Fall 2021

BAN 5733 Midterm Exam Review Sheet

Week 1: Overview of analytics, sample, population, sampling methods, overview of probabilities

1. Overview of analytics
    a. What is analytics?
    b. Types of data & questions
    c. Progression of analytics over time
2. Analytics Process
    a. CRISP-DM
    b. SEMMA
    c. Business Analytics Process (BAP)
3. Sources and Types of Data
    a. Internal versus External Sources
    b. Structured versus Unstructured
4. Different Types of Variables
    a. Dependent versus Independent variable
    b. Categorical versus Continuous, Nominal, Binary, Ordinal, Interval and Continuous
    c. Reliability vs. Validity of measures
    d. Recommended analysis for each type of variable
5. Sample, Population and Confidence Intervals
    a. Sample and population
    b. Sampling methods – probability and non-probability
    c. Confidence Intervals for descriptive statistics
6. Events and Probabilities
    a. Types of events
    b. Types of probabilities
    c. Types of event probabilities
7. Probability Formulas
    a. Independent events
    b. Mutually exclusive and collectively exhaustive

Week 2: Random Variables, Summarizing Quantitative Data, Sampling and inferential statistics, Hypothesis testing, Errors in hypothesis testing, p-value

1. Discrete Random Variables
    a. Distributions
    b. Expected values and dispersion
2. Continuous Random Variables
    a. Normal Distribution
    b. How to talk about CRV
3. Normal Probability Calculation
    a. Examples

4. Summarize Quantitative Variables
    a. Quantiles, Boxplots, & Moments
    b. Measures of Shape
    c. Outliers
5. Basics of Inference based on Sampling
    a. Process of inference
    b. Estimators
    c. Confidence Intervals
    d. Sampling error
6. Hypothesis Testing
    e. Null and alternative
    f. P-values
7. Errors in Hypothesis Testing
    g. Errors in hypothesis testing

Week 3: T-tests, chi-square test, measures of association and correlation

1. Two-sample t-test
    a. Types of questions it can answer
    b. Mechanics
    c. Interpretation
2. Paired sample t-test
    a. Types of questions it can answer
    b. Mechanics
    c. Interpretation
3. Chi-square tests
    a. Types of questions it can answer
    b. Mechanics
    c. Interpretation
4. Correlations
    a. Types of questions it can answer
    b. Types and Mechanics
    c. Interpretation

Week 4: Simple and Multiple Regression Basics

1. Basics
    a. SR vs correlation
    b. Baseline vs regression model
2. Mechanics & Interpretation
    a. Model
    b. Least Squares Regression
    c. R^2, Regression Coefficients, model outputs
3. Prediction and Diagnostics
    a. Predicting using regression equation

   b. Diagnostics
   c. Confidence intervals
4. Multiple Regression
   a. Theory and Mechanics
   b. Interpretation
   c. Importance

Week 5: Tableau content

1. Visualization basics
   a. Rules
   b. Mistakes to avoid
2. Discrete and continuous variables
   a.
   b. Measure
3. Dashboards and stories
4. Formatting dashboards & worksheets
5. Calculated fields
6. Mapping

Week 6: Power BI

1. Types of Data
2. Types of Visualization
3. Layout of System