

# ECON 0150 | Economic Data Analysis

*How economists analyze data.*

## *Part 1.1-1.3 | Variable Types & Data Structures*

# Part 1.1 | Categorical Variables

*Three main variable types*

**Binary:** two categories (yes/no; true/false)

- *Employment Status (Employed, Unemployed)*

**Nominal:** no inherent order

- *Employment Sector (Agriculture, Services, Unemployed).*

**Ordinal:** meaningful order without consistent interval.

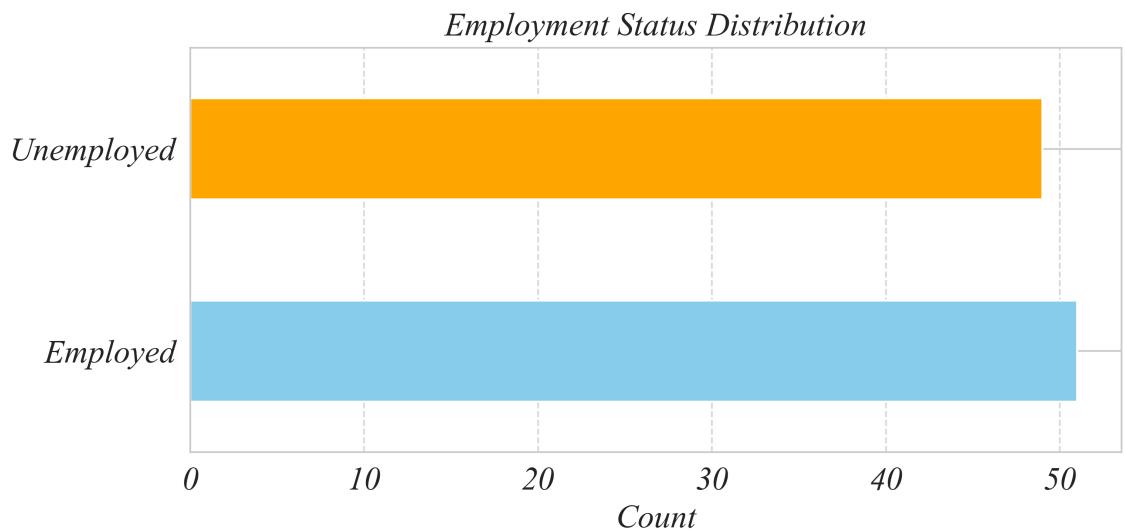
- *Economic Optimism (Very Pessimistic to Very Optimistic).*

