AT-RISK PRIORITY IN D.C.’S COMMON LOTTERY: POTENTIAL FOR ACCESS AND DIVERSITY

CHELSEA COFFIN | JULY 21ST, 2020

Our analysis finds that a priority for at-risk students in D.C.’s common lottery has the potential to both improve the chances for at-risk students to match at a school they have ranked and to increase socioeconomic diversity, especially at a subset of schools that serve low percentages of students who are at-risk. In D.C., 27 percent of students attend their in-boundary school, with the rest entering the common lottery to enroll at a school as an out of boundary student, at a public charter school, or at a citywide school. The common lottery allows families to rank up to 12 schools using one application, and matches families to these schools based on a randomly-assigned lottery number. However, sibling preference means that the lottery preserves existing school demographics, making the lottery a less effective means of securing a slot for students without siblings at schools, particularly where waitlists are high – in D.C., many schools with high waitlists serve a low percentage of students who are considered to be at-risk.

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2 There are many more siblings who apply than children of staff, making this the most important preference for public charter schools.
3 In D.C., schools receive additional funding for students who qualify for public assistance (Temporary Assistance to Needy Families, TANF, or Supplemental Nutritional Assistance Program, SNAP), experience homelessness, are involved in the foster care system, or are overage in high school.
This analysis simulates a priority for at-risk applicants using data collected from 12 public charter schools with long waitlists and low percentages of at-risk students. At the schools in our analysis, 15 percent of students are at-risk compared to 45 percent of all students in D.C., and waitlists are high, with an average of 287 applicants on the waitlist for three-year-olds attending pre-kindergarten (PK3) compared to an average of 78 applicants for PK3 across D.C. schools. At-risk applicants are less likely to match at these schools due in part to sibling preference: In our analysis, siblings who are not at-risk receive an estimated 36 percent of the available PK3 seats, and at-risk students without a sibling preference receive six percent of seats. Overall in our analysis, the match rate for PK3 at-risk applicants is lower, estimated to be four percent compared to 10 percent for all applicants under current conditions.

Implementing a priority for at-risk applicants in D.C.’s common lottery has the potential to shift demographics at some schools and increase access to these schools for at-risk students. The at-risk preference would make a meaningful difference in access and student body composition even if it were placed below the sibling preference. Under this scenario at public charter schools with a low percentage of at-risk students and high waitlists, PK3 match rates for at-risk students are expected to increase from four percent to 42 percent for the schools included in the analysis. Consequently, the share of at-risk students for the incoming PK3 class would increase from 15 percent to 61 percent.

Background

In D.C., 45 percent of students are considered to be “at-risk,” defined as students who qualify for public benefits (Temporary Assistance to Needy Families, TANF, or Supplemental Nutritional Assistance Program, SNAP), experience homelessness, are involved in the foster care system, or are overage in high school. The majority of at-risk students are living in households with lower income as an estimated 89 percent of at-risk students received SNAP benefits in school year 2018-19.4 Schools receive additional funding for each at-risk student, in part to help close achievement gaps between at-risk students and other students. In 2018-19, one out of every two not at-risk students met or exceeded expectations on the state assessment compared to one out of every five at-risk students.5

One potential path for improving learning outcomes for at-risk students in D.C. is to increase the chance that at-risk students are able to enroll at their school of choice, including their in-boundary District of Columbia Public Schools (DCPS) option. If at-risk students are most interested in their in-boundary DCPS school, they have a guaranteed seat beginning in kindergarten. If they seek a DCPS school as an out of boundary student, or if they seek a public charter school, or a pre-kindergarten seat, they must apply in the common lottery.

