

Class, Level, GLE Range	GED Preparation, CCRS Level B & C, GLE 3 – 6
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Date last revised	May 5, 2019

Title	Disproportional Incarceration: Graphing, Proportional Reasoning, and Social Justice
Time hours and weeks	6 two-hour classes, excluding presentation time which depends on the number of students.
Purpose	Understand relationships collected from graphs. Communicate relationships using graphs.
Goals and Outcomes	<ul style="list-style-type: none"> • Develop and/or strengthen multiplicative reasoning and connect it to visual representations • Sharpen analytic skills to create more critical consumers of data <ul style="list-style-type: none"> ○ Make predictions ○ Inform decisions ○ Influence others • Practice creating and presenting an argument with visual support
Priority CCR Standards	<p>3.MD.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p> <p>6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”</i></p> <p>6.RP.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. <i>For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is a $\frac{3}{4}$ cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”</i></p>
Standards for Mathematical Practice	MP.4 Model with mathematics.
Key Resources	<ul style="list-style-type: none"> • Reading selected from “Prisons and Justice?” issue of <i>The Change Agent</i> https://changeagent.nelrc.org/issues/issue-40/ • Slow reveal graphs and one printed graph posted at https://slowrevealgraphs.com/special-collection-incarceration-in-the-us/

- Bad Date video from <https://mathsnacks.com/baddate.html> (available in Spanish)
- Tables from *Literacy Behind Bars* (Table 3-4 or 6-1)
<https://www.prisonpolicy.org/blog/2016/04/01/literacy/>
- From Prison to PhD podcast <https://www.gse.harvard.edu/news/18/12/harvard-edcast-prison-phd?fbclid=IwAR3F9W2-MunRBYj6S5oGdbvqH7INBwv-E9drL3kpCcegp0i7pVsByleM5go>
- A list of Social Justice issues students may be interested in.

ESSENTIAL QUESTIONS to Guide the Unit

- How do graphs tell stories?
- How can you represent a relationship between quantities?
- How can visual representations be used to predict, influence, or make decisions?
- What does it mean for something to be disproportionate (or out of proportion)?

UNIT OBJECTIVES

By the end of this unit, students will be able to:

- Represent multiplicative relationships from tables in a graph. Include verbal descriptions of the relationship.
- Use graphs to deliver a more convincing message than words alone.

ASSESSMENT

Culminating Assessment - *authentic performance task(s) that demonstrate student learning and integration of the knowledge and skills taught through the objectives*

By the end of this unit, students will demonstrate their learning by...

...creating and presenting a graph and corresponding narrative designed to reveal to us a social injustice and point out a proportional comparison.

Students/the teacher will evaluate learning by ... e.g., using a rubric, checklist, etc.

...referencing a checklist:

- ✓ I found interesting relationships in a table of data that highlights disproportionate justice.
- ✓ I created a graph to tell a story I care about.
- ✓ My narrative includes a proportional comparison.
- ✓ I presented my story and graph to the class.

Other Evidence of Learning

Participation and quality of conjecture with slow reveal graphs. Listen especially for additive and multiplicative thinking revealed here.

LEARNING PLAN

Suggested Sequence of Lessons and Activities

1. Slow reveal of “International Rates of Incarceration per 100,000” bar graph with corresponding proportional reasoning questions. Introduce the social injustice topic, Incarceration. Formative assessment of graph awareness and of proportional reasoning.
2. Slow reveal of “Number of People in Prisons and Jails for Drug Offenses 1980 and 2015” double bar graph.
3. Paper version of “US Prison Population by Offense” bar graph to circle graph. Formative assessment of understanding a whole on a bar graph. See *EMPower: Many Points Make a Point* Teacher Book Lesson 1 for a way to address misconceptions.

4. Slow reveal of “Lifetime Likelihood of Imprisonment of US Residents Born 2001” picture graph. Solicit descriptions of proportional relationships. Formative assessment of ratio. Practice making a statement that expresses a relationship between two data points.
5. Play the video “Bad Date” to connect the word “times” to the more formal word “ratio” and lend understanding to the concept.
6. Worksheet, “Stating and Representing a Relationship,” for practice (preparation for performance task) naming a relationship and making a two-category graph when data is provided. Includes working backwards by identifying the thinking given the circle graph.
7. Identify relationships from data tables 3-4 and 6-1 from “Literacy Behind Bars” and use them to create a graph.
8. Read a story or selection of stories from “Prison and Justice?” from *The Change Agent* beginning with the graph on page 35.
9. Conver-Stations to help students identify a Social Justice topic to present. To each group of 4 students, provide a different a set of pictures of social injustices. Ask each student to pick up a picture that is meaningful to them and explain why. Encourage the group to ask questions of one another; give 5 minutes. Two students from each group rotate to a new group while the other members remain where they are. Continue conversations about social justice issues, but this time, pose a discussion question, or ask the groups to rank or sort pictures.
10. Choose a social justice topic, find data in a table, and identify a relationship. Create and present a graph (bar, circle, or picture graph) highlighting an injustice. Share a corresponding narrative that contains a proportional comparison. [provide a list of topic suggestions, brainstorm, give checklist]

Key Vocabulary – *additional vocabulary may be selected by teachers at the lesson plan level*

Ratio	Incarceration
Proportional reasoning	Justice

Additional Resources – *e.g., background sources for teachers, teacher- or student-generated materials, etc.*

- Teacher background for slow reveal graphs <https://slowrevealgraphs.com/read-about-it/>
- Download slides and one printout of 4 graphs from: <https://slowrevealgraphs.com/special-collection-incarceration-in-the-us/>
- Handout of proportional reasoning questions from “International Rates of Incarceration per 100,000” bar graph
- Bad Date ratio video
- Worksheet “Stating and Representing a Relationship”
- Pictures for Conver-Stations and some prepared discussion questions
- Handout written guidance and websites for finding a topic
- Handout written guidance and checklist for performance task

Conver-Stations

Conver-Stations, a student-led discussion strategy, can be used to:

