

Lab 2: Home Assignment

Designing and Analyzing a Transport Survey

Module: Transport Research and Analysis

Lab Title: Survey Design and Analysis

Due Date: One week from the date of assignment release

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1 Objective

This assignment aims to help students learn how to design, distribute, and analyze surveys in the context of transportation engineering. It provides practical experience in building a questionnaire, collecting data from real respondents, and analyzing that data using digital tools. These skills are essential for conducting meaningful transport research and producing data-driven insights for system design, evaluation, or planning.

2 Learning Outcomes

By completing this assignment, students will be able to:

- Define clear and specific objectives for a transport survey.
- Design structured surveys using unbiased and relevant questions.
- Use Google Forms to collect data effectively.
- Apply ethical principles in survey research.
- Analyze survey results using Google Sheets.
- Generate charts and interpret trends to support engineering decisions.

3 Submission Format

Please submit the following items:

1. A **PDF report** containing:
 - Part 1: Survey Scope
 - Part 3: Distribution Method
 - Part 5: Reflection and Engineering Insight
 - Screenshots of the cleaned data and the visualizations created in Google Sheets
2. A **Google Form link** to your live, functional survey
3. Combine the above into a folder or ZIP archive as required

4 Assignment Tasks

Part 1: Define Your Survey Scope

Write a short paragraph (maximum 250 words) describing:

- The transport-related issue or research question you wish to explore.
- Why surveys are a suitable data collection method in this context.
- Who your target audience is (e.g., students, cyclists, drivers).

Hint

Your research question should focus on a real-world concern such as:

- "How satisfied are university students with public transportation?"
- "What factors discourage urban residents from cycling to work?"

Keep it specific, measurable, and focused on user experiences or system performance.

Part 2: Design a Survey Using Google Forms

Using Google Forms, create a transport-focused survey with:

- An introduction explaining the purpose, duration, and voluntary nature.
- 10 total questions including:
 - 2 multiple-choice questions
 - 2 Likert scale questions (1–5 scale)
 - 2 open-ended questions
 - 1 question using skip logic
- Logical structure, simple language, and neutral tone

Hint

Start with easy questions (e.g., "How often do you travel by bus?"). Group related questions together. Use skip logic like: "Do you own a bicycle?" → If yes, show follow-up.

Submit: Link to the Google Form.

Part 3: Data Collection

- Distribute your survey to at least 10 respondents.
- You may share via social media, email, peer groups, or QR codes.
- Describe in a paragraph how you conducted the distribution and who responded.

Hint

Be honest about your sampling method. Mention the platforms used and any difficulties encountered.

Part 4: Data Cleaning and Analysis

- Export the responses to Google Sheets.
- Remove duplicates and incomplete records.
- Use formulas such as =COUNTIF, =AVERAGE, or filters.
- Generate at least two charts (bar chart, pie chart, or line graph).

Hint

Example: Pie chart showing transport mode preference; bar chart showing satisfaction score frequency. Keep your charts labeled and clean.

Submit: Include screenshots in your report.

Part 5: Interpretation and Engineering Insight

Write a 1-page summary answering:

- What did your survey data reveal?
- What are the implications for transportation systems or design?
- What were the limitations of your survey, and how could it be improved?

Hint

Use evidence from your data to draw conclusions. Avoid overgeneralizing from a small sample.

5 Grading Criteria

Component	Weight
Part 1: Survey Scope	10%
Part 2: Survey Design	30%
Part 3: Data Collection	10%
Part 4: Data Analysis	30%
Part 5: Interpretation	20%

6 Ethical Reminder

Always follow ethical guidelines:

- Inform participants about the survey's purpose and voluntary nature.
- Do not collect names, emails, or personal identifiers unless explicitly necessary.
- Respect anonymity and privacy throughout.
- Provide an opt-out or "prefer not to answer" option if needed.