



A case study of economic dynamics in the USA from the 20th and 21st centuries; median compensation, productivity and poverty level trends

Michelle Akaishi

Methods of Advanced Data Engineering (Winter 2024)

Introduction

- Study of the economic landscape of the USA in the 20th (1980-1990) and 21st centuries (2010-2020)
- Trends in productivity, median compensation, and poverty-level wages
- Patterns during the COVID-19 pandemic(2019/2020)



Goals of the study

How has productivity and median compensation affected the annual poverty level wages in the USA from two distinct time periods?

- a) What are some major patterns from the 2 time periods (1980-1990 vs 2010-2020)?
- b) What are some major patterns based on gender for these parameters?



Used Data

- sourced from Kaggle
- License: CC0: Public domain
- CSV, Tabular data

Dataset1: Productivity and Hourly Compensation (1948-2021) [link](#)

- productivity and hourly compensation trends

Dataset2: Poverty-Level Wages in the USA Dataset (1973-2022) [link](#)

- poverty-level wages
- annual and hourly poverty-level wages
- wage shares for different income brackets



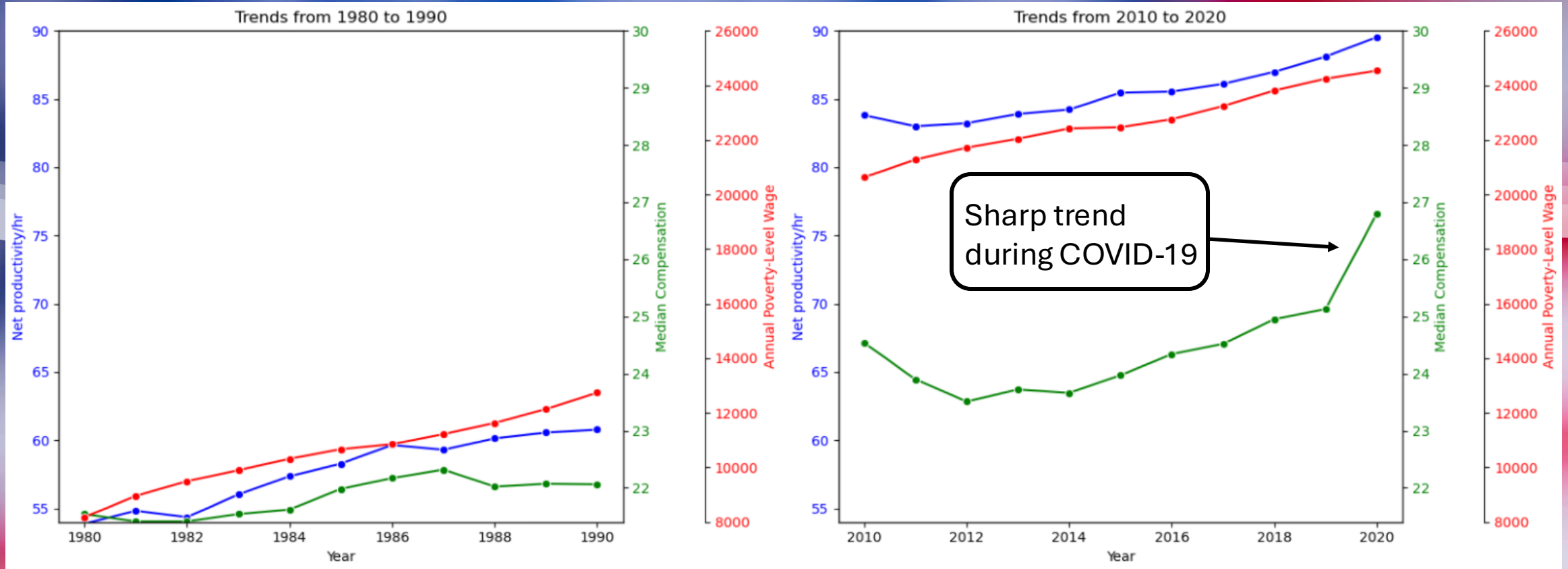
ETL Pipeline

- Python
- VS Code
- Kaggle API
- SQLite database
- libraries used: pandas, os, sys, sqlite3
- Transformation/Cleaning data