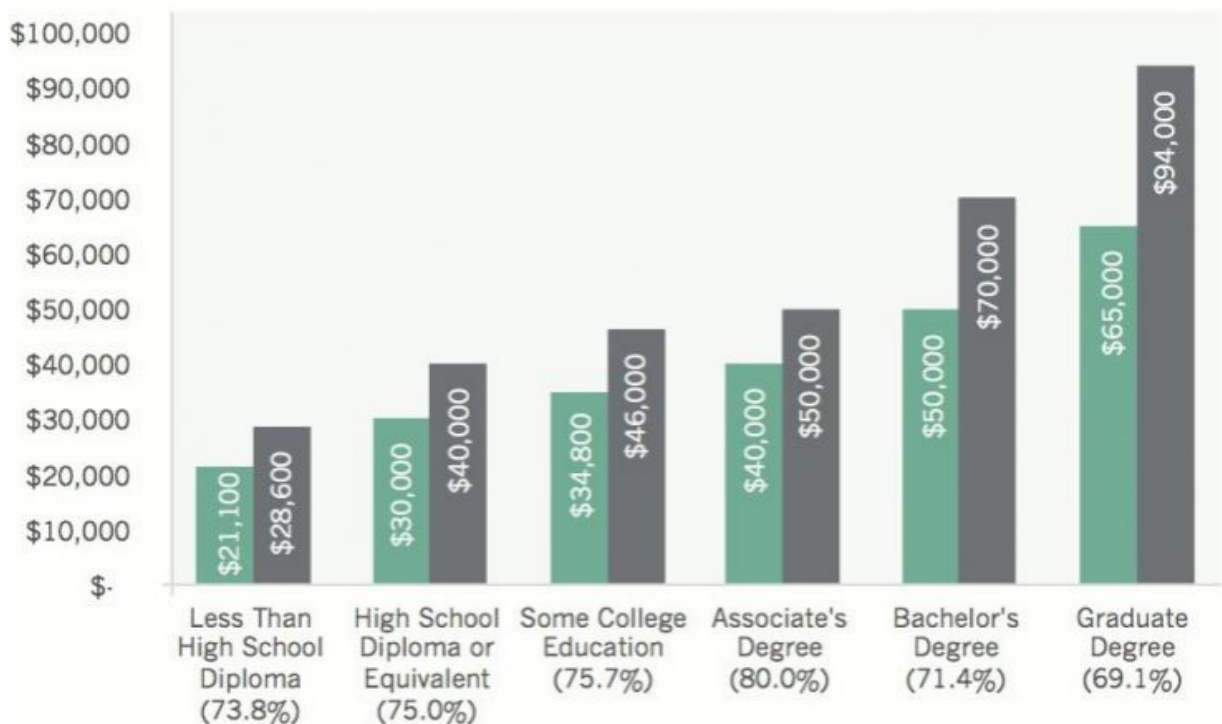
- scaffold toward students identifying a Social Justice topic to present
- provide students more practice analyzing graphs
- listen for information which students find evidence for in the graph (and what they attribute to the graph that is not there)
- identify the use of additive or multiplicative thinking revealed in graph descriptions.

With students in groups of 4, provide 6 – 7 different graphs of a social issue. Ask each student to choose a graph and explain their reasons for their choice to the group. Collect the graphs not chosen. Allow time for students to make sense of each of the chosen graphs and to explain them to each other. Encourage the groups to ask questions of one another and then to talk about the social issues raised by the graphs.

Next, ask two students from each group to rotate to a new group, taking their chosen graph with them, while the other members remain where they are. Ask students to continue their conversations with their new group, and this time, pose the first discussion question after students have had a chance to get started.

- “What is the perspective of the creator of this graph? How do you know?”
- “What assumptions are you making about [topic]? Where do your assumptions come from?”
- “How might this topic be viewed from the perspective of ____?” (explore at least two perspectives)
- “What alternatives to [topic] should be considered?”
- “What other ways might we create a visual for this topic?”

Rotate groups and pose additional questions, as needed, so each student has a chance to make sense of their graph, refine their explanation of what the graph is about, and hear different points of view connected to their graph. This should help students choose a social justice topic.

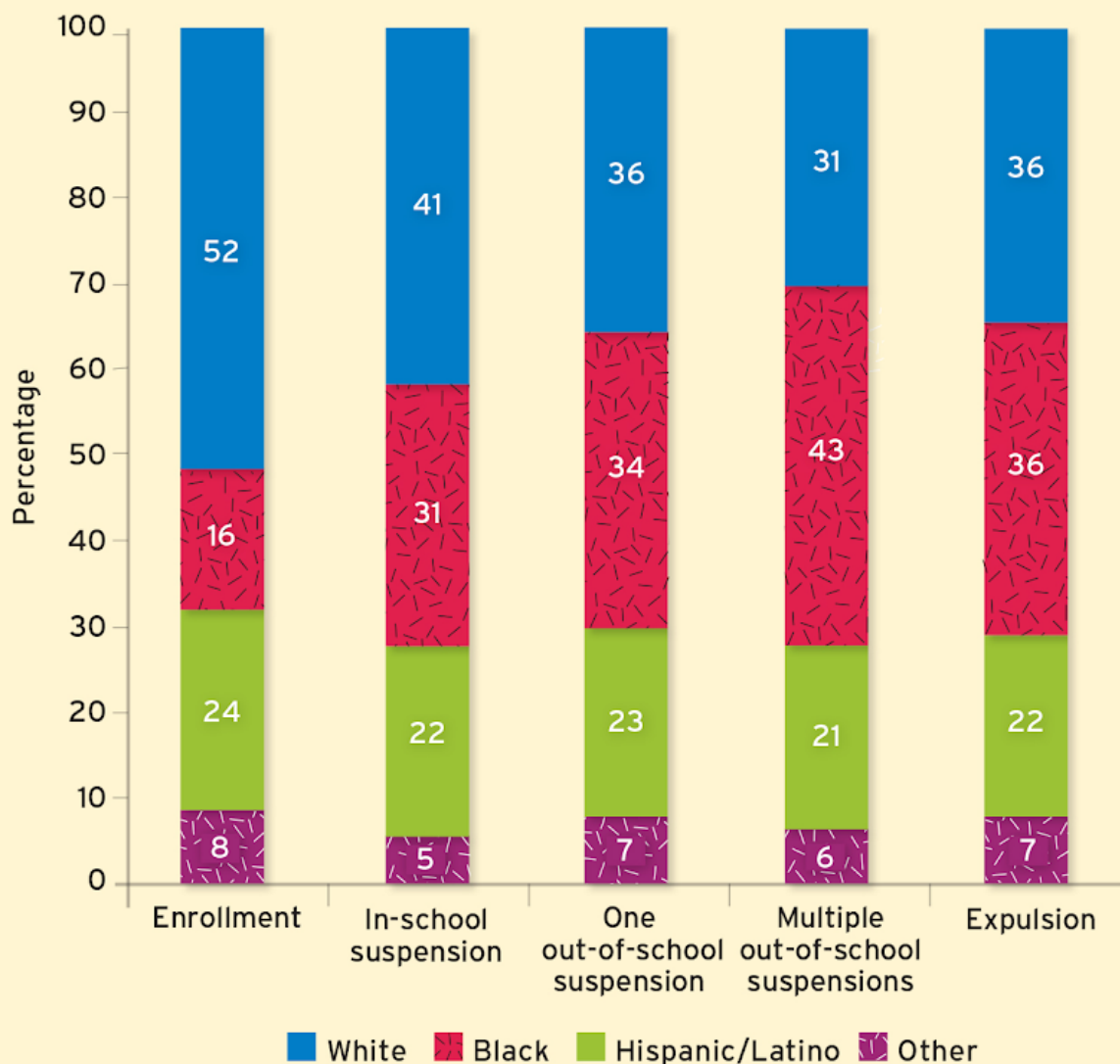


This graph shows the median annual earnings and the gender earnings ratio for women and men at different educational levels in 2013. Full-time, year-round workers ages 25 years and older are included and percentages in parentheses show women's earnings as percent of men's earnings. The analysis is based on American Community Survey microdata.