However, at-risk students may have lower access to their preferred schools, especially if the schools serve a low percentage of at-risk students and have high waitlists, for two key reasons. First, sibling preference at many schools in the common lottery means that schools are likely to maintain existing demographics as schools with a low percentage of at-risk students tend to enroll siblings who are likely to be not-at-risk. Siblings receive 70 percent of seats on average in pre-kindergarten for DCPS schools that have a STAR rating of 5, and up to 100 percent of seats in some cases.6 Second, parents of at-risk students might be less interested in schools with a small share of at-risk students for a variety of reasons, including location – many schools with a small share of at-

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6 Data are not available for public charter schools. DCPS data are available here: https://enrolldcps.dc.gov/node/61
risk students in D.C. are located far from neighborhoods with the greatest numbers of at-risk students. In general, at-risk students are less likely to use the common lottery. They comprised approximately 35 percent of applicants compared to 47 percent of all students in 2017-18. For these reasons, schools that have a low percentage of at-risk students do not become more socioeconomically diverse, as the future student body will closely mirror the current student body.

How does D.C.’s common lottery work?

The My School DC common lottery is a single, random lottery that determines placement for new students at all participating schools. Students should use the common lottery if they seek a seat in a PK3 or PK4 program at any DCPS school (including their in-boundary school), a DCPS school outside their boundary or feeder pattern for PK3 through Grade 12 (including DCPS citywide schools), a DCPS selective high school or program for Grades 9 through 12, or a participating public charter school offering PK3 through Grade 12. Families can rank up to 12 schools before the lottery deadline. Students can only be matched with one school and are waitlisted only at the schools they ranked higher than the school where they are matched or enrolled. After lottery results are released, families and students must enroll at the school where they matched to accept the seat. During the post-lottery period, students may be offered seats at schools where they were waitlisted.

A priority for at-risk applicants in the common lottery, through a preference or reserved seats, has the potential to improve access to schools that are top choices for at-risk students. A lottery preference for at-risk students would give at-risk applicants a better chance at a match in the common lottery, similar to the existing option for sibling preference that most schools offer. Reserving seats for at-risk students would mean that schools (particularly those with a low percentage of at-risk students) could hold a portion of their seats specifically for at-risk students until a certain date, such as the beginning of the school year.

In addition to expanding access to certain schools for at-risk students, a priority for at-risk students could increase socioeconomic diversity at some schools. In school year 2018-19, 19 schools had a student body with less than 10 percent of students considered to be at-risk compared to a student population comprised of 45 percent at-risk students. Studies have demonstrated academic, social, and non-educational benefits from attending diverse schools, particularly when no group makes up more than 30 percent of the student population. This is especially true when schools make an effort to integrate groups in practice beyond shifting student demographics.

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Other school districts have led similar efforts to prioritize economically disadvantaged students, with some success. In Los Angeles, Citizens of the World Charter Schools use a weighted lottery with a preference for students eligible for free or reduced price lunch, and serve between 26 and 45 percent of students who are socioeconomically disadvantaged. On state assessments in all subjects, these schools outperform both the state and the Los Angeles Unified School District, including for socioeconomically disadvantaged students. Dallas Independent School District reserves a certain percentage of seats for students who live within census blocks identified as having a socioeconomic disadvantage. The D.C. Council has introduced legislation for public charter schools to opt into a priority for at-risk students, and several public charter schools have expressed interest in implementing this priority, making this a possibility in D.C.

Examining the potential impact of an at-risk priority on access and student demographics

Prior research shows that an at-risk preference will lead to a relatively small change across all DCPS and public charter schools in D.C. The common lottery board organization, My School DC (MSDC), conducted an analysis of a preference for at-risk students in the common lottery, showing

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outcomes would only improve for eight percent of at-risk students even if the at-risk preference was placed above sibling preference.\textsuperscript{14} This means that with an at-risk preference, a small percentage of at-risk students would receive a match at a school they ranked higher than under the current common lottery framework. The MSDC study, however, made projections for the city as a whole, and not individual school campuses. Our analysis of school-level changes shows that some schools could experience dramatic demographic shifts, especially a subset of public charter schools with low percentages of at-risk students and high waitlists.

