

5-Day Workshop: Data Analysis Using AI Prompts

Comprehensive Training Manual

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1 Workshop Overview

This 5-day workshop focuses entirely on learning how to use **AI prompts for data analysis**, regardless of whether the analysis is done in R, Python, Stata, SPSS, Excel, or Tableau.

The workshop emphasizes:

- Prompt engineering for data
- Analysis roadmap prompts
- EDA prompts
- Survey & NHANES prompts
- Modeling prompts
- Mapping prompts
- Storytelling prompts
- Debugging prompts
- Vibe-coding prompts
- Case-based scenario prompts

2 Day 1 — Foundations of AI Prompting for Data Analysis

2.1 1.1 What is a Data Prompt?

A data prompt guides AI to produce relevant, accurate, and structured analysis.

2.2 1.2 CRISP Prompting Method

C — Context

R — Role

I — Input

S — Steps

P — Preferred Output

2.2.1 Template

You are a data analysis expert.

Context: [dataset]

Task: [goal]

Steps: [analysis steps]

Output: [tables, plots, bullet points]

2.3 1.3 Core Prompts for Day 1

2.3.1 Dataset Understanding

Provide structure, variable types, missingness, and 10 insights from this dataset.

2.3.2 EDA Roadmap

Create a complete EDA plan with summaries, grouped analysis, and recommended plots.

2.3.3 Data Dictionary

Generate a data dictionary for all variables, including definitions and plausible ranges.

3 Day 2 — Survey, Health, Demographic & NHANES Prompting

3.1 2.1 Survey Data Prompts

Summarize this survey dataset: sampling design, weights, PSUs, strata, key demographics.

3.2 2.2 NHANES Prompts

3.2.1 Cleaning & Merging

Clean NHANES data: demographics, labs, exams. Create BMI category, BP groups, race labels.

3.2.2 Risk Index

Create a composite risk index using hypertension, obesity, diabetes, smoking, inactivity.

3.2.3 Survey-Weighted Model

Fit a weighted logistic regression predicting hypertension and interpret results simply.

4 Day 3 — Modeling Prompts

4.1 3.1 Universal Model Selection

Choose the best model for this outcome. Compare regression, logistic, random forest, boosting,

4.2 3.2 Regression Interpretation

Fit a regression model and explain coefficients in simple English with policy insights.

4.3 3.3 Classification

Build a classification model. Provide confusion matrix, feature importance, and interpretation

4.4 3.4 Time-Series

Analyze long-term trends, produce forecasts, and describe patterns.

4.5 3.5 Panel Data

Fit FE and RE models, run Hausman test, and interpret results for policymakers.

5 Day 4 — Maps, Storytelling, Visualization Prompts

5.1 4.1 Mapping Prompts

Join spatial data with indicators and create a choropleth map. Explain spatial variation.

5.2 4.2 Visualization Enhancement

Improve this plot: labels, theme, color scheme, clarity, interpretability.

5.3 4.3 Storytelling Prompts

5.3.1 Narrative Writing

Write a three-paragraph narrative explaining the findings in simple English.

5.3.2 Executive Summary

Write a one-page executive summary with key findings, implications, and recommendations.

5.3.3 LinkedIn Post

Convert this analysis into a concise, engaging LinkedIn post.

6 Day 5 — Debugging, Vibe Coding, Scenario Practice

6.1 5.1 Debugging

Find the error in this analysis pipeline, explain the reason, and provide corrected code/output.

6.2 5.2 Vibe Coding

Rewrite my analysis code to be cleaner, more readable, modular, and commented.

6.3 5.3 End-to-End Project Prompt

Produce an entire analysis workflow:

cleaning → exploration → modeling → mapping → insights → narrative.

7 Deliverables

- Prompt libraries
 - Case studies
 - Cheat sheets
 - AI-generated reports
 - Executive summaries
 - Mapping prompts
 - Modeling prompts
-

8 Appendix — Master Prompt Library (100+ Prompts)

8.1 Dataset Prompts

Explain dataset in 10 bullet points.
Find anomalies and inconsistencies.
Generate 10 research questions from this dataset.

8.2 Survey Prompts

Produce weighted estimates and explain design effects.

8.3 Modeling Prompts

Run logistic regression and interpret ORs simply.
Explain model uncertainty.

8.4 Storytelling Prompts

Turn results into 5 policy recommendations.

8.5 Debug Prompts

Why is this model output unrealistic? Diagnose and fix.

8.6 Vibe Coding Prompts

Modernize my code using tidyverse/pythonic structure.

9 End of Document