INSTITUTE FOR WOMEN'S POLICY RESEARCH

<https://www.newsweek.com/gender-pay-gap-wont-close-another-43-years-314249>

Disproportionate Discipline (Figure 2)



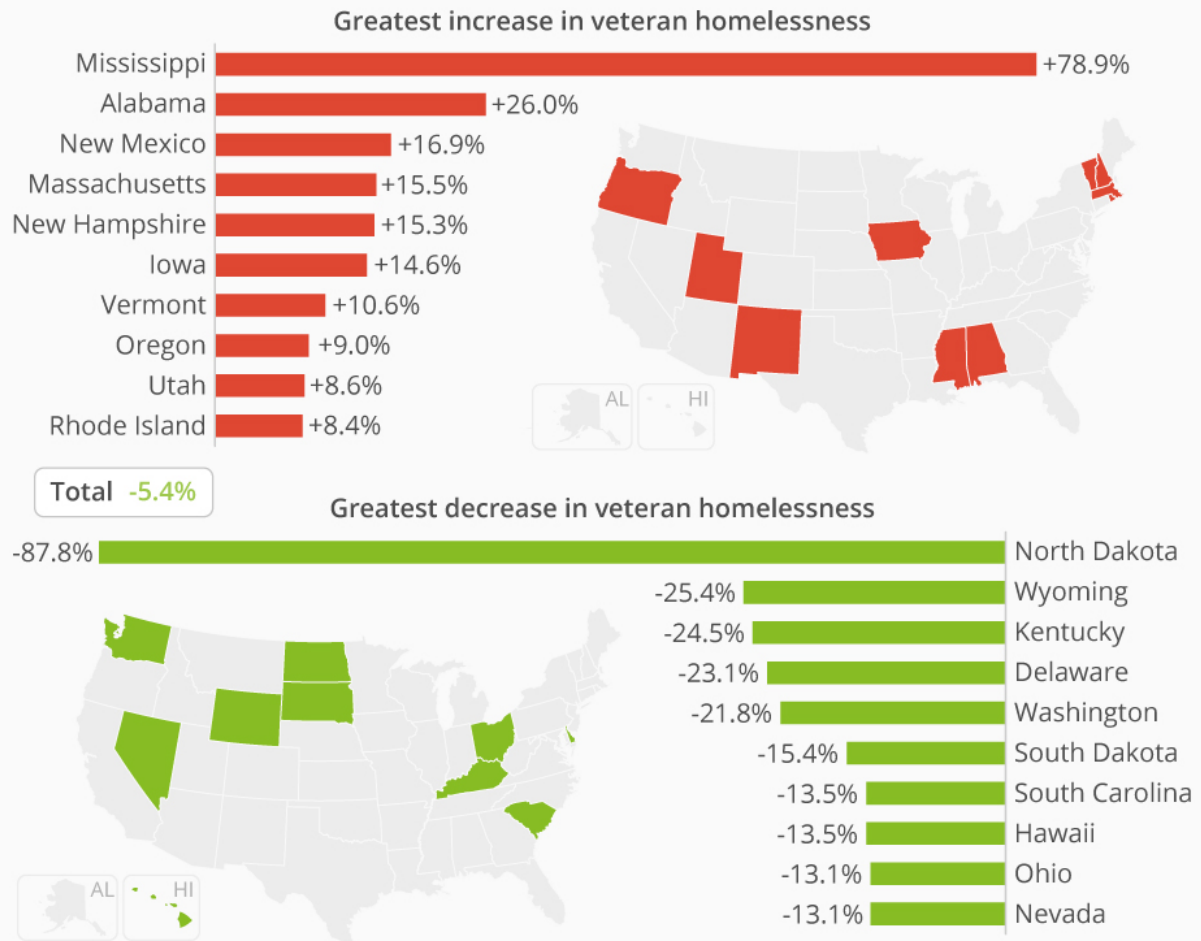
NOTES: "Other" students include Asians, American Indians, Pacific Islanders, and students with two or more races.

SOURCE: U.S. Department of Education, Office for Civil Rights

<https://www.educationnext.org/what-do-we-know-about-school-discipline-reform-suspensions-expulsions/>

Where Veteran Homelessness Is Rising And Falling

% change in the homeless veteran population by U.S. state from 2017 to 2018



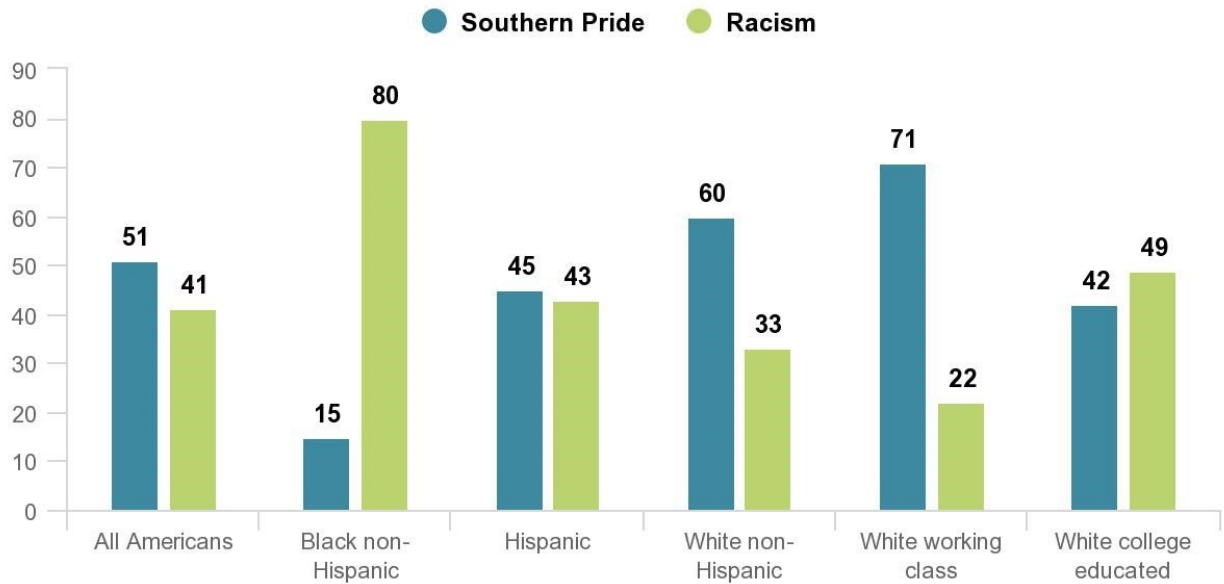
@StatistaCharts Source: U.S. Department of Housing and Urban Development



<https://www.statista.com/chart/16048/the-percentage-change-in-the-homeless-veteran-population/>

Racial, Ethnic and Class Divisions in Perceptions of the Confederate Flag

Do you see the Confederate flag more as a symbol of Southern pride or more as a symbol of racism?

