STAT 201

Week 4

Who am I?

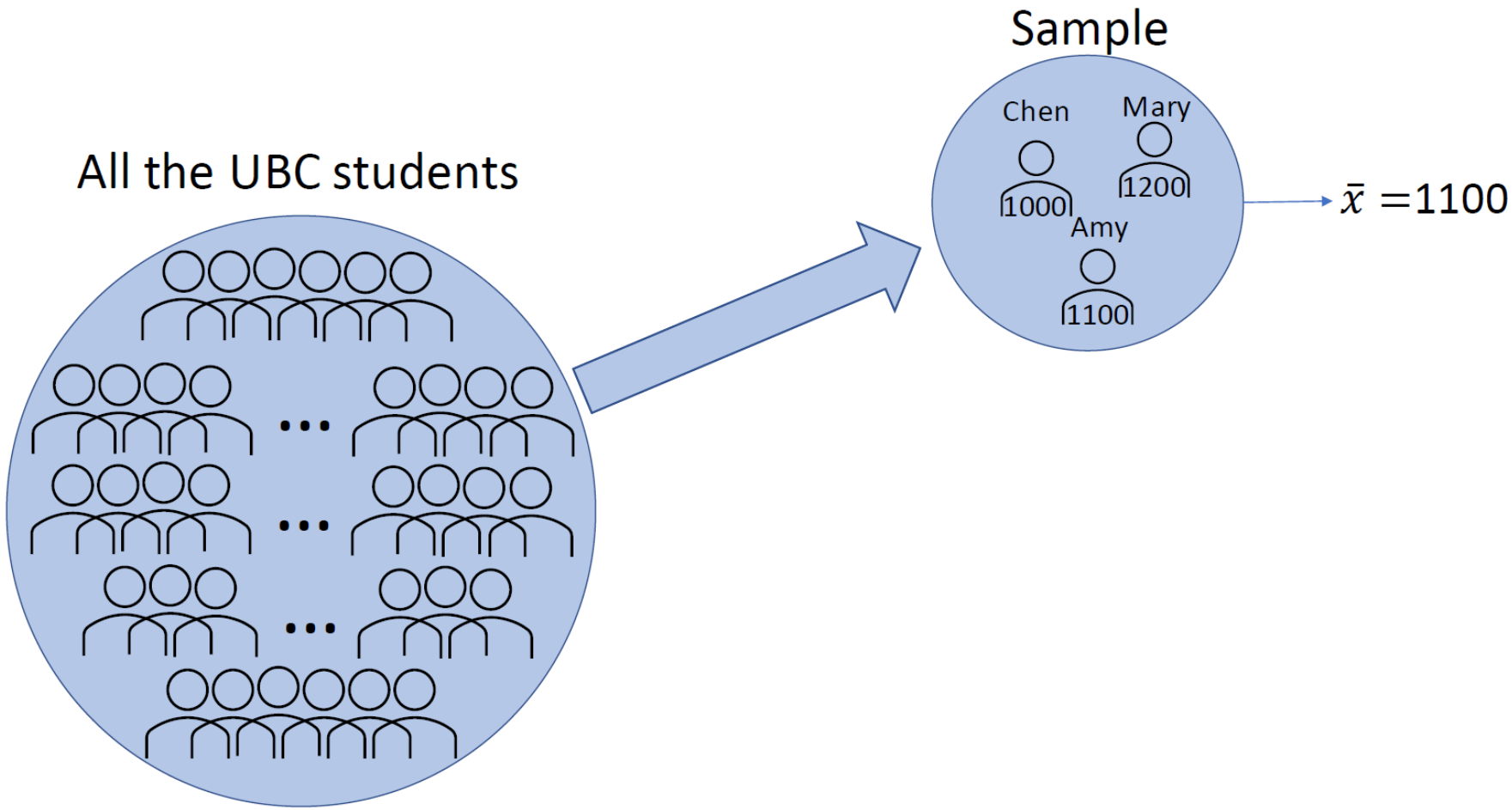
- Helloooo!!! I'm really happy to meet you.
- My name is Rodolfo;
- I am from Brazil (hence the accent ☺);
- Both my undergrad and master's degrees were in Stats, and my PhD was in CS.
- I recently joined the Stats Dept @ UBC.

