

February 28, 2023

DC Education Research Collaborative



Agenda

- Updates from the Chair
- Updates from the Executive Director
- Research project process overview
- Project presentations and discussion

Updates from the Chair

Updates from the Executive Director

What I See in 2023

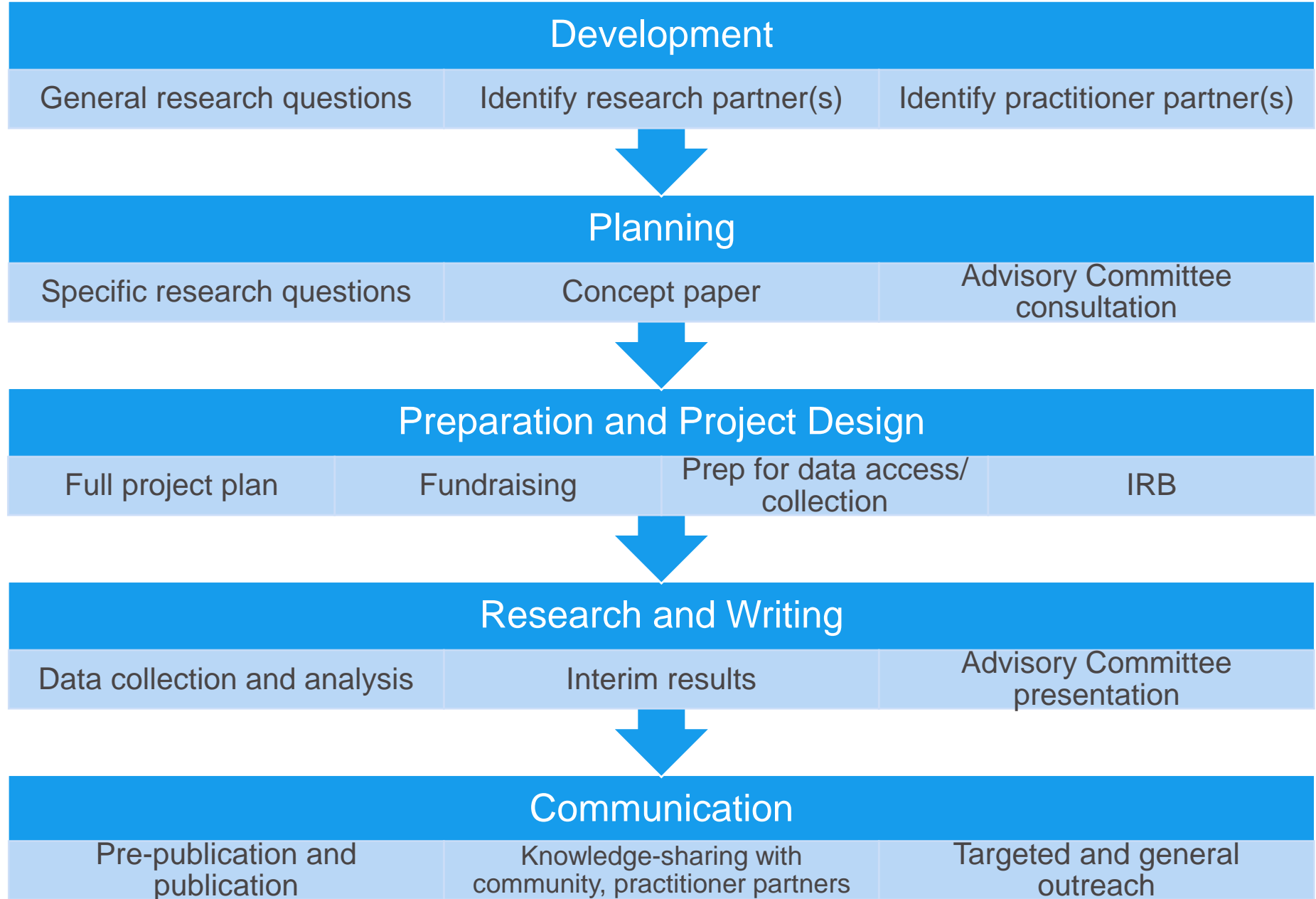
- Role Differentiation
- Meetings
- Research & Learning
- Outputs and Outcomes