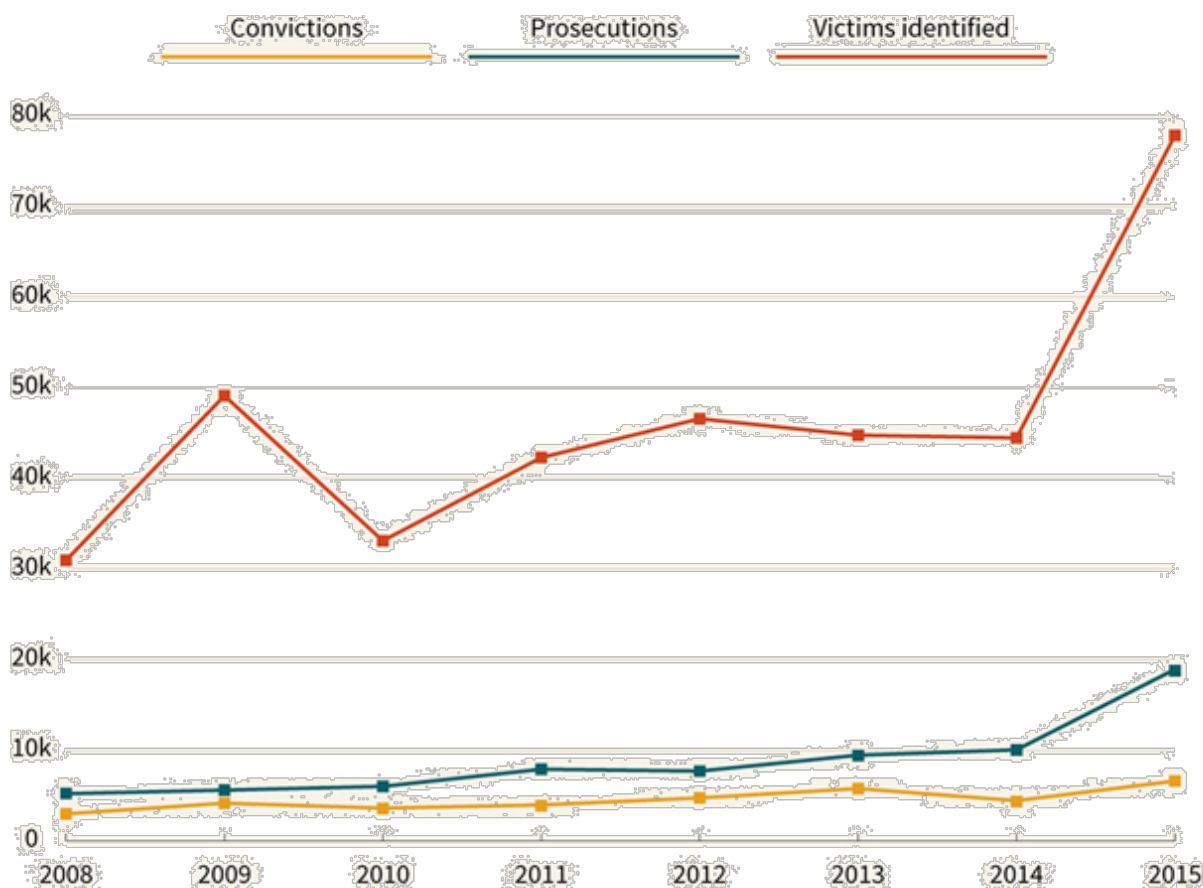


Source: PRRI 2016 American Values Survey.

PRRI

<https://www.saravanderwerf.com/wp-content/uploads/2017/08/southern-pride.jpg>

Prosecuting Human Traffickers Across the Globe

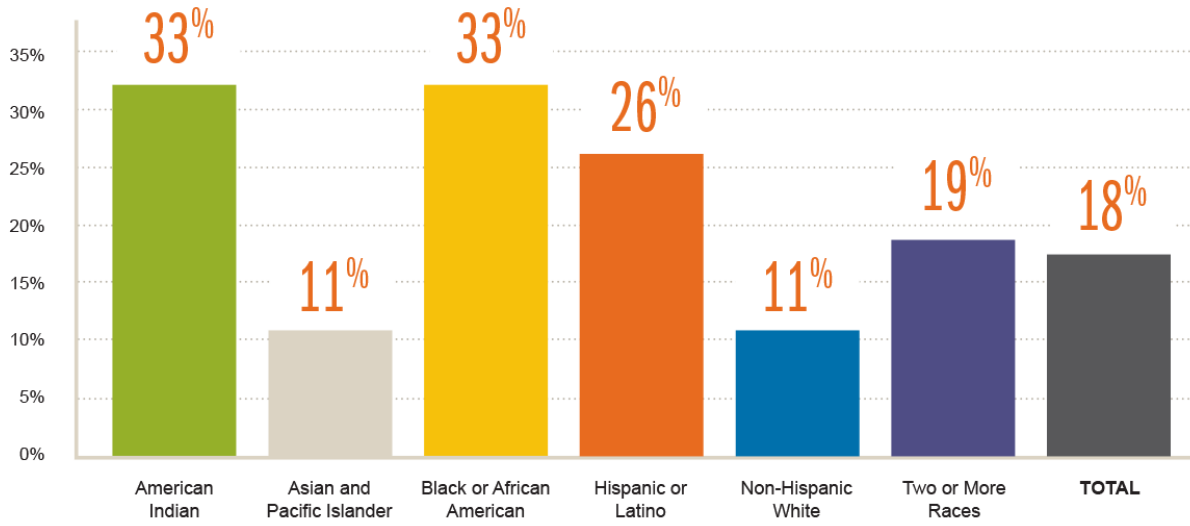


2008: 5,212 prosecutions; 2,983 convictions; 30,961 victims identified. **2009:** 5,606 prosecutions; 4,186 convictions; 49,105 victims identified. **2010:** 6,017 prosecutions; 3,619 convictions; 33,113 victims identified. **2011:** 7,909 prosecutions; 3,989 convictions; 42,291 victims identified. **2012:** 7,705 prosecutions; 4,746 convictions; 48,570 victims identified. **2013:** 9,460 prosecutions; 5,778 convictions; 44,758 victims identified. **2014:** 10,051 prosecutions; 4,443 convictions; 44,462 victims identified. **2015:** 18,930 prosecutions; 6,609 convictions; 77,823 victims identified.

