



Advancing Equity through Data-driven Collective Action:

A Biogen STAR Case Study

April 14th, 2023, 10:30am



NPEA
BOSTON
2023

Making the
Moment
a Movement

Deepening our
Commitment to
Equity and Justice
in Education

Welcome & Introductions

About Root Cause

WHO WE ARE

Root Cause is a nonprofit consulting team that helps drive transformative social change. Our mission is to be a transformative partner in building, improving, and sustaining social change initiatives that enable all people to thrive. We help nonprofits, public agencies, and philanthropies achieve their goals while advancing racial equity and justice.

WHAT WE DO

We've helped over 400 partners strengthen their

- 1) Strategy, design, & implementation,*
- 2) Collective Action and*
- 3) Continuous learning & improvement*



On today's panel...



Sonja Okun
Principal
Root Cause



Khari Milner
Co-Director,
Cambridge Agenda
for Children
Cambridge Public
Schools



Robert Emery
Data Manager- Biogen
STAR Initiative
Cambridge Public
Schools



Sarah Jo Torgrimson,
PhD
Biogen Data & Evaluation
Specialist
Somerville Public
Schools

Introduction to STAR

Origins of STAR:

Strengthening & diversifying the future STEM workforce

Employment in STEM fields is projected to continue growing:

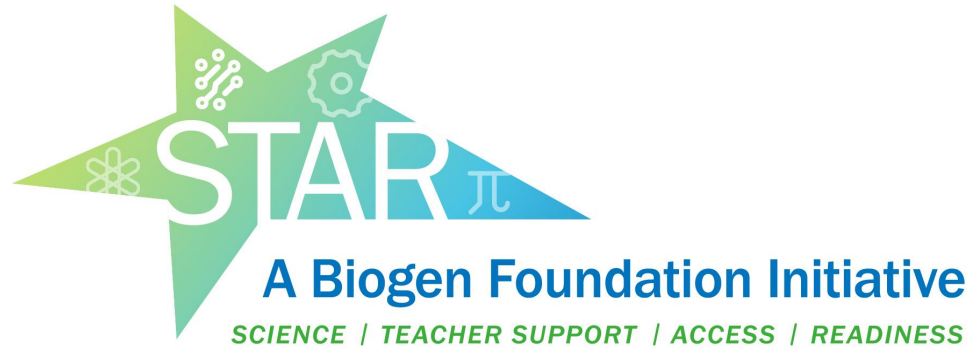
- Between 2020 and 2030 → 10.7 million additional STEM jobs in the US (+10.5%)
- In MA → STEM jobs will account for 40% of total employment growth through 2028

Yet... students from traditionally underrepresented communities are disproportionately unexposed to and unprepared for STEM careers.

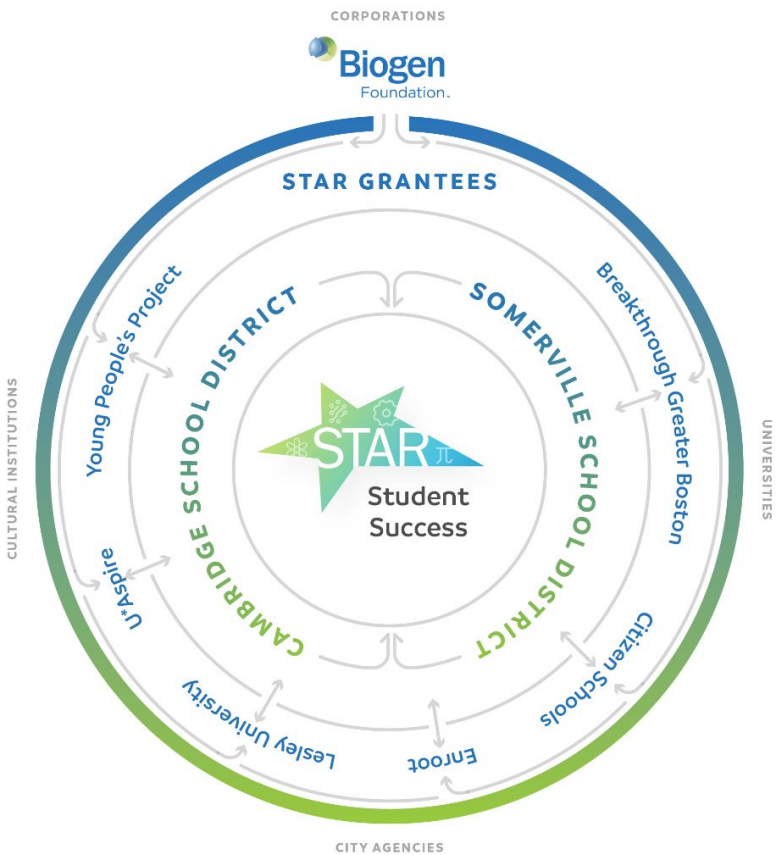
- Black (40%) and Latino (37%) students drop STEM majors before earning a degree vs. 29% of white STEM students.
- Cambridge, MA → 33% of Black 8th graders and 15% of Latinx 8th graders are meeting expectations in math vs. 53% of White and 56% of Asian peers.
- Somerville, MA → 31% of Black and 12% of Latinx 8th graders are meeting expectations in math vs. 56% of white and 77% of Asian peers.

