

What Makes a Good Question?

... in the context of Data4All

Julia Koschinsky

Why is this important:

Because the question is your starting point and initial filter for everything that comes next. You want to make sure you're not solving the wrong problem ("Type 3 error").

References:

→ [Mitroff & Featheringham \(1974\)](#)

→ [Daniel Lakens: Improving Your Statistical Questions](#)

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It's a “why” question about a mystery or puzzle, e.g.:

- Why did many people die of cholera -- while others did not?
- Why did patients have gut problems –instead of lung problems– when transmission was supposed to be airborne?
- Why do some neighborhoods in Chicago have higher covid rates than others?

→ all of these questions involve comparisons

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It lays the foundation for subsequent explanations and predictions that are risky in that they are specific and bounded enough that they can be proven wrong.

- Example that can be measured, tested and proven wrong: untrapped sewers will be more likely to emit sewage-contaminated air — thus one would expect more people to get infected in the vicinity (e.g. 25 yards) of untrapped than trapped sewers at the time when polluted air is emitted (e.g. measure potential changes in infections after traps are added)
- Hard to measure, test & prove wrong: e.g. clouds of polluted air will make people sick somewhere in the city.

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Questions often start general and then get more specific, as more evidence becomes available, e.g.:

- why are some people dying and others not?
- how is cholera transmitted?
- is it transmitted through air, or food, or water, or a combination?
- is it contagious or not?
- where might my assumptions, explanations, predictions or data be wrong or biased? Are the results I am getting real or an artefact of these problems?