

1. Basic Statistical Concepts

- 1.1. Statistical Thinking
- 1.2. Causality
- 1.3. Data Type
 - 1.3.1. Ratio Scale, Interval Scale, Nominal, Ordinal Data
- 1.4. Basic Probability theory
 - 1.4.1. Definition
 - 1.4.1.1. Subjective Probability
 - 1.4.1.2. Axiomatic Definition
 - 1.4.2. Concept of Conditionality And independence
- 1.5. Bayes theorem
- 1.6. Probability Model (Family of Distribution)
 - 1.6.1. Distribution Function
 - 1.6.2. Density Function
 - 1.6.3. Hazard Function
 - 1.6.4. Family of Discrete Distribution
 - 1.6.5. Family of Continuous Distribution
 - 1.6.6. Relation Between Different Distribution
- 1.7. Probability, Expectation And Standard Deviation
- 1.8. Statistical Dimensions of Data (Reducing Large Data To Small Number of Data)
 - 1.8.1. For interval Scale Data
 - 1.8.1.1. Center
 - 1.8.1.1.1. Mean, Median, Mode, Quintile,
 - 1.8.1.2. Variation
 - 1.8.1.3. St. Deviation, Coefficient of Variation, Gini Coefficient
 - 1.8.1.4. Grouping of Data
 - 1.8.1.5. Skewness
 - 1.8.1.6. Kurtosis
 - 1.8.2. Categorical Data Analysis
 - 1.8.2.1. Distribution
 - 1.8.2.2. Diversity Measurement
 - 1.8.3. Statistical Scales
 - 1.8.4. Sample Vs Population
 - 1.8.4.1. Sampling From Finite Population
 - 1.8.4.2. Type of Errors in Sampling
 - 1.8.5. Statistic: Link Between Sample And Population
 - 1.8.5.1. Central Limit theorem
 - 1.8.5.2. Estimation of Population Parameter
 - 1.8.5.2.1. Point Estimation
 - 1.8.5.2.2. Confidence interval
 - 1.8.5.3. Testing of Hypothesis
 - 1.8.5.3.1. Type One And Two Error, Power of Test
 - 1.8.5.3.2. P Value
 - 1.8.6. Design of Experiment
 - 1.8.6.1. Fundamental Principles of Design of Experiments

- 1.8.6.2. Types of Experiments
- 1.8.7. Survey Design
- 1.8.8. Frame of Analysis
 - 1.8.8.1. Statistical Models
 - 1.8.8.2. Dependency Through Tabular Structure
 - 1.8.8.3. Bi-variate Causal Structure
 - 1.8.8.4. Convergent Causal Structure
 - 1.8.8.5. Indirect and Spurious Causal Structure
 - 1.8.8.6. Interactive Structure
 - 1.8.8.7. Discriminate Structure
 - 1.8.8.8. Latent Structure
- 1.8.9. Classical Vs Bayesian Analysis
 - 1.8.9.1. Bayesian Contingency Table
 - 1.8.9.2. Bayesian Regression
 - 1.8.9.3. Bayesian hazard base model
 - 1.8.9.4. Bayesian Non-Parametric Estimate
 - 1.8.9.5. Bayesian Confidence Interval
 - 1.8.9.6. Bayesian Testing
- 1.8.10. Simulation
 - 1.8.10.1. Monte Carlo Simulation
 - 1.8.10.2. MCMC
 - 1.8.10.3. Role MCMC in Bayesian Technique
 - 1.8.10.4. Bootstrapping

2. Tools For Analysis

- 2.1.1. Data management
- 2.1.2. Descriptive Analytical Tool
 - 2.1.2.1. Data Summarizing Tool
 - 2.1.2.2. Graphical Tool
 - 2.1.2.3. Outlier Detection Tool
- 2.1.3. Effect Study Tool (Confirmatory Tools)
 - 2.1.3.1. Contingency Table
 - 2.1.3.2. Correlation
 - 2.1.3.3. Correspondence Analysis
 - 2.1.3.4. Regression, Multiple and Partial Correlation
 - 2.1.3.5. Multiple Classification Analysis
 - 2.1.3.6. Analysis of Variance
 - 2.1.3.7. Logit And Probit Model
- 2.1.4. Pattern Exploratory Tool
 - 2.1.4.1. Principal Component Analysis
 - 2.1.4.1.1. Multivariate Scales
 - 2.1.4.2. Factor Analysis
 - 2.1.4.3. Discriminant Analysis
 - 2.1.4.4. Classification Analysis
 - 2.1.4.5. Path Analysis
- 2.1.5. Tools for Time Series Data
- 2.1.6. Tools for Spatial Data

- 2.1.7. Field Specific Tools
 - 2.1.7.1. Economics
 - 2.1.7.1.1. Lorenz Curve
 - 2.1.7.2. Demography
 - 2.1.7.2.1. Life Table
 - 2.1.7.3. Engineering
 - 2.1.7.3.1. Quality control tools
 - 2.1.7.3.2. System analysis tools
 - 2.1.7.4. Medical
 - 2.1.7.4.1. Hazard Based Models
 - 2.1.7.5. Physics
 - 2.1.7.5.1. Statistical Mechanics
 - 2.1.7.6. Information Science
 - 2.1.7.6.1. Entropy