Strengthening & diversifying the future STEM workforce

The Biogen Foundation's STAR (Science, Teacher support, Access & Readiness) Initiative is a \$12 million, five-year investment that addresses disparities in STEM pathways by bringing together several high-performing nonprofits and two school districts in a coordinated network to serve students grades 6-14 who have been historically underrepresented in STEM college and career pathways, including students of color, economically disadvantaged students and English language learners.



STAR's Collective Action



Funder Network Design & Facilitation



Founding STAR Grantees



School District Partners



STAR's Collective Action

The Biogen Foundation has made a visionary commitment through STAR. There is no better place poised to lead the way in building a strong local STEM education ecosystem than the Greater Boston area, home to **Kendall Square**—one of the world's most powerful life sciences and technology hubs.



Key components of STAR

One of the most important and unique aspects of the STAR collective action initiative is the **engagement of both school districts in the network**. STAR liaisons from each grantee organization, and each school district, have met monthly and worked collaboratively for over three years with the shared goal of advancing STEM education equity.

The myriad challenges the pandemic has posed for students and families has highlighted the critical role that out-of-school time organizations play in leveling the playing field for students who typically do not have equal access to STEM exposure and enrichment opportunities.



**Grantee
Organizations**

Assessing STAR's impact

Assessing STAR's impact

Biogen Foundation's investment in **supporting STAR Data Specialist positions** in each school district is helping to optimize the work of grantee organizations and schools by analyzing STAR's impact.