# Part 1.1 | Binary Categorical

*Exercise: summarize binary\_categorical\_dataset.csv*

## Summary

- Use a *Bar Plot*
- Horizontal works well

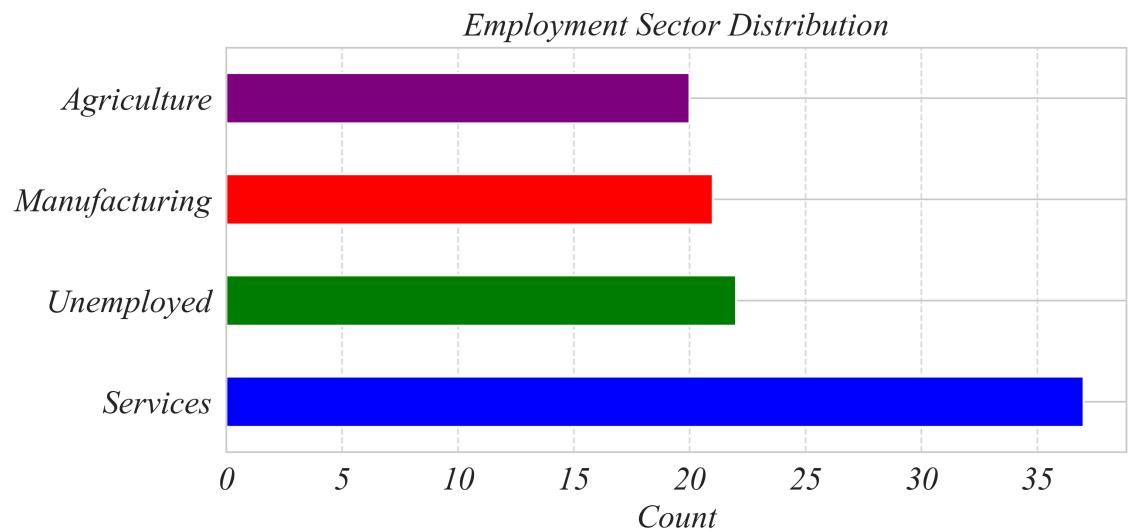


# Part 1.1 | Nominal Categorical

*Exercise: Summarize nominal\_categorical\_dataset.csv*

## Summary

- Use a *Bar Plot*
- Similar to Binary
- More categories

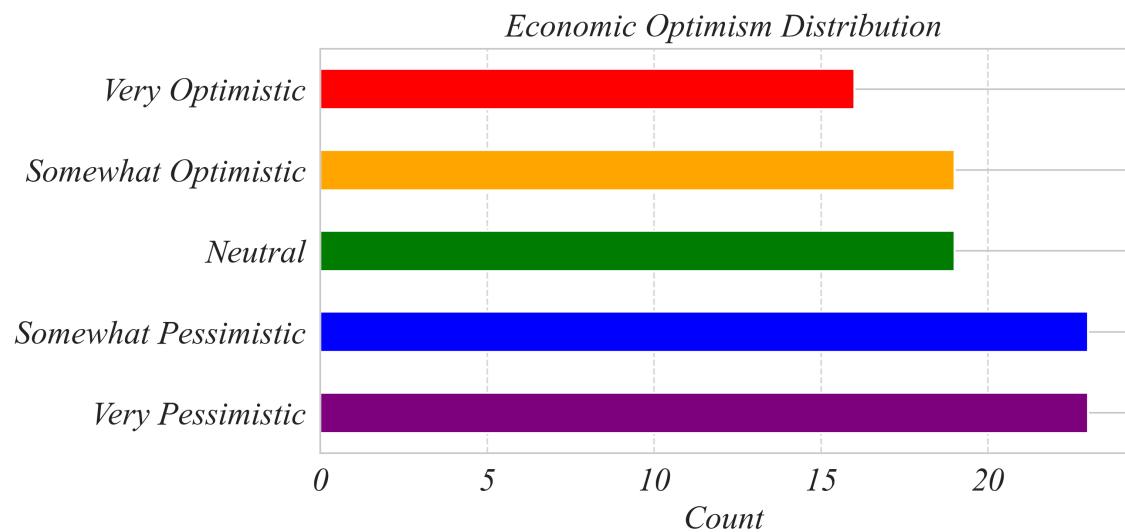


# Part 1.1 | Ordinal Categorical

*Exercise: Summarize ordinal\_categorical\_dataset.csv*

## Summary

- Use a *Bar Plot*
- Similar to nominal
- The axis is ordered



# Part 1.2 | Numerical Variable

*Two main variable types*

**Discrete:** countable numbers with meaningful intervals

- *Number of Children in a Household.*

**Continuous:** quantities measurable on the reals.

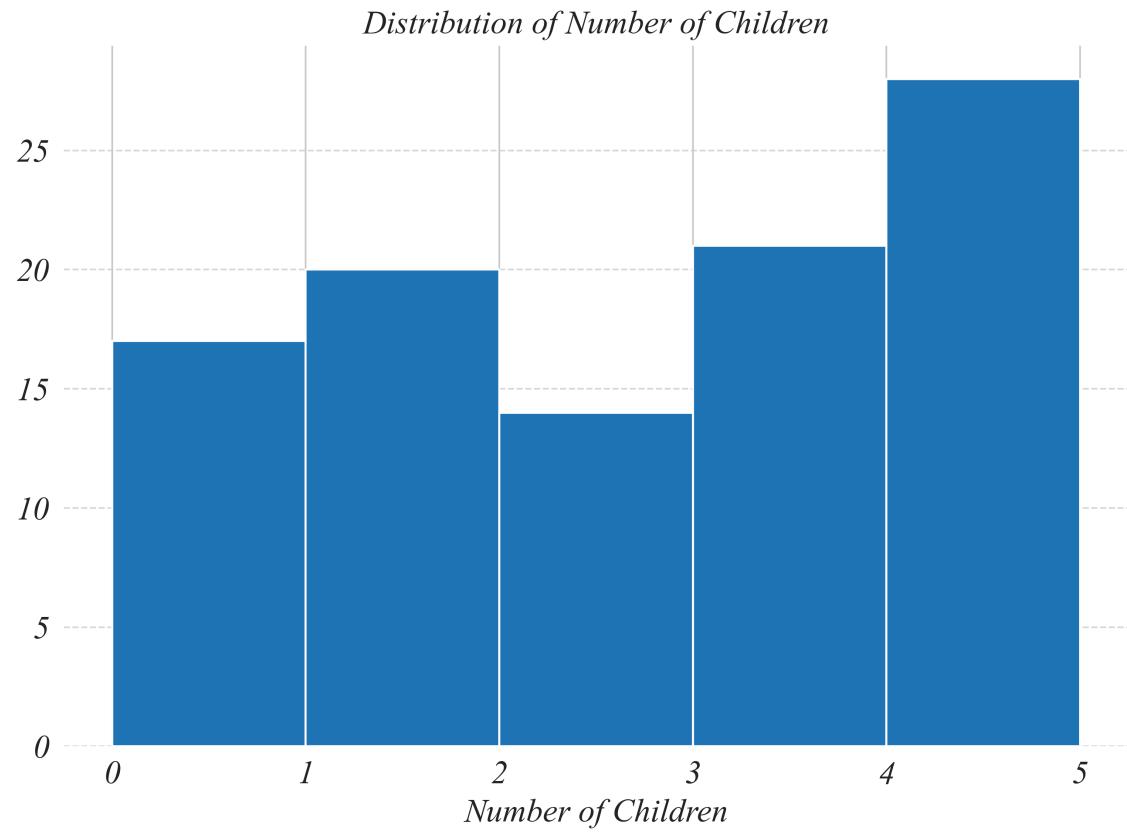
- *Household Income in USD.*

# Part 1.2 | Discrete Numerical

*Exercise: Summarize discrete\_numerical\_dataset.csv*

## Summary

- Use a *Histogram* or a *Summary Table*
- Similar to Ordinal Cat.

