

Research Methodology

Step 7: Data Collection, Test and Analysis

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Outlines:

- Types of Data Collection (Data Source)
- Data Collection instruments
- Data Analysis
- How to Draw Conclusion from Data
- Finding Presentation

Types of Data Collection (Data Source)





Types of Data Collection (Data Source)

■ Primary

- Data is collected by researcher himself
- Data is gathered through questionnaire, interviews, observations etc

■ Secondary

- Data collected, compiled or written by other researchers eg. books, journals, newspapers
- Any reference must be acknowledged



Types of Data Collection

- Questionnaire
- Interviews
- Observations
 - Records
 - Reports



Random Sampling

- Essential for statistical testing, generalizing
- Guard against biases
- Need to identify “population”
- Sampling methods
 - Select randomly
 - Stratify by hypothesized key variables
 - Multi-stage: e.g. select communities then households
 - NOT “convenience sample”!!
- Are also useful for qualitative studies!!
(Proof of Qualitative / How representative are your findings?)



Questionnaire

- The most common data collection instrument
- Should contain 3 elements:
 - Introduction - to explain the objectives
 - Instructions - must be clear, simple language & short
 - User-friendly - avoid difficult or ambiguous questions
- Types
 - Open-ended Questions
 - Free-response (Text Open End)
 - Fill-in relevant information of survey questions
 - Close-ended Questions
 - Dichotomous question
 - Multiple-choice
 - Rank
 - Scale
 - Categorical
 - Numerical



An Effective Survey Questionnaire

Prepare your survey questions

(Formulate & choose types of questions, order them,
write instructions, make copies)



Select your respondents/sampling

Random/Selected



Administer the survey questionnaire

(date, venue, time)



Tabulate data collected

(Statistical analysis-frequency/mean/correlation/%)



Analyze and interpret data collected



Interview

- Involves verbal and non-verbal communications
- Can be conducted face to face, by telephone, online or through mail
- Survey
 - Interviewer must be familiar with instrument
 - Follow questions exactly
 - Probing (you are researcher)
 - Not prompting
- Training
 - Practice
 - Pilot studies—these help train interviewers and work out the kinks in the survey instrument itself
 - Back up supervision



Steps To an Effective Interview

Prepare your interview schedule



Select your subjects/ key informants



Conduct the interview



Analyze and interpret data collected from the interview



Observation

- Need to keep meticulous records of the observations
- Observe verbal & non-verbal communication, surrounding atmosphere, culture & situation
- Can be done through discussions, observations of habits, review of documentation, experiments:
 - Record
 - Report



An Effective Observation

Determine what needs to be observed

(Plan, prepare checklist, how to record data)



Select your participants

Random/Selected



Conduct the observation

(venue, duration, recording materials, take photographs)



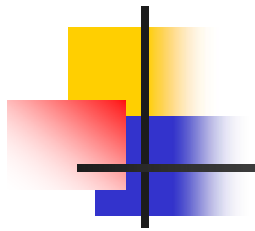
Compile data collected



Analyze and interpret data collected



Data Analysis



Data Analysis

1. To analyze data from interviews and observation, use

Summary sheet

Checklist

2. To analyse data from questionnaires, use

Manually

SPSS

3. Most common forms of statistical analysis presented are:

- Categorical
- Continuous
- Mix



Form of Data Analysis

- **Categorical**
 - Information that can be sorted into categories
 - Types of categorical variables – ordinal, nominal and dichotomous (binary)
- **Continuous**
 - Always numeric
 - Can be any number, positive or negative
 - Examples: age in years, weight, blood pressure readings, temperature, concentrations of pollutants and other measurements
- **Mixed**



Categorical: Ordinal Variables

- Ordinal variable—a categorical variable with some intrinsic order or numeric value
- Examples of ordinal variables:
 - Education (no high school degree, HS degree, some college, college degree)
 - Agreement (strongly disagree, disagree, neutral, agree, strongly agree)
 - Rating (excellent, good, fair, poor)
 - Frequency (always, often, sometimes, never)
 - Any other scale (“On a scale of 1 to 5...”)



