Outline

1. Introduction to Statistics
   - Why?
   - What?
     - Probability
     - Statistics
   - Some Examples
   - Making Inferences
     - Inferential Statistics
     - Inductive versus Deductive Reasoning
2. Basic Probability Revisited
3. Sampling
   - Samples and Populations
   - Sampling Schemes
     - Deciding Who to Choose
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     - Non-probability Sampling
     - Probability Sampling
   - A Practical Application
   - Study Designs
     - Classification
     - Qualitative Study Designs
   - Popular Statistics and Their Distributions
   - Resampling Strategies
4. Exploratory Data Analysis - EDA
   - Why?
     - Motivating Example
   - What?
     - Data analysis procedures
     - Outliers and Influential Observations
   - How?
     - One-way Methods
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   - Assumptions of EDA
5. Estimation
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   - Motivating Example
   - Approaches to Estimation: The Frequentist's Way
   - Estimation by Methods of Moments
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     - What?
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     - Examples
     - Properties of an Estimator
     - Properties of an MME
   - Estimation by Maximum Likelihood
     - What?
     - How?
     - Examples
     - Properties of an MLE