

# **Data Literacy with, for, and by Youth**

## **Exploring How Teens Co-Design After-School Programs as Sites of Critical Data Practice**

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May 7, 2026

# **The *Data Literacy with, for, and by Youth* project**

Explored how young people enact critical data literacies if given the opportunity, in this case, through informal, after-school activities at the library.

Teens in this project tested and provided feedback on data literacy activities and then developed their own novel approaches to data literacy learning at the public library.

The project was grounded on the principles and practices of co-design, giving teens an active role in the design process.

# **Data Literacy...**

## **More than computation and statistics**

Data literacy as a **new liberal art** that includes humanistic reasoning skills, socially-situated practices, and ethical considerations.

**Data Literacy** is about knowing how to read data...  
...so that you can use data to *read the world*

(Tygel and Kirsch, 2015).

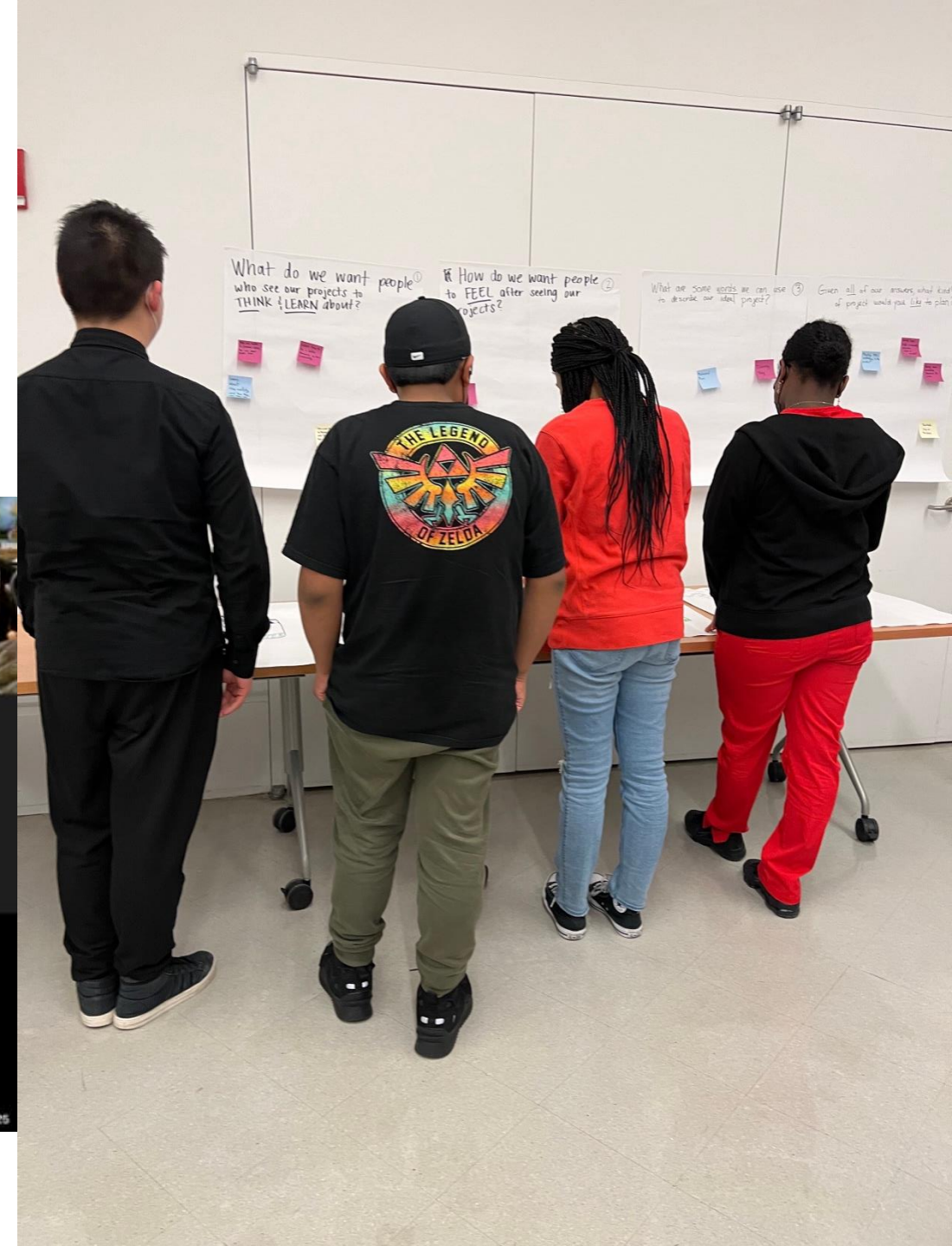
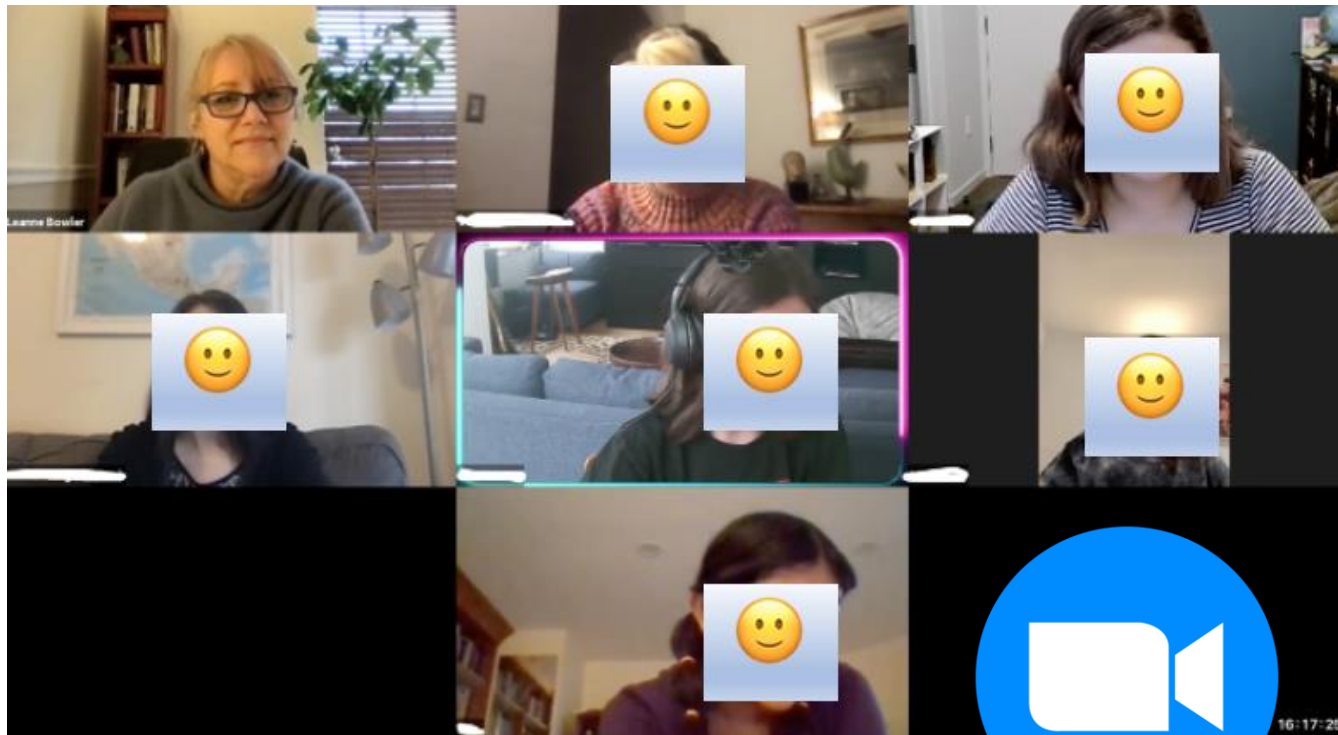
# Critical Data Literacy

A person who is **critical about data** considers the *effect* of data practices on people and society and asks *why* specific actions are being taken with data, not just what and how.

