

Pollyanna Racial Literacy Curriculum

# HIGH SCHOOL MATH

## **LESSONS IN THE MATH CURRICULUM:**

- 1 Racial Disparities in Deaths from the COVID Pandemic
- 2 Healthy Food for Healthy People: Addressing Food Deserts and Food Insecurity in BIPOC Communities
- 3 Locked Out Twice: The Racial Geography of Voter Disenfranchisement and Prison Gerrymandering
- 4 The Racial Wealth Gap: Why Does It Exist and How Can We Eliminate It?
- 5 A Dream Deferred for Young Immigrants
- 6 Addressing the Rise of Hate Crimes Against Asian Americans
- 7 The Legacy of Housing Discrimination and a Path Towards BIPOC Home Ownership
- 8 Racial Disproportionality in Police Killings and Use of Force

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## MATH LESSON 1 RACIAL DISPARITIES IN DEATHS FROM THE COVID PANDEMIC

Suggested time: Two 50-60 minute class periods Suggested unit: Algebra I; this lesson can also be adapted for a Statistics course

## **Overview**

This lesson draws from a March 2021 research study on the disproportionately high COVID-19 mortality rates within Black communities in the U.S. First, students will calculate and make sense of ratios between age-adjusted mortality rates for Black and White individuals in the U.S. Then they will create and analyze scatterplot graphs that explore the relationship between disparate mortality ratios and a State Racism Index. Through these data-driven activities, students will come to understand that the nationwide racial disparities in COVID mortality cannot be explained as the sum of individual actions but rather are symptoms of structural racism.

## **Objectives**

- Students will calculate ratios between two sets of rates, draw inferences about the real-world meanings of these ratios, and use them to extrapolate population outcomes.
- Students will graph real-world data into scatterplots, approximate trendlines within their graphs, calculate the slopes of those trendlines, and use their calculations to draw conclusions about real-world phenomena.
- Students will recognize unfairness on the individual level (e.g., biased speech) and injustice at the institutional or systemic level (e.g., discrimination).
- Students will recognize that people's multiple identities interact and create unique and complex individuals.

## **Key Understanding**

The nationwide racial disparities in COVID mortality cannot be explained as the sum of individual actions. Rather, as the data demonstrate, racial disparities in COVID mortality rates are strongly correlated with structural racism.

**Possible misunderstanding:** Racial disparities in COVID mortality rates are the result of individual behaviors and lifestyles choices.

## **Materials**

- Although not necessary, chart/poster paper with grids for graphing would be helpful. Alternatively, regular-size grid paper will be needed.
- Handouts (included at the end of this lesson):
  - What's the Story Behind This Photo?
  - Racial Disparities Between Black and White COVID Death Rates

## Vocabulary

disparity
ratio
scatterplot graph
slope
structural racism
trendline / line of best fit

## **National Standards**

This lesson aligns with the following Common Core Mathematics Standards:

• **CCSS.MATH.CONTENT.HSS.ID.B.6** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

This lesson also aligns with the following <u>Social Justice Standards</u> learning outcomes:

- **ID.9-12.5** I recognize traits of the dominant culture, my home culture and other cultures and I am conscious of how I express my identity as I move between those spaces.
- JU.9-12.12 | can recognize, describe and distinguish unfairness and injustice at different levels of society.

## **Note to Teachers**

This lesson explores disparities in COVID mortality rates between Black and White people. It is organized around <u>a research</u> <u>study</u> conducted by Siegel et al. (2021), one of the first studies to investigate these disparities after adjusting for age of the deceased. This type of analysis is necessary to gain a more nuanced understanding of how COVID has impacted different racial groups. According to the CDC, "adjusting by age is important because risk of infection, hospitalization, and death is different by age, and age distribution differs by racial and ethnic group. If the effect of age is not accounted for, racial and ethnic disparities can be underestimated or overestimated." (APM Research Lab Staff, 2022)

Following the methodology in the research study, this lesson then compares age-adjusted mortality data to a State Racism Index. This comparison is important because, by demonstrating how structural racism is correlated to higher disparity ratios, this lesson will help students recognize that these disparities are not the fault of Black people, as explained by Ibram X. Kendi (2020) in his Atlantic article, "<u>Stop Blaming Black People for Dying of the Coronavirus</u>." We recommend teachers review both the study by Siegel et al. (2021) and the article by Kendi (2020) before teaching this lesson.

The study by Siegel et al. (2021) contains more complex statistical analysis than is covered in this lesson, but this lesson could be adapted to include regression, standard deviation, and confidence intervals. Additionally, students can complete this lesson without access to a computer or calculator, but the lesson could be adapted if students had access to Excel or other data analysis and graphing programs.

Finally, while this lesson focuses on the age-adjusted disparity in U.S. COVID mortality rates between Black and White individuals, it is important to recognize that other communities of color in the U.S., including Indigenous, Latino, and Pacific Islander communities, have experienced <u>disproportionately high rates of mortality from COVID as well</u> (APM Research Lab Staff, 2022). Be sure to let students know that the data in this lesson represent only part of the picture, and that COVID has highlighted the devastating consequences of systemic racism in many BIPOC communities.

## **LESSON PROCEDURE**

1. Distribute the handout called "What's The Story Behind This Photo?" and provide students with 4-5 minutes to think and respond to the prompts in the handout. Alternatively, you can project the image and post the four prompts (or others).

Before moving on with the lesson, you can share the following with students:

This is a photo of surviving family members of a man named Virgil Yazzie, a Native American elder who died of COVID-19 in 2020. As of March 2021, Indigenous Americans had a mortality rate of 256 out of every 100,000 people, the highest rate for any racial or ethnic group in the country. This rate is more than three times higher than the rate for White and Asian Americans.

- 2. Explain to students that a group of researchers from Boston University wanted to understand if COVID-19 has impacted Black and White people differently, and, if so, what might explain the differences. In February 2021, they studied data from 35 states where data was available. Today your class will examine and analyze these data.
- 3. To help students understand the mortality rate data from the report, walk them through an example, using the state you are in if possible; you can find a table with state mortality rates in <u>the report by Seigel et al.</u> (2021). Using California as an example, the death rate for Black individuals was 61 out of 100,000 and for White individuals it was 40 out of 100,000. Ask students to calculate the ratio between Black and White mortality rates, and have a student share their solution to ensure that everyone understands how the ratio was calculated.

#### *Solution:* 61÷40 = 1.5

Use a think-pair-share to have students discuss the question: What does a ratio of 1.5 mean about Black versus White COVID deaths in California?

Possible student response: It means that 1.5 Black people died of COVID for every 1 White person who did. Put differently, for every 1,000 White people who died from COVID, there were 1,500 Black people who died.

4. Next, explain that the researchers felt that this mortality ratio did not accurately reflect the full impact of COVID on these communities. Life expectancy for White people (79 years) is longer than for Black people (75 years). This means there are fewer older Black people than older White people, and because COVID mortality becomes higher the older the infected person is, mortality rates for White people are skewed because there are more older White people alive who could get sick and die. Therefore, the researchers adjusted their data to look at how many Black and White people of the same age were dying of COVID.

To help check for understanding, consider having students explain this data adjustment to a peer in their own words, and then ask someone to share their answer with the class.

Repeat the process of calculating ratios from above, this time using the age-adjusted data. For example, in California, the age-adjusted death rate for Black individuals was 67 out of 100,000, and for White individuals it was 28 out of 100,000. Have students calculate the age-adjusted ratio.

#### Solution = 2.4

Ask students: "Based on this age-adjusted ratio, for every 1,000 White people who died of COVID, how many Black people of the same age died?"

#### Solution = 2,400 people

5. Share with students that for all 35 states included in the study, the average baseline mortality ratio was 1.6 and the age-adjusted mortality ratio was 2.7. Ask students: "If 100,000 White people of a certain age died of COVID, how many Black people of the same age died of COVID?"

#### Solution = 270,000 people

It would also be helpful to add that White people make up 73% of the U.S. population, compared to the Black

population of 13%. In other words, despite there being about five times more White people, the Black mortality rate from COVID was almost three times higher than the COVID mortality rate for Whites.

- 6. Ask students to brainstorm a list of reasons why Black people might have had much higher mortality rates, and challenge them to identify systemic, structural reasons rather than placing blame on the individuals. Students should work on this in groups, and each group should share one answer while you write their ideas on the board. Continue circulating through the groups and gathering answers until there is a sufficiently long list from the class. Feel free to add your own ideas to the list, which might include:
  - Black people are more likely to be low-wage essential workers, putting them in greater contact with others during the pandemic.
  - Due to a legacy of housing discrimination, Black people are more likely to live in multi-generational homes where infection could spread.
  - Due to inequities in access to healthy food, Black people are more likely to have underlying health issues (like diabetes) that put them at greater risk from dying of COVID.
- 7. Explain to students that the researchers believed that factors like the ones generated in this class brainstorm were likely to blame for the racial disparities in age-adjusted morbidity rates. The researchers used something called a State Racism Index that gave each state a score from zero to 100; a higher score indicates a higher presence of structural racism. The State Racism Index assesses racial disparities across five dimensions:
  - Residential segregation
  - Incarceration
  - Educational attainment
  - Economic indicators
  - Employment status
- 8. Distribute the handout called "Racial Disparities Between Black and White COVID Death Rates." Provide students with a minute to quickly look over the chart, and then check for their understanding by asking clarifying questions such as:
  - What do the data in the column labeled Baseline represent?
  - What do the data in the column labeled Age-Adjusted represent?
  - Which state had the lowest baseline disparity ratio?
  - Which state had the highest age-adjusted disparity ratio?
  - Which states had the lowest and highest State Racism Index scores?
- 9. Draw students' attention to the three tasks their group will now complete. It might be necessary to stop periodically while students are working to scaffold each of the tasks. Possibilities for scaffolding include:
  - Step 1: If students do not know how to create a scatterplot graph, you might demonstrate this graphing technique by using some made-up data points and a simple cartesian graph (i.e., "I would put a dot here for the coordinate [3,7], and here for [4,8]. Where would [1,9] go?"). Students are expected to determine an appropriate scale for their axes given the data, but struggling students might need more guidance to determine their scales or even be given the scale to use.
  - Step 2: In this version of the lesson, students are simply estimating a line of best fit. You can scaffold this
    process by quickly sketching a scatterplot graph and modeling how you would estimate where to draw the
    trendline. Or you could draw three trendlines (one or two that are obviously not accurate) and ask students
    which one they think is most accurate. This will help them understand how to estimate a line of best fit on
    their own.
  - Step 3: Students should know how to calculate a slope given two points, although you might need to remind them. While their trendlines might not actually include two points from the table, they should be able to estimate two points on their trendlines by looking at their graphs.

- 10. If time permits, once students are done with these tasks, have them hang their posters around the class and conduct a gallery walk, during which students will walk around the classroom and examine one another's work. You might ask them to look for similarities and differences between the posters, the trendlines, and the slopes. Another approach would be to have one student from each group stay at their poster and present the findings to other groups who rotate between posters every 2-3 minutes. Afterward, have students return to their seats, and facilitate a class-wide discussion about the posters, calling attention to any posters that showed very different results, highlighting a unique approach, or addressing a significant misunderstanding.
- 11. Put the following question up on the board for all students to read and respond to either in writing or via a think-pair-share:

What do these graphs show about the relationship between racial disparities in COVID deaths and structural racism in the United States?

Once students have had the opportunity to think, write, and discuss this question with a partner or small group, facilitate a full class discussion to elicit student thinking. Students should recognize that the higher the State Racism Index, the greater the disparities are between Black and White COVID mortality rates. In other words, structural racism can be blamed for the massive racial disparities in how COVID has impacted communities across our country.

12. Finally, it would be helpful to ask students to share their thoughts on what might have reduced disparities in mortality rates and/or what needs to happen in our country to prevent these disparities from continuing. Help students make the connection that reducing structural racism and its outcomes (such as racial segregation, incarceration rates, and employment status) would have other positive benefits to the health and wellbeing of people in the U.S.

### **Demonstration of Learning**

- Option 1: Have students write a few paragraphs to summarize what they learned from the lesson, addressing both the math content and background issues related to disparities in COVID-19 deaths.
- Option 2: Provide students with data to graph in a scatterplot. Have them estimate a line of best fit and its slope and write about the relationship the graph shows between the two categories of data.

### **Extension Opportunities**

Explore the impact of the pandemic on people who are incarcerated, a group that is disproportionately BIPOC. This could
include immigrant detention facilities that were ravaged with COVID outbreaks. One good source of data, policy, and
research is The COVID Prison Project:

The COVID Prison Project [website], available at: https://covidprisonproject.com/.

<u>APM Research provides visualizations of how COVID has impacted different racial groups</u>. Have students research the impact of COVID on Latinx communities, exploring, for example, how COVID has impacted undocumented immigrants working in poultry- and other meat-processing factories or immigrant detention facilities. You might also have them examine the fact that Indigenous and Pacific Islander communities in the U.S. have experienced disproportionately high mortality rates relative to White and Asian Americans, or other racialized trends in the data, such as the sudden increase in mortality rate among Asian Americans beginning in December 2021.

This activity uses the following resource:

APM Research Lab Staff. (2022). The color of coronavirus: COVID-19 deaths by race and ethnicity in the U.S. APM Research Lab. Accessed March 1, 2022 at: <u>https://www.apmresearchlab.org/covid/deaths-by-race</u>.

For statistics classes, explore the regression analysis on pages 8-9 of the report by Seigel et al. (2021).

### **Additional Resources**

COVID Racial Data Tracker [website], available at: https://covidtracking.com/race.

Demographic Trends of COVID-19 Cases and Deaths in the US [online dataset], available at <u>https://covid.cdc.gov/covid-da-ta-tracker/#demographics.</u>

Kendi, I. X. (2020). Stop blaming Black people for dying of the coronavirus. *The Atlantic*. Accessed March 1, 2022 at: <u>https://www.theatlantic.com/ideas/archive/2020/04/race-and-blame/609946/</u>.

McKoy, J. (2021). Racial disparities in COVID-19 mortality wider than reported. Boston University School of Public Health. Accessed March 1, 2022 at: <u>https://www.bu.edu/sph/news/articles/2021/racial-disparities-in-covid-19-mortality-wider-than-reported/</u>.

#### References

APM Research Lab Staff. (2022). The color of coronavirus: COVID-19 deaths by race and ethnicity in the U.S. APM Research Lab. Accessed March 1, 2022 at: <u>https://www.apmresearchlab.org/covid/deaths-by-race.</u>

Gilligan, H. T. (2021). Native American communities in California devastated by COVID-19 [blog post]. California Health Care Foundation. Accessed March 1, 2022 at: <u>https://www.chcf.org/blog/native-american-communities-ca-devastated-covid-19/</u>. Siegel, M., Critchfield-Jain, I., Boykin, M., & Owens, A. (2021). Actual racial/ ethnic disparities in COVID-19 mortality for the non-Hispanic Black compared to non-Hispanic White population in 35 US states and their association with structural racism. *J. Racial and Ethnic Health Disparities*. Accessed March 1, 2022 at: <u>https://doi.org/10.1007/s40615-021-01028-1</u>.



# What's the Story Behind This Photo?



Source: Taya Gray, The Desert Sun, https://www.chcf.org/blog/native-american-communities-ca-devastated-covid-19/

Describe what you see in this photo.	What questions do you have about this photo?
What do you think might be the story behind this photo?	How does this photo make you feel?



# Racial Disparity Between Black and White COVID Deaths Rates

	Baseline	Age-Adjusted	
State	Disparity Ratio (Black v. White)	Disparity Ratio (Black v. White)	State Racism Index
Alabama	1.3	1.9	35
Arizona	0.9	2.2	27
Arkansas	0.9	1.6	34
California	1.5	2.4	53
Colorado	1.7	2.7	53
Connecticut	1.4	2.7	60
Florida	1.3	3	35
Georgia	1.2	2.1	35
Illinois	1.6	2.5	61
Indiana	1.5	2.4	42
lowa	0.8	2.5	52
Kansas	1.5	2.7	49
Kentucky	1.4	2.1	26
Louisiana	1.6	2.4	41
Maryland	1.5	2.5	47
Massachusetts	1.1	2.1	52
Michigan	3.1	4.5	52
Minnesota	1	3.2	63
Mississippi	1.3	2.1	39
Missouri	1.3	2.1	39
Nebraska	1	2.1	58
Nevada	1.4	2.6	31
New Jersey	1.4	2.3	66
New York	2	3.3	59
North Carolina	1.6	2.4	39
Ohio	1.3	1.9	49
Oklahoma	0.8	1.4	37
Pennsylvania	1.7	3	53
Rhode Island	0.9	1.8	51
South Carolina	1.6	2.3	43

Tennessee	1.3	2.1	34
Texas	1.1	2	35
Virginia	1.5	2.1	43
Washington	0.8	1.6	33
Wisconsin	1.3	2.9	72
United States	1.6	2.7	46

Source: Siegel et al. (2021)

## **Your Task**

**Step 1:** Make a scatterplot graph that compares the age-adjusted disparity ratios to the Racism Index for each state. The x-axis should be the disparity ratio, and the y-axis should be the Racism Index Score. Include titles and label the scale on each axis.

**Step 2:** Draw one straight line (called a line of best fit or a trendline) that you think best reflects the average relationship between all the data points you graphed.

**Step 3:** Use two points along your line of best fit to calculate the slope of your line and include the slope on your graph.

## MATH LESSON 2 HEALTHY FOOD FOR HEALTHY PEOPLE: ADDRESSING FOOD DESERTS AND FOOD INSECURITY IN BIPOC COMMUNITIES

Suggested time: Three to five 50-60 minute class periods Suggested units: Algebra I, Algebra II, Geometry, or Pre-Calculus (Day 3 is appropriate for Algebra II or Pre-Calculus, but it can be adapted for Algebra I or Geometry students)

### **Overview**

This lesson explores the pervasiveness of food deserts across the United States, focusing specifically on the lack of access to affordable, healthy foods for people living in low-income BIPOC communities. Day 1 includes two activities that help students explore these issues by making sense of data that has been disaggregated by race. Day 2 asks students to apply a racial equity lens while using mathematical concepts to determine where a new supermarket should be built. Day 3 focuses on one strategy to address the problem of food deserts – the construction of a community garden – and engages students in an open-ended, "low-floor, high-ceiling" math task that can be adapted for a wide range of learners.

## **Objectives**

- Students will write and compare rates to assess disproportionate impact.
- Students will apply the distance formula to determine the distance between two points on a cartesian plane.
- Students will maximize the area of a rectangle given a fixed perimeter.
- Students will recognize unfairness on the individual level (e.g., biased speech) and injustice at the institutional or systemic level (e.g., discrimination).
- Students will respectfully express curiosity about the history and lived experiences of others and will exchange ideas and beliefs in an open-minded way.

## **Key Understanding**

Access to healthy food is affected by both race and class. In the U.S., structural racism, wealth inequality, and their intersections often leave poor Black and Latinx communities with particularly limited access to healthy food. Neighborhoods with limited access to healthy food are often referred to as food deserts.

Possible misunderstandings: Food deserts are the result of residents not wanting to eat healthy foods.

## **Materials**

- Grid paper (helpful, but not required)
- · Access to an internet-connected computer, projector, and speakers (helpful, but not required)
- The Guardian. (2019). The Food Deserts of Memphis: Inside America's Hunger Capital [video]. YouTube. Accessed March 1, 2022 at: <u>https://www.youtube.com/watch?v=E6ZpkhPciaU</u>.
- Emerson Collective. (2016). Uprooting Food Injustice in West Oakland [video]. Vimeo. Accessed March 1, 2022 at: https://

player.vimeo.com/video/166571100?player\_id=video&api=1?playsinline=0.

- Handouts (included at the end of this lesson):
  - Hunger in U.S. Families With Children, May 2020 March 2021
  - Supermarket Access by Race and Poverty Level in the United States
  - Building in the (Food) Desert
  - City Slicker Garden

## Vocabulary

census tract food desert food insecurity

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### **National Standards**

This lesson aligns with the following Common Core Mathematics Standards:

- CCSS.MATH.CONTENT.HSA.APR.C.4 Prove polynomial identities and use them to describe numerical relationships.
- **CCSS.MATH.CONTENT.HSG.GPE.B.7** Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

This lesson also aligns with the following Social Justice Standards learning outcomes:

- **DI.9-12.8** I respectfully express curiosity about the history and lived experiences of others and will exchange ideas and beliefs in an open-minded way.
- JU.9-12.12 | can recognize, describe and distinguish unfairness and injustice at different levels of society.