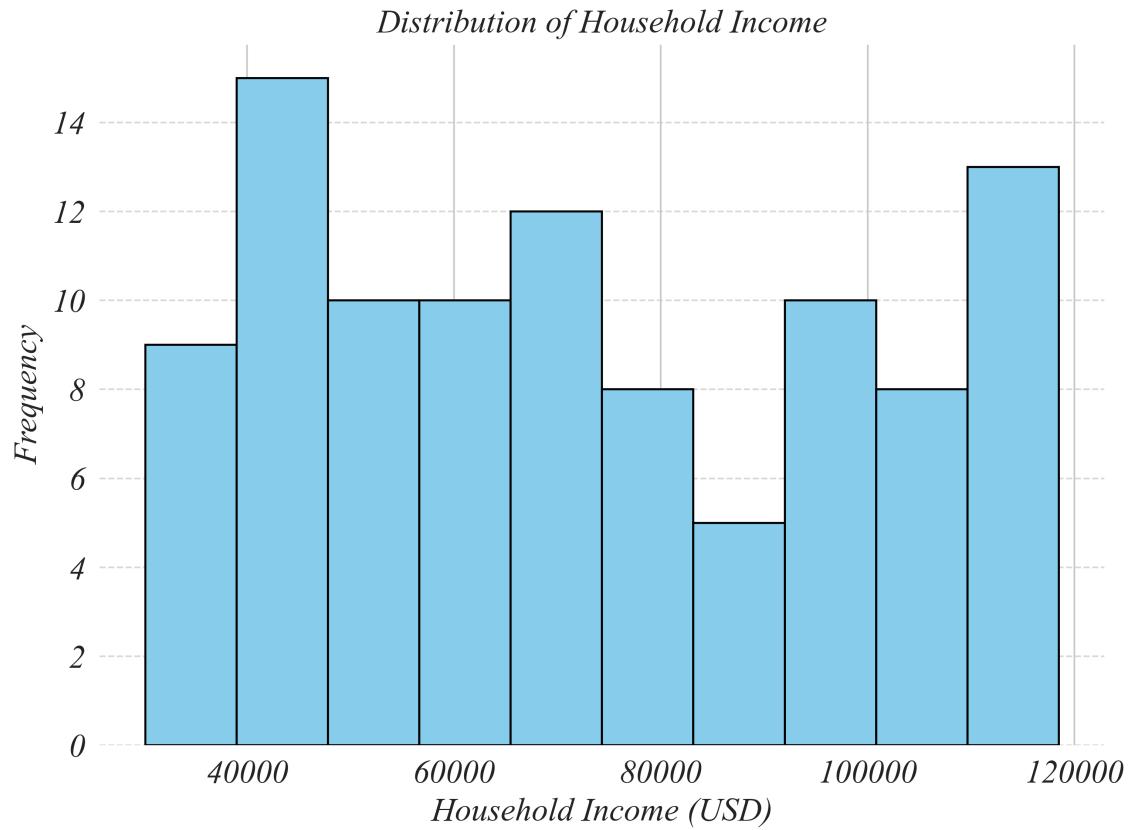


# Part 1.2 | Continuous Numerical

*Exercise: Summarize continuous\_numerical\_dataset.csv*

## Summary

- Similar to Discrete
- Use a *Summary Table*, **Histogram**, *Boxplot*, or *Jitter*

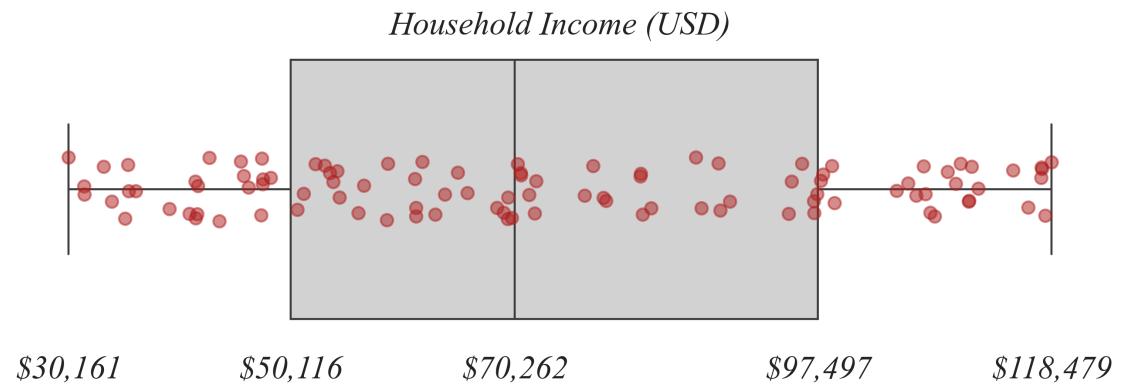


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*Exercise: Summarize continuous\_numerical\_dataset.csv*

## Summary

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# Part 1.3 | Data Structures

*...relationships between data points.*

The way we understand data depends on the relationship between the data points.

