

PRACTICE-DRIVEN DATA

Lessons from Chicago's
Approach to Research, Data,
and Practice in Education

Eliza Moeller, Alex Seeskin, and Jenny Nagaoka

Acknowledgements

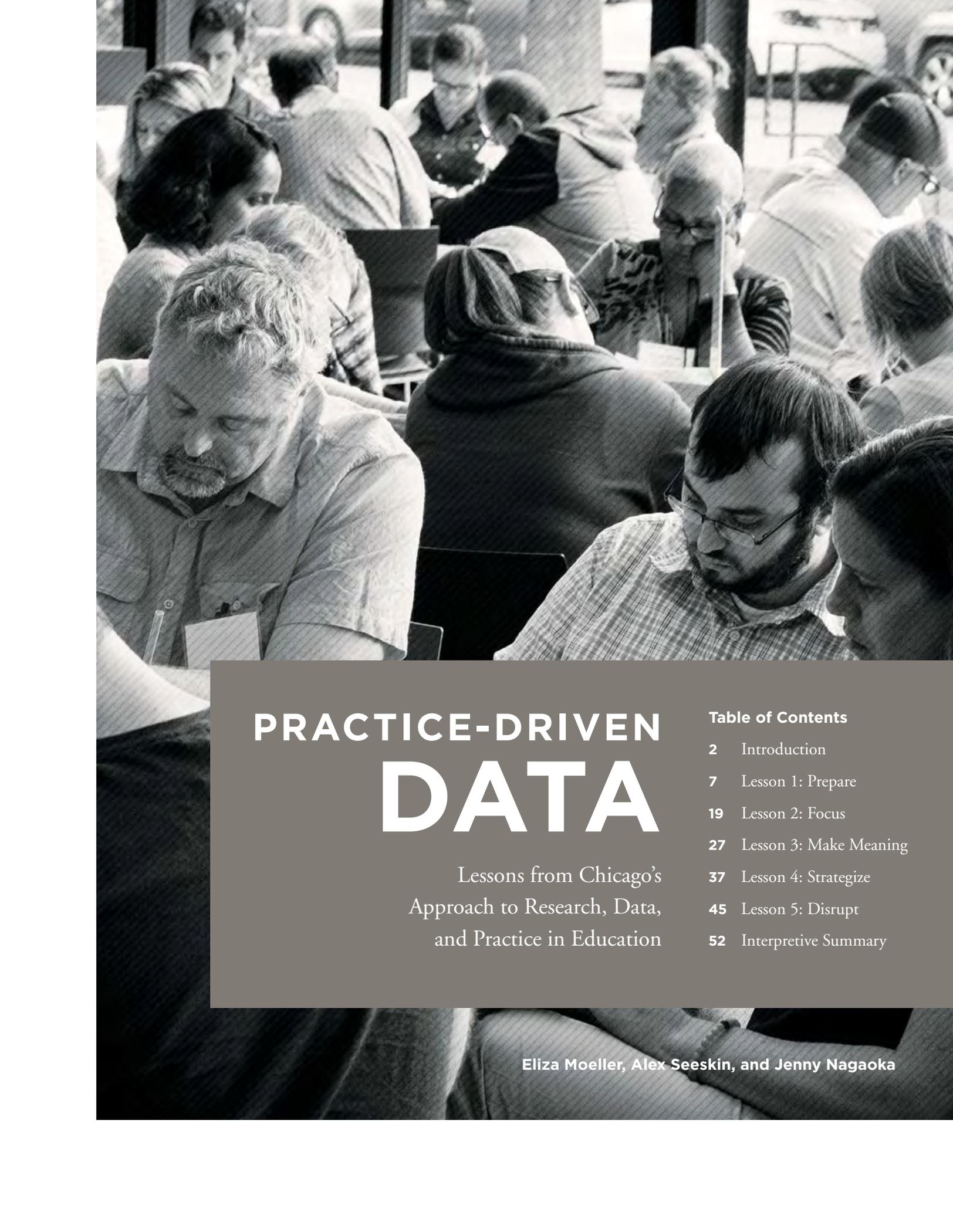
The authors gratefully acknowledge the many people who contributed to this paper. We draw on the deep knowledge of data use in schools developed by the administrators, principals, teachers, and researchers who have worked in and with the Chicago Public Schools over the course of many, many years and fueled the remarkable progress Chicago's schools have made in student achievement and attainment.

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Eliza Moeller, Alex Seeskin, and Jenny Nagaoka

Introduction

As educators, we have no shortage of expert perspectives on the challenge of improving educational outcomes in meaningful, scalable, and equitable ways. Some see a challenge of reliably scaling promising practice and ask us to learn faster and scale slower when we find promising ideas for improvement.¹ Others see school structures built for a different era and push us to turn schools into true learning organizations.² And some see reform idea after reform idea fail over and over in the exact same ways and challenge us to design strategies for improvement that take into account both the complexity of educational systems and the realities of the day-to-day work of educators in schools.³ These different perspectives all push us to think more carefully about the systems that produce our current results and the systems that may produce different, better results. They also challenge us to think about the thorny question of how we measure success in schools. How do we know what is working and what is not in our schools? How do we measure our success over time?

Chicago provides a particularly valuable case study for thinking about the challenges we face as a nation in creating large-scale, equitable improvements in students' outcomes. Supported by research, data, and practice partners from the University of Chicago, the question of *what should we measure* has fueled a shift in schools, in the school district, and across the city in how we quantify success. An overarching focus on the educational attainment of Chicago's youth has changed both the kinds of metrics educators pay attention to, and the ways those metrics are used in schools.

In the past decade or so, the Chicago Public Schools (CPS) has seen tremendous improvement on the most important indicators for student success. Overall, between 2006 and 2017, the district has seen a 28 percentage-point rise in the proportion of freshman on-track to graduate, with the greatest increases occurring among Black and Latino males. High school graduation rates have increased by 18 percentage points, with ACT scores improving at the same time. Most impressively, even with thousands of more high school graduates, the four-year college enrollment rate rose by 14 percentage points, and the overall proportion of high school freshmen who are projected to earn a bachelor's degree has doubled in the last decade.⁴

There is an important story to be told about the role that data played—and continues to play—in these kinds of improvements. Of course, it would be a mistake to think that the mere presence of data provided educators with all they needed to chart such a remarkable course of improvement. This decade of improvement in Chicago relied on many supports and conditions other than data. Not all data efforts during this time period were successful. Not all indicators have taken root in the life of schools. Not all educators welcomed data-driven improvement efforts with open arms. And not all data systems gave educators the tools needed to guide their efforts and solve their problems of practice. In short, not all data are created equal. This era did, however, generate

a particular kind of approach to using data in schools in Chicago—an approach that responds to the drive to make the field of education more data driven, but also acknowledges the still-echoing voices of Tony Bryk and Charles Payne that remind us to see the complex systems of human beings that produce the results. We call this approach “practice-driven data.” This approach has no playbook, no singular practice, no such thing as fidelity. Rather, it is rooted in deep respect for professionalism, a recognition of context and autonomy, and an acceptance that implementation is often as messy and ambiguous as the system itself.

This paper is designed to share the lessons we have learned about how, when, why, and under what conditions we have seen this practice-driven data approach support real and sustainable improvement. The paper is our attempt to share these lessons with advocates, policymakers, district and school leaders, and school support organizations, both locally and nationally, so they can develop the conditions that will support effective data use in schools and school systems. These lessons are:

Figure 1: Five Lessons of Practice-Driven Data



Taken together, these five lessons from Chicago form an approach to data use focusing stakeholders at various levels on the most important goals and features of an ecosystem of data use that has the potential to catalyze systematic improvement in student outcomes. First, it is important to *build capacity to facilitate hard conversations* and use data collectively to spur action, which requires an emphasis on trust, collaboration, and culture. Second, the wide availability of data and the scarce resource of time requires that educators and leaders *prioritize research-based indicators* that matter most for students' success. Third, educators can use relevant research evidence to make meaning of the data they use, and to *develop shared ownership over the implications of the research*. Fourth, using data effectively to guide practice requires that educators and leaders *use the right data at the right time* of the school year. Finally, there is no more important use of data in public schools than as a tool to *identify and stop inequities* that continue to leave the most vulnerable students further and further behind.

For each of the lessons above, we describe how the idea has played out in practice in Chicago high schools, as well as the implications for different stakeholders in the broader education system. We begin by discussing the lesson from the perspective of *school-based educators* and the capacities, skills, and tools they need to use data effectively to guide their practice. Then, we consider the implications for the *data system designers* who need to create the technical infrastructure of a data system, generate effective data displays that reach users of the data, and also need to support a culture of data use in order to enable those within and across schools to make the best use of the data in practice. Finally, we look at the considerations for *researchers and analysts*, whose work to understand important predictors, relationships, and outcomes guide the development and use of data at a high level.

We write this paper as three entities that are a part of the University of Chicago and work with CPS, but are independent of the district. The University of Chicago Consortium on School Research (UChicago Consortium) conducts research of high technical quality that can inform and assess policy and practice in CPS. The UChicago Consortium helps to build capacity for school reform by identifying what matters for student success and school improvement, creating critical indicators to chart progress, and conducting theory-driven evaluation to identify how programs and policies are working. The Network for College Success (NCS) partners with a cohort of Chicago's public high schools to dramatically increase high school graduation, college enrollment, and college success rates for all students. NCS helps schools respond to emerging research and the latest data to create actionable strategies to organize schools for improvement and prepare more students for the rigors of college. The To&Through Project is an initiative that utilizes NCS and the UChicago Consortium as partners to integrate research, data, and professional learning to move more students to and through high school and college. Together, these three entities have worked both independently and together to help educators and leaders at all levels of CPS use data as a tool to guide improvement in the outcomes that matter most for students.

It is important to understand the context in which the lessons we describe in this paper were generated. First, our role as partners to CPS has granted us an outside perspective and flexibility that are different from the context of those working inside districts or state agencies. This perspective gives us the advantage of seeing the public system from a slight remove, though the lessons we draw here may vary somewhat from the conclusions someone inside the system would make. Second, this paper focuses on the lessons we have learned specifically from doing this work in high schools, where the relationship between the three partner entities and CPS has been deepest. Though we believe that many of the lessons apply outside of high schools, we also acknowledge that the high school context is different than either K-8 or post-secondary education. Finally, the approach we describe in this paper has been generated in a distinctly place-based partnership, and all of the examples presented here reflect our work in Chicago. That said, as we continue to broaden our reach to schools, districts, and states across the country, we find that these lessons do apply in other places.

The Chicago Public Schools (2017-18)^A

The Chicago Public Schools (CPS) is the third largest school district in the country and home to a diverse array of schools, students, and educators. The approach to using data to guide educational improvement that we describe in this paper was developed in the Chicago context. Here are some important facts about CPS that help explain that context:

Schools: There are 165 high schools in CPS, including 92 district-run high schools, 65 charter schools, seven contract schools, and one SAFE school. CPS has 479 elementary schools, including 421 district-run, 56 charter schools, and two contract schools. One of the unusual characteristics of CPS elementary schools is that

the vast majority serve students from kindergarten through eighth grade, and there are very few dedicated middle schools.

Students: In grades 9-12, CPS has 107,352 students, 38.3 percent are Black, 47.25 percent are Latino, 8.6 percent are White, 4 percent are Asian, 1 percent are multi-racial, 0.3 percent are Native American/Alaskan, 0.2 percent are Hawaiian/Pacific Islander, and race/ethnicity is not available for 0.5 percent of high school students. CPS serves 244,589 students in grades K-8.

Teachers and principals: Across all CPS district-run schools, there are 19,324 teachers and 505 principals.

^A Retrieved from: www.cps.edu/About_CPS/At-a-glance/Pages/Stats_and_facts.aspx.

It is our hope that the lessons shared in this paper about how preparing educators to do the hard work—focusing on the indicators that matter most; making meaning to build collective ownership of a challenge; strategizing to use the right data at the right time; and interrupting inequity—can help organizations, cities, sectors, and schools across the country understand how a practice-driven approach to using data to guide educator practice has been a critical component of Chicago’s remarkable success story. We hope the practice-driven data approach can further spark a deep dialogue to push the field toward a collective vision of creating lasting, impactful research-practice partnerships to improve school systems, resulting in students who are prepared for life after their K-12 education.



PREPARE

Build Capacity to Facilitate Hard Conversations

Using data to guide school improvement means that the conversation around the data is just as important as the data itself. For data to improve student outcomes, educators must be able to use data in conversations about their practice. Our work in Chicago has underscored the importance of building educator capacity to have hard data conversations that clarify what the problem is and what the solutions might be. This requires investing in the capability of one or a few people at a school to lead data-driven conversations, and it also requires strong school leadership to support a culture of data-driven improvement. The importance of this goal has clear implications for data work at the school level, but there are also less obvious implications for the design of the data ecosystem, as well as the research and analysis that underpins the work.

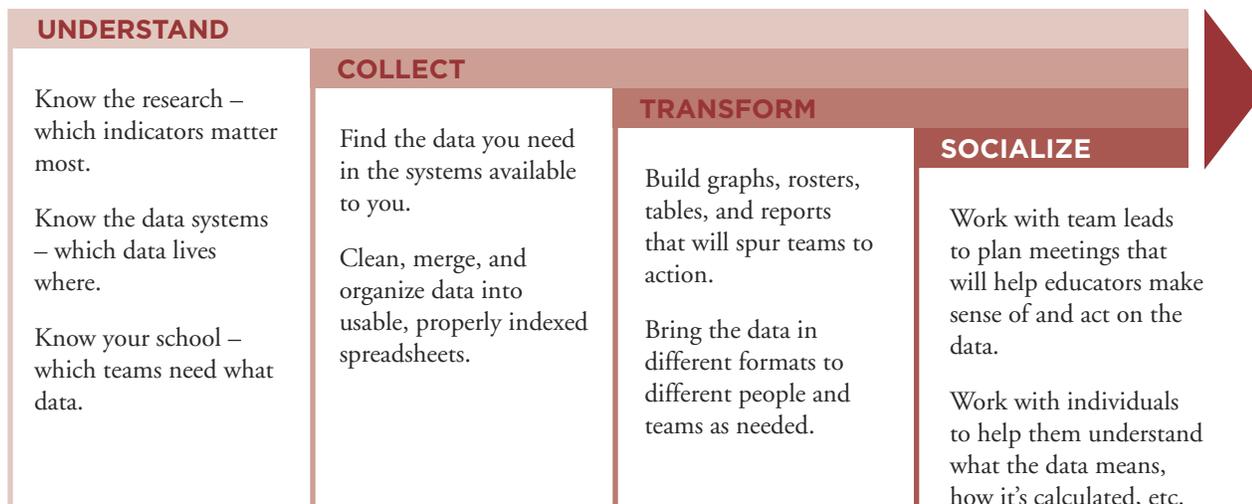
School-Based Educators:

Build capacity in teams around the technical ability to analyze data, and the adaptive ability to lead team conversations on data

The practice-driven data approach relies on developing specific capacities, creating teams, and fostering important conditions within those teams and within the school. NCS, with professional learning and coaching, supports school teams to use data in four stages (see Figure 2); each stage depends on an interplay of analytic capacity, communications skills, and the ability to work with individuals and teams to act on the data. This work requires essentially two roles: a skilled data strategist and a team leader who collaboratively brings data to life in team meetings. Sometimes, these roles can be played by one person on a team who can execute the entire process, but more often, the process requires two different individuals building the right skills and working together. Whether the role resides in one person or two, NCS encourages schools to view these pieces of work—generating the data and driving the conversation—as two sides of the same coin.

