



Exploring the Interplay of Health, Wealth and Demographics

*Visualizing Population, GDP,
Health Expenditure & Life Expectancy*

By: Alex Ivanoff, Noah Schmidt, Pojanart Foote, Stephanie Fritz

Project 3 - Group 5

Project Goal: Understanding Global Development



To create an **interactive visualization tool** to **explore the relationships** between **key indicators of global development** : *Population, GDP, Health Expenditure and Life Expectancy*



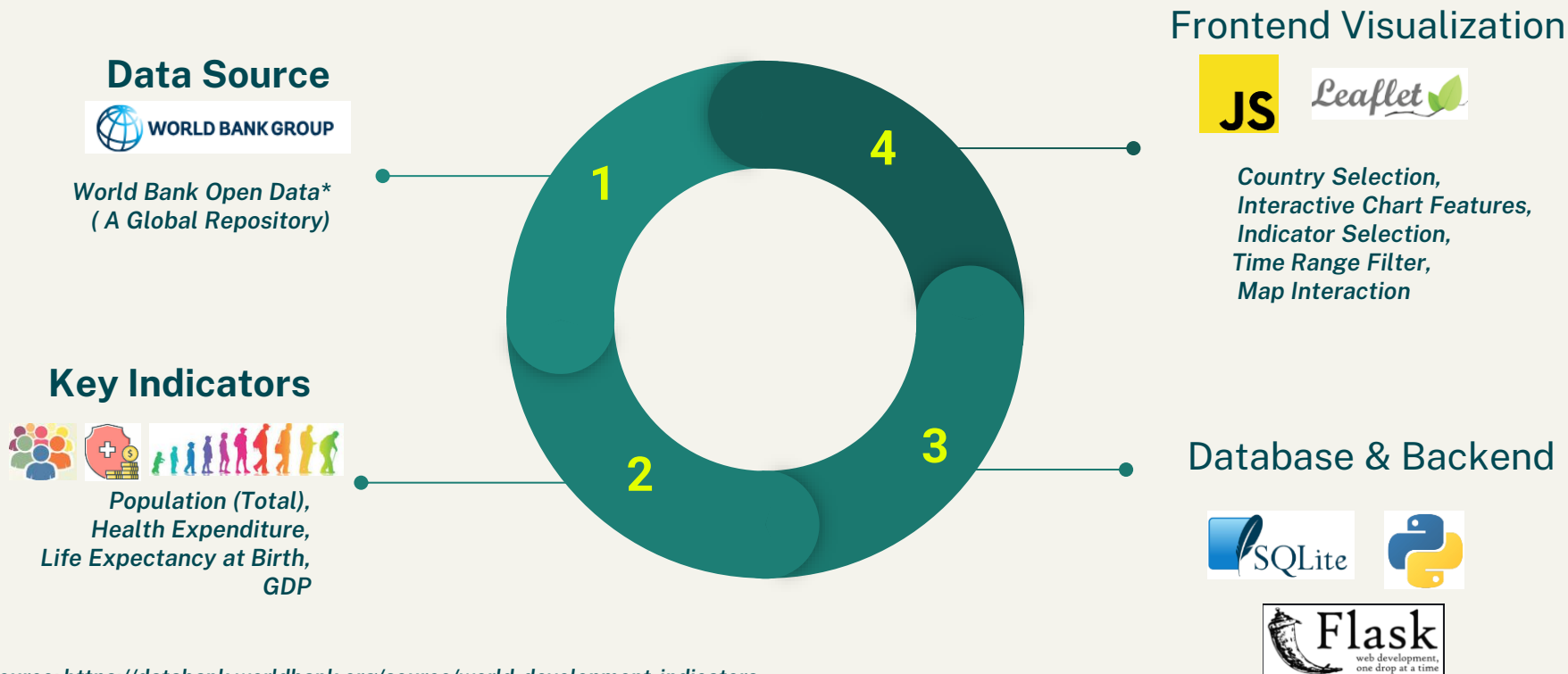
We aim to **uncover potential correlations, highlight disparities, and illustrate development trends** across countries and over time.



Understanding these relationships is crucial for **informed discussion about global challenges.**

Data Sources & Tools

Extract, Transform, Load



* Resource: <https://databank.worldbank.org/source/world-development-indicators>

Building Blocks: The Structure of Our Visualization Tool

The screenshot shows a code editor with two panels. The left panel, titled 'EXPLORER', displays the project structure for 'PROJECT-3-GROUP-5'. The right panel shows the content of 'Data.csv'.