Analysis

Median compensation vs Net productivity vs Poverty-level wage trends



Key Points:

- *Annual Poverty-Level Wage*: steady & faster increase rate
- *Net Productivity per Hour*: more volatile trend
- *Median compensation*: initially decreasing, but then increasing trend

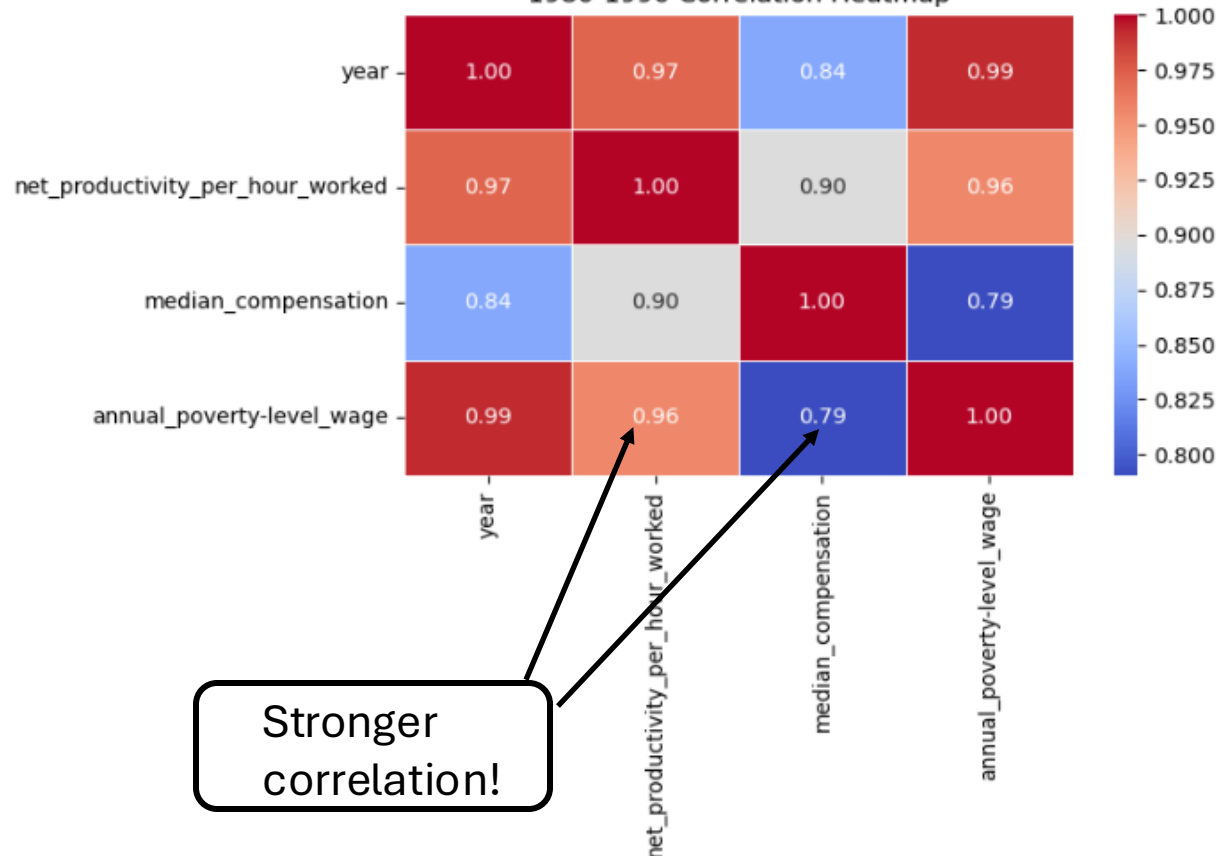
2010-2020

- *Annual Poverty-Level Wage*: steady increase rate
- *Net Productivity per Hour*: less fluctuation
- *Median compensation*: ends with a sharp increasing trend