Categorical: Nominal Variables

- Nominal variable – a categorical variable *without* an intrinsic order
- Examples of nominal variables:
 - Where a person lives in the U.S. (Northeast, South, Midwest, etc.)
 - Sex (male, female)
 - Nationality (American, Mexican, French)
 - Race/ethnicity (African American, Hispanic, White, Asian American)
 - Favorite pet (dog, cat, fish, snake)



Categorical: Dichotomous Variables

- Dichotomous (or binary) variables – a categorical variable with only 2 levels of categories
 - Often represents the answer to a yes or no question
- For example:
 - “Did you attend the picnic on May 24?”
 - “Did you eat potato salad at the picnic?”
 - Anything with only 2 categories

How to Draw Conclusion from Data



Draw conclusion from data

- Use of graphical presentations
- Use of statistical analyses
- Sharing data among colleagues and receiving constructive feedback
- Critically analysing data and results

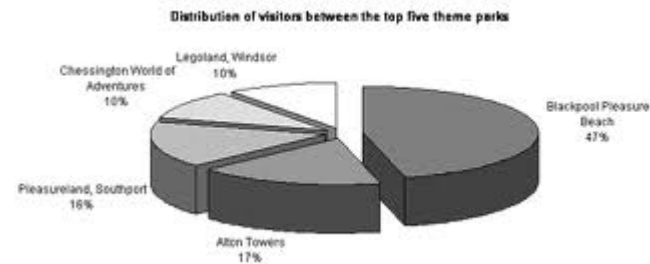
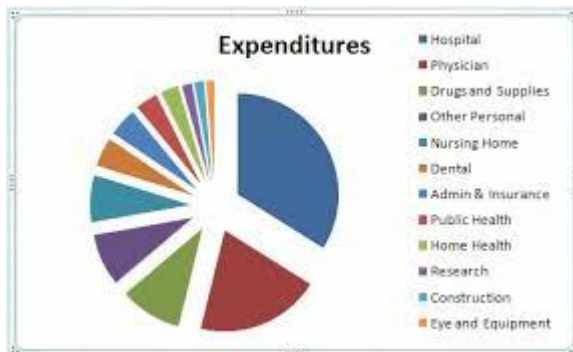
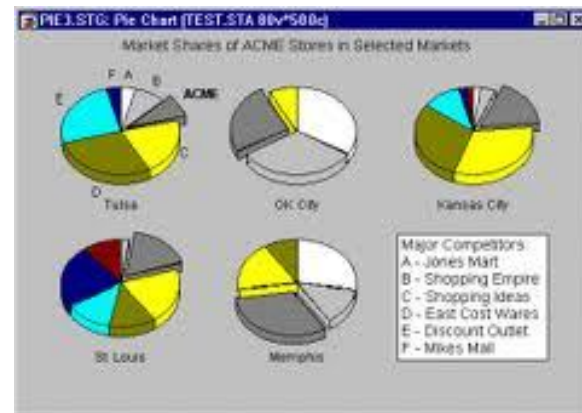
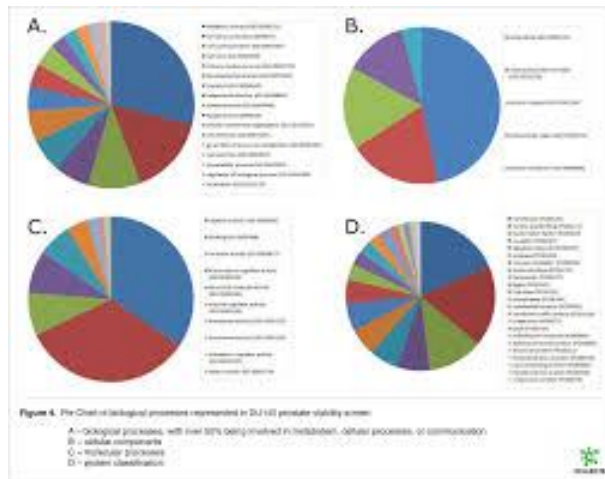
Types of Finding Presentation



