Lab 2
Noninfectious diseases

Admin

- Course messaging is now turned on. Use this to communicate individually with me.

- I've used Learn's "Announcement" feature - does this work for people? Better than sending a message to everyone?

- Individual Presentation Schedule will be posted. You may trade amongst yourselves, but let me know.

Individual Presentation

- My turn:

Statistics!

Math is like opera: you don't need to understand all the words to get the general idea.

Definitions:

- Population: all individuals of interest
- Sample: A subset of the population of interest
  - **Example**: you are a sample of UNM students
- Science commonly studies **random** samples to learn about populations. **Why?**

Sample Statistics!

- Summarize the sample to describe the population.
- Examples for a sample **S** of size **N**:
  - Mean **m:** average, "expected value"
    m=sum(**S**)/**N**
  - Standard deviation **SD**: measure of variation
    SD=sqrt(sum((**S-m**)^2)/**N**)

Example: Backpacks

- Each table is a sample of what?
- Is each table a **random** sample?
- Weigh each backpack. Find the mean and SD.
  - Mean **m:** average, "expected value" =sum(**S**)/**N**
  - Standard deviation: measure of variation =sqrt(sum((**S-m**)^2)/**N**)

Example: Weather

- Is the mean annual temperature of Albuquerque higher or lower than that of Seattle? **Why?**

- Is the mean January temperature of Albuquerque higher or lower than that of Seattle? **Why?**

- Is the annual temperature SD of Albuquerque higher or lower than that of Seattle? **Why?**

Example: Coin flips

- Each group gets 10 coins.
  - Flip all 10 coins, count the # of heads.
  - Do this 10 times

  - If you have a computer, one person should record results in Excel/Google docs spreadsheet.
- What do you expect to get?
- Compute the mean mean of your sample.
- Did everyone get the same result? Why / why not?

Distributions!

- Are you more likely to get 5 heads or 1 head?
- A distribution shows how likely each result is.
- Coins follow a binomial distribution

  - With lots of coins, the binomial is close to a normal distribution - "bell curve"

- Extreme events are in the **tails**: low probability
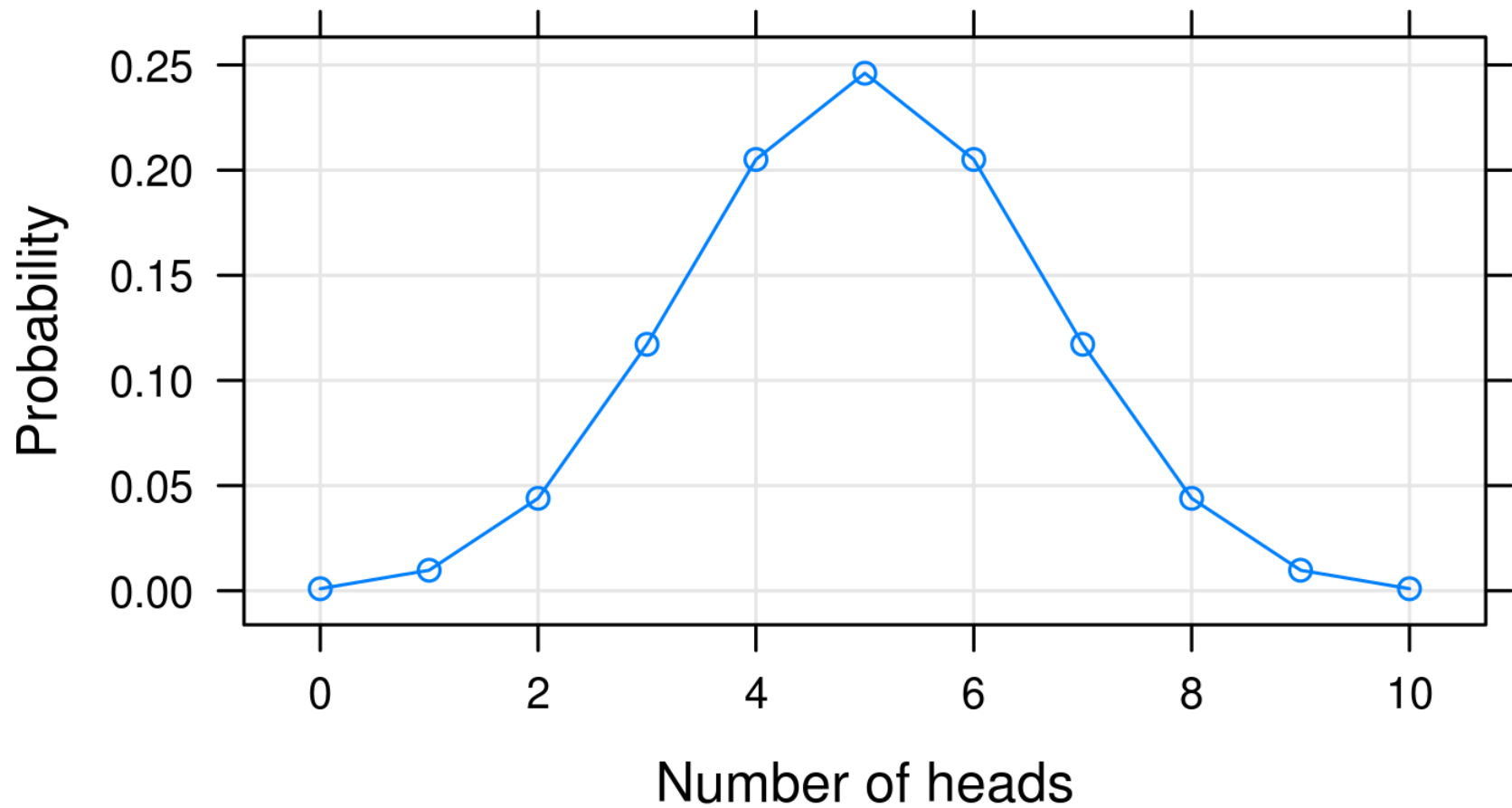
Non-infectious disease

- Now we will look at some human diseases.

- Later, we'll explore patterns of those diseases using random samples of human populations.