An effective team leader takes on the responsibility of supporting the development and executing the work of a high-functioning professional learning community. This requires the leader to build skills in facilitating data-driven discussions with a team. One of the foundational tenets of using data for improvement is setting the conditions for trust and collective responsibility so that the process is safe for individuals and

Figure 2: Stages of Data Strategy in NCS Partner High Schools



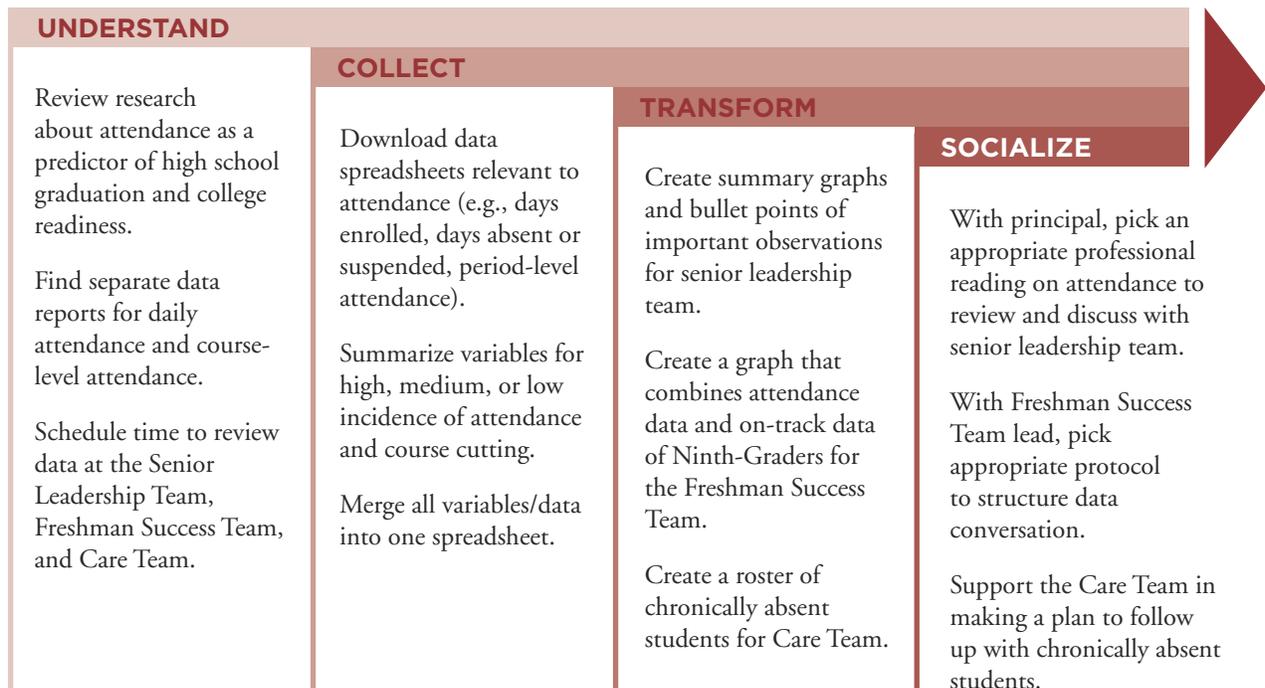
Developed by Quinton Keith and NCS.

teams to have hard conversations about data and improving their practice. In order to be effective, a team leader needs to be able to support the development of this trust on a team, usually by generating a clear mission to drive the team's work; connecting to shared core values and intentions for serving students the best that they can; and using carefully structured protocols to introduce data into the conversation in a way that instills a sense of efficacy, rather than defensiveness, among team members. It takes time and skill for a team leader help a team build routines of analyzing student outcome data and using that data to interrogate current practices. The team leader will likely require some training and ongoing support to build and sustain these practices.⁵

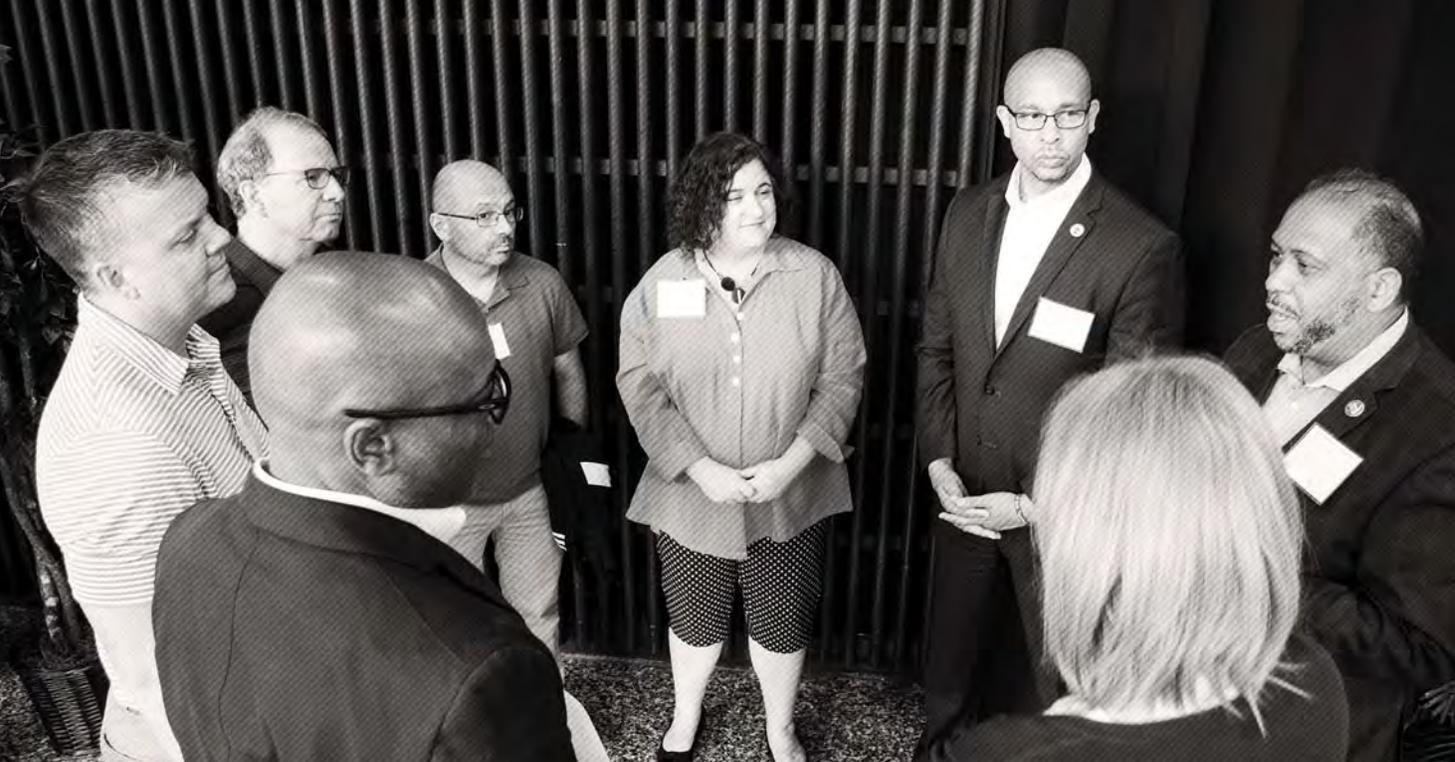
A school-based data strategist plays a critical role in the work of teams to use data to inform practice, although the nature of this role could vary across contexts. In some cases, a data strategist could be from an organization like NCS. A data strategist could also be a stand-alone role within a school, with a job of supporting all areas of the school with strategic data support. More often than not, though, the role of data strategist is played by an educator already on a team who is able to strengthen his or her analytic skills to support the team in a new capacity. A school-based data strategist needs to learn which data systems or dashboards house the data the team needs. The strategist also needs to know how to analyze the data so that it answers the questions that the team needs answered. Data strategists benefit from district-provided professional development on how to use school-facing data systems, and they can also benefit from forming professional learning communities where they can share tools, tips, and tricks for making the most of the data available to them and their schools. Data strategists must build fluency in various data analysis applications and skills (e.g., Microsoft Excel, programming languages, data visualization software, etc.) in order to execute statistical tasks efficiently and accurately.

Whether working independently or in collaboration with a team leader, a data strategist goes through four phases of data analysis, as shown in Figure 2. First, the data strategist needs to build understanding of the purpose and need for data, as well as the intricacies of the data systems available. Second, the data strategist collects the data from the available data systems and, third, transforms the data into the representation that will best inform an educator’s or team’s practice. Finally, the data strategist socializes the data, connecting with relevant stakeholders to make meaning of and act on the data. The interplay of each stage of this process pushes those analyzing the data to consider the way it will be used in the school (e.g., building awareness of the numbers with stakeholders, bringing data to teams for action, communicating the results to students and parents, etc.) as an integral step in data analysis. Figure 3 gives an example of the kinds of technical and adaptive tasks required at each stage of data strategy, in this case relating to how a data strategist would analyze student attendance data in different ways and with different people in a school. This multi-step approach to data strategy underscores that, just as data analysis itself takes time and care to complete, so too does planning a productive conversation around the data.

Figure 3: Stages of Data Strategy Applied to Attendance Data



Developed by Quinton Keith and NCS.



Driving School Improvement through Teams

One of the hallmarks of the NCS approach to working with schools is the use of teams of educators to drive improvement on the most important areas of work. In their foundational text on building professional learning communities, DuFour and Eaker argue that schools should organize themselves to operate as professional learning communities that share a mission, vision, and values; inquire and experiment to find best practices; and work together toward continuous improvement. A key feature of a professional learning community is that it is composed of collaborative teams:

The basic structure of a professional learning community is a group of collaborative teams that share a common purpose. Some organizations base their improvement strategies on efforts to enhance the knowledge of individuals. Although individual growth is essential for organizational growth to occur, it does not guarantee organizational growth.

B DuFour & Eaker (1998).

Thus, building a school's capacity to learn is a collaborative rather than an individual task. People who engage in collaborative team learning are able to learn from one another, thus creating momentum to fuel continuous improvement.^B

Creating high-functioning teams to drive improvement is especially important in high schools, which are often large, complex organizations where individual educators have limited time to collaborate. Distributed leadership and teaming structures are a crucial step in driving the teacher collaboration necessary to improve student outcomes at scale and creating coherence in a school's improvement efforts.

While team structures look different across schools, someone visiting an NCS partner high school would likely find a predictable set of teams in operation.

Table A: Common Teams in NCS Partner High Schools

Team Name	Team Members	Team Responsibility	Data Used
Freshman Success Team	Freshman teachers, counselors, and other educators; administrator supporting the work	Monitoring students' transition into high school and supporting their academic achievement in ninth grade	GPA, course grades, attendance rates, and behavioral data for freshman; eighth-grade early warning indicator data
Instructional Leadership Team	Teacher leaders from across the building; administrator supporting the work	Ensuring instructional coherence and pushing toward instructional improvement	Student assessment data; student course performance data
Postsecondary Leadership Team	Counselors, teachers, and other educators; administrator supporting the work	Supporting students' college search and application process, as well as their eventual transition into college; creating a school-wide college-going culture	Data on students' college applications; student academic performance data; college enrollment data from previous cohorts
Senior Leadership Team	Leaders and administrators from all areas of school functioning	Setting a vision for the work and monitoring progress toward important outcomes	High-level data from all other teams
Care Team	Dedicated specialists for supporting socially vulnerable students—social workers, attendance interventionists, counselors, health professionals, etc.	Intervening with students whose social, emotional, or physical needs are the deepest—those who are not easily reached by other educator teams in the building	Attendance and behavior data; data from students' Individualized Educational Plans

A common collaboration rhythm for school-based teams (like Freshman Success Teams and Postsecondary Leadership Teams) is a bi-weekly meeting that lasts approximately 45-60 minutes. During this time, teams analyze student data, set strategies for interventions and supports, and progress monitor or reflect on the effectiveness of interventions to date. These tasks happen in addition to the ongoing and necessary work of a professional learning community, like making meaning of professional readings and looking at student work together.

In addition to developing the capacity of team leaders and data strategists to facilitate data-driven conversations in teams, the principal plays a crucial role in shaping the culture of a school to use data for improvement. High-functioning teams are rarely formed in isolation at a school or in contrast to the school's culture. Rather, high-functioning teams flourish where the school-wide culture, systems, and structures are in place to drive the work. One of the hallmarks of effective data use in schools is the investment in a process that Janet A. Weiss describes as “*making data safe*.”^c Many educators have primarily experienced data only punitively, as a way to make harsh judgments about individual teachers or students.

^c Weiss (2012).

Part of the role of the school leader is to not let this history stand between current practice and improved practice, and that journey nearly always requires the use of data to have hard conversations. The goal of approaching data safely, therefore, is not to make the data itself nice or palatable to educators, but rather to build the conditions necessary for team members to have hard conversations with each other about current practice and strategies for improvement.

A great deal of trust-building needs to occur within a team and across a school in order to make the conditions safe for teachers to use data to collaborate and improve. Though some tools can help—norms, protocols, and listening techniques, to name a few—there is no standardized approach to developing trust. The work of trust-building is deeply contextual and personal. It is not built in an off-site professional learning session, but rather can only be developed by engaging in difficult data-driven conversations, and then reflecting on that process. It starts at the top of a school building. Fundamentally, principals and administrators must set the conditions for individuals and teams to trust each other in order to keep a lens of improvement and support, rather than shame and judgment.

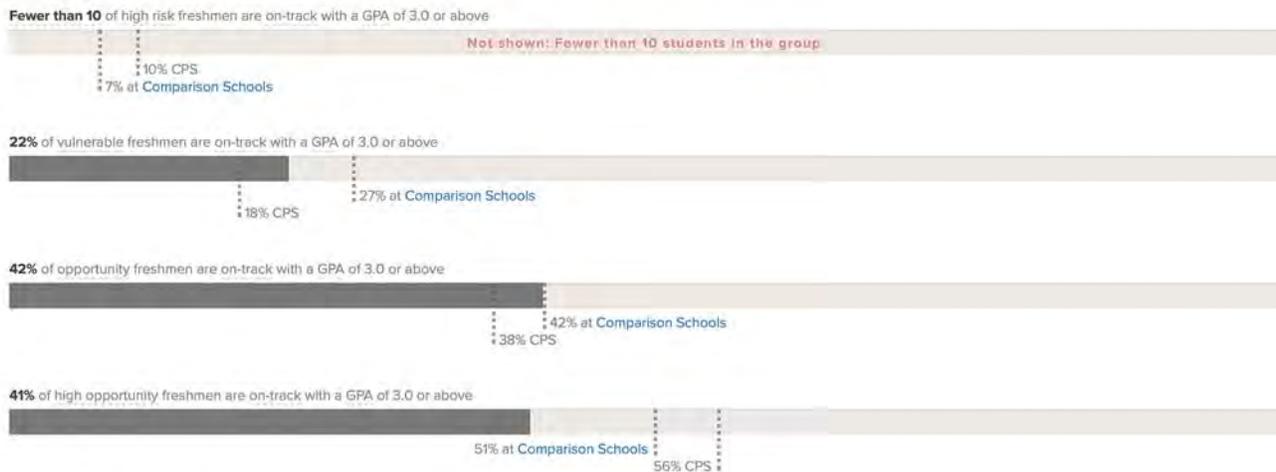
When teams have these elements in place—the technical ability to analyze data; the adaptive capacity to lead team conversations on data; and a trusting, supportive school-wide culture that promotes data as a tool for improvement—they begin collaborating at a high level. Data can be used to highlight variation in outcomes across educators and support them in creating the conditions necessary to push each other toward better and more equitable outcomes for all students. In high-functioning teams, educators are motivated to push for better outcomes for their students by their commitment to their students and their collective responsibility as peers and not from an external motivator, like a rating system. Teams that can do this—use data to hold their colleagues accountable to their shared responsibilities and student goals—are characterized by a remarkably high level of social trust, which takes time and intention to build.

Data System Designers:

Provide cross-school analysis and give educators dedicated time and space to learn from each other about promising practices at different schools

Data systems can play a crucial role by providing information in ways that can inform conversations across schools—both in how the systems are technically designed to display data and in how those data displays are designed to generate conversations among educators. Schools are the primary lever for change in a school system, but learning across schools can catalyze changes in practice within schools. Most importantly, effective data systems show comparisons of indicators and outcomes of similar students across schools in order to highlight differences in practice, not differences in population, which is how data is typically presented. This kind of data disaggregation allows educators to more critically examine their own strengths and weaknesses, as well as to seek out peers who are achieving impressive results with similar populations and who may have promising practices to share. For example, Consortium research on middle grade indicators of high school graduation identifies eighth-grade GPA and eighth-grade attendance as the most powerful predictors of ninth-grade performance.⁶ For that reason, the To&Through Online Tool (a public-facing data tool with data on all Chicago public high schools) disaggregates freshman course performance by those indicators of prior performance, combined into summary measures that estimates a student’s risk and opportunity for success or struggle in ninth grade.⁷ The tool also provides schools with data on how “comparison schools” (schools whose ninth-grade students had similar academic performance in the middle grades) are faring so that schools can put their results into context.

