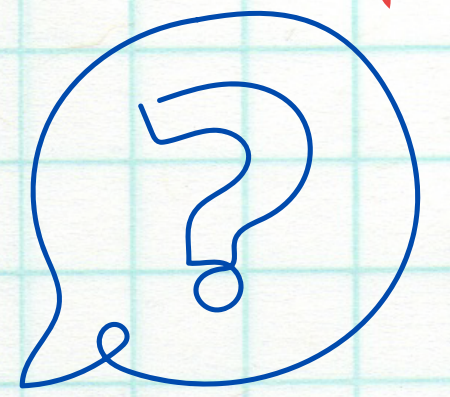# WRITING A DATA JAM RESEARCH QUESTION

Nina Mennies, 2021 Data Jam Mentor
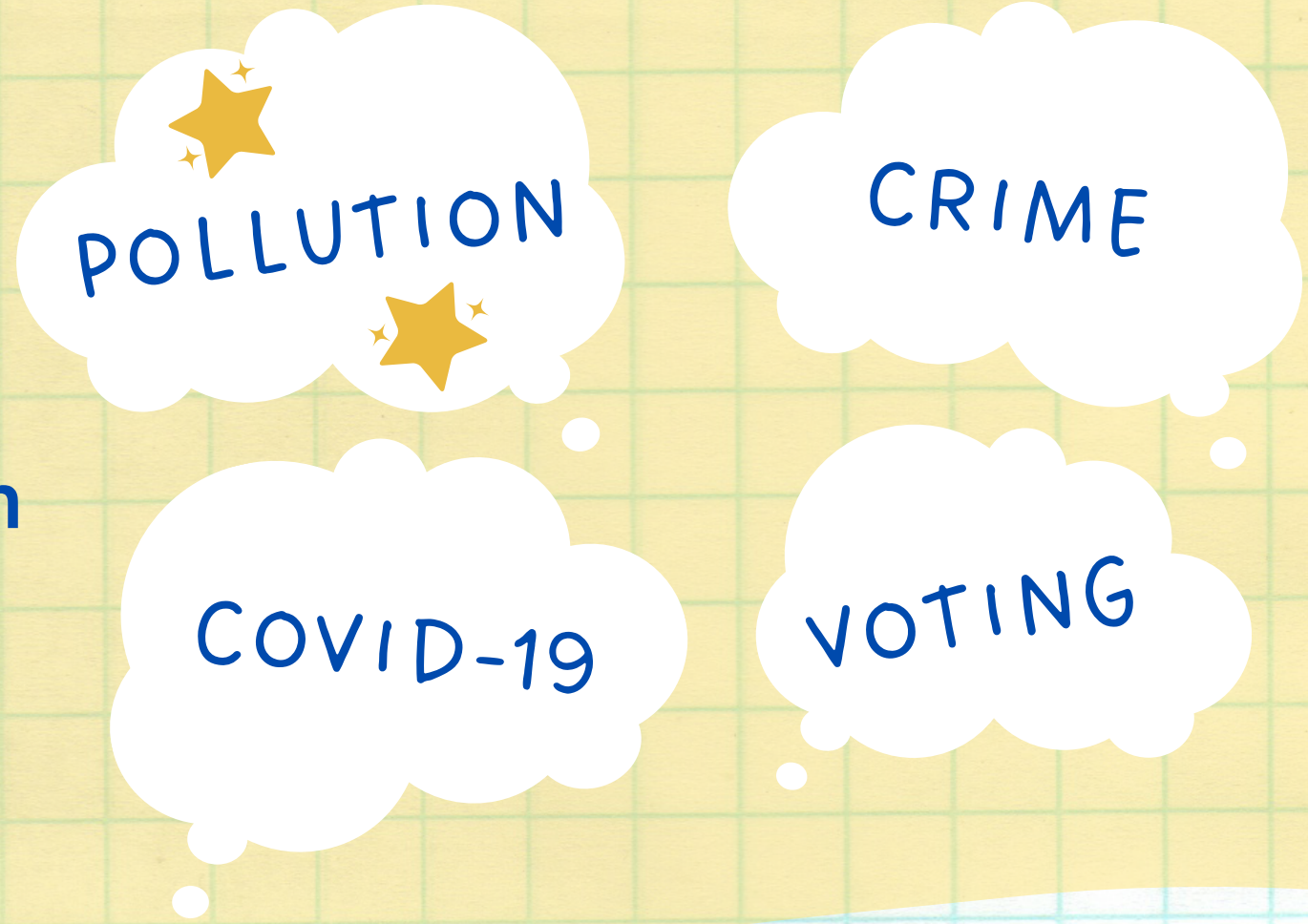
1 Choose Your Topic Of Interest

Brainstorm a list of topics that you find interesting and that you think could be represented with numerical data.