Revisiting the big Picture

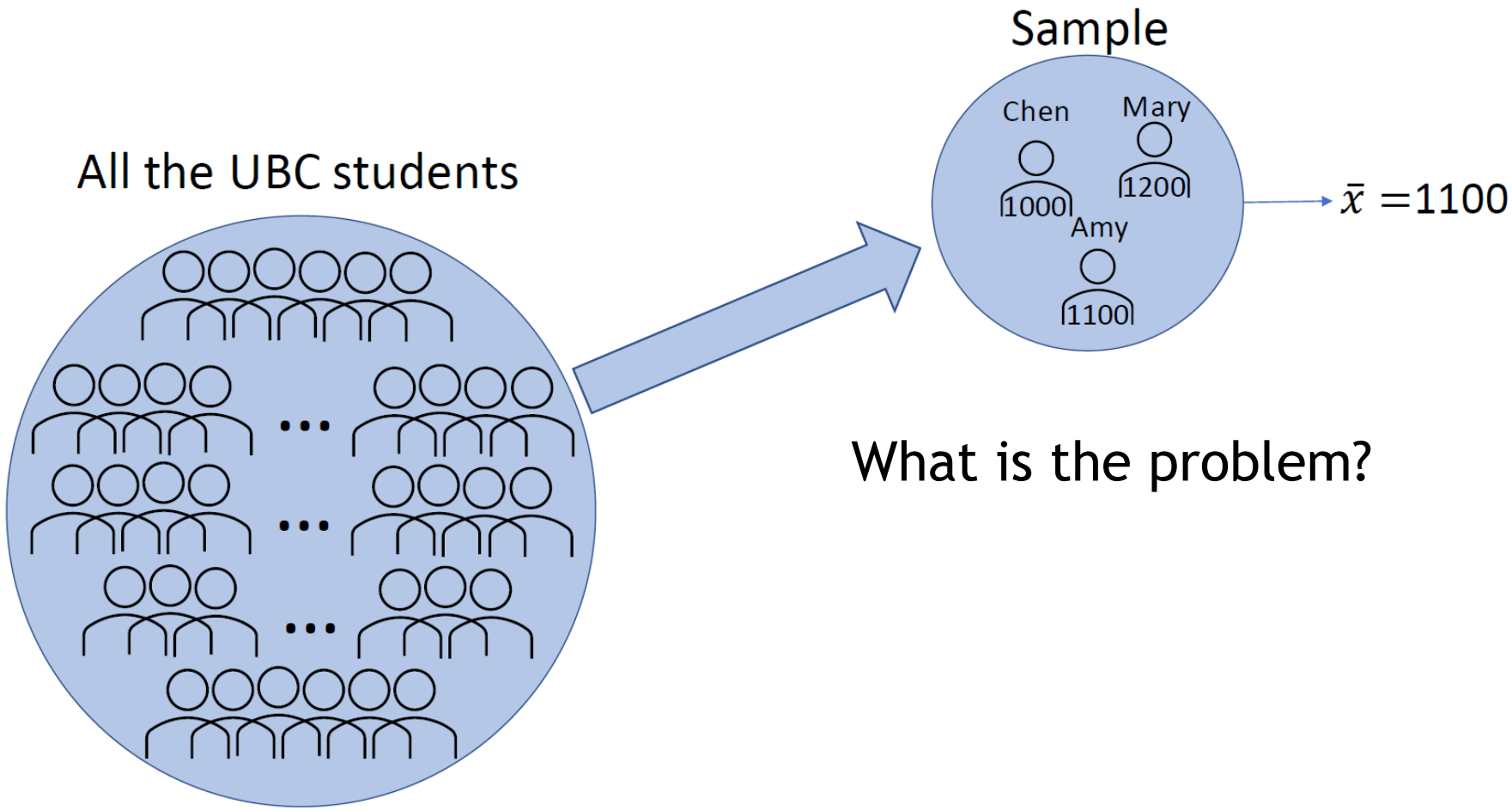
The big picture

- Suppose the President of UBC is interesting in knowing the average income of UBC students so he can create a student financial aid to help them go through the COVID-19 situation.
  - What is the population of interest?
  - What is the parameter of interest?
  - We don't know what the student's average income is, and UBC has over 65,000 students. What should we do?

