

How to get GOOD data? Research design, sampling and errors

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Please read this before coming to class

- ▶ Sampling, population: <http://onlinestatbook.com/2/introduction/inferential.html>
- ▶ Demonstration of sampling with turtles and lions: http://onlinestatbook.com/2/introduction/sampling_demo.html
- ▶ Research design: sections 2,3,4,5,7,8
http://onlinestatbook.com/2/research_design/contents.html

For the rest of this lecture, you will see a bunch of scenarios. For each, write down:

- ▶ the research question,
- ▶ the population,
- ▶ how you would sample,
- ▶ what variables you may want to gather
- ▶ assumptions needed to make your sample reasonable.

Example 1: School garden and vegetables consumption

Do hands-on school garden programs increase vegetable consumption in children? And if so, by how much?

Example 2: chocolate and BMI

Recent research has brought to light the beneficial health effects of chocolate. You wish to study the hypothesis that chocolates beneficial metabolic mechanisms might also reduce fat deposition in spite of its high caloric content.

Example 3: Have smartphones destroyed a generation?

Related: <https://www.theatlantic.com/magazine/archive/2017/09/has-the-smartphone-destroyed-a-generation/534198/> The researcher of this article hypothesized that (...).

How would you collect data to

- ▶ test this hypothesis?
- ▶ measure the effect of smartphone usage on mental health issues?

Example 4: What influences class ratings?

Frequently, students ask friends and/or look at instructor evaluations to decide if a class is worth taking. How can one design an experiment to measure the impact of reputation on actual teaching ratings?