Blueprint Labs

The Algorithm Advantage: Ranked Application Systems Outperform Decentralized and Common Applications in Boston and Beyond

Christopher Avery, Geoffrey Kocks, and Parag Pathak

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Author: Amanda Schmidt

Summary

In the last decade, *common application systems*, which allow students to apply to multiple schools with a single application, have become increasingly prevalent in K-12 education. Such systems are an alternative to *decentralized systems*, in which each school requires a separate application. Policymakers often pursue common applications to bolster school choice and equalize opportunities for students from diverse backgrounds.

Do common applications achieve these goals? In a recent working paper, Blueprint Labs Director Parag Pathak, Research Associate Geoffrey Kocks, and co-author Christopher Avery study how common applications affect access and enrollment outcomes compared to other systems. They examine Boston's 2016 implementation of a common application for charter schools. In addition, they consider alternative systems, such as a *ranked-choice system* in which students rank schools in order of preference, submit a single application, and receive a single offer to attend one of their ranked schools.

Boston's charter sector common application did little to increase access or match students to their top-choice schools. This lack of effect may be explained by two conflicting factors: common applications both lower the cost of applying to more schools and, consequently, increase competition at desirable schools. Increased selectivity

MIT Department of Economics
77 Massachusetts Avenue, Bldg. E53-390
Cambridge, MA 02139

blueprintlabs.mit.edu
@blueprintMIT

offsets the benefits of applying to more schools.

A ranked-choice system, on the other hand, may improve students' enrollment and access outcomes. Simulations suggest that under a ranked-choice system, a higher share of Boston students—particularly those from disadvantaged backgrounds—would attend their top-choice program. However, the effects of each enrollment system would vary in different contexts depending on families' preferences and the number of available seats, and ultimately, the effects of any system are limited by the underlying patterns of family demand and school supply.

Background and Policy Relevance

In recent efforts to expand families' school choice, many state and local policymakers have turned to common application systems. As of 2019, 36% of the 100 largest public school districts in the US use centralized enrollment. Primarily, these districts have implemented common applications, particularly for charter schools. Some of these regions have also implemented ranked-choice systems.

Policymakers pursue common applications and ranked-choice systems to reduce the burden on families, increase access to information, and improve students' equitable access to high-quality schools. In large urban districts, families must sort through many schools, each with different activities, transportation routes, admissions criteria, and student populations. This process can prove especially challenging for historically disadvantaged families who lack the time or resources (e.g., school admissions consultants) that high-income families may have. A centralized resource for information and applications holds the potential to reduce this burden and the associated inequities.

Source

Avery, C. N., Kocks, G., and Pathak, P. A. (2025): "The Algorithm Advantage: Ranked Application Systems Outperform Decentralized and Common Applications in Boston and Beyond." *Blueprint Labs Working Paper #2025.09*.

Setting and Methods

In 2016, Boston's charter schools revamped their enrollment system. While the city considered adopting a ranked-choice system that included both charter and traditional public schools, city leaders ultimately decided to implement only a common application for charter schools. The plan was adopted in 2016, with applications due in February 2017.

In this working paper, Blueprint researchers study six Boston charter schools that admitted 5th-grade students between 2015 and 2020. The researchers use a structural model to simulate the effects of three different assignment systems: a decentralized system, the common application, and a ranked-choice system. They examine

how each system would affect students' enrollment in their preferred schools, and they study students receiving free and reduced-price lunches (FRPL) in particular to understand each policy's impact on access.

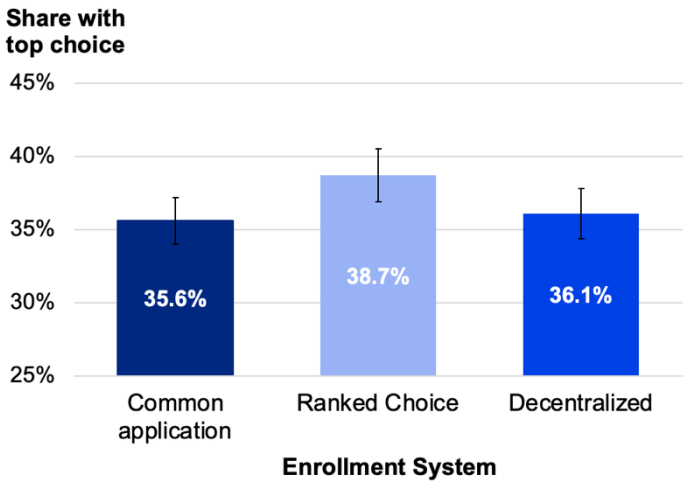
To determine whether the findings would apply to contexts beyond Boston, the researchers simulate environments that vary based on two factors: 1) the level of oversubscription (e.g., high oversubscription means many students compete for few seats) and 2) the stability of applicant preferences (e.g., stable preferences mean that applicants' top choices are the same at the time of application and at the time of enrollment).

Key Findings

Key Finding #1: The Boston charter common application does not affect enrollment or access outcomes.

Students' enrollment and access outcomes in the common application system remain the same as in a decentralized system. Using a common application or a decentralized system, 36% of students enroll in their first-choice school (see Figure 1). While the common application makes the application process easier for students receiving FRPL, the system also increases competition for their preferred schools. Therefore, acceptance rates at preferred schools for students receiving FRPL remain the same.

Figure 1: Average Share of Students Receiving their Top Choice
In 3 Enrollment Systems



Key Finding #2: A ranked-choice system would have improved students' enrollment outcomes.

A ranked-choice system would have placed 39% of students in their top-choice schools, relative to 36% under the common application (see Figure 1). Furthermore, 41% of students receiving FRPL would have attended their first choice in a ranked-choice system, compared to 36–37% in a common application or decentralized system.

Additionally, a ranked-choice system would reduce "mismatch"—if two students could switch schools and both prefer their new school, they are "mismatched." The researchers estimate that roughly 9% of Boston charter applicants in 2017 were mismatched under a common application or decentralized system, but only around 1% would have been mismatched in a ranked-choice system.

Key Finding #3: The performance of each enrollment system depends on context.

When applicants have stable preferences (i.e., the schools applicants most prefer when they apply are the same as the schools they most prefer when they enroll), a decentralized system matches more students to their top-choice programs. In this case, the difficulty of applying incentivizes families to only apply to their top choices, resulting in less overall competition and better matches. Because students' preferences remain consistent, they benefit less from applying to more schools. However, this benefit must be weighed against the cost of applying to each school separately.

In contrast, when applicants are more likely to change their preferences between applying and enrolling (i.e., upon enrolling, applicants prefer schools they ranked lower when they applied), a ranked-choice system matches the highest share of students to their top-choice programs, regardless of oversubscription. Common applications are most effective in a context with unstable preferences and less oversubscription, because students can typically switch to a newly preferred school at the time of enrollment. In this case, a high fraction of students can receive either their first- or second-choice school through a common application system.

Conclusion

Depending on the context, common applications or ranked-choice systems can improve enrollment and access outcomes, but these benefits are constrained by families' underlying demand for school choice options and the supply of those options. In Boston, families' application behavior didn't change much after the charter sector implemented a common application. A ranked-choice system in Boston would have improved students' enrollment outcomes more than the common application, but even these improvements would be relatively small. Because these policies cannot change the schools themselves, their impact is limited. Ultimately, policies that affect both families' decision-making and the schools available—for example, policies that change the quality and/or quantity of schools—may have a greater impact.