Figure 4: Sample School Freshmen who are On-Track with a GPA \geq 3.0 by Risk and Opportunity Group



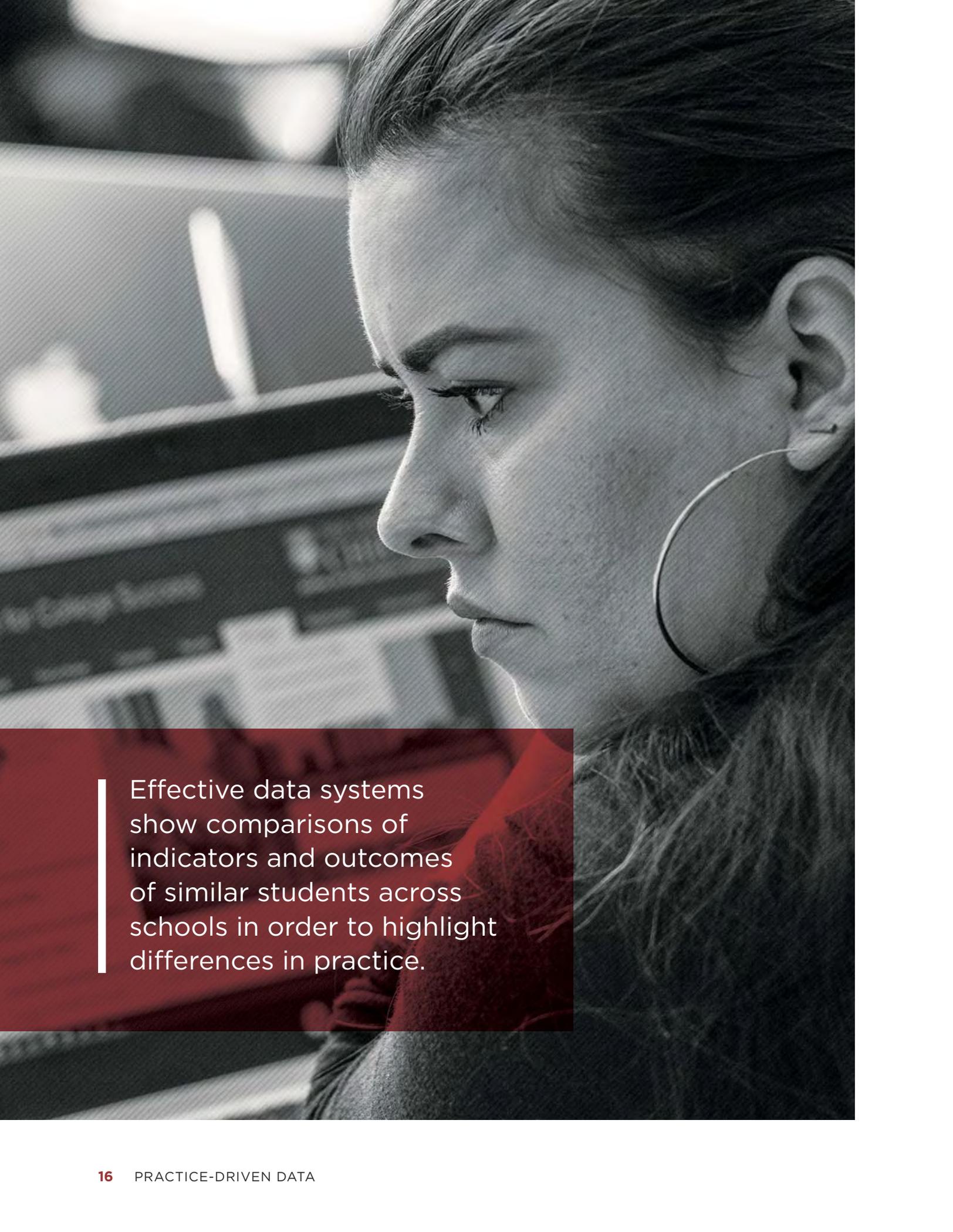
Visualization adapted from the To&Through Project website.

Once the outcomes are disaggregated by students' prior achievement, educators can compare the outcomes of similar students across schools. One frustrating element of typical cross-school data discussions is that outcomes are compared across schools that serve very different populations—for example, a neighborhood high school in a deeply-impooverished area compared to a selective enrollment school where students have to demonstrate high achievement in order to be admitted, or schools serving very different populations across a state. Focusing on students at a particular band of academic achievement—for example, freshmen entering high school at high risk for course failure or seniors with qualifications to attend a highly-selective four-year college—allows educators to make more rational and fair comparisons across context. This, in turn, removes some quick explanations or defensive excuses about why schools' outcomes are different and pushes educators to talk about differences in practice, not population.

This practice of highlighting schools that are making progress can reframe the conversation from one that is focused on negative perceptions of students to one that lifts up the responsibilities of adults.

In Chicago, a system with over 90 district-run high schools serving dramatically different populations, this approach to disaggregation of data also supports the search for best practices, allowing teams to discover areas of relative strength and weakness for a given population compared to other schools. As the work of supporting students' transition to high school has evolved over time, one group of students that has emerged as important is “high opportunity students,” ninth-graders with strong eighth-grade course performance. For the school in Figure 4, only 41 percent of these students earned a 3.0 GPA in freshman year at the school, a result that is lower than the results for high opportunity students citywide or at similar schools. This information allows the school in Figure 4 to search for comparison schools that have better outcomes with “high opportunity students” and engage in powerful cross-school practice sharing.

However, to make use of disaggregated data and cross-school comparisons, the conditions for adult learning need to exist. Educators require dedicated time, space, trust, and safety (discussed within schools, above) to have constructive conversations across schools to share practices. Supporting effective cross-school conversations on data requires careful attention to objectives, norms, and facilitation from a lens of authentic improvement. School leaders may never be able to create a learning space entirely separate from accountability in their schools, but by positioning themselves as learners and looking to educators as professionals and experts, they can find ways to hold space where data for improvement takes center stage. Consider, for example, the High School Institute, a networked learning space jointly hosted by the To&Through Project, NCS, and the Chicago Public Schools. An Institute session might begin with the research



Effective data systems show comparisons of indicators and outcomes of similar students across schools in order to highlight differences in practice.

about a given indicator’s relationship to a student outcome, grounding the conversation on why the particular indicator is relevant to student success. Then, student outcomes on one indicator can be displayed for all schools at one time, with school teams having space and time to engage in data-based inquiry. After teams discuss their data, educators can learn about practices from other schools that are showing improvement, giving those schools a chance to highlight a specific practice that has driven their data.

Focusing on schools sharing their promising practices, even when those practices are not perfect, builds a spirit of collaborative problem-solving that fuels the spread of innovation. This practice of highlighting schools that are making progress can reframe the conversation from one that is focused on negative perceptions of students to one that lifts up the responsibilities of adults. When done well, this type of disaggregation and cross-school sharing can lead to an ethos that, regardless of what kind of schools educators work in—selective enrollment, neighborhood, South Side, North Side—they can learn valuable lessons from anyone in the city.

Researchers and Analysts:

Validate the problem of practice, identify strategies, and show variation across schools

Schools are encouraged to use evidence-based strategies, and researchers can structure their studies to more effectively support the needs of educators. In order to build the kind of data systems that support this within- and across-school capacity to improve, the research standing behind the data will be most effective if it can provide three things:

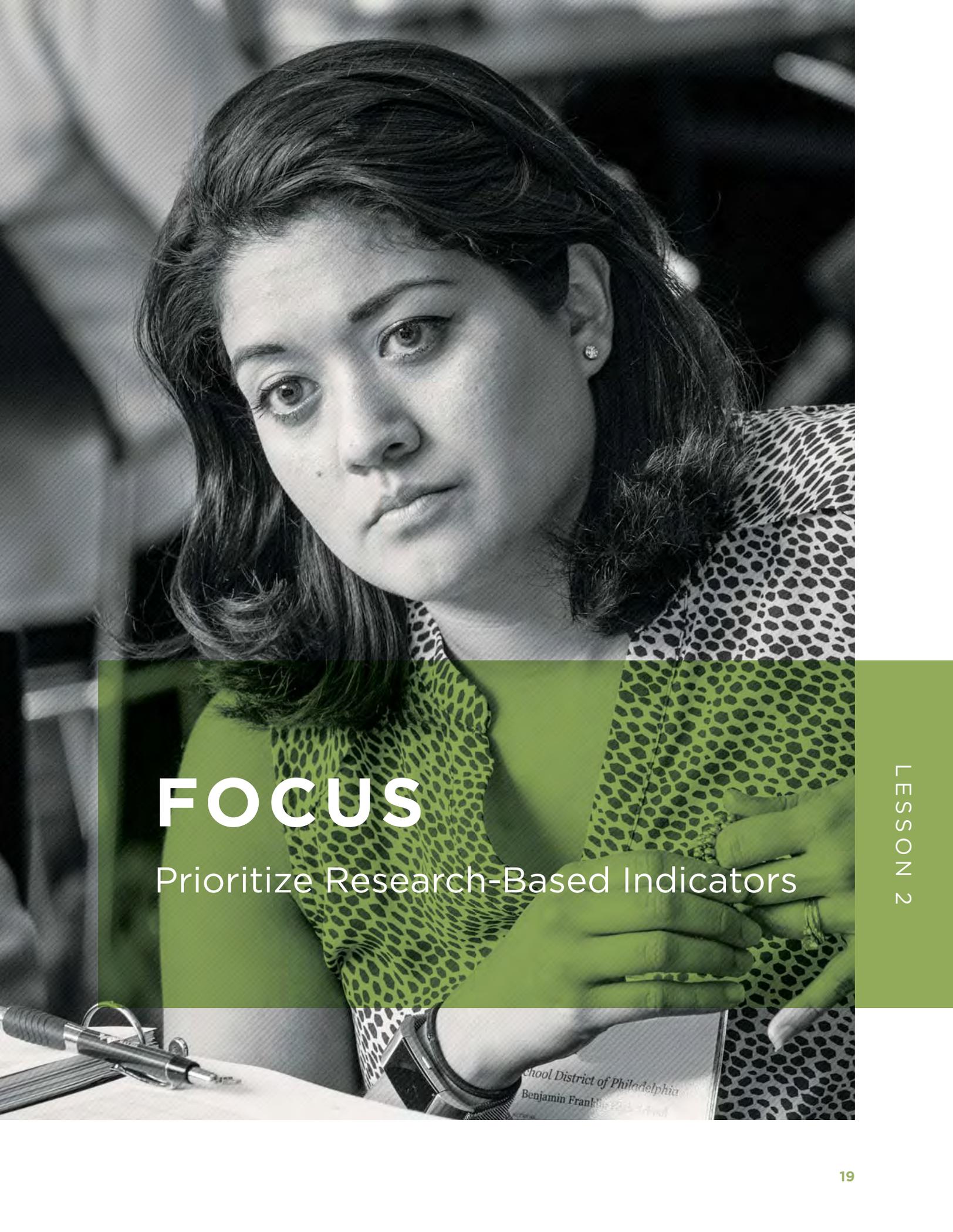
1. A clear understanding of the nature and scope of the problem of practice so educators can have conversations about the purpose and need for data in their school teams;
2. Guidance on how to address the problem of practice so that educators are grounded on how to use the information contained in the data once educators have made meaning from it; and
3. Evidence of variation in student outcomes across schools so that educators identify and share effective strategies.

The starting point for research and analysis should be to clarify what the problem is and what students and schools are affected by the problem. For example, when Consortium researchers began to examine dropout rates and who dropped out from high school, a key insight was that the majority of students who dropped out of high school were not in the lowest quartile of eighth-grade achievement.⁸ Defining the issue of high school

dropout as being not just about academic ability was an important insight for educators about how they might improve graduation rates.

Knowing the nature and scope of the problem of practice is not sufficient; educators need to have research and analysis that enables them to act on the information contained in the data. After Consortium research demonstrated how higher-achieving students also dropped out of high school, the strategies for addressing this problem of practice pointed to a direction other than intervening with the lowest-achieving students or the students who had the deepest challenges. A subsequent Consortium report, *What Matters for Staying On-Track and Graduating in the Chicago Public Schools*, provided evidence on how poor attendance was a key driver of failure rates and not graduating from high school.⁹ Armed with the knowledge that attendance was closely tied to graduation rates, schools developed strategies to address a problem of practice that was more manageable.

Going deeper into the data to understand cross-school variation can help show schools how they have agency to move student outcomes. For example, in the same research report, Consortium researchers found that even when controlling for a number of considerations like the demographic and prior achievement data of CPS high schools, rates of ninth-grade course failure were substantially different across high schools. Furthermore, researchers identified several measures of school culture—especially those related to student-teacher relationships—that were associated with better-than-expected Freshman OnTrack rates.¹⁰ This provided an important evidence-based theory of action to schools: if they worked on building better relationships between students and teachers, they might expect to see higher Freshman OnTrack rates at their school. By surfacing leverage points and demonstrating that there is sufficient variation in outcomes across schools, schools can work on problems and share ideas in networked improvement communities about promising practices. When educators can see clearly that students like the ones they serve do better at other schools—and when they can see that there are clear levers for improvement—they take ownership of student outcomes in a way that fuels their need for and use of data.



FOCUS

Prioritize Research-Based Indicators

LESSON 2

School District of Philadelphia
Benjamin Franklin School

In a relatively short period of time, CPS, like a great many school districts across the country, moved from a system in which educators were thirsty for any data to one where they could drown in data if they were not careful.” The proliferation of data meant educators needed to find ways to focus their discussions on the most important data. It is the role of researchers to work with educators and develop high-leverage indicators that can help them focus on what matters the most for future student outcomes. Data system designers can then integrate these indicators into the data that reaches schools. Finally, educators and school leaders can then incorporate this data into their ongoing work, using these indicators to track progress and examine patterns both within and across schools.

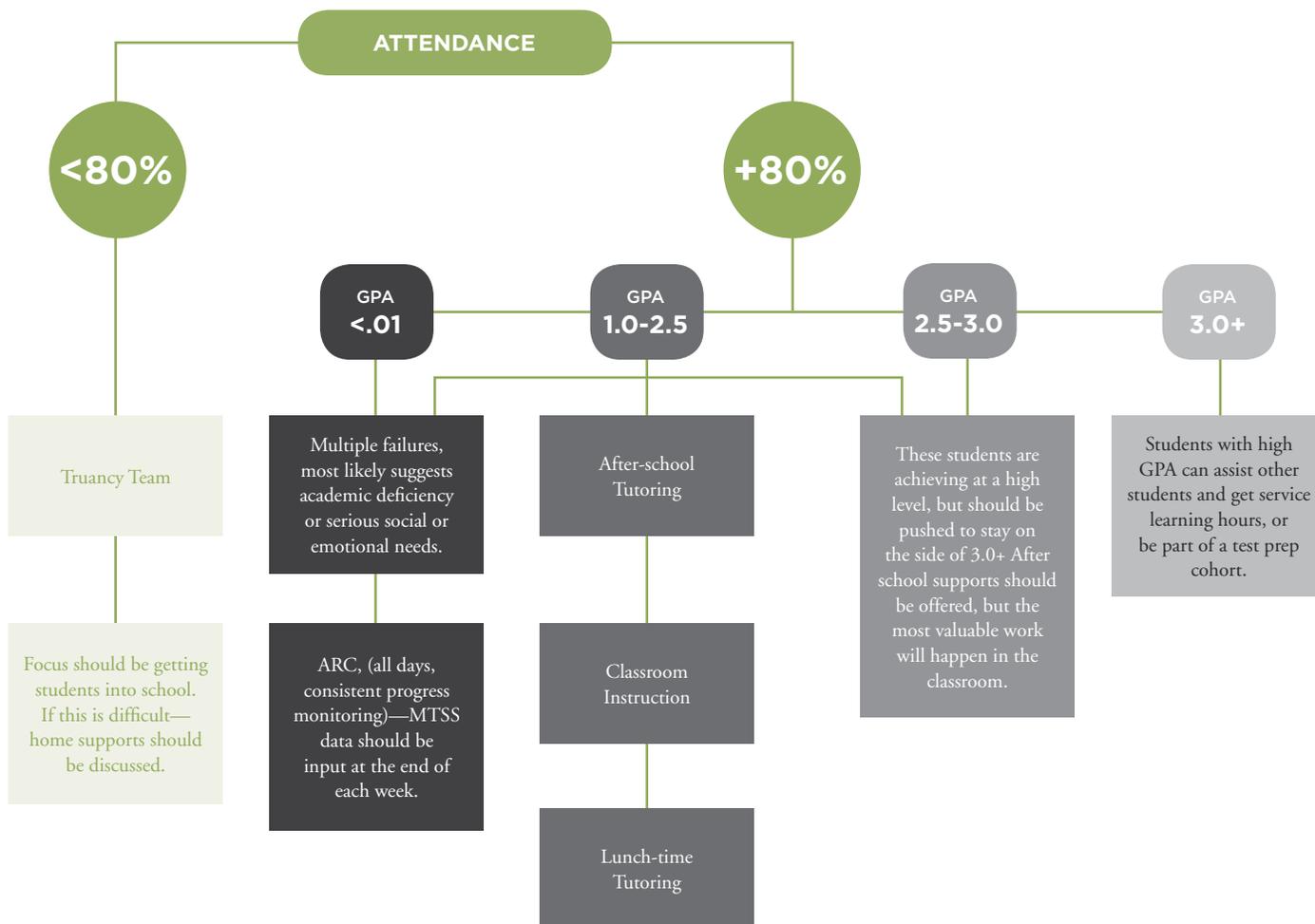
School-Based Educators:

Prioritize indicator data at the student-level and the school-level, while using other data points as context

One of the most valuable resources in schools is time, and indicators can help educators prioritize how they spend their time. For schools inundated with information and data systems, research-backed indicators help educators make sense of the existing data as part of the regular process of education. Knowing which data points are crucial for students’ long-term success helps schools to make decisions about what to emphasize over the course of a school year. Specifically, schools can use indicators at two primary levels: first, at the student level, to identify who needs support and intervention; and second, at the school level, to target, guide, and assess progress of improvement strategies. When used effectively, indicators are integrated into daily practice and are a part of a highly-collaborative environment that can bring together teachers, school leaders, other school staff, families, and students to work together on common goals. Meaningful and malleable indicators set the conditions for more positive, solution-oriented conversations by keeping the focus on outcomes that educators believe matter to the students they care about—and outcomes educators believe they can change.

