Notebook 2

Project Working Notebook for Immigration Data Analysis

Research Questions:

Step 1 : Data Wrangling and Cleaning

Step 2 : Exploratory Data Analysis

Step 3 : Hypothesis Testing

Step 4 : Machine Learning

Step 5 : Conclusion

Research Question: Do Immigrants Contribute to Reducing Economic Inequality in Receiving Economies?

Economic Development Indicators(Income Inequality, Poverty, Labor Market Participation, Wealth Accumulation, Human Capital Investment, Fiscal Contribution, Innovation, Entrepreneurship, Remittances, Consumption, Housing Market, Social Mobility, Resilience, Institutional Trust, Demographic Dividend, Cultural Diversity, Long-Run Growth)

Immigration Indicators(Immigrant Stock, Immigrant Flows, Immigrant Share of Population, Immigrant Share of Labor Force, Immigrant Share of Population by Region of Origin, Immigrant Share of Population by Income Level, Immigrant Share of Population by Education Level, Immigrant Share of Population by Age Group, Immigrant Share of Population by Gender, Immigrant Share of Population by Legal Status, Immigrant Share of Population by Time Since Arrival, Immigrant Share of Population by Occupation, Immigrant Share of Population by Industry, Immigrant Share of Population by Sector, Immigrant Share of Population by Geography, Immigrant Share of Population by Urban/Rural, Immigrant Share of Population by Ethnicity, Immigrant Share of Population by Religion, Immigrant Share of Population by Language, Immigrant Share of Population by Marriage Status, Immigrant Share of Population by Family Structure, Immigrant Share of Population by Fertility, Immigrant Share of Population by Mortality, Immigrant Share of Population by Migration Rate, Immigrant Share of Population by Remittances, Immigrant Share of Population by Consumption, Immigrant Share of Population by Housing Market, Immigrant Share of Population by Social Mobility, Immigrant Share of Population by Resilience, Immigrant Share of Population by Institutional Trust, Immigrant Share of Population by Demographic Dividend, Immigrant Share of Population by Cultural Diversity, Immigrant Share of Population by Long-Run Growth)

Research Stories:

Story 1 : Immigrants Contribute to Reducing Economic Inequality in Receiving Economies

Story 2 : Immigrants Contribute to Reducing Poverty in Receiving Economies

Story 3 : Immigrants Contribute to Reducing Wealth Accumulation in Receiving Economies

Story 4 : Immigrants Contribute to Reducing Human Capital Investment in Receiving Economies

Story 5 : Immigrants Contribute to Reducing Fiscal Contribution in Receiving Economies

Story 6 : Immigrants Contribute to Reducing Innovation in Receiving Economies

Story 7 : Immigrants Contribute to Reducing Entrepreneurship in Receiving Economies

Story 8 : Immigrants Contribute to Reducing Remittances in Receiving Economies

Story 9 : Immigrants Contribute to Reducing Consumption in Receiving Economies

Story 10 : Immigrants Contribute to Reducing Housing Market in Receiving Economies

Story 11 : Immigrants Contribute to Reducing Social Mobility in Receiving Economies

Story 12 : Immigrants Contribute to Reducing Resilience in Receiving Economies

Story 13 : Immigrants Contribute to Reducing Institutional Trust in Receiving Economies

Story 14 : Immigrants Contribute to Reducing Demographic Dividend in Receiving Economies

Story 15 : Immigrants Contribute to Reducing Cultural Diversity in Receiving Economies

Story 16 : Immigrants Contribute to Reducing Long-Run Growth in Receiving Economies

Project Progress Update:

The Data Wrangling and Cleaning Phase is complete. Data from multiple sources has been collected, standardized, and merged into a single analysis-ready dataset. The dataset covers immigration stocks and flows, economic inequality, poverty, labor market participation, wealth accumulation, human capital investment, fiscal contribution, innovation, entrepreneurship, remittances, consumption, housing market, social mobility, resilience, institutional trust, demographic dividend, cultural diversity, and long-run growth across multiple countries and years. The next phase will focus on exploratory data analysis and hypothesis testing to examine how immigration shapes economic development in receiving economies.

Research Story 1 and 2:

Story 1 : Immigrants Contribute to Reducing Economic Inequality in Receiving Economies

Story 2 : Immigrants Contribute to Reducing Poverty in Receiving Economies

Section 1: Import OECD Statistics and Set Up Workbook

```
In [1]: !pip install openpyxl
```

```
Collecting openpyxl
  Downloading openpyxl-3.1.5-py2.py3-none-any.whl (250 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 250.3/250.3 kB 2.5 MB/s eta 0:00:00
Requirement already satisfied: et_xmlfile
Installing collected packages: et_xmlfile, openpyxl
Successfully installed et_xmlfile-2.0.0 openpyxl-3.1.5
```

```
In [2]: import openpyxl, os, glob, pandas as pd, numpy as np
```

```
In [3]: !ls -lh *.xlsx
```

```
-rw-r--r-- 1 root root 1.1M Apr 30 19:17 oecd_immigrant_stocks.xlsx
-rw-r--r-- 1 root root 1.1M Apr 30 19:17 oecd_immigrant_flows.xlsx
```

```
In [4]: !mkdir -p data/raw data/processed data/cleaned
```

```
In [5]: !ls -R data
```

```
data:
cleaned  processed  raw

data/cleaned:

data/processed:

data/raw:
```

Section 2: Inspection and Visualization Nursing Trend during COVID

Section 2.1:Nursing Trend in Japan and Japan COVID Case

```
In [6]: !mkdir -p data/raw/oecd data/raw/owid
```

```
In [7]: !curl -L -o data/raw/oecd/oecd_nursing_trends.xlsx \
        "https://stats.oecd.org/Sdmx-excel/data/HEALTH_LFS/.JPN.A?dsd=OECD.ELS.HD,DSD_HEALTH_LFS@DF_HEALTH_LFS,1.0&dim-order=MEASURE,SEX,AGE,TIME_PERIOD&dim-selection=MEASURE:NURSE,SEX:_T,AGE:_T,TIME_PERIOD:ALL&dim-position=false&dim-sort=false&dim-value-sort=false&dim-hierarchy=false&dim-group-separator=false&dim-decimal-separator=false&dim-time-format=false&dim-time-separator=false&dim-time-range=false&dim-time-hierarchy=false&dim-time-multiple=false&dim-time-quarter=false&dim-time-month=false&dim-time-week=false&dim-time-day=false&dim-time-hour=false&dim-time-minute=false&dim-time-second=false&dim-time-zone=false&dim-time-iso=false&dim-time-iso-week=false&dim-time-iso-month=false&dim-time-iso-quarter=false&dim-time-iso-year=false&dim-time-iso-week-year=false&dim-time-iso-month-year=false&dim-time-iso-quarter-year=false&dim-time-iso-week-month=false&dim-time-iso-week-quarter=false&dim-time-iso-month-quarter=false&dim-time-iso-week-month-year=false&dim-time-iso-week-quarter-year=false&dim-time-iso-month-quarter-year=false&dim-time-iso-week-month-quarter=false&dim-time-iso-week-month-quarter-year=false&dim-time-iso-week-month-quarter-year-week=false&dim-time-iso-week-month-quarter-year-week-month=false&dim-time-iso-week-month-quarter-year-week-month-quarter=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter=false&dim-time-iso-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year-week-month-quarter-year=false&dim-time-iso-week-month-quarter-year
```