BAN 5733 Final Exam Review Sheet

I. On Midterm Exam – could be covered on final exam

Week 1-2: Overview of analytics, sample, population, sampling methods, probabilities, random variables, normal distribution, summary stats and graphs, Sampling distribution and inferential statistics, CLT, hypothesis testing and p-value

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
    d. Independent events
    e. Mutually exclusive and collectively exhaustive
8. Discrete Random Variables
    f. Distributions
    g. Expected values and dispersion
9. Continuous Random Variables
    h. Normal Distribution
    i. How to talk about CRV
10. Normal Probability Calculation
    j. Examples
11. Summarize Quantitative Variables

   k. Quantiles, Boxplots, & Moments
   l. Measures of Shape
   m. Outliers
12. Basics of Inference based on Sampling
   a. Process of inference
   b. Estimators
   c. Confidence Intervals
   d. Sampling error
13. Hypothesis Testing
   e. Null and alternative
   f. P-values
14. Errors in Hypothesis Testing
   g. Errors in hypothesis testing

Week 3

1. Two-sample t-test
   a. Types of questions it can answer
   b. Mechanics
   c. Interpretation
2. Paired sample t-test
   d. Types of questions it can answer
   e. Mechanics
   f. Interpretation
3. Chi-square tests
   g. Types of questions it can answer
   h. Mechanics
   i. Interpretation
4. Correlations
   j. Types of questions it can answer
   k. Types and Mechanics
   l. Interpretation

Week 4: Simple and Multiple Regression Basics

1. Simple Regression 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

II. Not covered on Midterm Exam – will be on final exam

Week 7: Visual Analytics

1. Overview of visual analytics
2. Accessing Content in SAS Drive
3. Organizing and Sharing Content in SAS Drive
4. Explorations Basics
5. Exploration Enhancements
6. Viewing a Report in SAS VA
7. Creating a Basic Report in SAS VA
8. Creating a Multi-Page Report in SAS VA

Week 9: Logistic Regression

4. Basics & Advanced Concepts of Logistic Regression
    a. Binary target variable
    b. Odds
    c. Logistic Regression Model
    d. Mechanics
    e. Results & Interpretation

    f. Importance of variables
    g. Issues
5. Variable Selection
6. Diagnostics
7. applications

Week 10: ANOVA

1. Experimental Design
2. Basics of Single Factor ANOVA
3. Factorial Design ANOVA

Week 11: Overview of Predictive Modeling & Decision Trees

1. Overview of Predictive Modeling
    a. statistical vs. machine learning approaches
    b. How to predict new cases
    c. How to select input
    d. How to optimize model complexity
2. Basics of Predictive Modeling
3. Basics of Decision Trees
4. Overview of decision tree

Week 12: Neural Networks

1. Basics of ANN
2. Selecting useful inputs in ANN
3. Optimizing complexity in ANN
4. Applications of ANN

Week 13: Segmentation and RFM Analysis

1. Components
2. Methods of calculation
3. Segmentation

Week 14: Text Analytics

1. Overview
2. Basics of Text Parsing
3. Case Studies and Next Steps