Random Sample

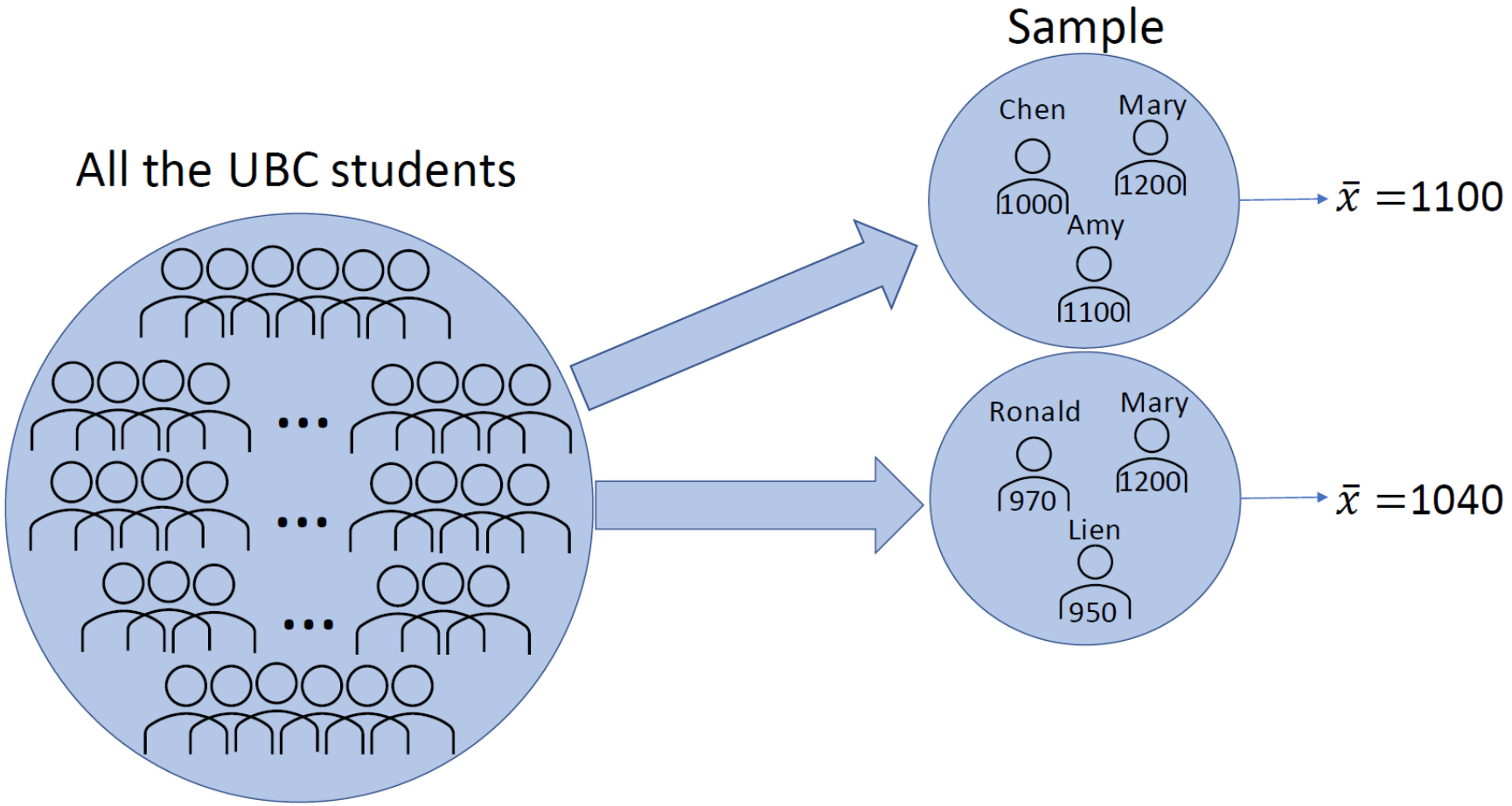


Random Sample

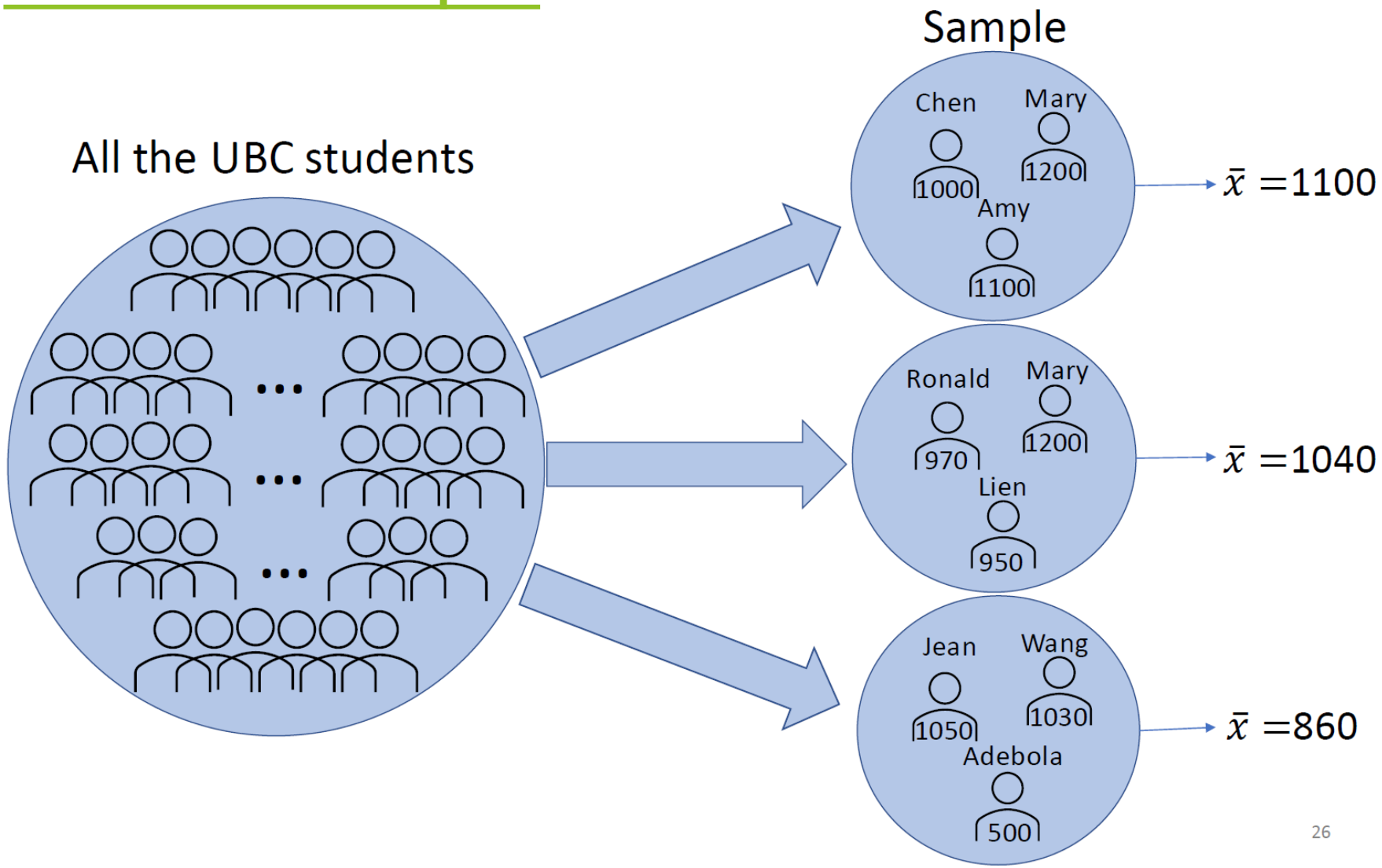


What is the problem?

Random Sample



Random Sample



A few points to consider:

- A different sample might give different results
- Bad sample (not representative of the population)
- In general: how reliable is our result?

Revisiting the big picture

- What are we trying to do?
- How are we doing it?
- What is the problem?

Revisiting the big picture

- What are we trying to do?
  - We want to learn about the populational parameter, in this case, the populational mean
- How are we doing it?
  - By taking a sample and estimating the populational parameter.
- What is the problem?
  - We have no clue how good is the value we got.