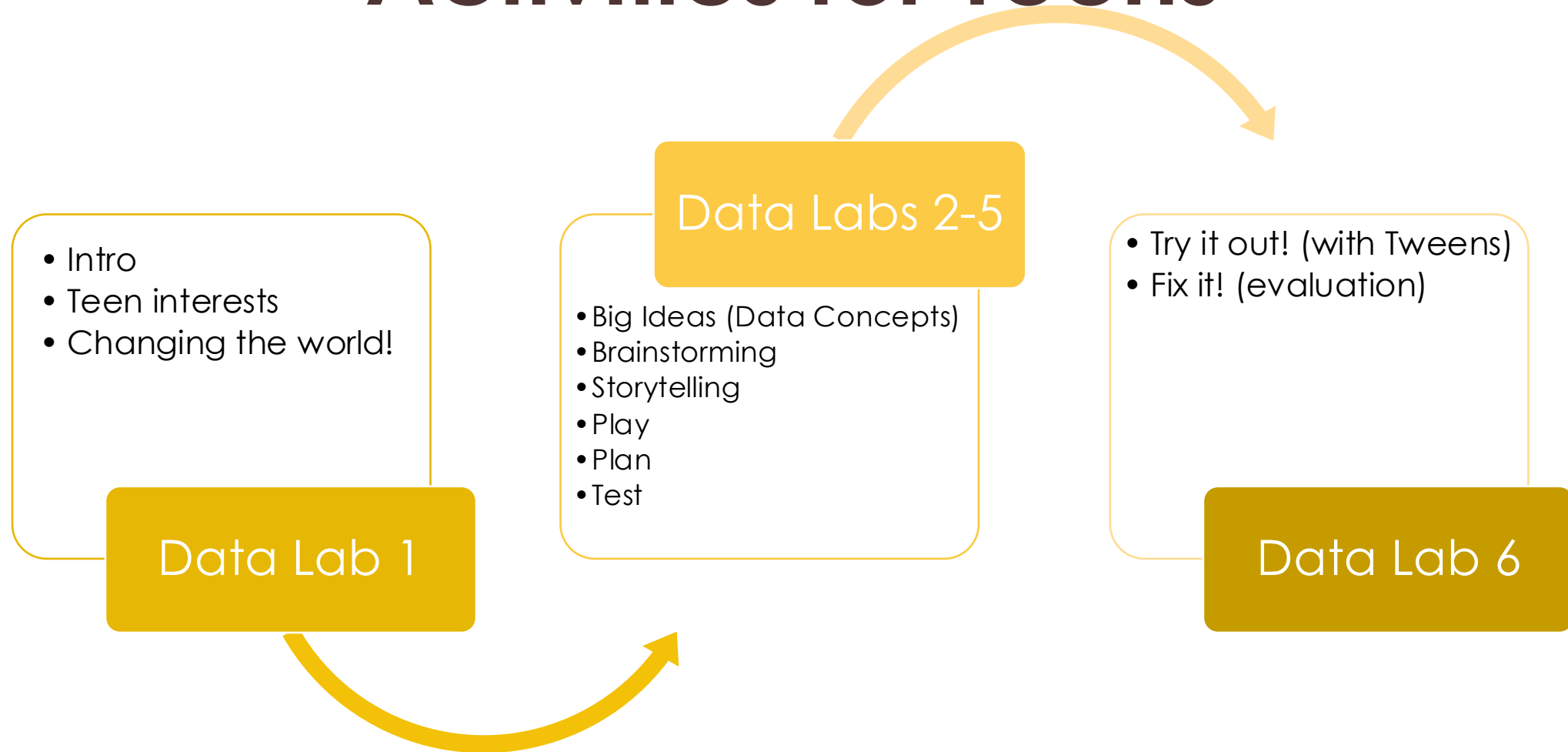
**Critical approaches** to data arise out of **personal** and **meaningful** interactions with data rather than abstractions; therefore, we, as adults, need to hear what teens have to say about data **in their own lives**.

**Co-design** with teens can reveal what is meaningful to teens. It is a powerful means to reveal a youth point of view, to help create learning environments that **facilitate critical perspectives** on data.

