CASE CLOSED

## Can Magnets Help Reduce Pain?
Chapter "F"

AP Stats at LSHS

Mr. Molesky

I: Data Analysis

- Answer the key questions:
  - Who: 50 polio patients who reported pain.
  - What: Treatment Group (active/inactive) and Pain Rating (0 to 10)
  - Why: To see if magnets reduce pain suffered by polio patients.
  - When, etc.: Data was collected on recruited patients by doctors and scientists.
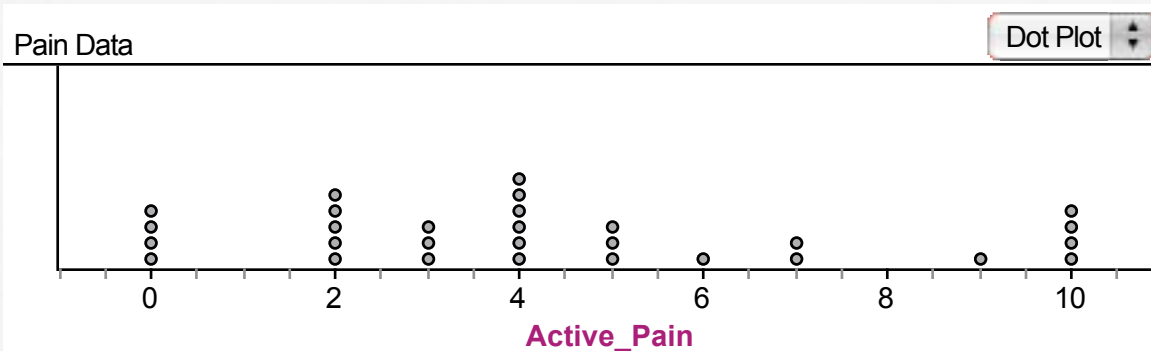
I: Data Analysis

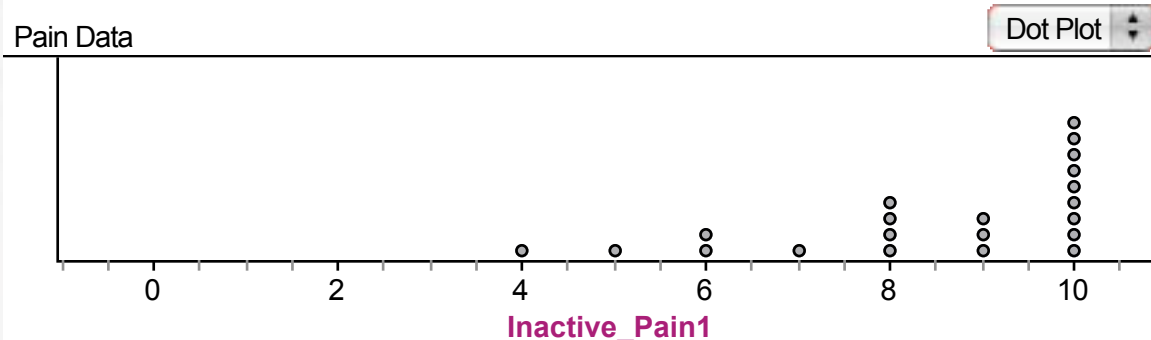☐ Construct separate dotplots:
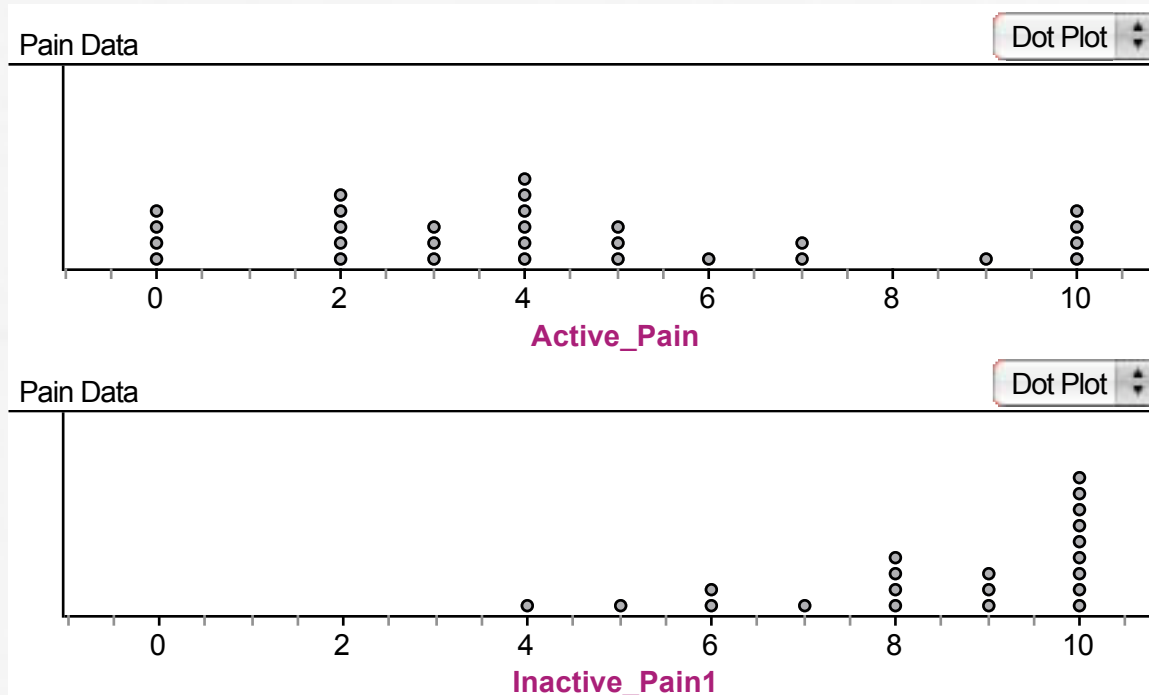
☐ There is more variability in the Active pain scores. However, it appears the typical Inactive pain score may be somewhat higher.

