

# Statistics Chapter 1 Cheatsheet Cheat Sheet

by Shelbeans (shelbeans) via cheatography.com/177819/cs/42059/

## **Definitions**

Population

The entire collection of subjects we wish to target

Sample

A subset of the population

Univariate

1 variable

Bivariate

2 variables from the same subject

Multivariate

2 or more variables from the same subject

Qualitative Data

Categorical, descriptive (yes/no, blue, etc)

Quanitative Data

Numeric (include discrete and continous)

Discrete Data

Primarily count data (the number of...)

Continuous Data

Data from measurements (can take on any value w/in some interval)n

# Ways to Obtain a Sample

| Stratified<br>Sample | helps avoid biased data (If there are 2X white people than Hispanics, then the sample should have 2X white people |
|----------------------|---|
|                      | than Hispanics)   |
| Convenience Sampling | Stay away from this, (Choosing to only sample from one assembly line on the shop floor)                           |
| Simple<br>Random     | (A name is drawn out of a hat)  |

# Ways to Obtain Data

Experiment allows us to draw cause and effect b/c of the ways its designed (the best)

Survey A questionnaire or observ-

#### The 2 Branches of Statistics

**Descriptive Statistics** 

use of graphs, numeric computations to summarize the data

Inferential Statistics

Make and inference using sample statistics back to the population

#### Predicts\_

| Sample Mean (x-)                  | Population mean (µ)                  |
|-----------------------------------|--------------------------------------|
| Sample Median (x-)                | Population Median(µ ~)               |
| Sample Relative Frequency (p.)    | Population<br>Proportion (p)         |
| Sample Standard<br>Deviation (s)  | Population Standard<br>Deviation (σ) |
| Sample Variance (s <sup>2</sup> ) | Population Variance $(\sigma^2)$     |

#### Things to know how to calculate:

Trimmed trim a certain percentage of

| values from the ends of the     |
|---------------------------------|
| data set, and then average      |
| whats left                      |
| The size of a typical deviation |
| (calculator function)           |
|                                 |
| How data points vary from the   |
| mean                            |
|                                 |

### **Symbols and Their Meanings**

n sample sizeN population size

# Characteristics of a Graph

#### Center

tells us what a typical value in the data set should be (If data is fairly symetric use mean, otherwise, use median)

#### Spread

The range of data

#### Skev

If the bell curve is shifted left (negative skew) or right (positive skew)

## More on Box Plots

| Box<br>Plots     | They show us outliers visually,<br>and are great for comparing<br>multiple data sets                                      |
|------------------|---|
| Quartiles        | Values that divide the sorted data set into 4 equal parts.  |
| Q1               | The smallest 25% of data  |
| Q2               | The median  |
| Q3               | The 75% mark  |
| Q4               | The max value   |
| percen-<br>tiles | If a value is in the first quartile,<br>then 75% of the values are<br>grater than that, so your in the<br>75th percentile |



Sampling

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# **Graph Types**

Box Plots Show us outliers visually and

great for comparing multiple

data sets

Dot Plot Dots located above their value

on the X-axis

Stem and Leaf The stem of the number includes all but the last digit (so

38|3 would be 38.3)

Histogram

Like box graphs but there's no spaces between columns, can be used with discrete and

continuous data

Histogram Shapes:

Symmetric, Right(positive) skew, Left (negative) skew, Bimodal (2 peaks), and Multi-modal (many peaks)



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