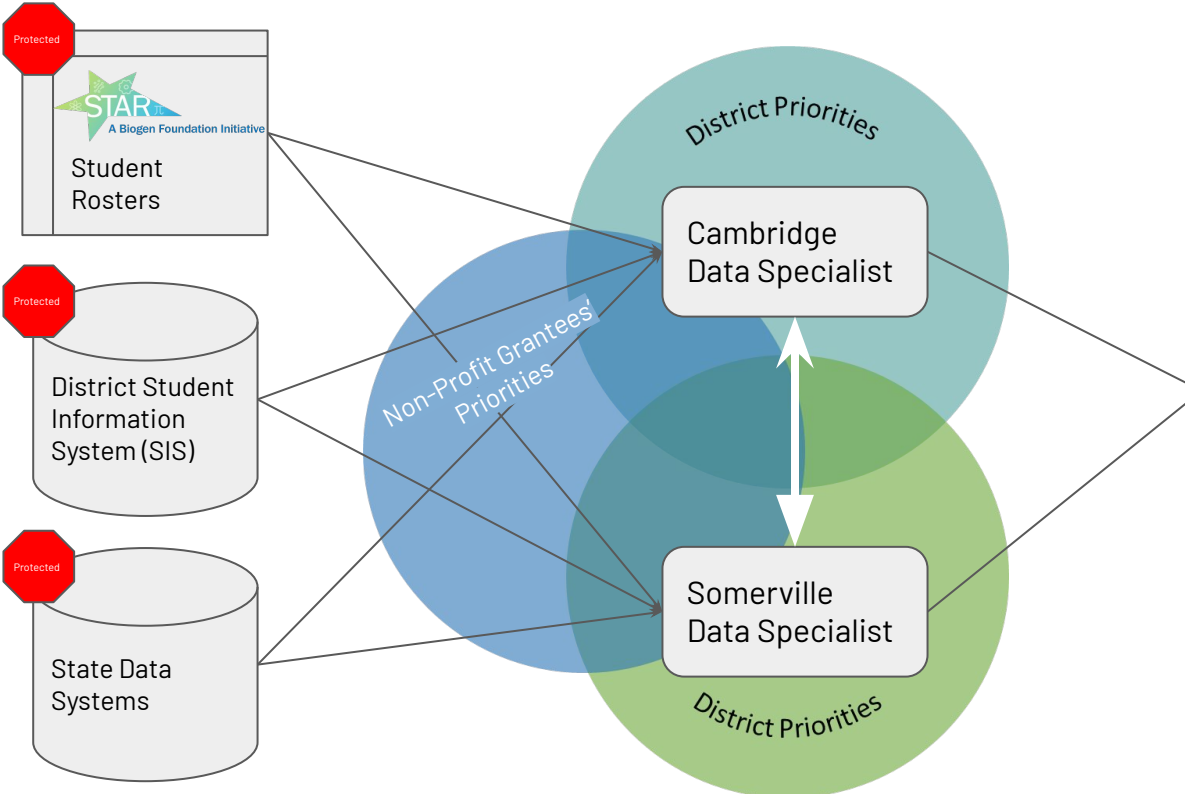
The alignment of data collection and analysis between STAR and the school districts STAR serves helps organizations better understand:

- **Who they serve**
- **How students experience STEM education** *in middle + high school*
- **How STAR as a network can strengthen individual and collective practices to help more students** *specifically students of color, low-income students, and English language learners - become better prepared to pursue STEM education and career pathways.*

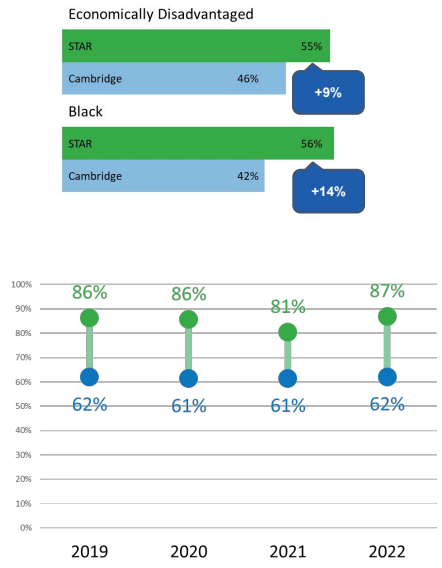


STAR Data Snapshots

Benefits of a district-embedded data position



Analyses



Progression of data specialists' work



Dynamic dashboards to tell STAR's story



STAR Initiative

SCIENCE | TEACHER SUPPORT | ACCESS | READINESS



The STAR Initiative (Science, Teacher support, Access & Readiness) brings together several high-performing nonprofits and two school districts to work with students grades 6-14, primarily serving students historically underrepresented in STEM college and career pathways. Launched in 2018 by founding funder the Biogen Foundation, STAR helps partner organizations collaborate in new ways, expand and deepen their programs, and ultimately help more young people in Cambridge and Somerville, MA access and succeed in STEM learning opportunities while developing a lasting passion for science and discovery.

The STAR model was designed based on research of what's working in STEM education and is part of a national movement of STEM ecosystems working to effect systemic change in STEM education. STEM ecosystems cultivate relationships across stakeholders and maximize each stakeholder's unique contribution. Root Cause serves as STAR's backbone organization, facilitating collective action amongst stakeholders, which can include schools and districts, out-of-school-time programs, leading STEM institutions (i.e. higher education, industry leaders, science centers, etc.), the private sector, other community-based organizations, young people and their families.