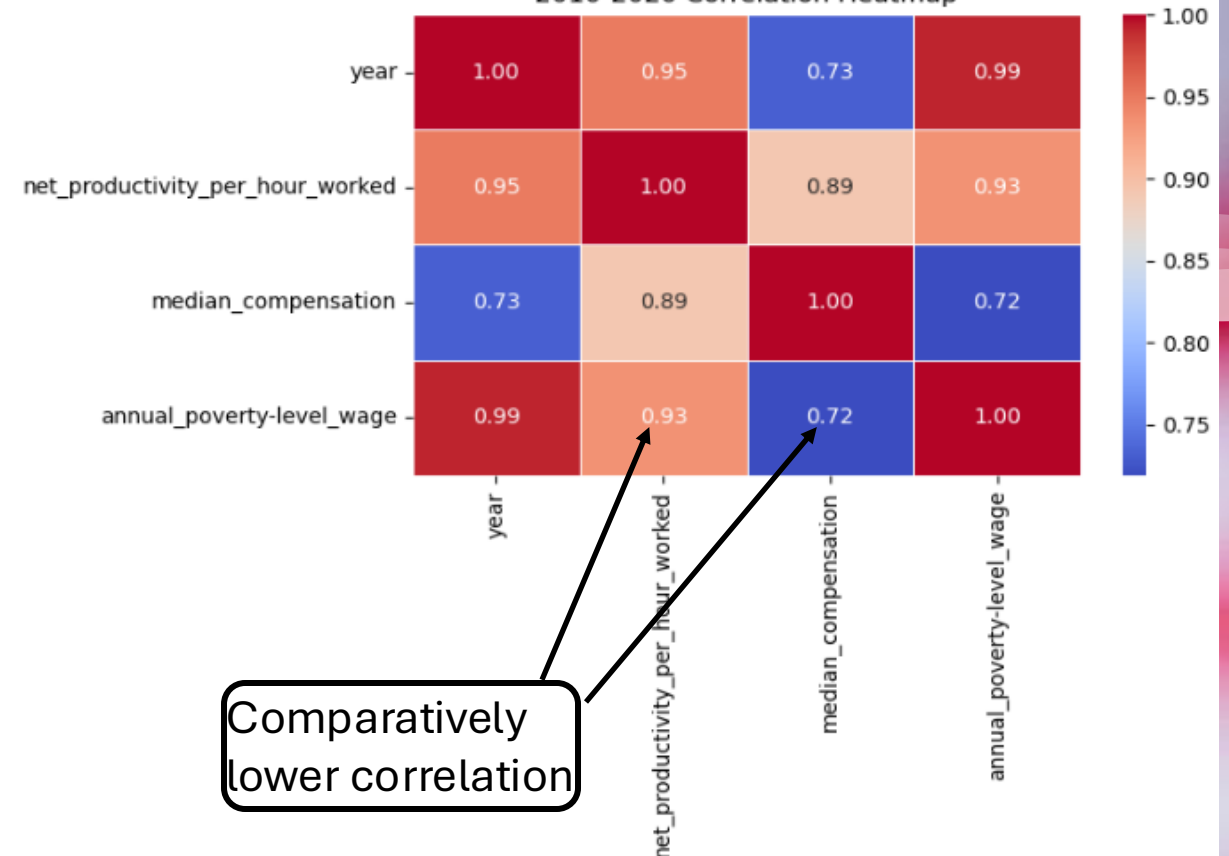


Correlation Analysis (Heatmap)

