Welcome!

AP Statistics

LoPriore

E1

1. Without looking, select 8 chips from the bag.
2. Record the number of each color.
3. Replace the chips and mix the bag.
4. Repeat 1 and 2.
5. Replace the chips and pass the bag to someone else.

- Get textbooks and review the syllabus
- materials
- AP exam, rigor, placement

Read:

WHAT

IS

STATISTICS??

watch video

http://www.learner.org/courses/againstallodds/unitpages/unit01.html

Intro to Data Analysis-

Making Sense of Data

I will be able to:

- Identify individuals in a data set
- Classify variables as categorical or quantitative

Data Analysis

Statistics is the science of data.

Data Analysis is the process of *organizing*, *displaying*, *summarizing*, and *asking questions* about data.

Individuals
✓ objects described by a set of data — people animal object

Variable
✓ any characteristic of an individual

Categorical Variable
✓ places an individual into one of several groups or categories.

color
class
zip code
ages 10-19, 20-29, . . .

Quantitative Variable
✓ takes numerical values for which it makes sense to find an average.

height
age
weight

A consumer reports **article about 98 HDTVs lists each set's manufacturer cost, screen size, type, and overall performance score (0-100).** Individuals — TV's

Are these variables categorical or quantitative? Include units where appropriate, and describe "why" of the study.

quantitative

cost ($)

screen size (in)

performance score

categorical

type

- Pick the "Best" TV
- comparison
- manufacturer research

Data Analysis

A **variable** generally takes on many different values.

- We are interested in how often a variable takes on each value.

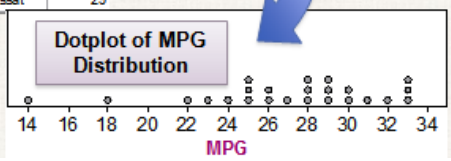
Distribution

✓ tells us what values a variable takes and how often it takes those values.

MODEL	MPG	MODEL	MPG	MODEL	MPG
Acura RL	22	Dodge Avenger	30	Mercedes-Benz E350	24
Audi A6 Quattro	23	Hyundai Elantra	33	Mercury Milan	29
Bentley Arnage	14	Jaguar XF	25	Mitsubishi Galant	27
BMW 5281	28	Kia Optima	32	Nissan Maxima	26
Buick Lacrosse	28	Lexus GS 350	26	Rolls Royce Phantom	18
Cadillac CTS	25	Lincoln MKZ	28	Saturn Aura	33
Chevrolet Malibu	33	Mazda 6	29	Toyota Camry	31
Chrysler Sebring	30	Mercedes-Benz E350	24	Volkswagen Passat	29

Variable of Interest: MPG

Dotplot of MPG Distribution



How to Explore Data

MODEL	MPG	MODEL	MPG	MODEL	MPG
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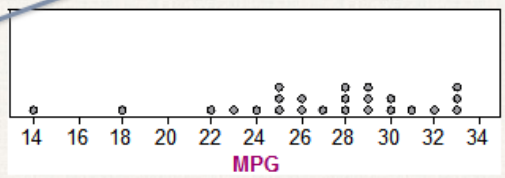
Examine each variable by itself.
Then study relationships among the variables.

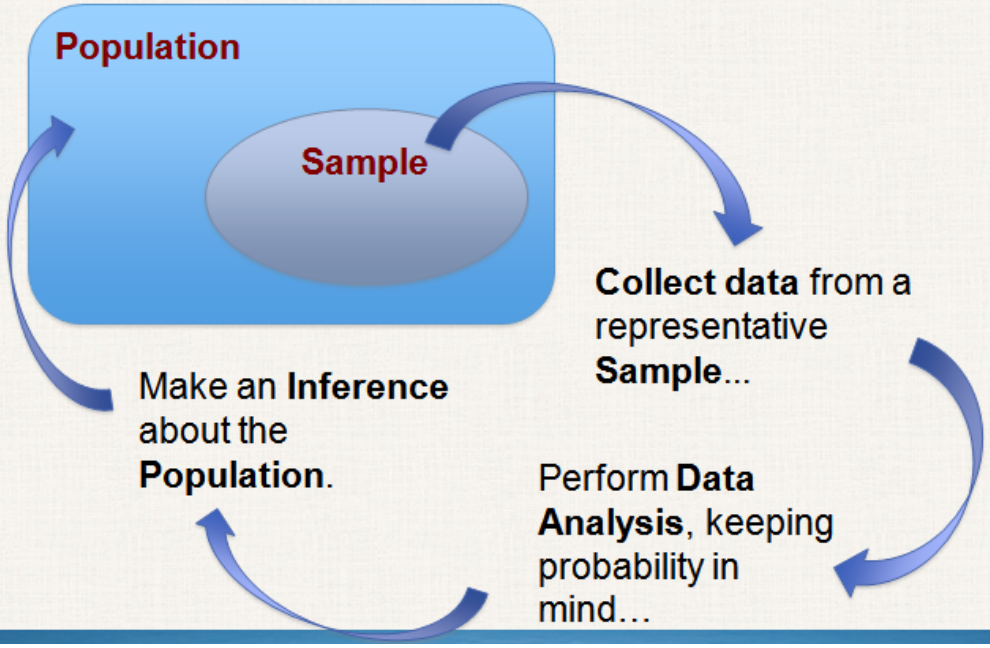
Start with a graph or graphs



Add numerical summaries

```
1-Var Stats
 x̄=27
 Σx=648
 Σx²=17992
 Sx=4.643836495
 σx=4.546060566
↓n=24
```