# Co-Design for Critical Data Literacy



# Co-Designing Data Literacy Activities for Teens



# Data Labs

## Approaches and Types of Data in the Data Labs

Series / Date	Number of Sessions	Approach	Type of data / Focus
Data Lab Series 1 Spring 2021	6	Concepts or skills	Personal digital data
Data Lab Series 2 Fall 2021	8	Concepts or skills	Personal digital data
Data Lab Series 3 Winter 2022	5	An interest or personal story	Civic data and community needs
Data Lab Series 4 Spring 2022	5	An interest or personal story	Civic data and community needs

**Some lessons from the project...**

# 1: Must not be “school”

Data activities with a **sense of play** (puzzles, treasure hunts, challenges, arts and crafts, general gamification of learning) and a **strong “after-school” social vibe** (hanging around, meeting other teens)

The screenshot shows a Kahoot! quiz interface. At the top, the question "What is data?" is displayed in a white box. To the right of the question is a blue "Skip" button. Below the question is a central image of two Star Trek characters, Spock and Ilia, sitting at a table. To the left of the image is a purple circle containing the number "1". To the right of the image is a large "0" above the word "Answers". Below the image are three answer options in colored boxes: a red box with a triangle icon and the text "Any kind of information about you, your community, and the world", a blue box with a diamond icon and the text "A character from Star Trek", and a yellow box with a circle icon and the text "All of the above".

Above: A game about data in the online game environment, Kahoot.

## 2: Data Literacies, plural

- The type of data matters. (i.e., Personal digital data, Civic data)
- The way we define data literacy varies across disciplines and the context of use. **We are really talking about data literacies, plural.**
- A plug and play approach is not possible. **Data Activities designed to suit the context.**

It is “unhelpful to talk about a single form of data literacy”  
(Fotopoulou, 2021, p.1).

Each type of data presents “a distinct set of skills and practices  
and therefore, different approaches to both research and  
instruction” (Bowler & Shaw, 2024, p. 203).

# 3: Conscious Co-Design



- After design sessions, asking ourselves, *“In what way did teens participate?”*. Adapting for next session.
- A “Conscious Co-Design” check list.
- Teen-led. No formal, predetermined “6-week plan”. Each session determined by ideas generated by teens in previous session.
- Break-out groups for teens. Small group interaction.
- Awareness that levels of participation change and grow throughout. There is no one right way.

**Sample data literacy activities  
tested and designed by teens**



# UNCOVERING ASSUMPTIONS IN DATA PROFILES

Thinking about how algorithms make inferences from data

What to do:

Pick one sticky note from each category.

Add it to this board.

Working together, build a persona here.

>>>

You can sketch with the pen.

You can add found images.

You can write notes.

What did you infer about this person from the sticky notes?

**Attack on Titan, Basketball, Inception, Secret History, Keanu Reeves.**

**Assumptions: likes gory & dark stories, tall & muscular, likes to challenge themselves, dark stories, like action heroes.**



# UNCOVERING ASSUMPTIONS IN DATA PROFILES

Thinking about how algorithms make inferences from data

# Begin by asking, *What do I care about in my community?*

- Traffic
- Transport
- Parks
- Stray cats
- Book club meetings
- Kids without their parents
- Accessibility
- Activities
- Helping teens find a job
- Clean streets

**DATASET NAME:** NYC Greenthumb Community Gardens

**YOUR NAMES:** \_\_\_\_\_

**BIOGRAPHY** (What you know about this dataset):

'R' means Staten Island in a column. It only has four community gardens.

Brooklyn (B) has the most green spaces at 226.

'Q' means Queens in a column. It has the fourth largest green spaces.

Greenthumb is an environmental movement that was established in 1978. It is the largest one in the nation and has made over 550 gardens.

The focus of Greenthumb is environmental conservation, empowerment, and to strengthen communities.

<https://greenthumb.nycgovparks.org/>

Something I learned about this data is that there are less gardens in Staten Island and Queens.

X in a "Boro" column means The Bronx-- and the X bus goes to The Bronx!

**PROFILE PICTURE:**



**QUESTIONS:**

Why does Staten Island (S) only have four green spaces?

Are the green spaces counted part of the natural environment or manmade gardens and parks?

Is the size in acres or a measurement?

Is Greenthumb a nonprofit organization or one that is run by the city?

What is the purpose of the Census Tract?