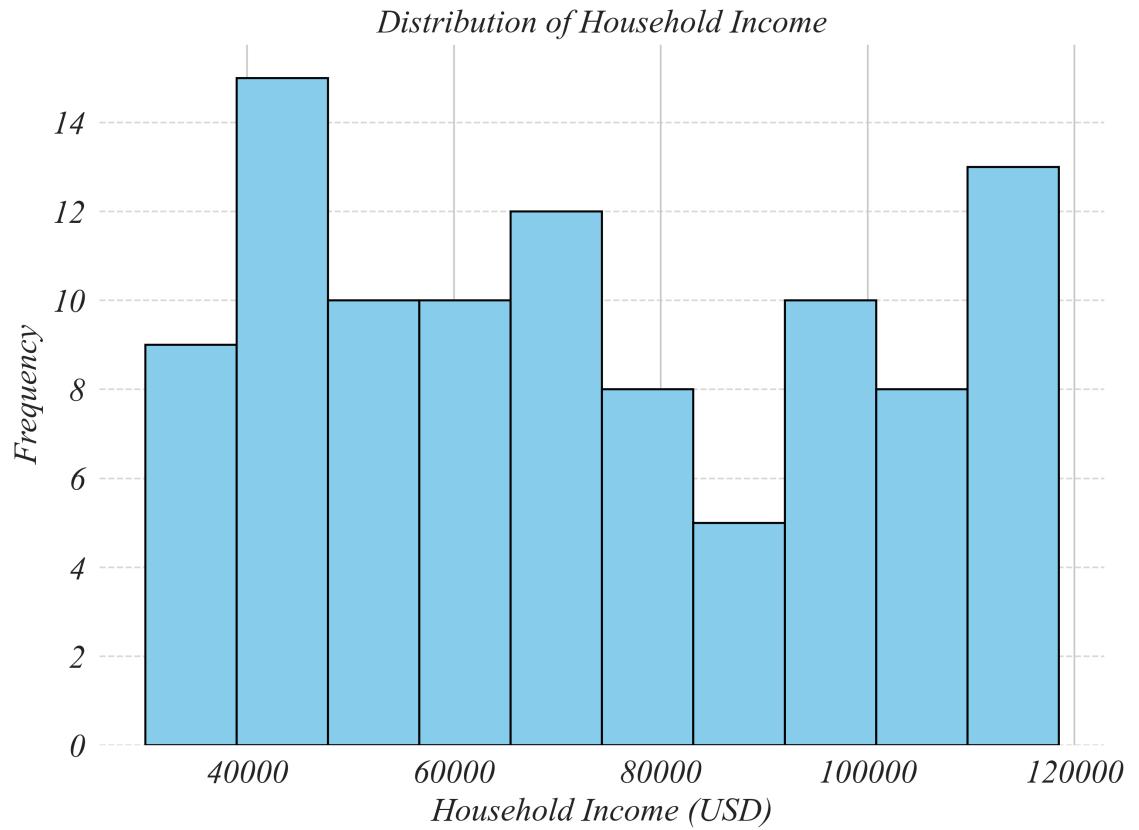
	Cross-Sectional	Time-Series	Panel Data
<b>Focus</b>	Multiple units, one time point	One unit, many times	Multiple units, many time points
<b>Shape</b>	Wide format	Long format	Long format
<b>Ex.</b>	Household income, 2025	US GDP, 10 years	Household income, 10 years

