

Panel 1

Welcome to Math 1203 - Intro to Stats
for Social Sciences

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Hours: MW 3-4pm

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Syllabus: Look at: <http://pirate.shu.edu/~wachsmut>

You need:

- text book ✓
- StatCrunch ✓
- DyKnow ✓

Grading:

- 3 exams : 300 p.
- 1 final : 100 p
- Quizzes : 100 p
- Computer : 100 p
- 600 p.

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Panel 3

Course Overview:

1. Overview: Population, Sample, types of variables
2. Sample and Measurement: randomization, sampling methods
- 3.) Descriptive Stats: distr., graph, central tendency, variability
4. Probability Distributions: normal dist., Central Limit theorem

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5. Statistical Inference: Estimation
Confidence Intervals
6. Statistical Inference: Significance Tests
tests for mean, proportion
8. Associations between Categorical Vars
contingency tables, chi-square tests
9. Linear Regression + Correlation
scatter plots, regression line
7. Comparing two Groups *

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Panel 5

What is Statistics?

- measuring data, %, etc.
- using #'s to further your argument
- make predictions
- analysing surveys
- graphing + plotting data

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What is Statistics?

Statistics is the science of making sense of data

Statistics consists of a body of methods for obtaining and analyzing data

4 components

- collect data
- summarize
- analyze
- report

3 Phases

- Design Phase (create survey)
- Description Phase (summarize)
- Inference Phase (predictions)

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Example: Use a small group of numbers to make inferences about large group.

General Social Survey GSS 2008, asked 2000 adults in the US questions like 'do you believe in life after death'
Suppose 1250 say 'yes'

Design: GSS survey

Description: 1250 out of 2000 do believe, 62.5%

Inference: $62.5\% \pm \text{error}$ in the US believe.
e.g. $62.5 \pm 3\%$

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Population: set of all measurements

Sample: a subset of population

Descriptive Statistics: summarizes info in a collection of data

Inferential Statistics: provides predictions about population based on sample data

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Parameter: numbers that apply to population

Statistics: numbers -v- sample

Ex: 1850 randomly selected US adults were asked "do you believe in heaven"? 1000 answered "yes", 800 "no", and 50 did not answer. We compute, somehow, that $55.5\% \pm 3\%$ of US adults believe in heaven.

$$\frac{1000}{1850} \cdot 100$$

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Ex: 1850 randomly selected US adults were asked "do you believe in heaven"? 1000 answered "yes", 800 "no", and 50 did not answer. We compute, somehow, that $55.5\% \pm 3\%$ of US adults believe in heaven. Identify:

population all US adults

sample 1850 people

descr. stats: 55.5%

inf stats: $55.5\% \pm 3\%$

statistics 55.5%

parameter: % of people in US who believe in heaven (unknown)

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Ex: Find avg. exam score in this class

stats and params are the same, no
guessing (inference) necessary.

Ex: Tax auditor has 25 000 accounts. How many
are in error?

take, like, 200 accounts "at random",
find that avg.

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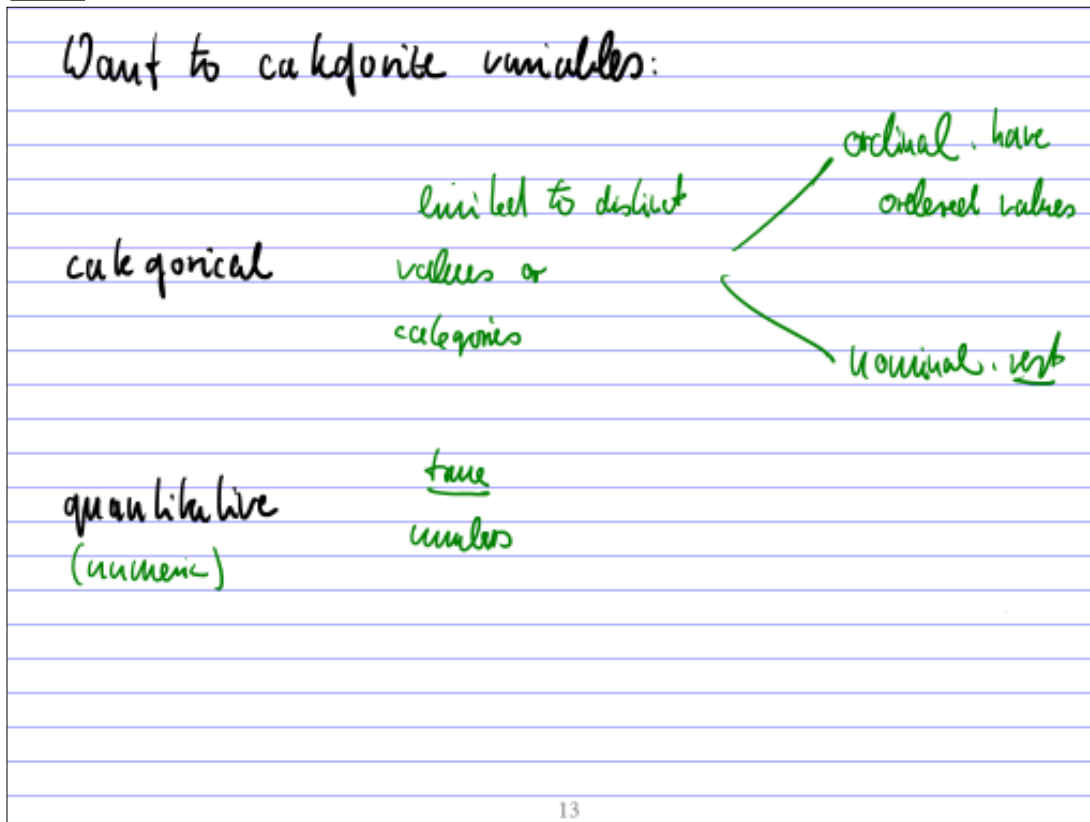
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Stat Crunch + GSS Data



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Panel 13



Panel 14

Sample Survey

① Who are you

Freshmen (1)

Sophomore (2) ordinal

Junior (3)

Senior (4)

② What is your height: _____ (in cm)

③ What is your major: _____

④ Religion:

protestant (3)

catholic (2)

other (0)

⑤ Your name: _____

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