Probability (continued)

Supplementary Material for CFB3333/PHY3333
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Based on the following information on the web:
http://www.physics.smu.edu/pseudo/Probability/

The Birthday Paradox

- We act surprised when we find out that somebody we meet at a party has the same birthday as us.

- Let's try it in class.

  - We'll start people calling out their birthday (month and day only, please!) one at a time

  - Yell "Me too!" if you hear somebody else with your birthday

http://www.physics.smu.edu/pseudo

The Telephone Game

- What happens when we base our assumptions on something from "word of mouth"?
- Let's play the Telephone Game!

The Telephone Game

- Information has a low probability of surviving word-of-mouth transmission

- Information degradation is a huge problem!

- You can't always base assessments on what you hear.

The Telephone Game Story

- Here's what the passage SHOULD have said.

    "A rock band was playing in a submarine
    The noise awakened a whale
    Which ordered a pizza for lunch
    Anchovies go well with squid."

The Clustering Illusion
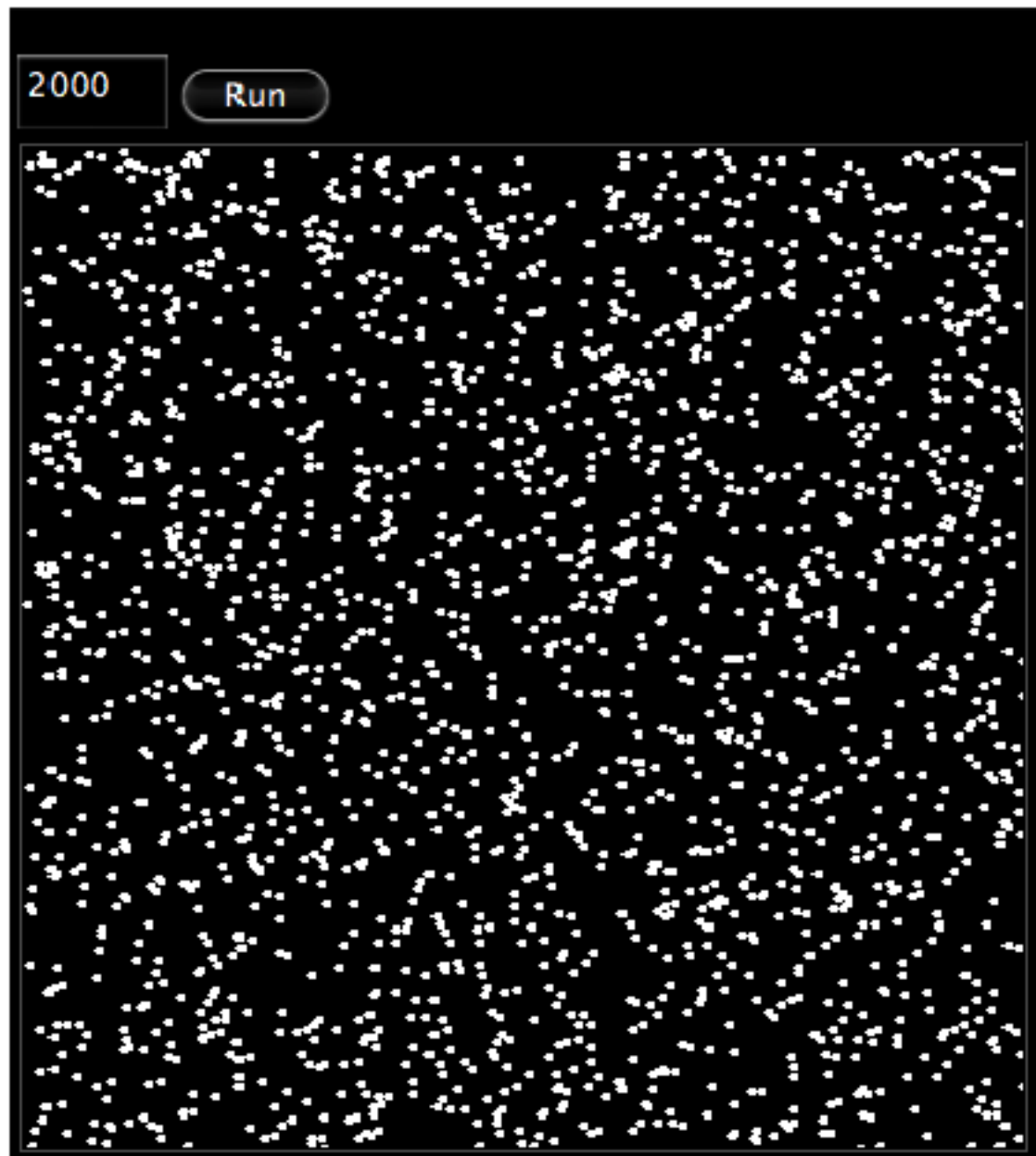
Simpson's Paradox

- Two or more studies may each reach a common conclusion

- But . . . when combined they reach the opposing conclusion.

The non-transitive paradox

- If A is better than B, and B is better than C, how is A related to C?

- C is not necessarily better than A!

- Consider rock, paper, scissors...

Extrapolation and Coincidence

- Extrapolation: predicting what happens next in the data based on what has happened before.

- Coincidence: when two unrelated events occur in relation to one another.
  - we often assign correlation or causality and neglect that they may just be a coincidence