### **Note to Teachers**

This lesson focuses on the role of race and wealth inequality in accessing healthy food. Students will start by exploring data that demonstrate that, when controlling for level of poverty, poor Black neighborhoods at all poverty levels and high-poverty Latinx neighborhoods have far fewer supermarkets (a proxy for access to healthy food) than poor White neighborhoods.

On Day 2, students will work on the activity outlined in the handout "Building in the (Food) Desert." Please note:

- This activity would be best conducted in pairs or small groups, rather than individually. Students could be asked to complete the final step on their own based on the work their pair or small group conducted.
- This activity requires students to apply the distance formula. If you have not already covered this content, you might first
  introduce the distance formula using an alternative example. The recommended approach even if this content is new
  for students is to use this activity to help students learn to apply the distance formula. Consider having students try to
  apply the distance formula to just one line segment to start, and then having some students share their work with the
  class so you can address any misunderstandings or misconceptions before allowing students to continue with the activity.

On Day 3, students will work on the activity outlined in the handout "City Slicker Garden." Please note:

The central activity in this lesson is a "low-floor, high-ceiling" task. This means some students can explore this problem by drawing sketches and working towards a solution using basic computations (e.g., adding and multiplication), while more advanced students can solve the problem using more complex math typically covered in Algebra II or Pre-Calculus courses (e.g., quadratics and vertices). Depending on the class you are teaching and your students' content knowledge, you can adjust the complexity of the problem and your requirements for a solution. This problem also serves as a great activity for introducing new and more complex math.

• Before you introduce this activity, decide whether you will restrict students to using whole numbers or allow them to use decimals as well (such as 2.5 feet of fencing) when exploring dimensions for their gardens.

Note that this lesson does not explicitly address the consequences of structural inequities in access to healthy food. Therefore, you should be ready to help students recognize that, when people do not have easy access to places where they can purchase affordable, healthy food, they are more dependent on fast-food restaurants and convenience stores that sell high-calorie, high-sugar products. Lack of healthy food and reliance on fast food plays a major role in the high rates of obesity, diabetes, and other health-related issues that disproportionately impact low-income BIPOC communities. Be prepared to respond to comments and questions that might shift blame to people for their health outcomes, such as:

- Why don't people just travel to where there is a supermarket?
- People don't have to eat fast food just because they can.
- The reason there aren't supermarkets in these communities is because the people don't want them there (blaming demand, rather than supply).

Finally, the content in this lesson relates closely to Lesson 4 from the Biology Curriculum, entitled "Macromolecules: The Building Blocks of Us;" this lesson examines the impact of nutritious foods (or lack thereof) on the body. Therefore, you might consider partnering with a biology teacher at your school to teach about food insecurity from both a mathematical and a biological perspective, and its effects at both the individual and societal levels.

## **LESSON PROCEDURE**

#### **Day 1: Food Deserts in BIPOC Communities**

1. Introduce the topic of this lesson by having students reflect on the following questions. Explain that, as a class, you be exploring these and related questions over the next few days:

Why is eating healthy food important? Where do people go to get healthy food? Does everyone have access to healthy food, or are there some communities that have more or less access than others? And when communities lack access to affordable healthy food, what can they do to address this problem? These are some of the questions we will be exploring in this lesson.

- 2. Have students brainstorm a list of places their families can go to purchase healthy foods. For urban communities, make a list of places within one mile (within approximately 20 minutes of walking); for rural communities, list places within 10 miles. Examples could include grocery stores, supermarkets, farm stands, farmers' markets, and big-box stores like Target that sell produce. This list should not include fast-food restaurants, corner stores, or convenience stores. Compile a class list if there are a variety of places students identify. Have students reflect on the extent to which they live in a community that has geographic proximity, and thus easy access, to stores that sell healthy food.
- 3. Show students the video <u>The Food Deserts of Memphis: Inside America's Hunger Capital</u> (13:12 minutes; if time is limited, you can watch until 3:01 or 5:25 minutes). Students should take notes while watching the video; consider asking students to write down three important facts or big ideas as they watch.
- 4. Facilitate a brief discussion in small groups or as a class. Questions to pose include:
  - What is a food desert?
  - Where do people living in food deserts get food, and what kinds of food do they have the easiest access to?
  - What is it like, or how do you think it might feel, to live in a food desert?
  - How might living in a food desert impact one's health and wellbeing?

- 5. The next activity will help students understand that communities of color are disproportionately impacted by lack of access to affordable, healthy foods. Distribute or project the student handout entitled "Hunger in U.S. Families With Children, May 2020 - March 2021." In pairs, small groups, or as a whole class, have students respond to the following prompts:
  - What do you notice? If you make a claim, state what you noticed that supports your claim.
  - What do you wonder? What are you curious about that comes from what you notice in the graph?
  - What is going on in this graph? Write a catchy headline that captures the graph's main idea.
  - What do you notice when comparing hunger rates between Black and Latinx families on the one hand, and White and Asian American families on the other? How could you describe these differences using math terminology? What are some different ways you could use math language to describe the differences?

(Consider having students find the total difference between the averages, calculate the percent difference between racial groups, compare one set of data as a percent of the other, and/or describe how many times greater one group's hunger levels are than another's.)

- What impact do federal unemployment benefits seem to have on hunger levels? Why would this be?
- 6. Distribute the handout called "Supermarket Access by Race and Poverty Level in the United States." Have students work independently or with a partner to answer the three observation questions, and then facilitate a whole-class discussion so that students can hear one another's observations, questions, and headlines.
- 7. Provide students with time to answer additional questions on the handout; you will have to decide if you want to assign some or all of these questions or to add your own.
- 8. Assess students' learning by asking them to summarize, in writing, what they think are the most important takeaways from the activities, and to use mathematical evidence to justify or explain their perspectives. This could be in the form of an exit ticket or a homework assignment.

#### Day 2: Applying a Racial Equity Lens to Building a Supermarket

- Remind students that, in the previous class, they learned about food deserts and saw that low-income Black and Latinx neighborhoods often have less access to supermarkets than low-income White neighborhoods. Inform students that today they are going to apply this information as they determine the fairest location to build a new supermarket.
- 2. Distribute the handout called "Building in the (Food) Desert." Have students work in pairs or small groups to apply the distance formula to determine the distance between Neighborhood A and the Black Star Supermarket (Question 1).
- 3. After students have completed Question 1, use a brief, whole-class discussion to check for understanding and address any confusion or misconceptions.
- 4. Have students complete the remainder of the assignment. When students begin looking for a location to place the Black Star Supermarket, there are several things they should consider. You can use the following prompts to scaffold the activity for struggling learners, require groups that finish quickly to justify their analysis using additional mathematical concepts, or challenge groups to think more equitably about their solution.
  - The Red Star Supermarket is closest to Neighborhood C (predominantly White). Ask students if they think the new market should be built an equal distance from each neighborhood. Is that the fairest approach? Why or why not?
  - If students decide to build the Black Star Supermarket closer to Neighborhoods A and/or B, how far away from Neighborhood C would they feel comfortable placing it?
  - This task might be different if the Red Star Supermarket did not exist; in that case, students might feel justified placing the Black Star Supermarket at a point equidistant from the three neighborhoods. But this is not the case, because there is already one supermarket in Center City. How should students factor in the

existing access (or lack thereof) between each neighborhood and the Red Star Supermarket?

- How might students justify placing the Black Star Supermarket directly between Neighborhoods A and B? How would they determine this location on the map?
- While the task does not ask this of students, they could calculate the average distance between each neighborhood and the two supermarkets. Knowing this average could help them justify a location for the new market. Would it be fairest to place the new market where the average distance between a neighborhood and the two supermarkets is the same? Or, given what students have explored about food insecurity disproportionately impacting Black and Latinx communities, would it be fairer for the average distance to the two supermarkets to be lower for Neighborhoods A and B?
- 5. Provide students with an opportunity to share their final results, along with their justification for where they decided to build the new supermarket, including their mathematical calculations.

#### Day 3: Maximizing the Area of a Community Garden

- 1. Let students know that some communities facing food insecurity and lacking access to healthy foods have taken matters into their own hands by starting grocery cooperatives, creating neighborhood gardens, and distributing food directly to people. In Oakland, California, there is a neighborhood called West Oakland, a historically Black neighborhood that is now home to many low-income communities of color; until recently, this neighborhood did not have any supermarkets. Inform students that they will watch a short video about a community organization in West Oakland that develop a way to get healthy food to local residents.
- 2. Show students the video <u>Uprooting Food Injustice in West Oakland</u> (3:07 minutes). While students watch the video, have them complete a 3-2-1 chart that includes three facts, two opinions they hear, and one big idea from the video.
- 3. Distribute the handout called "City Slicker Garden." Have students, in pairs or small groups, determine the area of the two rectangles based on the diagram provided in the handout. After a few minutes, provide students with the opportunity to explain how they calculated the area of the two rectangles so that everyone understands the problem they are being asked to solve and has a plan for how they will look for an answer.
- 4. Provide students with time to work toward a solution. Students may need to complete their work asynchronously as homework.
- 5. End class by engaging students in a discussion about their findings. Have different students or groups of students share their answers, and consider posing some of the following questions as you facilitate the conversation:
  - How would you determine which of these answers is best?
  - Why did different groups come up with different solutions?
  - What was a strategy you saw a different person or group using that you liked? Why do you think this was an effective strategy?
  - Did anyone make a table of their results? If so, what did it look like?
  - What do you think a graph of these results would look like?

### **Extension Opportunities**

Depending on time and interest, the activity based on the handout "Building in the (Food) Desert" could be extended in the following ways:

- Have students engage in a debate about their recommended locations for the Black Start Market with their peers as the audience. When not presenting, students should fill out a note-taking guide or rubric in which they might restate the key arguments other groups are making and evaluate the strengths of these arguments.
- Have students present their recommendations to a mock Planning Commission comprised of other adults from the school community.
- Help students research local food deserts using one of the following resources:

US Department of Agriculture's Food Access Research Atlas [online dataset], available at: (<u>https://www.ers.usda.gov/</u><u>data-products/food-access-research-atlas/go-to-the-atlas/</u>).

US Department of Agriculture's Interactive Charts and Highlights [online dataset], available at: (<u>https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/interactive-charts-and-highlights/</u>).

Depending on time and interest, the activity based on the handout "City Slicker Garden" could be extended through the following options:

- Require students to create a table with their results. For example, X = width of the rectangle, Y = length of each horizontal section of the rectangle, and A is the area of the full rectangle (the sum of the two smaller rectangles). Then have them choose two variables (ideally X and A, but they might do well experimenting with different options) and graph the data from their tables. Could this graph help them identify (or get closer to finding) the dimensions that maximize the area of the garden if they could not find it on their own?
- Using the variables from above, have students try to write an algebraic equation that describes the relationship between X, Y, and A.
- Provide students with the equation that represents the relationship between the dimensions of the garden and its area, and, using a graphing calculator or <u>Desmos</u>, have them graph the equation and use the graph to determine the dimensions that would maximize the area of the garden.
- Adjust the problem by separating the garden into three rectangles (meaning that there are four vertical fences) and have students apply strategies from the first problem to more quickly solve this second one.

### **Additional Resources**

Census Tract, in Glossary. (2022). United States Census Bureau. Accessed March 1, 2022 at: <u>https://www.census.gov/pro-grams-surveys/geography/about/glossary.html#par\_textimage\_13</u>.

This site provides a definition and more information about census tracts.

Mario's Math Tutoring. (2020). Maximize Area of Rectangle Given Perimeter (PreCalculus) [video]/. YouTube. Accessed March 1, 2022 at: <u>https://www.youtube.com/watch?v=A0WRfys\_5gs</u>.

This YouTube video demonstrates how to maximize the area of a rectangle for a given perimeter, which is relevant to the problem students will complete on Day 3 in the "City Slicker Garden" handout.

McBirney, J. (2017). Food deserts. Common Lit. Accessed March 1, 2022 at: https://www.commonlit.org/texts/food-deserts.

This student-friendly article by Jessica McBirney describes food deserts, their causes, their consequences, and some of their solutions using language accessible to students in Grade 8 and above.

Mr. James. (2015). Word Problem - Maximum/Minimum Value [video]. YouTube. Accessed March 1, 2022 at: <u>https://www.youtube.com/watch?v=hS1rJHVVvLE</u>.

This YouTube video demonstrates how to maximize the area of three adjacent plots using 600 feet of fencing. This math problem is similar to the one students will complete on Day 3 in the "City Slicker Garden" handout.

Silva, C. (2020). Food insecurity in the U.S. by the numbers. NPR. Accessed March 1, 2022 at: <u>https://www.npr.org/2020/09/27/912486921/food-insecurity-in-the-u-s-by-the-numbers</u>.

This article describes the state of food insecurity in the U.S. during the coronavirus pandemic. It includes data on race and food insecurity and a discussion of food deserts.

Take Care Staff. (2014). Poverty not sole indicator of food deserts. WVRO. Accessed March 1, 2022 at: <u>https://www.wrvo.org/post/poverty-not-sole-indicator-food-deserts#stream/0</u>.

This is a 10-minute radio interview with Professor Kelly Bower, who discusses her research at Johns Hopkins University on the double disadvantage that low-income Black communities face in accessing healthy food.

#### References

Bower, K. M., Thorpe R. J., Rohde C., & Gaskin D. J. (2013). The intersection of neighborhood racial segregation, poverty, and urbanicity and its impact on food store availability in the United States. *Preventive Medicine*, 58: 33-39.

Lakhani, N. (2021). One in four faced food insecurity in America's year of hunger. *The Guardian*. Accessed March 1, 2022 at: <u>https://www.theguardian.</u> com/environment/2021/apr/14/americas-year-of-hunger-how-children-and-people-of-color-suffered-most.



# Hunger in U.S. Families With Children, May 2020 - March 2021



Source: <u>https://www.theguardian.com/environment/2021/apr/14/americas-year-of-hunger-how-children-and-people-of-color-suffered-most</u>



# Supermarket Access by Race and Poverty Level in the United States

Researchers from John Hopkins University used data to estimate the number of supermarkets in 65,000 census tracts across the United States to learn more about access to healthy foods by race and poverty level. Some of their data is in the table below.

	Average (Mean) Number of Supermarkets per Census Tract		
Race	Low Poverty	Medium Poverty	High Poverty
Predominantly White	0.27	0.25	0.22
Predominantly Black	0.16	0.11	0.08
Predominantly Latinx	0.26	0.23	0.16
Integrated	0.27	0.25	0.17

#### **Observations**

What do you notice? What evidence supports your claim?

What do you wonder? What are you curious about that comes from this data table?

What's going on in this data table? Write a catchy headline that captures the data's main idea.

#### **Analyzing the Data**

How do the number of supermarkets in low-poverty Black census tracts compare to high-poverty White census tracts?

Approximately how many high-poverty White census tracts would be needed to have approximately one supermarket? How many high-poverty Black and Latinx census tracts would be needed?

#### Visualization

Make a graph of the data in the high-poverty census tract column.

#### Reflection

What story do these data tell about the relationship between race, poverty, and access to healthy foods in the U.S.? What are some of the ways that lack of access to healthy foods might have a disparately negative impact on Black and high-poverty Latinx communities? How does this information make you feel?

Data source: Bower, K. M., Thorpe R. J., Rohde C., & Gaskin D. J. (2013). The intersection of neighborhood racial segregation, poverty, and urbanicity



# Building in the (Food) Desert: Determining an Equitable Location for a New Supermarket

The Red Star Supermarket is the only supermarket in Center City, and it is the closest location for residents of three neighborhoods (called A, B, and C) to buy healthy foods. Neighborhood A is predominantly Black; Neighborhood B is predominantly Latinx; Neighborhood C is predominantly White.

In the grid below, one block equals one mile.



Recall the distance formula that can be used to determine the distance between two points on a cartesian plane (an x-y axis).

 $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ 

1. Use the distance formula to determine how far the Red Star Supermarket is from the center of Neighborhoods A, B, and C.

2. Is the Red Star Supermarket equitably serving people in Center City? Why or why not?

3. Center City decides to build a second supermarket called the Black Star Supermarket. Given your knowledge about the demographics of the three neighborhoods, the location of the Red Star Supermarket, and your understanding about food deserts, your task is to determine the best location for the new supermarket. There is not one correct solution to this problem. Rather, your goal is to determine a location that is most equitable.

You must consider *at least* three locations for the Black Star Supermarket before determining where it should be built.

4. You have been asked to submit a report to Center City's Planning Commission with your recommendation. Write a brief report, including your calculations, explaining where you recommend building the Black Star Supermarket and why you have chosen this location.

Thank you to Dr. Nathan Alexander, Morehouse College, for inspiring this activity.



# **City Slicker Garden**

<u>City Slicker Farm</u> has just purchased land in West Oakland, a historically Black, predominantly low-income community, and is developing plans for a community garden so that local residents can grow healthy foods for themselves and their neighbors. They have asked for your help in designing the new garden.

They have 100 feet of bamboo fencing, and they want to grow two different crops in two adjacent rectangular gardens that maximize the area of the two enclosed gardens. Your task is to determine what the dimensions of the garden should be.

To help you get started, they drew a sketch with one idea for the garden, as follows:



Based on this sketch, determine:

1. The dimensions of the rectangles

2. The combined area of the rectangles

Now your task is to experiment with other dimensions for the garden until you find the design that produces the largest possible area. Draw a sketch for each design, and label all of the dimensions.

## MATH LESSON 3 LOCKED OUT TWICE: THE RACIAL GEOGRAPHY OF VOTER DISENFRANCHISEMENT AND PRISON GERRYMANDERING

Suggested time: Three to five 50-60 minute class periods Suggested units: Ratios and proportions, graphing coordinates on a cartesian plane

## **Overview**

This lesson explores just some of the contemporary manifestations of a racist legacy of denying voting rights to many people of color in the United States, and to Black people especially—a legacy that includes the three-fifths clause in the U.S. Constitution and Jim Crow disenfranchisement laws. Today, many policies and practices related to the prison system serve to inequitably inflate the representational power of rural, predominantly White communities. The first part of the lesson explores racial disproportionality in voter disenfranchisement. The second part focuses more specifically on prison gerrymandering, and why this practice benefits White rural communities at the expense of urban communities of color.

## **Objectives**

- Students will select appropriate data from a table and calculate percentages in order to make accurate inferences.
- Students will graph lines given two sets of data points and draw conclusions about additional data points relative to these lines.
- Students will write ratios from two sets of data and draw meaningful conclusions by comparing them.
- Students will recognize unfairness on the individual level (e.g., biased speech) and injustice at the institutional or systemic level (e.g., discrimination).

## **Key Understandings**

- Black and Latinx people are incarcerated at disproportionately higher rates than White people due to structural racism within the criminal justice system.
- In the United States, most people with felonies are denied the right to vote. Because Black and Latinx people are incarcerated at disproportionately high rates, disenfranchisement disproportionately impacts Black and Latinx communities.
- The incarceration of Black and Latinx people from urban counties in rural, predominantly White counties inflates the representational power of those White counties and reduces the representational power of the urban communities from which the incarcerated individuals have been removed.

## **Materials**

- Uggen, C., Larson, R., Shannon, S., & Pulido-Nava, A. (2020). Locked out 2020: Estimates of people denied voting rights due to a felony conviction. The Sentencing Project. Accessed March 1, 2022 at: <u>https://www.sentencingproject.org/wp-content/uploads/2020/10/Locked-Out-2020.pdf</u>.
- Handouts (included at the end of this lesson):
  - Locked Out From Voting

- Incarcerated Far From Home
- Racial Geography of Incarceration (projected or printed)
- A projector (helpful but not required)
- Appendix: Why Is the Census Important?

### Vocabulary

census disenfranchisement disproportionality gerrymandering ratio

### **National Standards**

This lesson aligns with the following Common Core Mathematics Standards:

 CCSS.MATH.CONTENT.HSS.ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

This lesson also aligns with the following Social Justice Standards learning outcomes:

• JU.9-12.12 | can recognize, describe and distinguish unfairness and injustice at different levels of society.

