enrollment

Charters	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Kindergarten	2%	3%	2%	3%	3%	3%
Grade 1	5%	5%	4%	5%	6%	6%
Grade 2	6%	6%	6%	7%	6%	8%
Grade 3	4%	9%	8%	10%	9%	8%
Grade 4	7%	7%	10%	11%	11%	11%
Grade 5	9%	10%	7%	12%	12%	12%
Grade 6	9%	11%	9%	11%	12%	12%
Grade 7	12%	10%	11%	12%	12%	12%
Grade 8	14%	12%	9%	14%	13%	12%
Grade 9	11%	13%	13%	16%	15%	15%
Grade 10	14%	12%	17%	14%	15%	16%
Grade 11	13%	16%	13%	18%	16%	17%
Grade 12	8%	14%	11%	14%	17%	16%
All Grades	**8%**	**9%**	**8%**	**10%**	**10%**	**10%**

NPS Traditional	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Kindergarten	8%	7%	9%	6%	6%	7%
Grade 1	9%	9%	8%	8%	10%	9%
Grade 2	10%	13%	12%	11%	13%	13%
Grade 3	14%	13%	14%	15%	14%	16%
Grade 4	16%	16%	15%	17%	17%	15%
Grade 5	19%	17%	18%	18%	18%	18%
Grade 6	17%	20%	19%	19%	18%	20%
Grade 7	18%	18%	20%	20%	19%	19%
Grade 8	20%	17%	18%	21%	20%	20%
Grade 9	28%	23%	23%	20%	21%	22%
Grade 10	25%	24%	24%	23%	17%	20%
Grade 11	25%	20%	22%	22%	18%	18%
Grade 12	24%	21%	24%	22%	20%	21%
All Grades	**17%**	**16%**	**17%**	**17%**	**16%**	**16%**

NPS Magnet	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Grade 7	1%	3%	7%	8%	6%	7%
Grade 8	1%	2%	2%	8%	6%	6%
Grade 9	5%	6%	5%	13%	13%	13%
Grade 10	5%	7%	7%	7%	10%	12%
Grade 11	5%	6%	6%	7%	6%	8%
Grade 12	6%	5%	5%	6%	6%	5%
All Grades	**5%**	**6%**	**6%**	**8%**	**8%**	**10%**

All NPS	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Kindergarten	8%	7%	9%	6%	6%	7%
Grade 1	9%	9%	9%	9%	10%	10%
Grade 2	10%	13%	12%	11%	13%	13%
Grade 3	14%	13%	15%	15%	14%	16%
Grade 4	16%	17%	16%	17%	18%	16%
Grade 5	19%	18%	18%	18%	19%	18%
Grade 6	18%	20%	20%	20%	19%	20%
Grade 7	18%	18%	20%	20%	19%	19%
Grade 8	20%	17%	19%	21%	20%	20%
Grade 9	21%	19%	17%	19%	19%	20%
Grade 10	20%	19%	19%	18%	16%	18%
Grade 11	21%	17%	18%	18%	15%	16%
Grade 12	21%	20%	21%	21%	20%	20%
All Grades	**17%**	**16%**	**16%**	**17%**	**16%**	**16%**

Free Lunch % of Enrollment

Charters	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Kindergarten	72%	71%	68%	74%	78%	74%
Grade 1	73%	74%	68%	75%	78%	75%
Grade 2	72%	74%	69%	73%	77%	74%
Grade 3	72%	74%	69%	76%	73%	72%
Grade 4	70%	75%	70%	72%	76%	69%
Grade 5	70%	74%	69%	74%	74%	72%
Grade 6	70%	71%	68%	74%	73%	69%
Grade 7	68%	67%	67%	68%	72%	69%
Grade 8	66%	70%	63%	65%	71%	65%
Grade 9	73%	74%	64%	62%	69%	68%
Grade 10	63%	71%	68%	65%	72%	69%
Grade 11	66%	67%	72%	66%	68%	70%
Grade 12	55%	59%	63%	70%	65%	75%
All Grades	**70%**	**72%**	**68%**	**71%**	**74%**	**71%**