STAR programs specifically work with students grades 6-14 who are traditionally underrepresented in STEM fields. This includes students that identify with one of more of the following: Women/Girls, Black/African American, American Indian/Alaskan Native, Pacific Islander, Hispanic, Latinx, LGBTQ+, Multilingual Learners, are from low-income households, and/or receiving special education services. Students can participate in more than one program and many participate for multiple years! We can proudly say that we have worked with 4,535 unique STAR students across Somerville and Cambridge!

WITH THE HELP OF STAR...

21+	17	86%
New STEM Programs Established	STEM Programs Expanded or Deepened	Underrepresented 9 th Graders Passed ALL their STEM Courses

STAR GRANTEE ORGANIZATIONS [Click Logos to Learn More](#)

<p>110+ High Schoolers TRAINED AS Math Literacy Workers</p> <p>YPP uses math literacy work to develop the abilities of elementary through high school students to succeed in school and in life through peer-to-peer learning and teaching opportunities. YPP trains, employs, and supports high school students as math literacy workers that help their younger peers after school and in the summer.</p>	<p>2 MONTHS MATH GROWTH During summer programming, while other students typically experience loss in skills.</p> <p>BTGB is a six-year model that prepares highly motivated low-income students starting in 6th grade through high school graduation with academic programming -- including in STEM subjects-- and college access programming. BTGB also trains the next generation of urban teachers using a unique Students Training Students model.</p>	<p>624,728 Scholarship funds awarded to students in 2021-2022</p> <p>Enroot empowers multilingual immigrant high schoolers improve academic performance including STEM subjects, build community and confidence, develop a clear pathway for higher education and career and graduate prepared to transition to and graduate from postsecondary education.</p>
<p>57% Latinx</p> <p>11% African American/Black</p> <p>28% Multilingual Learners</p> <p>55% Low Income</p>	<p>44%</p> <p>28%</p> <p>53%</p>	<p>77,000 Streams on instructional, open access site for sharing lesson plans.</p> <p>Lesley University STEAM Lab supports educators to increase student engagement as they explore, test, and refine hands-on world, student-centered activities in a way that is responsive and tailored to the specific needs of their students.</p>