### **Background Information**

This lesson explores voter disenfranchisement. While voting laws vary from state to state, the majority of disenfranchised voters have been convicted of a felony and are currently in prison, on parole/probation, or have completed their full sentence and are still denied the right to vote. Other people convicted of felonies are in jail (not prison) and also cannot vote. There are additional people who are unable to vote because they have unpaid fines and fees, for example.

The activities presented in Day 2 expose students to what is often called **prison gerrymandering**, the practice of (1) redrawing district lines to give more power (through the census) to counties with prisons, and/or (2) incarcerating high percentages of BIPOC people in counties that have a much smaller percentage of non-incarcerated BIPOC people. Prison gerrymandering artificially inflates the power of these often-rural communities, giving them disproportionate power through representation and access to resources that are allocated based on population size. Only Maryland, New York, and Delaware do not count prisoners as residents of the counties in which they are incarcerated. Furthermore, as wards of the state, most prisoners are counted towards the local resident population but remain disenfranchised from voting. For more information on prison gerrymandering, see the Additional Resources section.

### **Note to Teachers**

Prior to leading Day 2 of this lesson, print and cut out the four sections of the Appendix: Why Is the Census Important? You will need enough copies such that each pair or group of students receives just one section; it is fine if multiple groups of students have the same information.

During this lesson, you may hear students suggest that people of color are incarcerated at higher rates – and thus are disenfranchised at higher rates – because they commit felonies at higher rates. Remind students that due to <u>over-policing</u> in <u>BIPOC</u> communities, higher rates of being stopped by police, unfair drug laws, and other forms of structural racism within the criminal justice system, BIPOC are more likely to be surveilled, criminalized, arrested, and impacted by that system (Nellis, 2021). The major causes behind the disproportionately high incarceration rates of Black and Latinx individuals in the U.S. are

described in the report <u>The Color of Justice</u>, which we highly recommend teachers review before teaching this lesson. In addition, you might consider assigning students to read the section of this report entitled "The Causes of Disparity."

This lesson looks at data for Black, Latinx, and White people in the U.S., but this may lead students to wonder: what about the many other races represented in the U.S. population? As the Prison Policy Initiative explains, many other races are often left out of these types of analyses due to limited data:

Not all racial or ethnic groups are consistently represented in the data; less populous Census-identified groups, such as Native Hawaiian or other Pacific Islander, Asian, and American Indian or Alaska Native – as well as the sizable but less specific "Two or more races" and "Some other race" – are very often excluded in publications, even when they are collected. Moreover, all of these categories are so broad that they lump together groups with very different experiences with the U.S. justice system. They disregard tribal differences, sweep people of East Asian and South Asian origins into one category, and somehow ignore Arab Americans entirely. As a result, our observations of racial and ethnic discrimination are limited to these broad categories and lack any real nuance. (Sawyer, 2020)

Despite these limitations, there are data that demonstrate that Indigenous communities, and especially Indigenous youth, also experience <u>disproportionately high rates of incarceration and confinement</u> within the U.S. criminal justice system (Sawyer, 2020). These data can provide additional context for students' conversations about racial disproportionality in voter disenfranchisement.

Finally, you might consider partnering with a biology teacher to teach this lesson alongside Biology Lesson 7, which explores some of the reasons why BIPOC individuals are wrongfully convicted of crimes in the U.S. at disproportionately high rates, and how the use of DNA fingerprinting can help to prevent wrongful convictions.

## **LESSON PROCEDURE**

#### **Day 1: Voter Disenfranchisement**

- 1. Let students know they are going to learn about people in the United States who have lost the right to vote and to explore how different racial groups are impacted by this issue. At the end of the lesson, they will be asked to share what they have learned and how it makes them feel, and they will have the opportunity to identify solutions to the problems and injustices they have learned about. Then activate students' prior knowledge about voting by posing the questions below. Students could discuss these questions via think-pair-share or in small groups before any answers are shared with the whole class.
  - How old do you have to be to vote in the United States?
  - What would disqualify a voting-age person from being able to vote?
  - Have you ever heard the word "disenfranchisement?" What might this word mean as it relates to the right to vote?
- 2. Distribute the handout called "Locked Out from Voting" and provide Tables 3, 4, and 5 from the Sentencing Project's report, Locked Out 2020: Estimates of People Denied Voting Rights Due to a Felony Conviction. Have students identify their state data in the three tables and use the data to fill in the tables in their handouts. Then have students complete the Observation questions individually, in pairs, or in small groups.
- 3. Review students' data tables and their responses to the Observation questions as a class. Facilitate a wholeclass discussion to solicit different perspectives, celebrate student ideas, and address any misunderstandings.
- 4. Have students complete the Deeper Exploration section in the handout to determine the ratios of disenfranchised voting-age people in their state and nationwide. You might help them understand how the number 44 was calculated (one in every 44 voting-aged people nationwide is disenfranchised). Before telling them how to calculate these figures, provide students time to work in pairs or small groups, or have students suggest processes to calculate these figures rather than telling your students what method to use.

- 5. Have students complete the Reflection section at the end of the "Locked Out" handout. You could give them options for how to respond to this prompt, including:
  - Write a mock newspaper article, editorial, or letter to someone
  - Answer the questions directly
  - Prepare a slideshow presentation
  - Create a poster with infographics and text

#### Day 2: The Racial Geography of Incarceration

- 1. Remind students that, in the previous class, they learned that people with felonies are often denied the right to vote (disenfranchised), an issue that disproportionately affects Black and Latinx communities. Today they will look at where these people are incarcerated, how they are counted by the U.S. Census, and why these practices give additional power to some communities at the expense of others. Then have students discuss the following questions in pairs or small groups, and afterward discuss their thoughts as a whole class to clarify the correct information and address any misconceptions.
  - What is the census?
  - How often does the U.S. conduct a nationwide census?
  - Who is supposed to be counted in the census?
  - Why is the census important? What impact does it have on people's lives?
- 2. Distribute the four sections of the Appendix such that each pair or group of students receives just one section; it is fine if multiple groups of students have the same information. Students should read the sections they received and then paraphrase what they read to the rest of the class. After this activity, students should have a general understanding that representative power and resource allocation are impacted by census counts, which in turn have significant impacts on people's lives.
- 3. Read the following statement to students, and then take a quick tally of how many students think the statement is true or false. Do not provide an answer yet; you will show them the answer later and can compare the true answer with the tally of their guesses at that time. (Note: The statement is true.)

We have discussed several reasons why it is so important for the census to accurately determine how many people live in a given area. In most states, the census counts people who are incarcerated as residents of the counties where they are in prison, rather than the counties that they came from and likely consider home.

- 4. Distribute the handout called "Incarcerated Far From Home." The first three parts of this activity are intended to help students think about what would be fair or proportionate, and what would be unfair or disproportionate, when comparing the percentage of Black and Latinx people in a given county who are incarcerated to those who are not incarcerated. Provide students with time to work on the first three parts of this activity in pairs or small groups. After a designated amount of time, or when they are done, have students present their work and solutions to the class, eventually projecting one graph with two correctly drawn lines.
- 5. Ask students to work on the fourth part of the handout, entitled "A Look at Three Counties." This activity will provide them with an opportunity to look at three different counties that show proportionate, disproportionate, and highly disproportionate ratios between incarcerated and non-incarcerated Black populations. Invite different students to share with the class where they marked these three points on the graph, and have them share their reflections about what it means for the second two counties to be disproportionate.

Consider asking the following questions:

• If a county has a much higher percentage of Black people within their incarcerated population than within their non-incarcerated population, what does that suggest about the difference between who is in prison and who lives in the surrounding community?

- Returning to what we learned about the census and why it is so important, how is representational power impacted in places like Washington Parish or Martin County that have an imbalance between who is in prison and who lives in the county?
- 6. Project or distribute the two graphs in the handout entitled "Racial Geography of Incarceration." Provide students with time to reflect on the two graphs and consider asking students the following questions:
  - What do you notice?
  - What do you wonder?
  - What do you think is going on in these graphs? Write a headline that captures the graph's main idea.

Close by facilitating a conversation with the class to interpret the graphs and discuss their broader implications for racial justice.

### **Demonstration of Learning**

For homework or a class assignment, provide students with an opportunity to share and reflect on what they have learned about the racial geography of incarceration. Students should:

- Share the graphs and data they explored on Day 2 of this lesson.
- Use math to explain what is disproportionate about the data.
- Reflect on why these disproportionalities are harmful to Black and Latinx people and their communities.
- Provide recommendations for what could be done to address these disproportionalities and achieve racial equity.

Some activities that students could choose from could include:

- Writing an editorial
- Writing a newspaper article
- Writing a letter to a local official
- Creating a slide deck
- Planning and giving a presentation to school staff, parents, the school board or city council, and/or other community members

### **Extension Opportunities**

- Provide students with state-by-state disenfranchisement data for Black Americans and/or Latinx Americans with felony convictions from Tables 4 and 5 of <u>Locked out 2020</u>. Then have them create a map like the ones in Figures 5 and 6 to visually communicate Black and/or Latinx disenfranchisement rates across the country.
- Support students in identifying and exploring solutions to the issues raised in this lesson. For example, many states have begun restoring the right to vote for people who were incarcerated, and students could interview organizers, lawyers, or legislators working in these areas. The <u>Sentencing Project</u> website contains useful links and ideas.
- Explore gerrymandering by providing students with a hypothetical city, represented on a grid with differently colored squares, and having them draw districts that create proportionate representation and gerrymandered districts that create disproportionate ones. Here is <u>a visual example</u> of what this might look like.

### **Additional Resources**

D'vera Cohn, D. & Caumont, A. (2016). 10 demographic trends shaping the U.S. and the world in 2016. Pew Research Center. Accessed March 1, 2022 at: <u>https://www.pewresearch.org/fact-tank/2016/03/31/10-demographic-trends-that-are-shaping-the-u-s-and-the-world/</u>.

The Editorial Board. (2021). Opinion: You've heard about gerrymandering. What happens when it involves prisons? *The New York Times*. Accessed March 1, 2022 at: <u>https://www.nytimes.com/2021/04/11/opinion/prison-gerrymandering-census.html</u>.

Henderson, T. (2019). Counting prison inmates differently could shift political power to cities. The Pew Charitable Trusts. Accessed March 1, 2022 at: <u>https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2019/01/02/counting-pris-on-inmates-differently-could-shift-political-power-to-cities</u>.

Nellis, A. (2021). The color of justice: Racial and ethnic disparity in state prisons. The Sentencing Project. Accessed April 1, 2022 at: <u>https://www.sentencingproject.org/wp-content/uploads/2016/06/The-Color-of-Justice-Racial-and-Ethnic-Disparity-in-State-Prisons.pdf</u>.

Paschal, O. (2019). Fixing the Unfairness of Prison Gerrymandering. The Institute for Southern Studies. Accessed March 1, 2022 at: <u>https://www.facingsouth.org/2019/11/fixing-unfairness-prison-gerrymandering</u>.

Prison Gerrymandering Project [website], available at: www.prisonersofthecensus.org.

Remster, B., & Kramer, R. (2019). Shifting power: The impact of incarceration on political representation. *Du Bois Review*. Accessed March 1, 2022 at: <u>https://osf.io/preprints/socarxiv/egd72/</u>.

Wang, H. L. (2019). "Your body being used": Where prisoners who can't vote fill voting districts. NPR. Accessed March 1, 2022 at: <u>https://www.npr.org/sections/codeswitch/2019/12/31/761932806/your-body-being-used-where-prisoners-who-can-t-vote-fill-voting-districts</u>.

#### References

Mather, M. & Scommegna, P. (2019). Why is the U.S. census so important? PRB. Accessed March 1, 2022 at: <u>https://www.prb.org/resources/impor-tance-of-u-s-census/</u>.

Nellis, A. (2021). The color of justice: Racial and ethnic disparity in state prisons. The Sentencing Project. Accessed April 1, 2022 at: <u>https://www.sentencingproject.org/wp-content/uploads/2016/06/The-Color-of-Justice-Racial-and-Ethnic-Disparity-in-State-Prisons.pdf</u>.

Sawyer, W. (2020). Visualizing the racial disparities in mass incarceration. Prison Policy Initiative. Accessed April 1, 2022 at: <u>https://www.prisonpolicy.org/blog/2020/07/27/disparities/</u>. Uggen, C., Larson, R., Shannon, S., & Pulido-Nava, A. (2020). Locked out 2020: Estimates of people denied voting rights due to a felony conviction. The Sentencing Project. Accessed March 1, 2022 at: <u>https://www.sentencingproject.org/wp-content/uploads/2020/10/Locked-Out-2020.pdf</u>.

Wagner, P., & Kopf, D. (2015). The racial geography of mass incarceration. Prison Policy Initiative. Accessed April 1, 2022 at: <u>https://www.prisonpolicy.org/racialgeography/report.html</u>.



# **Locked Out From Voting**

Use Tables 3, 4, and 5 from the Sentencing Project's report <u>Locked Out 2020</u> (pp. 16-19) to complete the table below based on data from your state and from the country as a whole.

	Total Disenfranchised	VAP (Voting Age Population)	% Disenfranchised
Black (my state)			
Black (nationwide)			
Latinx (my state)			
Latinx (nationwide)			
Total (my state)			
Total (nationwide)			

#### **Observations**

- 1. What do you notice when looking at the data in this table?
- 2. What questions do you have about these data?
- 3. What claims can you make from this table using data to justify your perspective?
- 4. Write a newspaper headline from the data about voter disenfranchisement in your state.

#### **Deeper Exploration**

Using data from the table above, calculate the numbers that go into the empty cells in the table below:

1 in every	VAP in my state, and 1 in every	44	VAP nationwide is denied the right to vote
1 in every	Black VAP in my state, and 1 in every		Black VAP nationwide is denied the right to vote
1 in every	Latinx VAP in my state, and 1 in every		Latinx VAP nationwide is denied the right to vote

#### Reflection

Write a reflection about the data for different racial groups in your state and nationwide. How do these data make you feel? What unanswered questions do you still have? Please use mathematical evidence to justify any claims. Your reflection must include the word disenfranchise.



# **Incarcerated Far From Home**

An organization called the Prison Policy Initiative analyzed census data from every county in the United States and compared the percent of Black and Latinx people who lived in each county with the percent of Black and Latinx people who were incarcerated (in prison) in each county. They started with an empty graph like the one below:



#### **1. Equal Representation**

Imagine if every county had the same percentage of incarcerated and non-incarcerated people who were Black. Fill in the empty cells in the table below for such a scenario, then graph these data on the empty graph. Finally, draw and label a line on the graph that represents this 1:1 ratio between the two columns of data.

Percent of non-incarcerated people who are Black	Percent of incarcerated people who are Black
10%	10%
25%	25%
50%	
	5%
30%	
	65%

#### 2. Unequal Representation

Now imagine that the percentage of incarcerated Black people were five times greater than the percentage of non-incarcerated Black people. Fill in the empty cells in the table below for this new scenario, and then graph these data. On the graph, draw and label a line that represents the 5:1 ratio between the two groups of data.

Percent of non-incarcerated people who are Black	Percent of incarcerated people who are Black
10%	50%
5%	
	10%
	100%
1%	
	75%

#### 3. Very Unequal Representation

Draw and label a line on the graph that would represent a 10:1 ratio of incarcerated to non-incarcerated Black people by county.

#### 4. A Look at Three Different Counties

In Hertford County (North Carolina), 60% of the non-incarcerated population is Black, and 60% of the incarcerated population is Black.

- Mark and label the (x,y) point on the graph for Hertford County.
- Are these two populations proportionate? Why or why not?

In Washington Parish (Louisiana), 30% of the non-incarcerated population is Black, and 70% of the incarcerated population is Black.

- Mark and label this point on the graph.
- Are these two populations proportionate? Why or why not?

In Martin County (Florida), 5% of the non-incarcerated population is Black, and 48% of the incarcerated population is Black.

- Mark and label this point on the graph.
- Are these two populations proportionate? Why or why not?

#### **Racial Geography of Incarceration**



Source: Wagner & Kopf (2015), https://www.prisonpolicy.org/racialgeography/report.html

### **Appendix: Why Is the U.S. Census Important?**

Why Is the U.S. Census Important?

#### **Apportionment**

State population counts from the census are used to reapportion seats in the U.S. House of Representatives based on each state's share of the national total, which gives different states and different political parties more or less power in making federal laws depending on census results. The data from the 2020 Census will affect the size of state delegations for the 2022 U.S. House of Representatives and the power of state votes in the U.S. Electoral College for the 2024 presidential election.

Why Is the U.S. Census Important?

#### Redistricting

State and local officials use census results to redraw congressional, state, and local district boundaries to contain roughly equal numbers of people to ensure each person's voting power is closely equivalent regardless of where they live. In other words, two different districts with an equal size population should have the same power in determining the laws that affect both districts. (This is sometimes called the "one-person, one-vote rule.")

Why Is the U.S. Census Important?

#### **Money to States and Cities**

Census totals help determine the amount of funding that state governments and local communities receive from the federal government for the next decade. Census Bureau data were used to distribute more than \$675 billion in federal funds to states and local communities for health, education, housing, and infrastructure programs in 2015 (roughly \$2,000 per person). Accurate census counts ensure that funding is equitably distributed for numerous programs such as Medicaid, highway planning and construction, special education grants to states, the National School Lunch Program, and Head Start. In other words, the larger the population and the greater the need, the more money a community should be getting.

Why Is the U.S. Census Important?

#### Planning

Data from the census inform a wide range of government, business, and nonprofit decision-making. Governments and nonprofit organizations rely on decennial census data to determine the need for new roads, hospitals, schools, and other public sector investments based on how many people live in different areas.

Source: Mather, M. & Scommegna, P. (2019). Why is the U.S. census so important? PRB. Accessed March 1, 2022 at: <u>https://www.prb.org/resources/importance-of-u-s-census/.</u>
## MATH LESSON 4 THE RACIAL WEALTH GAP: WHY DOES IT EXIST AND HOW CAN WE ELIMINATE IT?

Suggested time: Three to five 50-60 minute class periods Suggested units: Algebra I (substitution, evaluating equations, order of operations) or Introductory Statistics (analyzing graphs, confidence intervals)

### **Overview**

This lesson explores the racial wealth gap in the United States. Day 1 introduces the topic of wealth and focuses on historical data comparing the median net worth of White and Black families. Day 2 debunks some of the myths surrounding the causes of the racial wealth gap and investigates wealth disparities between married households of different racial backgrounds. Day 3 explores the use of Baby Bonds to help close the racial wealth gap. Throughout this lesson, students will develop an understanding of how structural racism has created the racial wealth gap and thus requires structural solutions if it is to be eliminated.

## **Objectives**

- Students will interpret line graphs of real-world data to draw accurate conclusions.
- Students will explain the accuracy of representational data given confidence intervals.
- Students will select, justify, and apply a method to calculate averages given real-world data.
- Students will substitute numbers into an algebraic equation and accurately determine a solution to the equation by performing calculations based on the correct order of operations.
- Students will analyze the harmful impact of bias and injustice on the world, historically and today.
- Students will plan and carry out collective action against bias and injustice in the world and will evaluate what strategies are most effective.

### **Key Understanding**

Extensive research demonstrates that the racial wealth gap is caused by ongoing structural racism. Narratives that hold people of color responsible for the racial wealth gap are not only untrue but also rely on logic that is inherently racist.

**Possible misunderstanding:** The racial wealth gap is the result of cultural or character-based flaws, e.g., people of color being lazy, not caring enough about education, or spending too much and not saving enough.

### **Materials**

- An internet-connected, java-script enabled computer
- A projector (helpful but not required)
- Graphing paper or larger chart paper
- Pfeffer, F. T., & Killewald, A. (2019). Animation 2: Wealth structure, Intergenerational wealth mobility and racial inequality. *Socius*. Accessed March 1, 2022 at: <u>https://viz.theinequalitylab.com/Animations/2-wealth-structure.html</u>.

- Handouts (included at the end of this lesson):
  - The Relationship Between Race and Net Worth
  - Median Wealth of U.S. Parent Households by Partnership Status and Race
  - Closing the Racial Wealth Gap with Baby Bonds
- Appendix: Myths vs. Actual Causes of the Racial Wealth Gap (cut into cards)

### Vocabulary

asset compound Interest confidence intervals liability median net worth racial wealth gap wealth

### **National Standards**

This lesson aligns with the following Common Core Mathematics Standards:

- CCSS.MATH.CONTENT.HSS.IC.A.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
- CCSS.MATH.CONTENT.HSS.IC.B.6 Evaluate reports based on data.