Methodology

This analysis develops four scenarios of how a priority for at-risk students would affect lottery results at a composite school we call “Balance PCS.” To construct the composite applicant pool for Balance PCS, the D.C. Policy Center collaborated with a subset of public charter schools that serve a low percentage of at-risk students and have high waitlists, and shared summaries of their school’s lottery outcomes. The analysis does not incorporate the interaction of the in-boundary preference for DCPS students as data are not available to do so at this time.\textsuperscript{15} The findings investigate four scenarios of priority\textsuperscript{16} for at-risk applicants at Balance PCS:

1. **No priority for at-risk applicants.** This scenario reflects the current common lottery preference order at most public charter schools where siblings and children of staff have preference and match in the common lottery to seats at a particular school before all other applicants.

2. **Preference for at-risk applicants, ranked before siblings of current students and children of staff.** Under this scenario, at-risk students have the highest ranked preference and match to seats first, followed by siblings of current students and children of staff, and then all other applicants.

3. **Preference for at-risk applicants, ranked after siblings of current students and children of staff.** Under this scenario, siblings of current students and children of staff have the highest ranked preference and match to seats first, followed by the next highest preference for at-risk applicants, and then all other applicants.

4. **Reserve 30 percent of seats for at-risk applicants.** Under this scenario, one lottery that includes only at-risk applicants matches 30 percent of seats exclusively to at-risk applicants. Then, another lottery matches the remaining 70 percent of seats first to siblings of current students, then children of staff, then those with no preference (at-risk applicants who did not match in the other lottery are included in the no preference category). The threshold of 30 percent was chosen as it would double the percent of students who are considered at-risk at schools in the sample, but it is intended to be illustrative as a school could choose to reserve a higher percentage of seats.


\textsuperscript{15} In-boundary preferences for DCPS are not examined in this analysis as data are not available. An in-boundary preference places additional limitations on the number of seats available to applicants without preferences, so an at-risk preference would be likely to have a greater impact at schools where many students match with in-boundary preference.

\textsuperscript{16} See Appendix I for a more detailed explanation of the methodology.
Findings show how an at-risk priority would impact matches to the entry grade of pre-kindergarten for three-year-old students (PK3). The analysis focuses on PK3 as this is the grade where a priority for at-risk applicants in the lottery could make the most difference: The majority of schools in D.C. offer PK3 as their entry grade (130 schools out of 224 in 2018-19); PK3 has the highest number of applicants compared to other grades (22 percent of applicants in 2019); and schools offering PK3 have the most grades (eight on average) and therefore the most potential for sibling preference to impact matches in the lottery.

In the dataset from our subset of public charter schools, applicants who match are more likely to enroll than they are at other schools. The actual capture rate (number of students who enroll as a share of the number of offers made) across the schools for PK3 in our sample was 71 percent, higher than the citywide average of 50 percent in 2018-19. At-risk applicants who match are slightly more likely to enroll, at an average of 83 percent across the public charter schools in our sample.

For simplicity, the analysis assumes that 71 percent of matched students enroll given the average across schools. The remaining 29 percent of students would come from the waitlist along the same preferences as in the initial lottery without changing the composition of the incoming class too much. In the real world, matched applicants must choose to actually enroll at a school, meaning that the students who eventually enroll can differ from those who match in the lottery at first. In addition, other applicants can apply during the post-lottery period. These assumptions are founded on the high percentage of students who do enroll at these schools as well as long waitlists, which make it unlikely that applications in the post-lottery period would result in matches.

Composite applicant pool and school profile at Balance PCS

Among the 20 public charter schools with the highest waitlists for entry grades in the city, 12 shared data for this analysis. These schools currently serve low percentages of at-risk students, have long waitlists, and offer fewer PK3 seats.