Project Structure (EXPLORER):

- PROJECT-3-GROUP-5
 - __pycache__
 - .ipynb_checkpoints
 - static\js
 - correlation.js
 - main.js
 - Templates
 - correlation.html
 - index.html
 - .gitignore
 - app.py
 - Data.csv
 - database.db
 - Project_3_Group_5_Project Proposal.pdf
 - README.md
 - requirements.txt

Data.csv Content:

```

1 Country Name,Country Code,Series Name,Series Code,2000 [YR2000],2001 [YR2001],2002 [YR2002],2003 [YR2003],2004 [YR2004],2005
2 Afghanistan,AFG,"Life expectancy at birth, total (years)",SP.DYN.LE00.IN,55.298,55.798,56.454,57.344,57.944,58.361,58.684,59
3 Afghanistan,AFG,GDP (current US$),NY.GDP.MKTP.CD,3521418059.92345,2813571753.87253,3825701438.99963,4520946818.54581,5224896
4 Afghanistan,AFG,"Population, total",SP.POP.TOTL,20130327,20284307,21378117,22733049,23560654,24404567,25424094,25909852,4145
5 Afghanistan,AFG,Current health expenditure (% of GDP),SH.XPD.CHEX.GD.ZS,...,9.44339085,8.94125843,9.80847359,9.94828892,10
6 Albania,ALB,"Life expectancy at birth, total (years)",SP.DYN.LE00.IN,75.404,75.639,75.89,76.142,76.376,76.621,76.816,77.549,
7 Albania,ALB,GDP (current US$),NY.GDP.MKTP.CD,3480355258.04122,3922100793.5403,4348068242.19512,5611496257.14231,7184685781.5
8 Albania,ALB,"Population, total",SP.POP.TOTL,3089027,3060173,3051010,3039616,3026939,3011487,2992547,2970017,2745972,2777689,
9 Albania,ALB,Current health expenditure (% of GDP),SH.XPD.CHEX.GD.ZS,5.94419765,5.92584515,5.66464472,5.91140795,5.89364862,5
10 Algeria,DZA,"Life expectancy at birth, total (years)",SP.DYN.LE00.IN,70.478,70.823,71.23,71.287,71.762,72.061,72.334,72.602,
11 Algeria,DZA,GDP (current US$),NY.GDP.MKTP.CD,54790398570.3282,59413400923.6364,61516103406.1688,73482264190.9245,91913680985
12 Algeria,DZA,"Population, total",SP.POP.TOTL,30903893,31331221,31750835,32175818,32628286,33109249,33623506,34189416,46164219
13 Algeria,DZA,Current health expenditure (% of GDP),SH.XPD.CHEX.GD.ZS,3.48903275,3.83787704,3.7300415,3.60104108,3.5440731,3.2
14 American Samoa,ASM,"Life expectancy at birth, total (years)",SP.DYN.LE00.IN,...,512000000,524000000,509000000,500000000,493000000,518000000,...,871
15 American Samoa,ASM,GDP (current US$),NY.GDP.MKTP.CD,...,512000000,524000000,509000000,500000000,493000000,518000000,...,871
16 American Samoa,ASM,"Population, total",SP.POP.TOTL,56855,57053,57062,56971,56818,56617,56374,56113,47521,48342,49225,49761,5
17 American Samoa,ASM,Current health expenditure (% of GDP),SH.XPD.CHEX.GD.ZS,...,512000000,524000000,509000000,500000000,493000000,518000000,...,871
18 Andorra,AND,"Life expectancy at birth, total (years)",SP.DYN.LE00.IN,...,512000000,524000000,509000000,500000000,493000000,518000000,...,871

```

Project Files Overview

1. **'data.csv'**: Our primary dataset from the World Bank.
2. **'database.db'**: SQLite database for efficient data management.
3. **'correlation.html'** & **'index.html'**: Frontend web pages for our visualizations.
4. **'correlation.js'** & **'main.js'**: JavaScript code powering the interactive visualizations.
5. **'app.py'**: Python backend using Flask to serve data.



Key Visualization Views

Time Series View

← → ↺ 127.0.0.1:5000



Global Development Indicators Dashboard

Select Country: Year: [Download Chart](#)