This lesson also aligns with the following <u>Social Justice Standards</u> learning outcomes:

- **JU.9-12.13** I can explain the short and long-term impact of biased words and behaviors and unjust practices, laws and institutions that limit the rights and freedoms of people based on their identity groups.
- **AC.9-12.20** I will join with diverse people to plan and carry out collective action against exclusion, prejudice and discrimination, and we will be thoughtful and creative in our actions in order to achieve our goals.

### **Background Information**

Before teaching this lesson, we recommend teachers familiarize themselves with some of the concepts and history around the racial wealth gap. These two excerpts from *The Asset Value of Whiteness: Understanding the Racial Wealth Gap* describe some of the basic causes of these inequities and indicate the impact the racial wealth gap can have on communities of color:

Research probing the causes of the racial wealth gap has traced its origins to historic injustices, from slavery to segregation to redlining. The great expansion of wealth in the years after World War II was fueled by public policies such as the GI Bill, which mostly helped white veterans attend college and purchase homes with guaranteed mortgages, building the foundations of an American middle class that largely excluded people of color. The outcomes of past injustice are carried forward as wealth is handed down across generations and are reinforced by ostensibly "color-blind" practices and policies in effect today. Yet many popular explanations for racial economic inequality overlook these deep roots, asserting that wealth disparities must be solely the result of individual life choices and personal achievements. (Traub et al., 2017, p. 1)

The racial wealth gap matters because of the central role wealth plays in enabling families to both handle current financial challenges and make investments in their future. Families that have accumulated some wealth are better equipped to manage unanticipated expenses like an emergency medical bill, or disruptions in household income such as a layoff, without falling into debt or poverty. Over the longer term, wealth can expand the prospects of the next generation, helping to pay for college, provide a down payment for a first home, or capitalize a new business. As long as a substantial racial wealth gap persists, white households will continue to enjoy greater advantages than their black and Latino neighbors in meeting the financial challenges of everyday life and will be able to make greater investments in their children, passing economic advantages on. (Traub et al., 2017, p. 2)

Day 2 of this lesson is intended to help dispel myths about the causes of the racial wealth gap that blame BIPOC and, in particular, Black people, for this disparity. The important takeaway is that the racial wealth gap is caused by structural racism, and not by individuals making bad choices. The following excerpt from *What We Get Wrong About Closing Racial Wealth Gaps* addresses many commonly held myths about the racial wealth gap in the U.S.:

A number of ideas frequently touted as "solutions" will not make headway in reducing black-white wealth disparities. These conventional ideas include greater educational attainment, harder work, better financial decisions, and other changes in habits and practices on the part of blacks. While these steps are not necessarily undesirable, they are wholly inadequate to bridge the racial chasm in wealth.

These myths support a point of view that identifies dysfunctional black behaviors as the basic cause of persistent racial inequality, including the black-white wealth disparity, in the United States. We systematically demonstrate here that a narrative that places the onus of the racial wealth gap on black defectiveness is false in all of its permutations.

We challenge the conventional set of claims that are made about the racial wealth gap in the United States. We contend that the cause of the gap must be found in the structural characteristics of the American economy, heavily infused at every point with both an inheritance of racism and the ongoing authority of white supremacy.

Blacks cannot close the racial wealth gap by changing their individual behavior – i.e., by assuming more "personal responsibility" or acquiring the portfolio management insights associated with "financial literacy" – if the structural sources of racial inequality remain unchanged. There are no actions that black Americans can take unilaterally that will have much of an effect on reducing the racial wealth gap. For the gap to be closed, America must undergo a vast social transformation produced by the adoption of bold national policies, policies that will forge a way forward by addressing, finally, the long-standing consequences of slavery, the Jim Crow years that followed, and ongoing racism and discrimination that exist in our society today. (Darity et al., 2020, pp. 3-4)

It is worth noting the significant role that intergenerational wealth plays in maintaining the racial wealth gap. Families with significant wealth, who are more likely to be White, can use their money to support their children by paying for college, helping to purchase homes, providing seed capital for starting a business, and covering personal costs during unpaid internships, among other things. Their children can therefore avoid going into (significant) debt while starting to build their own wealth. In other words, wealth begets wealth. As Hamilton and Darity (2010) explain, "careful economic studies actually demonstrate that inheritances, bequests and intra-family transfers account for more of the racial wealth gap than any other demographic and socioeconomic indicators including education, income and household structure" (p. 212). Although this lesson does not directly explore the role of intergenerational wealth in maintaining the racial wealth gap, it is an important factor to reflect on and possibly discuss with students if the opportunity arises.

Restructuring inheritance taxes would be one method to reduce racial wealth gaps, but building wealth also requires capital. Therefore, this lesson mostly focuses on building wealth among people with lower incomes (the majority of whom are BIPOC) through a simulation of Baby Bonds. From Alexander Hamilton to Senator Cory Booker, and from government officials to economists, a wide range of experts have landed on this approach as a key step towards reducing the racial wealth gap in the U.S.

### **Note to Teachers**

Grappling with both the real and mythological causes of the racial wealth gap could feel disempowering for BIPOC students. While it is important to acknowledge the barriers students may face because of their racial identities, we recommend teachers also focus on (1) the fact that, as individuals, students still have a great deal of agency regarding their life trajectories, and (2) there are structural changes that can be made which would help us achieve greater racial wealth equality as a society.

Some students with privilege might also struggle with learning about the causes of the racial wealth gap because they have

benefitted from past injustices. While these students are not responsible for the actions of their ancestors, there are ways they can help close the racial wealth gap in the future. One such strategy will be explored on Day 2 of this lesson.

Before teaching Day 2 of this lesson, print and cut out the cards from the Appendix: Myths vs. Actual Causes of the Racial Wealth Gap. You will need enough sets so that each pair or small group of students in your class can have one.

The main activity on Day 2, based on the handout "Median Wealth of U.S. Parent Households by Partnership Status and Race," requires students to learn or understand some basic statistical principles (e.g., confidence intervals) in the process of constructing and interpreting a graph. If preferable, you can skip Day 2, Step 3, and instead provide students with a completed graph to analyze.

On Day 3, the opening activity requires that students have access to a java-script enabled computer or that the teacher has both a java-script enabled computer and a projector. The website visualizes wealth across generations and comes from statistical estimates based on the Panel Study of Income Dynamics. A lengthy paper on the methodology behind this visualization is included in the source list below.

Finally, note that the formula used to calculate the end value of the Baby Bonds has been slightly simplified for this activity. Interest is typically compounded monthly, but to make this activity easier, we are assuming it is compounded once per year.

To learn more about Baby Bonds, we recommend taking a look through the Additional Resources section. The article entitled <u>Baby Bonds Could Shrink the Black-White Wealth Gap</u> uses similar calculations to those in the central activity for Day 3, and it also includes some graphs that might be helpful for students to explore after they complete the activity.

## **LESSON PROCEDURE**

#### Day 1: What Is the Racial Wealth Gap and How Big of a Gap Is It?

- 1. Have students follow the prompts below first on their own in writing and then with a partner or small group. If time permits, ask a few students to share with the class. During this discussion you can begin to surface that wealth is acquired not only from one's salary but also from other factors (e.g., investments, inheritance).
  - Write down the name of someone you know (or know of) who you believe is wealthy. This can be a person you actually know or someone you know about, such as a famous athlete, celebrity, or business person.
  - What makes you think this person is wealthy?
  - What is the source (or sources) of their wealth?
  - How do you define the idea of wealth?
  - What do you know (or think you know) about specific groups of people in the U.S. who have the most wealth? The least wealth?
- 2. Write the term "Median Net Worth" on the board for students to see, and ask them to discuss in pairs or small groups what this term might mean. You might suggest they explore each word separately before trying to make sense of this term. After providing a few students with the opportunity to share their ideas with the class, provide some basic definitions:
  - **Median** is a type of average. If you wrote down the height of five people from smallest to largest, the median height for the group is the height of the person in the middle.
  - **Net Worth** refers to the value of the assets a person or family has (such as any money they have in bank accounts, the value of their possessions and property, and the stocks they own) minus their liabilities (such as how much money they owe on their credit cards, on their mortgage, and on their car payments).
- 3. If the concept of median net worth is challenging for students, give them the following scenarios, and ask them to calculate each family's net worth. In this scenario, Family A has more money in the bank but a smaller net worth.

	Family A	Family B
Money (in bank)	\$60,000	\$50,000
Value of home	\$150,000	Don't own a home
Value of stocks	\$10,000	Don't own stocks
Money owed on mortgage	\$200,000	\$0
Credit card debt	\$5,000	\$5,000
Net Worth:		

- 4. Tell students that you are going to provide them with a graph comparing the median net worth of White and Black families between 1989 and 2016. Before sharing the data with them, consider asking students to predict the following:
  - How do you think the median net worth of each group will change, if at all, over the period from 1989 to 2016?
  - Which group, White or Black, do you think will have a greater median net worth than the other? If there is a gap between these two groups, how significant do you expect it to be?
- 5. Distribute the handout called "The Relationship Between Race and Net Worth." Provide students with time to answer the questions, ideally in pairs or small groups, and then explore some of their responses as a whole class.
- 6. Close by asking students to consider the following questions, either as a whole class or in small groups:
  - In which year(s) was the gap the largest?
    - Possible student response: The gap in median net worth between White families and Black families was largest in 2007 when the gap was about \$185,000.
  - What was the approximate median net worth of Black families in 2016? What about White families in 2016? In that year, how many times greater was the median net worth of White families than the median net worth of Black families?
    - Possible student response: In 2016, the median net worth of Black families was about \$20,000, and the median net worth of White families was about \$180,000. In that year, the median net worth of White families was about nine times greater than the median net worth of Black families.
  - If Black families had a median net worth of approximately \$20,000 in 2016, what does or doesn't this number tell us about the net worth of individual Black families?

Possible student response: Although some Black families had a net worth lower or higher than the median, we don't know how close to the median wealth these other families were. For example, the net worth of individual families below the median could extend far lower, while the net worth of individual families above the median might only be slightly higher—or the other way around.

7. Either in class or for homework, have students write a summary of what they have learned so far about the racial wealth gap. Their task could include a requirement to use key vocabulary words. Students should also include data in their responses.

#### Day 2: What Are the Real Causes of Our Racial Wealth Gap?

1. Distribute the cards from the Appendix to students. You will need to prepare one packet of cards for each pair or small group of students in advance. The task is for students to sort the cards into two piles: one pile for myths about the causes of the racial wealth gap, and one for actual causes of the racial wealth gap. After the students have sorted the cards, have them discuss why they made the choices they did. Then reveal the following answers for all but the "People raising children outside of a two-parent household" card:

	Actual Causes of the Racial Wealth Gap	Myths About Causes of the Racial Wealth Gap
•	Low tax rates on inheritance (money passed between generations)	People choosing not to attend college (this affects individual outcomes but not the broader
	Lack of homeownership among people of color (although addressing this problem is not suffi- cient for eliminating the racial wealth gap)	<ul> <li>wealth gap)</li> <li>People not working full-time (this affects individ- ual outcomes but not the broader wealth gap)</li> </ul>
	Racial covenants that prevented Black people from buying homes in certain communities	• Spending too much and not saving enough (this affects individual outcomes but not the broader
	Black veterans getting denied access to benefits from the GI Bill after WWII	<ul><li>wealth gap)</li><li>Lack of personal responsibility</li></ul>
	The legacy of slavery	
	Redlining (charging higher rates to BIPOC for loans to purchase homes)	
•	Homestead Acts (the U.S. government giving free land to White people that actually belonged to Native Americans)	

- 2. Explain to students that you did not include the card about family structure because this is the factor they will be investigating in today's class. Some people believe that BIPOC families would have greater wealth if they were more likely to have two-parent households. In the following activity, students will use real-world data to determine whether this is, in fact, true.
- 3. Distribute the handout called "Median Wealth of U.S. Parent Households by Partnership Status and Race." Explain that the researchers are 95% confident that the two-parent households, for example, have a median net worth (wealth) between \$79,590 and \$107,102.

If students need support understanding confidence intervals, consider posing this simplified example:

"If asked the average height of someone in this class, I could say I'm 50% confident the average height is five feet six inches, but I'm 95% confident the average height is somewhere between five feet and six feet. In other words, the broader the range (or the interval), the more confident I am that the average is somewhere within that range."

Before students can graph the data, they will need to determine just one number to represent the median wealth for each type of household by race. Some students might choose to use just the low estimate, while others might choose just the high estimate; both options would reveal different graphs that would be interesting to compare side by side. The researchers calculated the mean between the low and high estimates, which is the most accurate way to compare the different categories, but consider not telling students which approach to take unless they are stuck. Alternatively, you could assign some groups to graph the low estimates, some the high estimates, and some the mean estimates, in order to compare three different graphs of the same data.

- 4. Once they have completed the activity in the handout, have students reflect on their graphs using the questions below. If your students chose different numbers to graph, it could be helpful to first provide time for a "Gallery Walk" so they could compare and contrast one another's graphs and then answer the questions about all of the graphs, not just their own:
  - What do you notice?
  - What do you wonder?
  - What impact might this have on you and your community?
  - Write a headline that captures the graph's main idea.

#### Day 3: Closing the Racial Wealth Gap With Baby Bonds

 Prior to showing them the animation below, explain to students that their first task is simply to make sense of what information is being visualized, not to analyze it. Specifically, they should consider what each small square represents, and what information is represented by the x- and y-axes.

Share the <u>Intergenerational Wealth Mobility and Racial Inequality</u> animation with students by projecting it to the class or having students watch it on a computer. Provide students with 3-4 minutes to write or think-pair-share as they consider what information is being visualized in the animation, and then invite a few students to share their thinking.

Possible student response: Each square represents either a Black or a White child, and shows how the child's wealth changes into adulthood as compared to their parent's wealth a generation earlier.

2. Replay the animation, and this time ask students to complete a think-pair-share routine in response to the following question: What patterns do you notice regarding the racial composition within and between each quintile over a generation?

Possible student response: I can see that many children, both White and Black, end up in a different category of wealth from their parents—some with more wealth, and some with less wealth. But I also notice that, despite these changes within individual families, the overall outcome is that there are still large, persistent gaps in wealth between White and Black people.

- 3. Remind students that in previous classes they explored the racial wealth gap and some of its causes. The question they will be exploring today is: Why does wealth especially for the top 20-60% of the population stay relatively consistent over generations, and what might move our country towards a more equal distribution of wealth for all people?
- 4. Distribute the handout called "Closing the Racial Wealth Gap with Baby Bonds." Have students read the instructions alone or with a partner, and discuss Step 1 before they complete this step. Some students might decide to give each group the same sized payments (\$1,000 each), which is fine for the purpose of this activity. However, consider steering them towards thinking about this scenario equitably; such a solution would involve giving the largest share to those with the greatest needs (i.e., Group I: Bottom 20%).
- 5. Step 2 requires students to perform a series of calculations. This might be an important moment to refresh their memory on the order of operations. Consider having students attempt the calculations for Group I, and then review one student or group's work as a class to address any misconceptions and provide a model for them to follow. Be prepared to discuss how many decimal places students should use in their calculations.

When students have finished their calculations, invite them to share their results. It will be interesting to see how different approaches to dividing up the \$5,000 in monthly payments would lead to different final amounts per group.

6. After students have finished their calculations, use a think-pair-share to discuss this final question in the handout:

Do you think Baby Bonds would be an effective strategy for closing the racial wealth gap? Why or why not?

At first glance, there is no mention of race in this part of the activity. Hopefully students can see that Baby Bonds would provide the greatest economic benefit to children from the families with the least wealth. Given that the least-wealthy people in our country are overwhelmingly BIPOC, providing disproportionate financial benefits to the bottom quintile of people would lead to wealth creation for BIPOC communities, thereby closing (though not eliminating) the racial wealth gap.

### **Demonstration of Learning**

Students should complete a write-up of what they learned about Baby Bonds, including some of their calculations, and explain why they feel Baby Bonds are (or are not) an effective strategy for addressing the racial wealth gap.

### **Extension Opportunities**

 The Pew Research Center provides <u>interactive graphs on their website</u> that can be used to compare data on Black, Latinx, Asian, and White Americans across categories that include income, wealth, education, and health for the years 1983-2019. Students can pick different graphs based on a topic of interest and conduct additional research using the graph as a starting point.

This activity uses the following resource:

Fry, R., Bennett, J., & Barroso, A. (2021). Racial and ethnic gaps in the U.S. persist on key demographic indicators. Pew Research Center. Accessed March 1, 2022 at: <u>https://www.pewresearch.org/interactives/racial-and-ethnic-gaps-in-the-u-s-persist-on-key-demographic-indicators/</u>.

Students can explore the extreme pay gaps between CEOs and their employees. Using the resources below, students can
calculate and graph average worker pay against CEO pay for companies they know of or patronize. In addition or as an
alternative, students can estimate how much more each worker would make if CEO pay was distributed evenly to the
employees.

This activity uses the following resources:

Gelles, D. (2021). C.E.O. pay remains stratospheric, even at companies battered by pandemic. *The New York Times*. Accessed March 1, 2022 at: <u>www.nytimes.com/2021/04/24/business/ceos-pandemic-compensation.html</u>.

Mishel, L., & Kandra, J. (2020). CEO compensation surged 14% in 2019 to \$21.3 million. Economic Policy Institute. Accessed March 1, 2022 at: <u>www.epi.org/publication/ceo-compensation-surged-14-in-2019-to-21-3-million-ceos-now-earn-320-times-as-much-as-a-typical-worker/</u>.

Ruetschlin, C. (2014). Fast food failure: How CEO-to-worker pay disparity undermines the industry and the overall economy. Demos. Accessed March 1, 2022 at: <a href="https://www.demos.org/sites/default/files/publications/Demos-FastFoodFail-ure.pdf">www.demos.org/sites/default/files/publications/Demos-FastFoodFail-ure.pdf</a>.

The <u>Freedman's Savings Bank</u> opened after the Civil War and held the money of many Black southern farmers. When the bank collapsed in 1874, approximately \$3M in savings for over 61,000 people disappeared. Have students calculate how much money \$3M would be in 2021 dollars, or have students calculate the value of the assets in the Freedman's Savings Bank if the money had grown at the rate of the stock market since that time.

This activity uses the following resource:

The Freedman's Savings Bank: Good intentions were not enough; A noble experiment goes awry. (No date). Office of the Comptroller of Currency. Accessed March 1, 2022 at: <u>https://www.occ.treas.gov/about/who-we-are/histo-ry/1863-1865/1863-1865-freedmans-savings-bank.html</u>.

• The New York Times offers students <u>the chance to adjust parameters by different races</u>, <u>genders</u>, <u>and financial catego-ries</u> to visualize data used in the opening part of this activity. Students can select different groups of data, observe the animations, and report back to their peers about what they have learned. There is also an article that shows <u>downward</u> <u>wealth trajectories for Black boys in particular</u>, which could be a deeper topic to explore.

This activity uses the following resources:

Badger, E., Miller, C. C., Pearce, A., & Quealy, K. (2018). Income mobility charts for girls, Asian-Americans and other groups. Or make your own. *The New York Times*. Accessed March 1, 2022 at: <u>www.nytimes.com/interac-tive/2018/03/27/upshot/make-your-own-mobility-animation</u>.

Badger, E., Miller, C. C., Pearce, A., & Quealy, K. (2018). Extensive data shows punishing reach of racism for Black boys. *The New York Times*. Accessed March 1, 2022 at: <u>www.nytimes.com/interactive/2018/03/19/upshot/race-class-white-and-black-men.html</u>.

- The activity on Baby Bonds from the handout "Closing the Racial Wealth Gap with Baby Bonds" could be made more complex for more advanced students in the following ways:
  - 1. Use a formula that compounds interest monthly (this adds another variable).
  - 2. Have students determine (for one of their groups) how much money would be in the account at the end of each year, for 18 years, and graph these amounts against how much would be available without interest.
  - 3. Have students determine a formula / line of best fit for the graph.

#### **Additional Resources**

Blakemoore, E. (2021). How the GI Bill's promise was denied to 1 million Black veterans. History.com. Accessed September 1, 2021 at: <u>https://www.history.com/news/gi-bill-black-wwii-veterans-benefits</u>.

