COGS 9 – A05 Discussion

Deadlines/Announcements

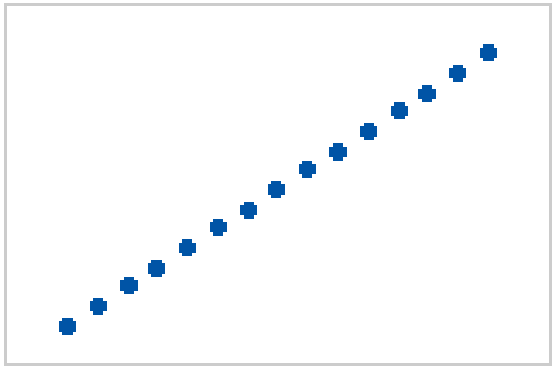
- Reading Quiz 4 – November 4th (Today), Late submission till 6th
  - 10 points
  - Deadline was moved by 1 day due to gradescope issue
- Assignment 3 – November 11th (Friday)
  - 40 points
- Reading Quiz 5 – November 17th
  - 10 points

- Assignment 2 grades will be released next week
- No discussion section on 11th November and 25th November

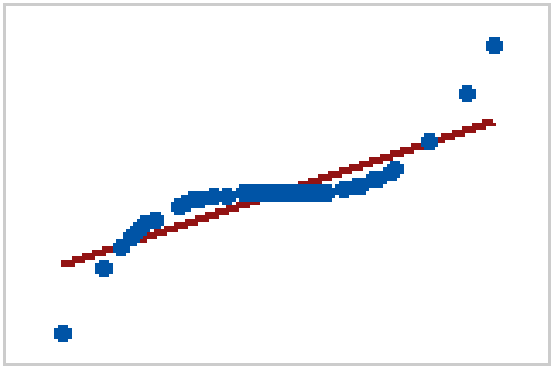
Lecture 11: Inferential Analysis

Pearson Correlation = Linear relationship between two variables
Spearman Correlation = Monotonic relationship between two sets

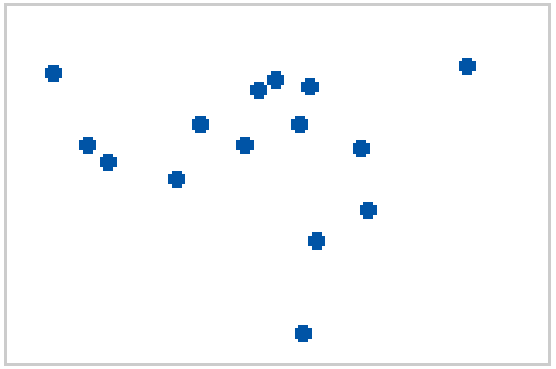
Pearson = +1, Spearman = +1



Pearson = +0.851, Spearman = +1



Pearson = −0.093, Spearman = −0.093



Lecture 11: Inferential Analysis

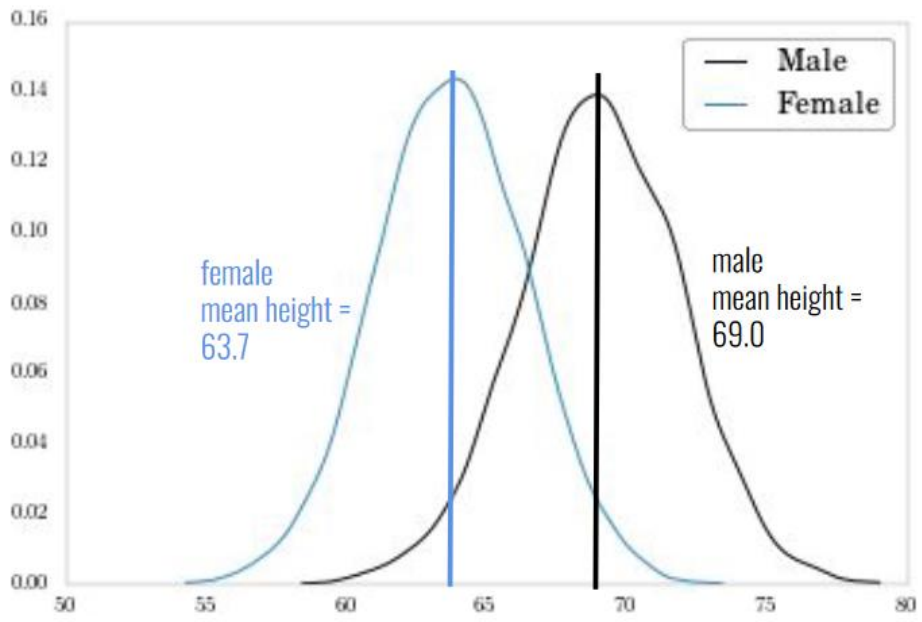
T-test = Test for differentiating between the means of 2 groups