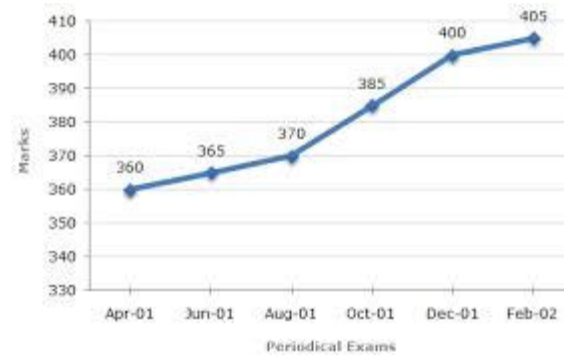
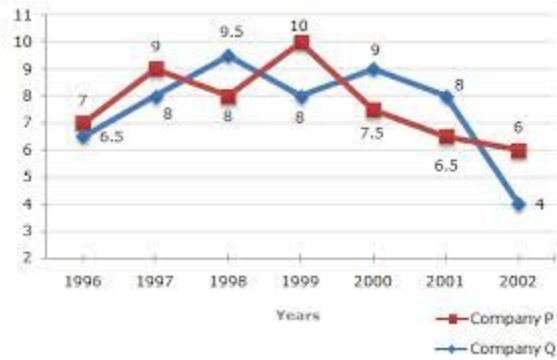
Types of finding presentation

- Tables-matrix of rows and columns representing variables
- Figures-visual organization of data/observations
 - pictures
 - pie charts
 - line charts
 - bar charts
 - flow charts
 - organizational charts
 - cartogram charts
 - Gantt charts
 - scatter plot charts

