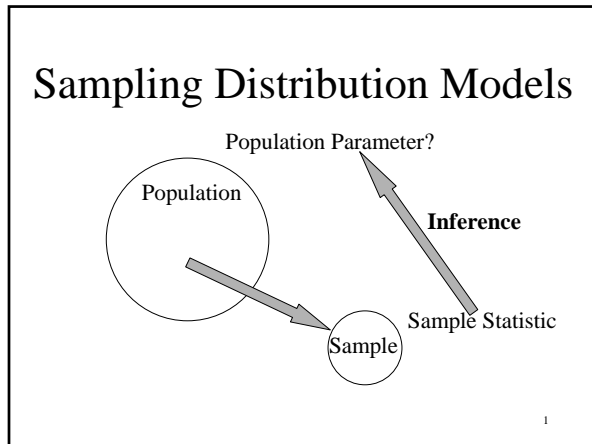


# Stat 101 – Lecture 21



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## Example

- Who? Stat 101 students in Sections P and Q.
- What? Number of siblings.
- When? Today.
- Where? In class.
- Why? To find out what proportion of students' have exactly one sibling.

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## Example

- Population
  - Stat 101 students in sections P and Q.
- Population Parameter
  - Proportion of all Stat 101 students in sections P and Q who have exactly one sibling.

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# Stat 101 – Lecture 21

## Example

- Sample
  - 10 randomly selected students.
- Sample Statistic
  - The proportion of the 10 students who have exactly one sibling.

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## Demonstration

- Sample 1  $\hat{p} =$
- Sample 2  $\hat{p} =$
- Sample 3  $\hat{p} =$

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## What have we learned?

- Different samples produce different sample proportions.
- There is variation among sample proportions.
- Can we model this variation?

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# Stat 101 – Lecture 21

## Repeated Sampling

- We could continue to randomly select 10 students from the class and accumulate the different values of the sample proportion and see how those values are distributed.

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## Sampling Distribution

- The sampling distribution of a sample statistic displays the variation in repeated random samples from a given population.

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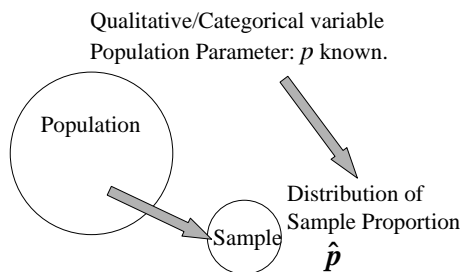
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## Sampling Distributions



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# Stat 101 – Lecture 21

## Simulation

- Population  
– Reese's Pieces

[www.rossmanchance.com/applets/Reeses/ReesesPieces.html](http://www.rossmanchance.com/applets/Reeses/ReesesPieces.html)

- Population Parameter  
– Proportion of Orange Reese's Pieces

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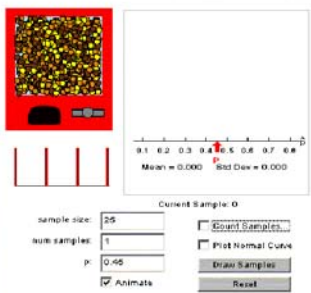
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### Reese's Pieces Samples



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## Simulation

- Simple random sample of size  $n=25$ .
- Repeat several times.
- Record the sample proportion of orange Reese's Pieces.

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