# Part 1.3 | Cross-Sec. Numerical

*Exercise: Summarize cross\_sectional\_numerical\_dataset.csv*

## Summary

- Focus: distribution
  - *Histogram*
  - *Boxplots*
  - *Jitters*

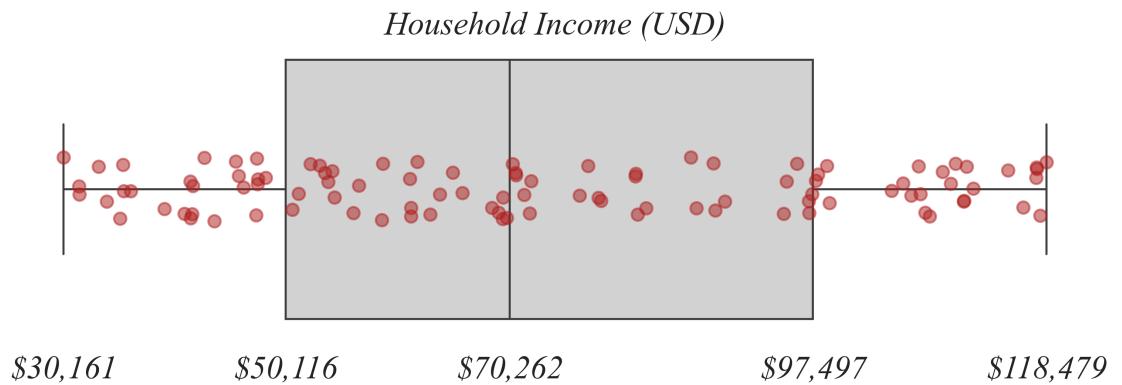


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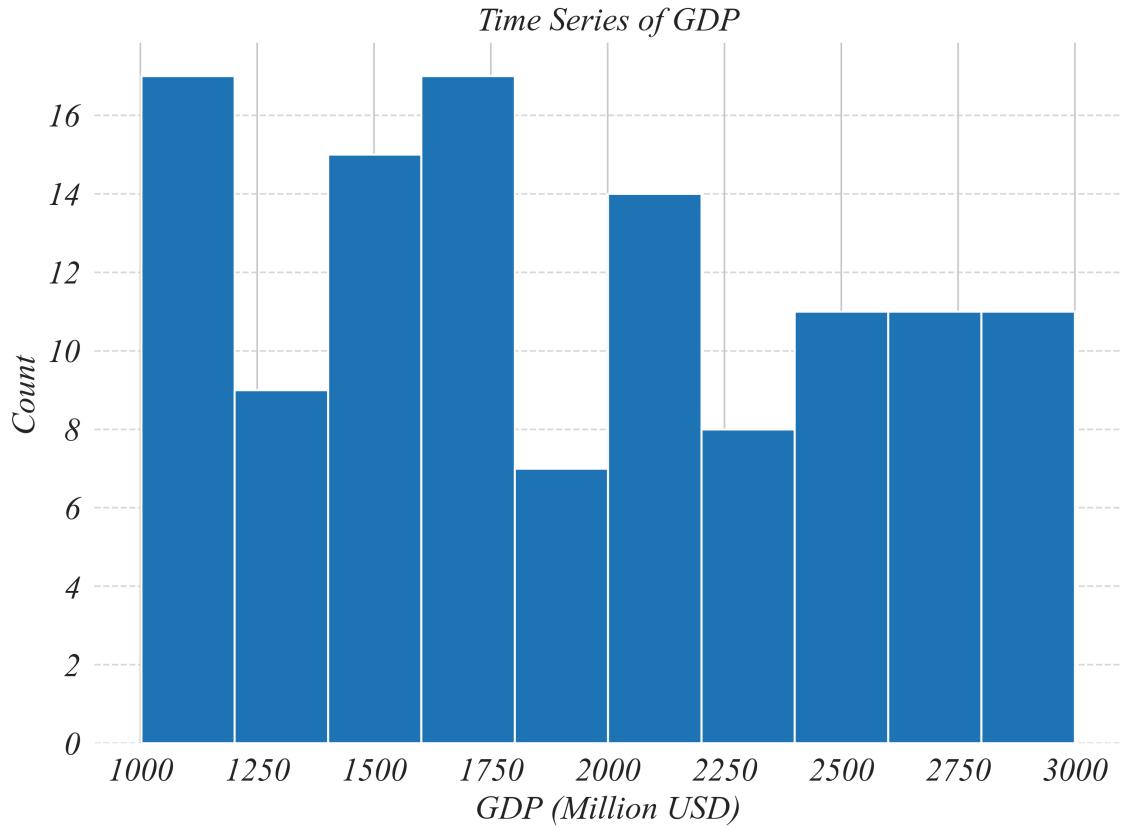


# Part 1.3 | Time-Series Numerical

*Exercise: Summarize time\_series\_numerical\_dataset.csv*

## Summary

- Show: distribution
  - *Histogram*
  - *Boxplots*
  - *Jittered Scatters*
- Focus: time-path
  - *Linegraph*

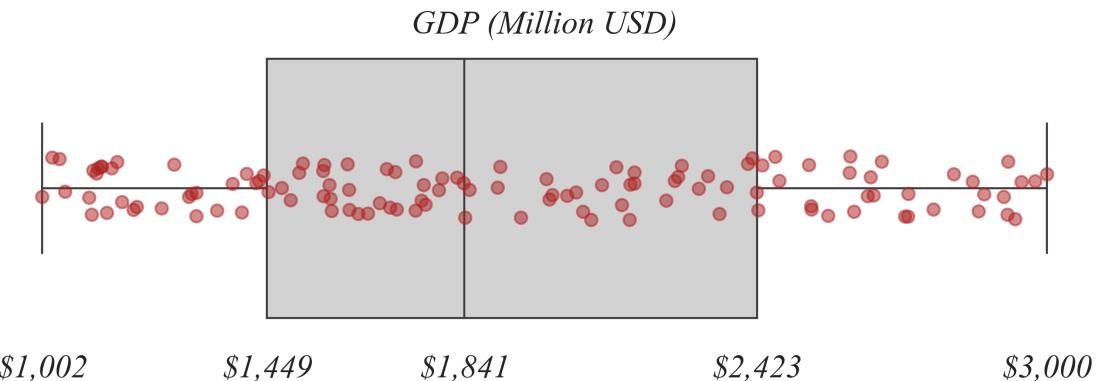


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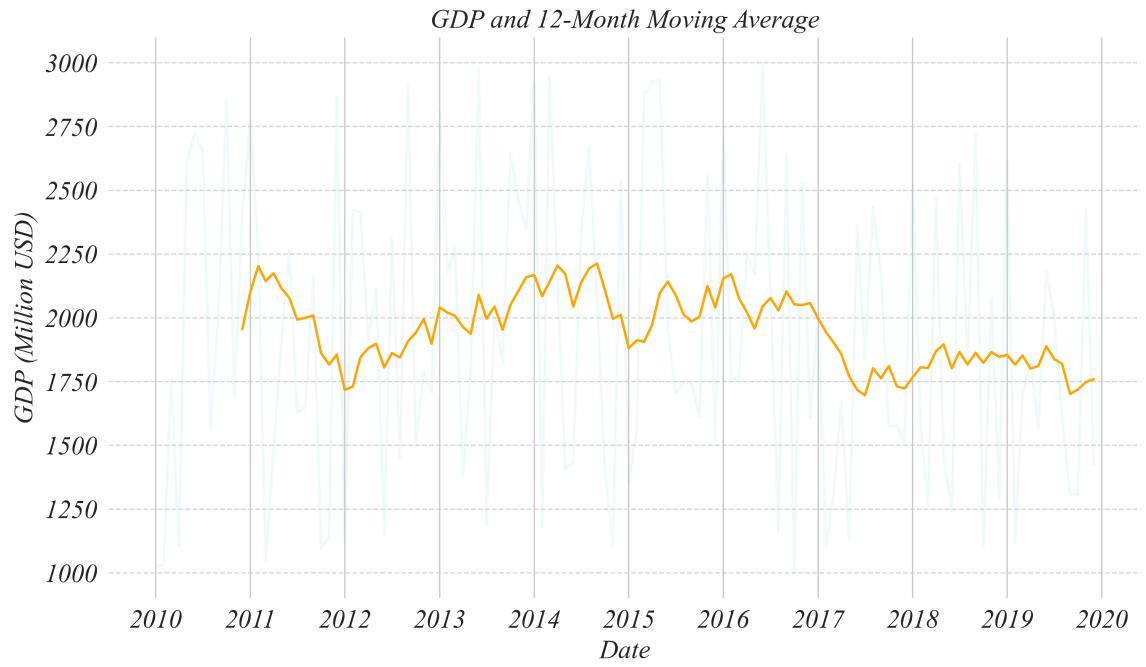


