

# ECON 0150 | Spring 2026 | Homework 1.5 (Optional Question)

*Due: Friday, February 6 at 5PM*

Homework is designed to both test your knowledge and challenge you to apply familiar concepts in new applications. Answer clearly and completely. You are welcomed and encouraged to work in groups so long as your work is your own. Submit your figures and answers to Gradescope.

## **Q2 (optional addition to Q1). Comparing Coffee Production Across Time**

Using the dataset `coffee_prod_in_years.csv`, which provides information on coffee production in different countries between 1961 and 2023. This dataset is in **long format**. To create a scatter plot comparing two years, you'll first need to reshape it to wide format using `pivot()`.

a) Reshape the data to wide format, then generate a scatter plot comparing coffee production in 1961 and 2023 for each country. Include a 45-degree line to help identify which countries increased or decreased production. Are there outlier countries? Briefly suggest why these countries might stand out.

b) How many countries increased their coffee production between 1961 and 2023? How many decreased? (*Hint: you can count points above vs below the 45-degree line, or create a column for the change and filter.*)

c) In HW 1.4, you created a multi-line plot showing coffee production for each country over time. Which figure — the country-level time trends (from HW 1.4) or the 1961 vs. 2023 scatter comparison (from part a) — better helps you understand patterns in coffee production? Justify your answer.