I: Data Analysis

☐ Calculate and compare the mean pain ratings...

Pain Data

Dot Plot ⬍

Active_Pain

Pain Data

Dot Plot ⬍

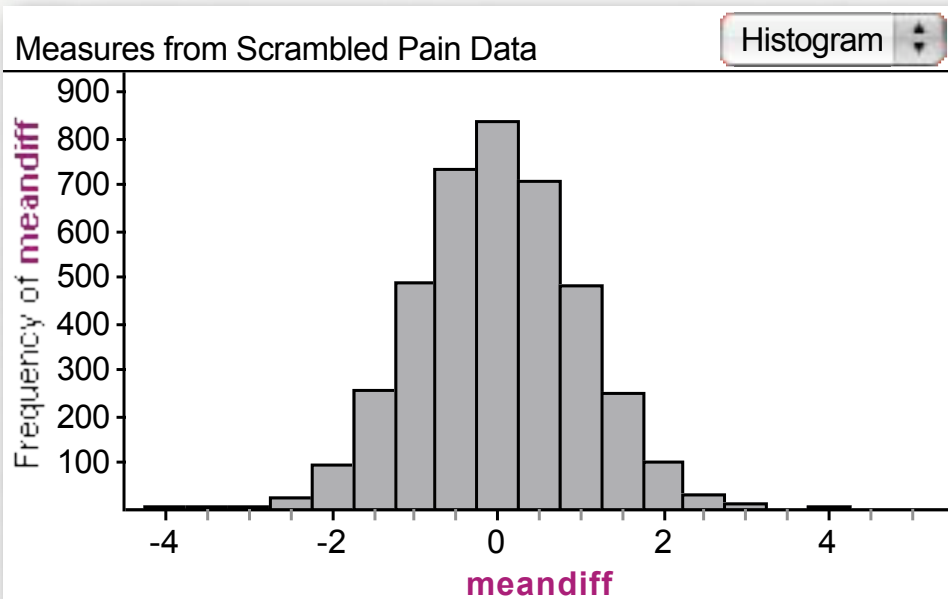Inactive_Pain1

☐ Mean **Active** Rating = 4.379

☐ Mean **Inactive** Rating = **8.**429
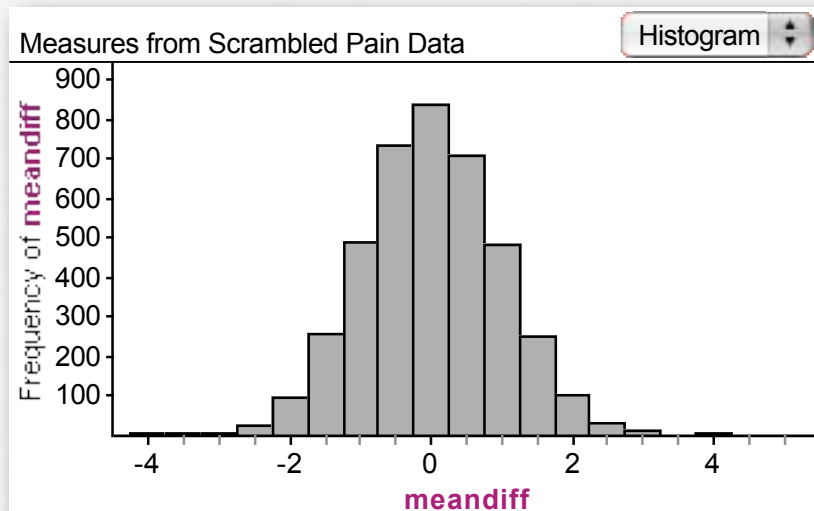
☐ Difference = 4.05

II: Producing Data

a. These ratings are new data...

b. They came from an experiment in which a treatment was imposed on patients.

c. Chance assignment of treatments helps the researchers avoid bias.

d. Yes. If the patients knew which treatment they received, their responses may be influenced by an expectation of pain-reduction. Also, the doctors may influence the patients rating if they know which treatment they are receiving.

III:prObability

Measures from Scrambled Pain Data — Histogram

a. The graph is roughly symmetric around 0, so we expect the difference to be positive 50% of the time.

b. It is very unlikely we'd see a difference of 4.05 or more if active magnets do not relieve pain.

IV:Inference

Measures from Scrambled Pain Data   Histogram

Differences between mean Active and Inactive scores...
IF ACTIVE MAGNETS DO NOT RELIEVE PAIN...

a. We'd estimate the true difference to be about 4.05 (what we observed).

b. I would reject the claim. If active magnets did not relieve pain, we shouldn't have observed much of a difference. We saw an unlikely difference, so we conclude they may help.