NPS Traditional	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Kindergarten	80%	79%	63%	69%	66%	63%
Grade 1	84%	85%	82%	75%	83%	80%
Grade 2	84%	85%	83%	80%	83%	83%
Grade 3	85%	86%	82%	81%	82%	82%
Grade 4	84%	86%	83%	80%	83%	80%
Grade 5	82%	85%	83%	79%	82%	81%
Grade 6	81%	83%	82%	80%	80%	80%
Grade 7	79%	83%	80%	80%	80%	82%
Grade 8	79%	82%	80%	77%	77%	79%
Grade 9	77%	87%	78%	72%	70%	70%
Grade 10	75%	84%	81%	78%	64%	70%
Grade 11	72%	82%	77%	76%	63%	65%
Grade 12	70%	77%	70%	76%	61%	62%
All Grades	**80%**	**84%**	**80%**	**78%**	**77%**	**77%**

NPS Magnet	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Grade 7	72%	72%	80%	74%	68%	66%
Grade 8	68%	71%	73%	76%	62%	78%
Grade 9	68%	72%	74%	68%	69%	71%
Grade 10	67%	73%	74%	72%	62%	71%
Grade 11	62%	72%	73%	69%	63%	68%
Grade 12	66%	64%	72%	68%	56%	67%
All Grades	**66%**	**71%**	**73%**	**70%**	**63%**	**70%**

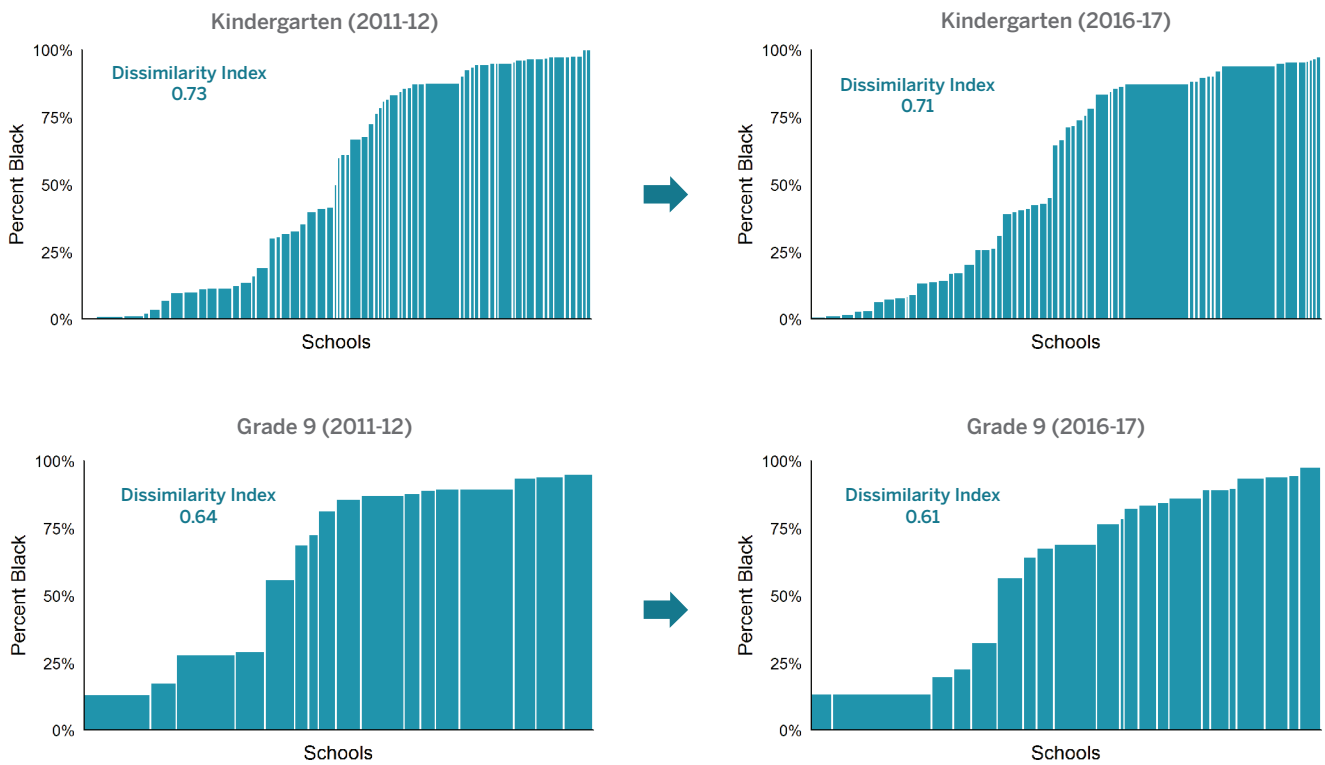| All NPS	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Kindergarten	80%	79%	63%	69%	66%	63%
Grade 1	84%	85%	82%	75%	83%	80%
Grade 2	84%	85%	83%	80%	83%	83%
Grade 3	85%	86%	82%	81%	82%	82%
Grade 4	84%	86%	83%	80%	83%	80%
Grade 5	82%	85%	83%	79%	82%	81%
Grade 6	81%	83%	82%	80%	80%	80%
Grade 7	79%	82%	80%	80%	79%	81%
Grade 8	79%	81%	80%	77%	76%	78%
Grade 9	74%	81%	76%	70%	69%	70%
Grade 10	72%	80%	78%	76%	63%	70%
Grade 11	68%	78%	76%	73%	63%	66%
Grade 12	67%	72%	69%	73%	58%	62%
All Grades	**79%**	**82%**	**79%**	**77%**	**75%**	**76%**