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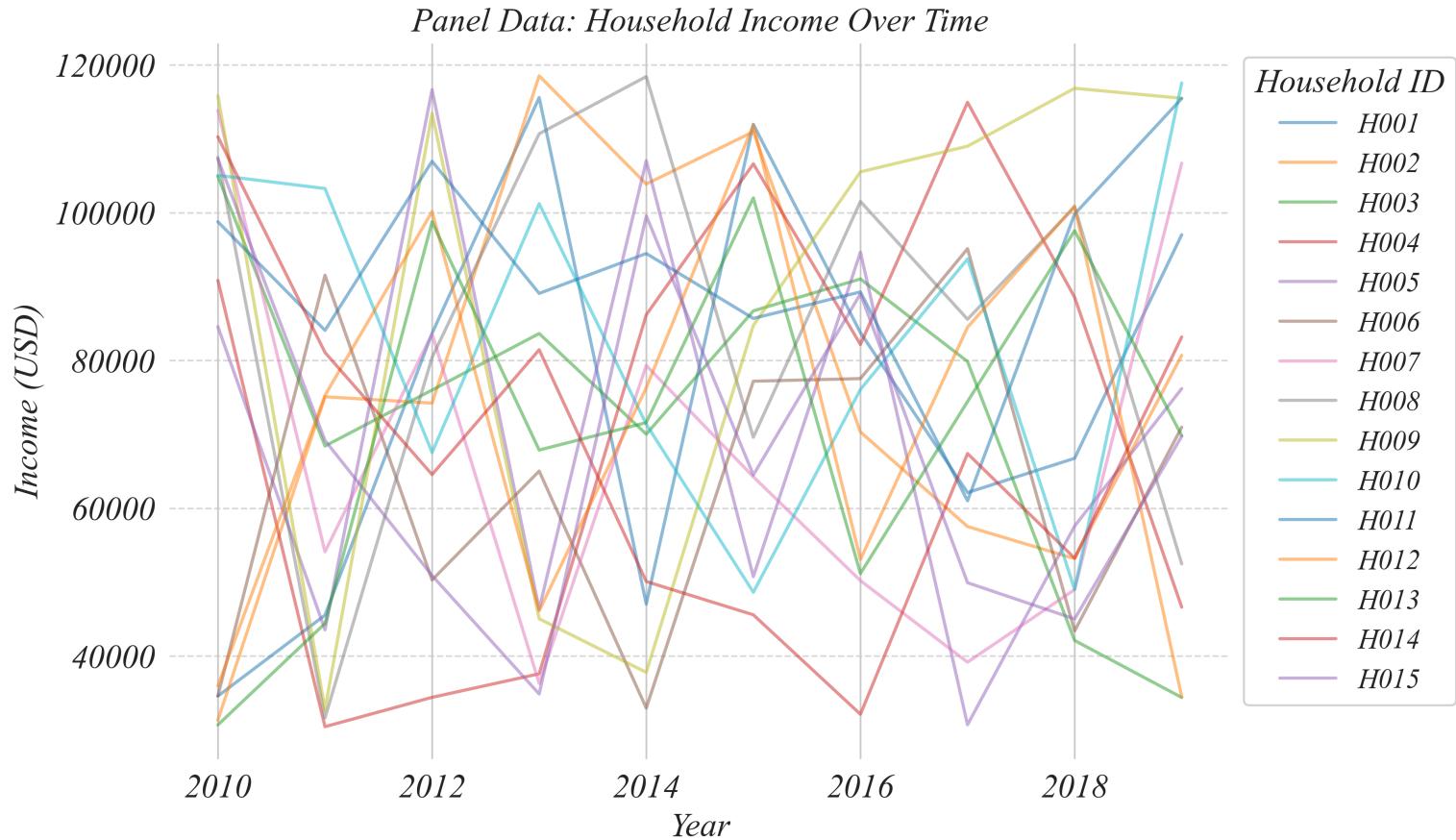