This focus does not necessarily mean talking about a single indicator and no other data, nor does it mean analyzing the indicator in the same way over and over again. School teams that have built some interpersonal trust and data analysis skills might choose to review a wide range of variables at a team meeting. The key is to lead with the indicator

Figure 5: Intervention Flowchart Addressing Freshman GPA Decline



Developed by Kareem Sayegh and the Freshman Success Team at Sarah E. Goode STEM Academy.

and build other data into the conversation for context or explanation. For example, a Freshman Success Team will probably check a point-in-time Freshman OnTrack rate as a first pass at their student data at a meeting, but then they will likely use other data to help understand the nature of students' challenges and make strategies to better support them. Looking at Freshman OnTrack rates helps answer the question of how many students are off-track. Yet, Freshman Success Teams also need to ask a series of additional questions to guide their problem-solving. How many students are failing courses because they are not attending regularly versus attending regularly and still failing? How much is failure driven by poor grades on large exams or assignments versus failure to hand in homework or participate in class? How many students are failing a class for the first time in their lives and how many have a past history of course failure? To answer these questions and others, teams need to be able to review data in stages to guide their problem solving.

The flow chart in Figure 5 describes how the Freshman Success Team at Sarah E. Goode STEM Academy in Chicago thinks about developing interventions for freshmen who are experiencing GPA declines in the transition to high school. This chart gives a sense of the kind of triage process that schools can develop using a staged approach to data. First, the team distinguishes between students with extremely low attendance and those who are coming semi-regularly, referring the students with the deepest attendance challenges to a team of attendance specialists. Then, the team uses GPA as a marker to distinguish between students having different kinds of academic struggles, developing interventions both within and outside of classrooms to respond to students' needs. Other schools might also use data to distinguish between students with and without discipline infractions, students who are or are not involved in particular school programs, and/or students in different curricular tracks or cohorts within a school.

This kind of data analysis—introducing the data at different stages to assign students to different interventions—is crucial for problem-solving and helps to make a task like developing and monitoring interventions for a large number of freshmen feel more manageable to educators. In addition, note that the assumption in the flow chart, as it should be in indicator use in general, is that the predictive power of indicators is practical rather than deterministic. Indicators are used to estimate a student's likely outcome, determine whether a student is in need of additional supports, and then work to change the student's outcomes for the better. That is, the goal is to take action so that the predicted outcome does not correspond with the student's actual outcome.

Data System Designers:

Prioritize how school-based educators can most readily use indicator data for improvement

While schools require flexibility in day-to-day data monitoring to meet their immediate practice needs, the work of looking at student outcome data over time or generally in the “big picture” view is better served by simplicity rather than complexity. When data systems are not focused, the implicit message to educators is that everything (and therefore nothing) is important. The best way to accomplish this simplicity is to prioritize school-based educators above other audiences and research-based indicators above other data points. Here are four guidelines to focus and align data systems while avoiding common mistakes.

Streamline the amount of data — For many districts and states, the default approach to data systems is: “If we have the data and someone might want to use it, we ought to include it.” When data is available on everything from students' attendance to students' clicks in a software program, educators can spend valuable time sorting through tables and graphs that have no connection to students' outcomes. It is important to streamline and simplify data for educators by asking: What are the

most important questions we want school-based practitioners to be able to answer and what data do we absolutely need to provide to enable them to answer those questions? Placing these questions at the top of any data set or display can clarify what the focus should be for educators.

To achieve simplicity, prioritize school-based educators above other audiences and research-based indicators above other data points.

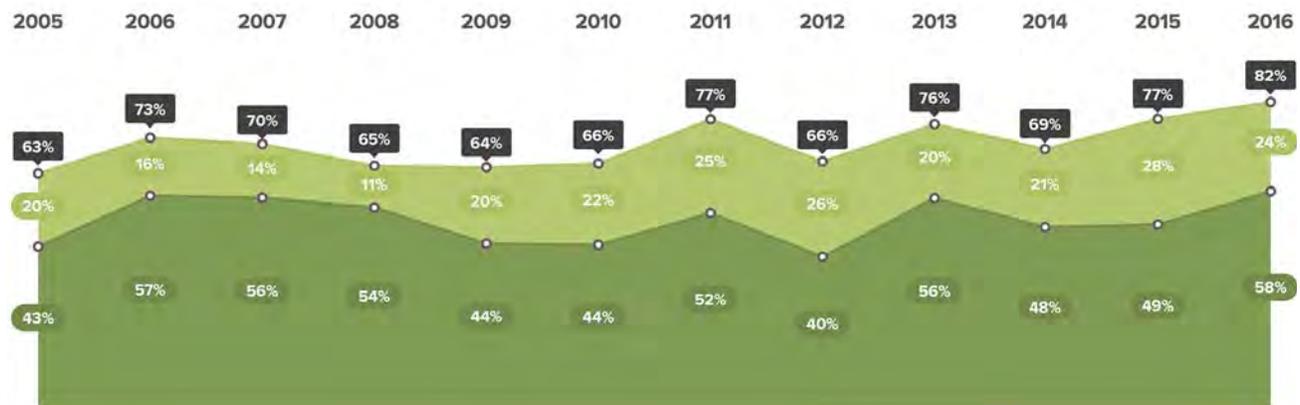
Show data in ways that make it easy to understand — It is critical that data be understood easily so that practitioners can quickly move to conversations about the data. Although complicated data displays can provide a lot of nuance and be visually interesting, users on the ground prefer something clean and simple. This allows them to go right to the information they need without getting lost in the esoteric differences between data displays. The default should always be to display the data once or twice and to choose displays with which educators are already familiar. In order to justify a new way of presenting data, there should be clear evidence that the benefits of the new format considerably outweigh the expected learning curve for school-based practitioners to understand how to interpret the new format. Basic stacked bar and line graphs, as shown in Figure 6, are often the best way to display indicator data.

Consolidate data into one system — Even the most intuitive and focused data systems are not helpful if the data are held in separate, disconnected interfaces. The onus then falls on the front-line user to integrate data across systems in order to answer seemingly simple questions about indicators. Data systems often evolve in different departments within a school district, and as a result, users need to take the time to access and merge data across multiple data systems. A lack of data interoperability sends the message to school-level practitioners that their work to improve different indicators is unrelated. The objective of the data system should be to, as much as is feasible, reduce the time and energy it takes for a school-based practitioner to integrate data from different sources. The work of building data infrastructure to connect data points and products is essential for a data system's utility for front-line users.

Design data systems for practice, not accountability reporting — Data collection that occurs as the enforcement mechanism for a policy goal creates fatigue and can lead to mistrust in a school. Typically, this kind of data is collected for the primary purpose of informing a particular department or program about whether people on the ground are complying with mandates to implement a new curriculum, pedagogical approach, or system of support. The data collection itself is the way that

a school demonstrates compliance with the new policy or idea. Data in these cases are generated in the field and funneled up to higher levels of administration, and there is often no mechanism for educators to review the data themselves for their own inquiry. This kind of data collection wastes time and can reinforce the viewpoint of many educators that collecting and reporting data serves no purpose in their own work but is rather something they must do to accommodate district or civic leaders far removed from the work of schools.

Figure 6: College Enrollment Rates for Moderately Qualified Graduates over Time at Sample School



- Moderately Qualified Graduates enrolled in a 2-year college
- Moderately Qualified Graduates enrolled in a 4-year college

Visualization adapted from the To&Through Project website.

Looking at one graph from the To&Through Online Tool in Figure 6 shows how specific data choices can prevent these mistakes. Notice that the graph begins with a question that frames the purpose of the data for the user, and that it is a relatively simple stacked line graph. The graph allows for disaggregation by a particular group of students, here focusing on moderately qualified graduates (or those with access to somewhat and non-selective four-year colleges). The display also integrates high school data and college data from different sources and is designed to push schools to raise questions about how shifts in practice during specific years may have led to changes in student outcomes.



Researchers and Analysts:

Consider the role indicators will play in the school context and how they will be used

Schools are awash with data. Without research evidence on which indicators to pay attention to, setting priorities and effectively focusing school resources and efforts can be extremely difficult. By organizing readily available information on student performance into indicators, educators can identify which students need what types of support and develop and test school strategies to improve students' educational attainment. At its core, an indicator provides a prediction of a future outcome such as high school graduation.

However, in developing indicators for use in schools, it is essential to pay as much attention to how they will be incorporated in daily practice and used to make strategic decisions as their predictiveness. The role of researchers is not just to conduct studies to identify indicators that are highly predictive of critical educational outcomes, but to consider the role they will play in the school context and how they will be used (see box titled Characteristics of Effective Indicators). The power of the Freshman OnTrack indicator comes from much more than it being more predictive of high school graduation than eighth-grade test scores, SES, race/ethnicity, gender, and school mobility combined. Rather the power of the Freshman OnTrack indicator comes from utilizing readily available and understandable data to ground and focus problem-solving discussions within schools about student performance.

Characteristics of Effective Indicators

A recent Consortium report outlined five characteristics of effective indicators:

1) predictiveness, 2) usability and clarity, 3) real time/right time availability, 4) direct causal linkage to outcomes, and 5) malleability.^D

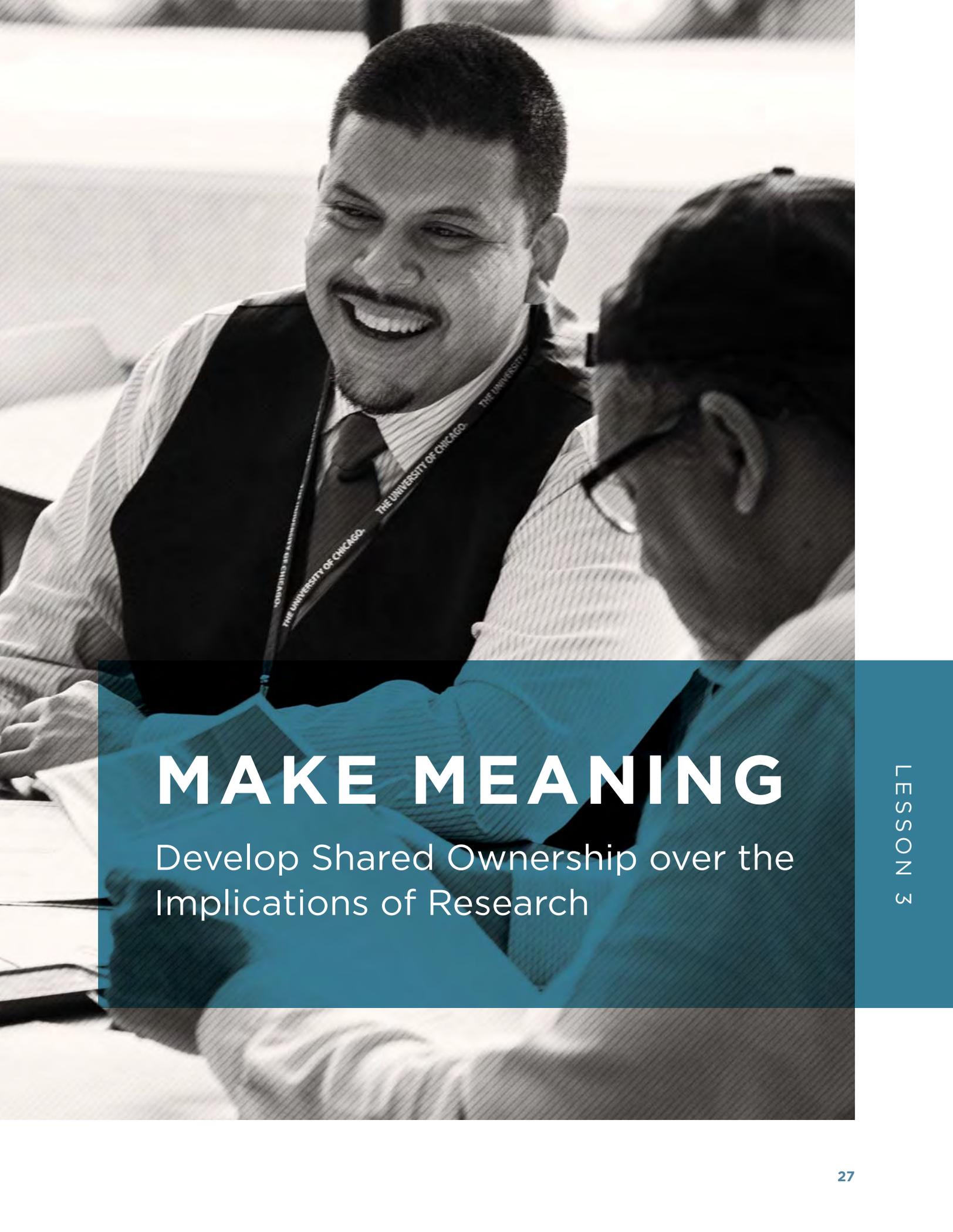
It is critically important that researchers provide evidence of what indicators are *predictive* and *not predictive* of the outcomes that schools seek to change. When deciding which indicators to use to guide practice, it is important to know which indicators are most predictive of students' future success—and which indicators may be related to down-the-line outcomes, but are demonstrably less predictive than others. As important as knowing what indicators are useful in knowing how to target strategies and interventions, is knowing what indicators are less effective targets for improvement efforts and are not good measures of progress. However, predictiveness is still only part of the equation when deciding which indicators to use. Even with rigorous evidence on the predictive nature of an indicator, systems will still struggle to use indicators to focus if the indicators themselves aren't *usable and clear*. Put simply: the analysis can be complex, but the best indicators are able to drive practice because they are understandable, simple, and can be applied in schools. When educators use indicators, the priority is to take in information quickly and to make indicators available in *real time* or at the *right time* so that action can be taken in a timely fashion. If the complexity in understanding and interpreting an indicator becomes a barrier to action, it will not be effective in practice. This endpoint should be a major consideration in indicator development. If the indicator is only available once a year, it may be useful in planning, but is not going to be

effective for educators who need to take action on a regular basis in schools. This attention to clarity, usability, and timeliness in developing indicators streamlines data and keeps all elements of a data system focused on the outcomes that matter most for student success.

Ideally, indicators should be used to develop school strategies that have a *direct causal linkage to outcomes*, meaning that the indicators are not only useful in identifying students for support, but also useful as a focus for changes in school practice. Establishing causality is a complicated task. Yet, when educators expend their resources to improve a specific indicator, it is essential that those practices change the ultimate outcome of interest. For example, Freshman OnTrack is often thought of as an early warning indicator to identify which students require intervention to improve their likelihood of graduating from high school. However, it is even more useful as a focus for school strategies because changes in school practice that improve Freshman OnTrack rates also lead to increases in high school graduation rates.

Finally, it is critical that the indicators that guide the data work are *malleable* and actionable (i.e., that it is possible to move the indicator and that there are known strategies for moving the indicator). For example, even if eighth-grade test scores are useful to identify students who are likely to struggle academically in ninth grade, high school educators cannot change past performance. In contrast, freshman year course performance is something that educators can develop strategies to address, and research has demonstrated how attendance, for one, is a strong predictor of course performance and high school graduation.

^D Allensworth, Nagoaka, and Johnson (2018).



MAKE MEANING

Develop Shared Ownership over the Implications of Research

LESSON 3

When using data for improvement, accessible research findings give school and district leaders the opportunity to infuse their data work with research evidence. This, in turn, builds educators' sense of ownership over the problems of practice raised by the research and commitment to changing adult practice to improve student outcomes.

School-Based Educators:

Facilitate educators' understanding of the research behind the indicators

Important ideas in educational measurement often move from being the answer to a research question to a research-backed indicator to a system-wide call to action to a school-level accountability metric. This process happens often without the people on the ground in schools getting a chance to make sense of the ideas behind the numbers. To move so quickly from the ideas to the data misses opportunities to work with teachers and other educators to generate their understanding of a problem, how the problem plays out in their context, and how they weigh the benefits and drawbacks of different strategies.

An example of this comes from the UChicago Consortium's work on college access. In *From high school to the future: Potholes on the road to college*, researchers found that students who completed three or more college applications were more likely to gain acceptance to a four-year college.¹² As a result, the proportion of seniors who completed three or more college applications became a component of school evaluation. As the idea moved from an illustrative research finding into an evaluative metric, some important context was lost in translation for many educators working on college access in schools. The biggest take-away of this line of research was that scores of motivated, talented CPS seniors fail to enroll in college every year simply because they do not know how to navigate the college application process—and that schools that set up the systems and structures necessary to support students in that process got good results. In this context, a school leader might consider monitoring the proportion of students who complete three or more college applications as an indicator of whether or not the school is meeting the broader imperative of supporting all students to achieve their post-secondary goals. Divorced from the context, the indicator felt arbitrary and misaligned to many educators.



