

Module 1a – Stats Basics

Statistics - Definition and Purpose

- **Quantitative** mathematical analysis.
 - Encompasses **methodologies** for reviewing, analyzing, and drawing conclusions about **data**.
- **Systematically** seeking understanding and answering questions about **reality**.
 - Doing so with integrity, honestly, and with acknowledging and addressing **bias**
 - **Objective** study (avoiding *deliberate* bias)
- **Review Against All Odds clip – What is Statistics?**
 - <https://www.learner.org/series/against-all-odds-inside-statistics/what-is-statistics/>

Qualitative vs Quantitative Research

- **Qualitative:** Textual Analysis
 - Narrower and deeper
- **Quantitative:** Numerical Analysis (statistic)
 - Shallower and broader

Descriptive and Inferential Statistics

- **Descriptive** statistics summarize data
 - Mean, Median, Mode, Variance, Standard Deviation etc.
- **Inferential** statistics
 - Seek to make *inferences* about the population based on results from a sample
 - Ex: Political polling with a margin of error
 - Ex: Nielsen ratings – making an estimate based on a sub-group

Basics of inference

- **Sampling**

- When we collect data on a subset of the population make estimates about the population
- A *statistic* is a value that describes the *sample*
 - *Ex: 53% of those polled favor term limits.*
- A *parameter* is a value that describes the *population*
 - *Ex: 53% of the population favor term limits.*

- **Randomization**

- For a sample to accurately reflect a population, the sample should be *randomly* selected