1980-1990 Correlation Heatmap



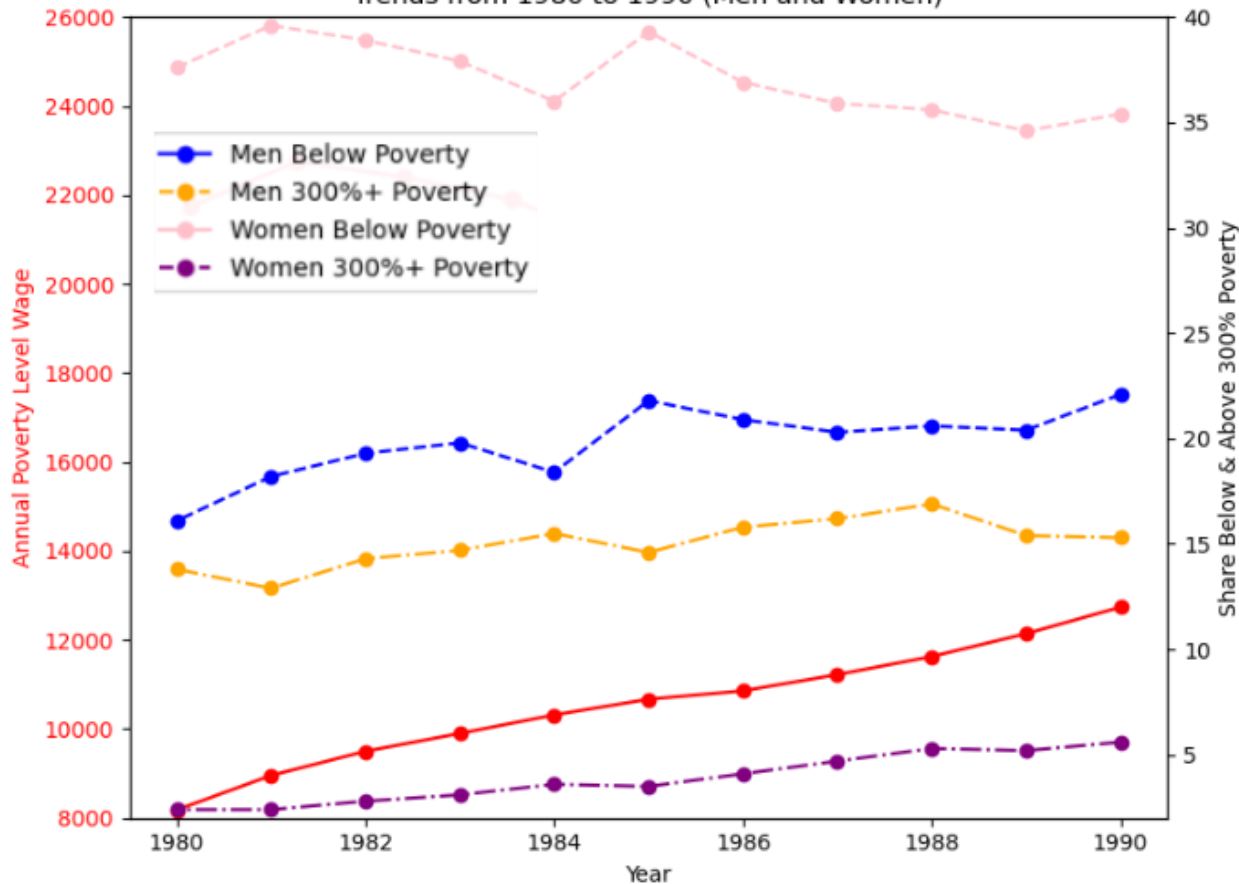
2010-2020 Correlation Heatmap



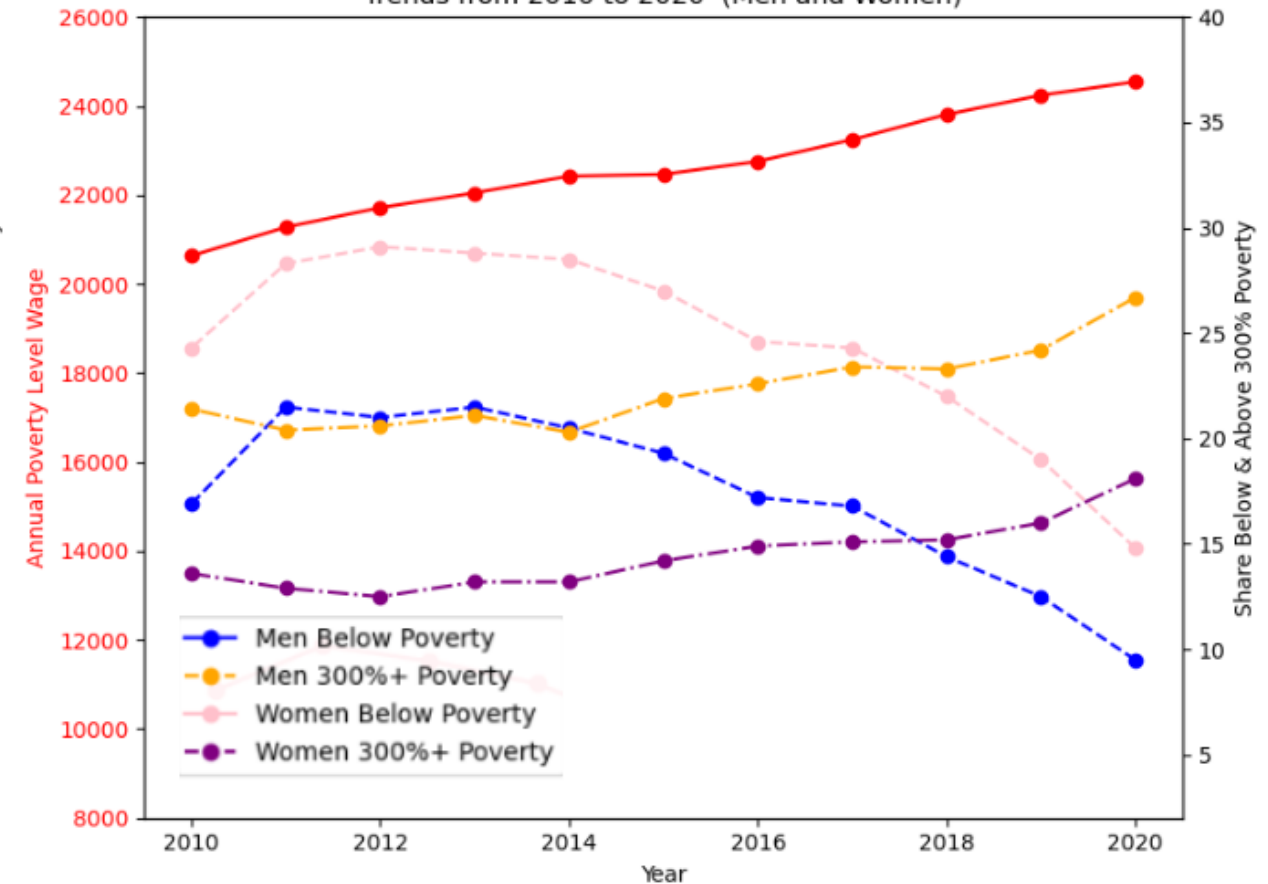
Analysis (Gender-based)

- Increasing income inequality
- Increasing cost of living

Trends from 1980 to 1990 (Men and Women)



Trends from 2010 to 2020 (Men and Women)



Conclusion

- productivity and compensation were closely aligned
- poverty levels followed a consistent trend

2010-2020

- economy improved
- rise in high earners
- high cost of living

COVID-19 (2019/2020)

- unusual rise in median compensation
- *Increasing productivity and compensation did not reduce poverty levels!*
- *Poverty remains a challenge == deeper research needed!*



The background of the image is a blurred American flag, showing the stars and stripes in a soft, out-of-focus manner. A white, wavy banner is superimposed across the middle of the image.

Thank you for your time!