

Stat 104 – Lecture 1

Course Objectives

- Develop Statistical Thinking.
 - Display and summarize data.
 - Evaluate probabilities.
 - Use statistical methods to reach informed decisions.

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Prerequisites

- Make sure you can do basic algebra.
 - There will be a pre-test in lab.
- Make sure you can use a calculator.
 - Bring your calculator to lab.

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How can I do well in this class?

- Attend all lectures and pay attention.
- Attend all labs and participate.
- Complete all assignments.
- Go over answers to assignments.
- READ and STUDY the textbook.
- Come to office hours with questions.
- Form study groups with fellow students.

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What Is Statistics?

- Statistics is a way of reasoning about the world around us.
- Statistics helps us use data to make informed decisions.

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Statistics in a Word

- Statistics is about ...variation.
 - The world is full of data.
 - Data exhibit variation.
 - Recognizing, displaying and quantifying variation in data can help us make sense of the world.
 - Try to explain variation.

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Data

- Information
- Context is important
 - **Who** are we collecting data on?
 - Cases: Rows in a data table.
 - **What** data are we collecting?
 - Variables: Columns in a data table.

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<i>Acacia bonariensis</i>	Moist	1.59	35	59	94
<i>Dendropanax arboreus</i>	Moist	1.46	25	31	56
<i>Heliocarpus americanus</i>	Moist	2.36	30	40	70
<i>Margaritaria nobilis</i>	Moist	1.84	24	23	47
<i>Pouteria macrophylla</i>	Moist	1.55	57	46	103
<i>Bougainvillea modesta</i>	Dry	2.19	12	12	24
<i>Chrysophyllum gonocarpum</i>	Dry	1.42	59	70	129
<i>Jacaratia</i> sp.	Dry	2.12	21	50	71
<i>Phyllostylon rhamnoides</i>	Dry	1.49	18	21	39
<i>Sweetia fruticosa</i>	Dry	1.70	28	26	54

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Data

- Who?
 - Tropical trees/shrubs.
- What?
 - Species, type of forest
 - Average crown exposure, sugar (mg/g), starch (mg/g), nonstructural carbohydrate (mg/g)

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Population – all items of interest.
Example: All trees/shrubs in tropical forests.

Sample – a few items from the population.
Example: 10 trees/shrubs.

Parameter – numerical summary of the entire **population**.
Example: **population mean** sugar concentration.

Statistic – numerical summary of the **sample**.
Example: **sample mean** sugar concentration.

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What?

- Variables
 - Categorical (Qualitative) variable
 - Species
 - Type of forest
 - Quantitative variable
 - Crown exposure
 - Sugar, starch, and NCH concentration

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Categorical

- Nominal – names.
 - Species – *Acacia bonariensis*
- Ordinal – ordered categories.
 - Forest type – Dry, Moist (ordered by amount of wetness).

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Numerical

- Discrete – takes on only certain isolated values.
 - Crown exposure – 1, 2, 3, 4, or 5
- Continuous – measurement.
 - Sugar concentration – any value greater than 0.

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