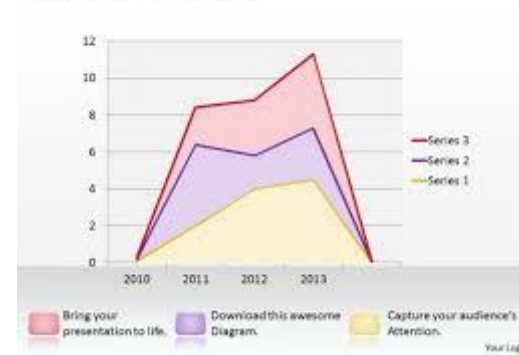
Pie Charts

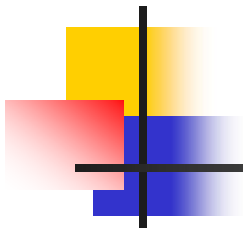


Line Charts

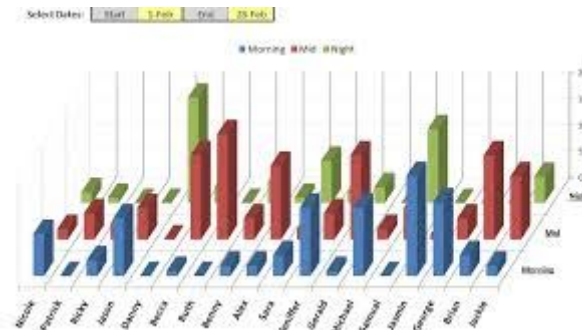
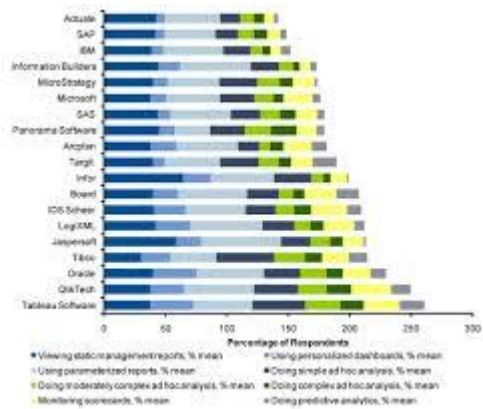
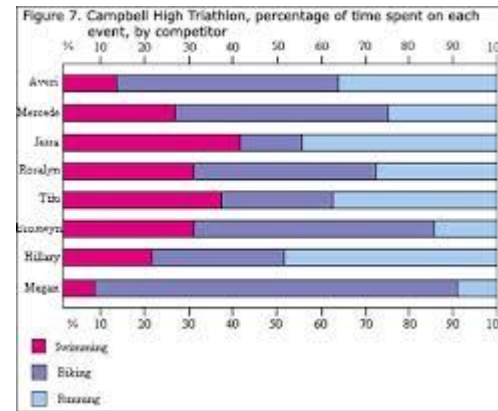
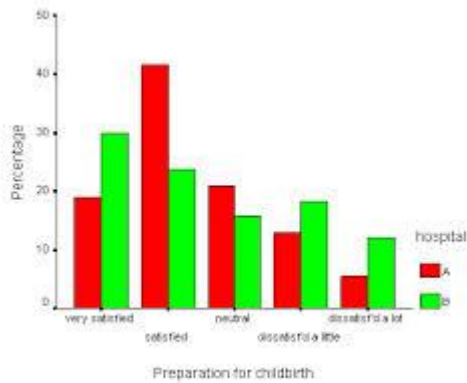


Line Chart - Data Driven

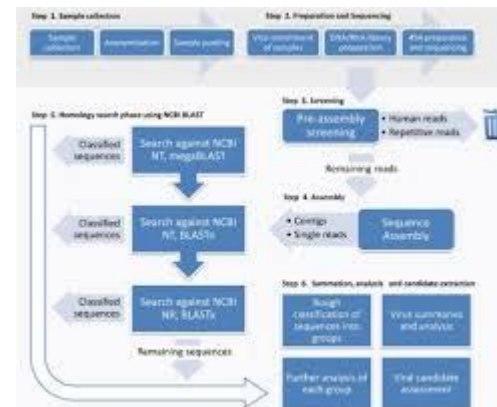
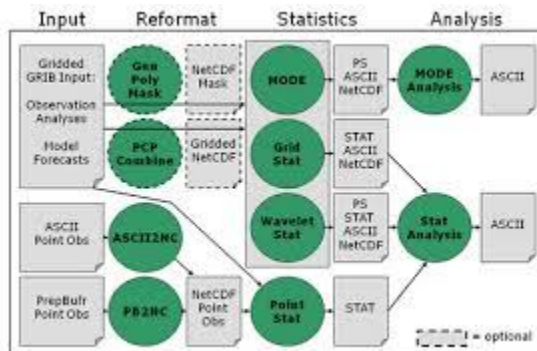
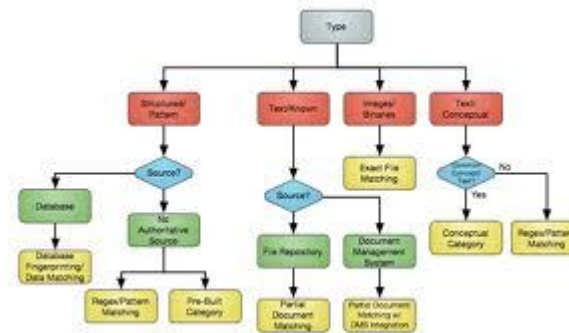
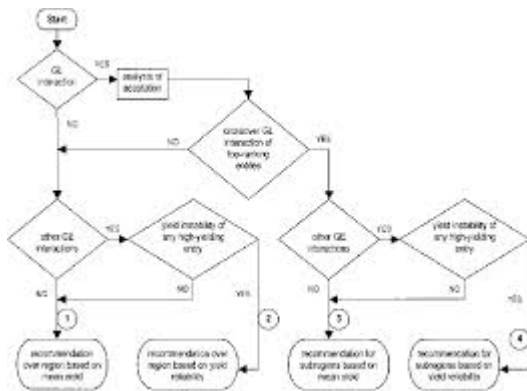