# Part 1.3 | Panel Numerical

*Exercise: Summarize panel\_numerical\_dataset.csv*

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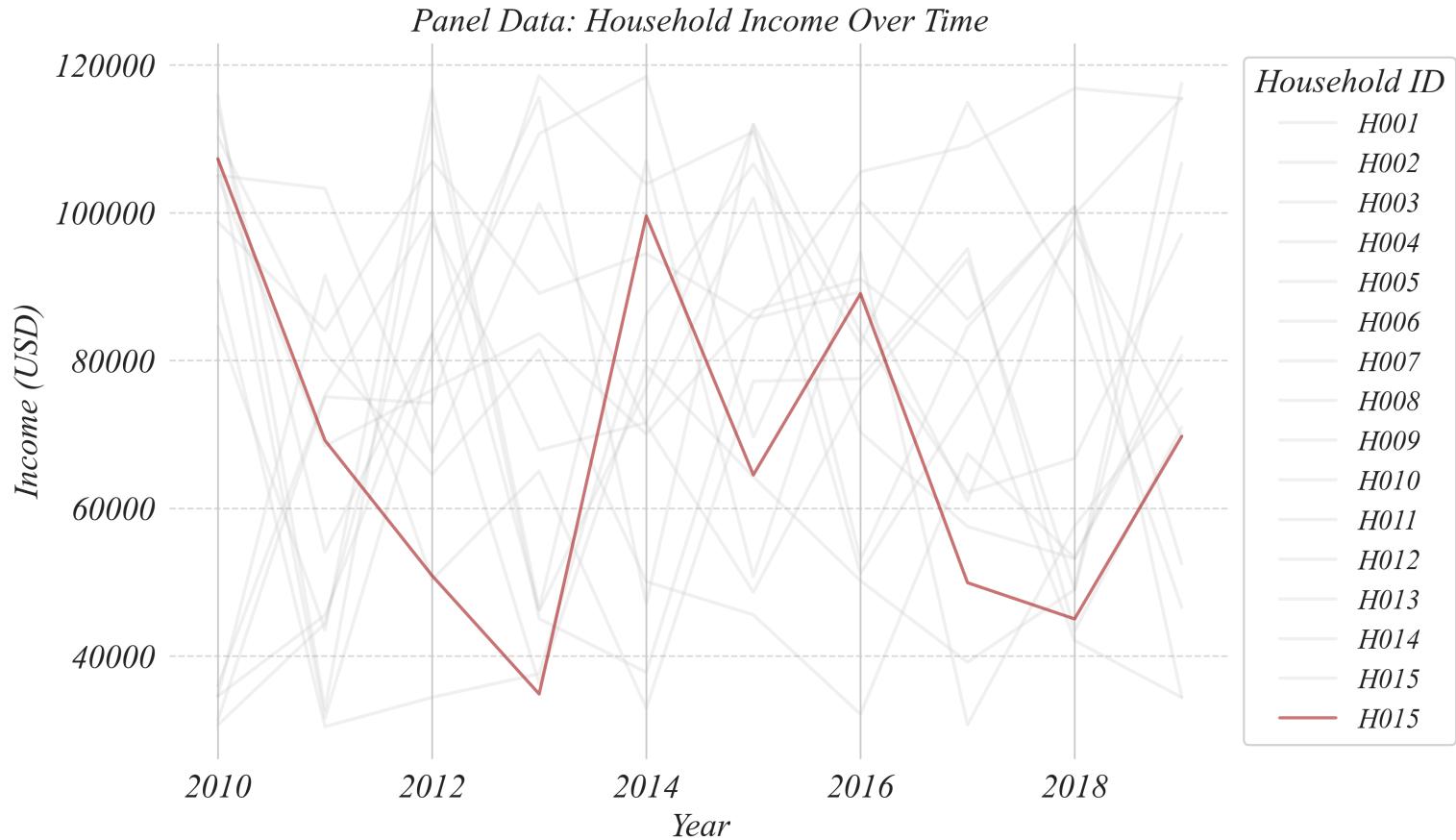
*Exercise: Summarize panel\_numerical\_dataset.csv*



> not so great

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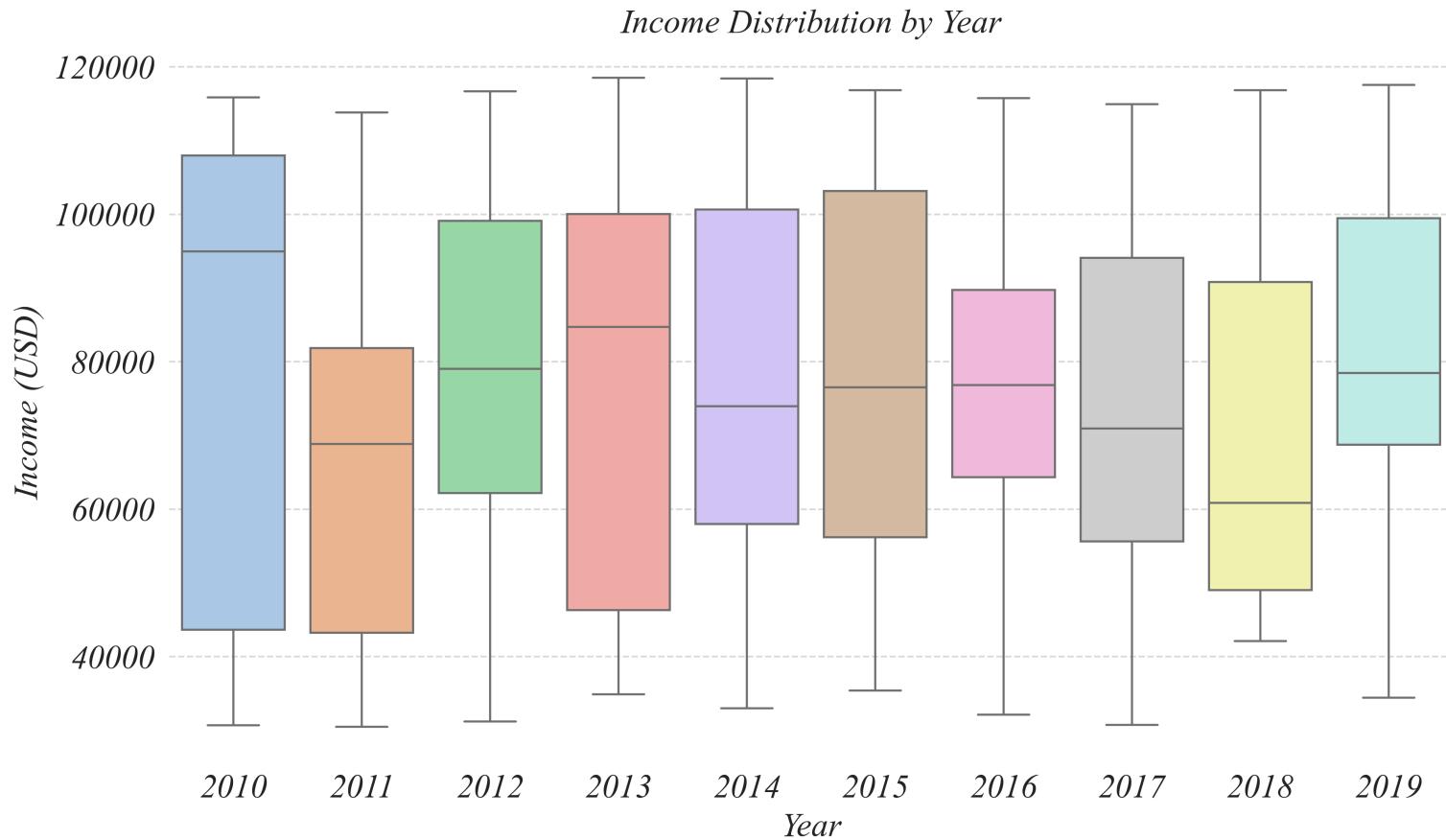
*Exercise: Summarize panel\_numerical\_dataset.csv*