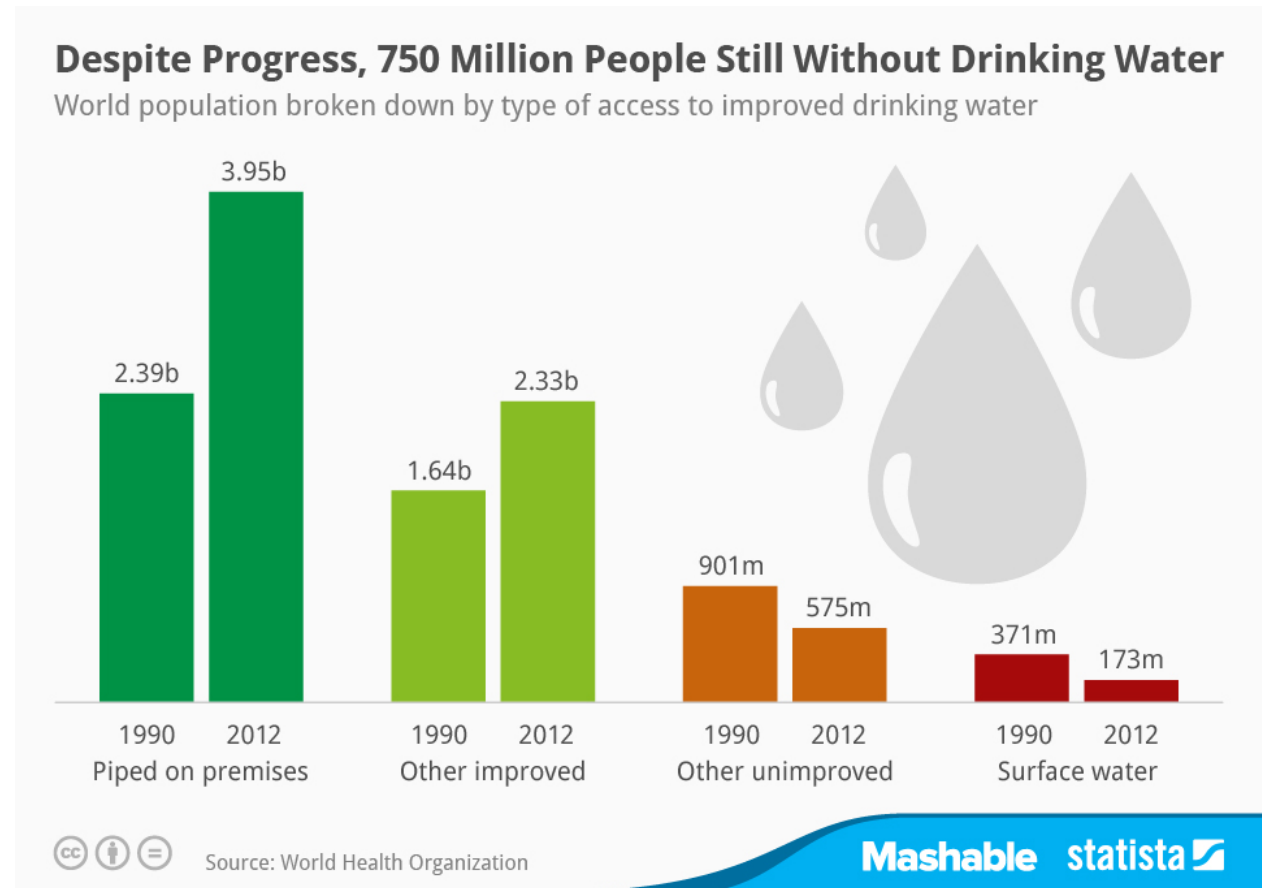
Source: [2016 Trafficking in Persons Report](#)

<https://msw.usc.edu/freedoms-journey-understanding-human-trafficking/>

Children in Poverty By Race and Ethnicity (2017)



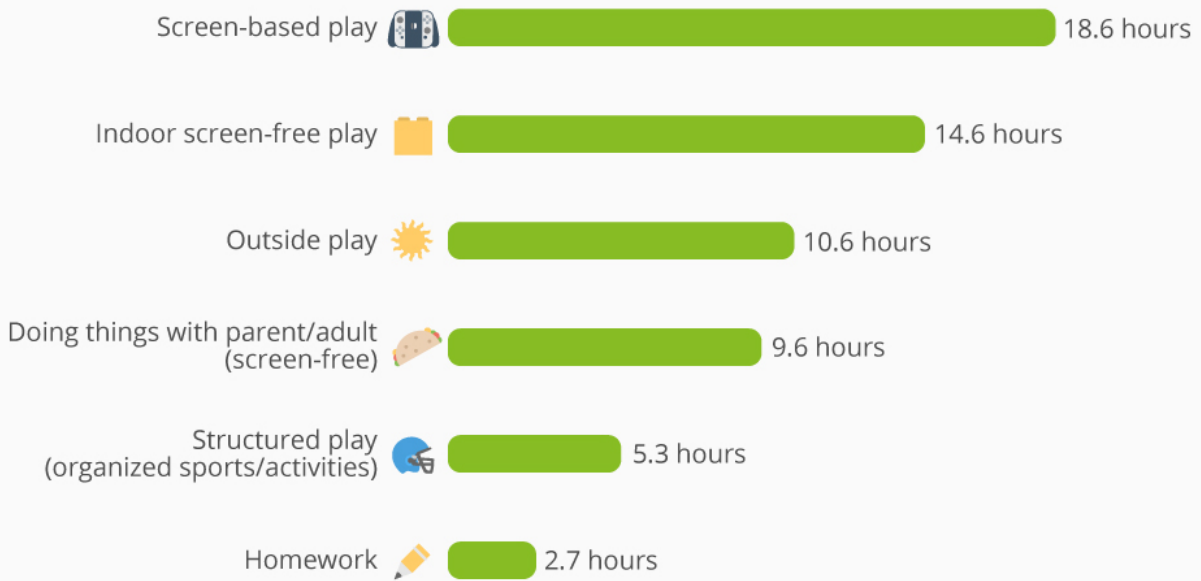
<https://datacenter.kidscount.org/updates/show/213-child-poverty-rate-reaches-prerecession-level>



<https://www.statista.com/chart/2226/world-population-with-access-to-drinking-water/>