Balance PCS school profile

<table>
<thead>
<tr>
<th>Characteristic in 2017-18 school year</th>
<th>Balance PCS</th>
<th>DCPS and public charter school average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of students who are at-risk</td>
<td>15%</td>
<td>47%</td>
</tr>
<tr>
<td>Number of waitlisted students for PK3</td>
<td>287</td>
<td>70</td>
</tr>
<tr>
<td>Number of PK3 seats offered</td>
<td>35</td>
<td>43</td>
</tr>
</tbody>
</table>

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18 My School DC. 2019. Applications and seats offered by grade. Available at: https://www.myschooldc.org/resources/data
19 Defined as waitlists in the top 25th percentile.
Based on the characteristics of the 12 schools that shared data, Balance PCS has 375 applicants for PK3, including 48 at-risk applicants, 13 siblings, two who are both siblings and at-risk, and 1 child of staff. The school has 35 seats to offer for this pool of applicants.\(^{20}\) Notably, at-risk applicants across these schools reflect current enrollment: 13 percent of applicants are considered to be at-risk compared to 15 percent of enrolled students at these schools. And siblings represent 42 percent of open seats, meaning that 58 percent of seats are open to others.

![Applicant pool diagram]

Source: D.C. Policy Center analysis.

Balance PCS lottery outcomes by scenario

For each scenario, we examined the composition of the incoming class, the composition of the waitlist, and match rates by applicant group. These scenarios are sensitive to the number of siblings, number of children of staff, and number of applicants who are at-risk compared to the number of open seats. If the number of at-risk or sibling applicants is greater than the number of open seats, they will crowd out other applicants depending on the order of preference.

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\(^{20}\) The total number of applicants has been reduced from 581 average applicants across schools to reflect that 64 percent of applicants ranked the school in their top three – and applicants to the common lottery are more likely to match at schools they ranked first, second, or third.
Composition of incoming class

These scenarios have varying implications for the percent of students who will be at-risk within the incoming PK3 class at Balance PCS, where 15 percent of students are currently considered to be at-risk. Under the status quo, 11 percent of the incoming class is at-risk, compared to a high of 100 percent of the incoming class if an at-risk preference is first. The other two scenarios fall in between. If an at-risk preference is last, 61 percent of the class is at-risk, and if 30 percent of seats are reserved, 31 percent of the incoming class will be at-risk students. Shifts in demographics in PK3 would gradually shift the demographics of the entire school. Applicants who are both at-risk and siblings match under all scenarios. All 13 siblings as well as the child of staff match except when the at-risk preference is ranked first, a situation where none from these groups that are not at-risk would match.

Composition of incoming pre-kindergarten 3 class

- **11% at-risk**
  - At-risk, 2
  - At-risk and sibling, 2
  - No preference, 18
  - Sibling, 13
  - Staff, 1

- **100% at-risk**
  - At-risk, 34

- **61% at-risk**
  - At-risk, 20
  - At-risk and sibling, 2
  - No preference, 11
  - Sibling, 13
  - Staff, 1

- **31% at-risk**
  - At-risk, 9
  - At-risk and sibling, 2
  - No preference, 11
  - Sibling, 13
  - Staff, 1

Source: D.C. Policy Center analysis.
D.C. Policy Center | dcpolicycenter.org
Composition of waitlist

Each of these scenarios benefits certain groups over others. Under the status quo, at-risk applicants would comprise 14 percent of the waitlist with 339 names. If the at-risk preference is first, at-risk applicants comprise only four percent of the waitlist. Applicants with no preference represent the greatest share of the waitlist – at least 86 percent of those who don’t match – under any scenario. Siblings and staff are only on the waitlist if the at-risk preference is first.