Cineas, F. (2021). Baby bonds could shrink the black-white wealth gap: A race-neutral plan to give young Americans economic security at birth. *Vox*. Accessed September 1, 2021 at: <u>https://www.vox.com/22268500/baby-bonds-black-white-wealth-gap-booker-pressley</u>.

Pfeffer, F. T., & Killewald, A. (2018). Generations of advantage. Multigenerational correlations in family wealth. *Social Forces, 96*(4), 1411-1442. Accessed September 1, 2021 at: <u>https://scholar.harvard.edu/files/akillewald/files/generations\_of\_advantage.</u> <u>pdf</u>.

Pfeffer, F. T., & Killewald, A. (2019). Intergenerational wealth mobility and racial inequality. *Socius*. Accessed March 1, 2022 at: <u>https://journals.sagepub.com/doi/pdf/10.1177/2378023119831799</u>.

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# The Relationship Between Race and Net Worth



Data source: https://www.pewresearch.org/interactives/racial-and-ethnic-gaps-in-the-u-s-persist-on-key-demographic-indicators/

- 1. What do you notice?
- 2. What do you wonder?
- 3. What impact might this phenomenon have on you and your community?
- 4. Write a headline that captures the graph's main idea.



# Median Wealth of U.S. Parent Households by Partnership Status and Race

A team of researchers analyzed data from the Survey of Consumer Finances (SCF) and constructed the following table:

	95% Confidence Interval for Median Wealth			
	Married/Partnered with Kids		Single with Kids	
All Households	\$79,590	\$107,102	\$10,308	\$18,172
White	\$138,888	\$184,712	\$23,530	\$48,510
Black	\$9,151	\$23,289	\$1,748	\$8,900
Latinx	\$10,930	\$23,470	\$2,855	\$9,637

Your task is to create a graph of the median wealth of married/partnered households with kids compared to single households with kids by the race of the family.

Rather than graphing both the low-end and high-end estimates for each group, determine one number for each group to represent that group's median wealth. Record these numbers into the table below and then create your graph.

	Median Wealth of U.S. Parent Households by Partnership Status		
	Married/Partnered with Kids	Single with Kids	
All Households			
White			
Black			
Latinx			

When you are done making your graph, answer the following questions about either your graph or about the different graphs made by students in your class.

1. What do you notice?

2. What do you wonder?

3. What impact might this phenomenon have on you and your community?

4. Write a headline that captures the graph's main idea.

Data source: Traub, A., Sullivan, L., Meschede, T., & Shapiro, T. (2017). The asset value of Whiteness: Understanding the racial wealth gap. Demos. Accessed September 1, 2021 at: <u>https://www.demos.org/research/asset-value-whiteness-understanding-racial-wealth-gap.</u>



# Closing the Racial Wealth Gap with Baby Bonds

You have been put in charge of a new government initiative called "Baby Bonds." The government will put money into bank accounts for every child born in this country, and then add money to their accounts once each year for 18 years. When the child turns 18 they will have access to this money. Your job is to determine how much money each child should get every year, and then calculate how much money they will have when they turn 18. However, not all kids need to get the same amount of money each year.

You might want to consider how inequitably wealth is currently distributed among people in the U.S. The 20% of our population with the least wealth (about 66 million people) collectively own only 1% of the country's wealth, whereas the 20% of people with the most wealth collectively own 64% of the country's wealth.

You have a total of \$5,000 in monthly payments to spread out among these five groups. You could decide to give each group the same amount, or you could give the entire amount to one group, or spread it out in a different way that feels fair.

Group	Current Wealth out of 100%	Annual Payment	Amount After 18 Years
l: Bottom 20%	1%		
II: Bottom/Middle 20%	4%		
III: Middle 20%	9%		
IV: Middle/Top 20%	22%		
V: Top 20%	64%		

Step 1: Determine how much of the \$5,000 in annual payments you want to give each group and put that information into your table under "Annual Payment." Then explain in writing why you decided to spread out the money this way.

Step 2: Determine how much money a child from each group would have at the end of 18 years using the formula below and put that information into your table under "Amount After 18 Years."

**A** = Total amount of money after 18 years

**P** = Principal (the amount each account starts with; in this case, the principal is \$1000)

**PMT** = The Annual Payment (the amount you have chosen to distribute)

**R** = Interest Rate (for this activity, assume the interest rate is 2% or 0.02)

**T** = The number of times money is added (in this case, T is 18)

 $A = [P \cdot (1 + R)^{T}] + [PMT \cdot (((1 + R)^{T} - 1) \div R) \cdot (1 + R)]$ 

Step 3: Write a response to the following question and be prepared to share it with your class:

Do you think Baby Bonds would be an effective strategy for closing the racial wealth gap? Why or why not?

## **Appendix: Myths vs. Actual Causes of the Racial Wealth Gap**

People raising children outside of a two-parent household is a cause of the racial wealth gap.	Inheritance (money passed be- tween generations) is taxed at a low rate is a cause of the racial wealth gap.	Lack of homeownership is a cause of the racial wealth gap.
Homestead Acts – the U.S. government giving free land to White people that actually belonged to Native Americans – was a cause of the racial wealth gap.	People not working full-time causes the racial wealth gap.	Racial covenants that prevented Black people from buying homes in certain communities were a cause of the racial wealth gap.
Lack of personal responsibility is a cause of the racial wealth gap.	The legacy of slavery is a cause of the racial wealth gap.	People choosing not to attend college is a cause of the racial wealth gap.
Spending too much and not saving enough is a cause of the racial wealth gap.	Redlining (charging higher rates to BIPOC for loans to purchase homes) is a cause of the racial wealth gap.	Black veterans getting denied access to benefits from the GI Bill after WWII is a cause of the racial wealth gap.

#### **Answer Key**

	Actual Causes of the Racial Wealth Gap		Myths About Causes of the Racial Wealth Gap
•	Low tax rates on inheritance (money passed	•	People raising children outside of a two-parent
	between generations)		nousenoid
•	Lack of homeownership among people of color	•	People choosing not to attend college (this
	(although addressing this problem isn't suffi-		only affects individual outcomes but not the
	cient for eliminating the racial wealth gap)		broader wealth gap)
•	Racial covenants that prevented Black people	•	People not working full-time (same as above)
	from buying homes in certain communities	•	Spending too much and not saving enough
•	Black veterans getting denied access to bene-		(same as above)
	fits from the GI Bill after WWII	•	Lack of personal responsibility
•	The legacy of slavery		
•	Redlining (charging higher rates to BIPOC for		
	loans to purchase homes)		
•	Homestead Acts (the U.S. government giving		
I	free land to White people that actually be-		
	longed to Native Americans)		
	longed to Native Americans)		

## MATH LESSON 5 A DREAM DEFERRED FOR YOUNG IMMIGRANTS

Suggested time: Two to four 50-60 minute class periods Suggested unit: Algebra I

### **Overview**

This lesson provides students with an opportunity to learn about the Deferred Action for Childhood Arrivals (DACA) program, which currently supports over 700,000 people brought to the United States as children without documentation. The first part of this lesson explores the impact on both individuals and our broader society of a July 2021 court ruling that DACA is unconstitutional. The second part of this lesson has students imagine that they are helping to plan a protest in support of DACA, for which they need to determine how to maximize attendance given a variety of outreach options and constraints.

### **Objectives**

- Students will identify relevant data from large data sets, perform calculations with this data, and draw conclusions from their analyses.
- Students will write algebraic inequalities based on a real-world situation.
- Students will graph multiple inequalities, identify a feasible region, and determine which point(s) within the feasible region will maximize outcomes.
- Students will recognize unfairness on the individual level (e.g., biased speech) and injustice at the institutional or systemic level (e.g., discrimination).
- Students will make principled decisions about when and how to take a stand against bias and injustice in their everyday lives and will do so despite negative peer or group pressure.

### **Key Understandings**

- There are pervasive narratives in U.S. culture suggesting that immigrants especially undocumented immigrants drain
  resources and do not contribute financially to society. There is ample data demonstrating that these narratives are false.
  DACA recipients contribute financially to local and state economies through their (often essential) work, their taxes, and
  their spending.
- DACA is more than simply a financial issue. DACA is a human rights issue that affects individual children (some of whom are now adults) and their families.

### **Materials**

- Access to graphing software (such as <u>Desmos</u>), a graphing calculator, and/or grid or chart paper
- A projector, internet-enabled computer, and speakers
- DACA Requests for Intake 2012 2021. (2021). U.S. Citizenship and Immigration Services. Accessed September 1, 2021 at: <u>https://www.uscis.gov/sites/default/files/document/reports/DACA\_performancedata\_fy2021\_qtr2.pdf</u>.

- Svajlenka, N. P. (2019). What we know about DACA recipients, by state. The Center of American Progress. Accessed September 1, 2021 at: <u>https://www.americanprogress.org/issues/immigration/news/2019/09/12/474422/know-daca-re-cipients-state/</u>.
- Puente Arizona. (2019). Orozco Family #ReleaseSandra | Puente [video]. YouTube. Accessed September 1, 2021 at: www.youtube.com/watch?v=DeFLgGZwcIE.
- Handouts (included at the end of this lesson):
  - A Dream Deferred for Young Immigrants
  - What the Loss of DACA Will Mean for Your Community
  - Organizing for Immigrant Rights
- Appendix: Organizing for Immigrant Rights, Solution

### Vocabulary

combination feasible region inequalities percentage

### **National Standards**

This lesson aligns with the following Common Core Mathematics Standards:

• **CCSS.MATH.CONTENT.HSA.REI.D.10** Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

This lesson also aligns with the following <u>Social Justice Standards</u> learning outcomes:

- JU.9-12.12 I can recognize, describe and distinguish unfairness and injustice at different levels of society.
- **AC.9-12.18** I can explain the short and long-term impact of biased words and behaviors and unjust practices, laws and institutions that limit the rights and freedoms of people based on their identity groups.

### **Note to Teachers**

Consider assigning some pre-work to students before beginning these lessons to provide them with some background about DACA and DACA recipients. FWD.us has a simple <u>FAQ</u> your students could read for homework in advance of Day 1 of this lesson. Additionally or alternatively, students could read some of the powerful stories about DACA recipients available on this site.

This lesson steers towards a more economic-based argument for maintaining DACA (i.e., tax revenue will be lost without as many DACA recipients working). However, it is important to recognize other ways that eliminating DACA, or not approving outstanding applications, will harm communities. For example, families would be separated if DACA-eligible people are deported, and many of the individuals facing deportation are themselves parents. Even without deportation, eliminating DACA would lead to many people losing their jobs, negatively impacting their families and putting greater stress on government-funded safety nets and public health care systems. It is also important to recognize and name the role race and intersectionality play in the debate over DACA. The vast majority of DACA recipients are people of color, and thus DACA recipients are often discriminated against because of both their race and their immigration status.

The activity presented on Day 2 in the handout "Organizing for Immigrant Rights" can be explored using several different approaches. The most efficient strategy is to write and graph inequalities, find the feasible region, and determine which corner of the feasible region results in the highest outcome. Depending on your time constraints, as well as where you use this lesson

within your broader curriculum, you may want to consider scaffolding aspects of the task to help students who may need additional guidance. Suggestions for scaffolding are offered in Day 2, Step 3 of the Lesson Procedure. The solution to this problem is included in the Appendix.

## **LESSON PROCEDURE**

#### Day 1: A Dream Deferred for Young Immigrants

1. Distribute the handout called "A Dream Deferred for Young Immigrants," which contains two cartoons and several reflection prompts. If possible, project the two cartoons. Use a think-pair-share protocol to have students reflect on the messages behind these cartoons before constructing ideas as a whole class.

The key concepts for students to understand from this activity are listed below. You could read or paraphrase these to students, or project these points for the class to read, having different students read each bullet:

- DACA stands for "Deferred Action for Childhood Arrivals" and refers to young immigrants who were brought to the U.S. without documentation before they turned 18.
- Approximately 93% of DACA recipients are Latinx and were born in Central or South America. Another 6% are Asian and are predominantly from Korea, the Philippines, and India.
- Many of these young people register with the federal government so they can legally stay in the U.S. while pursuing citizenship. There are approximately 700,000 current DACA recipients nationwide, also known as Dreamers.
- DACA was created in 2012, and in July 2021, a Federal Court in Texas declared that DACA was unconstitutional.
- As of July 2021, there was already a backlog of 99,721 people who applied for DACA and were waiting to have their applications approved, due in part to budget cuts in this department. However, because of the recent court decision, the federal government is now prohibited from approving any of the applications moving forward.

Let students know that, during the rest of this lesson, they will explore some of the impacts on their state when eligible individuals are unable to obtain or renew DACA.

2. Ask students to make a list of reasons why it would be harmful for DACA to be eliminated altogether. You might also have students consider the impact that the backlog of pending new and renewal DACA applications is already having on individuals and their families. After students have time to generate a list with a partner or small group, make one larger list as a class.

Possible student responses:

- Deportation and potential family separation.
- Stress and anxiety for individuals and families due to the fear of deportation.
- Losing the ability to legally work.
- Losing access to in-state college tuition.
- Losing one's valid driver's license.
- A decline in local, state, and federal taxes paid as a result of people losing the ability to legally work.
- Destabilizing effects on society, such as the loss of many essential workers.
- 3. Provide students with pages 4-6 of the "U.S. Citizenship and Immigration Services DACA Requests for Intake 2012 - 2021" and Tables 1 and 2 from the Center of American Progress called "DACA Recipients Fiscal and Economic Contributions to the Economy." Have students use these resources to complete the handout called "What the Loss of DACA Will Mean for Your Community." Students can all be assigned the state you live in, or they can choose different states. (Note that some states are missing from the dataset).

An example of a completed table for California is below:

Your state:	California
Total accepted applications (state):	902,747 (USCI data)
Total accepted applications (nationwide):	3,166,039 (USCI data)
Calculate the % of DACA applications (state):	902k / 3.166M = 28.5%
Total ("cumulative") applications pending (nationwide)	99,721 (USCI data)
Calculate the estimated number of all pending DACA applications from your state	28.5% of 99,721 = 28,420
Number of DACA recipients (state)	188,420 (from CAP Table 1)
Federal taxes paid by DACA recipients (state)	\$2,100,000,000 (CAP Table 2)
State taxes paid by DACA recipients (state)	\$1,000,000,000 (CAP Table 2)
Average federal taxes paid per DACA recipient (state)	\$2.1B / 188,420 = \$11,145
Average state taxes paid per DACA recipient (state)	\$1B / 188,420 = \$5,307
Calculate the estimated amount of federal taxes that would be lost if pending DACA applications are not approved (state)	28,420 x \$11,145 = \$205,290,900
Calculate the estimated amount of state taxes that would be lost if pending DACA applications are not approved (state)	28,420 x \$5,307 = \$150,824,940

4. At this point, students will have calculated the economic benefit that people with DACA applications pending would contribute to their assigned state, i.e., the estimated federal, state, and local taxes that would potentially be lost without these hopeful DACA recipients earning money and paying taxes. Ask students to reflect on and discuss how the loss of this tax revenue might affect services provided to individuals throughout the state.

Asynchronous work: Have students write a letter to a politician explaining what they have learned about DACA, along with an overview of their data analysis and calculations. They should make a persuasive argument, backed by data, about why DACA should be continued and why pending applications should be approved.

#### **Day 2: Organizing for Immigrant Rights**

- Share the video entitled <u>Orozco Family #ReleaseSandra</u> (3:29 minutes) with the class. This video features the family of a woman named Sandra Ramos who was deported in 2019; because of her deportation, her children were left parentless in Phoenix, Arizona. After watching the video, provide students with some time to write or discuss their reflections on this story in pairs or small groups before hearing some responses from the class. Consider asking students:
  - How do you think you would feel if you were one of Sandra Ramos's children?
  - How do you think members of Sandra Ramos's community feel about what happened?

- 2. Distribute the handout called "Organizing for Immigrant Rights." Provide students with time to read the problem and encourage them to highlight key pieces of information. Before they begin trying to solve the problem, it is important for them to understand that the overall goal is to find the combination of feasible phone calls and texts, given the constraints, that produces the greatest number of attendees at the protest. There are many possible combinations within the constraints, but (likely) only one that maximizes the outcome.
- 3. There is no one best process for you to use when guiding this activity, as your approach will be impacted by your students' prior knowledge and the amount of time you have available for students to work on the problem. Below are some suggestions for how you could scaffold this activity based on your context:
  - Have students guess possible combinations and check to see if those combinations are possible for some, all, or none of the constraints.
  - Give students one or more combinations of phone calls and texts, and have students determine if these combinations are possible given the constraints, and if so, what outcomes they would produce.
  - Rather than expecting students to find the single best combination, have them choose 5-10 combinations, determine which ones are feasible based on the constraints, and then find the combination that produces the best outcome from among these options. Alternatively, give different students unique combinations to assess and have the class work together to find the best combination.
  - Provide students with some or all of the inequalities rather than having them write the inequalities on their own.
  - Provide students with a graph where the lines of the inequalities are already drawn, and have students shade the appropriate sides of each line to find the feasible region.
  - Once students write inequalities, they might decide to solve for one variable before graphing. However, a free program like <u>Desmos</u> will graph equations where x and y are on the same side of the inequality, making the graphing process faster for students.
- 4. Close by facilitating a discussion in which students share their processes and results and make the case for their recommended solutions.

### **Demonstration of Learning**

Have students write reports or create presentations describing their results, explaining their methods, and justifying their solutions. Students could present to their peers or other school community members. Creating a graph is not necessary to make some progress on this assignment, but you might make that a requirement (either hand-drawn or using <u>Desmos</u>).

### **Extension Opportunities**

- Have students conduct research about immigration issues and DACA in your local community or at your school.
- Take a deeper look at how federal and local taxes are used in your community, and how a loss of tax revenue would
  actually impact local services. The <u>Center on Budget and Policy Priorities</u> includes average allocations of state tax dollars
  by category; students could use these estimates and their state-level calculations about the potential loss of tax revenue
  due to rescinding DACA to estimate the actual amount of money that would be reduced in these categories.

This activity uses the following resource:

Policy basics: Where do our state tax dollars go? (2018). Center on Budget and Policy Priorities. Accessed March 1, 2022 at: <u>https://www.cbpp.org/research/state-budget-and-tax/where-do-our-state-tax-dollars-go</u>.

 Survey data show strong and growing support for DACA and for providing immigrants with pathways toward citizenship. <u>This report from National Public Radio</u> references surveys and includes some data. Students could analyze survey results and/or conduct their own surveys. Morning Consult has <u>additional survey data</u> on this topic.

This activity uses the following resources:

Montanaro, D. (2018). NPR poll: 2 in 3 support legal status for dreamers; Majority oppose building a wall. NPR. Accessed March 1, 2022 at: <u>https://www.npr.org/2018/02/06/583402634/npr-poll-2-in-3-support-legal-status-for-dreamers-majority-oppose-building-a-wal</u>.

National Tracking Poll #170409: April 20-24, 2017: Crosstabulation Results. (2017). Morning Consult, Politico. Accessed March 1, 2022 at: <u>https://morningconsult.com/wp-content/uploads/2017/04/170409\_crosstabs\_Politico\_v1\_AG-2.pdf</u>.

<u>Many DACA recipients are essential workers</u>, including nurses, educators, and farmworkers, and it would therefore harm others who benefit from their labor if they were deported. Students could explore some of these statistics and calculate the potential consequences on the broader U.S. population.

This activity uses the following resource:

Griffith, S. & Flores, C. (2020). Dreamers help keep the country running during the coronavirus pandemic. Center for American Progress. Accessed March 1, 2022 at: <u>https://www.americanprogress.org/article/dream-ers-help-keep-country-running-coronavirus-pandemic/</u>.

#### **Additional Resources**

FAQ: DACA and Dreamers. (No date). FWD.us. Accessed September 1, 2021 at: https://www.fwd.us/daca-101/.

#### References

DACA requests for intake 2012-2021. (2021). U.S. Citizenship and Immigration Services. Accessed September 1, 2021 at: <u>https://www.uscis.gov/sites/</u> default/files/document/reports/DACA\_performancedata\_fy2021\_qtr2.pdf.

The Editorial Board. (2017). Dreamers: Cartoons. *Los Angeles Daily News*. Accessed September 1, 2021 at: <u>https://www.dailynews.com/2017/09/07/</u> <u>dreamers-cartoons/</u>.