Research Project Process Overview

From ideas to projects

Ongoing Idea Generation

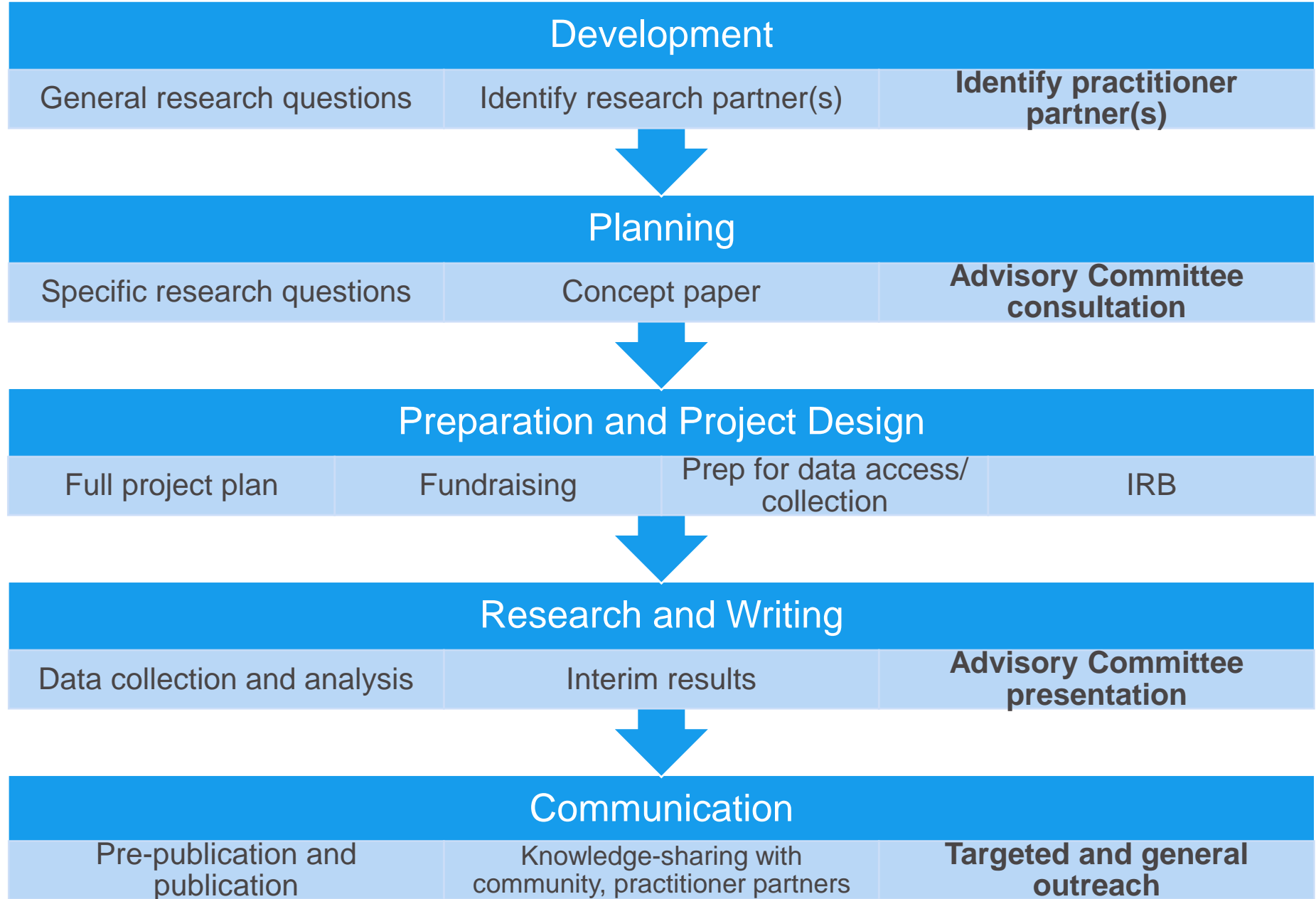
- Regular Collaborative brainstorming
- Regular agency and community partner needs-sensing
- Advisory Committee and community member suggestions
- Research Council member inventory of interest, capacity, expertise
- Research Council member proposals



