

Author: Nataraj Narayan

Repo: Natsman/household-expenditure-analysis

📊 Project Overview

This project analyzes how **education**, **income**, **and demographic characteristics** affect household monthly expenditure.

Using a dataset of 50 households, I compare **Multiple Linear Regression** and **Decision Tree Regression** models to understand which approach best explains expenditure patterns.

The project is part of my MSc coursework in **Applied Economics + AI/ML**, and demonstrates how traditional econometrics and modern machine learning can complement each other.

Key Results

- Income and household size are strong positive predictors of monthly expenditure.
- EMI/Rent significantly increases outflows.
- **Number of earners** shows a negative relationship with expenditure (possibly due to savings behavior in multi-earner households).
- Education had a weak effect in this small dataset.
- Cross-validation shows **Linear Regression generalizes better** on this dataset, while Decision Tree captures non-linear splits but risks overfitting.

Repository Contents

- 2437038_Nataraj.ipynb Jupyter Notebook with the full analysis, code, and visuals.
- 2437038_Nataraj.pdf Exported PDF report (ready-to-read version).
- 2437038_Nataraj.html HTML version of the notebook (optional, for GitHub Pages).
- requirements.txt Python package dependencies.
- .gitignore Ignoring cache/temporary files.
- images/ Preview images from the analysis (optional).

How to Run

Clone the repository:

git clone https://github.com/Natsman/household-expenditure-analysis.git
cd household-expenditure-analysis

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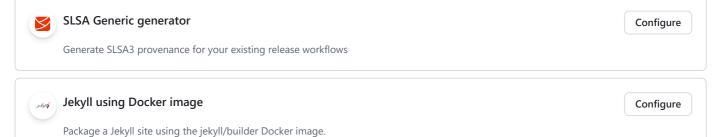
Languages

• HTML 63.9%

Jupyter Notebook 36.1%

Suggested workflows

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