Match rate

The percent of students who match shows how each scenario provides relative benefits to a particular group. Under the status quo, average match rate across all groups is 10 percent and four percent for at-risk applicants. If an at-risk preference is last, this match rate for at-risk applicants rises to 42 percent (higher than the status quo of four percent or 19 percent with reserved seats). The match rate is highest for at-risk applicants at 71 percent with an at-risk preference first. Siblings
(including those who are at-risk) and children of staff have a 100 percent match rate unless the at-risk preference is first, when these groups have a match rate of zero percent. The group with no preference has a match rate at six percent or lower throughout, but it is zero percent if there is an at-risk preference, either first or last.

### Percent matching by group and scenario

<table>
<thead>
<tr>
<th>Applicant group</th>
<th>Scenario</th>
<th>Percent matching</th>
</tr>
</thead>
<tbody>
<tr>
<td>At-risk</td>
<td>Status quo</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>At-risk first</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>At-risk last</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Reserved seats</td>
<td>100%</td>
</tr>
<tr>
<td>At-risk and sibling</td>
<td>Status quo</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>At-risk first</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>At-risk last</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Reserved seats</td>
<td>100%</td>
</tr>
<tr>
<td>No preference</td>
<td>Status quo</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>At-risk first</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>At-risk last</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Reserved seats</td>
<td>4%</td>
</tr>
<tr>
<td>Sibling</td>
<td>Status quo</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>At-risk first</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>At-risk last</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Reserved seats</td>
<td>100%</td>
</tr>
<tr>
<td>Staff</td>
<td>Status quo</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>At-risk first</td>
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</tr>
<tr>
<td></td>
<td>At-risk last</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Reserved seats</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: D.C. Policy Center analysis.

D.C. Policy Center | dcpolicycenter.org

**Other considerations**

**Increased applications from at-risk applicants.** Introducing an at-risk preference might shift the behavior of applicants who are at-risk over time. This may result in more applications from at-risk applicants to schools that have high waitlists if applicants perceive they have a better chance at a match. It is unclear whether this would happen in D.C.
**Systemwide effects.** These outcomes show how an at-risk preference might affect one school, but a shift in the patterns of where at-risk students match would have implications for many other schools. For example, if the same at-risk applicants are applying to a similar set of schools that currently serve low percentages of students who are at-risk, schools may see a smaller increase in the percentage of students who are at-risk. However, outcomes for individual at-risk students would improve as they have a better chance of matching at schools they rank highly. The preference may also shift demographics at schools that currently serve higher percentages of at-risk students if fewer at-risk students enroll at these other schools.

**Opening a new school.** For an opening school, the effect of an at-risk priority in the common lottery would be similar to the at-risk preference ranked first, as there are no existing siblings and the number of children of staff is likely to be small.\(^ {21}\) Without the seats for siblings that reinforce existing demographics, the composition of the incoming class would be representative of the applicants and recruitment efforts. A model of reserving seats for a new school would allow an opening school to ensure a floor of a certain socioeconomic mix. For example, reserving 15 seats out of 50 seats for at-risk students would mean that a minimum of 30 percent of the school would be at-risk if there were enough at-risk applicants – but this percentage could be higher because at-risk applicants would also be eligible for the other 35 seats.

**Impact at a school with 50 percent of students who are considered at-risk.** An at-risk preference is not likely to move the needle at a school where a higher share of students are at-risk. For public charter schools with between 35 percent and 70 percent of students who are at-risk,\(^ {22}\) waitlists are much lower for pre-kindergarten entry grades, around 15 names on average instead of 287 in the sample for this analysis. A lower waitlist means that most students are already matching.

**Which schools get the best results for at-risk students.** On average, learning outcomes in terms of growth and proficiency are better for at-risk students at schools with a low percentage of at-risk students and a high waitlist than citywide. For example, 30 percent of at-risk students meet or exceed expectations in English Language Arts (ELA) at schools serving 20 percent or less students who are at-risk compared to a city average of 21 percent for at-risk students. However, according to the graphs below, several schools where less than 20 percent of students are at-risk and high waitlists have outcomes that are below the city average for their at-risk students in achievement and growth. These schools would need to reconsider their models, especially if they move toward serving more students who are at-risk.