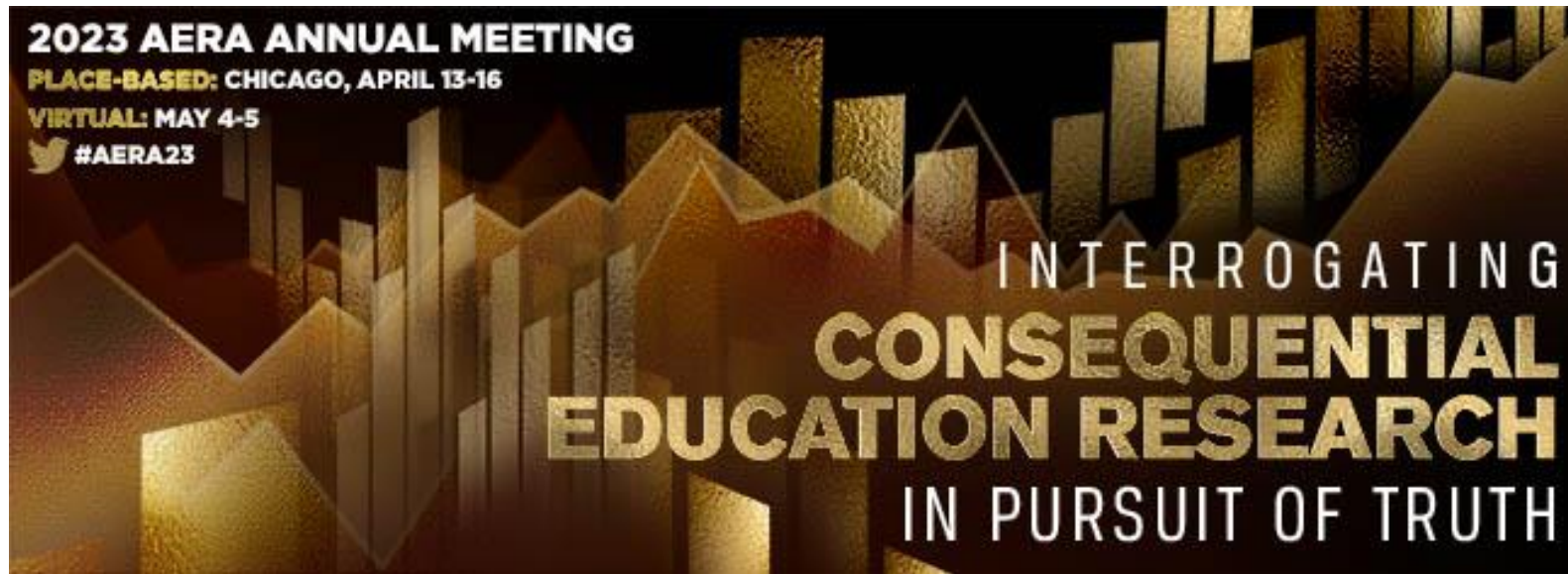
From ideas to projects

Ongoing Idea Generation

- **Regular Collaborative brainstorming**
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Example of non-project work: Support for school and student projects



Youth Teams in Education Research Special Program

The newly created Youth Teams in Education Research (YTER) Program will bring teams of high school students to the Annual Meeting to present their work in a high-profile featured poster session and to participate in a mini-workshop to discuss their ongoing research projects, issues consequential to them in their studies, and potential opportunities for continuing to pursue research engagements.



Ideas must meet the following criteria as they are fully developed into research projects:

- Address at least one guiding question of the Collaborative's research agenda
- Address the anti-racism and equity focus areas of the research agenda
- Arise from a demonstrated or articulated need of the DC education community
- Can directly inform practice or decision-making once the answers to the research questions are known
- Does not duplicate past or current research
- Have a clear, reasonable, and practical high-level project plan
- Have a practitioner as a member of the research team
- Align with Research Council member(s)' interest, expertise, ability, capacity, time, and procedures
- Have the potential to be supported using new or existing resources
- Uphold the Collaborative's core values of collaboration, equity, independence, quality, relevance, and transparency

Funding Values & Principles

- Our values guide our work: collaboration, equity, independence, quality, relevance and transparency.
- Our current funding sources and supporters will be listed on our web page and posted on the Collaborative's eventual website.
- We anticipate the Collaborative's work will be supported by a diverse set of local and national funders.
- Introductions to foundation program officers and potential supporters are always welcome.