When indicators reach educators without the research as context, educators have a tendency to approach indicators from a perspective of complying with mandate, rather than useful data to solve an important problem. By contrast, when educators are able to make their own meaning of the research findings, they are able to approach the work of moving student outcomes from a place of conviction, rather than a place of compliance with a policy. Working from a place of belief is far more likely to lead to long-lasting improvement efforts. Using the primary research in schools can be a powerful tool to build commitment, community, and collective responsibility for change in a school.

Consider, again, the process by which high schools in Chicago began to organize their strands of work on the goal of sending more students to college. Driven in part by Consortium research on students' post-secondary outcomes, the district began measuring and reporting college enrollment rates of CPS graduates in 2005. It was not immediately clear to the educators supporting students with the college process where the major points of leverage in their practice were—or if it was truly fair to hold high schools accountable for the college choices of their students. Over time, due to outreach efforts by the UChicago Consortium and facilitated learning opportunities facilitated by NCS, many educators were able to make their own meaning of important research reports like *Potholes on the Road to College*.¹⁵ This allowed them to see the current conditions that either produced roadblocks for students seeking to attend colleges (such as relying on students to seek counseling support when they needed it) or provided important supports (like developing a school-wide approach to college counseling). It also helped educators connect with the broader moral imperative behind the push to increase college enrollment numbers. *Why were educators working so hard to prepare students for college academically if all of their efforts fell apart when students struggled to navigate the college application process?* Using the research to understand strategies for improvement and build commitment to the work, in turn, helped educators develop a sense of ownership over their own process of building a college-going culture and the systems and structures to support all students to access to higher education. Working from this stance cements educators' commitment to sustaining the hard work of incremental improvement over time.

Data for Improvement vs. Data for Accountability

It is important to consider whether the ecosystem educators work within is designed to use data for *improvement* or for *accountability*. This distinction is not just about the data itself, but also about the purpose and conditions by which data is created and socialized. Data for accountability uses external incentives to signal which outcomes schools and teachers should prioritize.^E Data for improvement focuses on creating the internal conditions that enable educators to use data to improve student outcomes in spaces that are safe from external pressure.

It is a mistake to focus solely on either function for data. Most commonly, school systems prioritize data for accountability, providing little in the way of infrastructure, data, or support for improvement cycles, and assuming that schools have the capacity to generate and use aligned data for improvement. At the same time, it is not rational to think that data for improvement can be kept completely separate from data for accountability. Accountability systems are a part of every system of public education, and the lines between data for accountability and data for improvement will always be blurry: an indicator's presence in an accountability system means that data will never become entirely safe from the judgments that come with accountability in public education. The pressure that educators feel to improve their schools' accountability metrics is palpable—we still close schools, fire principals, and choose schools for our children based on this data. In addition, much of the data available to school-based educators are data generated in alignment with the accountability system, leaving savvy leaders in the position of retrofitting accountability data for improvement purposes.

However, the mere presence of data for accountability does not preclude an education system from creating authentic spaces where schools can use the data for improvement. Ideally, there is alignment between a system's data for accountability and data for improvement: the former should signal to schools what indicators they should focus on, while the latter makes up the bulk of the day-to-day work of using that indicator. For example, a school district could incorporate college enrollment into its accountability system, signaling to high schools that they should organize around improving this metric. The data system could then be used to make a compelling case that the day-to-day work of supporting students through the college application process is educators' best leverage point to impact college enrollment percentages. The data system could also be used to support schools by providing systems to track college applications and FAFSA completion, coaching schools in how to structure bi-weekly meetings to review the data, and working with schools to share promising practices and integrate contextual challenges into their data and work.

Efforts to use data for improvement begin to create a culture where educators take data for accountability as a given, but where data for improvement becomes a core part of the culture. In other words, a way of being and doing. However, committing to using data for improvement requires committing to openness, reflectiveness, and some amount of risk-taking on the part of leaders who must be willing to learn alongside their systems and schools.

^E Loeb & Figlio (2011); Ed Trust (2016).



Data System Designers:

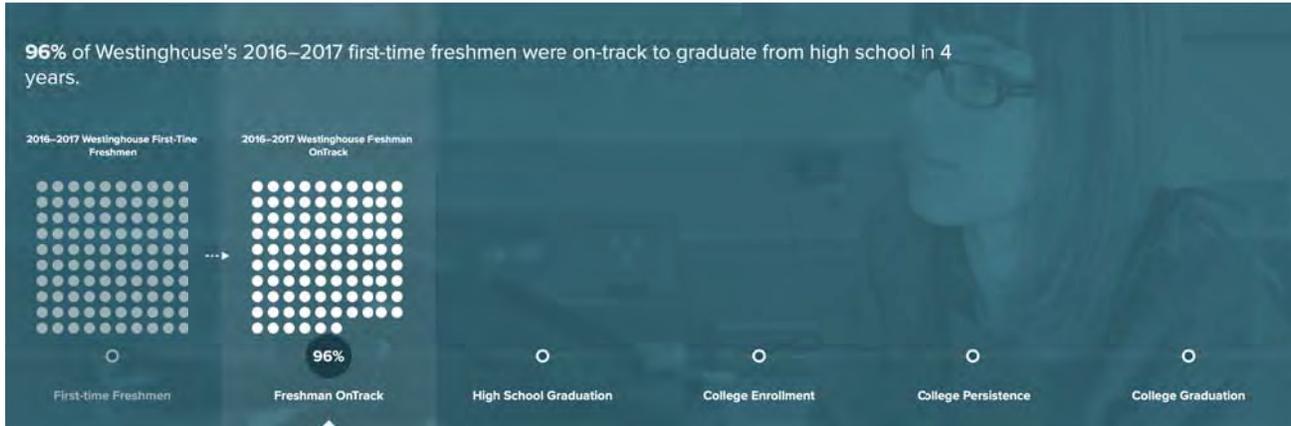
Ensure data systems explicitly draw connections between school-level indicators and the research behind them

Of course, the process of encouraging educators to make meaning of research across a school system as large as CPS is quite labor-intensive. It is not feasible to expect researchers or even school support organizations to reach all relevant educators in the system in person. There are certainly lighter-touch ways to emphasize the importance of the research in data work, starting with the data system itself. One of the core functions of a data system is to explicitly make the case to educators that there is a connection between their day-to-day work, the indicators of futures outcomes, and the outcomes themselves. In order to do so, a data system should directly link its indicators to the underlying research that explains why a particular indicator is associated with desired outcomes for students. When educators understand how the indicators link to student outcomes, and then are convinced that they can influence those indicators, they are more likely to believe that working on the indicators is about improving outcomes for their students rather than accountability or compliance.

The To&Through Project sets out to do this in several ways: Issue Briefs highlighting what drives high school and college attainment (e.g., Freshman OnTrack, grades, etc.) and what strategies schools are using to move the needle on these measures; Mythbusters designed to dispel some common misconceptions on what drives high school and college attainment; Data Insights, or infographics that illustrate why post-secondary attainment matters and what can help foster it; and a Communications Toolkit that contains a collection of resources created to support school leaders in communicating research and data to stakeholders.

In addition, the To&Through Online Tool provides an explanation of each indicator at the top of data displays.

Figure 7: Landing Page for the To&Through Project Website



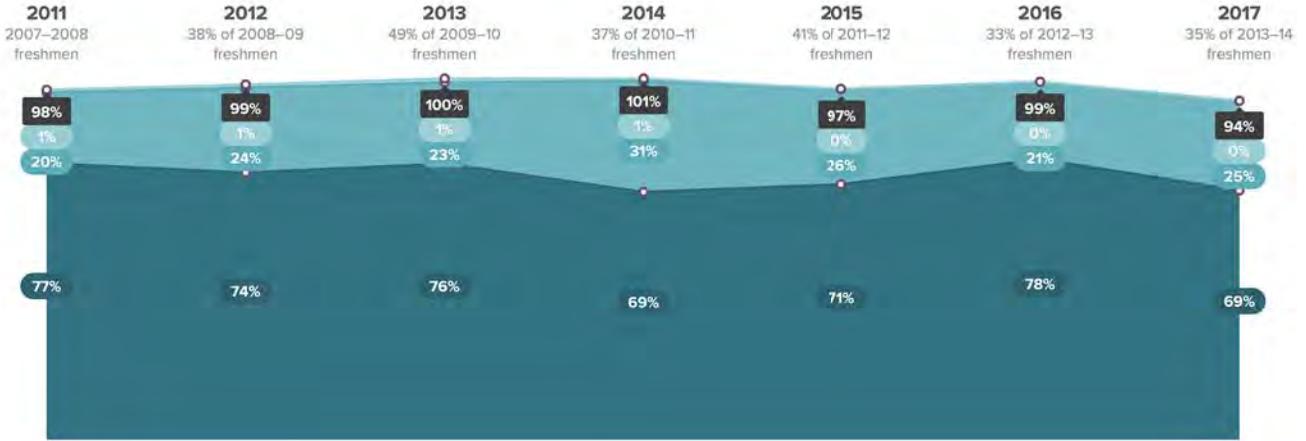
Students who are on-track at the end of ninth grade are nearly three times more likely to graduate from high school than students who are off-track. A student is on-track if he or she fails no more than one semester of a core course and earns at least 5 credits by the end of freshman year. Additionally, only students who earn a 3.0 GPA or above in high school have at least a 50 percent chance of graduating from a four-year college within six years.

This Tool makes explicit links between the way the data is shown and the relevant research. This kind of connection is vital to building and socializing a data ecosystem. In addition to adding brief reminders on the screen, the tool can help spur interest among educators in going back to the primary research texts to start doing the kind of meaning making—whether on their own or with their peers—that helps to build commitment to improvement. Of course, the quality and accessibility of the texts and tools that educators will discover if they follow the trail back to the research matters a great deal in this process.

In certain situations, it can be helpful to replicate descriptive research findings at the school level. This process allows school-based practitioners to directly link an indicator to an outcome in their particular context. For example, it is one thing to know that freshman-year GPA is predictive of graduating GPA and college access, but the importance of freshman-year GPA may not be evident until a school team reviews the relevant data on their own students. The To&Through Online Tool provides graduating GPA over time at the school level for three different groups of students: on-track freshmen with > 3.0, on-track freshmen with < 3.0, and off-track freshmen. The vastly different outcomes for these three different groups of students make a clear case at the school level for the utility of freshman GPA as an early warning indicator.

Figure 8: Changes over Time in High School Graduation for Different Groups of Freshmen at Sample School

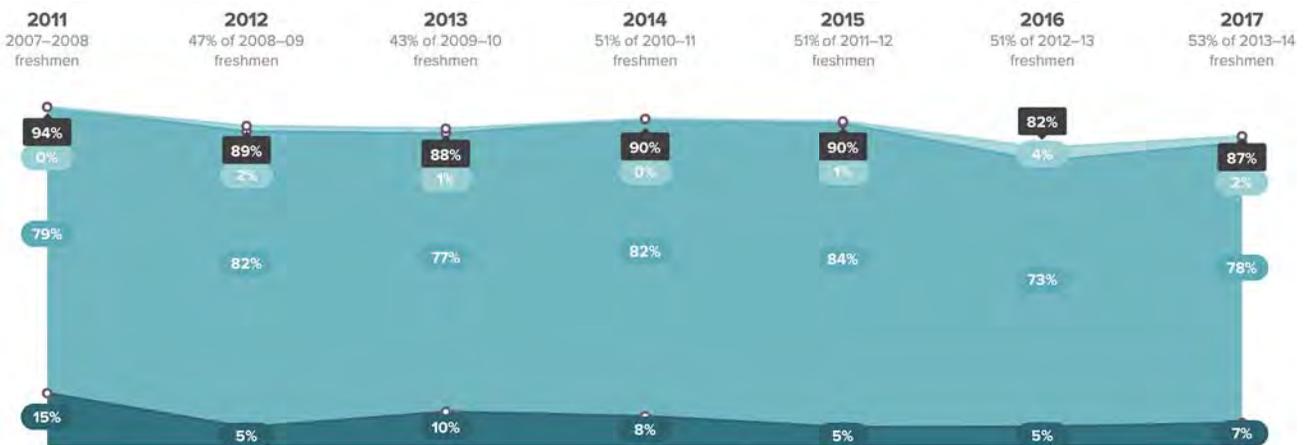
High school graduation for on-track freshmen with a GPA \geq 3.0



- Graduated with no GPA reported, on-track with a GPA of 3.0 or above as freshmen
- Graduated with a GPA below 3.0, on-track with a GPA of 3.0 or above as freshmen
- Graduated with a GPA of 3.0 or above, on-track with a GPA of 3.0 or above as freshmen

Visualization adapted from the To&Through Project website.

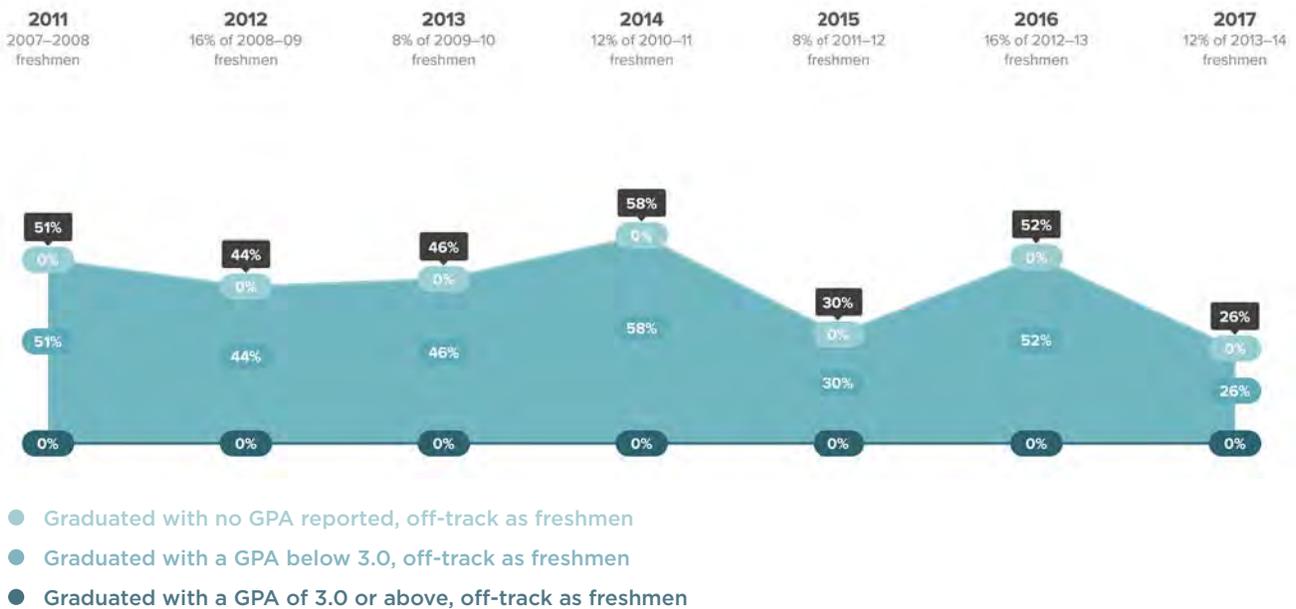
High school graduation for on-track freshmen with a GPA < 3.0



- Graduated with no GPA reported, on-track with a GPA below 3.0 as freshmen
- Graduated with a GPA below 3.0, on-track with a GPA below 3.0 as freshmen
- Graduated with a GPA of 3.0 or above, on-track with a GPA below 3.0 as freshmen

Visualization adapted from the To&Through Project website.

High school graduation for off-track freshmen



Visualization adapted from the To&Through Project website.

Researchers and Analysts:

Build a two-way dialogue with practitioners to strengthen communication and ownership of research findings

Building educator or school ownership of student outcomes is the result of an intentional process of conducting research and communicating findings that are relevant and actionable. From the beginning, the UChicago Consortium has distinguished its work from traditional academic research by conducting its studies with the audience of educators and other education stakeholders in mind, while still maintaining quality and rigor. From the onset of a study, the approach is motivated by research questions informed by pressing problems of practice and policy that emerge from schools and the district. While the methods underlying the research are guided by best practices in academic research, the selection of methods is driven by answering the research questions in ways that can guide district and school leaders.