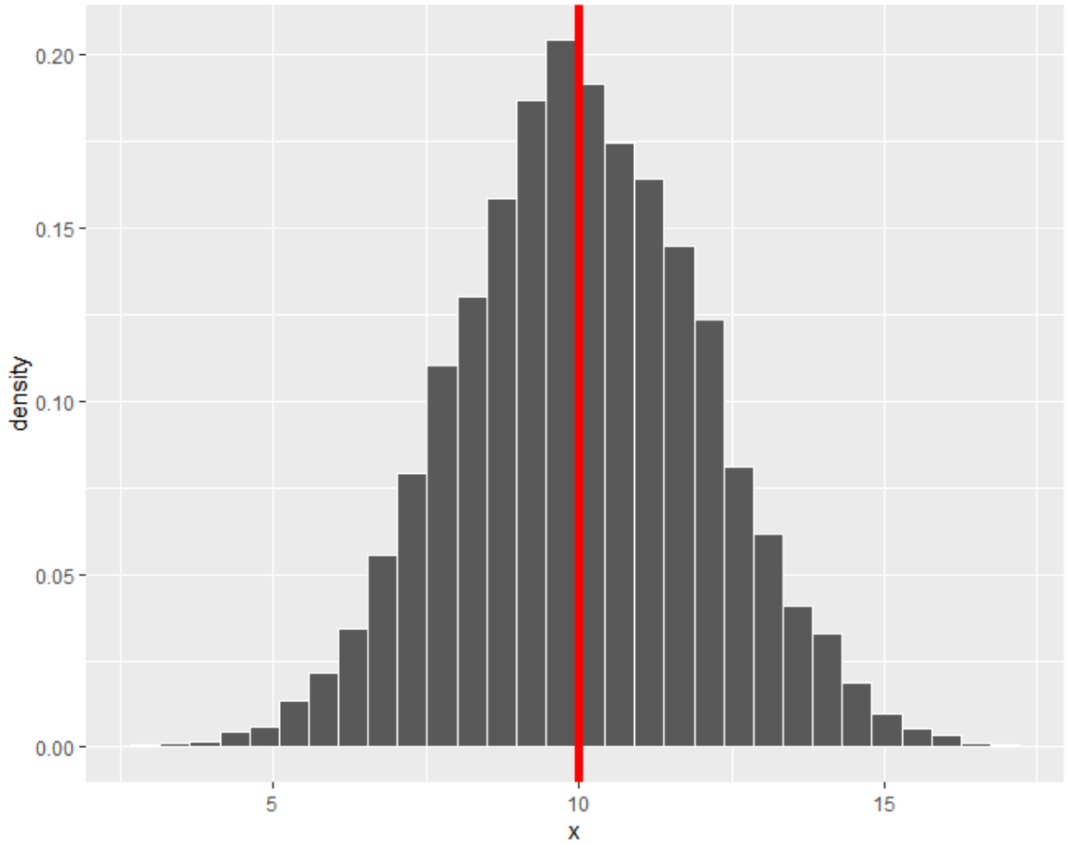
Confidence Interval

Confidence interval

- You learned about point estimate.
- Then, you studied the impacts of sampling variability and modelled it using ….?
- However, given a point estimate, we have no idea how good (how to close to the parameter it actually is).

Confidence interval

- The sampling distribution gives us a general idea of how likely it is for the point estimate to be far from the parameter.