Project Presentations and Discussion

What input/insight does the Advisory Committee give on project plans?

The purpose of Advisory Committee input is to ensure that projects are relevant, actionable, and reflective of the DC education context (meaning they are practical and grounded in reality).

Please use your knowledge and experience as a member of the DC education community, through the lens of the communities or groups whom you represent, to give input about:

1. Does the project **understand the policy, program, or population that it is studying**? What information do the researchers need to know that they might not have?
2. Does the research plan (research questions, data sources, data analysis, communication) seem **reasonable given the context** of where the research will be taking place?
3. Does the research plan **unintentionally omit anything or anyone**? Who or what else should be included?
4. Besides the named partner(s), who else might this research enable to **change practice or make a decision** that helps address a need, solve a problem, or improve something?
5. Do you have **additional comments, foresee challenges, or have advice** about the Collaborative's plan to take on this work?

Ways for the Advisory Committee to give input:

- During this meeting:
 - Put comments, questions, etc. in the chat
 - Provide input “out loud” at the end of each presentation by raising hand
- Within the next seven days (by March 7 at 7pm):
 - Send an email to Dara Shaw, Research Director (dshaw@urban.org) with comments, questions, etc.
 - Request a call with Dara Shaw/research staff

Supporting DC Students' Potential for Success in Algebra I

Supporting DC Students' Potential for Success in Algebra I

Mathematica Policy Research

Presentation to the DC Education Research Consortium

February 28, 2023



Project Team

Elias Walsh, principal researcher at Mathematica, is one of Mathematica’s representatives on the DC Education Research Collaborative Research Council. Elias has worked closely with DCPS, OSSE, and other state and local education agencies on multiple research projects and topics. Before joining Mathematica in 2011, he was a math teacher in the Chicago Public Schools.

Gabriel Cartagena, Director of Secondary Math, District of Columbia Public Schools, TKTK. Cartagena has taught mathematics in middle schools and provided professional development to math teachers on standards-based curriculum, data-driven decisions, and questioning strategies as well as serving as a district curriculum and assessment writer.

Duncan Chaplin, principal researcher at Mathematica, has been conducting research about education policy in the District of Columbia and elsewhere for over 20 years, most recently having finished a study on the associations between the rigorous education reforms enacted in DC and student achievement on national standardized tests.

Douglas Van Dine, senior researcher at Mathematica, is an experienced teacher, administrator, teacher educator, and research project director with a focus on mathematics education. His work has emphasized evidence-based mathematics teaching practices.



Project Motivation

- **DCPS would like to increase the number of, and equity among, students successfully completing Algebra I in middle school**
 - Algebra I is a transition to more abstract mathematical thinking, critical thinking, creative problem solving, and logical reasoning
 - Algebra I is often a prerequisite to higher-level high school and postsecondary math courses, and can be a gateway to coursework and careers in science, technology, and engineering
 - Algebra I can be an unintentional gatekeeper, dissuading or disengaging students away from math and creating (or worsening) inequity
- **During the 2020-2021 school year:**
 - Approximately 25% of all DCPS middle school students took the state test in Algebra I
 - Black students: 61% of DCPS middle school students; 44% of middle school Algebra I test-takers
 - Hispanic students: 25% of DCPS middle school students; 22% of middle school Algebra I test-takers
 - White students: 13% of DCPS middle school students; 24% of middle school Algebra I test-takers



Project Goals

The results of this project will help DCPS:

- **Identify middle school students likely to be successful in Algebra I who might be overlooked by traditional identification strategies:**
 - 7th grade iReady test scores
 - Middle school course sequence
 - Middle school course grades
- **Identify middle school students who, with early or additional supports, might be successful in Algebra I**



DC Education Research Collaborative Research Agenda

Focus area 3: Equity in Learning Outcomes

- **Guiding question 3.1:** What knowledge and skills do DC's students need to be successful in future grades, and how can they be supported in gaining them?
- **Guiding question 3.3:** Given the disparities in learning outcomes that exist among student groups (both within schools and across DC), what strategies for increasing growth and closing opportunity gaps are effective in reducing these disparities?



Research Questions

1. What are the characteristics of groups of middle school students who take Algebra I, pass the Algebra I course, and/or score proficient on the state standardized Algebra I test?

