

Statistics
Spring 2023
Lecture 2



Feb 19-8:47 AM

SG 2

What is statistics?

It is about collecting information (data),
organize the data, draw graphs, do
certain computations, and draw conclusion
from data with some level of confidence.

Two Branches in Statistics:

- 1) Descriptive Statistics
- 2) Inferential Statistics

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Descriptive Statistics:

Collecting data, organize them, graph them,
do certain computations.

Inferential Statistics:

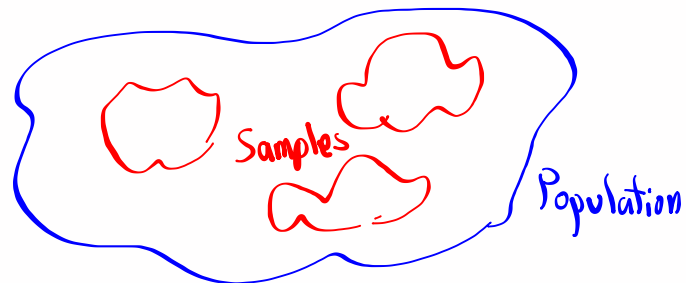
When we learn from descriptive statistics
to draw conclusion, make predictions
with some level of confidence.

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Collecting Information (data) \Rightarrow Samples

Entire field of interest \Rightarrow Population

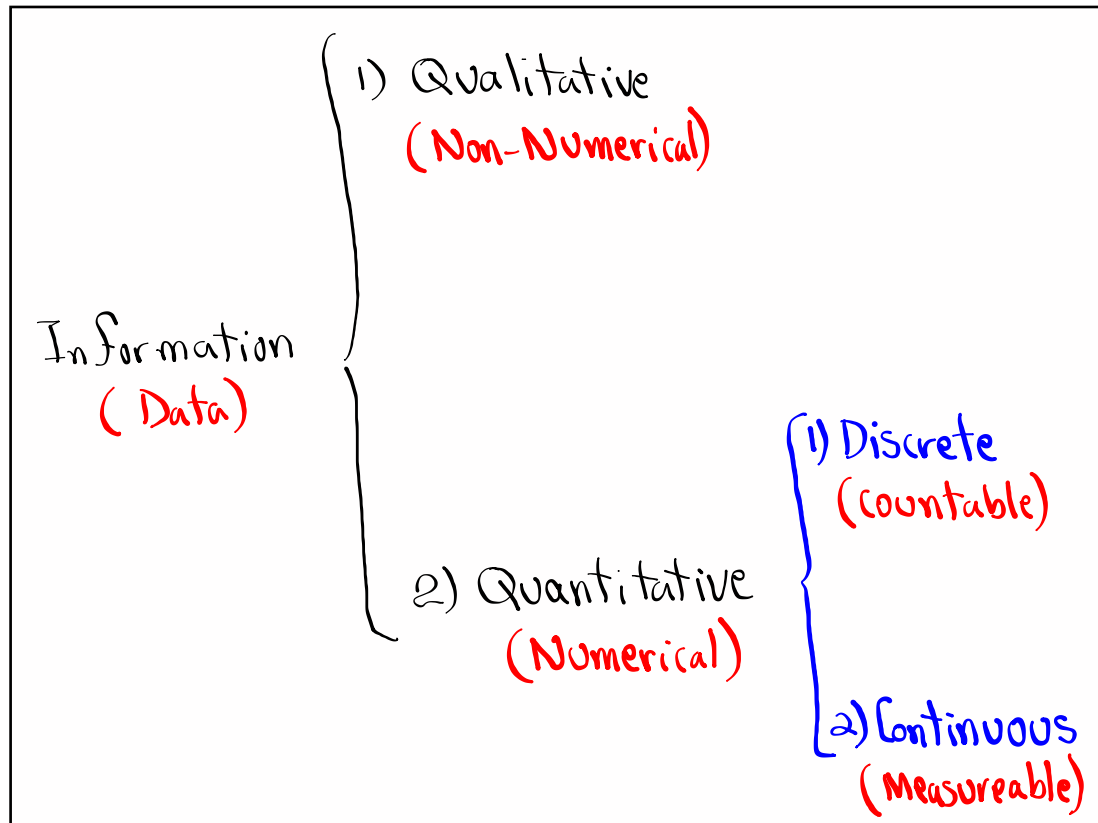
we work with samples to learn about
Population.