Screen Time Dominates Kid's Play

U.S. children's average free-time hours per week, by activity type*



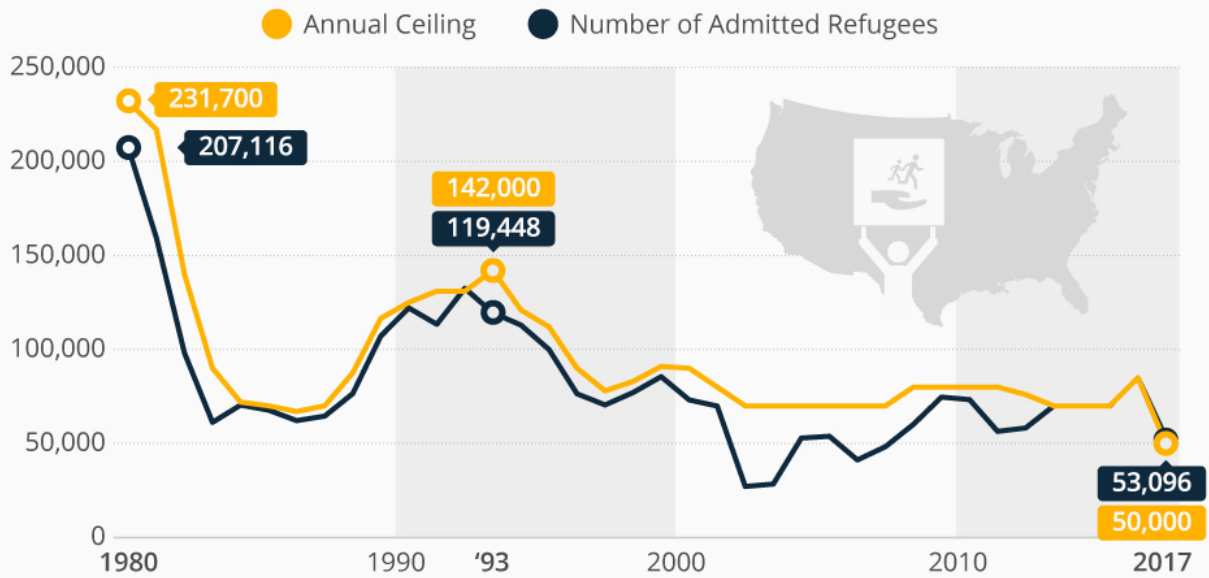
n=1,271 parents/caregivers
* Children aged 2 to 10. According to parents.
Source: Gallup



<https://www.statista.com/chart/11651/screen-time-dominates-kids-play/>

U.S. Refugee Numbers in Decline

Refugee resettlement ceilings and the number of refugees admitted, by fiscal year*



* 2017 refugee admissions data were complete through September 26, 2017 - four days short of the end of the fiscal year.

Data series began following the enactment of the Refugee Act of 1980. Includes Amerasian immigrants except in Fiscal Years 1980 to 1988.



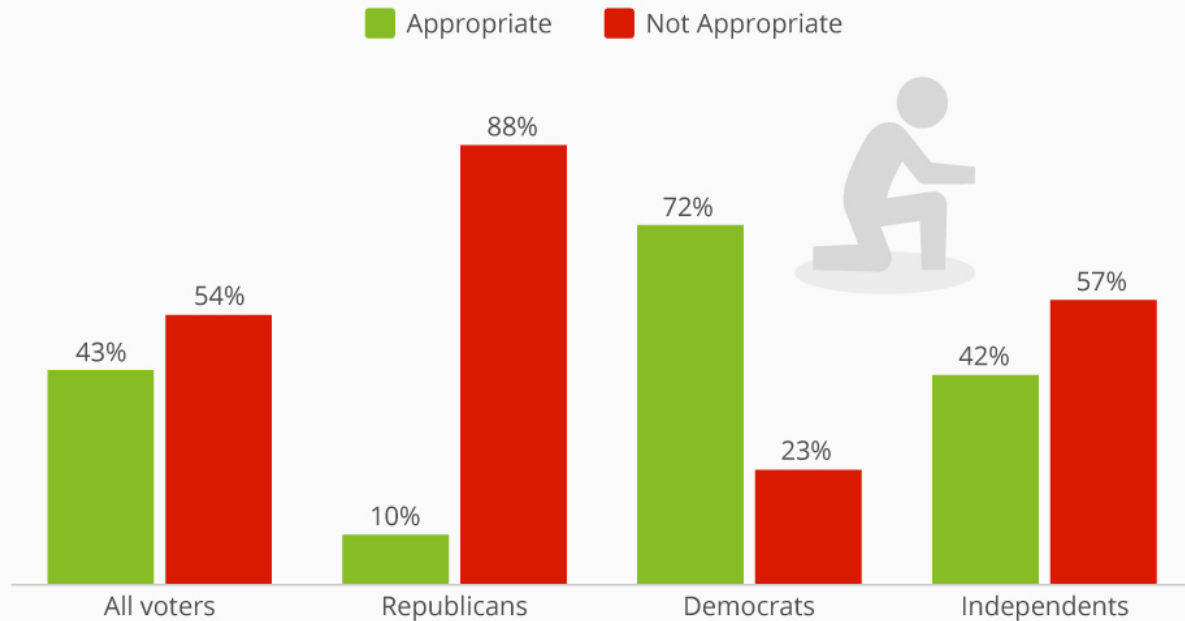
Source: MPI



<https://www.statista.com/chart/12099/us-refugee-numbers-in-decline/>

Americans Split on Athletes Kneeling in Protest

% of voters who think kneeling during the national anthem to protest racial inequality is ...