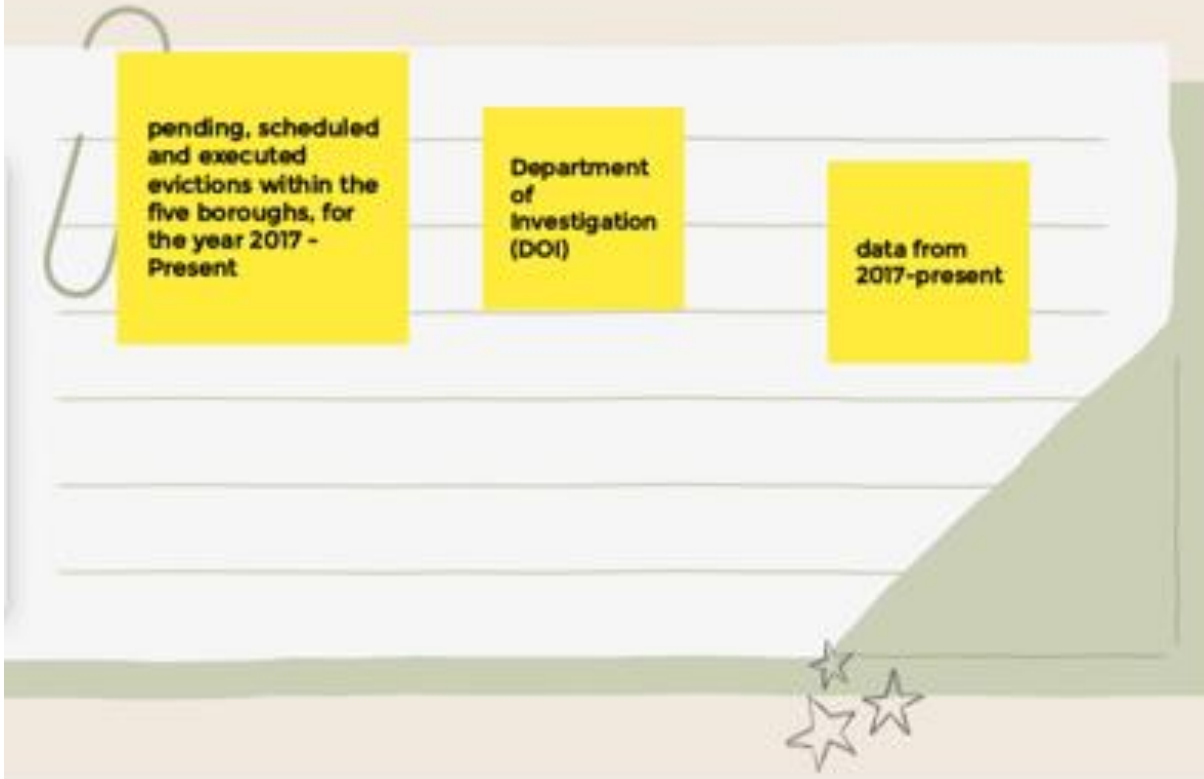
DATASET NAME: Evictions

YOUR NAMES: \_\_\_\_\_

PRoFILE PICTURE:



BIOGRAPHY (What you know about this dataset):



pending, scheduled and executed evictions within the five boroughs, for the year 2017 - Present

Department of Investigation (DOI)

data from 2017-present

QUESTIONS:



Why are people being evicted?

How are these evictions recorded?

Where are the most evictions happening in NYC?

What are the demographics of people being evicted? What are the circumstances of their life?

Are social groups identified in this dataset?

