Project: Make an Infographic

This lesson plan has students use CODAP. (Using another tool? Please select it now: Pyret.)

Infographics are a powerful tool for communicating information, especially when made by people who understand how to connect visuals to data in meaningful ways. This project is an opportunity for students to become more flexible math thinkers while tapping into their creativity. *This project supports the learning goals of our lesson on* Bar Charts and Dot Plots.

Lesson Goals	Students will be able to… • Represent ratio relationships visually, using repeated images, scaled images, or area models. • Assess whether various infographics effectively incorporate ratios and proportions by considering the infographic's impact. • Avoid stereotyping when creating an infographic in order to help viewers relate to and understand the topic.
Student-facing Lesson Goals	• Let's make an infographic on a topic of interest!
Prerequisites	• Introduction to Data Science • Exploring CODAP • Bar Charts and Dot Plots
Materials	• PDF of all Handouts and Pages ▼ • Printable Lesson Plan (a PDF of this web page)
Supplemental Materials	• Global Food Supply & Production Starter File

Preparation	• Think about what data will be the basis of your students' infographics. Some teachers prefer that all students work from the same dataset while others encourage students to pursue their own unique interests. It is up to you how much freedom or structure you offer your students during this phase. Below are four suggestions. Some require significant teacher preparation.
	  ◦ **Option 1:** Students can build bar charts or dot plots in CODAP using the Global Food Supply & Production Starter File or any of the datasets in our library. *This option is appropriate for students who are comfortable independently building and interpreting visualizations.*
	  ◦ **Option 2:** Students may find a dot plot or bar chart on the internet about a topic of interest to use as a starting point. *This option works best for students who can confidently conduct an internet search and discern which internet sources are reliable, but may struggle with independently building visualizations.*
	  ◦ **Option 3:** Students build a pie or bar chart in google sheets based on a summary statistic that they find about an issue that is of interest. *For this option, students need to be able to recognize reliable internet sources. Option 3 is valuable if there is a school-wide (or interdisciplinary) interest in students developing comfort with google sheets.*
	  ◦ **Option 4:** *This option is the most appropriate for younger students, who need more teacher support.* As a class, agree on a topic of interest, and then generate as many quantitative questions as possible about that topic. (E.g., if the topic is veterans, students might ask: What's the gender breakdown? Do veterans have higher suicide rates? What percentage of veterans struggle with mental health?) Then, spend some time locating data that answers each question to develop a list of ratio statements for students to choose from. Students will use their chosen statement to make a dot plot or bar chart and a corresponding infographic.
	• Decide what medium you want students to work with. Construction paper, markers and art supplies? A slide deck / word processor? Will you leave it up to the students?
	• This project is designed to span multiple days. Consider what work you want students to complete at home and at school.
	• Teachers are welcome and encouraged to edit and adapt the student-facing Making Infographics Rubric for their unique classroom context and distribute it to help students understand the scope of the project - and your expectations - at the outset.

Intro to Infographics

Overview

Students get curious about a variety of provided infographics, then complete research and plan to create their own - either electronically, or with paper and art supplies.

Launch

Did you know that our brains process and remember images more efficiently than written words?

Infographics take advantage of this, representing data and other information visually. Infographics are everywhere… in advertisements, political campaigns, your textbooks, on the news! When made well, they can communicate important information quickly and clearly.

Investigate

For this project, you are going to create your own infographic! But first, let's take a look at some examples to see what strategies data designers use and what makes their work more or less impactful.

You are about to facilitate a class discussion about each individual slide in Sample Infographics (Google). Decide whether you will project the slides or share a link with students.

- Let's look at the first slide from Sample Infographics (Google)
- What do you Notice? What do you Wonder?
- How did the designer incorporate ratios and proportions into the design?
- Why do you think they chose this strategy to represent their ratio statement (e.g., illustrate ratios using repeated images)?
- What works well about this infographic?
- What ideas do you have about how the infographic could be improved to be more impactful?