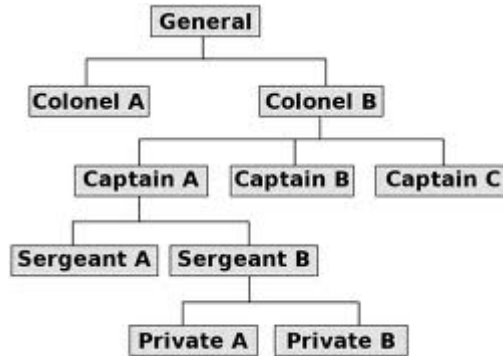
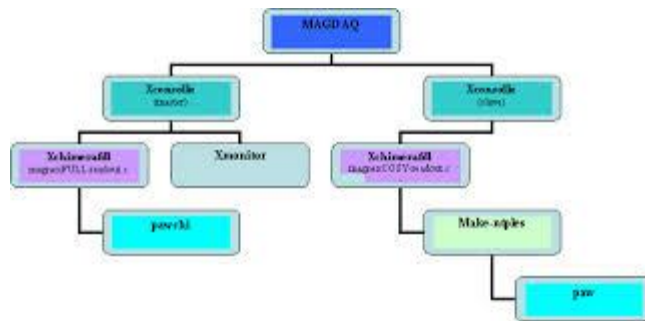
Bar Charts

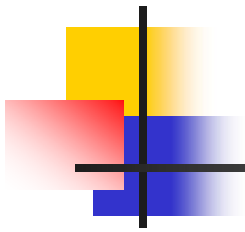


Flow charts

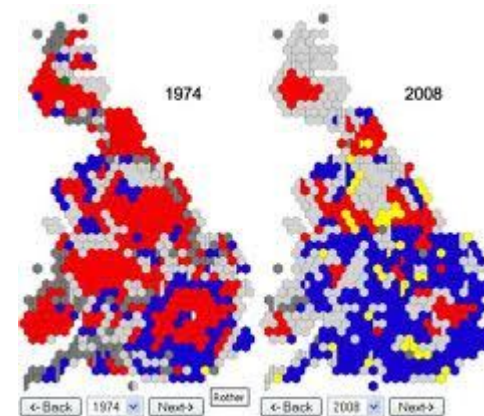
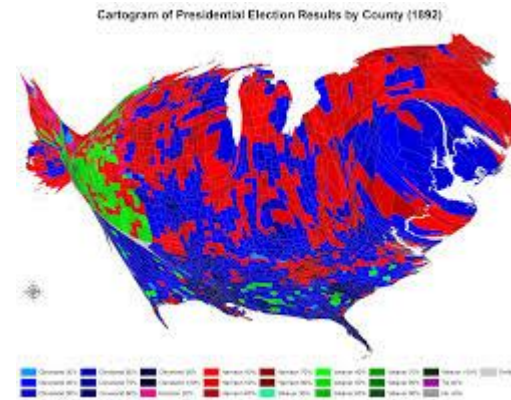
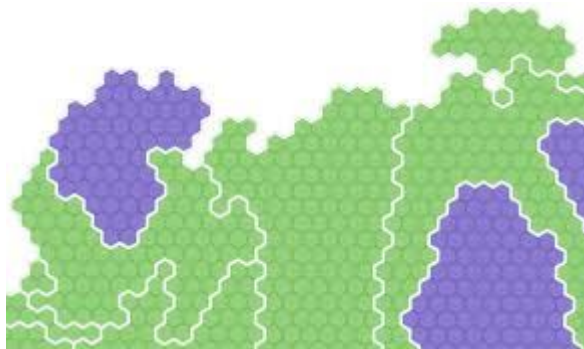