You don't need to have a specific question in mind at this point, just general themes and topics that you would like to explore.

The more you **care about your topic**, the more rewarding the research process will be.

POLLUTION

CRIME

COVID-19

VOTING

2 Narrow Your Scope

POLLUTION

air quality   litter   water pollution

Pick a few topics from your list that stand out to you. For each of them, **begin to list specific subcategories** that are more easily measurable.

If you are not extremely knowledgeable in the subject, this is a good time to **do some background research on your topic** in order to help you break it down into more distinct variables.

3 Determine Your Variables and Context

air quality and... hospitalization rates?

air quality and... median income?

air quality and... racial demographics?

in... Pittsburgh? P.A.? U.S.A?

For your Data Jam project, you will be comparing **at least two** variables. Think about the relationships that your chosen topic may have with other variables. These relationships shouldn't be extremely obvious, but should also not be too far-fetched.

Try to think of multiple comparisons that you could make. At this step, also **consider the context** you want to research in. Do you want to focus on your neighborhood, your city, or address your topic on a national level?

4 Structure Your Question

Now that you have thought about your variables and context, it is time to **write your research question.** Pay attention to your wording: avoid questions that begin with "why" and make sure that your question does not already imply an answer.

If you are studying whether one variable may affect another, **think about the order of your variables** in your question. If you are simply trying to determine whether or not there is a relationship between your variables, do not imply that one leads to the other.

✗ Why does air quality affect median income in Pittsburgh?

✓ Is there a relationship between median income and air quality in Pittbsurgh?
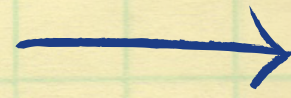
5 Be Open To Change

There are many reasons why **your research question might change** throughout your research process. You may find that there is not enough data to adequately answer your question, or might find that there is no relationship between your variables and decide to change your focus. This is all part of the process and the reason why you came up with a range of variables you could research. Don't be afraid of changing your question.

YOUR RESEARCH QUESTION SHOULD...

Be Answerable: You should be able to answer your question with data. This means that it should not be a philosophical question or a question that is opinion-based
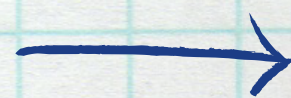
❌ "Which breed of dog is best?" → ✅ "Is there a relationship between median income and most popular dog breed in Pittsburgh neighborhoods?"

Be Feasible: You need to have adequate resources to answer your question and should be able to answer your question in a reasonable time frame

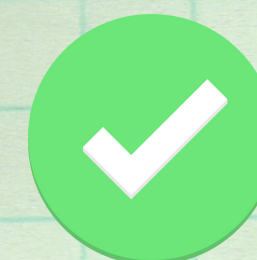❌ "What are the effects of racism in America?" → ✅ "Are certain racial groups more likely to contract COVID-19 in the U.S.?"

Be Focused: Your question should be specific. It should not be overly broad or stray from one subject

❌ "How do high school graduation rates affect employment rates and voter turnout?" → ✅ "What is the relationship between high school graduation rates and voter turnout in Pennsylvania counties?"

Require Research: Your question should not have an immediately obvious answer. You shouldn't be able to answer your question with a quick google search.
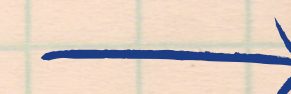
❌ "How many parks are there in Pittsburgh?" → ✅ "What is the correlation between high schools' proximity to parks and their average SAT scores?"

End in a Question Mark: Your research question needs to be written as a question!

❌ "The relationship between pollution and childhood asthma." → ✅ "What is the relationship between pollution and childhood asthma in Pittsburgh?"