CSE P 590

Building Data Analysis Pipelines

Fall 2024

Significance and confidence

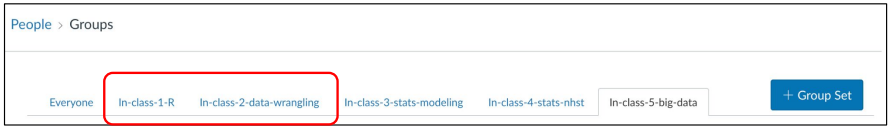
Today

- Housekeeping: Group work and grading
- Recap: Terminology
- Live demo: Statistical significance
- In-class exercise 4

Housekeeping

Canvas groups

How we see them



How you see them

Groups and group sets on Canvas

Self-assign to a group by Friday EOD

Grading

- Holistic grading – reasoning and justifications
- Fine-grained grading breakdown (now) on each assignment
  - Completion
  - Questions
  - Optional questions
- Reach out with questions/concerns

Recap: Terminology

Population vs. Sample vs. Sampling distribution

Population

- All possible individuals
- Parameters
  - **μ: mean, σ: standard deviation**

Sample

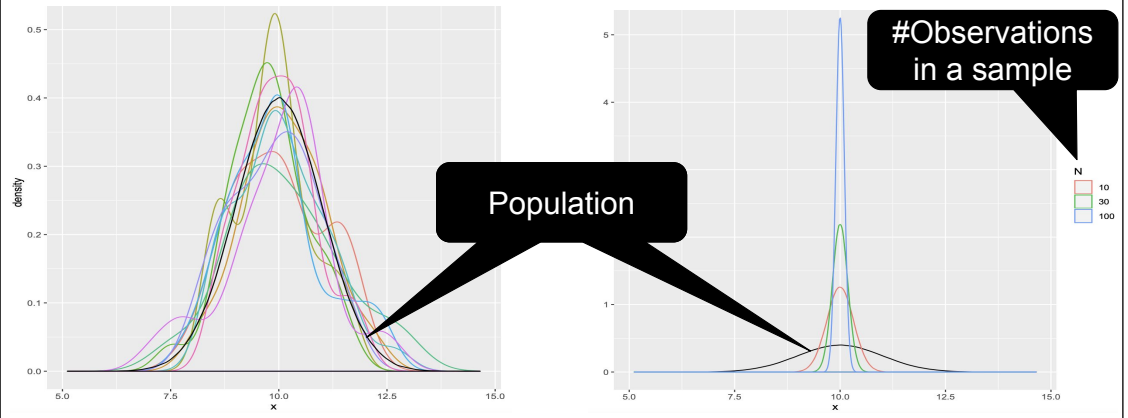
- A subset of the population
- Sample statistics
  - **$\bar{x}$: mean, s: standard deviation**

Sampling distribution

- Distribution of the sample statistic (e.g., mean)

Population vs. Sample vs. Sampling distribution

Population and Samples | **Sampling distribution**



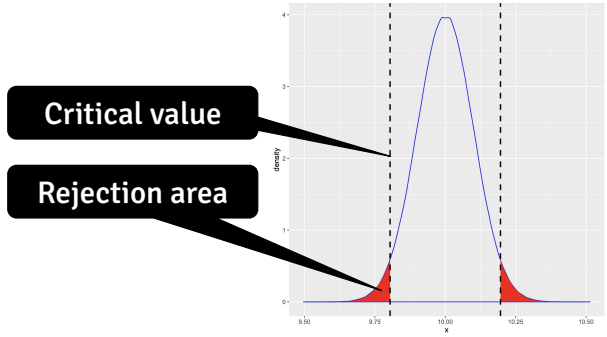
Given a sample mean, what is its p value?

P-value, critical value, and rejection area

Zooming in on the Sampling Distribution

Sampling distribution for ***N*(10, 1)** and **sample size 100**

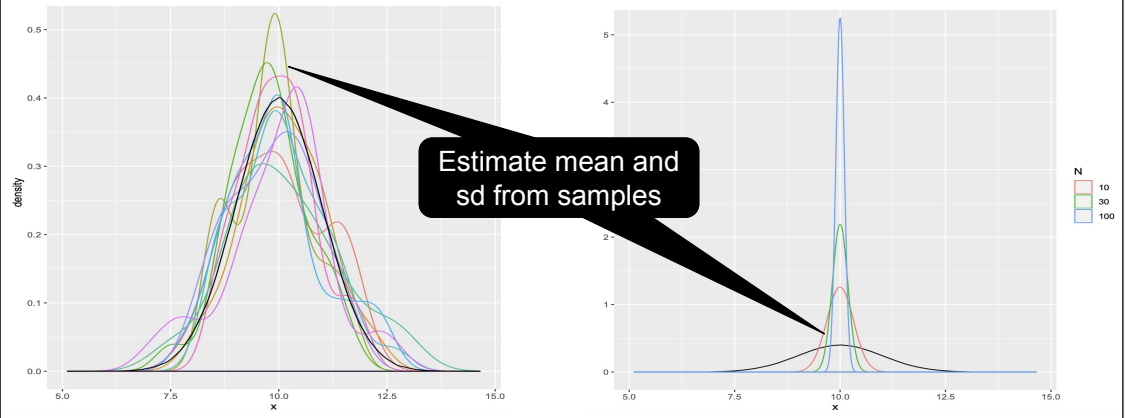
- μ = 10, σ = 0.1 -> critical values (**α** = 0.05, two-tailed) = 9.804 and 10.196



Great, but how do we know the sampling distribution?

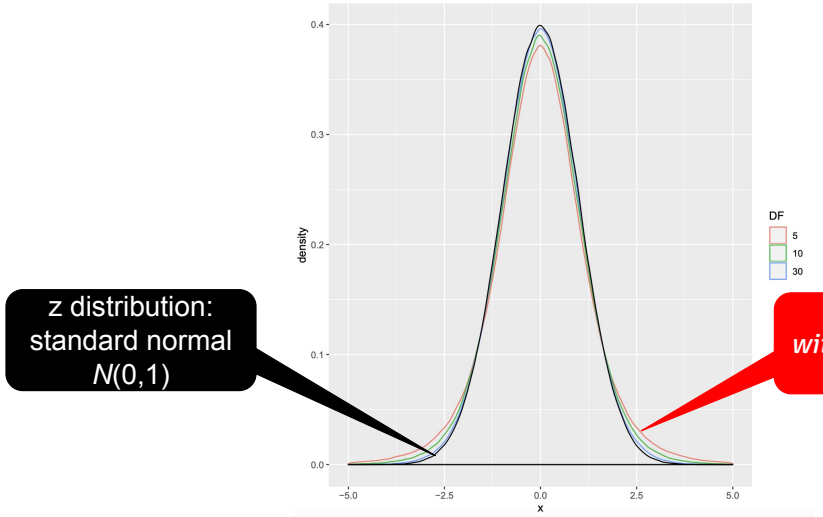
Estimating parameters from samples

Population and Samples | **Sampling distribution**



How do we account for uncertainty in those estimates?

z distribution vs. t distribution (small samples)



NHST: live demo

In-class exercise