The UChicago Consortium has created structures within its organization that are intentionally designed to ensure that researchers receive adequate feedback from the field about what challenges educators are struggling with and what research products will best support those working to overcome those challenges. The UChicago Consortium's research agenda is developed through a process of working with key education stakeholders every five years to ensure its planned studies reflect needs

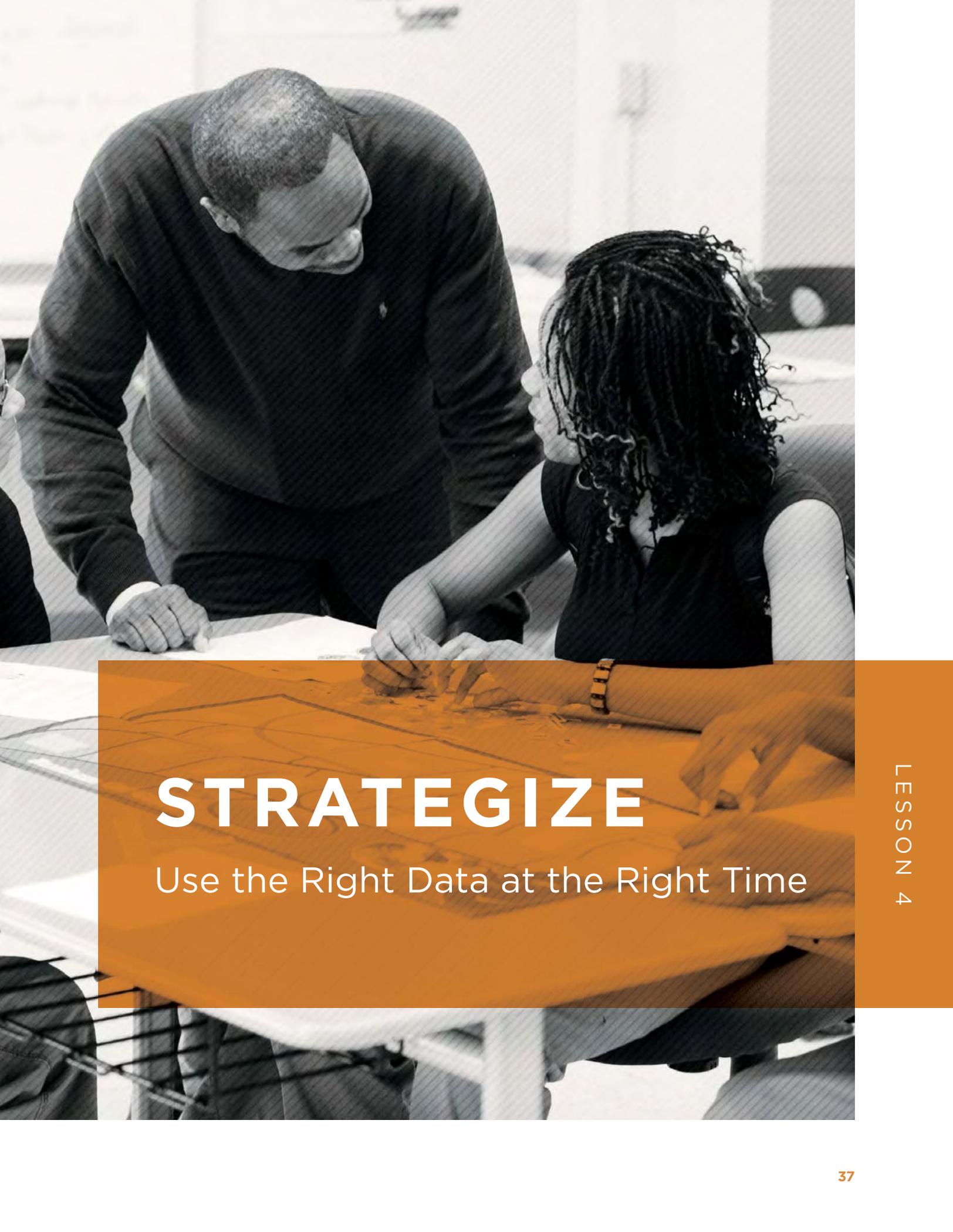


Building educator or school ownership of student outcomes is the result of an intentional process of conducting research and communicating findings that are relevant and actionable.

emerging from the field. Individual studies are developed in consultation with district administrators and researchers provide regular updates as findings emerge so that district leaders have the time to develop thoughtful and intentional strategies and policies that draw on findings. The UChicago Consortium has a steering committee that provides feedback on studies in progress. The UChicago Consortium also has a formal “no surprises” policy of working with district leaders to share research findings in advance of public release of research reports. Just as important as the formal structures, though, is the power of long-standing relationships between researchers and education leaders at many levels of the school district. Both the commitment of CPS leaders to be guided by the best possible evidence and the responsiveness of Consortium researchers to collaborate and share findings with these leaders when and where they are needed builds an ongoing line of communication, as well as a sense of mutual accountability between both partners to use the partnership to the best of its promise.

These researchers also help educators feel a sense of ownership by delivering research evidence in ways that are understandable by a broader audience and written with educators in mind. This approach is built on the belief that research findings will only be used by schools and districts if they are speaking to the priorities and needs of practitioners and are communicated in ways that make their implications clear. The UChicago Consortium engages with practitioners and policymakers throughout its studies to ensure that findings are understandable and actionable prior to their public release.

Importantly, the approach does not end with the publication of a report or happen only within the timeframe of a given study. In order to build educators’ ownership of research findings, researchers need to dedicate time to listen to how educators frame their most pressing problems of practice. Through this dialogue, researchers build their own understanding of the right questions to ask, the best ways to share findings, and the context that educators need to start acting on findings. Researchers learn from practitioners about how to interpret findings in the distinct context of different schools or how policies play out in the school level. Practitioners frequently have a deeper understanding of the nuances of data and potential pitfalls, whether it is the meaning of specific variables, practices in data entry and timing that can influence their interpretation, and differences between the summative data researchers usually receive and what the interim data schools use may look like. Whether by interacting with Consortium researchers directly at professional learning opportunities, reviewing short research summaries on their own time, or using the primary research texts to guide the professional learning of a school-based team, educators in Chicago have been able to make meaning out of important research studies that guide the field.



STRATEGIZE

Use the Right Data at the Right Time

LESSON 4

Decision-making in schools varies from big-picture strategy to fine-tuning interventions with individual students. Each of these decisions—and everything in between—benefit from the right data at the right time. The data system should provide schools with different data for different levels of decisions, with researchers evaluating popular strategies across contexts to determine the potential for scale.

School-Based Educators:

Get data at the right level to the right people at the right time

One of the most important elements in making data work effectively in a school is the ability to get the right data to the right people at the right level of detail at the right time. Often schools have a tendency to focus either very broadly on the school average of an indicator (i.e., our Freshman OnTrack rate is 78 percent) or very narrowly on the short list of students with the deepest challenges (i.e., the 10 students failing two or more courses). Focusing too much on either end of this spectrum of detail misses the rich nuance and opportunity for improvement between the two poles. There are certainly different constituencies within the school who need the broadest possible look at the data and other constituencies who need the list of “high-flyers.” For example, a senior leadership team would likely want to see the school’s Freshman OnTrack rate, along with other high-level metrics every five weeks, but attendance interventionists need lists of students with chronic levels of absence and monitor it frequently.

However, much of the work of teams like Freshman Success teams or Post-secondary Leadership teams is to find the students at the tipping point of success and failure. For example, students who are failing only one class or coming to school regularly, but often missing first period. Finding these groups of students who need similar and relatively light-touch supports from teachers and counselors to overcome fairly routine challenges in high school can have a two-fold benefit. First, for an individual student, it can prevent small challenges from growing larger. Second, it is an efficient way of working to improve a school’s overall performance on any given indicator. This process of grouping and monitoring requires a team to break apart the school’s average Freshman OnTrack rate and examine it from different lenses. It also pushes teams to effectively group different kinds of students for in-class and out-of-class interventions.



In addition to thinking about data at different levels of granularity, it is also important to consider which data is most pressing to review at which points of the school year. Figure 9 shows an example of how some senior leadership teams in NCS partner high schools have chosen to structure the data focus of their monthly meetings, emphasizing different datasets at appropriate times of year.

Figure 9: Yearly Arc of High-Priority Data for Senior Leadership Teams in NCS Partner High Schools

MONTH	DATA FOCI	RATIONALE
September	Who's in Our Building (demographics and prior achievement of students)	Schools need to start the year with an understanding of their population.
October	Whole School Attendance & Discipline (with a focus on freshmen)	Schools will want to catch attendance and discipline issues early before they become bigger climate/culture issues.
Early November (End of 1st Quarter)	Freshman Course Performance and Whole School End of Quarter GPAs	End of first quarter is the earliest possible time to estimate on-track rates; schools will want to identify off-track students early and provide support; schools will also want to start pushing for B-averages.
December	School- and/or teacher-generated common assessment data	By December, schools should have administered their own assessments of academic achievement.
January	College Application Data	Many application deadlines are in January/February; it's important for schools to check on college match.
February (End of 1st Semester)	Freshman OnTrack and End of Semester GPAs	It's important for schools to check the efficacy of interventions to keep freshmen on-track and to keep the rest of the school high-achieving.
March	School- and/or teacher-generated common assessment data; estimates of performance on accountability systems	By March, schools should have administered a second assessment of academic achievement; it's also a good time to check in on where the school is landing on performance policies.
April	College Enrollment; Freshman OnTrack and GPA	Prior to the end of the year, schools will want to check in on acceptance rates, scholarships, and estimates of intended enrollment. Also important to check on 3rd quarter freshman success rates to check on the extent of the "third quarter slump" commonly seen at many schools.
May	Who's In Our Building NOW?	Checking in on where the school will close out the year on various metrics and goals provides a great opportunity for reflecting on the effectiveness of interventions/strategies and will be a springboard into planning for the next year.

Developed by Quinton Keith, Rachel Steele, Tim Valenti, and NCS.

Data System Designers:

Produce different data for different times and purposes

School practitioners need data at the right time and in the right form to effectively use it to support strategy and implementation. End-of-year data can guide longer and forward-looking cycles to set priorities and identify strategies (e.g., school improvement plans) while real-time data can drive shorter cycles of reflection and strategy adjustment in reaction to new information about student performance.

End-of-year data, trends, and longer cycles of reflection and improvement

— Since school systems generally have the time to make end-of-year data more precise, the objective should be to enable users to conduct more sophisticated analysis on this data. In this way, the data can be used for high-level strategy decisions that may lead to significant shifts in practice. It can take several years to see changes in student outcomes (i.e., high school or college graduation), and since these outcomes vary at different types of schools, school systems should try to provide end-of-year data as part of longer historical trends. The more precise nature of end-of-year data means that it is also the form of data that is public facing, allowing a variety of stakeholders both within and outside of a school to participate in their own long-term strategy and implementation cycles. Given the sometimes-public role of this data and the year-over-year comparison, it is vital to maintain consistent data rules across time so that schools and school partners can reliably compare outcomes from one year to another.

Real-time data and short cycles of reflection and improvement — On the other end of the spectrum is real-time data. By its very nature, real-time data places a greater emphasis on timeliness rather than data-quality. For example, data may not be as accurate because a teacher may not have updated grades recently; a student may have just transferred in or out; or an administrator is late for processing a long absence as “excused.” Though systems should try to limit these errors as much as possible, the often inexact nature of real-time data means that systems should also limit possible analysis to what they term the most important views of data. The purpose of this data is to support adjustments in implementation (e.g. tactics, interventions, moves), rather than starting an entirely new approach.

In addition to a simple table or graph, it is incumbent on the data system to enable schools to easily access the names behind the real-time data in a roster format. Rosters are the link between a data system and student-level interventions or Multi-Tiered Systems of Support, and the organization of a roster should privilege the indicators a system wants its schools to focus on and use language consistent with quarterly and end-of-year data. In addition, the format of a roster should allow a team of adults to quickly filter and sort through different sub-groups to move further toward hypothesizing about potential root causes.

Figure 10 shows an example of a real-time roster that counselors and Post-secondary Leadership Teams use when working with NCS. The roster pulls data from Naviance, the software that CPS counselors use to monitor and support students' college application activity. The roster organizes the information to show counselors what kinds of college applications students are submitting and whether or not students have hit the school's targets, such as submitting at least three applications and at least one application to a "match" college.¹⁴ Counselors—or other members of a Post-secondary Leadership Team—can use this roster to regularly check their student caseload and see which students to target in any given week on whether they are making effective progress toward their post-secondary planning goals. Rosters like these—especially ones that can be frequently updated to reflect meaningful changes in status—are critical tools for educators taking a case management approach to support a school-wide goal, such as meeting appropriately ambitious college application benchmarks.¹⁵

Quarterly or mid-quarter data — Quarterly data falls in between end-of-year and real-time data. One distinction between real-time data and quarterly data is that, generally speaking, both schools and systems can take a little extra time and energy with quarterly data to ensure quality and may also find time for deeper analysis and broader socialization. Quarterly metrics also give educators a chance to step back and place their quarterly results in the context of year-over-year trends, while also doing some basic analysis to look at the results from different points of view. At the same time, it is also helpful to focus on one or two groups of students to develop an understanding of what quarterly data looks like at the student level as well as to transition into planning for tiered intervention.

Figure 10: College Application Tracker

Student Name	Student's College Access Level	Application Counts by Match Range							Application Thresholds	
		Too Safe	Safety	Match	Reach	Too Selective	Unknown	Total	Three Application Milestone Met?	One Match Application Milestone Met?
Student 1	Somewhat Selective	2	1	3	5	4	0	15	YES	YES
Student 2	Somewhat Selective	3		6	1	2	0	12	YES	YES
Student 3	Selective	1	1	3			0	5	YES	YES
Student 4	Selective	1	10	15	3		0	29	YES	YES
Student 5	Somewhat Selective	1					0	1	NO	NO
Student 6	Somewhat Selective		1	1	2		2	6	YES	YES
Student 7	Selective		3	7	5		0	15	YES	YES
Student 8	Two-Year			1			0	1	NO	YES
Student 9	Somewhat Selective	3					0	3	YES	NO
Student 10	Selective	1		1			0	2	NO	YES
Student 11	Non-Selective		2				0	2	NO	NO
Student 12	Two-Year			1			0	1	NO	YES
Student 13	Somewhat Selective		2	3	3		0	8	YES	YES
Student 14	Selective	1	2	2	3		0	8	YES	YES
Student 15	Somewhat Selective	1		2	1		0	4	YES	YES
Student 16	Somewhat Selective			5	2	4	0	11	YES	YES
Student 17	Selective	3		1			2	6	YES	YES
Student 18	Somewhat Selective	1	1	2	1	1	0	6	YES	YES
Student 19	Non-Selective		1		3		1	5	YES	NO
Student 20	Non-Selective		1	1	4	3	1	10	YES	YES
Student 21	Two-Year			1			0	1	NO	YES
Student 22	Somewhat Selective	1		3	2		1	7	YES	YES
Student 23	Selective		1				0	1	YES	YES
Student 24	Selective		4	2	2		0	8	YES	YES
Student 25	Selective		2	6	2		0	10	NO	YES

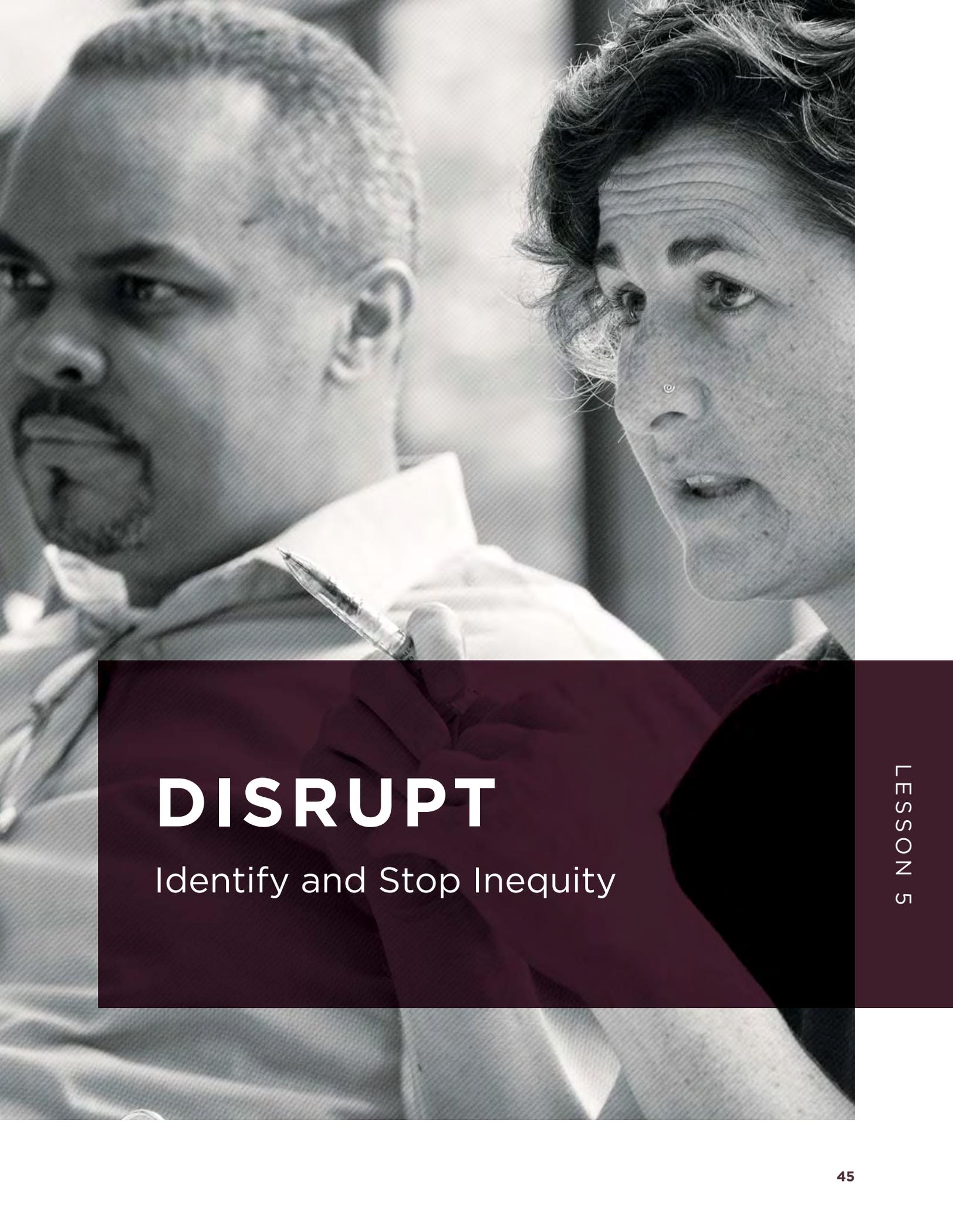
Developed by Nate Flint and NCS.

