

Telling Your Data Story

This math resource will help you as you analyze your data for your prototype.

Understand Your Data

Asking Statistical Questions

Telling a story with data often starts with a statistical question. A question is statistical if answering it involves variability.

Non-Statistical Question: How tall am I?

Statistical Question: How tall are students in the junior class?

1. What story or narrative are you exploring?
2. What statistical question or questions do you need to answer to tell that story?
3. How does your statistical question take into account variability?

Understanding the Variables

Once you have your statistical question, you can start considering the data and variables you need to answer that question.

There are many different types of data: quantitative, categorical, ordinal.

4. What are the variables that you have in your data? What are the types of data for those variables? How do you know?
5. Which variables will not help you answer your question and can be eliminated from consideration?

Cleaning and Understanding Your Data

You may find that you need to clean some of the data, because it is missing, irrelevant, or nonsensical. For example, if someone's height was entered in as "I don't care," then that data point would be problematic for your analysis. Other times, you may wonder why one data point is so different from the others. For example, a height entered as 163 cm instead of 5' 4" might make you realize that you need to check if all data points have been entered using the same units.

6. Take a look at your variables of interest. What do you notice? What jumps out at you?
7. Based on your quick scan of the data, what hypotheses do you have relating to your statistical question? What would you need to do next to test those hypotheses?

Describing and Summarizing Your Data

You also should explore some of the statistics related to your variables.

8. Use technology to calculate some of these descriptive statistics. How could these statistics be useful in answering the question you want to explore?

Create Your Own Variable

To tell an untold or overlooked story in a new way, you will probably need to find more useful data. For example, you may want to shed light on the potential for students in the junior class at your school to be competitive in basketball. This may require a comparison variable of the heights of students in your junior class to the average height of a student in the junior class.

9. Which variables could you combine or convert to be in a form that makes more sense for your narrative?

Tell Your Data Story

Once you have learned all about your variables and understood what the data tell you about your narrative, it is time to communicate your findings in a compelling way. This could be through a variety of visualizations. Maybe it is some combination of the statistics you found and the visualization you have created.

10. What types of visualizations would be helpful for telling your story?
11. Which statistics help highlight important takeaways about your narrative?
12. What claims are you making in your story? Most times, a situation that seems like causation is actually a correlation. It is important to be careful not to overgeneralize a claim in your narrative. Are there other factors that may have contributed to your conclusion?