Advance to the next slide and ask the same questions. Repeat the process til you finish with the slide deck.

Optional: You may also want to have students read Case Study: NASA Infographic about an infographic that failed to communicate what it was trying to.

Synthesize

Think back to all of the infographics we just viewed. What stands out in your mind that you want to hold onto as we embark on designing our own?

Making an Infographic

Overview

In this project, students will (1) do some brainstorming and research, (2) write a ratio statement or create a display, and (3) make their infographic in a medium of their choice (or one that you have selected).

Launch

*Now is the time to implement the plan you made while preparing for this lesson about what data students will use for their infographics. (**There were four options for you to choose from outlined in the Preparation section of this lesson plan.** Perhaps you to decided to have students work with the Global Food Supply & Production Starter File?)*

Once students have conducted their research, it is time to write a ratio statement (for options 1-3) or create a bar/pie chart or dot plot (for option 4). Urge students to refer to their rubrics for guidance on doing this well!

The first step of making an infographic is finding the data that you want to communicate! We'll start by finding a ratio statement that is of interest to you and could be represented using a bar or pie chart. Remember: All percentages are ratios!

We recommend having students submit their work up to this point to monitor progress and ensure that all students have a solid foundation for the remainder of the project.

Investigate

At this point, everyone should have a ratio statement and a bar or pie chart to use as their starting point and should have recorded the source(s) of data used.

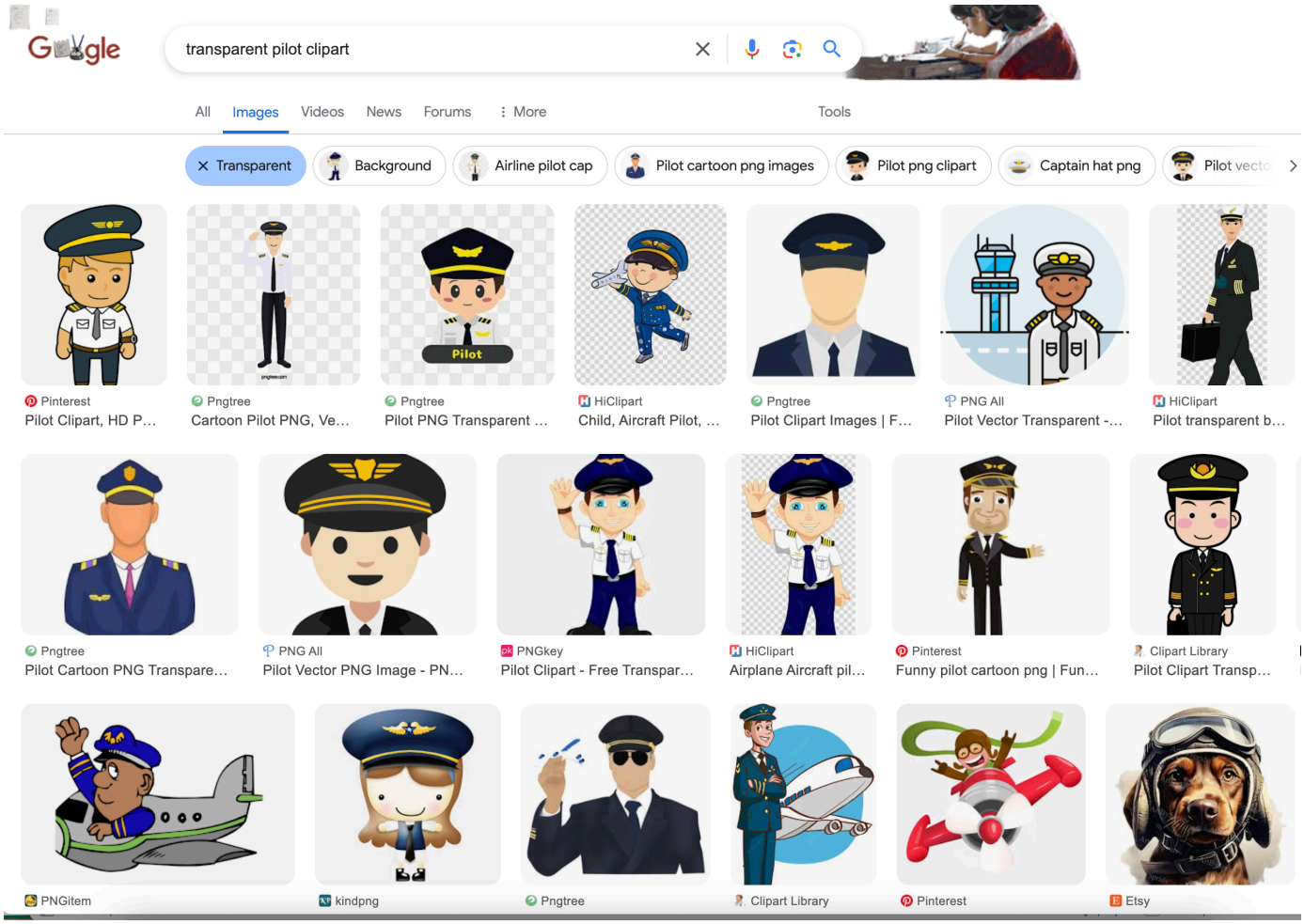
Before we get to work designing our infographics, let's think through a *fictional* example together.

