LAB 05

PH142 Fall 2025

Announcements

- **Lab05:** due 10/4 at 11:59pm (extended to Saturday)
- **Quiz04:** due 10/4 at 11:59pm (extended to Saturday)
- **Group Project Part II:** due 10/24 at 11:59pm

*Your group must meet with your assigned GSI before the due date.

Midterm 1

- **Date:** Friday, October 3rd
- **Time:** 8:10-9:00AM, arrive no later than 8:00AM
- **Material Covered:** Lectures 1-10, Lab 1-3
- **Location(s):** Room assignments were emailed on Monday 9/29
    - If you did not receive this message, please contact 142gsi@berkeley.edu ASAP

What to Bring

- **Student ID**
- **Pencil/Pen**
- **Cheat Sheet** (single sided, handwritten, 8.5x11”)
- **Scientific Calculator** (non-graphing)

Week 6 Lecture Review

Independence of Events

Independent Events

- A and B are independent if knowing whether A occurs does not change the probability of B

Dependent Events

- A and B are dependent if knowing whether A occurs does change the probability of B

Week 6 Lecture Review

Screening Tests: Key Terms

Sensitivity: Probability the test is positive given disease present

- Sensitivity = **P(Test+ | Disease+)**

Specificity: Probability the test is negative given disease absent

- Specificity = **P(Test- | Disease-)**

Sensitivity and specificity are properties of the test. They do not change based on prevalence of disease in the population.

Week 6 Lecture Review

Predictive Values

Positive Predictive Value (PPV): Probability the disease is present given a positive test result

- PPV = **P(Disease+ | Test+)**

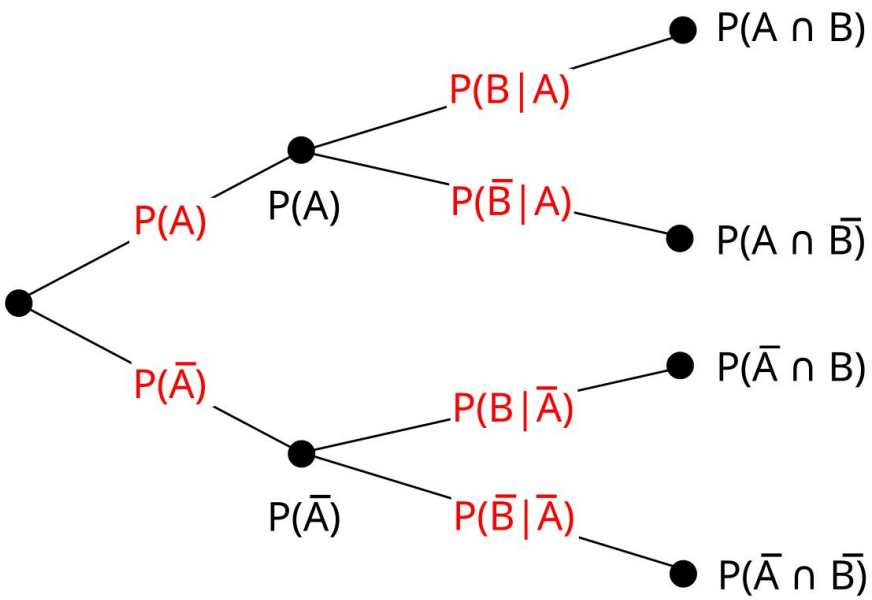
Negative Predictive Value (NPV): Probability the disease is absent given a negative test result

- NPV = **P(Disease- | Test-)**

PPV and NPV change with the prevalence of disease in the population.

Week 6 Lecture Review

Tree Diagrams



Week 6 Lecture Review

The Normal Distribution

The normal distribution is a bell-shaped, symmetric distribution, with notation $\mathbf{X \sim N(\mu, \sigma)}$

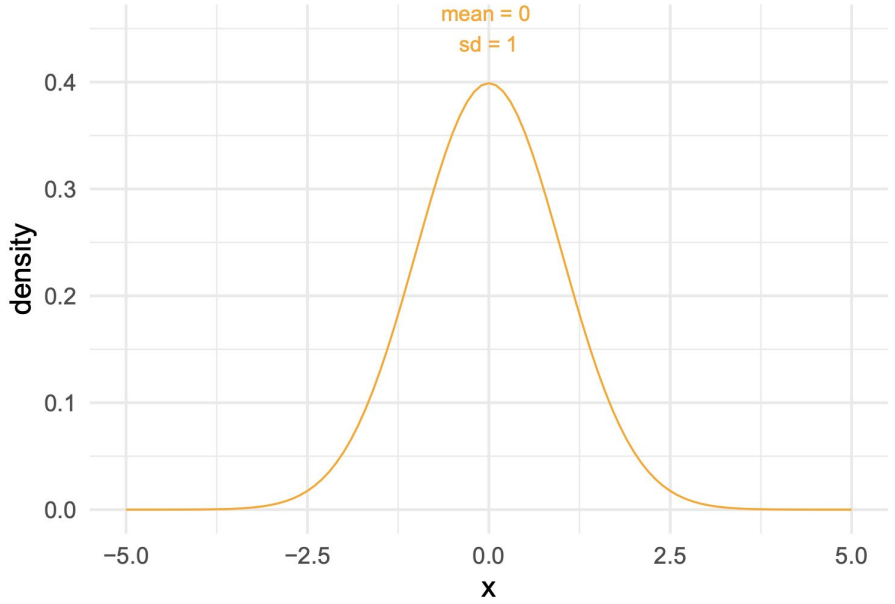
- μ = mean
- σ = standard deviation

R Functions:

- pnorm() → outputs the probability of value x or below
- rnorm() → generates random draws from the distribution

Week 6 Lecture Review

The Normal Distribution



Week 6 Lecture Review

Z-Scores

Z-score formula: $$z = \frac{x - \mu}{\sigma}$$

x = data point
μ = mean
σ = standard deviation

The Z-score tells you how many standard deviations the data point is from the mean.

LAB 05 Walkthrough

Lab Submission

- Follow the directions on the LAB05 file
- Submit using the **Terminal Tab** (next to the console in the bottom left pane)
  - Copy and paste the given line into the terminal
  - Follow prompts (NOTE: the terminal will **not** show your password being typed out!)
- **CHECK IN GRADESCOPE THAT ALL YOUR TESTS PASSED**