Course Overview
(PSY206) Data Management and Analysis

Md Rasel Biswas

Course Teacher

Md Rasel Biswas
MS & BS in Applied Statistics (DU)
Lecturer at DU since July 2022
Email: rasel@du.ac.bd
Personal Website: https://rasel.rbind.io

Course introduction

Course Title: Data Management and Analysis
Course Code: PSY206
Credit Hour: 4

The skills for analyzing both quantitative and qualitative data are essential to explore human behavior and mental processes. This course has been designed to address this need by providing an introductory understanding of fundamental computer concepts and widely used data analysis packages. The primary focus of this course is to familiarize students with SPSS. In this course, students will gain hands-on experience with key aspects of SPSS, including data entry, data import, data management, basic data visualization, and statistical tools. Practical exercises will emphasize interpreting statistical results. In addition to SPSS, this course introduces other qualitative research tools such as Nvivo, ATLAS.ti, and MAXQDA. By the end of this course, students will be equipped with the foundational skills required to perform efficient data analysis.

Course objectives

Upon completing this course, students will be able to:

- Understand Computer Systems and Data Analysis Tools: Demonstrate a foundational understanding of computer systems and their application in data analysis.
- Perform Data Management and Analysis in SPSS: Perform data entry, data import, data cleaning, and basic data visualization in SPSS, preparation and organization of datasets for statistical analysis.
- Utilize SPSS to perform and interpret various statistical analysis commonly used in psychology, such as descriptive statistics, t-tests, ANOVA, correlation, and regression analyses.
- Use qualitative analysis tools (e.g., Nvivo, ATLAS.ti, MAXQDA) to organize, code, and analyze qualitative data, applying appropriate techniques for psychological research.

Lecture plans

Lecture 1-6: *Fundamentals of Data Analysis Software:*

- 1.1 Introduction to Word Processor and Spreadsheet
- 1.2 Different Statistical Software for Data Analysis and their strength and limitations
- 1.3 Introduction to SPSS, and its applications
- 1.4 Background of SPSS, Windows in SPSS

Lecture 7-12: *Quantitative Data Preparation for Analysis:*

- 2.1 Entering the Data set: Preparation of SPSS data Window
- 2.2 Input the Data; Defining the Variable: Variable type, Variable name, Variable formats, Variable Labels, and Value Labels
- 2.3 Reading the Data set: Reading SPSS Data, Reading Data from Spreadsheet formats
- 2.4 Reading Data from Simple Database formats, Reading Data from other Statistical Programs, e.g., Stata, SAS

Lecture plans

Lecture 13-20: *Quantitative Data Management:*

- 3.1 Expressions, Functions, and Operators: Numeric Expressions, Logical Expressions, and Arithmetic Operations, Numeric Functions, Arithmetic Functions
- 3.2 Statistical Functions, Relational Operators, and Logical Operators: AND and OR

Lecture 21-24: *Working with Date, Time, and File Operations in SPSS:*

- 4.1 Working with Date and Time: Date and Time Formats and Functions
- 4.2 Arithmetic Operations with Date and Time Variables Different Commands in SPSS: Obtain and save files in SPSS and other formats (get, save outfile)

Lecture plans

Lecture 25-30: *Data Manipulation and Transformation in SPSS:*

- 5.1 New Variable Creation with Arithmetic Operation (Compute)
- 5.2 Recoding Variables (Recode), Conditional Execution (if, do if- end if, select if)
- 5.3 Sorting Values (sort cases), Split files, add Files
- 5.4 Match files and Aggregate
- 5.5 Sample Selection (sample), Reporting Data (list)
- 5.6 Removing Effect of Permanent Commands (Temporary)

Lecture plans

Lecture 31-44: *Quantitative Data Analysis:*

- 6.1 Graphical Presentation: Simple Bar Graphs, Line Graphs, and Graphs for Cumulating Frequency, Pie Chart, and Scatter Plot
- 6.2 Univariate Statistical Analysis: Frequency, Descriptive Statistics, Multiple Response
- 6.3 Bivariate Statistical Analysis: Contingency table Analysis
- 6.4 Statistical Tests (Parametric and non-parametric): Goodness of fit, comparing (one/two/several) mean/proportion, ANOVA
- 6.5 Correlation and Regression Analysis: Correlation, Linear Regression Analysis, Logistic Regression
- 6.6 Factor Analysis and Principal Component Analysis
- 6.7 Reliability Analysis (Cronbach's Alpha)

Lecture plans

Lecture 45-48: *Introduction to Qualitative Research:*

- 7.1 Definition and significance of qualitative research
- 7.2 Key differences between qualitative and quantitative research
- 7.3 Strengths and limitations of qualitative research
- 7.4 Types of Qualitative Research
- 7.5 Qualitative Data Collection Techniques

Lecture 49-52: *Introduction to Qualitative Data Analysis Software:*

- 8.1 Overview of different software: NVivo, ATLAS.ti, MAXQDA
- 8.2 Comparison of features and functionalities
- 8.3 Advantages of using software for qualitative research

Lecture plans

Lecture 53-60: *Analyzing Data & Reporting in NVivo:*

- 9.1 Understanding the interface: toolbars, navigation, and icons
- 9.2 Creating a new project and importing qualitative data
- 9.3 Organizing and managing data sources
- 9.4 Coding qualitative data (manual and automatic coding)
- 9.5 Thematic analysis and categorization
- 9.6 Generating reports and presenting qualitative research findings

Textbooks

1. *SPSS for Psychologists* (7th ed.) (Harrison et al., 2020) (pdf)
2. *The SAGE Handbook of Qualitative Data Analysis* (Flick, 2014) (pdf)
3. *IBM SPSS Statistics 31 Command Syntax Reference* (IBM Corporation, 2025) (pdf)

Lecture time

Every Sunday, 8:00–9:00 AM; every Tuesday, 3:30–5:30 PM.

Assessment

- Attendance: 5%
- Incourse exams: 35%
- Final exam: 60%

References

Flick, U. (Ed.). (2014). *The SAGE handbook of qualitative data analysis*. SAGE Publications.

Harrison, V., Kemp, R., Brace, N., & Snelgar, R. (2020). *SPSS for psychologists* (7th ed.). Bloomsbury Academic.

IBM Corporation. (2025). *IBM SPSS statistics 31 command syntax reference*. IBM. https://www.ibm.com/docs/SSLVMB_31.0.0/pdf/IBM_SPSS_Statistics_Command_Syntax_Reference.pdf