

Data Analysis Workshop for PERI

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Objectives

- Delineate variables among various types, like nominal, ordinal and interval.
- Exporting, importing and wrangling data to get insight with data.
- Understand important elements of data, summarizing, visualization and tabulating data as per best practices
- Creating awesome graphs and tables for report writing and getting insight
- Exploring MICS/PDHS/ASER/other data sets
- Learning to use R for serving data analysis instead of learning coding
- All slides, data , data codes and related stuff will be handed over to reproduce all training material and prepare reports whenever required after the training.

Main Topics

Defining and Measuring Concepts

Taxonomy of data

Measuring and Describing Variables with Real Data

constant/variable, nominal/ordinal/interval variable, dummy variable, Likert item, when can you treat an ordinal variable as interval/continuous?, mode/median/mean.

Correlation and Linear Regression

correlation, scatterplot, Pearson's r , multicollinearity, (multiple) regression, regression coefficient, standard error, prediction error, "ordinary least squares", partial effects, interactive effects.

Daywise detail

| Day | Topics | Sources |
|-----|---|--|
| 1 | In trodution to R, RStudio, POSIT Cloud , gituhub , Taxonomy of data Reading /writing STATA/ SPSS/ csv/xlsx webAPI , pdf data into R | PO SIT Hands-on practice with MI CS/PDHS, Punjab STax data |

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|--------------------|--|--|
| | Data Visualization (when to make which graph) bar, scatter, line and histograms with edu cational/other case study data in ggplot2 graphics for categorical and continuous data using R | ggplot2, W SJ/Econo mist/538 style graphs |
| Day-2 Session-1 | Data Tables, Measure of central tendency, dispersion | Learning Data Tables with R as p ublished in world leading outlets |
| Session-2 | | Hands-on workshop on making Tables by e xploring real data sets like GST and others to produce tables like 538, NYT, WSJ, FT... |
| Session-3 | Basics of Regression and Correlation <ul style="list-style-type: none"> Parameterized and automating reporting using Quarto | Hands on practice for writing html/ pdf/word d ocument/ revealjs slides |

Also New ways of having data and analyzing will also be explored

Analyzing Google Trends, Google News API, Media API

Discussion of various sources from where one can read all data directly from web API. - Google trends - Google news API - Media API - UN votes data from 1948-49 on 6 key issues directly from API till to-date (Comparing Pakistan and India) - Participants feedback for way forward