Based on a poll among 900 U.S. voters conducted Aug. 18-22, 2018

Sources: NBC News, The Wall Street Journal

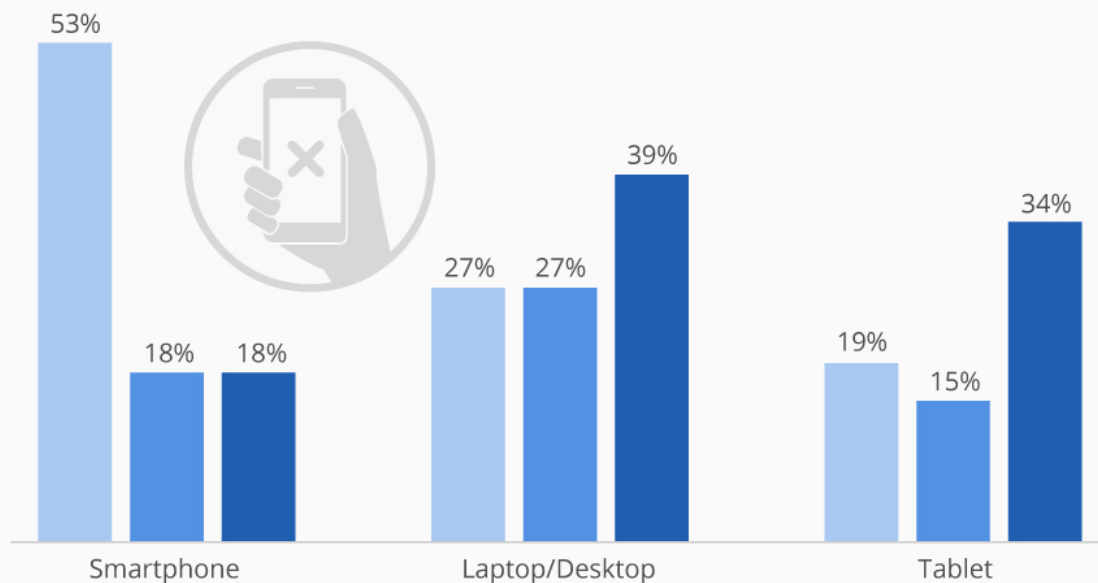


<https://www.statista.com/chart/15340/public-view-of-athletes-taking-a-knee/>

Not Without My Smartphone

Time U.S. teens (age 13 to 17) could go without using the following devices

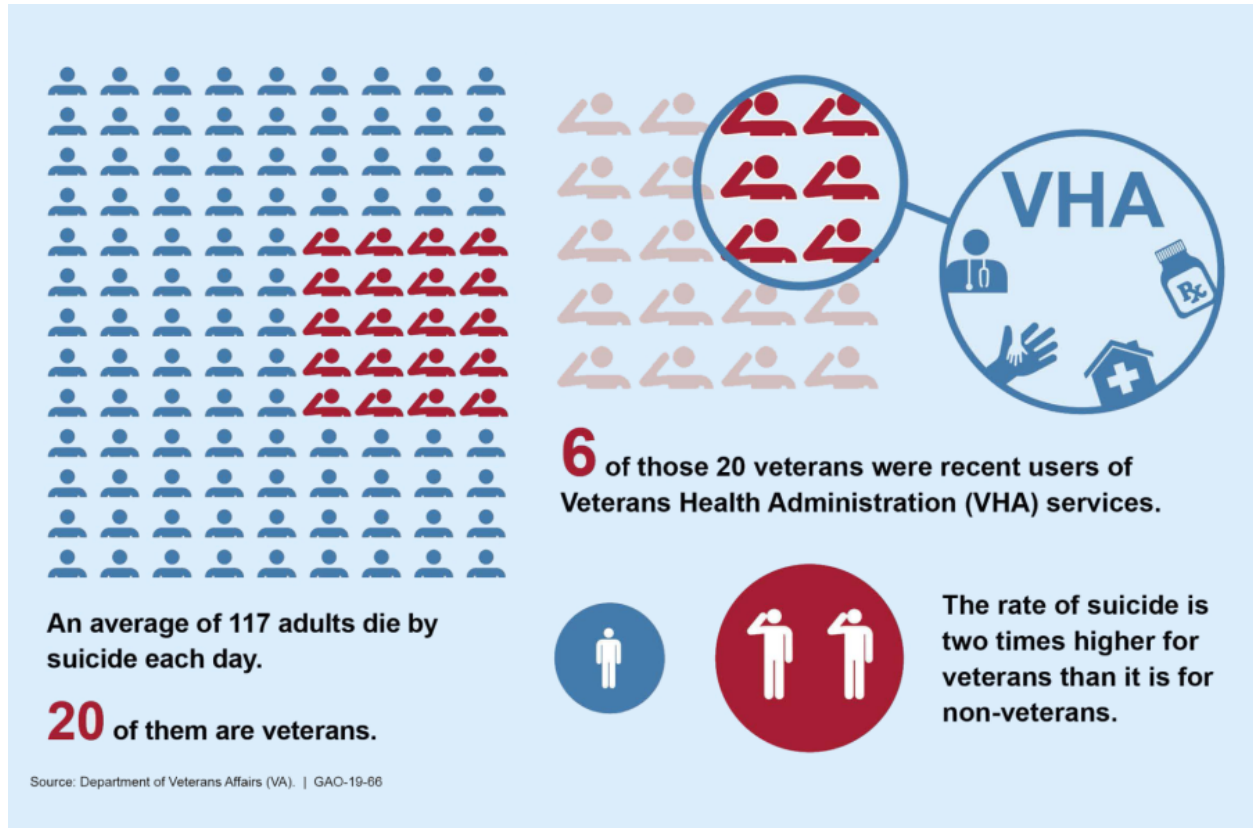
■ One day or less ■ More than a day, less than a week ■ More than a week



Missing percentages to 100%: I do not have/use this device; May 2017
@StatistaCharts Source: YouGov

statista

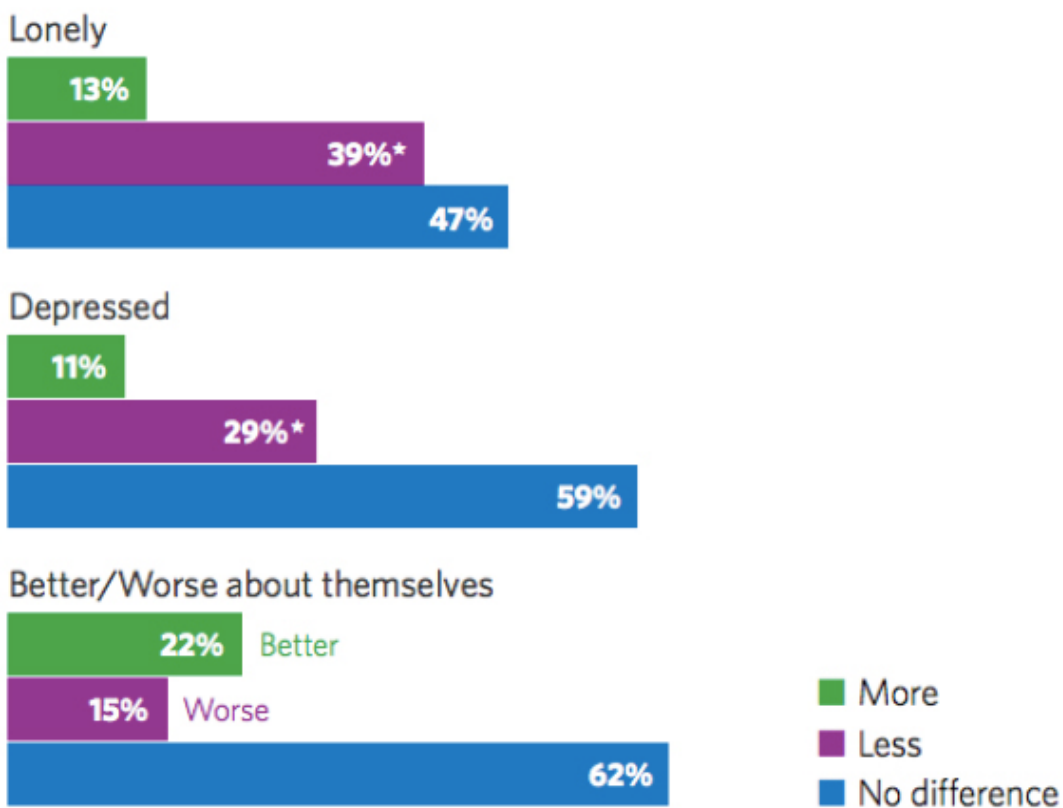
<https://www.statista.com/chart/9718/most-important-devices-for-us-teens/>