The Editorial Board. (2017). Trump needs to protect dreams and Dreamers. *Tampa Bay Times*. Accessed September 1, 2021 at: <u>https://www.tampabay.com/opinion/editorials/editorial-trump-needs-to-protect-dreams-and-dreamers/2335710/.</u> Svajlenka, N. P. (2019). What we know about DACA recipients by state. The Center for American Progress. Accessed September 1, 2021 at: <u>https://www.americanprogress.org/issues/immigration/news/2019/09/12/474422/know\_daca-recipients-state/</u>.



# **A Dream Deferred for Young Immigrants**

Look at the two cartoons below. Do you recognize any words or terms? Who are the people in the cartoons? What are the messages the cartoons might be trying to communicate? Write at least two sentences responding to each image.



Source: https://www.dailynews.com/2017/09/07/dreamers-cartoons/



Source: https://www.tampabay.com/opinion/editorials/editorial-trump-needs-to-protect-dreams-and-dreamers/2335710/



# What the Loss of DACA Will Mean for Your Community

In this activity, you will estimate the number of people waiting for DACA applications to be approved or renewed in your assigned state, and how these and other people will be impacted if their applications are never approved.

Use the data provided by your teacher to fill in the table below. Some rows will require you to calculate the missing information.

Your state:	
Total accepted applications (state):	
Total accepted applications (nationwide):	
Calculate the % of DACA applications (state):	
Total ("cumulative") applications pending (nationwide)	
Calculate the estimated number of all pending DACA applica- tions from your state	
Number of DACA recipients (state)	
Federal taxes paid by DACA recipients (state)	
State taxes paid by DACA recipients (state)	
Average federal taxes paid per DACA recipient (state)	
Average state taxes paid per DACA recipient (state)	
Calculate the estimated amount of federal taxes that would be lost if pending DACA applications are not approved (state)	
Calculate the estimated amount of state taxes that would be lost if pending DACA applications are not approved (state)	

Now that you have estimated how many people in your state are at risk of not getting DACA approved or renewed, you will explore how this might impact people, families, and your state.



# **Organizing for Immigrant Dreamers**

You work with an immigrant rights organization in Arizona called Puente, and you are helping to organize a rally in support of DACA and the Dreamers in your community. You are trying to get people to attend the rally and show their support for this important issue.

There are two primary approaches for getting people to attend the rally: (1) making hour-long blocks of telephone calls, and (2) sending out rounds of text messages. The cost to make each one-hour block of calls is \$30, and the cost for sending one round of text messages is \$20. Each block of phone calls requires one hour, while each round of texts requires two hours to complete.

Several factors limit your options:

- Your organization has a budget of \$500 maximum to spend organizing this protest.
- You have a limited amount of phone numbers available to text, so at most you will be able to send eight rounds of text messages.
- You have recruited some people to help make phone calls, but the maximum total number of hours they can spend making calls is 16.
- The protest is coming up soon, so you will have at most 22 hours for all rounds of texts and blocks of phone calls combined.

Based on past experience, each one-hour block of phone calls will result in 30 people coming to the protest, and every set of texts will result in 16 people attending.

Your task is to determine what combination of phone calls and texts will maximize the number of people who turn out for the rally.

## **Appendix: Organizing for Immigrant Dreamers, Solution**

Using x for blocks of phone calls and y for groups of texts, the inequalities that describe this scenario are:

- x ≤ 16
- y ≤ 8
- $2y + x \le 22$
- $20y + 30x \le 500$

Graphing these four inequalities with a feasible region reveals five testable points along its border. Those combinations and their resulting outcomes are assessed below.

Х	Y	Outcome for X (x $\rightarrow$ 30 people)	Outcome for Y (y $\rightarrow$ 16 people)	Total
0	8	0	128	128
6	8	180	128	308
14	4	420	64	484
16	1	480	16	496
16	0	480	0	480





## MATH LESSON 6 ADDRESSING THE RISE OF HATE CRIMES AGAINST ASIAN AMERICANS

Suggested time: Three to four 50-60 minute class periods Suggested unit: Algebra I; this lesson can also be adapted for a Statistics course

### **Overview**

This lesson explores the rapid rise in hate crimes against Asian Americans since the coronavirus pandemic began. In the first activity, students use historic rates of anti-AAPI hate crimes to predict expected rates in 2020 and 2021. Students then compare their predictions to the actual data. The second part of the lesson is based on a survey that was conducted to better understand why some people stigmatize Asian Americans as being "COVID-19 risks" in order to more strategically address some of these root causes. Students are encouraged to develop and carry out a plan of action to reduce anti-AAPI bias and behaviors within their school or local community.

## **Objectives**

- Students will calculate the slope from segments of a line graph to make predictions about future trends.
- Students will create scatterplot graphs and estimate trendlines to make inferences about correlations in data.
- Students will calculate a linear regression from survey data to make inferences about the relationship between categories of data.
- Students will recognize traits of the dominant culture, their home culture, and other cultures and understand how they negotiate their own identity in multiple spaces.
- Students will recognize their own responsibility to stand up to exclusion, prejudice, and injustice.

### **Key Understanding**

There has been a significant spike in hate crimes against people of Asian descent since the COVID pandemic began. There are many explanations for why this racist and violent behavior has increased, including stereotypes about AAPI communities that have gained prominence in mainstream media, social media, and political pulpits.

### **Materials**

- Handouts (included at the end of this lesson):
  - What's Happening in This Photo?
  - Anti-Asian Hate Crimes Across the U.S., 1996-2019
  - Anti-Asian Hate Crimes Across the U.S., 2019-2021
  - I Am Not the Virus
  - Reducing Violence Against AAPI Communities

### Vocabulary

correlation
regression
scatterplot
slope
stigmatization
trendline / line of best fit

### **National Standards**

This lesson aligns with the following Common Core Mathematics Standards:

- **CCSS.MATH.CONTENT.HSS.ID.B.6** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
- **CCSS.MATH.CONTENT.HSS.ID.C.7** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

This lesson also aligns with the following <u>Social Justice Standards</u> learning outcomes:

- **ID.9-12.5** I recognize traits of the dominant culture, my home culture and other cultures and I am conscious of how I express my identity as I move between those spaces.
- **AC.9-12.20** I will join with diverse people to plan and carry out collective action against exclusion, prejudice and discrimination, and we will be thoughtful and creative in our actions in order to achieve our goals.

### **Note to Teachers**

This lesson explores the rapid rise in hate crimes targeting Asian Americans during 2020 and 2021. Although the historical data and more recent data are not structured in the exact same way and come from different sources, they nevertheless present a clear picture of the climate of hatred and violence that people from AAPI communities have experienced during the coronavirus pandemic.

Day 2 of this lesson explores the false characterization of people of Asian descent as people who are at risk of spreading COVID or who are responsible for the coronavirus. It begins with an investigation of three potential causes for this stigmatization and then encourages students to develop a plan to address one or more of them. The main activity, outlined in the handout "Reducing Violence Against AAPI Communities," is based on <u>a survey and subsequent paper</u> by Cho et al. (2021). The survey included responses from over 800 people and used multiple methods of statistical analysis to arrive at the results. Prior to teaching this lesson, it would be helpful to skim the paper and familiarize yourself with the key points covered in the abstract. This includes the authors' conclusion that "efforts to reduce stigmatization should address racial stereotypes and emotions, maladaptive coping, and biased media use by providing education and resources to the public" (Cho et al, 2021, p. 94). The handout "Reducing Violence Against AAPI Communities" contains mock data from 10 people across only three questions from the actual survey. The mock data have been carefully chosen so that the mean responses and linear regressions students will calculate from it will be very close to those found by the authors analyzing the real data. This will hopefully lead students to draw similar conclusions to those identified by the researchers.

This lesson can be adapted based on the course it is being used in, as well as students' background knowledge of statistics. As described in Day 2, Step 3, the activity in the handout "Reducing Violence Against AAPI Communities" can be modified to accommodate students without any statistical background, or complicated to accommodate students with more advanced knowledge of statistics. Although this lesson focuses on hate crimes and discrimination against Asian American and Pacific Islander communities in the U.S., hate crimes against some other racial groups, and <u>against Black people in particular</u>, have also risen during the period examined in this lesson (Mangan, 2021). Teachers should be ready to discuss and defend the importance of focusing on violence against AAPI communities while recognizing that, in doing so, students can learn lessons about reducing racism and anti-BIPOC violence more broadly.

### **LESSON PROCEDURE**

#### Day 1: Rising Violence Against AAPI Individuals During the Coronavirus Pandemic

- Provide the handout called "What's Going On in This Photo?" which is a <u>photo of people marching in an</u> <u>Anti-AAPI-Hate rally</u>. One image is provided in this lesson, but there are many on the internet to choose from. You might also prepare a short slide deck with multiple images. Students should reflect on what they see in the chosen images, and they can either discuss their reflections with a partner or complete the graphic organizer provided.
- 2. Distribute the handout with the graph called "Anti-Asian Hate Crimes Across the U.S., 1996-2019." Start by checking for students' understanding of what the data in the graph represent. Consider also explaining to students that while these data have been collected by the FBI, they do not include any hate crimes that were not reported and therefore may underrepresent the true number of incidents.
- 3. Working in pairs or small groups, have students work on Questions 1 and 2. Consider modeling how to calculate the slope between two different years in order to guide students in their own calculations. After a sufficient number of students have completed Question 2a, consider having a student share their work with the class so that you can address any common misunderstandings.
- 4. Question 3 asks students to make predictions about the number of anti-Asian hate crimes they would expect in 2020 and 2021, based on historical trends. There are a few reasonable approaches students could take, including:
  - Averaging the annual growth between 2015 and 2019 to predict growth beyond 2019.
  - Using the growth between 2018 and 2019 to predict the growth from 2019 to 2020 and 2021.
  - Using the slope from 2015 to 2019 to make their predictions for 2020 and 2021.

If students come up with different methods, have them share their methods and predictions with the class.

5. After students have made their predictions, show them the two graphs from the handout entitled "Anti-Asian Hate Crimes Across the U.S., 2019-2021," either by distributing the handout or projecting these two graphs. Use a think-pair-share to have students discuss what they see in the graphs.

Possible student response: In 20 major U.S. cities, hate crimes against people of Asian descent in the U.S. rose during both time periods. These data do not include all of 2021.

Remind students that these graphs include data from only 20 cities, not the entire country, and that these numbers represent cases reported to police, not FBI statistics. Nevertheless, the data demonstrate a clear rise in anti-Asian hate crimes from previous years.

6. Engage students in a discussion about why they think the number of anti-Asian hate crimes has risen so much during this time period. For background, consider reviewing the <u>Report To The Nation: Anti-Asian Prejudice & Hate Crime</u>, from which the graphs in this activity are sourced.

Asynchronous work: Have students write a summary of their work from the lesson so far, including:

- The data they were given.
- The key question(s) they were trying to answer.
- The predictions they made and their processes for making them.

- How their predictions compared to actual data from 2020 and 2021.
- Why they (and/or their classmates) think there has been a spike in anti-Asian hate crimes during this time.

#### Day 2: Reducing Anti-Asian American and Pacific Islander Violence

1. Distribute or project the handout called "I Am Not the Virus," which contains artwork that accompanied an April 2020 editorial from a college student at Loyola Marymount University in Los Angeles. Give students time to study and reflect, in writing, on the message of the artwork before sharing their thoughts with a partner and then the whole class.

The image is intended to draw students' awareness to the narrative that Asian people are to blame for the coronavirus pandemic and the stigmatization of AAPI communities as posing COVID-19 risks, narratives that have led to violent actions against people of Asian descent across the U.S. The image does not include the word stigmatization, but this could be a useful time to briefly introduce that concept, as it is referenced in the next activity.

- 2. Provide students with the handout called "Reducing Violence Against AAPI Communities" and allow them some time to read through the scenario and their tasks. It might be important at this point to pause for a brief discussion of the term "stigmatization," and how it applies to this scenario. It will also be important to conduct a check for understanding before students begin the task. Potential questions to ask include:
  - How many people were surveyed?
  - What questions were they asked?
  - What were the possible responses to each of the survey questions? For each question, what do these n umbers mean or represent?
  - Why do you think the researchers were interested in asking people about racial prejudice? Media consumption? Coping mechanisms? Feelings that Asians in the U.S. pose a COVID-19 risk?
    - (Help students draw possible connections between these items. For example, we might assume that if someone only gets news from the same limited sources of social media, which tend to be biased, they might be more likely to embrace harmful narratives about people of Asian descent.)
  - How would you explain stigmatization in your own words? Have you ever experienced stigmatization? Can you think of other examples of when people have been stigmatized?
- 3. As the students work on completing the tasks in the handout, there are several approaches you might consider taking to scaffold this activity, depending on how much time you have and the mathematical knowledge of your students.
  - This activity can be simplified by having different groups of students make only one graph each, comparing the three inputs (responses to the first three survey questions) with the outputs (responses to the fourth survey question). They do not need to know the concept of a "scatterplot" as long as they are familiar with graphing (x,y) coordinates. Once their graphs are made, students could be encouraged to draw one line that "best fits" the points. You could model this by sketching a simple scatterplot graph and demonstrating how to approximate a line of best fit. The important thing is for students to recognize whether the slope of the line is increasing, flat, or decreasing, which will help them interpret the relationship between the input and output variables.
  - More advanced students in a statistics class might be required to create three scatterplot graphs (comparing the input responses for the first three survey questions to the output responses for the fourth survey question), and then to calculate (by hand, or using a graphing program) the R2 value of each linear trendline.
- 4. Facilitate a discussion in which students share, discuss, and interpret their graphs for Task 1. Students should notice that the strongest positive correlation exists between "racial prejudice" and "stigmatization." There is also a weak, positive correlation between social media consumption and stigmatization. In other words,

consuming (biased) social media does increase the likelihood of harboring beliefs that people of Asian descent pose a COVID-19 risk, but the low correlation suggests the relationship between these items is weak or unclear.

- 5. Once the class has come to an agreement about the trends in the data uncovered as part of the first task, have students work in pairs or small groups to develop a plan for reducing stigmatization and violence against AAPI communities, as directed in the second task.
- 6. Facilitate a discussion with students about possible strategies for reducing stigmatization and violence against AAPI communities. Consider having students discuss strategies both in the context of our country as a whole as well as within their specific communities, e.g., their town, school, or classroom. Students should incorporate their results from the first task as they think through which strategies would be most impactful.

### **Demonstration of Learning**

Students should propose a plan for reducing stigmatization and violence against AAPI communities within a specific context (e.g., their town, school, or classroom). This plan could focus on reducing stigmatization across all three categories from the activity (racial prejudice, lack of coping mechanisms, and biased media) or in just one area. For example, racial prejudice is the category that correlates the most strongly with believing that Asians in the U.S. pose a COVID-19 risk, so students could explore strategies for helping people overcome racial prejudice. Some examples of strategies students might incorporate include:

- Creating a course on the history of discriminatory laws and practices against people of Asian descent in the United States to help participants develop greater empathy for AAPI communities.
- Developing workshops that guide people in exploring their implicit biases and reflecting on how bias impacts unconscious beliefs, attitudes, and actions towards people of color.
- Elevating Asian Americans as Americans, promoting intergroup contact between Asian Americans and others, promoting counter-stereotypical information, focusing on individuals rather than group identity, and engaging in perspective-taking and giving (Jilani, 2021).

Students might also present their findings and plans of action to their peers, a student club or student government, or other school community members.

### **Extension Opportunities**

- Have students conduct a survey at your school to assess stigmatization and/or discrimination against BIPOC groups and develop a plan of action and even take steps to carry out this plan (for example, by coordinating anti-bias trainings for students, staff, and family members).
- Using the results from a <u>Pew Research Survey</u> from April 2021, which assesses different racial groups' experiences with discrimination since the COVID-19 outbreak, assign students different questions and their corresponding data to analyze.

### **Additional Resources**

Stop AAPI Hate [website], available at: http://www.stopaapihate.org.

This website has been collecting data and personal stories about anti-Asian violence since the coronavirus pandemic began. There are charts and graphs students can analyze, key findings they can explore, and testimonials from victims they can read.

Levin, B. (2021). Report to the nation: Anti-Asian prejudice & hate crime. New 2020–21 first-quarter comparison data. Center for the Study of Hate & Extremism, California State University–San Bernardino. Accessed September 1, 2021 at: <u>https://www.csusb.edu/sites/default/files/Report%20to%20the%20Nation%20-%20Anti-Asian%20Hate%202020%20Final%20Draft%20</u> \_%20As%20of%20Apr%2030%202021%206%20PM%20corrected.pdf.

This report summarizes trends in anti-Asian hate crimes from March 2020 to March 2021 in select cities and counties across the U.S. and Canada.

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Cho, H., Li, W., Cannon, J., Lopez, R., & Song, C. (2021). Testing three explanations for stigmatization of people of Asian descent during COVID-19: Maladaptive coping, biased media use, or racial prejudice? *Ethnicity & Health*, 26(1), 94-109. Accessed September 1, 2021 at: <u>https://www.tandfonline.</u> <u>com/doi/pdf/10.1080/13557858.2020.1830035</u>.

Jeung, R., Yellow Horse, A. J., & Cayanan, C. (2021). Stop AAPI hate national report. Stop AAPI Hate. Accessed September 1, 2021 at: <u>https://stopaapihate.org/wp-content/uploads/2021/05/Stop-AAPI-Hate-Report-National-210506.pdf</u>.

Jilani, Z. (2021). Why are Asian Americans being attacked and what can you do about It? *Greater Good Magazine*. Accessed September 1, 2021 at: <u>https://greatergood.berkeley.edu/article/item/why are asian americans being at tacked and what can you do about it</u>.

Lin, N. & William, A. (2021). As US emerges from COVID, AAPI leaders say hate incidents expected to rise. NBC Los Angeles. Accessed September 1, 2021 at: <u>https://www.nbclosangeles.com/news/national-international/anti-asian-hate-crimes-statistics-in-the-us/2597914/</u>.

Mangan, D. (2021). Hate crimes against Asian and Black people rise sharply in the U.S., FBI says. CNBC. Accessed April 1, 2022 at: <u>https://www.cnbc.com/2021/08/30/fbi-says-hate-crimes-against-asian-and-black-people-rise-in-the-us.html</u>.



# What's Happening in This Photo?



Source: Nhat V. Meyer, *Bay Area News Group*, <u>https://calmatters.org/education/higher-education/col-lege-beat-higher-education/2021/06/tracking-anti-asian-hate/</u>

Describe what you see in this photo.	What do you think you know about what is happening in this image?
What questions do you have about this image?	What would you like to know more about?



## Anti-Asian Hate Crimes Across the U.S., 1996-2019



Source: https://www.nbclosangeles.com/news/national-international/anti-asian-hate-crimes-statistics-in-the-us/2597914/ via FBI Data

- 1. Calculate the slope of a line from 1996 to 2015, the period during which there was the largest decline in anti-Asian hate crimes in the U.S.
- 2. Calculate the slope from:
  - a. 2015 to 2016
  - b. 2016 to 2017
  - c. 2017 to 2018
  - d. 2018 to 2019
  - e. 2015 to 2019
- 3. The graph above shows a rise in anti-Asian hate crimes in the U.S. beginning in 2015. Using the slopes you calculated above, make a prediction for the number of anti-Asian hate crimes you would expect in 2020 and 2021.



## Anti-Asian Hate Crimes Across the U.S., 2019-2021



Source: Levin (2021), https://www.csusb.edu/sites/default/files/Report to the Nation - Anti-Asian Hate 2020 Final Draft - As of Apr 30 2021 6 PM corrected.pdf

# Pollyanna Racial Literacy Curriculum HIGH SCHOOL MATH



# I Am Not the Virus



Cartoon by Camille Bautista Source: <u>www.laloyolan.com/opinion/i-am-not-the-chinese-virus/article\_57582652-1892-52fa-9a85-0db200afb4cd.html</u>

Spend a few minutes looking at and reflecting on this image and then write a short response. Some questions you might think about are:

- Who does the person in this drawing represent?
- Why are they wearing a mask?
- What does the message on their mask refer to?
- Why might this person be wearing this message on their mask?
- How do you think the person in this drawing might feel?