[Click Here](#)
Learn More about STAR in Somerville

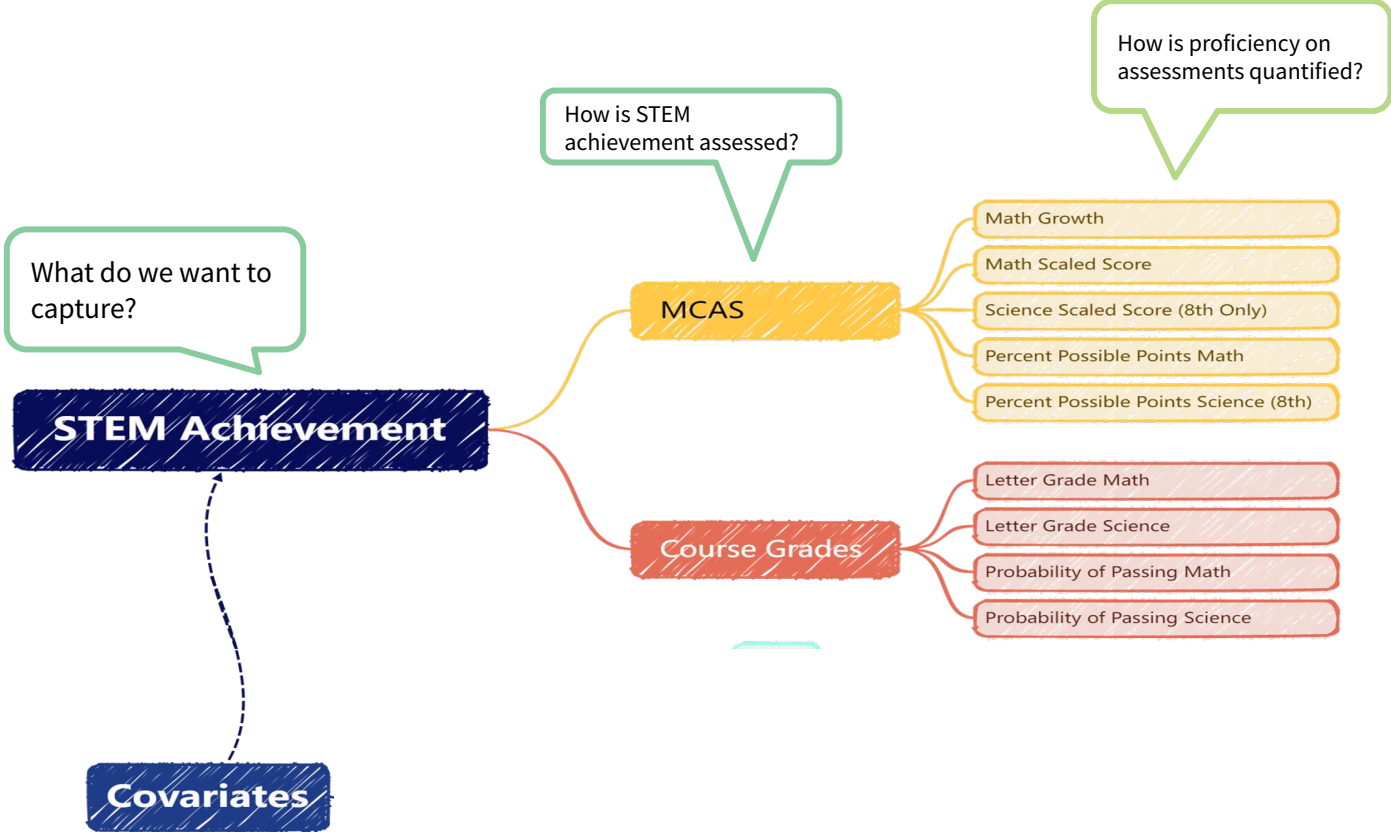
[Click Here](#)
Learn More about STAR in Cambridge

Check out STAR's Public Dashboard:

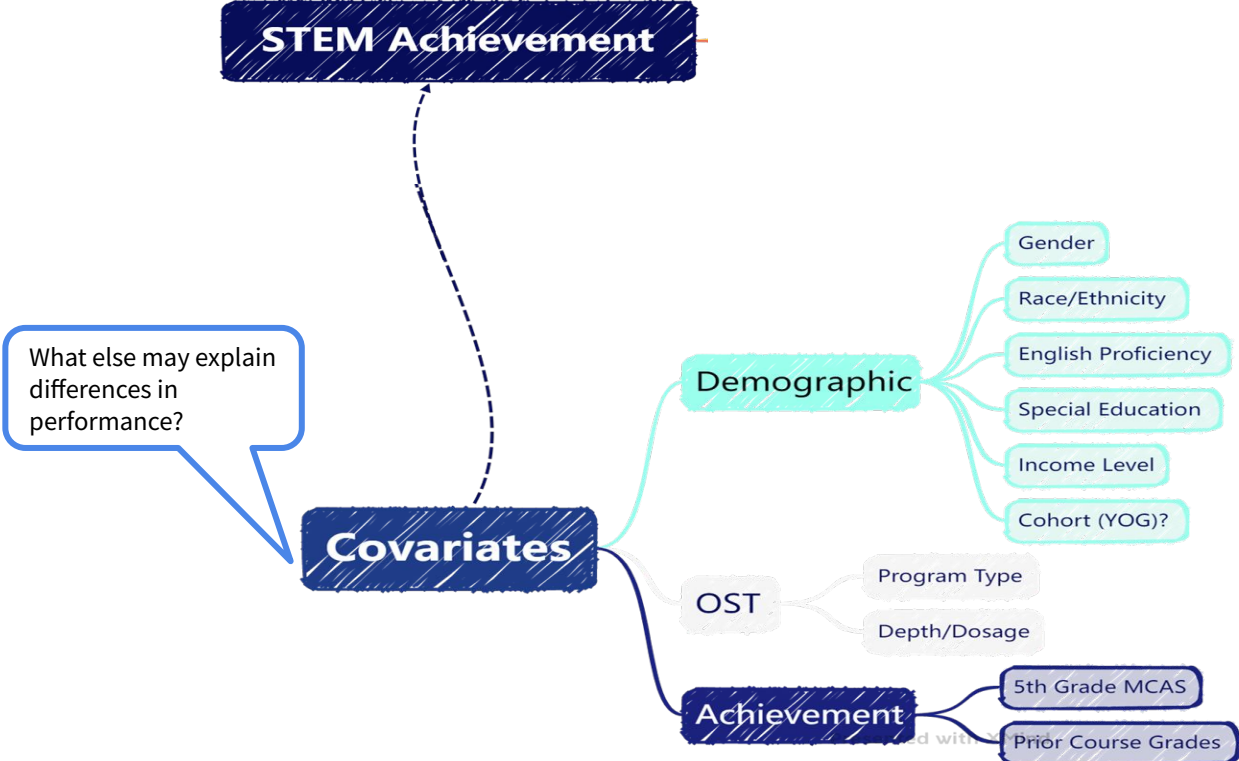


tinyurl.com/
5b7pwrtx

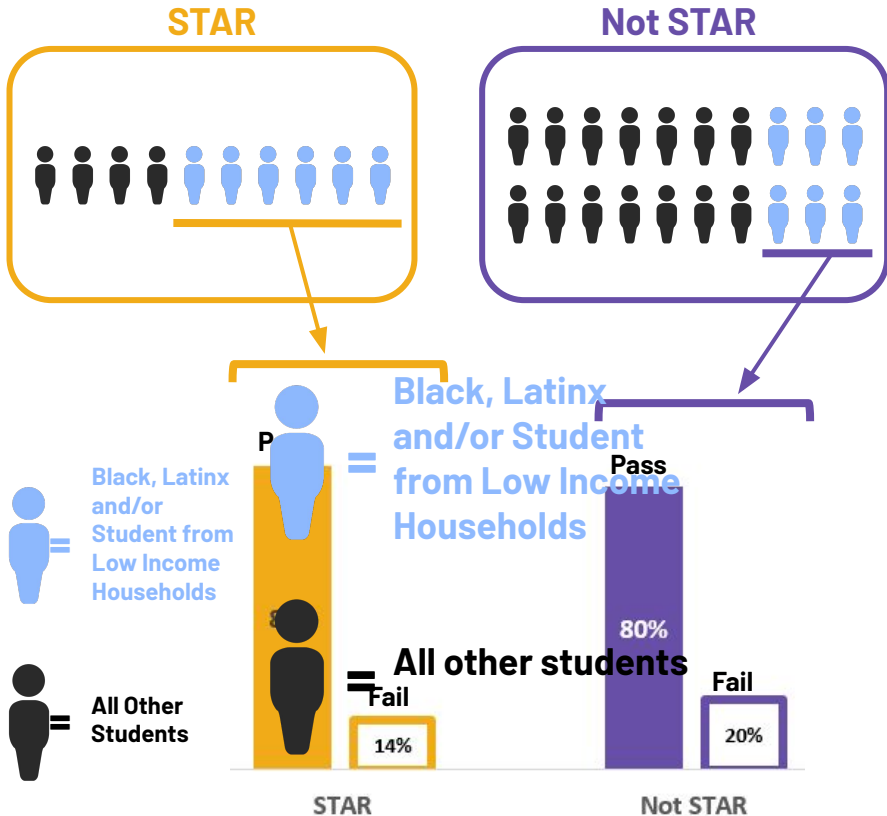
How do we assess STAR Initiative goals?



How do we assess STAR Initiative goals?