- What are the characteristics of groups of students who have had varying degrees of success in Algebra I in 8th grade?
- What are the characteristics of groups of students who appear to be prepared to successfully complete Algebra I in 8th grade, but currently have low probabilities of taking that class?

Data to describe: course progression, course grades, prior-year diagnostic and state standardized test results, attendance, school enrollment, student and school characteristics



Research Questions

2. What indicators or combination of indicators might be used to signal whether a student is ready to successfully complete Algebra I in 8th grade?

- How can iReady or other tools best be used to inform placement in Algebra I?
- How can iReady or other tools best be used to inform placement in a course progression leading up to Algebra I?
- What is the potential impact of different identification strategies on the demographics of students identified for Algebra I in middle school? How can the use of additional identification strategies increase access for underrepresented students likely to successfully complete Algebra I?

Outcomes: enrolling in Algebra I, passing Algebra I course, performance level on Algebra I test

Relationships to explore: course progression, course grades, elementary and middle school iReady and state standardized test results, attendance, school enrollment, student and school characteristics



Research Questions

3. What indicators or combination of indicators might be used to signal whether a student needs additional support in math prior to 8th grade, such that they may be prepared to successfully complete Algebra I in 8th grade?

- Does attending certain schools, engaging in certain course progressions, or other characteristics increase the likelihood of Algebra I success?
- What types of support for math learning do schools with better results for under-represented students report using?

Outcomes: enrolling in Algebra I, passing Algebra I course, performance level on Algebra I test

Relationships to explore: course progression, course grades, elementary and middle school diagnostic and state standardized test results, attendance, school enrollment, student mobility, student and school characteristics



Data

- **DCPS administrative data**
- **iReady and MAP assessment scores, grades 2-8 (beginning, middle, and end-of-year), starting in 2015-16**
- **Cohorts of students who started grade 7 in 2015-16, 2016-17, 2017-18, or 2018-19**
- **State standardized test scores, grades 3-8, Algebra I**
- **Middle and high school course enrollment data and course grades, and**
- **Student and school characteristics**



Thumbnail Timeline

- **Development, Planning, Preparation and Project Design: now**
- **Research and Writing: May-December 2023 (including presentation of interim results to Advisory Committee)**
- **Publication and Communication: January 2024**



Questions?





Contact Information

- **Elias Walsh:** EWalsh@Mathematica-mpr.com
- **Duncan Chaplin:** DChaplin@Mathematica-mpr.com
- **Douglas Van Dine:** DVandine@Mathematica-mpr.com

DC Public Education Data Inventory

Context and Motivation

- There is a wealth of data collected on, for, and about DC's public education students...
- But using that data to do research for the benefit of students is challenging.
 - Large number of unconnected data sets: Office of the State Superintendent (OSSE), DC Public Schools and other local education agencies (LEAs), other DC government agencies
 - Different or unclear definitions of what's in data sets across entities
 - No “encyclopedia” that researchers can use to plan, design, and implement research projects
- A cross-sector DC Education Data Inventory is needed to address those challenges, and to uncover opportunities to better collect and utilize data for future research projects

Inventory Questions

1. What DC public education data elements are centrally available from OSSE and LEAs?
 - Who collects, stores, and reports each element?
 - How is each element defined? For similar elements collected by different agencies, do definitions align?
 - What years are available?
 - At what level is the data stored? (student, grade, school, teacher, etc.?)
 - Are there unique identifiers in the data that can be used to connect with other information? If so, what identifiers are those?
 - Are there additional notes that concern the data element that could impact the way it is used or interpreted?
2. What data elements do schools or LEAs collect in a standardized way but not report to OSSE?
3. What are the possible mechanisms for combining data across agencies, what would the quality of that combination be, and what could be done to improve the match?

Data Sources

- OSSE data dictionary and data warehouse model
- LEA data dictionaries, data warehouse models, and de-identified raw data files
- Survey of LEA data managers about the types of data elements and tools they use
- Focus groups with OSSE data team, LEA data managers, Public Charter School Board (PCSB) data team, Office of the DC Auditor (ODCA), and external charter data management services

Inventory Results and Tools

The work will conclude in December 2023 and produce:

- Filterable table of all data elements and standard information about each one (where the element is held, the years for which it is available, etc.).
- Memo outlining project's methodologies, data sources, conclusions, and limitations.