Source: School-by-grade enrollment data from the NJDOE. Note: the category "All NPS Schools" includes traditional, magnet, special education, and transfer schools.

Figure A4
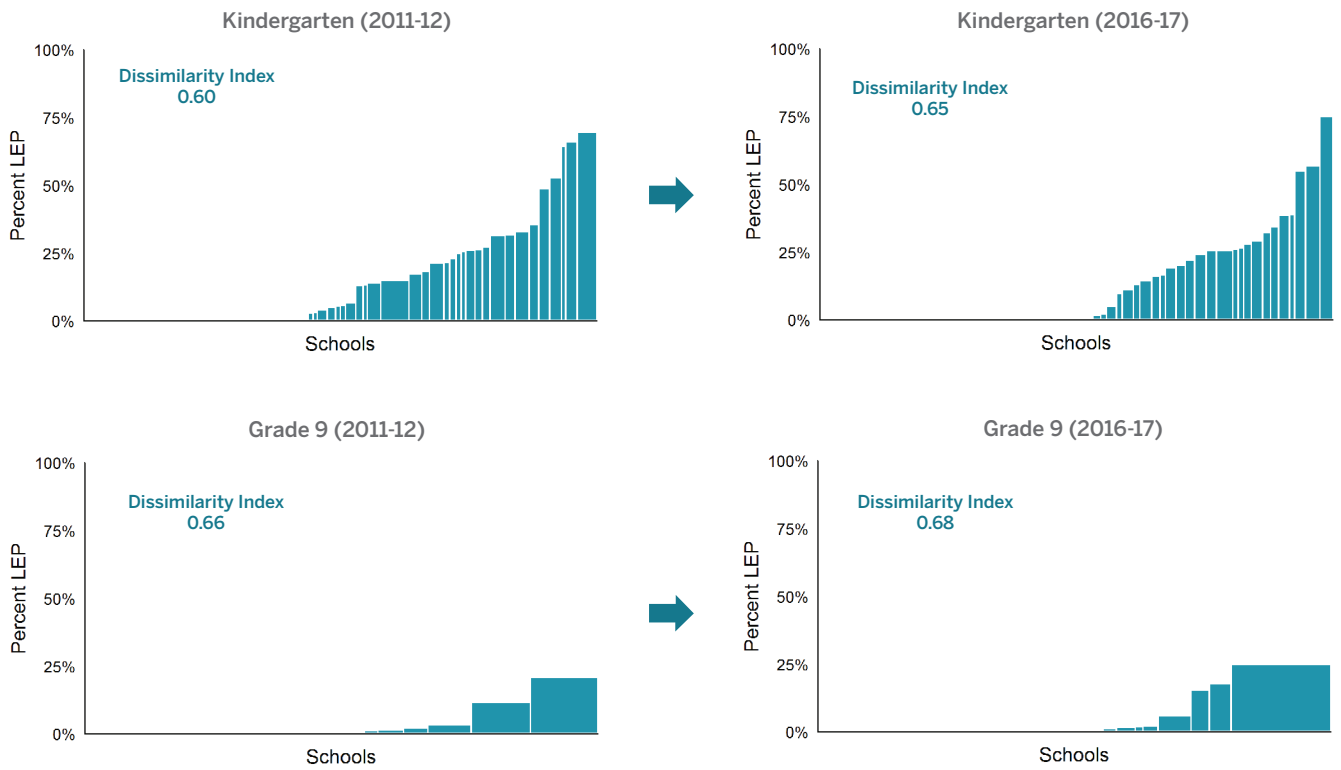## % Free Lunch by School (2011-12 and 2016-17)
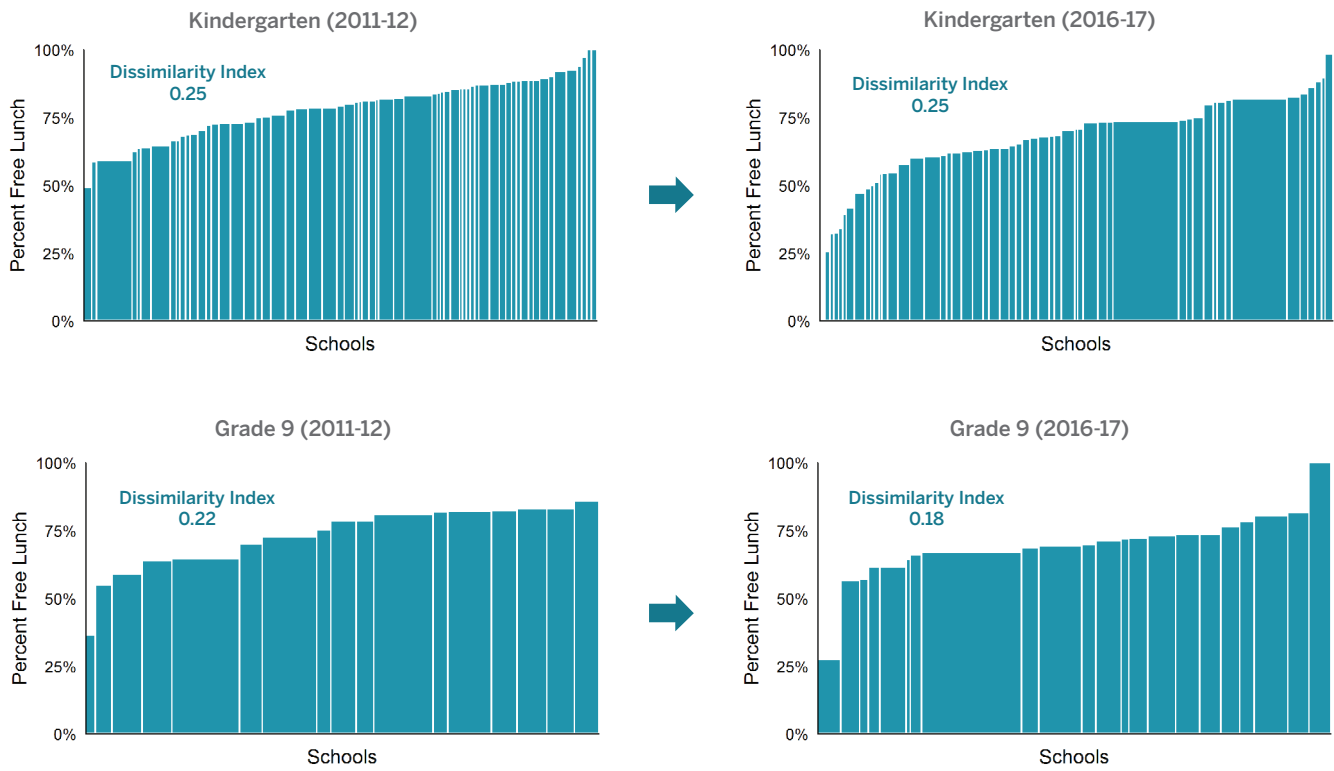
Source: School-by-grade enrollment data from the NJDOE. Note: the dissimilarity index represents the share of free lunch students who would have to move schools to ensure an even distribution of free lunch students across all schools. Includes only traditional, magnet, and charter schools with at least 15 students in the grade being analyzed.