# Reducing Violence Against AAPI Communities

In Spring 2021, a team of researchers decided to explore what has been causing a spike in violence toward AAPI communities during the COVID pandemic. The researchers felt that the increase in anti-AAPI behavior was the result of increased stigmatization of people of Asian descent. Stigmatization is when one person or group discriminates against another because of perceived (but untrue) negative beliefs related to the other group's characteristics (such as their race, gender, or sexuality).

The researchers believed three main factors were contributing to the increased stigmatization of people of Asian descent in the U.S.:

- Racial prejudice towards AAPI communities
- Biased media coverage

Lack of coping mechanisms to deal with stress related to COVID-19

The researchers surveyed 20 people about these three factors and also asked to what extent the survey respondents felt that people of Asian descent in the U.S. posed a COVID-19 risk. Their survey results are on the next page.

You have two tasks:

- 1. Determine if any/all of these three factors contributed to the stigmatization of people of Asian descent and, if so, how significantly.
- 2. Based on your results, develop a plan for reducing stigmatization and violence against AAPI communities.

	Racial Prejudice	Coping Mechanisms	Biased Media	Risk
	"Generally, Asians are outside of American identity"	"I am able to minimize the negative impact of COVID-19 on my life"	How often did you receive COVID-19 news from social media over the past eight weeks?	"Asians in the U.S. pose COVID-19 risk"
Person #	1 = Strongly Disagree 5 = Strongly Agree	1 = Strongly Disagree 5 = Strongly Agree	1 = Never 5 = Very Often	1 = Strongly Disagree 5 = Strongly Agree
1	3	1	2	1
2	3	4	1	2
3	2	5	2	4
4	2	4	3	4
5	4	2	1	4
6	1	4	3	1
7	3	3	1	3
8	5	5	3	4
9	4	3	2	3
10	2	3	1	2
11	2	3	1	1
12	1	5	1	1
13	3	5	3	4
14	4	5	2	5
15	2	4	1	3
16	1	3	2	2
17	1	4	3	1
18	2	4	2	1
19	2	4	1	1
20	1	4	1	1

## MATH LESSON 7 THE LEGACY OF HOUSING DISCRIMINATION AND A PATH TOWARDS BIPOC HOME OWNERSHIP

Suggested time: Two to four 50-60 minute class periods Suggested unit: Algebra I or higher

### **Overview**

The first part of this lesson explores redlining, a procedure that was used to legally discriminate against homebuyers and homeowners of color and contributed significantly to segregation and wealth inequality, particularly for Black communities. To understand how redlining functions, students will play a simulated "homebuying game" in which some will have an unfair advantage and others will not be able to win. The second part of this lesson explores a contemporary strategy for addressing the harms of housing discrimination: the use of homeownership vouchers to help increase homeownership rates in communities of color. Students will work in groups to allocate funding to different neighborhoods in a fictitious city, justifying their allocation plans using mathematical evidence and racial equity principles.

### **Objectives**

- Students will analyze the fairness of outcomes from a game involving probabilities.
- Students will develop mathematical justifications for their proposed solutions to an open-ended task with multiple correct solutions.
- Students will analyze the harmful impact of bias and injustice on the world, historically and today.

## **Key Understanding**

Redlining is one of several forms of racial housing discrimination that has contributed to racially segregated n eighborhoods, wealth inequality, and lower rates of homeownership among people of color.

**Possible misunderstanding:** Segregated neighborhoods, wealth inequality, and lower rates of homeownership among people of color are purely the results of individuals' choices.

### **Materials**

- A computer, projector, and speakers
- Dice (one for every three students)
- Fair Housing Center of Central Indiana. (2020). History of Redlining Indianapolis, IN [video]. YouTube. Accessed September 1, 2021 at: <u>https://www.youtube.com/watch?v=kX\_W\_XRNHJ4</u>.
- Handouts (included at the end of this lesson):
  - The Homebuying Game
  - Addressing the Harm of Housing Discrimination in Jackson
- Appendix: Example Scorecard (Yellow)

## Vocabulary

homeownership vouchers housing discrimination median mortgage percent redlining

### **National Standards**

This lesson aligns with the following <u>Common Core Mathematics Standards</u>:

• CCSS.MATH.CONTENT.HSS.MD.B.6 Use probabilities to make fair decisions.

This lesson also aligns with the following <u>Social Justice Standards</u> learning outcomes:

• JU.9-12.12 I can recognize, describe and distinguish unfairness and injustice at different levels of society.

### **Note to Teachers**

This lesson explores one historical form of racial housing discrimination: redlining. People of color have also faced other forms of housing discrimination, including racial covenants, contract-buying, and predatory lending, topics that are not addressed in this lesson. It is important for students to recognize that these and other structural forces have helped to create segregated communities, a lack of BIPOC homeownership, the racial wealth gap, and other racial disparities in health and educational attainment. Students should be able to identify and critique racist laws, policies, and practices, rather than blaming individuals for their circumstances.

Day 1 of this lesson is structured around a game, the goal of which is to win the most money by purchasing houses. What students will not know before the game begins is that, depending on which color they are playing with (red, yellow, or blue), the rules will make it much easier or harder to win. In essence, this game simulates how Black people and other people of color have been obstructed from purchasing homes due to federally sanctioned redlining practices that began in the 1960s. In order to keep this activity relatively straightforward, the game provides a simplified version of how wealth can be amassed through homeownership. You can make the scenario more mathematically accurate and complex, however, such as by adding compounding interest.

The activity on Day 2, guided by the handout "Addressing the Harm of Housing Discrimination in Jackson," presents students with a relatively simple scenario for the purpose of exploring how homeownership vouchers can help close the racial homeownership gap, build wealth in BIPOC communities, and restore some of the harm from racist housing practices such as redlining and racial covenants. In this activity, students get to distribute homeownership vouchers to neighborhoods with different racial compositions in order to address the legacy of housing discrimination in a fictitious city. It is important to note (for yourself and your students) that there is no one correct answer to the problem posed in this activity. Rather, there are many answers that students can justify mathematically. Therefore, this scenario requires students to reach an answer that is both mathematically correct and that they can justify through a lens of racial equity and their personal values. Some of the ethical questions students will have to grapple with include:

- Is it fair to give each neighborhood the same number of vouchers, even if that results in spending different amounts of money on each neighborhood?
- Is it fair to spend the same amount of money on each neighborhood, even if it means each neighborhood receives a different number of vouchers?
- Does every neighborhood deserve at least some vouchers? Can students justify concentrating all their vouchers in one or two neighborhoods?

There are many different ideas about how our country should address the legacy of racially discriminatory housing laws and practices; homeownership vouchers provide just one approach, and it has its detractors. One of the challenges of addressing these historical harms is that many neighborhoods that were redlined have since been gentrified, and Black and other families of color have often been displaced from cities into suburbs, making geographic solutions less effective.

## **LESSON PROCEDURE**

#### **Day 1: Introduction to Redlining**

- Before introducing the activity, use any method to randomly but equally assign students the colors RED, YELLOW, and BLUE. Then have the students form groups of three in which each color is represented no more than once. (If your class does not divide evenly into groups of three, you can have one or two groups of two, as long as their colors are different; in groups of two, pairs of RED and BLUE will demonstrate the concept of this activity best.)
- 2. In this activity, students will work in groups of three to play a game to simulate how redlining has prevented some people from building wealth while allowing others to amass wealth through homeownership.

Distribute the handout called "The Homebuying Game" along with one six-sided die per group, and review the game rules and scorecard with students before they begin playing. Once students understand the rules and scorecard, give them the following information:

- RED buys a house if they roll a 1.
- YELLOW buys a house if they roll a 1, 3, or 5.
- BLUE buys a house if they roll a 1, 2, 3, 4, or 5 (not 6).

If necessary, provide scaffolding by role-playing a few rounds as a YELLOW player in front of the class, getting students to help calculate your score each round. A sample scorecard for a YELLOW player is included in the Appendix.

- 3. After students have finished playing the game, engage them in a class discussion by posing the following questions:
  - Which color won from each game? (The most likely answer is BLUE; some groups might say YELLOW; it would be highly unlikely for anyone playing with RED to win.)
  - Why did the BLUE player (or BLUE and YELLOW) win the most games?
  - Why didn't the RED player ever win any games?
  - RED players: How did you feel while playing this game? (Try to elicit feedback from RED players who express that the game felt unfair, that the odds were stacked against them, and that they had no way of winning.)
- 4. Show students the video <u>History of Redlining Indianapolis, IN</u> (5:50 minutes) made by the Fair Housing Center of Central Indiana. Explain that while this video focuses on Indianapolis, the practice it describes took place in over 100 metropolitan areas around the United States. As students watch the video, have them look, listen, and respond in writing to comprehension questions to ensure they are actively engaged. These questions could include:
  - What is redlining?
  - How did redlining harm some people while giving advantages to others?
  - Who has been harmed by redlining?

After they watch the video, consider showing students the <u>data on current U.S. homeownership rates based on</u> <u>race</u>, which demonstrate the impact redlining and other forms of housing discrimination continue to have on BIPOC today.

5. In class or for homework, have students write a paragraph explaining how the Homebuying Game they played in class was related to the history they learned in the video <u>History of Redlining – Indianapolis, IN</u>.

#### Day 2: Repairing the Harms of Housing Discrimination

1. Pose the question for students: Why does owning a home typically help people build wealth? Students should brainstorm their own lists, compile joint lists in pairs or small groups, and then share out to create a class list that you can document on the board for everyone to see. You can also add your own ideas to the list.

Possible student responses:

- They can sell it later for more than the purchase price.
- They can use it to borrow money to pay for college, make home improvements to increase the value of the house, or make other investments.
- A home that is owned can be gifted to children or grandchildren as an inheritance.
- Monthly mortgage payments typically remain the same from year to year, whereas rent would steadily increase.
- Homeowners can take deductions to lower the amount of taxes they pay.
- 2. Put students into groups of 2-4. Distribute the handout called "Addressing the Harm of Housing Discrimination in Jackson." Provide students with time to read the scenario and the central task, and ask questions to check their understanding of the overall goal of the activity. At this point in the activity, students may not have a clear idea about the process they will use to solve this problem.

Ask students why they would get \$500 for each home they already owned, and how this is connected to the opening reflection question. While in real life owning a home does not result in getting a monthly cash payment, the idea is that owning a home leads to wealth creation, which is what the \$500 payments in this game are meant to simulate.

It may be necessary to briefly discuss what a mortgage and mortgage payments are as these concepts are referenced in the Homebuying Game.

3. Before students begin working on Questions 1-3 from the handout, and based on your students' math background, it might be helpful to work through an example together. For example, you might ask: "What would it cost to provide homeowner vouchers for one year to 50 families in Neighborhood A? How would that impact homeownership rates in the neighborhood?" The answer is worked out below:

Median Monthly Income (given)	\$3,000
Amount household would pay towards mortgage	\$3,000 x 25% = \$750
Amount required from voucher	\$1,500 (given) - \$750 = \$750
Cost to city for 50 vouchers per month	\$750 x 50 = \$37,500
Cost to city for 50 vouchers annually	\$37,500 x 12 = <b>\$450,000</b>
Current homeownership rate (given)	25%
Current homeowners in Neighborhood A	25% of 5,000 = 1,250
New total homeowners in Neighborhood A	50 (given) + 1,250 = 1,300
New homeowner rate in Neighborhood A	1,300 ÷ 5,000 = <b>26%</b>

Students should see that the example above costs \$450,000 per year when they have a total of \$6,000,000 to work with, so clearly they can provide more vouchers across the city than in this example.

4. If time permits, have students start with Questions 1-3 in the Exploring the Problem section, which will give them practice before they must determine their own plans. These problems can be solved through some version of guess-and-check, or they can be solved algebraically, requiring students to write and solve an algebraic equation to arrive at X (the number of households that can receive vouchers in a given neighborhood).

Note that in Question 2, spending all \$6M on Neighborhood C would bring their homeownership rates over 100%, so this is not a plausible scenario, but it may be helpful for students to see and struggle with this on their own before you help them make sense of their answer.

Additionally, Question 3 would result in an annual cost of over \$33M, so this is also not a plausible scenario, though it could still be useful for students to solve this problem and reach this conclusion on their own.

- 5. If possible, provide students with time to identify three different scenarios for distributing the homeownership vouchers. Once they have explored several scenarios, students will need to settle on a final plan. Some of the reasons why they might eliminate a scenario include:
  - The cost would exceed their \$6M budget.
  - The cost would be much less than \$6M, and they want to help more people.
  - The scenario would boost homeownership rates in a neighborhood to over 100%.
  - The scenario does not go far enough to address the racial inequities in homeownership rates.

Note that Question 8 in the handout is considered an extension question.

- 6. Close class by facilitating a conversation in which students share, discuss, and debate the merits of their different solutions. Ask them to consider:
  - What are the pros and cons of each proposed solution?

#### **Demonstration of Learning**

This lesson provides an excellent opportunity for students to present their findings to their peers, and possibly to others in the school community as well. Students should present the scenarios they explored and justify why they settled on their final plans. They need not only to demonstrate that their solutions are mathematically sound but also to explain why their own plans are the best solution to addressing the underlying racial injustices the city has faced because of housing discrimination.

#### **Extension Opportunities**

 Have students conduct research on a specific city that experienced redlining, starting with the Home Owners Loan Corporation (HOLC) maps accessible via the <u>Mapping Inequality</u> website. Students can research topics and find data on poverty rates, educational attainment, wealth, and homeownership as these relate to race in order to investigate how housing discrimination has impacted generations of people in these communities.

This activity uses the following resource:

Mapping Inequality [database], available at: <u>https://dsl.richmond.edu/panorama/redlining</u>.

 Have students research approaches other than vouchers for addressing the harms of redlining and then present what they learned to their classmates. Students should be sure to incorporate math to demonstrate the effectiveness of these approaches.

#### **Additional Resources**

Badger, E. (2017). How redlining's racist effects lasted for decades. *The New York Times*. Accessed September 1, 2021 at: <u>https://www.nytimes.com/2017/08/24/upshot/how-redlinings-racist-effects-lasted-for-decades.html</u>.

Homeownership rates show that Black Americans are currently the least likely group to own homes. (2020). USA Facts. Accessed April 1, 2022 at: <u>https://usafacts.org/articles/homeownership-rates-by-race/</u>.

This resource includes data on recent rates of homeownership in the U.S. by race.

Mapping Inequality [database], available at: <u>https://dsl.richmond.edu/panorama/redlining</u>.

This database combines data from all the Home Ownership Loan Corporation (HOLC) maps that originally designated redlined neighborhoods. Also contains over 100 HOLC maps.

Menendian, S., Gambhir, S., & Gailes, A. (2021). The roots of structural racism: Twenty-first century racial residential segregation in the United States. Othering & Belonging Institute. Accessed September 1, 2021 at: <u>https://belonging.berkeley.edu/roots-structural-racism#</u>.

This comprehensive report, which includes an interactive map and other multimedia, explores the extent of racial segregation and its underlying consequences in communities across the United States.

Perry, A. M., & Harshbarger, D. (2019). America's formerly redlined neighborhoods have changed, and so must solutions to rectify them. Brookings Institution. Accessed September 1, 2021 at: <u>https://www.brookings.edu/research/americas-former-ly-redlines-areas-changed-so-must-solutions/</u>.

Urban Displacement Project [website and database], available at: <u>https://www.urbandisplacement.org</u>.

This resource contains interactive maps from around the United States that demonstrate the impacts of gentrification and displacement on people of color.

Warren, E. (2019). My housing plan for America. Medium. Accessed September 1, 2021 at: <u>https://medium.com/@teamwar-ren/my-housing-plan-for-america-20038e19dc26</u>.

#### References

Baradaran, M. (2018). Jim Crow Credit. *UC Irvine L. Rev.*, 9, 887. Accessed September 1, 2021 at: <u>https://scholarship.law.uci.edu/cgi/viewcontent.</u>cgi?article=1387&context=ucilr.

Lerman, R. (2021). Expanding Homeownership Vouchers Could Help Boost Black Homeownership and Wealth. Urban Institute. Accessed September 1, 2021 at: <u>https://www.urban.org/urban-wire/expanding-homeownership-vouchers-could-help-boost-black-homeownership-and-wealth</u>.



# **The Homebuying Game**

This is a game for three people. One player will be RED, one player will be YELLOW, and one player will be BLUE.

Here are the rules:

- Each player starts with \$1,000.
- There are 10 rounds of play, and each player gets one turn per round.
- When it is your turn, roll the die and record your roll. If you roll a "magic number" (your teacher will tell you more about your magic number), you will "buy a house."
- A house costs \$500.
- For every house you owned from previous rounds, you get an additional \$500 per round.

Example: If you already own three houses and then you buy a new house, you would subtract \$500 (the cost of the new house) from your score and also add \$1,500 to your score (the amount gained on the three houses you already own), which means you would have \$1,000 more than in the previous round.

- After 10 rounds, the player with the largest amount of money wins.
- Keep track of the number you rolled each round and scores for each player in the game on your scorecard.

#### Homebuying Game Scoreboard

Round	Red rolls a	# of houses owned	Total Score	Yellow rolls a	# of houses owned	Total Score	Blue rolls a	# of houses owned	Total Score
Starts with:		0	\$1,000		0	\$1,000		0	\$1,000
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									



# Addressing the Harm of Housing Discrimination in Jackson

You and your peers are members of the City Council in the city of Jackson. For many years, Black people and other people of color were prevented from buying homes in certain neighborhoods in Jackson because of redlining and other discriminatory practices. Generations later, these racist practices have contributed to inequitable conditions in predominantly BIPOC neighborhoods.

Your group is responsible for developing a proposal to help address the harms caused by discriminatory housing practices. The city has allocated \$6,000,000 per year that you can use to address these issues through **homeownership vouchers**.

Homeownership and Racial Composition of Jackson Neighborhoods						
Neighborhood	Racial Composition of Neighborhood	Households in Neighborhood	Homeownership Rates	Median Monthly Income		
A	Majority BIPOC	5,000	25%	\$3,000		
В	Majority White	2,000	50%	\$5,000		
С	Mix between White and BIPOC	1,200	30%	\$4,000		

Under the Homeownership Voucher Program, a household purchasing a new home would pay 25% of their monthly income towards the mortgage payment and would get a homeownership voucher from the city of Jackson to pay the difference.

Assume that the total monthly mortgage payment for participants in the Homeownership Voucher Program would be \$1,500. For example, if a family paid \$500, the city of Jackson would pay the additional \$1,000 that month, or \$12,000 for the year.

#### **Creating a Racial Equity Homeownership Plan**

Your task is to create a Racial Equity Homeownership Plan that distributes homeownership vouchers to Jackson neighborhoods. Your group needs to determine how many vouchers to provide to each neighborhood given your budget for the year.

You must consider at least three scenarios before choosing one as your final plan.

#### **Exploring the Problem**

- 1. Imagine you only provided vouchers to households in Neighborhood A. What is the largest number of households there you could help? What would be the new homeownership rate in the neighborhood at the end of the year?
- 2. Imagine you only provided vouchers to households in Neighborhood C. What is the largest number of households there you could help? What would be the new homeownership rate in the neighborhood at the end of the year?
- 3. If you wanted to bring homeownership rates in Neighborhood A up to 100%, how much money would that cost the city of Jackson per year?

#### **Creating a Racial Equity Homeownership Plan**

Now that you have explored the problem, you need to develop your Racial Equity Homeownership Plan. Remember to explore at least three scenarios before choosing the scenario you think is best. Show all your work and make it clear which scenario you are selecting as your final plan.

#### **Questions About Your Racial Equity Plan**

- 4. How many households from each neighborhood would you support with homeownership vouchers?
- 5. Why did you choose this plan from the different ones you considered? Why didn't you select the other plans?
- 6. Based on your plan, how much money would the city of Jackson be spending on each neighborhood per year?
- 7. What would be the new homeownership rates in each neighborhood by the end of the first year?

#### **Extension Question**

8. Imagine if you continued with this same plan for the next three years. What would be the new homeownership rates in each neighborhood? How would this compare to the current homeownership rates?

