Early-Phase Competition Absolute Priority 3 (STEM)
Partnership for Regional Educational Preparation-Kansas City
S411C220077
Real World Data Science

Project Abstract: PREP-KC's proposed EIR early-phase project—Real World Data Science (RWDS)—addresses Absolute Priorities 1 and 3 and competitive priorities 1 and 2. The project creates opportunities for high-needs middle school students from Kansas City's urban districts to develop data science skills and prepare for a STEM-focused career.

Target Population: The RWDS initiative will engage approximately 4,500 students attending ten middle schools across urban districts serving the Kansas City metropolitan area. We define "high needs" students as those who identify as BIPOC or students growing up in low-income households. Over 80% of the students enrolled in PREP-KC's partner school districts identify as BIPOC and over 80% qualify for free or reduced lunch programs due to low household income.

Outcomes: RWDS will provide the field with a field-initiated innovation that expands data science instruction to middle school.

The project will target three outcomes:

First, 1. RWDS will increase students' data literacy and mastery of the data science process.

2. RWDS will develop students' ability to transfer data science skills to improve math and science outcomes, especially in Algebra I and Biology I.

3. RWDS will increase students' awareness and enthusiasm for STEM pathways and increase enrollment in high school STEM-focused courses of study.

Project Activities: Schools will offer RWDS as a semester-long course for eighth graders. Throughout the course, students will solve data science challenges drawn directly from the Kansas City community and their interests. These real-world challenges anchor a curriculum focused on developing every student's identity as a data scientist and aligning data science instruction with critical math and science standards that will improve outcomes in STEM-focused coursework.

RWDS will also incorporate STEM industry professionals into the RWDS course as advisors and subject matter experts for students. This ongoing interaction with STEM professionals develops students' awareness of STEM careers, builds their social capital, and provides exposure, support, and encouragement to boost student participation in STEM-focused pathways in high school.

As part of the RWDS initiative, PREP-KC will design the RWDS curriculum, recruit industry volunteers to support students during the course, and provide ongoing training and coaching for RWDS teachers through a cross-sector Data Science Professional Learning Community (DSPLC). The DSPLC will convene regularly, include teachers, data science professionals, and higher education faculty, and focus on collaboration and interaction to strengthen data science content knowledge and relevant, engaging pedagogy.

Our evaluation partner, MDRC, will study the impact of RWDS using an evaluation framework with both formative and summative components. PREP-KC can adjust implementation through a continuous improvement process using data from the formative evaluation. At the same time, a randomized control trial will drive the summative phase of the evaluation.