- Data should be continuous
- Normally distributed
- Large enough sample size
- Equal variance between groups

Greater magnitude of T implies that there is a statistically significant difference b/w the 2 groups

t-statistic: -95.6

p-value < 0.001

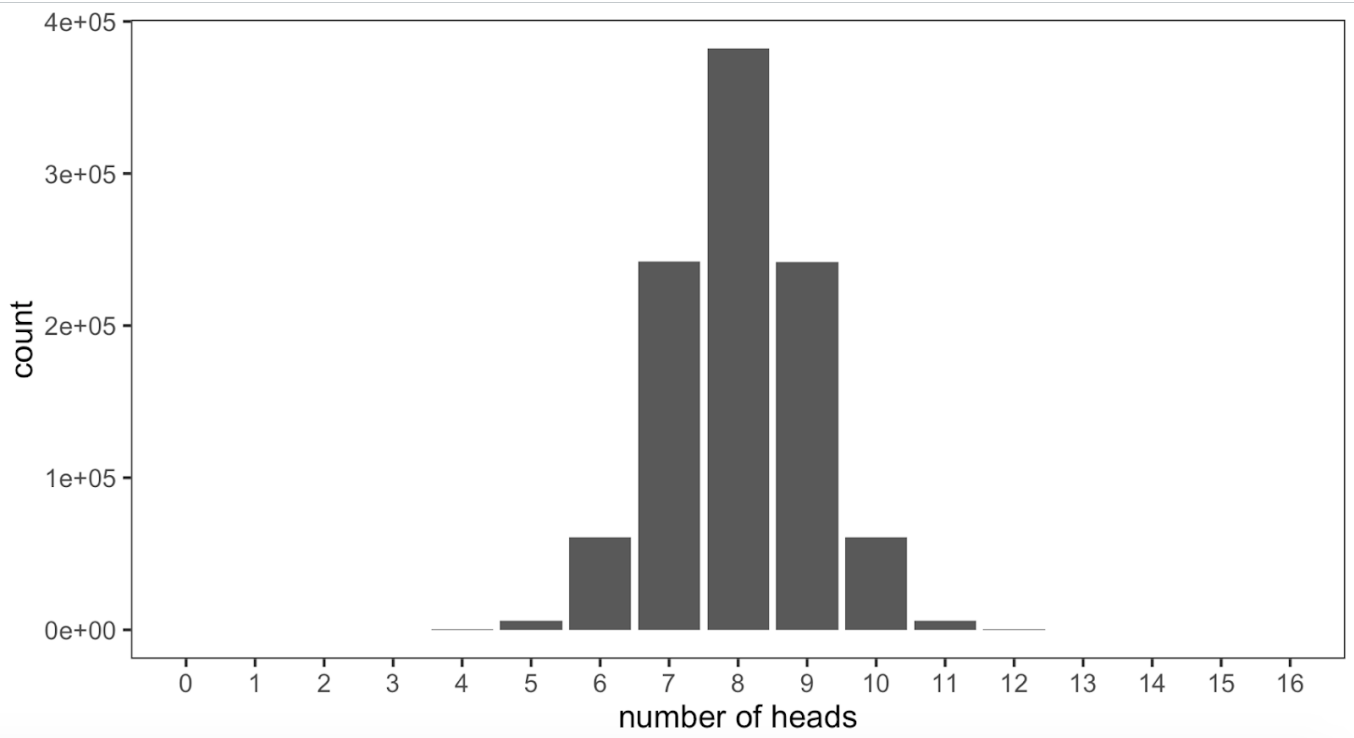


Lecture 11: Inferential Analysis

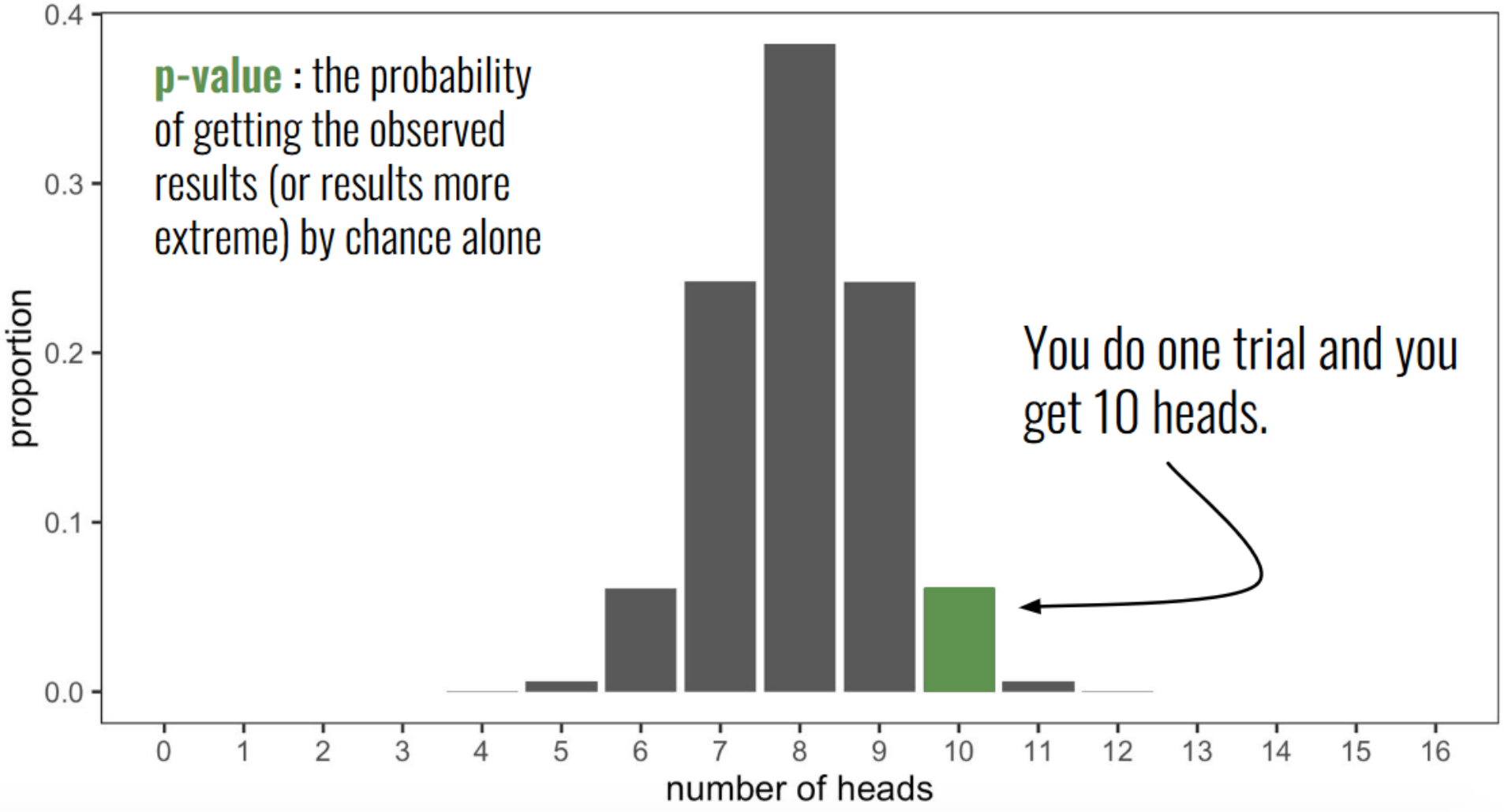
P-value = Probability of obtaining results at least as extreme as the observed results of a statistical hypothesis test, assuming that the null hypothesis is correct