Researchers and Analysts:

Develop multiple indicators that can be used for different purposes

As schools engage in cycles of reflection and improvement, having multiple evidence-based indicators of the same outcome that can be used at different points in the cycle are essential. For example, the Freshman OnTrack indicator evaluates where a student is at the end of freshman year, and provides a useful metric for assessing the progress of a school on a yearly basis and develop priorities and goals for the next school year. The Freshman OnTrack indicator does not help educators understand where individual students stand at a given moment during the school year. In addition to the Freshman OnTrack indicator, Consortium research demonstrated that attendance and grades, particularly course failures, were also highly predictive of Freshman OnTrack status and high school graduation.¹⁶ Grades and attendance are collected on an on-going basis in schools, and can be used by educators to identify students or groups of students in need of additional support and intervention. Thus researchers and analysts should be mindful of developing indicators that can be used for different purposes at different stages in the cycle of reflection and improvement.

Another dimension of indicator development that researchers and analysts should consider is ensuring that indicators are reflective of multiple priorities and different populations, particularly achievement level. For example, while the Freshman OnTrack metric is highly predictive of high school graduation, it is less helpful in supporting schools in supporting their students in enrolling and succeeding in college, particularly for students who entered high school having strong eighth-grade attendance and grades. The UChicago Consortium developed the “risk and opportunity” categories and used both Freshman OnTrack and a 3.0 GPA as outcomes to reflect that students who had lower eighth-grade attendance and grades would likely need support to ensure that they were on-track, while students with stronger qualifications may need support to maintain their eighth-grade level of high performance and put them on a path to college readiness.¹⁷ When researchers develop differentiated indicators for different students, educators are better positioned to help their students meet their potential.



DISRUPT

Identify and Stop Inequity

LESSON 5

Decades of public discussion on the need to reduce achievement gaps has done little to produce more equitable outcomes for American students. In Chicago, we use data not only to highlight differences in student achievement, but also to push educators to examine the beliefs, practices, and institutional conditions that create inequitable outcomes for our youth across the district. Everything from the intentionality of the conversations at the school to the organization of the data ecosystem to the design of the research itself has implications for equity. The approach we describe here creates the moral imperative for educators to make the changes in their practice necessary to change marginalized students' experiences in public education.

School-Based Educators:

Critically examine the implications when different groups of students have different outcomes

In her seminal address to members of the American Education Research Association (AERA), AERA President Gloria Ladson-Billings made a case to academics, advocates, and policymakers that we should move away from the familiar language of an *achievement gap* in American education and instead embrace the language and framing of an *educational debt*, owed to those communities of Americans from whom educational resources have been historically withheld. The speech provides a powerful reframing of a persistent problem and also shines a light on how the language embedded in the discussion on achieving equitable educational outcomes in America has been a roadblock for improvement in and of itself.¹⁸

In order to responsibly use data for improvement in schools like those in Chicago, it is important for school-based teams to push themselves to examine students' outcomes by race, gender, income, English learner (EL) status, diverse learner status, and any other area of vulnerability students experience in the school system. However, the language, context, and framing of this data are fraught with potential pitfalls of the kind that Ladson-Billings warns about. Decades of school outcomes disaggregated by these subgroups has produced important datasets and supported conversations about inequitable outcomes for students, but not all of these conversations have had the effect of spurring educators to seek new ways to support the learning of historically

marginalized groups of students. Indeed, the practice of continually, publicly documenting outcomes like high school graduation with the rates of White students compared to the rates of students of color can be demoralizing to communities of color. Presenting the data in this way—which emphasizes the differences in student outcomes without bringing to light the structures in educational systems that produce inequitable results—can sometimes lead educators to rely on their implicit biases for explanations. It can also subtly reinforce a problematic narrative that whiteness itself is a goal that communities of color should hope to achieve. Given these concerns, explicitly addressing disparate outcomes for marginalized groups at any given school is as important as it is perilous.

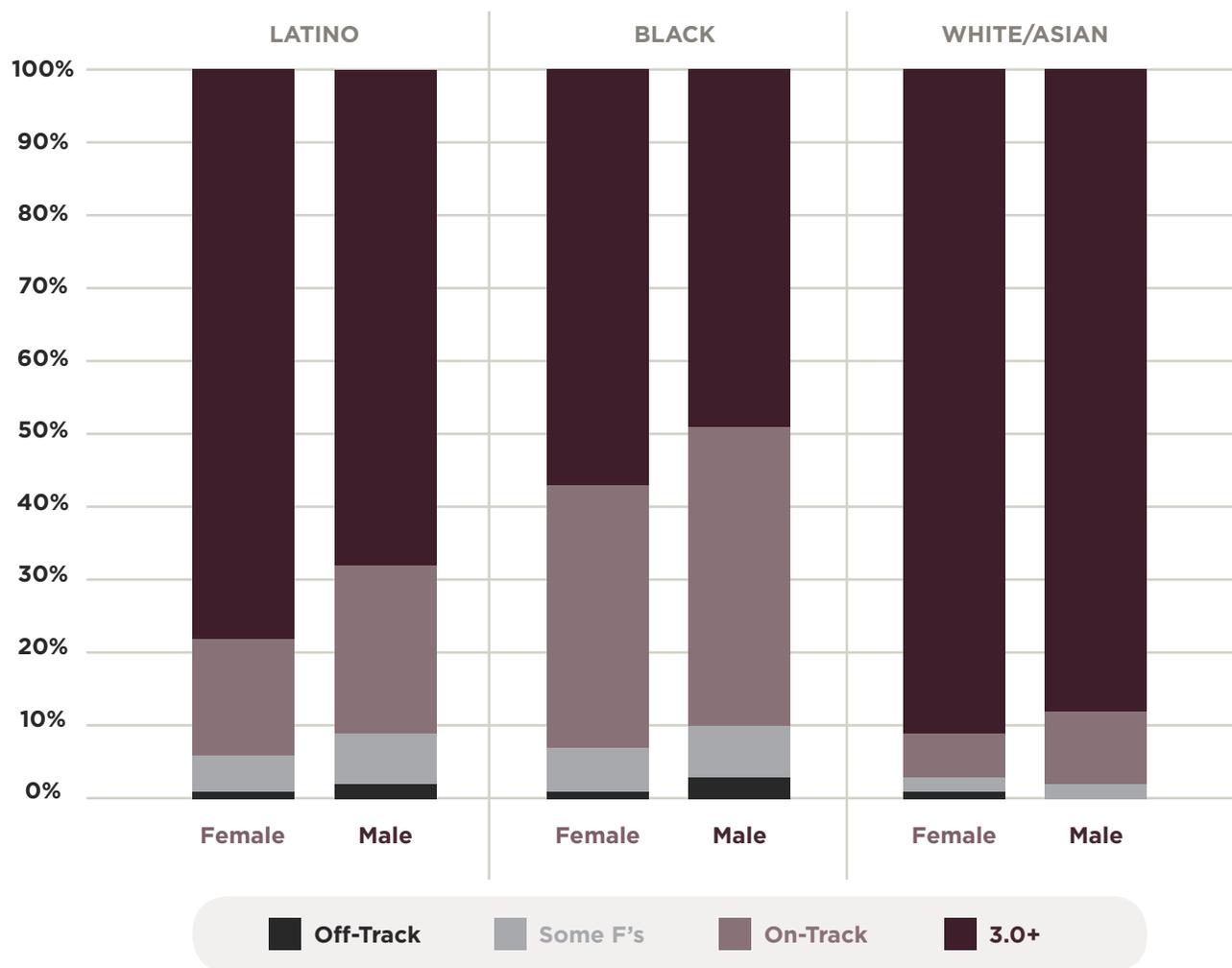
Productive data-driven conversations about equity in educational outcomes focus educators on an examination of their own practice to understand why students experience such different outcomes in the present—in *these* classes and at *this* school.

Productive data-driven conversations about equity in educational outcomes focus educators on an examination of their own practice to understand why students experience such different outcomes in the present—in *these* classes and at *this* school.

It can be thorny to disentangle the extent to which student outcomes are driven by the kinds of vulnerabilities students bring with them to school (as a result of systematic and long-term inequities) versus the current practices of adults in their high schools. This is especially true in high schools, where students bring with them a 14-year legacy of school and life experiences. Nevertheless, this process is necessary for data work in schools. For example, in Chicago, Freshman Success Teams use different categories of students to case manage their freshman class from the beginning of the year. These “risk and opportunity” categories—which are based on eighth-grade GPA and attendance—have been validated as predictive of ninth-grade performance across schools and across subgroups of students, so they provide an important lens for planning and monitoring student outcomes in freshman year.¹⁹ Freshman Success Teams also typically review data by subgroups like race, and when they do, they may notice that, for example, Black young men may be less likely than their peers to earn a 3.0 GPA. The team may also notice that Black young men are less likely than their peers to have entered high school with a prior track record of high grades and strong attendance. If the conversation ends here, then the team has let itself off the hook. Allowing incoming achievement alone to be the explanation for disparities in student outcomes in high school reinforces the idea that these differences are out of the control of educators, driven by what happened in the past, not by the current practices of adults in the high school. This is where the thoughtful disaggregation of data becomes so important.

However, if we compare the outcomes of students across racial/ethnic and gender groups whose prior grades and test scores positioned them to be at “high opportunity” for success in high school, the conversation changes. As shown in Figure 11, school teams may see that, when narrowing the focus to these high-achieving students, Black young men are far less likely than their similarly prepared peers to earn a 3.0 in freshman year. This view of the data highlights the disparities in outcomes between students of different races/ethnicities *who share the same academic background*. Now the focus is squarely on the practices of the adults in the building, and in this way, using different disaggregations can deepen a team’s understanding of students’ outcomes by sub-group and hold themselves accountable to a higher standard of improvement. When Freshman Success Teams combine these views—and bring a lens of equity to their analysis—they are nearly always able to observe that, even within a given student group, their practices are at the root of a group’s performance.

Figure 11: Outcomes for High Opportunity Freshmen Disaggregated by Race at Sample School



Even if disparities in student outcomes by race can be explained by looking at prior achievement, effective Freshman Success Teams use this fact as explanation, not an excuse. The conversation in these teams does not sound like, *“Our Black males didn’t have high grades in middle school so what can we do about it?”* Rather it may sound like, *“Our Black males may not have had great success in school in the past—so what are we, as educators, going to do to change that experience for them in high school?”* As we have stated throughout these lessons learned, adhering to this focus requires a great deal of relational trust among team members. It also requires that educators commit themselves to the ongoing work of self-examination that is required to overcome implicit biases and proactively disrupt inequity.

Data System Designers:

Provide school-based educators with disaggregated data that allows them to answer difficult questions about inequity

In order for educators to identify groups of students who are underachieving, and begin shifting how they see and treat these groups in school, they need very specific cuts of data. There are several essential questions that a data system must be able answer about each indicator, each leading to a different kind of data disaggregation:

How are students doing across different demographic and learning differences (race/ethnicity, gender, diverse learners, ELs)? — Differences in outcomes or growth for different subgroups of students could suggest a bias on the part of some educators. It may also suggest a particular, common experience that a certain group of students are having inside the school. This may be indicative of a structural form of racism that exists in a school policy and/or implicit biases on the part of educators and in curriculum.

How are students fairing across different levels of prior achievement? — Most high schools in Chicago serve students with a wide range of academic histories leading up to ninth grade. Disaggregating data on important outcomes by prior achievement helps schools understand whether or not their practice supports all students, regardless of prior performance. Differences across prior levels of attainment could suggest that the teaching and learning is directed toward a particularly well-prepared or particularly struggling group of students. As a result, a group of students with a specific level or prior attainment is possibly disengaged and/or disconnected.

How are students doing in different grade levels, subject areas, and classrooms? — Differences in a particular subject or classroom can be most indicative of the effect of teacher practice on student learning. This suggests a practice used by an individual or group of teachers (grade level or department) is accelerating or hindering student learning.

Researchers and Analysts:

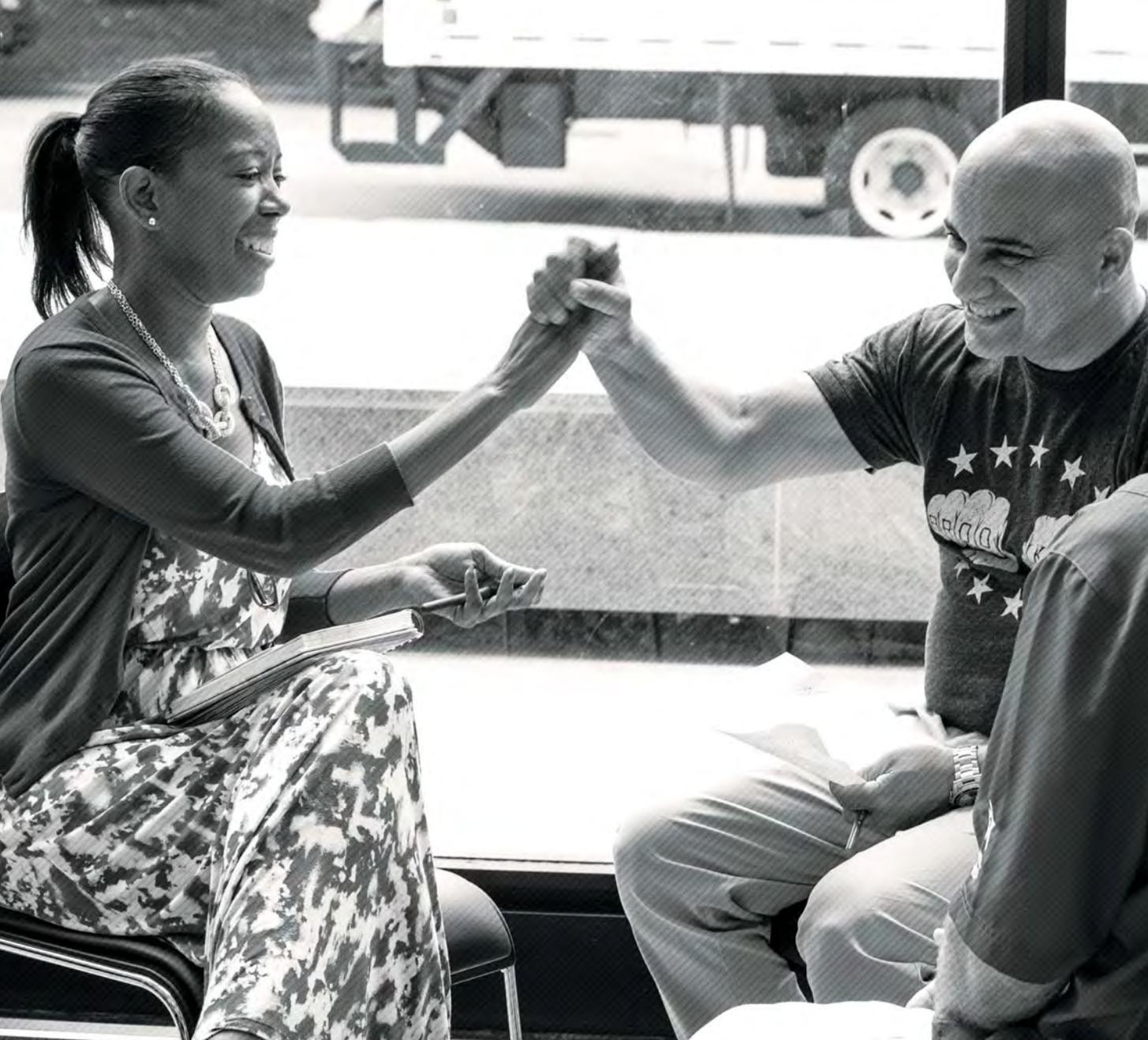
Dig beneath descriptive differences in outcomes to uncover leverage points for educators

For school practitioners to address inequities in educational outcomes, it is essential that the research and analysis behind the indicators must examine how these data apply across student subgroups. Oftentimes, analyses focus on estimating average effects on a total population or show that one subgroup outperforms another on a given outcome. These kinds of analyses don't provide much insight as to why those gaps exist or whether the indicator itself might mean something different in its ability to predict future outcomes across student sub-groups. Researchers can do much more than shed light on the differences in outcomes by gender, race/ethnicity, EL status, or other subgroups. For example, in the years after the Freshman OnTrack indicator was identified as an important predictor of high school graduation, Consortium researchers returned to that foundational relationship to test whether the indicator held the same predictive power for students of two different subgroups: students who were or had ever been ELs, and students with diagnosed learning disabilities.²⁰ Each analysis pointed to disparities in outcomes for these vulnerable student groups, but in each case, the on-track indicator held as predictive. This reinforced the message that, while supporting students to higher levels of course performance in ninth grade may prove to be a bigger challenge for some groups of students, it is still the right work to do. This is especially true if the goal is to increase high school graduation and college access for all subgroups of students.