Figure A5
% Black by School (2011-12 and 2016-17)

Kindergarten (2011-12)

Dissimilarity Index
0.73

Kindergarten (2016-17)

Dissimilarity Index
0.71

Grade 9 (2011-12)

Dissimilarity Index
0.64

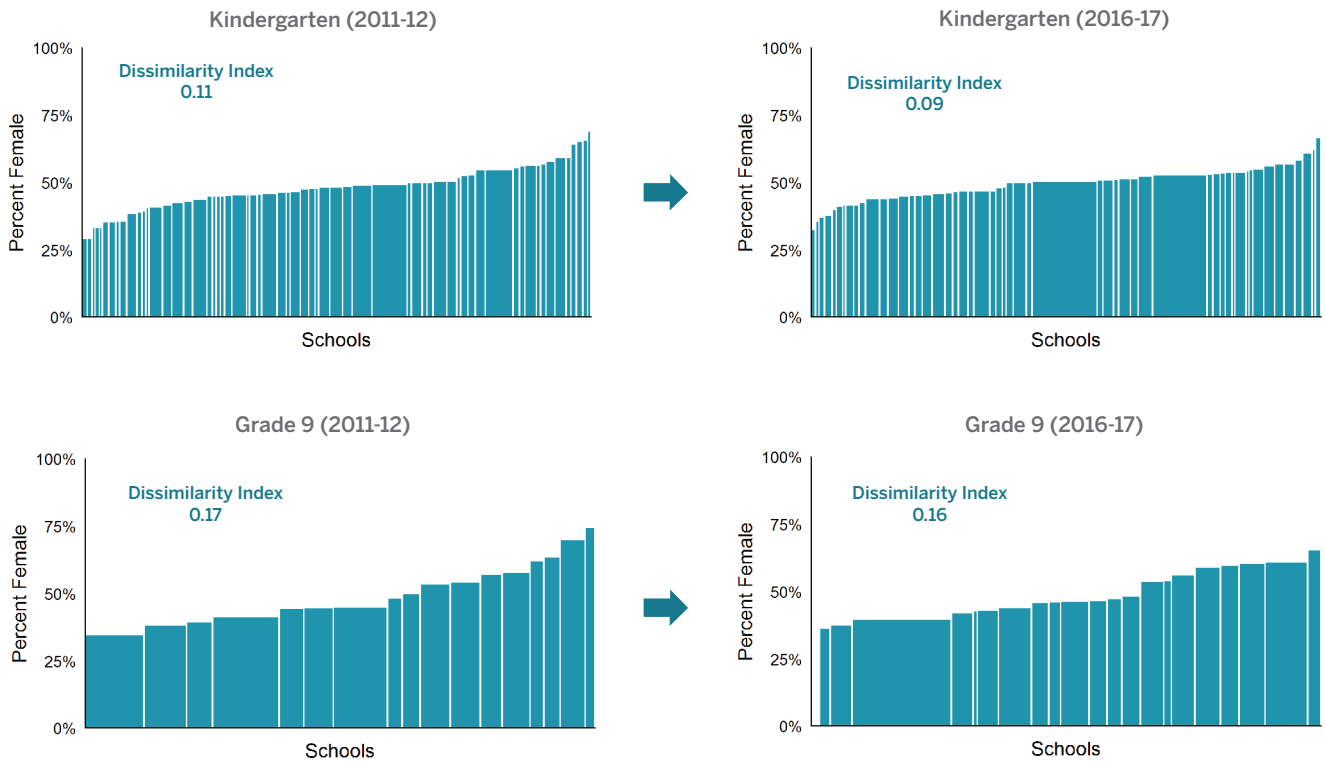Grade 9 (2016-17)

Dissimilarity Index
0.61

Source: School-by-grade enrollment data from the NJDOE. Note: the dissimilarity index represents the share of Black students who would have to move schools to ensure an even distribution of Black students across all schools. Includes only traditional, magnet, and charter schools with at least 15 students in the grade being analyzed.

