

# Statistics and Data Analysis

Unit 01 – Lecture 04: In-class Activity (Cleaning + Summary  
+ Plots)

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<https://github.com/tali7c/Statistics-and-Data-Analysis>

# Quick Links

Task

Deliverables

Solution

Wrap-up

# Agenda

1 Activity Brief

2 Deliverables

3 Solution and Discussion

4 Wrap-up

# What We Will Do Today

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- create summary tables
- create 3 plots and write short insights

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- 5 min: wrap-up + exit question

# Dataset

File: data/campus\_cafe\_transactions.csv

Columns:

- date (datetime), category (Snacks/Drinks/Stationery)
- payment\_mode (Cash/UPI/Card)
- units, unit\_price, discount\_pct

**Note:** It intentionally includes missing values and invalid entries to clean.

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- Compute missingness % per column

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- Handle price outliers (replace with category median or cap; justify)

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## Task 3: Feature Engineering (5 minutes)

Create:

- `gross_amount = units × unit_price`
- `net_amount = gross_amount ×(1 – discount_pct/100)`
- `is_weekend from date`

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- top 5 transactions by net\_amount

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Create and save:

- bar chart: net revenue by category
- histogram: net amount per transaction
- line chart: daily net revenue

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- 3–5 short insights + 2 limitations/caveats

# Solution Script (Python)

After attempting yourself, run:

```
python demo/activity_solution.py
```

Outputs:

- data/campus\_cafe\_clean.csv
- summary CSVs in data/
- plots in images/

# Expected Key Results (Example)

Net revenue by category (after cleaning):

Category	Count	Net Revenue (INR)
Snacks	9	1129.25
Drinks	8	368.00
Stationery	7	283.90

**Question:** Why is Snacks revenue much higher?

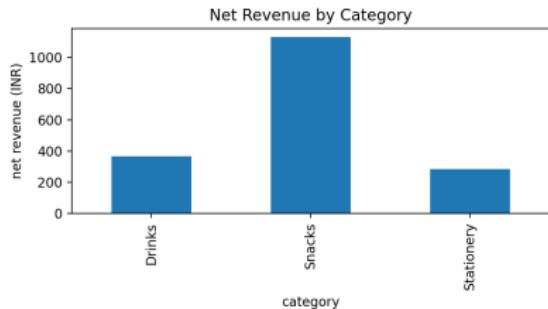
# Expected Key Results (Payment Mode)

Net revenue by payment mode (after cleaning):

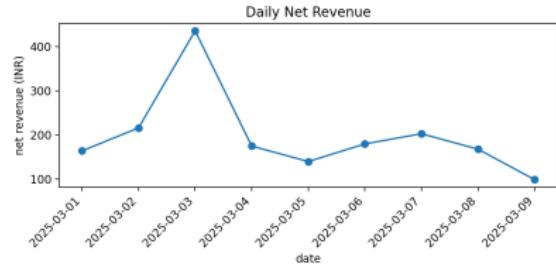
Mode	Count	Net Revenue (INR)
UPI	12	1124.15
Cash	6	304.00
Card	6	353.00

# Example Plots

## Revenue by Category



## Daily Revenue



# Write Insights + Caveats

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Examples of caveats:

- Small dataset (only a few days) ⇒ not representative.
- Cleaning choices (caps/median replacement) can change results.

# Wrap-up

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- Document your rules so results are reproducible
- Always communicate limitations honestly

**Exit question:** What is one cleaning rule you applied and why?