Ratio Statement: 40% of pilots surveyed wear glasses.

- What ratio is 40% equivalent to?
  → *40 out of 100… or we could scale that down to 2 out of 5*
- How could we represent that in an infographic?
  → *We can show 100 people, of which 40 are wearing glasses.*
  → *We could show 5 people of which 2 are wearing glasses.*
- Is it better to use 100 people or 5 people in our infographic?
  → *There's no right answer here! Sometimes infographics are clearer when we use the scaled-down ratio, but some facts might feel more powerful with a huge number of images. We might even choose to scale 40 out of 100 up to 400 out of 1000!*

For the discussion that follows, either project your own google image search results for clip-art pilot or use the screenshot below.

A tricky thing about making infographics with images of people is that not all images accurately represent the diversity of the communities described by the statistics. Here's what google image search returns when we look for pilot clip-art. What do you Notice? What do you Wonder?



- Why wouldn't we want to make an infographic about pilots just using pictures of white men?
  → *At least as far back as the 1920s there have been lots of pilots who aren't white men and we don't want to imply otherwise! (Remember Amelia Earhart and Bessie Coleman?)*
- Why would it be problematic to represent this ratio using two images of men wearing glasses and three images of women not wearing glasses?
  → *People might think that we were trying to communicate that female pilots have better vision than male pilots!*
- Why is it helpful to restrict the search to transparent images?
  → *Our infographic will look more professional if the images we use don't have their own individual backgrounds.*

- A good strategy for avoiding these pitfalls in infographics is to use silhouettes.
  - You can add the word silhouette to any google image search, for example, "silhouette of pilot with glasses".
  - Not all silhouettes feel like they are generically of people, but if you look, you'll find images that read broadly.

Optional: Complete Which Silhouette Might Work?. Then turn and discuss your choices with your partner.

It's time to get to work designing an infographic. Let's take a look at the Making Infographics Rubric and make sure that everyone is clear of what's expected.

You may choose to allot class time (when students could use computers or art supplies), or you can direct students to complete the remainder of their infographics at home.

Synthesize

- *Celebrate students' work! Students will want to share their creations, given how much time they have invested. Class or public presentations can instill a sense of pride. If you don't have time, display their work.*
- *If all students' infographics are on the same topic (e.g., if you used Option 4), a display featuring each student's project will provide a fascinating and comprehensive view of that topic!*

- Looking at the infographics your class made, what do you notice? what do you wonder? what design elements stand out as particularly impactful?
- What new ideas do you have about how you could improve upon your infographic?