<https://www.stripes.com/news/va-leaves-nearly-5-million-unused-in-2018-campaign-to-battle-suicide-watchdog-finds-1.561146>

FIGURE D. Self-Reported Social Media Effects, 2018

Among low-SEWB 13- to 17-year-old social media users, percent who say using social media makes them feel:



*Statistically significant compared to answers of "more" at the level of $p < .05$.

Note: "SEWB" stands for "social-emotional well-being."

<https://www.the74million.org/article/the-kids-are-all-right-teens-say-social-media-makes-them-feel-better-about-themselves-less-lonely-less-depressed/>

What is **Social Justice**?

You can find many descriptions. Google's definition is: *justice in terms of the distribution of wealth, opportunities, and privileges within a society.*

In this unit, we are actually looking for data for an example of something in society that *isn't* as it should be – an *injustice*.

So, you're looking for a specific social injustice?

1. Consider what you know about the treatment of a particular group of people.

For example:

- People in poverty
- Veterans
- Women

2. Get more specific with an injustice. For example:

- People in poverty are more likely to be victims of human trafficking.
- Veterans are more likely to become homeless than non-veterans.
- Women are paid less than men for doing the same job.

3. What doesn't feel right to you? Find some data. Previous students found it useful to browse:

- <https://www.globalslaveryindex.org/>
- <http://www.radicalmath.org/socialjustice.php>
- <https://www.ranker.com/list/social-issues-in-america-that-you-care-about-most/mike-rothschild>



Social Justice Task Checklist:

- Choose a social justice topic important to you.
- Find a table of data.
- Identify a proportional relationship on the table.
- Write a relationship statement with a proportional comparison.
- Create a bar, circle, or picture graph showing the relationship.
- Present your statement and graph to the class.

Social Justice Task Checklist:

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Stating and Representing a Relationship

Staff members in two areas conducted a survey of adults who are incarcerated. Staff asked whether these adults are *currently*, were *previously*, or have *never* been enrolled in education programs during their incarceration. Their results are summarized in the table below:

	Currently enrolled	Previously enrolled	Never enrolled
Western Facilities	40	10	6
Eastern Facilities	12	13	20
<i>Total</i>	<i>52</i>	<i>23</i>	<i>26</i>

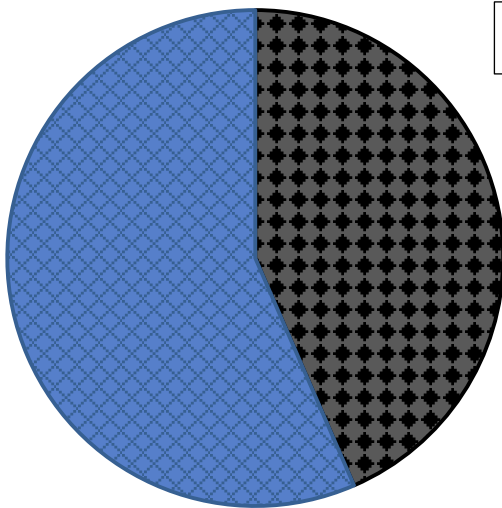
1. What relationships do you notice in the data?

-
-
-
-
-
-
-

2. Choose a relationship between two data points. Write this relationship in a clear statement. Create a circle or bar graph to show this relationship.

3. Staff made these graphs based on the data. Choose to answer A, B, or C:

	Currently enrolled	Previously enrolled	Never enrolled
Western Facilities	40	10	6
Eastern Facilities	12	13	20
<i>Total</i>	<i>52</i>	<i>23</i>	<i>26</i>



A

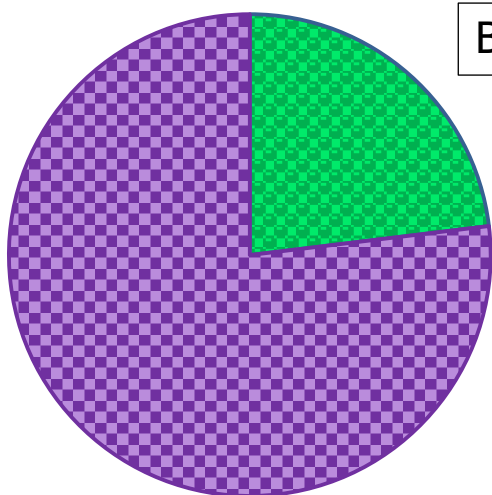
Which numbers from the table were used to make this graph?
Explain how you knew which data were used.

Label the graphs with category numbers and names. Give the graph a title.

Write a clear statement to go with the graph that

compares the two categories.

	Currently enrolled	Previously enrolled	Never enrolled
Western Facilities	40	10	6
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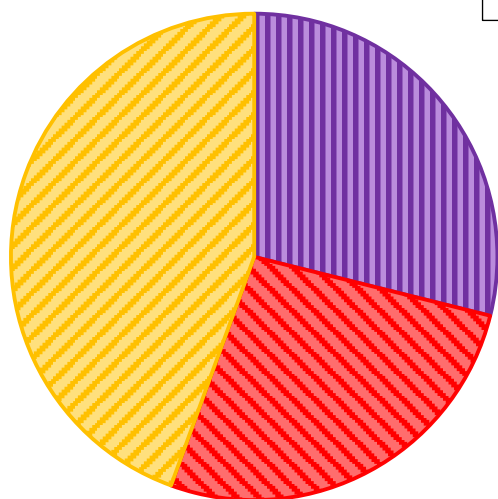
B Which numbers from the table were used to make this graph?
 Explain how you knew which data were used.

Label the graphs with category numbers and names. Give the graph a title.

Write a clear statement to go with the graph that compares

the two categories.

	Currently enrolled	Previously enrolled	Never enrolled
Western Facilities	40	10	6
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<i>Total</i>	<i>52</i>	<i>23</i>	<i>26</i>



C

Which numbers from the table were used to make this graph?
Explain how you knew which data were used.

Label the graphs with category numbers and names.
Give the graph a title.

Write a clear statement to go with the graph that compares the three categories.

4. How did you choose the graph you would label and write about?