COURSE SYLLABUS

Descriptive Statistics for Data Analysis Course

Gain foundational statistical skills using measures such as averages, proportions, and variability to interpret data effectively.

Group classes (Live Online) and onsite training are available for this course. For more information, email onsite@graduateschool.edu or visit: https://sdfm.graduateschool.edu/courses/descriptive-statistics-for-data-analysis



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Course Outline

Module 1: Arithmetic and Algebra for Statistical Calculations

- Review order of operations and algebraic manipulation used in formulas.
- Convert among fractions, decimals, and percentages for analysis.
- Apply exponent rules and roots in statistical computations.
- Set up and solve equations that appear in descriptive statistics.

Module 2: Frequency Distributions for Categorical and Quantitative Data

- Organize data into tables and class intervals.
- Create and interpret histograms, bar charts, and frequency polygons.
- Distinguish between categorical and quantitative distributions.

Module 3: Descriptive Statistics for Categorical Data: Proportions and Percentages

- Compute proportions, percentages, and rates from frequency data.
- Compare categories using relative frequency and percent distributions.
- Present categorical summaries with clear labels and scales.

Module 4: Two and Three-Way Contingency Tables for Categorical Data

- Construct cross-tabulations to explore relationships between variables.
- Calculate joint, marginal, and conditional percentages.
- Identify patterns and potential associations across categories.

Module 5: Descriptive Statistics for Quantitative Data: Averages

- Compute mean, median, and mode and know when to use each.
- Handle grouped data and weighted means.
- Assess sensitivity of measures of center to skew and outliers.

Module 6: Descriptive Statistics for Quantitative Data: Dispersion

- Calculate range, interquartile range, variance, and standard deviation.
- Interpret dispersion to understand variability and consistency.
- Use boxplots and standard deviation rules to summarize spread.

Module 7: Calculating Relative Position with a Z Score

- Standardize values to z scores for comparison across scales.
- Interpret positive/negative z scores and percentiles.
- Apply z scores to identify unusual observations.

Module 8: The Standard Normal Distribution

- Describe properties of the normal curve and symmetry.
- Use standard normal tables to find areas and probabilities.
- Relate empirical rule (68–95–99.7) to real-world data.

Module 9: How to Select a Random Sample from a Population

- Differentiate populations, samples, and sampling frames.
- Implement simple random sampling and avoid selection bias.
- Use random digits or software to draw unbiased samples.