Our Analysis Process








	STAR Students	Non STAR Students
9th Grade STEM Passing Rate Black, Latinx and/or Students from Low Income Households	86%	80%
HONORS STEM ENROLLMENT Black Students	52%	45%
Students from Low Income Households	47%	42%

Logistical challenges to data work



District differences with:

- Course progression     
- STAR partners serve districts differently
- Dashboard software

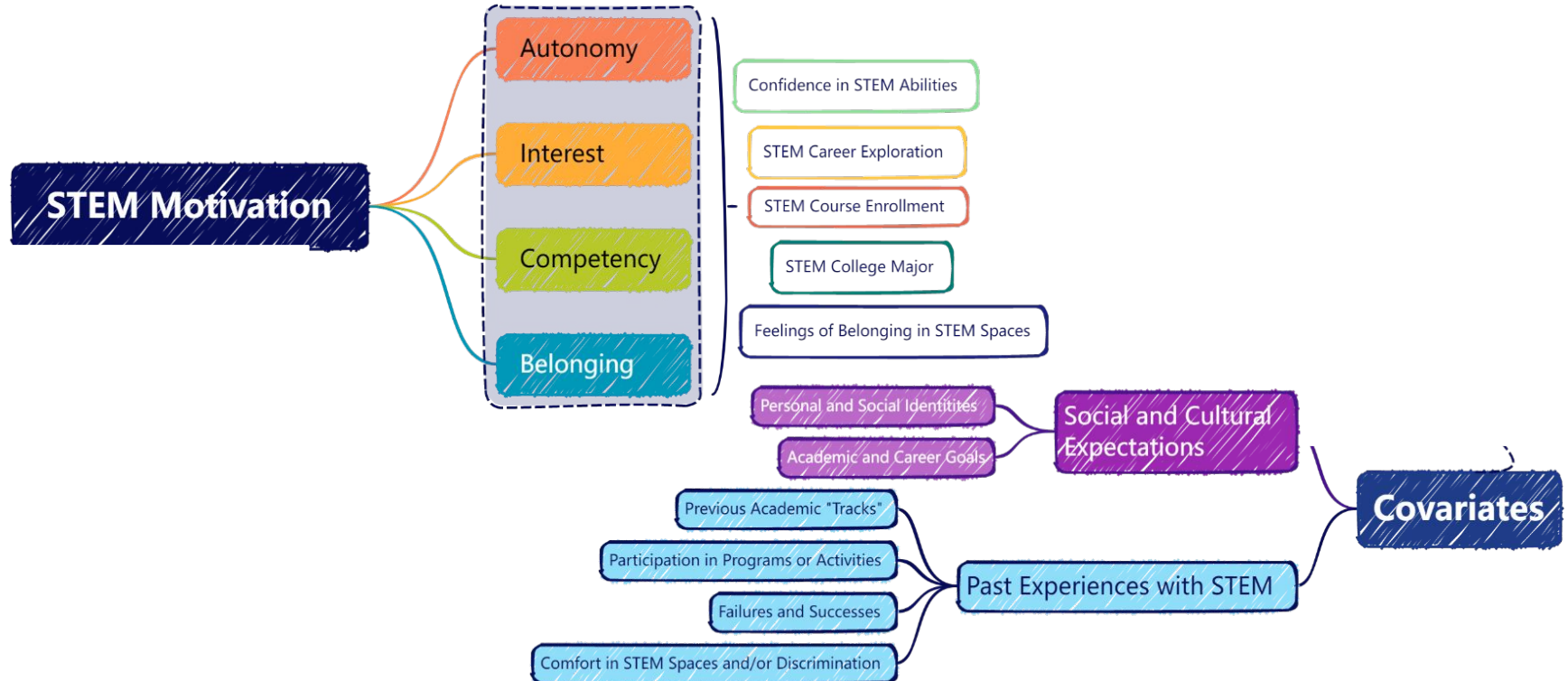


Longitudinal factors:

- Access to data on student majors in college
- Access to job/career information



What's next...