Assuming a fair coin

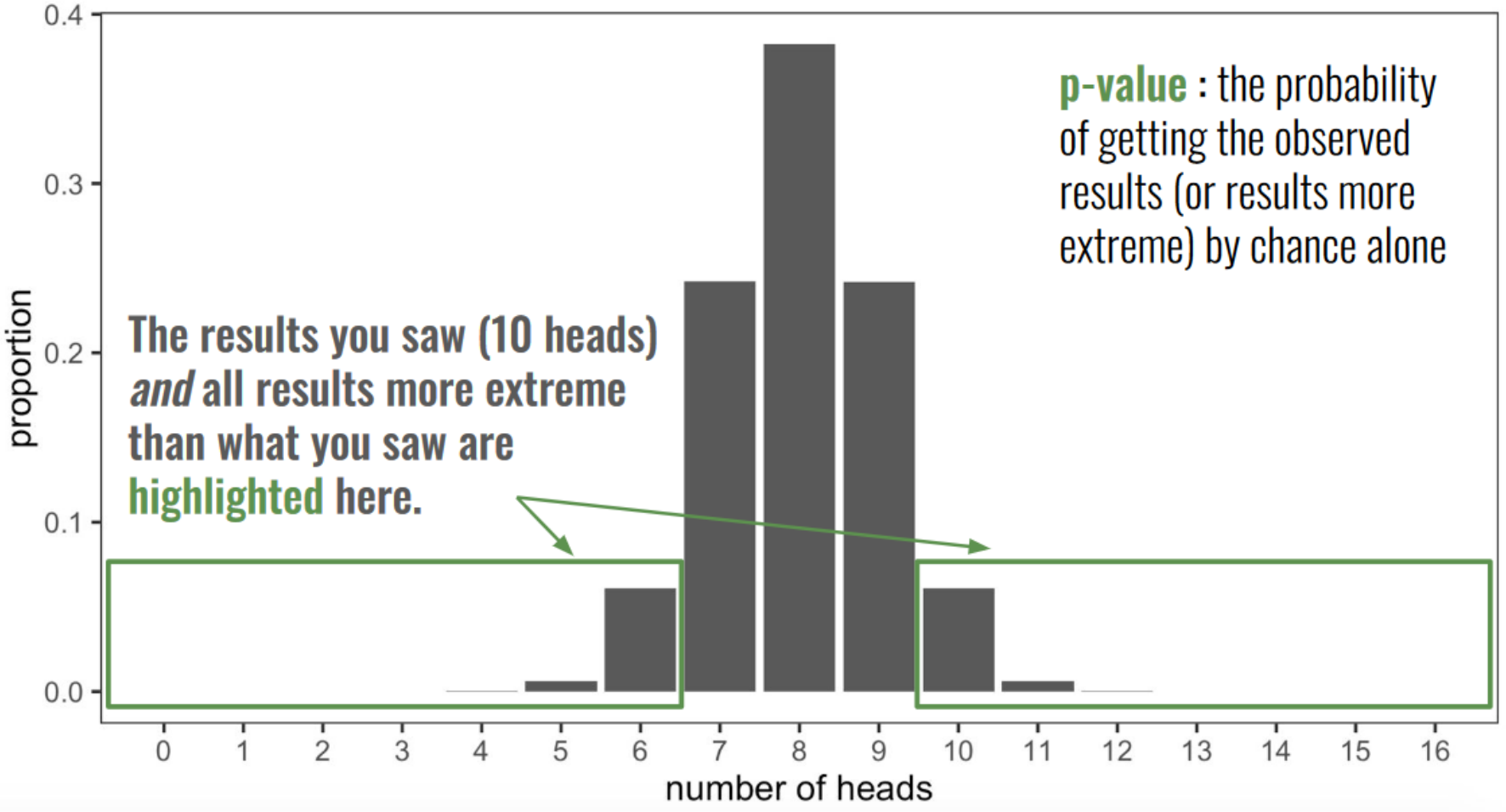
If we flip a coin 16 times and record the number of heads and then repeat this 16 flip trial 1 million times



