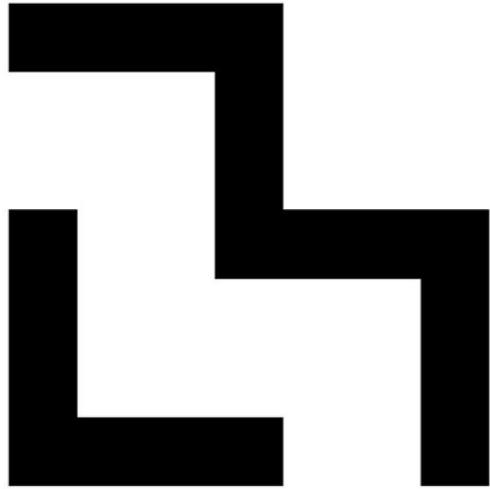


Data Activism Curriculum team

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**Open Data
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Data Activism Curriculum: Enabling Students to Mitigate Systemic Oppression Through Data Science

By Raechel Walker



Data Activism Curriculum for the Mayor's Summer Youth Employment Program (MSYEP)

- Data activism involves using open data and data science to challenge power inequalities, such as racism.
- We developed a 6 week data activism curriculum about utilizing data science to challenge power inequalities and how AI can amplify different forms of oppression.

Empowering Cambridge youth through data activism

Mayor's youth employment program brought local high schoolers to MIT this summer.

Katherine Ouellette | MIT Open Learning
September 21, 2022



Problem: Lack of Diversity in Computing

Table B3. Bachelor's Degrees Awarded by Ethnicity

	CS	
Nonresident Alien	3,307	14.5%
Amer Indian or Alaska Native	51	0.2%
Asian	6,128	27.0%
Black or African-American	755	3.3%
Native Hawaiian/Pac Islander	36	0.2%
White	9,939	43.7%
Multiracial, not Hispanic	715	3.1%
Hispanic, any race	1,800	7.9%
Total Residency & Ethnicity Known	22,731	

Computer Science Bachelor's Degrees
Awarded by Ethnicity (Zweben, 2020)

- We can not expect a more diverse computing workforce while underrepresented students fail to feel a sense of belonging.
- Today, less than 4% of computer science Bachelor's degrees are awarded to Black or African American students.

Problem: Computing Curricula Often Presents Computing As A Neutral Field

Wrongfully Accused by an Algorithm

In what may be the first known case of its kind, a faulty facial recognition match led to a Michigan man's arrest for a crime he did not commit.



- A vast amount of African Americans are not taught how tech is utilized to surveil, police, and incarcerate their communities.
- Robert Williams was wrongfully arrested after facial recognition technology had mistaken him for someone else.

Wrongfully Accused by an Algorithm
(Hill, 2020)



Problem: Algorithmic Bias in Society



- It's frightening to see how a technology that research has proven misidentifies people of color at higher rates is utilized more often on people of color.

MIT 6.S191: AI Bias and Fairness
(Amini, 2022)



Liberatory Computing



Artist: B. Mike

- Liberatory computing is a framework that ensures African American students acquire five pillars of the liberation:
 1. sound racial identity
 2. critical consciousness
 3. collective obligation
 4. liberation centered academic identity
 5. the activism skills to use computing to transform a multi-layered system of barriers in which racism persists

Open Data Capstone Project Objectives

- The objectives of this curriculum consist of students:
 1. conducting background research about a systemic problem
 2. finding an open data set
 3. implementing an intersectional data analysis
 4. creating a data drawing