What Data Specialists add to their Districts



Sarah Jo Torgrimson
*Biogen Data &
Evaluation Specialist*
Somerville Public
Schools

- Contributes to district evaluation and research projects, analyzing quantitative and qualitative data.
- Consultant for data infrastructures around classroom, school, and district level metrics.
- Develops data dashboards, infographics, and presentations to improve district data literacy and provide educators and leaders with accessible, interpretable, and actionable data.



Robert Emery
*Data Manager- Biogen
STAR Initiative*
Cambridge Public
Schools

- Designs and builds the infrastructure for data to flow from its source to dashboards including district Out-of-School-Time data and COVID data
- Documenting internal data structures
- Building automated reports and ad hoc internal reports

Panel Discussion

Panel Discussion

1. Can you talk about how the work the STAR Data Specialists are doing is helping to overcome some of the typical barriers to sharing data?
 - a. **CPS:** You were already working on ways to address access and equity for students in terms of access to OST supports. Can you talk about the function of Agenda for Children, CPS, OST STEM providers and the development of the Community Partner Portal?
 - b. **SPS:** Can you speak to how your roles and work you've done to create data dashboards has helped increase capacity in this area for your district?
2. CPS: How has working in this collective action initiative, particularly now with these data roles, helped strengthen relationships between OST programs/partner orgs and your districts?
3. SPS: The "T" in STAR stands for Teacher support. One of the grantees in STAR is Lesley University which addresses this important aspect of the work to strengthen STEM education equity. Since Lesley's work isn't captured in most of the data about students, can you speak briefly about how their work has increased capacity in your district (towards this goal)?

The background is a solid teal color with a pattern of thin, white, concentric circles that resemble ripples in water or a fingerprint. The circles are centered in the upper right quadrant and spread out towards the bottom left.

Audience Q&A

Thank you for joining!

Contact us at:

sokun@rootcause.org

jhennick@rootcause.org



Follow this code for more
STAR Resources!



STAR


86%

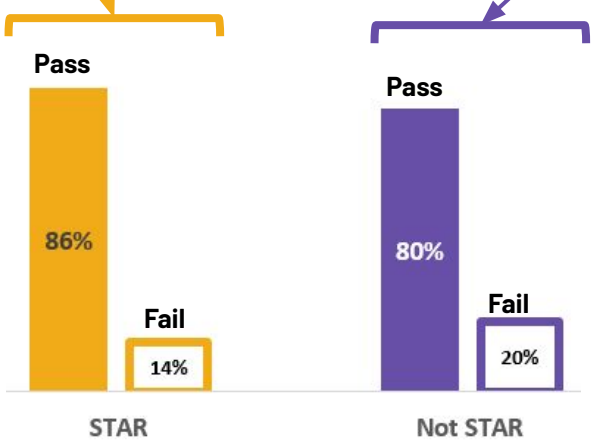
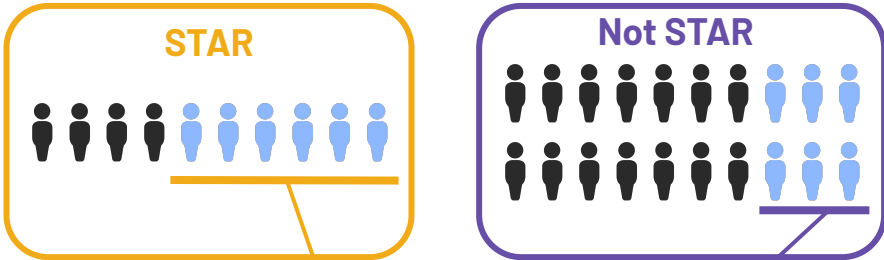
Not
STAR

80%

Percent of Black, Latinx, or Low Income
Freshmen who Passed All STEM Courses

Our Analysis Process

 = Black, Latinx and/or Student from Low Income Households
  = All Other Students



STAR Students
Non STAR Students

9th Grade STEM Passing Rate
 Black, Latinx and/or Students from Low Income Households

86%
80%

HONORS STEM ENROLLMENT
 Black Students

52%
45%

Students from Low Income Households

47%
42%