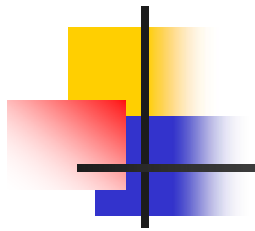
Organizational Charts



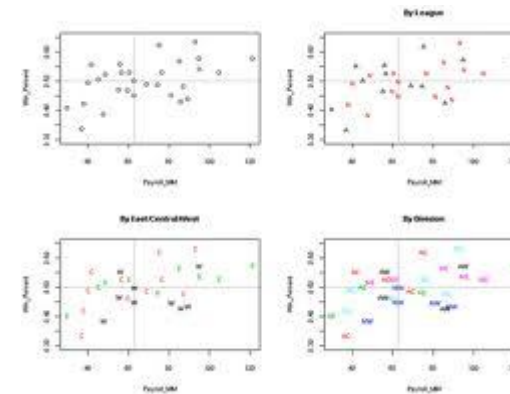
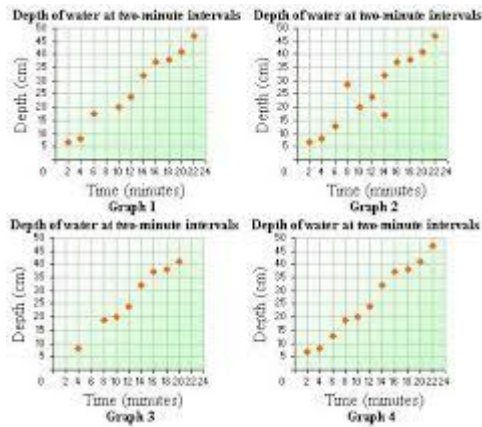
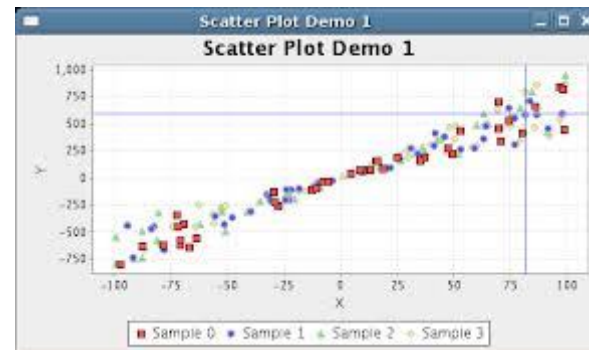
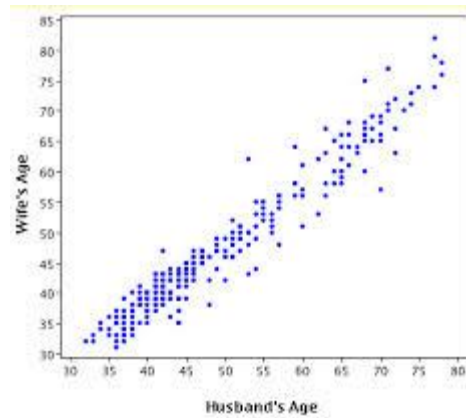


Cartogram Charts





Scatter Plot Charts



Methodology:

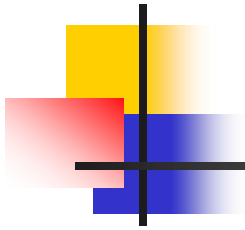
Questionnaire, Interview, Observation

Manually, SPSS

Categorical, Continuous, Mix

Next Session :

Step 8: Begin writing your first draft



*"There is no way to get
experience except
through experience."*