

Panel 1

Stats: Cont Time

Grades, web site, DyKnow, StatCrunch

Statistics:

Population, sample,

descriptive + inferential stats

Parameters, statistics

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Panel 2

Want to categorize variables:

categorical limited to distinct values or categories

- ordinal: inherent ordering
- nominal: not

quantitative (numeric) free (?) numeric values

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Panel 3

1. Which year did you enter Seton Hall University?	<input type="text"/>	quant numeric (or ord.)	
2. Which year do you expect to graduate from Seton Hall University?	<input type="text"/>	quant, numeric (or ord.)	
3. Are you male or female?	<input type="radio"/> Male <input type="radio"/> Female	nominal	
4. What is your age in years?	<input type="text"/>	quant	Rank this lectures
5. What is your weight in pounds (enter number only)?	<input type="text"/>	quant.	[ ] sat (1)
6. What is your height in inches (enter number only)?	<input type="text"/>	quant	[ ] ok (2)
7. How many CD's do you own (approximately)?	<input type="text"/>	quant	[ ] super (3)
8. Are you left or right handed?	<input type="radio"/> Left Handed <input type="radio"/> Right Handed <input type="radio"/> Ambixtertrous	nom.	ordinal

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Panel 4

Other categories for variables:

continuous : unlimited possibilities in every subinterval

discrete: you can count # of choices

Example

Age: cont. or discrete

Income: discrete

Opinion about today's lecture, from 0 (sad) to 6 (super) discrete if integers only

Who did you vote for: cont. if decimals

Obama  Romney discrete

Panel 5

1. Which year did you enter Seton Hall University?	<input type="text"/>	discrete
2. Which year do you expect to graduate from Seton Hall University?	<input type="text"/>	disc.
3. Are you male or female?	<input type="radio"/> Male <input type="radio"/> Female	discr.
4. What is your age in years?	<input type="text"/>	discr.
5. What is your weight in pounds (enter number only)?	<input type="text" value="163.79"/>	cont
6. What is your height in inches (enter number only)?	<input type="text"/>	discrete
7. How many CD's do you own (approximately)?	<input type="text"/>	discrete
8. Are you left or right handed?	<input type="radio"/> Left Handed <input type="radio"/> Right Handed <input type="radio"/> Ambixtertrous	discr.

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Panel 6

Dealing with Two Variables

Often deal with situation where we want to analyze two variables and their connections

Ex: Smoking vs Lung Cancer

One variable is usually dependent, other independent.

Often, indep. is earlier in time.

Ex: <sup>(indep)</sup> Age vs. <sup>(dep)</sup> Party Affiliation

Height vs. Weight <sup>(indep)</sup> <sub>(dep)</sub>

Smoking vs. Lung Cancer <sup>(indep)</sup> <sub>(dep)</sub>

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Panel 7

## Random Sample

Want to make inferences on pop based on sample

Def: Random Sample of size  $N$  is a subset of  $N$  numbers selected from a population so that every other sample of size  $N$  has the same probability of being selected

Exam: "unbiased" sample.

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Panel 8

A: Leave card on table for cust. to fill out

B: Ask every 5<sup>th</sup> person who leaves their opinion

Which one is closer to a Random Sample?

B seems more unbiased

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Panel 9

Example: Find average income of NYC residents.

Ask everyone. Very hard! Not possible

Pick sample: Pick random page in phone book, <sup>McDon</sup>  
Pick every 2<sup>nd</sup> person. Binned! <sup>McDon</sup>  
Mc-

Carefully pick pages from phone book in  
different neighborhoods, 2 random #'s each page.  
Binned (missing, unlisted, cells)

Difficult to pick a random sample!

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Panel 10

Ex: Last election I saw on TV at 9:45 pm:

Channel X: Candidate A - 43%  
Candidate B - 52%  
Margin of error: 3%

Channel Y: Candidate A - 49%  
Candidate B - 48%  
Margin of error - 2%

What is wrong with this picture?

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Panel 11

Meet a random person on the street. Is it a man or a woman? US

How many men: 45%  
 women: 54%

Pick random sample, e.g. GSS survey!

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Panel 12

Distribution: set of all possible values together with their frequencies - Frequency Distr.

Ex: Data 1, 2, 1, 1, 2, 1, 1, 9

1 = male  
 2 = female  
 9 = no answer

	count freq.	relative freq.	valid freq.
male	5	5/7	5/7
female	2	2/7	2/7
missing	1	1/8	
	8	1	7/7

← preferred

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