Confidence interval

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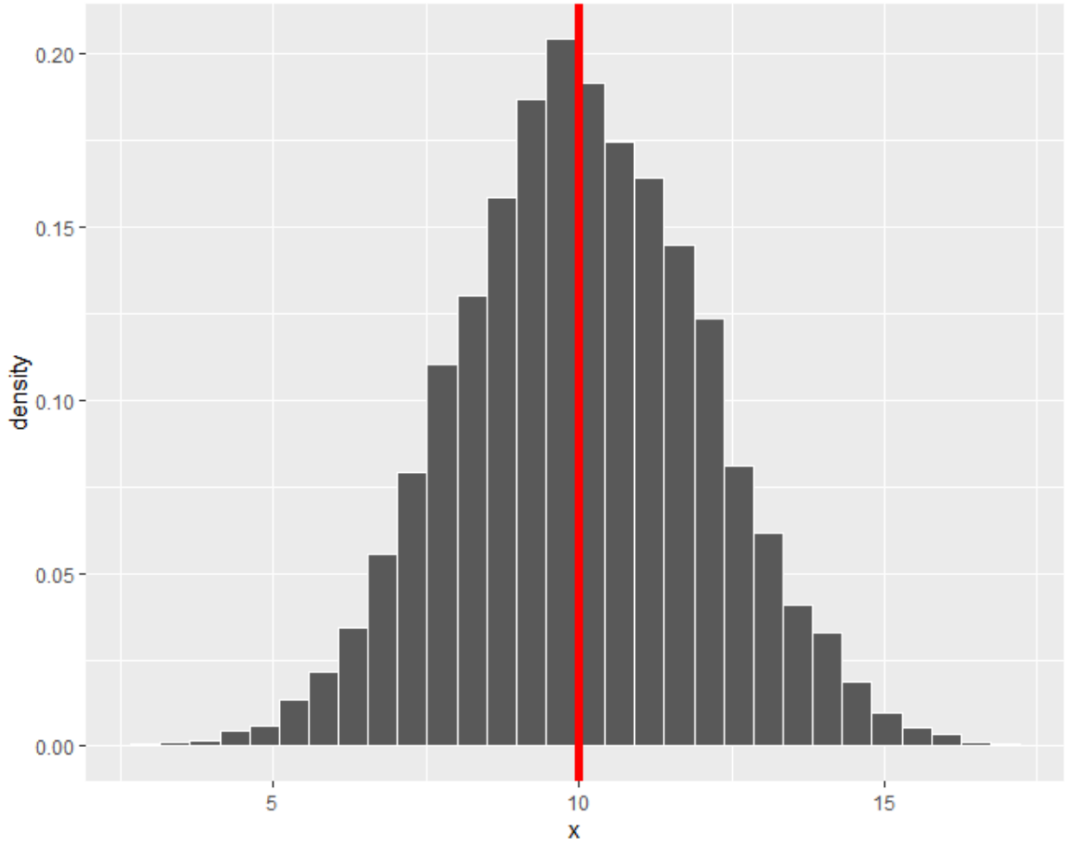
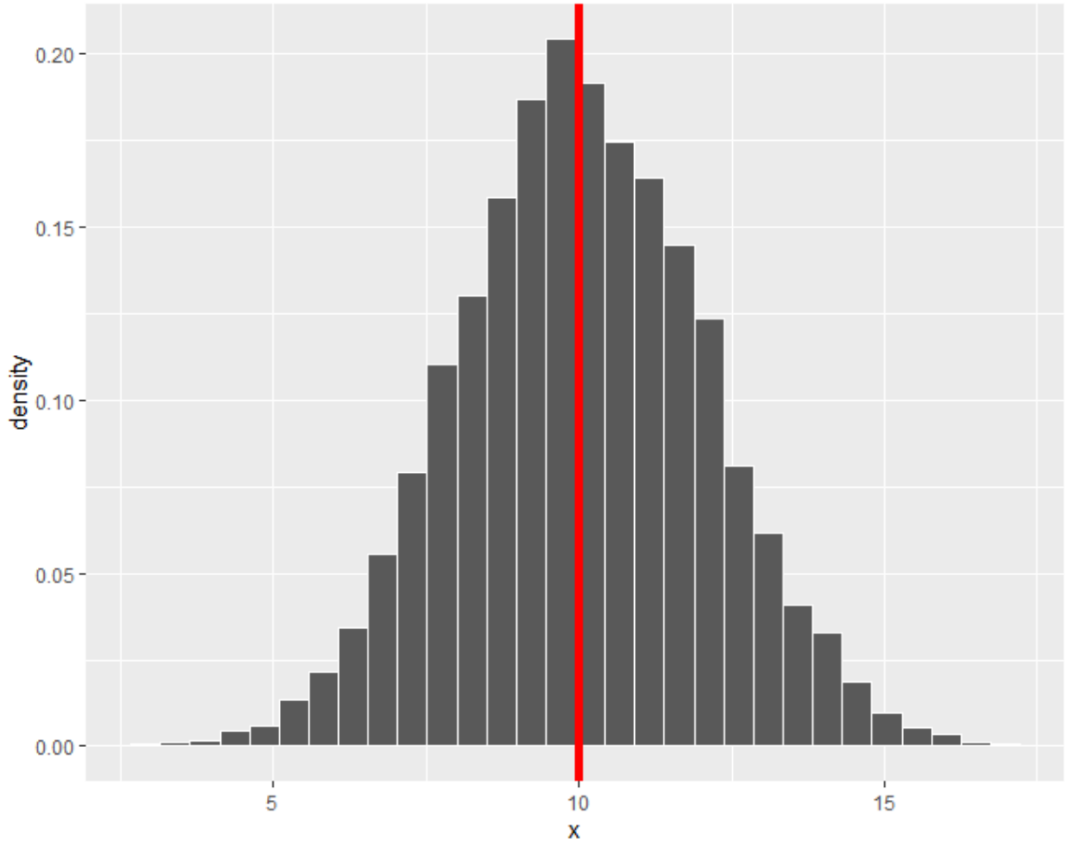


How likely is it for us to get a point estimate that is farther than 4 units from the parameter?

Confidence interval

- The sampling distribution gives us a general idea of how likely it is for the point estimate to be far from the parameter.



Today we are going to formalize this idea.