**Figure A6**
% English Language Learners by School

Source: School-by-grade enrollment data from the NJDOE. Note: the dissimilarity index represents the share of ELL students, defined as those with limited English Proficiency, who would have to move schools to ensure an even distribution of ELL students across all schools. Includes only traditional, magnet, and charter schools with at least 15 students in the grade being analyzed.

Figure A7
% Female by School

Kindergarten (2011-12)

Dissimilarity Index
0.11

Kindergarten (2016-17)

Dissimilarity Index
0.09

Grade 9 (2011-12)

Dissimilarity Index
0.17

Grade 9 (2016-17)

Dissimilarity Index
0.16

Source: School-by-grade enrollment data from the NJDOE. Note: the dissimilarity index represents the share of female students who would have to move schools to ensure an even distribution of female students across all schools. Includes only traditional, magnet, and charter schools with at least 15 students in the grade being analyzed.

Figure A8
Dissimilarity Index by Year by Student Characteristic (Kindergarten)
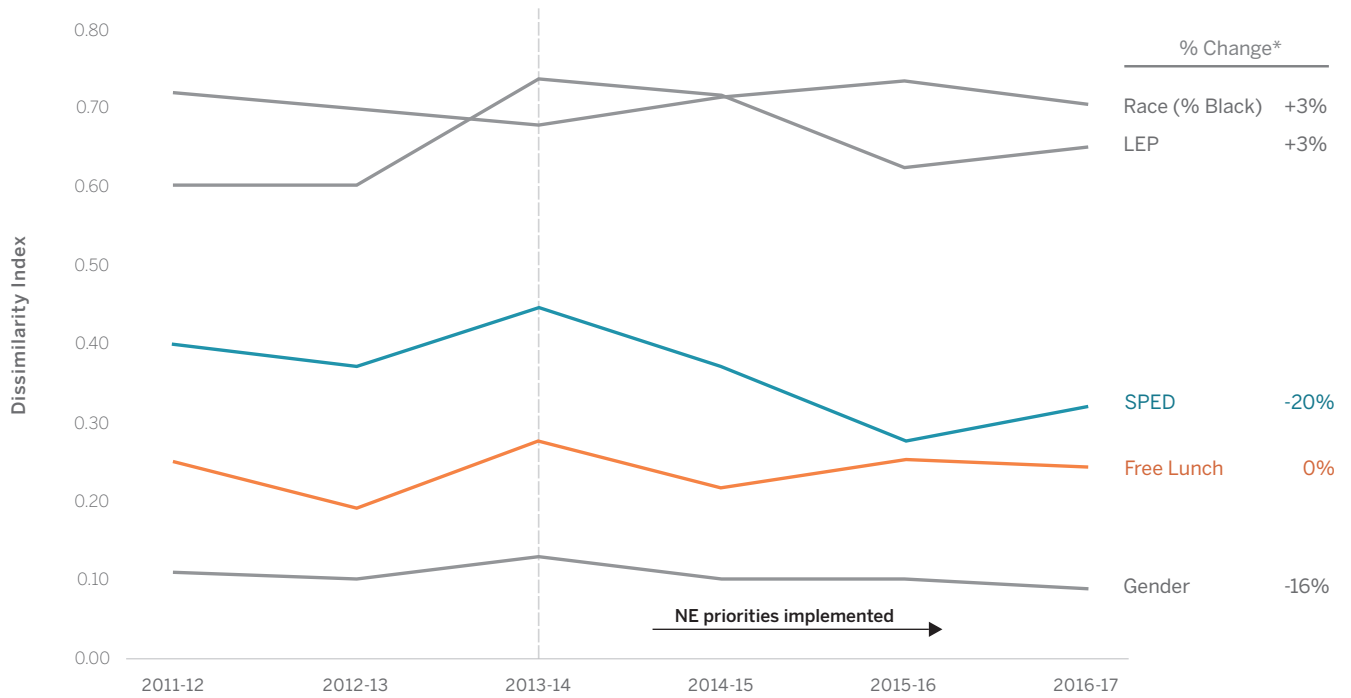
Figure A9
Dissimilarity Index by Year by Student Characteristic (Ninth Grade)
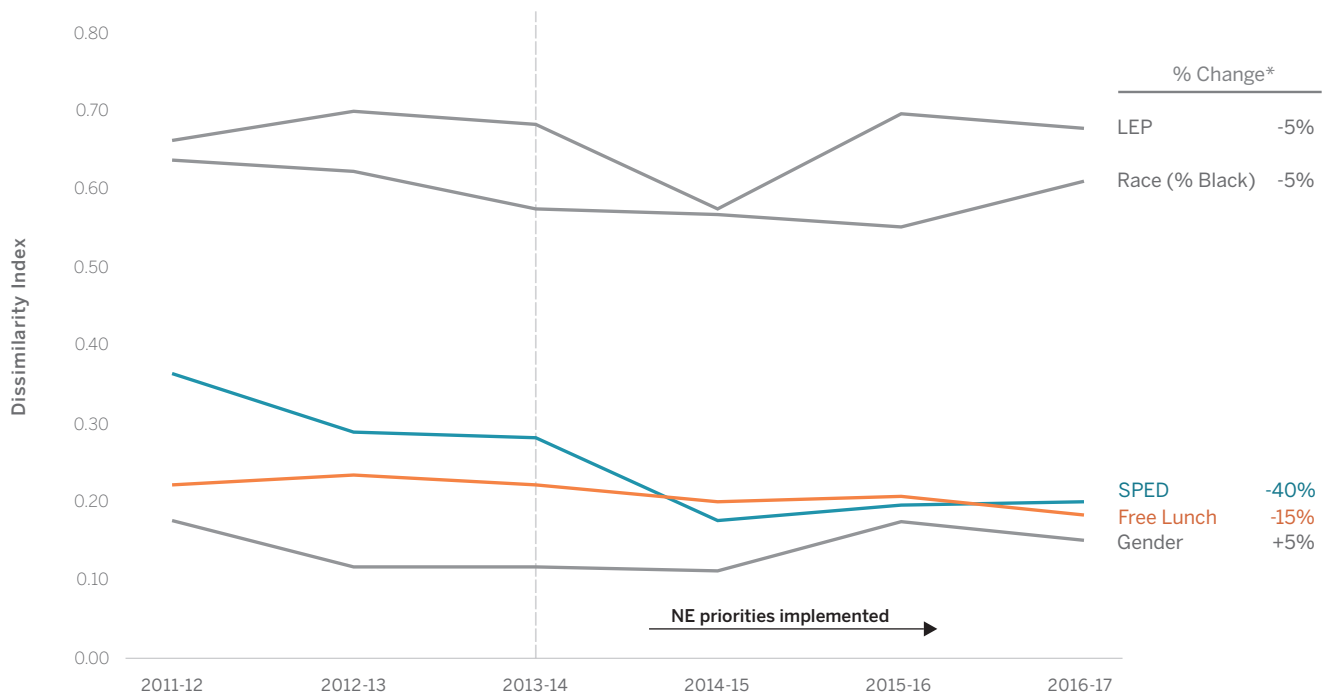
Source: School-by-grade enrollment data from the NJDOE. *% Change compares the three-year average before the SPED and Free Lunch priorities were implemented (2011-12 to 2013-14) with the three-year average after the priorities were implemented (2014-15 to 2016-17). Note: race is measured by the dissimilarity index for % Black, and gender is measured by the dissimilarity index for % female. Includes only traditional, magnet, and charter schools with at least 15 students in the grade being analyzed.

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