\(^ {21}\) There was only one child of staff in the sample for this analysis, for example.

\(^ {22}\) This is the interquartile range of at-risk percentages for public charter schools.
Key findings

An at-risk priority in the lottery would move at-risk applicants to the front of the line at schools in D.C. with the highest waitlists. This has the potential to improve match rates for individual at-risk students from four percent to as high as 71 percent if the at-risk preference is first. The percentage of students who are at-risk in the incoming PK3 class could increase from 11 percent to as high as 100 percent if the at-risk preference is first. Importantly, these findings should be interpreted as an example of what could happen at a school with the profile described above. It does not mean that each school would see a large impact, but rather that a few schools that currently have low percentages of at-risk students might experience large swings in this percentage for their incoming class (PK3 in this example).
Simulated lottery outcomes at public charter schools with high waitlists and low percentages of at-risk students

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Match rate for at-risk students</th>
<th>Percentage of PK3 students who are at-risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status quo</td>
<td>4%</td>
<td>11%</td>
</tr>
<tr>
<td>At-risk preference, first</td>
<td>71%</td>
<td>100%</td>
</tr>
<tr>
<td>At-risk preference, last</td>
<td>42%</td>
<td>60%</td>
</tr>
<tr>
<td>Reserved seats for at-risk applicants</td>
<td>19%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Over time, having a priority for at-risk applicants could shift demographics for the entire school. For example, in the scenario where the at-risk preference is last, the percentage of at-risk students would gradually shift from 15 percent to 61 percent over eight years. This is a simplified example, assuming all students stay enrolled (or at-risk and not at-risk students are equally likely to leave the school), no seats open up in upper grades, siblings are an equal percentage of the applicant pool, and all grades have equal enrollment.
An at-risk priority in the common lottery has the potential to improve lottery outcomes for some at-risk students and to increase the percentages of at-risk students served, especially at public charter schools with a low percentage of at-risk students and high waitlists. This has real implications for improving socioeconomic diversity at schools. Even putting a preference for at-risk students below siblings could increase the percentage of students in an incoming PK3 class from around 15 percent to 61 percent in the first year of implementation. Reserving seats for at-risk students allows schools to set a floor for the percentage of at-risk students they would like to serve. Importantly, schools implementing these preferences should consider what changes, if any, to their model are required to serve all students well and ensure that all students feel welcome across lines of difference.

About the Education Policy Initiative
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Chelsea Coffin is the Director of the Education Policy Initiative at the D.C. Policy Center.

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Feature photo from Ted Eytan (Source).
Appendix I: Methodology

1. Construct an applicant pool as a composite of data shared by public charter schools that currently have high waitlists and low percentages of students who are at-risk. Consider the average number of applicants, number of at-risk applicants, number of siblings of current students, number of children of staff, and number of students who ranked the school in their top three. Assume that siblings are the same percent at-risk as current student population.

2. Limit the number of applicants to Balance PCS and the number of at-risk applicants to the average percentage of applicants who ranked the school in their top three (84 percent of applicants are matched to a school they ranked first, second, or third). This adjusts for the likelihood that some applicants would match at other schools before this school in an actual lottery involving multiple schools. Use the average number of siblings of current students and children of staff without adjusting as these applicants are highly likely to have ranked the school in their top three.

3. Create a school profile based on data shared by charter schools, including the average number of open seats, percent of at-risk students, and the number of applicants on waitlists.

4. Assign a random lottery number to each applicant, ensuring that the results can be replicated by setting a seed for the random number generator. Sort applicants according to preferences in each scenario and assign a rank number to each applicant in each scenario. Repeat this 100 times.

5. Take the average rank number across the 100 replications and match the top applicants.

6. Present the composition of matches and match rates by preference type.

7. To model the impact of increased demand from at-risk students, the lotteries are run again with a higher percentage of at-risk students.

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