Photo: Katherine Ouellette

Open Data Capstone Project Results

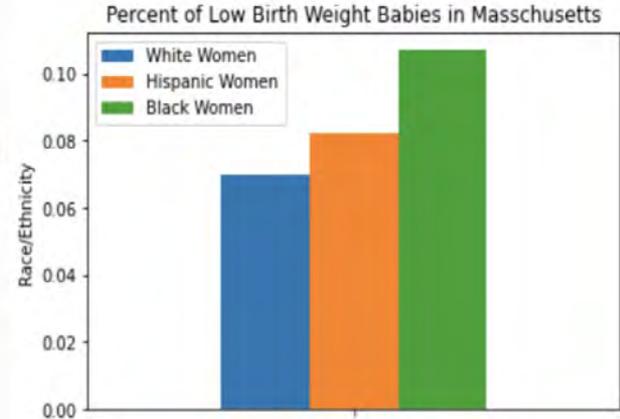
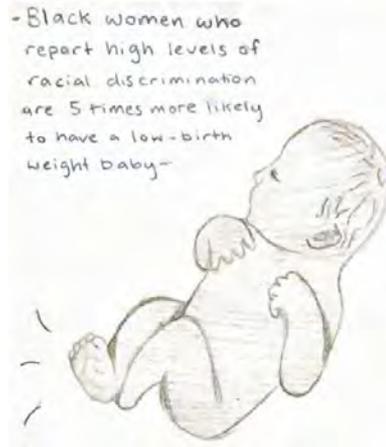
- Every project successfully discussed how racism contributes to harmful effects on African Americans in different sectors such as
 - housing
 - healthcare
 - gun violence
 - algorithmic bias
 - education



Photo: Katherine Ouellette

Student 1's Open Data Capstone Project

- Student 1 described how racism contributes to low birth weights in African American women.
- Also, Student 1 found a data set that highlighted this issue that they were passionate about mitigating, and produced meaningful data visualizations and data drawings to represent the low birth weight in African American



Student 1's Data Visualization and corresponding Data Drawing

Future Work: Collaborate with Community Organizations on Data Activism Projects

- We plan to teach students from the MSYEP and the Cambridge Rindge and Latin School (CRLS) how to collaborate with community organizations and local government offices to use their data activism skills to create policies that mitigate systemic oppression.

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Future Work: Online Data Activism Teaching Tools

- Make the curriculum available online for teachers and students
- Create video tutorials for every activity



Artist: B. Mike

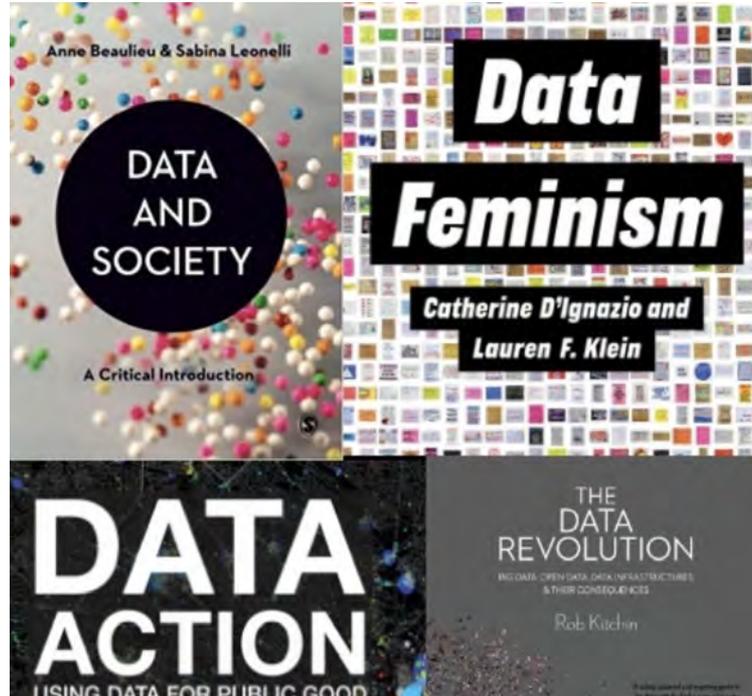
Conclusion:

- Students were able to:
 - identify a problem based on their unique lived experience
 - use open data, data science, and their knowledge of systemic oppression to analyze contemporary issues



Artist: B. Mike

If you're interested in learning more about data activism ...



Data and Society (Williams et al., 2022)

Thank you