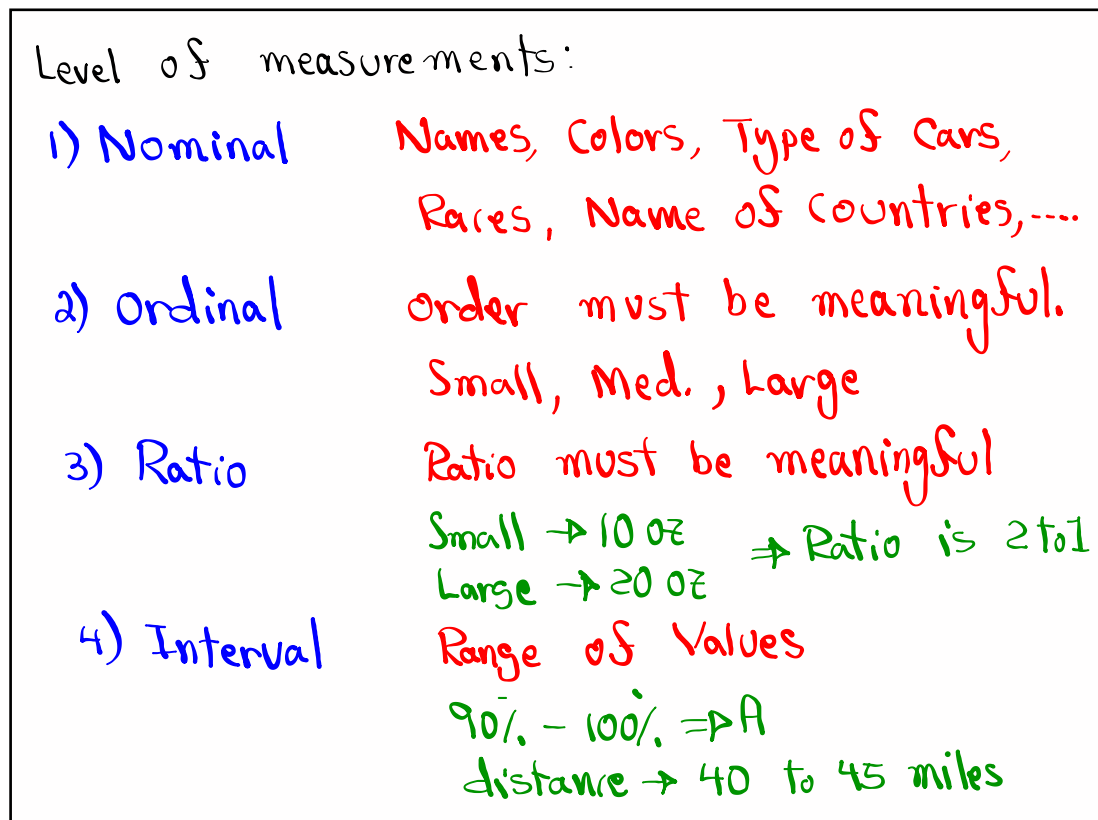
Sample \leftrightarrow Statistic

Population \leftrightarrow Parameter

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Methods on Collecting data:

1) Systematic When every k th item Selected

Record every 10th call.

Select every 25th item for inspection.

2) Stratified Divide into groups.

Select few from each group.

50 people $\left\{ \begin{array}{l} \text{Males} \rightarrow \text{select 5 males} \\ \text{Females} \rightarrow \text{select 8 Females} \end{array} \right.$

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3) Cluster

Divide into groups

Select few groups

Collect data from all members of selected groups.

College offers 500 sections of math classes.

We select 20 sections randomly, then ask all students from these sections to complete a survey.

4) Random/Convenience

"Least Reliable method"

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Experiment VS Observation

Experiment

You observe changes after some action taken

Observation

You observe changes without taking any actions.

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