From Data Analysis to Inference



9 of 10 randomly selected Canadian Students are right-handed. That's 90% of the sample.

Can we conclude that 90% of the population of Canadian students are right-handed? No

What would happen if we selected another 10 students?
need many more

Can we say the actual population value is "close" to 90%?

Data Analysis: Making Sense of Data

Section Summary

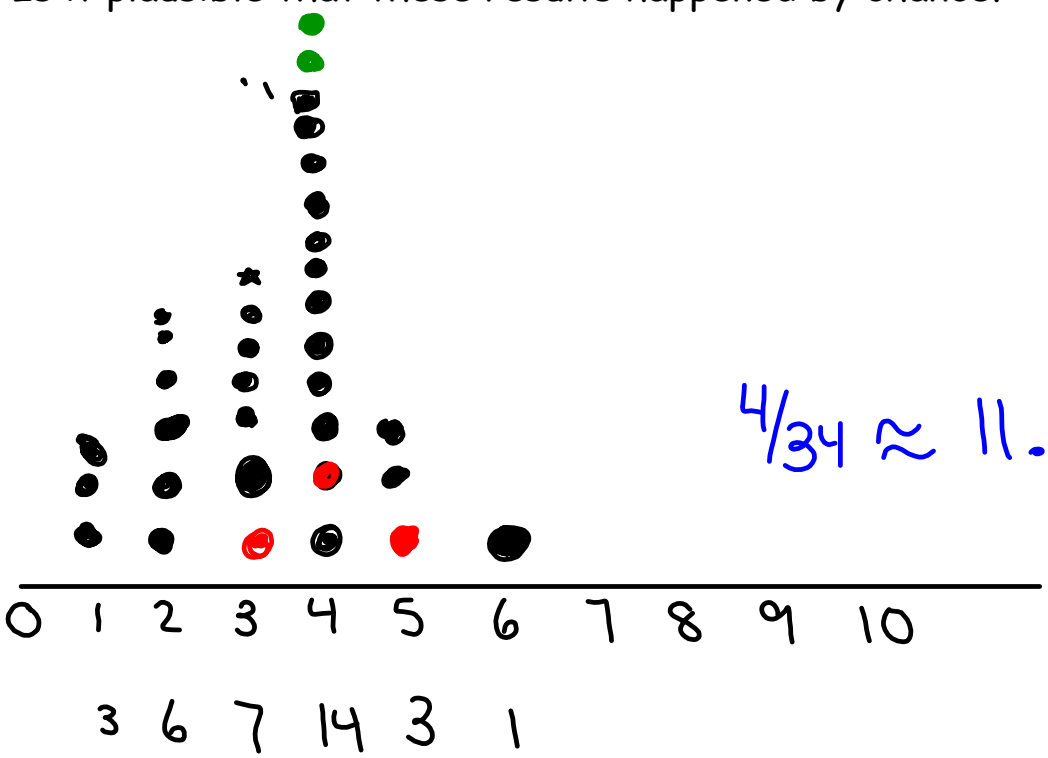
In this section, we learned that...

- ✓ A dataset contains information on **individuals**.
- ✓ For each individual, data give values for one or more **variables**.
- ✓ Variables can be **categorical** or **quantitative**.
- ✓ The **distribution** of a variable describes what values it takes and how often it takes them.
- ✓ Inference is the process of making a conclusion about a population based on a sample set of data.

An airline just completed a training for 25 pilots - 15 male and 10 female - to become captains. Unfortunately, only eight captain positions were available. The managers announced that they would use a lottery to determine which pilots would fill the available positions. The names of all 25 pilots were written on identical slips of paper. The slips of paper were placed in a hat, mixed thoroughly, and drawn out one at a time until all eight captains were identified.

A day later they announced the results of the eight chosen captains, 5 are female and 3 male. Some pilots who were not selected suspect the lottery was not carried out fairly. One of the pilots asked me for advice about whether to file a grievance with the pilot's union.

Is it plausible that these results happened by chance?



$4/34 \approx 11.8\%$

1. What advice would you give to the pilot who contacted us?

1/34

2. Would it change if they had chosen 6 females? 7 females? Explain

0/34

HW Intro Ch 1 p. 6

1, 3, 5, 7, 8