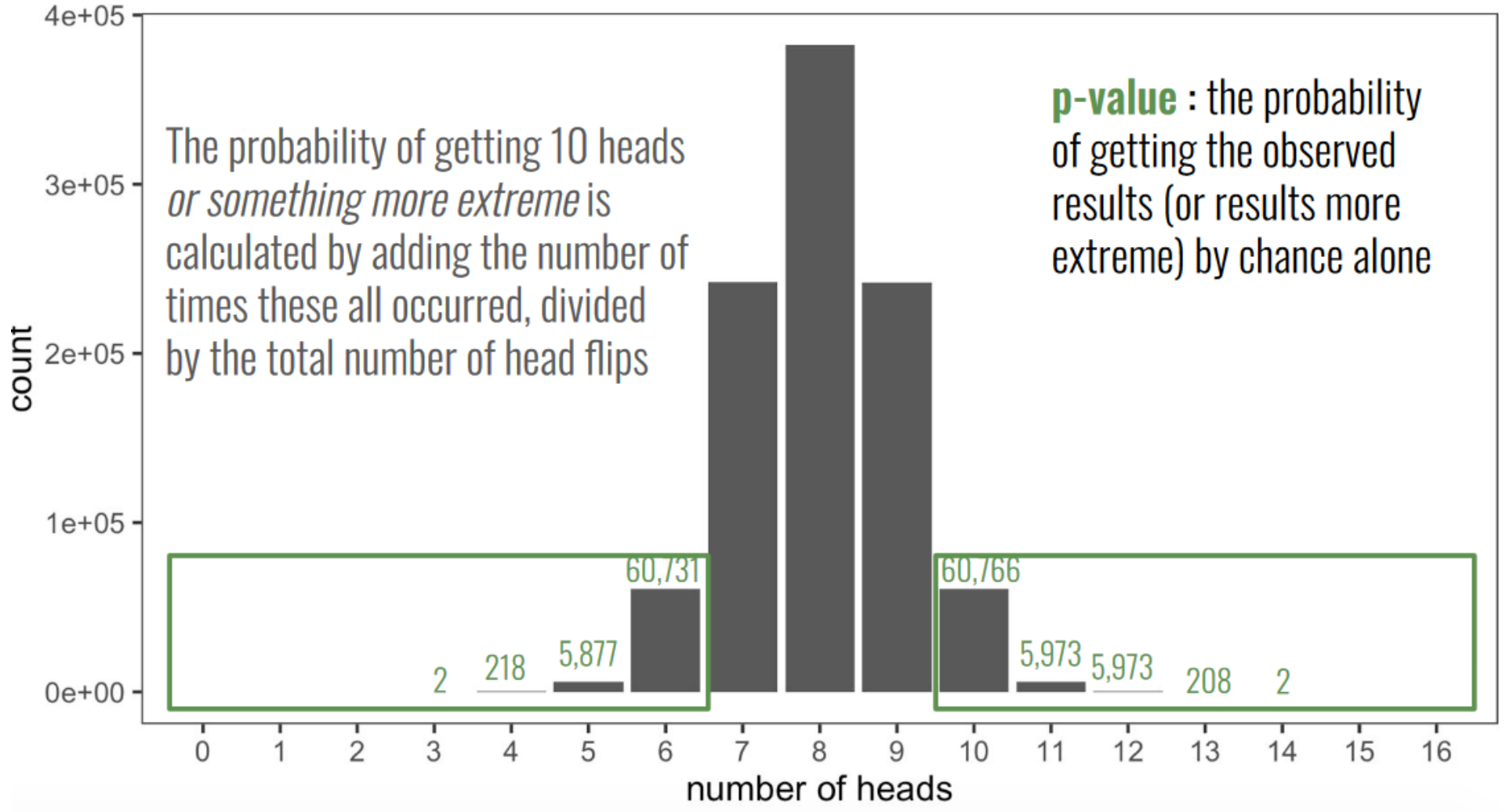
Lecture 11: Inferential Analysis



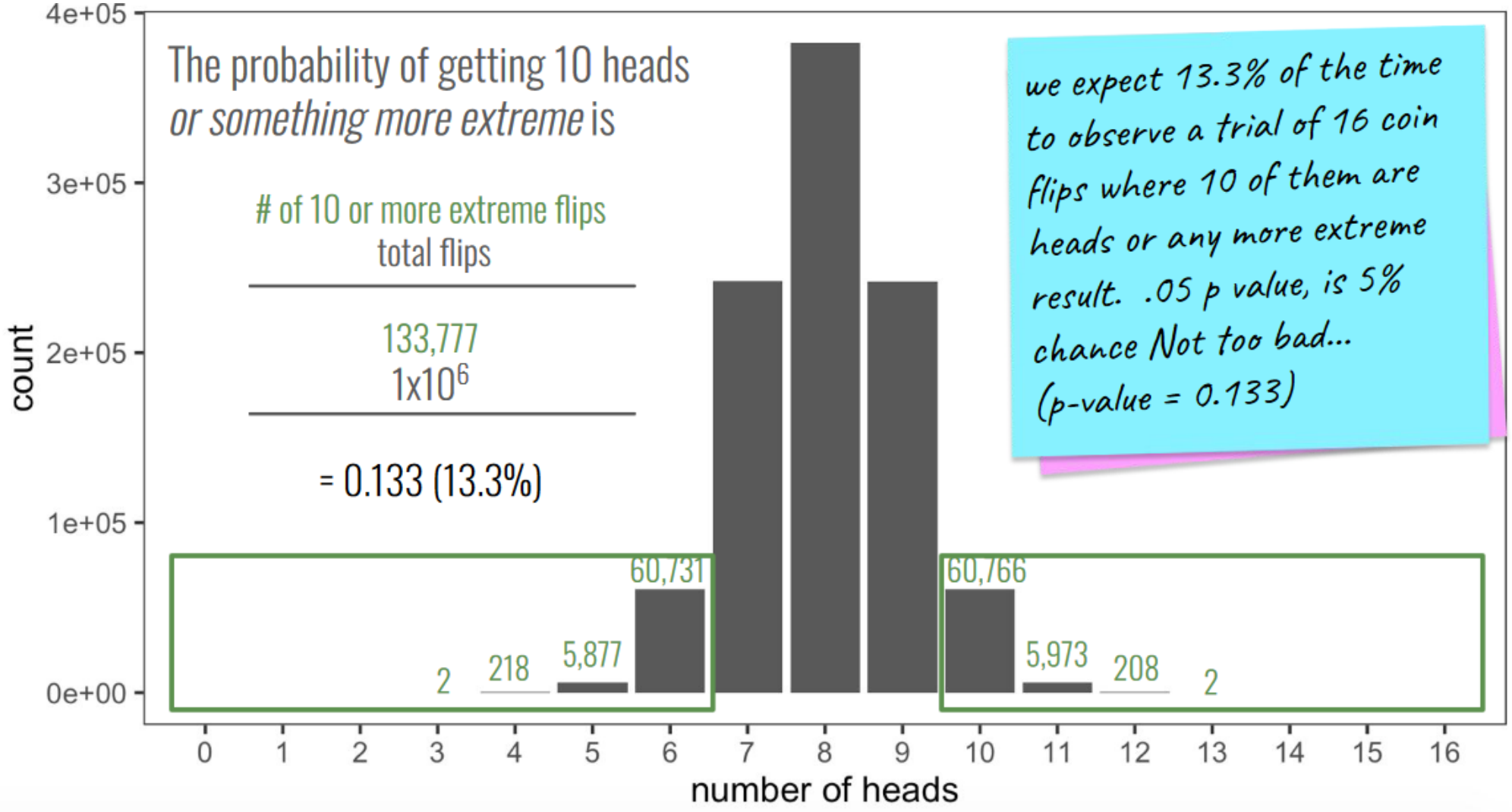
Lecture 11: Inferential Analysis



Lecture 11: Inferential Analysis

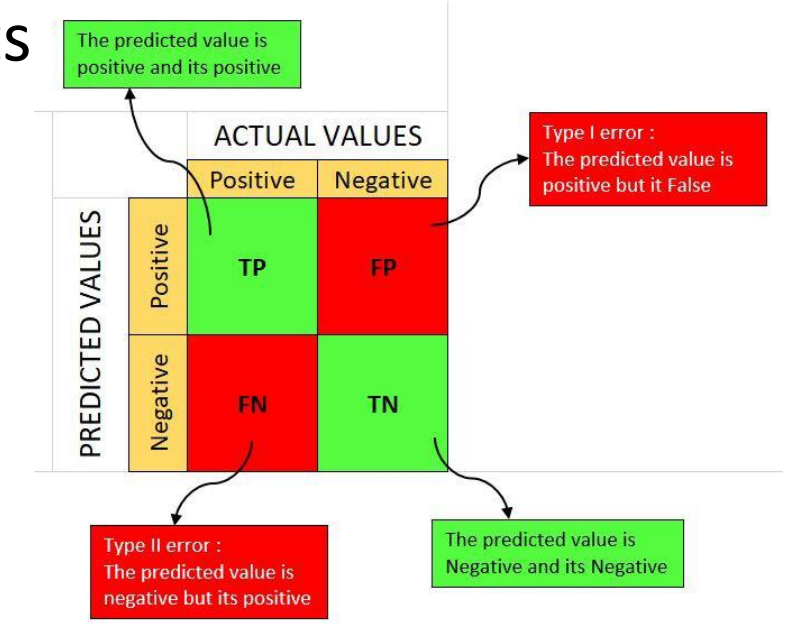


Lecture 11: Inferential Analysis



Reading 4: Graphical Inference

- Graphical inference bridges the gap between curiosity of finding relationships and skepticism that no relationship exists
- Traditional statistical test (like the coin flip)
- Rorshach: Show all null plots/Slip in the real data with the null plot
- Line-up: Real data plot is hidden among null plots
- True Positive, True Negative
  False Positive (Type 1), False Negative (Type 2)
- How to generate null plots
  - Resampling
  - Simulation



Assignment 3

Demo