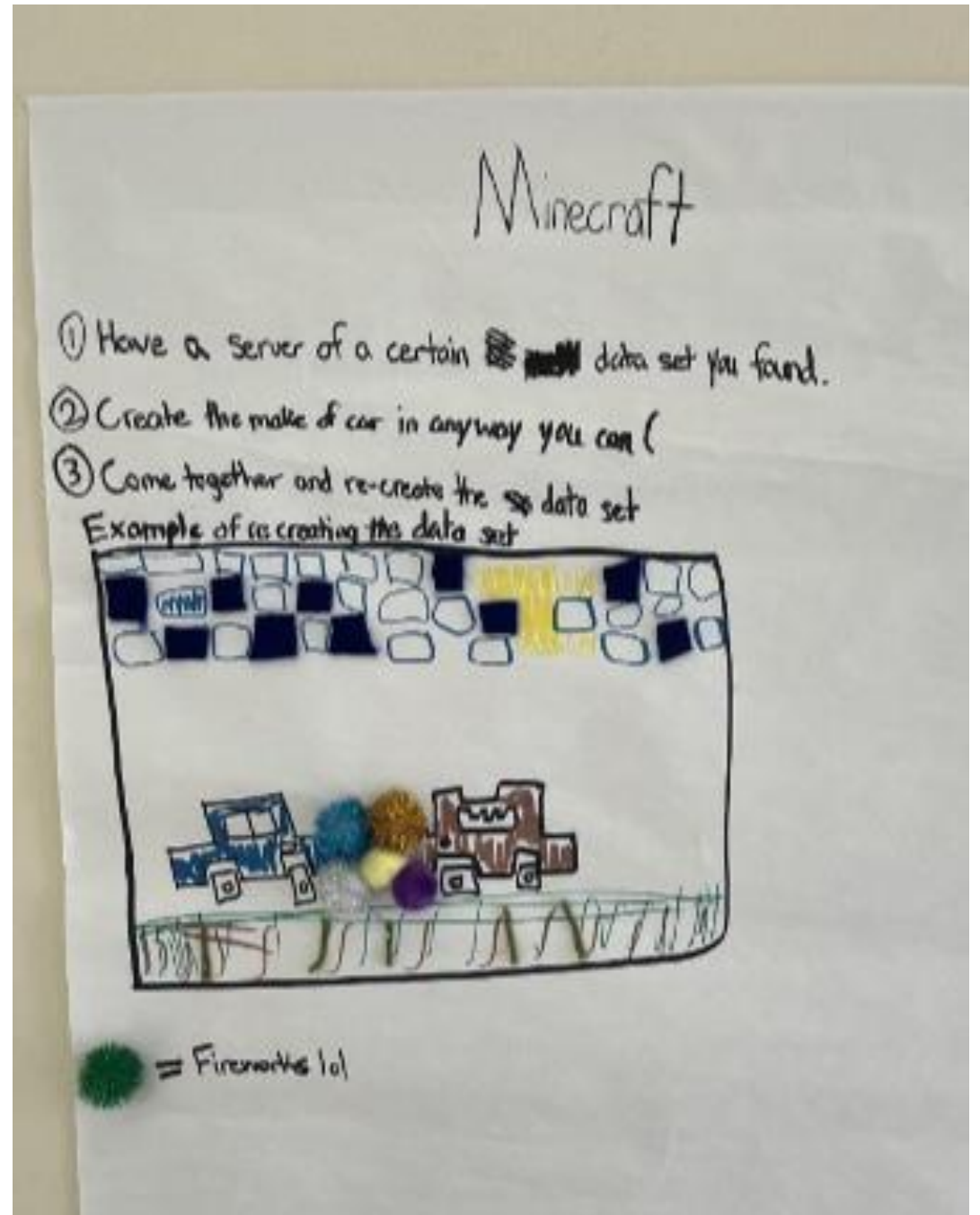
Is there a marshal that has a significant amount of evictions?

# Interrogating civic data

# Interrogating Civic Data

A sketch for a Minecraft game that uses Motor Vehicle Collision Data from NYC Open Data Repository.

Made by a teen who loves online games.



# **Did teens enjoy their participation?**

- The teens who participated were overwhelmingly positive about their experiences.
- As one teen said in the final exit survey, “I would like for you guys to know that I absolutely loved this internship, and I wish to come back again”.

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# ***The Data Literacy with, for, and by Youth project***

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**For more resources visit the  
project website:**

**<https://sites.google.com/pratt.edu/data-activism-for-youth/home>**



# Acknowledgements

Many thanks to the young people, library staff, and research assistants who participated in these studies. Their contributions are invaluable.

This project was made possible by a grant from the National Science Foundation, USA (Award #2005608). *Data Literacy with, for, and by Youth: Exploring How Teens Co-Design After-School Programs as Sites of Critical Data Practice.*

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**Thank you!**

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