## **Appendix: Example Scorecard (Yellow)**

	1, 3, or 5 wins	Total Score
Round #	Yellow rolls a	Starts with: \$1,000
1	б	\$1000 (no loss, no gain)
2	1	\$1000 (from previous round) - \$500 (cost of new house) = \$500
3	5	\$500 (previous score) - \$500 (new house) + \$500 (gain x 1 house) = \$500
4	1	\$500 (previous) - \$500 (new house) + \$1,000 (gain x 2 houses) = \$1,000
5	5	\$1,000 - \$500 + \$1,500 = \$2,000
6	4	\$2,000 + \$2,000 (gain x 4 houses) = \$4,000
7	5	\$4,000 - \$500 + \$2,000 = \$5,500
8	2	\$5,500 + \$2,500 (gain x 5 houses) = \$8,000
9	3	\$8,000 - \$500 + \$2,500 = \$10,000
10	5	\$10,000 - \$500 + \$3,000 = \$12,500 (FINAL SCORE)

## MATH LESSON 8 RACIAL DISPROPORTIONALITY IN POLICE KILLINGS AND USE OF FORCE

Suggested time: Three to five 50-60 minute class periods Suggested units: Algebra I, Statistics

### **Overview**

This lesson uses data to explore racial disproportionality among the victims of police killings and police use of force. First, students will investigate data that show Black and Latinx people are killed by police at rates that are disproportionate to their overall representation in the U.S. population. Second, students will examine data that debunk the misperception that police kill more Black and Latinx people because they commit more crimes. Third, students will write and solve algebraic equations to determine the reduction in police killings of Black and Latinx people required to achieve rates proportionate to White people. Finally, students are encouraged to creatively share their findings about this topic through several possible project ideas.

### **Objectives**

- Students will calculate and compare rates to explore disproportionality.
- Students will create and interpret graphs.
- Students will write and solve algebraic equations.
- Students will recognize unfairness on the individual level (e.g., biased speech) and injustice at the institutional or systemic level (e.g., discrimination).
- Students will express empathy when people are excluded or mistreated because of their identities and concern when they themselves experience bias.

### **Key Understandings**

- Black and Latinx people are killed by police at rates that are disproportionately high to their representation in the population.
- Black and Latinx people are more likely to be killed by police than White people are, even when the crime they are accused of committing is the same.

**Possible misunderstanding:** Black and Latinx people are more likely to be killed by police because they are more likely to commit crimes or act violently towards police.

### **Materials**

- Handouts (included at the end of this lesson):
  - Police Killings by Race, 2015-2021
  - Severity of Police Use of Force by Race

### Vocabulary

disproportionality percent police use of force proportionate rates

### **National Standards**

This lesson aligns with the following Common Core Mathematics Standards:

• **CCSS.MATH.CONTENT.HSA.REI.B.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters

This lesson also aligns with the following <u>Social Justice Standards</u> learning outcomes:

- JU.9-12.12 | can recognize, describe and distinguish unfairness and injustice at different levels of society.
- **AC.9-12.16** I express empathy when people are excluded or mistreated because of their identities and concern when I personally experience bias.

### **Note to Teachers**

This lesson examines a painful and upsetting topic: deaths caused by police encounters. As a result, the content in this lesson has the potential to be very triggering for some of your students, and for Black and Latinx students in particular. Below is some guidance that will support you and your students during this experience:

- It is important that you prepare yourself and your students for this lesson in advance. As you prepare to facilitate the
  lesson, consider talking with a trusted friend or journaling to reflect on how you feel about police killings of civilians and
  the disproportionate police murders of people of color (Black men in particular). What memories and emotions does this
  topic elicit for you? How will you care for yourself before and after engaging with students in this difficult content? What
  questions do you have about this topic that you might want to research or explore before teaching the lesson? How will
  you respond if students make inappropriate comments, express strong emotions by crying or shouting, want to leave the
  classroom, seem indifferent, or try to challenge the idea that these are problems worth addressing?
- Preparing students to engage in this lesson will include developing or reviewing agreements about what students can do
  when they are feeling upset, how they should treat and care for one another, and how they can ask questions and make
  comments in ways that do not cause harm to others. Clarify in advance: Can students leave the room if they get upset?
  Can they "check out" for a bit within the classroom? Will you respond differently if the person who requests a break is
  White or is a student of color? Do our White students have a greater responsibility to sit with the discomfort these topics
  might cause and, if so, how can you support them in confronting, rather than disengaging from, these hard truths?
- Compassion will be an important theme to focus on as you prepare for and facilitate this lesson. Consider how you
  will demonstrate compassion for students who experience a range of emotional reactions and how you will help your
  students extend this compassion towards one another. Facilitating this lesson may involve demonstrating compassion for
  students who have known people who have been hurt or killed by police as well as students who have police officers in
  their families.
- You might also look for ways to integrate mindfulness into this lesson. For example, periodically stop and have students slow down, close their eyes, breathe, and notice what is and is not there in their thoughts, bodies, and feelings, while you do the same. You can help students with this practice by modeling it for them.
- You may want to alert your colleagues and school counselors that you will be exploring these topics with students. Perhaps a counselor can join the class as you conduct the lesson, or at least be available if needed.

 After each class, continue checking in with students. It may take time for them to process their feelings or to notice emotions that are coming up for them. New questions, concerns, and memories might arise, and making space for students to continue asking and expressing these thoughts will help you care for them as you explore painful subjects.

Finally, while students will be exploring racial disproportionality of police killings, it is also important to name and discuss with students that eliminating all police killings of civilians is the broader goal, not just ensuring that police killings become proportionate across racial groups.

### **LESSON PROCEDURE**

#### Day 1: Racially Disproportionate Rates of Police Killings

Let students know that they will be exploring a complex and sensitive topic: police killings. In particular, they
are going to investigate differences in the rates of people killed by police and subject to police use of force
based on race. Let them know it is OK if they find this content emotionally challenging or upsetting, and
provide them with some guidelines on how to take care of themselves and one another. Then give students
three minutes to respond in writing to this prompt:

Think of people you know or have heard of who have been killed by the police. What do you know about the circumstances of their deaths? What do you know about the races of the people involved? What questions do you have?

Have students share their answers with a partner. Consider having a few students share their responses with the class.

- 2. Distribute the handout entitled "Police Killings by Race, 2015-2021." Consider projecting the data for the whole class to view. Ask students to reflect on the following questions in pairs, in small groups, or as a class:
  - Which racial groups have been killed the most by police? Which racial groups have been killed the least? How do the total numbers of people killed by police in each racial category compare to one another?

Possible student response: Police have killed almost two times as many White people as Black people, and nearly three times as many White people as Hispanic/Latinx people. There is also a much smaller number of people killed by the police who do not fall into one of these three racial groups.

• Why is it relevant how many people from each racial group there are in the U.S.?

Possible student response: The total number of people in each racial group matter because they give us context for understanding how many people of each race have been killed relative to their overall proportion of the population.

• How might we compare the data from Columns B and C to understand their relationship?

Students might suggest calculating a percent. Depending on time, you might let them try this approach, or try calculating one as a class. Students should see that this will result in very small percentages that are challenging to compare. Either look for someone to suggest that you calculate a rate, or suggest this approach yourself. It might also be interesting to engage students in a short discussion about what the denominator of that rate should be: 1,000 people? 100,000 people?

• What are the rates of people killed by police, by race, per million?

Depending on your established class routines, work with students to calculate one set of rates as a model and then let them calculate the rest on their own, or have them calculate all four rates and then compare answers.

3. Have students fill in the rest of the table in their handouts. For each row in the table, have students calculate the percentage each race represents among all people killed by police and the percentage each race represents within the total U.S. population. For reference, these percentages, along with the death rates based on a denominator of one million, are included in the table below:

Race	# of people killed by police	Total U.S. population	Rate of people killed by police (per million)	% of Total Police Killings	% of Total U.S. Population
Black	1,518	42,000,000	36	27%	13%
Hispanic/ Latinx	1,061	39,000,000	27	19%	12%
White	2,897	197,000,000	15	51%	60%
Other	239	49,000,000	5	4%	15%
Total	5,715	327,000,000			

4. Have students graph the data from this table. You could specify the type of graph or give them the flexibility to choose. You might encourage them just to graph the rates, or to compare the two percentage columns by race. The original graph from the Washington Post is below, and you could show it to students after they make their own, or, if time is limited, as an alternative to having them make their own graphs.



Source: Tate et al. (2022), https://www.washingtonpost.com/graphics/investigations/police-shootings-database/

- 5. Once students have made a graph, or have been given the graph from the Washington Post, engage them in conversation or have them respond to the following questions for homework. If students complete these questions outside of class, be sure to make time the following day to discuss their answers in person as this content feeds into the next part of the lesson:
  - What do you notice from looking at this graph?
  - Why are the widths of the bars in this graph different sizes?
  - Which group(s) of people are killed by police at the highest rates?

- How are you feeling about this information?
- What questions do you have about this information?
- 6. End with an exercise in mindful reflection. Acknowledge to students that, although you have been taking a mathematical approach to the topic of police killings, these numbers represent real people, each of whom has an individual story that cannot be captured in numbers. Give students five minutes to write a private reflection on how they are feeling, what they are thinking, and at least one plan they have for self-care.

Asynchronous work: Have students finish answering the questions from the handout if they did not complete them during class. In addition, ask students to imagine they were explaining what they learned in class today to a friend or family member. Have them write down their explanation and make sure to include the words "disproportionate" and "rate."

#### Day 2: Racially Disproportionate Police Usage of Force

- 1. Have students share their homework in pairs or small groups. If students have questions, invite them to share their questions with the class. Ideally, hold off on addressing students' questions at this time, as they might be explored during the lesson; instead, write these questions on the board and commit to returning to them later.
- 2. Project the following quotation for students to read or distribute it on paper. Have a student or students read the quotation out loud while others listen or read it silently:

"There is a dominant narrative among police executives about racial disparities in use of force.... It is the same as the dominant narrative around racial disparities in policing in general: They are unfortunate, they are unintentional, and they stem mostly from racial disparities in crime rates.

"This narrative is best exemplified by the words of Chief Ed Flynn of the Milwaukee Police Department who claimed that, 'If I draw an ellipse over our poorest neighborhoods and then find an ellipse and draw it where most of our 911 calls are, and then draw the ellipse over where most of our crime victims are... it's the same neighborhoods and the same zip codes.'" (Goff et al., 2016, p. 5)

- 3. Have students discuss this quotation in pairs or small groups. Questions they might discuss include:
  - How would you paraphrase this passage in your own words?
  - How does this passage relate to what we learned last time about racial disproportionality in police killings?
  - How is Chief Ed Flynn (who is White) trying to explain or justify the racial disproportionality in policing? What argument is he making?

Note that the quotation from Chief Flynn is an example of how people might try to justify the disproportionate killing of BIPOC by police. The narrative suggests that the reason a disproportionately high number of BIPOC are killed by police is that they commit a disproportionately high number of crimes. The purpose of the activities below is to explore and debunk this myth.

- 4. Explain to students that they will be looking at data from the Center on Policing Equity, a project that was created by researchers at Stanford University in partnership with the Denver Police Department. The researchers looked at data from 12 police departments around the country, identifying every arrest those departments made over a one-year period, as well as the race of the person arrested and which of these arrests involved use of force by police.
- 5. Share the following table with students. Your goal is to help them first understand what data are included in the table before they begin interpreting those data.

# Table 4. Use of Force Rates per 1,000 Arrests\*, by Citizen Race

### Sample: 12 Department-Years (only most recent year for each department)

	Mean	Median	Minimum	Maximum
Black**	46	21	9	308
White**	36	15	5	255

\*Arrest data were obtained from BJS and include all offenses. \*\*Use of Force data are for non-Hispanic Black and non-Hispanic White citizens, whereas arrest data are for all Black and all White citizens regardless of ethnicity.

Source: Goff et al. (2016) <u>https://policingequity.org/images/pdfs-doc/CPE\_SoJ\_Race-Arrests-UoF\_2016-07-08-1130.pdf</u>

Have students respond to the following questions in pairs or small groups, and then briefly have students share answers with the whole class to check for understanding:

- What does the phrase "per 1,000 arrests" mean in the title of this table?
- When examining police use of force, why is it useful to compare use of force per 1,000 arrests, rather than the total numbers of arrests?
- What do the numbers 46 and 36 represent in this table?
- Of the 12 police departments included in this study, what was the smallest rate per 1,000 arrests involving use of force on White people?
- What was the largest rate per 1,000 arrests involving use of force on Black people?
- How are the mean and median calculated from a set of numbers?
- What do you notice when comparing the rates for use of force against Black and White people?
- 6. Once students understand the data in the table, ask them to discuss the following questions:

Do these data support Chief Ed Flynn's argument that disproportionately more Black people are killed by police because they are committing disproportionately more crimes? Why or why not?

- 7. Distribute the handout "Severity of Police Use of Force by Race." In pairs or small groups, have students answer Questions 1, 2, and 3, and briefly discuss Question 3 with the class to check for understanding. Then provide students time to work on the remaining questions in class or for homework.
- 8. Discuss the final question (Question 9) with students. Have students share the alternative news headlines they wrote as well as why they chose these alternative headlines, using data to justify their answers. In addition, consider posing the following question from Project Zero's <u>I Used to Think...</u> Now I Think... thinking routine: Based on the data you have looked at over the last two classes, what is something you now know or think differently about since before analyzing these data together?

Asynchronous work: Have students finish answering the questions from the handout if not completed during class.

#### **Day 3: Eliminating Disproportionality in Police Killings**

1. Begin with an exercise in mindful reflection. Remind students that, although you have been taking a mathematical approach to the topics of police killings and use of force, the numbers they have been examining, calculating, and analyzing represent the lived experiences of real people, each of whom has an individual story that cannot be captured in numbers. Give students five minutes to write a private reflection on how they are feeling, what they are thinking, and anything that has worked or that they still need regarding self-care. After students have spent some time writing, give students the option of spending an additional three minutes either talking quietly with a partner of their choosing or continuing with their written reflection.

2. Let students know that the question they are going to explore today is: How many fewer Black and Hispanic or Latinx people would have to be killed by police to eliminate racial disproportionality? Have students recall the rates of people killed by police by race. You may want to project the table below on the board or have students refer to their work from their handout "Police Killings by Race, 2015-2021" from Day 1.

Race	# of people killed by police	Total U.S. population	Rate of people killed by police (per million)
Black	1,518	42,000,000	36
Hispanic/Latinx	1,061	39,000,000	27
White	2,897	197,000,000	15
Other	239	49,000,000	5

- 3. As a class or in small groups, have students write and solve an algebraic equation that would identify the total number of Black people killed by police so the rate would be the same as the rate of White people killed. Repeat this process for Hispanic/Latinx people.
- 4. Write and solve a new algebraic equation (or equations) that would identify the reduction (difference) in the number of Black people killed by police so that this rate would be proportionate with the rate of White people killed. Repeat the process for Hispanic/Latinx people. Ask students to articulate what each of these numbers represents, i.e., the lives of individuals that would not have been lost between 2015-2021 if racial disproportionality did not exist among police killings.
- 5. Reiterate that even when achieving proportionality, there would still be large numbers of people from all races dying from interactions with police. Our ultimate goal should be to eliminate this problem entirely. Nevertheless, any reduction in the number of people killed by police is meaningful, as every individual life saved has a human impact that cannot be measured in numbers.
- 6. Students should prepare to share what they have learned from this lesson with other people (see Demonstration of Learning). Before starting their projects, students might also spend time on the website <u>Mapping Police</u> <u>Violence</u>. This site contains maps, data on police killings in many U.S. cities, links to useful articles, evidence that police killings are not related to crime rates, information about the types of incidents that led to police killings, and more.
- 7. Close by facilitating a discussion about what students have learned, thought, and felt over the course of this lesson. Look for opportunities to have students discuss in what ways these reflections were impacted by their racial identities. You can leave this discussion open-ended, or you can ask the following questions, adapted from the thinking routine <u>Circles of Action</u> from Harvard's Project Zero:

Based on what we have learned and discussed over the course of this lesson, what can you do to make a difference:

- ....in your inner circles (friends, family, the people you know)?
- ...in your community (your school, your neighborhood)?
- ...in the world?

#### **Demonstration of Learning**

Students should share what they have learned from this lesson with other people, using a creative format of their choice. Examples of creative formats include:

- Writing a short essay or editorial
- Preparing and giving a presentation
- Designing an infographic
- Creating a piece of art
- Writing a newspaper story

Whatever the format, their creative pieces must include the data behind their analyses. These pieces can then be shared with their classmates, or you could invite other students and teachers from your school to learn from your students.

#### **Additional Resources**

Center for Policing Equity [website], available at: www.policingequity.org.

Data on Police Shootings from 50 Largest Cities, [database], available at: <u>https://news.vice.com/en\_us/article/a3jjpa/nonfa-tal-police-shootings-data</u>.

Mapping Police Violence [database], available at: www.mappingpoliceviolence.org.

National Use-of-Force Data Collection [database], available at: https://www.fbi.gov/services/cjis/ucr/use-of-force.

Tate, J., Jenkins, J., Rich, S., Muyskens, J., Fox, J., Fallis, D., & Rindler, D. (2022). Fatal force [database]. *The Washington Post*. Accessed April 1, 2022 at: <u>https://www.washingtonpost.com/graphics/investigations/police-shootings-database/</u>.

#### References

Goff, P. A., Lloyd, T. S., Geller, A. B., Raphael, S., & Glaser, J. (2016). The science of justice: Race, arrests, and police use of force. Center for Policing Equity. Accessed September 1, 2021 at: <u>https://policingequity.org/images/pdfs-doc/CPE\_SoJ\_Race-Arrests-UoF\_2016-07-08-1130.pdf.</u>

Tate, J., Jenkins, J., Rich, S., Muyskens, J., Fox, J., Fallis, D., & Rindler, D. (2022). Fatal force [database]. *The Washington Post*. Accessed April 1, 2022 at: https://www.washingtonpost.com/graphics/investigations/police-shootings-database/.



# **Police Killings by Race, 2015-2021**

Race	# of people killed by police	Total U.S. population
Black	1,518	42,000,000
Hispanic/Latinx	1,061	39,000,000
White	2,897	197,000,000
Other	239	49,000,000

Source: Tate et al. (2022), <u>https://www.washingtonpost.com/graphics/investigations/police-shootings-database/</u>

Your task: Based on the data in the table above, as well as your discussion as a class, fill in the table below.

Race	Rate Killed per People	Percent This Race Represents Among Total # of People Killed by Police	Percent This Race Represents Among Total U.S. Population
Black			
Hispanic/Latinx			
White			
Other			



# **Severity of Police Use of Force by Race**

The data below come from arrest records over a one-year period from different police departments in the United States. The purpose of these data is to examine how severely police officers used different types of force during an arrest. Different types of force were assigned different weights as follows:

- Lethal incidents were assigned a **weight of 6**.
- Less lethal and taser incidents were assigned a weight of 5.
- Canine incidents were assigned a **weight of 4**.
- OC (pepper) spray incidents were assigned a **weight of 3**.
- Weapon incidents were assigned a weight of 2.
- Hands and body incidents were assigned a **weight of 1**.

#### **Understanding the Data**

1. During the arrest of Person A, the police use both spray and dogs (canines). What total Use of Force (UoF) score would be assigned to Person A?

2. During the arrest of Person B, police use their hands/bodies. What total Use of Force (UoF) score would be assigned to Person B?

3. Why is it important to "weigh" these different types of police force when comparing them?

#### Rates of "Severity Scores" by Race



This chart shows the mean (average) use of force severity score for every 100,000 residents of a particular race.

Source: Goff et al. (2016), https://policingequity.org/images/pdfs-doc/CPE\_SoJ\_Race-Arrests-UoF\_2016-07-08-1130.pdf

4. Estimate the average (mean) rate for each race and write your estimation on the graph.

5. In your own words, what does it mean that the Mean UoF Severity Score per 100,000 Black residents is about 650?

6. The fictitious Capital City has 8,000 residents of each race: Black, White, Hispanic, Asian, and Other. Based on your estimates of the Mean UoF Severity Score per 100,000 people by race, determine the total Severity of Force score the police used when arresting people from each racial group in Capital City.

7. Jonestown has 40,000 White residents. Based on your estimates of the Mean UoF Severity Score per 100,000 people by race, what would the size of the Black population of Jonestown need to be for these two communities to have the same total Severity of Force score?

8. In Jonestown, the total severity score is the same for Black and White residents, but the populations of Black and White residents are very different. How might Black residents of Jonestown feel about police? Why?

9. The local television station in Jonestown ran a story with the headline "More Policing Needed in Local Black Community." Based on your exploration of the data about Jonestown, what is another headline the news could have used that would better reflect the experience Jonestown's Black residents might be having with police?