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Similarly, Consortium research on the college-going outcomes for CPS students has consistently called out disparities in college enrollment by race as a challenge, but the analysis went further than simply identifying disparate outcomes. In the seminal research report, *Potholes on the Road to College*, Consortium researchers identified a significant gap between Latino students and their peers across race/ethnicity—a gap which only grew when controlling for students' achievement level. This finding, if left uninvestigated, would have given very little guidance to practitioners on how to better support Latino students as they transition out of high school. In addition, this find might have had the unfortunate effect of reinforcing limiting beliefs that educators

may hold, consciously or unconsciously, about the extent to which Latino communities in Chicago value postsecondary education. Importantly, the analysis in *Potholes* also explained that educational aspirations were not meaningfully lower among Latino students, that Latino students came from communities with lower levels of educational attainment than their peers across the city, and most crucially, that Latino students appeared to be even more influenced by the college-going culture and structured supports for college access provided by their schools than other groups of students. Taken together, these findings removed some excuses that educators may have relied on to explain low college enrollment numbers. Rather, the analysis reinforced the message that schools have a role to play in shaping college access for students of all backgrounds.²¹



Interpretive Summary

We have a long, frustrating history in American education of developing exciting ideas that fail to deliver on their promise because they cannot be implemented or scaled effectively. For example, a new curriculum that revolutionizes the practice of the teachers trained to use it, but that falls flat when a larger group of teachers applies it with less training. Positive outlier schools that produce impressively strong student outcomes but cannot reproduce their success when they replicate their model. Academic enrichment programs that work wonders in early-adopter schools but lose their purpose and impact as leaders push the programs citywide. The words of Charles Payne still ring dishearteningly true a decade after they were written: we have seen so much reform in our schools, and yet so little change.²²

Veteran educators know this cycle well: A group of talented educators develops a smart, effective strategy to address a particular problem of practice. They try it in their own context, and it works. They document the results, recruit allies, refine the strategy, and try it out in two new schools. It works again. Ten schools later, the strategy turns into a packaged program that any school can pick up and use to train its teachers or support its students. In doing so, the strategy gets divorced from its original purpose, along with most of the nuance and all of the support that the original authors carried with them. To the educators who encounter it now, the once-great idea is just another PowerPoint they sit through in a rotating series of educational fads that have little relationship to their practice. Their school tries out the intervention for a year and then moves on to the next idea when the principal leaves or the funding is cut. When researchers look back at the limited impact of the once-great idea, they conclude that the promising practice failed to scale because educators on the ground lacked the capacity to implement it effectively.

The most important lesson we have learned in developing this approach of practice-driven data in Chicago is that the data we provide to educators is only going to be as helpful as the conversation that educators generate around it.

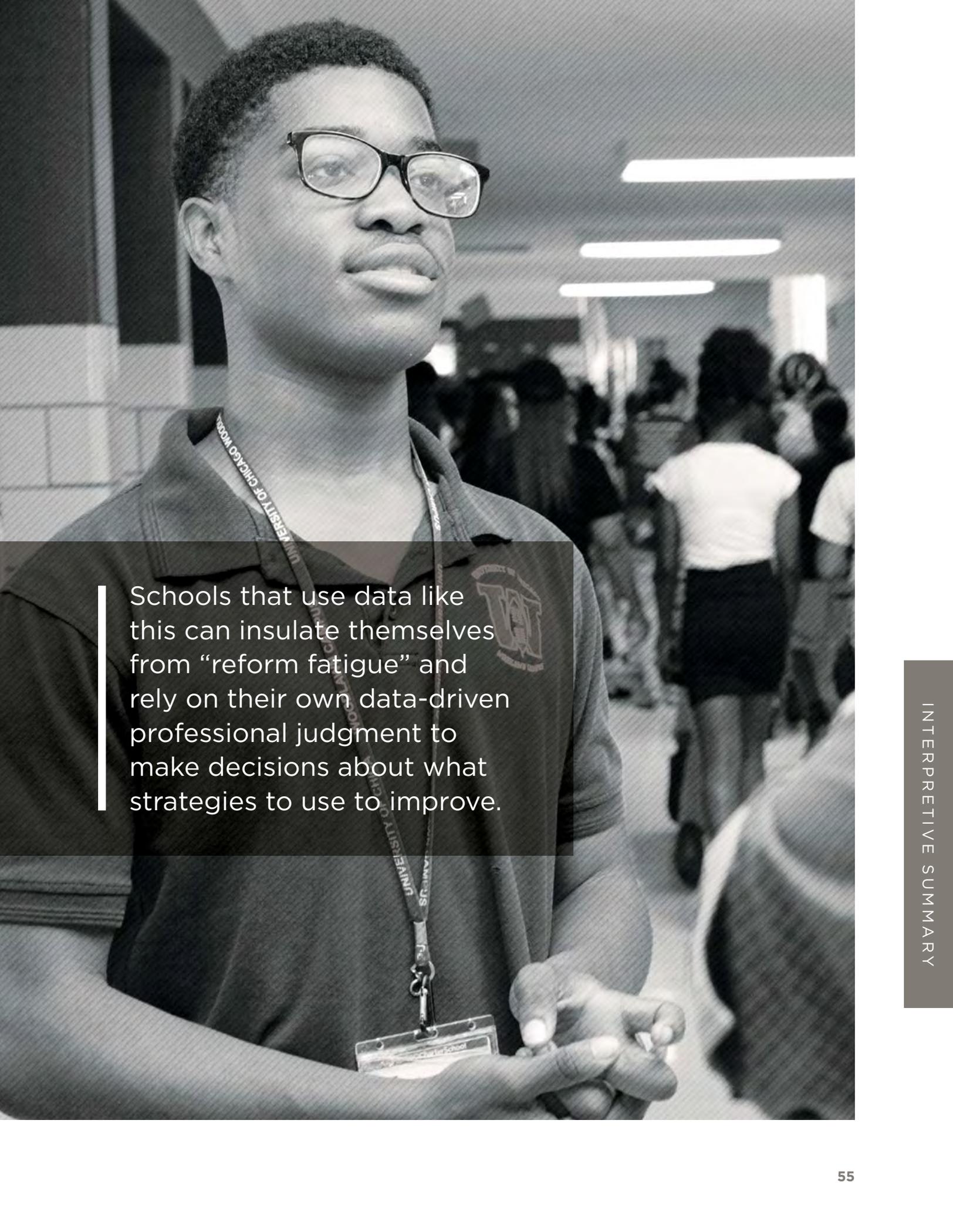
But what if the intervention itself was more of an approach to increase educator capacity to drive improvement in their own school buildings? Not a program, or curriculum, or model per se, but rather an effort to develop educator capacity to recognize and solve their own problems of practice. Schools that have a deep understanding of their students' data can identify, for example, that the high rates of class failure they see for male students is driven largely by a disproportionate suspension rate. So, they subsequently seek out strategies and supports to solve that problem specifically and bypass programs not suited to that particular problem of practice. Schools with high-functioning teams that monitor student outcomes alongside student interventions can make savvy decisions about when to stop using programs that are no longer working, and when to make deeper investments of their precious resources into programs that are working well. Schools that use data like this can insulate themselves from “reform fatigue” and rely on their own data-driven professional judgment to make decisions about what strategies to use to improve.

Building a school culture where educators use data in these ways is not impossible, but it is far from easy. Crucially, it is certainly not an automatic result of introducing data—even very actionable, high-quality data—into school life. Indeed, the very idea of being “data-driven” in our educational practice is on the cusp of being yet another

fad in education reform. The most important lesson we have learned in developing this approach of practice-driven data in Chicago is that the data we provide to educators is only going to be as helpful as the conversation that educators generate around it.

The practice-driven data approach we have described in this paper is a marathon, not a sprint. It adheres to a set of principles: a deep respect for the professionalism of educators, a recognition of context and autonomy, and an acceptance that implementation is often as messy and ambiguous as the system itself. Practice-driven data has no playbook, no singular practice, no such thing, really, as fidelity. However, there is much that education leaders, policymakers, and thought leaders can do to support this approach. They can generate data that sets the right tone. They can explicitly invest in the time, training, and support that schools need to prepare to have hard conversations. They can prioritize a small number of research-based indicators to keep educators focused on what matters most. They can provide research and analysis that helps educators interact with the evidence directly and build a sense of ownership over the problem they hope to solve. They can provide data that reaches the right people at the right level of detail at the right time. And we all can commit to using data to disrupt inequity in our schools.

We have tried to capture these lessons because we have seen, first hand, the promise in their application at scale in Chicago. In high schools across the city, you will find principals changing school culture and organizing their schools for improvement. You will see assistant principals and teacher leaders leading permanent, stable teams of educators to relentlessly tackle challenges like instructional improvement and getting freshmen on track to graduate. You will see counselors organizing every adult in the school to strategically support seniors' college application processes. You will see them all using data to guide their work. These practices are by no means universal, and the challenges these educators face are still significant. But even given the depth of the challenge in Chicago, the limited resources educators have to draw on, and the frequent changes in leadership at all levels of the school system, every year in our city, more ninth-graders are on-track to graduate, and more seniors enroll in college. We hope the approach we describe in this paper will remind our Chicago community that the educators of Chicago are capable of driving remarkable change in a large and complex system as we all seek to catalyze another decade of improvement in the lives of Chicago's young people. We further hope that these lessons will help educators in districts and cities across the country spur even greater change for all of their students.



Schools that use data like this can insulate themselves from “reform fatigue” and rely on their own data-driven professional judgment to make decisions about what strategies to use to improve.



Endnotes

1. Bryk et al. (2015).
2. DuFour & Eaker (1998).
3. Payne (2008).
4. Nagaoka, Seeskin, & Coca (2017).
5. For some examples of protocols and other tools used to guide teams' conversations, please see the NCS Freshman On-Track Toolkit (<https://ncs.uchicago.edu/freshman-on-track-toolkit>) and the NCS Postsecondary Success Toolkit (<https://ncs.uchicago.edu/postsecondary-success-toolkit/>).
6. Allensworth, Gwynne, Moore, & de la Torre (2014).
7. More information on how these "risk and opportunity" categories were created is available on the NCS Freshman On-Track Toolkit here: <https://ncs.uchicago.edu/tool-set/ongoing-research-uchicago-consortium>.
8. Allensworth & Easton (2005).
9. Allensworth & Easton (2007).
10. Allensworth & Easton (2007).
11. Roderick (2012).
12. Roderick et al. (2008).
13. Roderick et al. (2008).
14. For more information about college match, see Roderick et al. (2008) and/or https://ncs.uchicago.edu/sites/ncs.uchicago.edu/files/uploads/tools/NCS_PS_Toolkit_URAD_Set_C_CalculatingCollegeAccess.pdf.
15. For more information about how this roster is generated and used in schools, see https://ncs.uchicago.edu/sites/ncs.uchicago.edu/files/uploads/tools/NCS_PS_Toolkit_URAD_Set_C_CalculatingApplicationMatch.pdf.
16. Allensworth & Easton (2007).
17. Allensworth et al. (2014).
18. Ladson-Billings (2006).
19. For more information on middle grades predictors of high school performance see Allensworth et al. (2014). For more information about "risk and opportunity" groups, see <https://ncs.uchicago.edu/tool-set/ongoing-research-uchicago-consortium>.
20. Gwynne, Lesnick, Hart, & Allensworth (2009); Gwynne, Pareja, Ehrlich, & Allensworth (2012).
21. Roderick et al. (2008).
22. Payne (2008).

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About the Authors

ELIZA MOELLER is the Director of Research and Continuous Improvement with the Network for College Success as well as a Research Analyst at the UChicago Consortium. In an ongoing effort to make research live in schools, Moeller works with NCS data strategists and Consortium researchers to bridge the gap between research and practice by creating individual school reports on important research-based indicators, like Freshman OnTrack and college match; supporting school leaders' and practitioners' professional learning; and helping people at all levels of the school system learn how to incorporate data-driven decision making into their practice. Prior to her work on at NCS, Moeller directed qualitative analysis for the Consortium's postsecondary studies. Moeller is an author on several Consortium research reports, including Potholes on the Road to College. She received her BA from the University of Wisconsin and an MA in Social Service Administration from the University of Chicago.

ALEX SEESKIN is the Chief Strategy Officer at the Urban Education Institute (UEI) where he is responsible for guiding strategy for the organization and leading high priority work across and within UEI's units. Seeskin also leads the To&Through Project (toandthrough.uchicago.edu), which aims to empower educators and families with research, data, and resources they need to move more students to and through high school and college. Previously, he served as the Director of Strategy of UChicago Charter, and as a resident at UChicago Impact. Prior to coming to UEI, Seeskin taught high school English in the Chicago Public Schools for seven years, serving as the English Department Chair at Lake View High School from 2008-2012. Seeskin earned a BS in communications from Northwestern University and an EdLD from Harvard University.

JENNY NAGAOKA is the Deputy Director of the UChicago Consortium, where she has conducted research for nearly 20 years. Her research interests focus on policy and practice in urban education reform, particularly using data to connect research and practice and examining the school environments and instructional practices that promote college readiness and success. She has co-authored numerous journal articles and reports, including studies of college readiness, noncognitive factors, the transition from high school to postsecondary education, and authentic intellectual instruction. She is the lead researcher on the To&Through Project, a project that provides educators, policymakers, and families with research, data, and training on the milestones that matter most for college success. Nagaoka is the lead author of *Foundations for Young Adult Success: A Developmental Framework* (2015), which draws on research and practice evidence to build a coherent framework of the foundational factors for young adult success, and investigates their development from early childhood through young adulthood and how they can be supported through developmental experiences and relationships. Nagaoka received her BA from Macalester College and her MA in public policy from the Irving B. Harris School of Public Policy at the University of Chicago.



The University of Chicago Network for College Success

The mission of the Network for College Success (NCS) is to cultivate postsecondary readiness and success for all students by translating research into practice and supporting high school leaders to organize their schools for improvement and innovation.

Since 2006, NCS has partnered with Chicago Public Schools to dramatically increase high school graduation, college enrollment, and college graduation rates for all students. Housed in the School of Social Service Administration at the University of Chicago, NCS helps educators across the city and nationally respond to emerging research, analyze in-time student data, engage in joint problem-solving, and share effective practices to improve student outcomes.



The To&Through Project

The To&Through Project is a partnership between the University of Chicago's Urban Education Institute and the Network for College Success. Our mission is to use research, data, and professional learning to help more students get to and through high school and college:

- Research that illuminates what matters most for students' high school and college success
- Data that guides efforts to improve students' attainment of key milestones
- Professional Learning that helps translate research and data into improved practice.

In collaboration with educators, policymakers, and communities, the To&Through Project aims to significantly increase the percentage of the Chicago Public Schools freshmen who graduate from high school and go on to earn a college degree, and to share the learning from Chicago with education stakeholders across the country.



The University of Chicago Consortium on School Research

The University of Chicago Consortium on School Research (UChicago Consortium) conducts research of high technical quality that can inform and assess policy and practice in the Chicago Public Schools. We seek to expand communication among researchers, policymakers, and practitioners as we support the search for solutions to the problems of school reform. The UChicago Consortium encourages the use of research in policy action and improvement of practice, but does not argue for particular policies or programs. Rather, we help to build capacity for school reform by identifying what matters for student success and school improvement, creating critical indicators to chart progress, and conducting theory-driven evaluation to identify how programs and policies are working.





We write this paper as three entities that are a part of the University of Chicago and partners to the Chicago Public Schools: the Consortium on School Research, the To&Through Project, and the Network for College Success. This paper is designed to share the lessons we have learned about how, when, why, and under what conditions we have seen the use of data support real, sustainable, and remarkable improvement in the outcomes of Chicago's youth. Our work as partners to the school district has implications for advocates, policymakers, district and school leaders, and school support organizations, both locally and nationally, who wish to take the approach to data that we have seen work so well in Chicago. We call this approach *practice-driven data*.

