Math 243

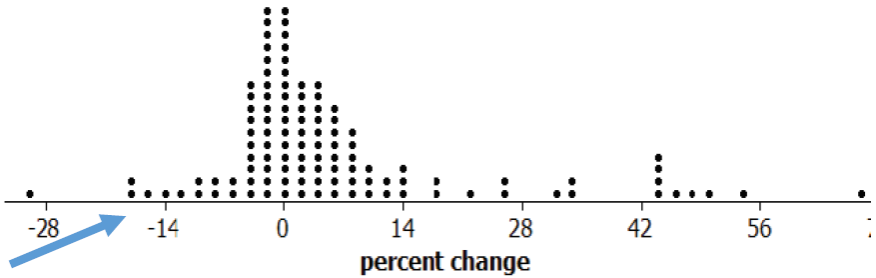
Inv. 1.1: Friend or Foe

Is a particular study result consistent with the null model?

Review

Inv. A: Traffic Fatalities

Is a particular observation unusual compared to a distribution?



Inv. B: Random Babies

Simulate a random process to estimate a probability.

Number of Matches: 1

Learning Outcomes for Inv. 1.1

1. Identify the **null model** explanation of a study result

2. Relate a null model explanation to a specific **random process**, a coin toss

3. Decide whether or not a particular study result is consistent with the null model explanation

Inv. 1.1: Friend or Foe?

Research Question:

Do babies prefer characters that appear to be friendly?

Data Collection: infantlab

Study Result: 14/16 babies chose the "helper" toy, rather than the hinderer toy.

Inv. 1.1: Friend or Foe

Do parts (a) and (b).

Read page 21 on your own.

Identify the **null model** explanation of a study result

Let's assume that babies have no preference and just randomly chose either the helper or hinderer toy.

This explanation is called the **"null model".**

Tip: the ***null model*** can often be identified by imagining the explanation that will disappoint the researchers: ***nothing*** interesting is going on.

Relate a null model explanation to a specific **random process**, a coin toss

Assuming babies have no preference:

baby choosing = coin toss

baby choses “helper” = coin lands “heads”

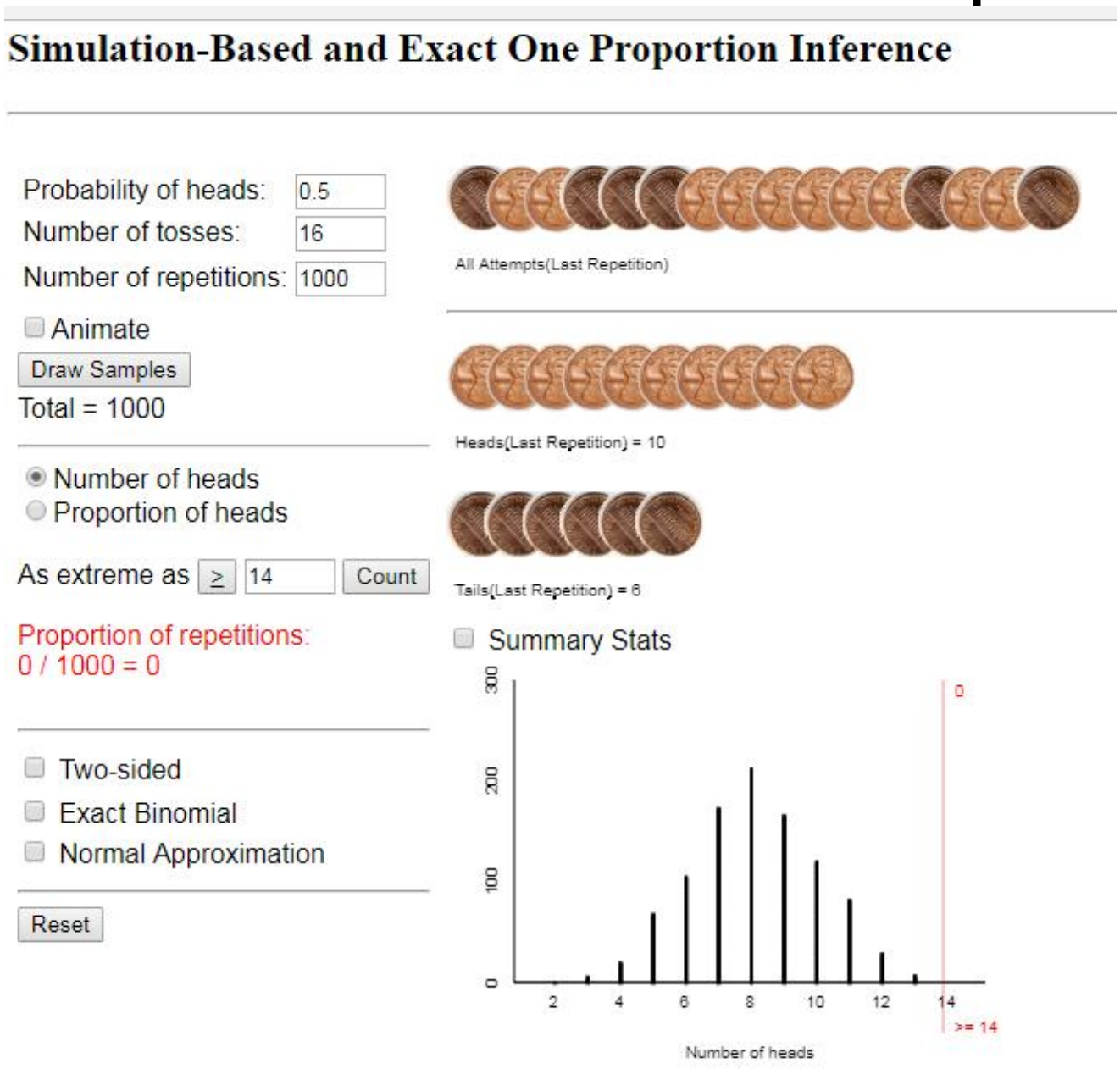
Rationale: If we can relate the null model to a random process, we can estimate the probability of seeing the study result by simulation.

Simulation

Do **parts (g) and (h)** on your own.

Combine your simulated study results with those of your classmates in **part (i).**

Simulation via One-Proportion Applet



Try this at home following the instructions on page 23.

Decide whether or not a particular study result is consistent with the null model explanation

Original study result:

14 /16 babies chose the “helper” toy.

Simulation under null model:

Assuming babies have no preference, it is very unlikely (0 times in 1000 simulations) to see a study result of 14 /16.

Therefore…

Decide whether or not a particular study result is consistent with the null model explanation

There is *strong evidence* babies are **not** randomly choosing between the two toys.

Read the **study conclusions** on page 25!