> a little better

# Part 1.3 | Panel Numerical

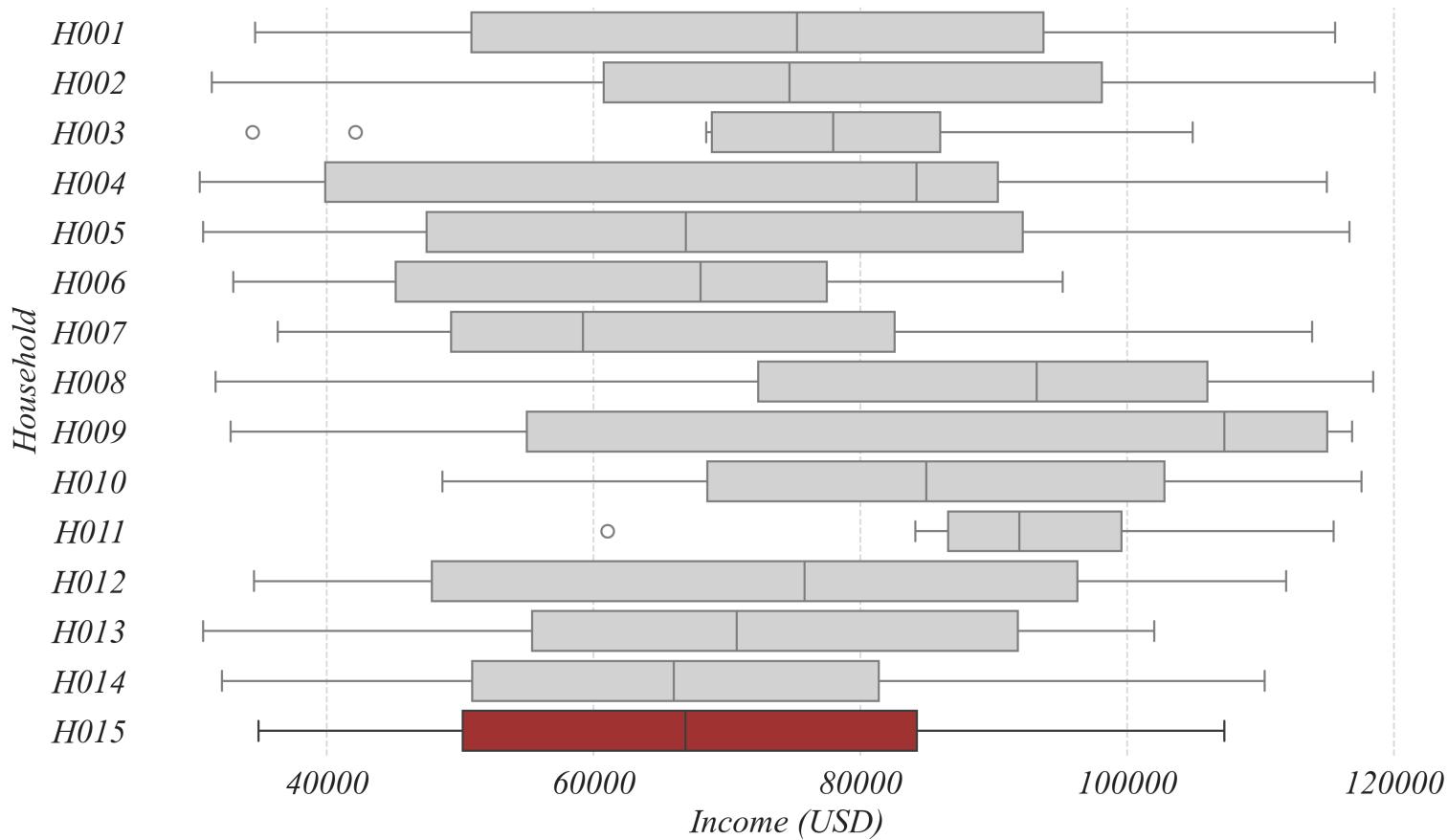
*Exercise: Summarize panel\_numerical\_dataset.csv*



> shows cross sectional variation through time  
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# Part 1.3 | Panel Numerical

*Exercise: Summarize panel\_numerical\_dataset.csv*



> shows variation within the household

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