GDP: 19,134,221,644.733 USD

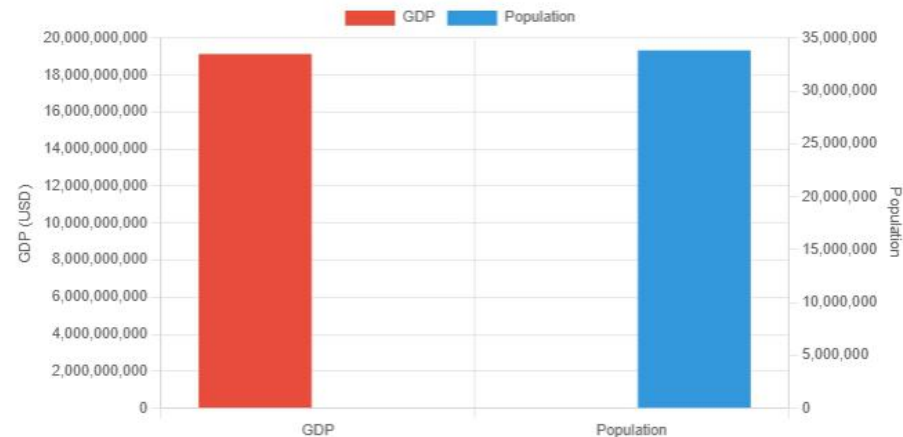
Population: 33,831,764

Life Expectancy: 62.66 yrs

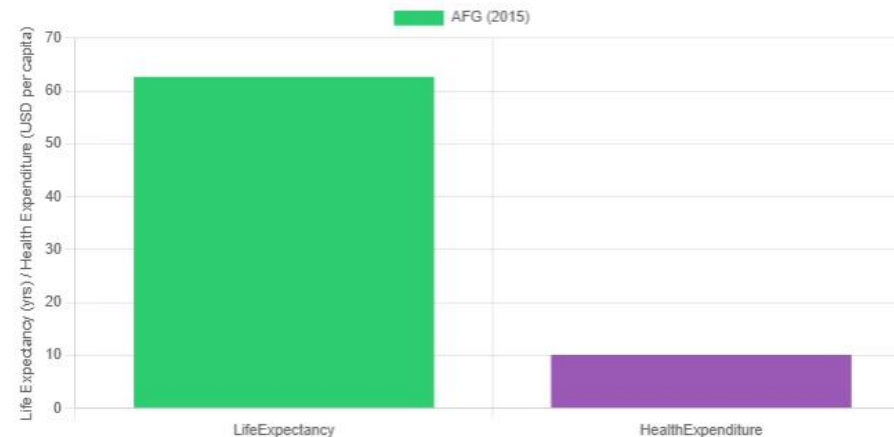
Health Expenditure (% of GDP):
10.11%

GDP per Capita: 565.57 USD

GDP & Population



Life Expectancy & Health Expenditure



Global Development Indicators Dashboard

Select Country: United States Year: 2020 [Download Chart](#)

GDP: 21,354,105,000,000 USD

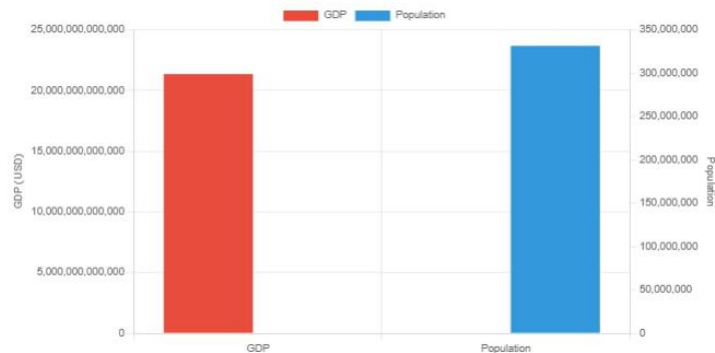
Population: 331,526,933

Life Expectancy: 76.98 yrs

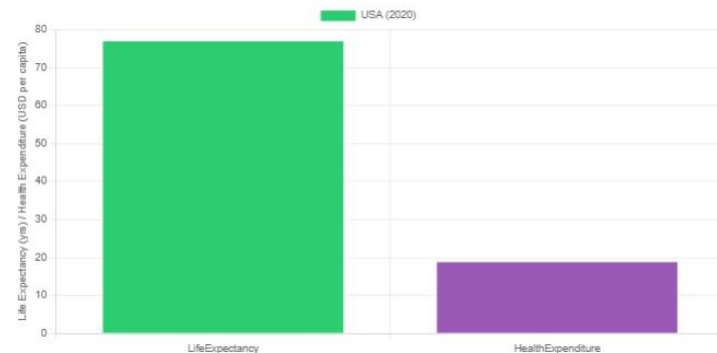
Health Expenditure (% of GDP): 18.76%

GDP per Capita: 64411.37 USD

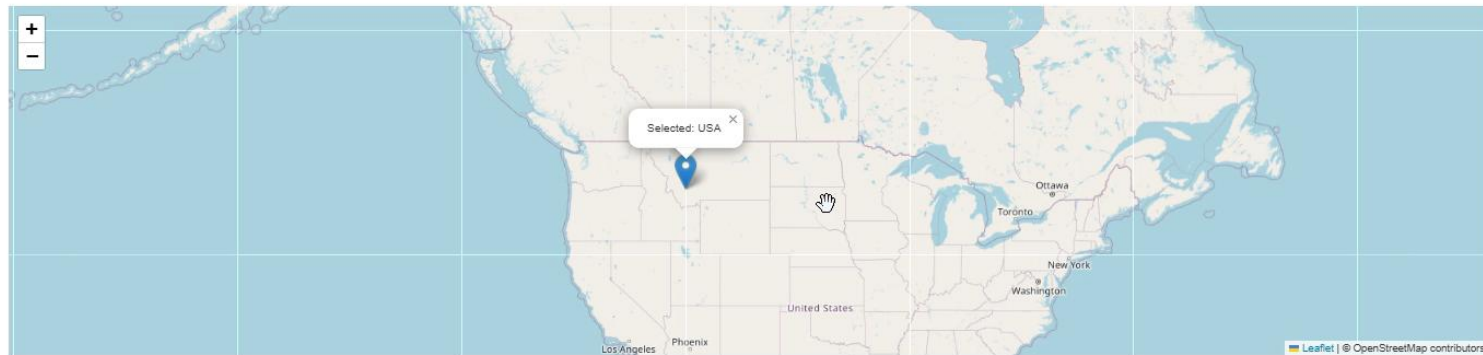
GDP & Population



Life Expectancy & Health Expenditure

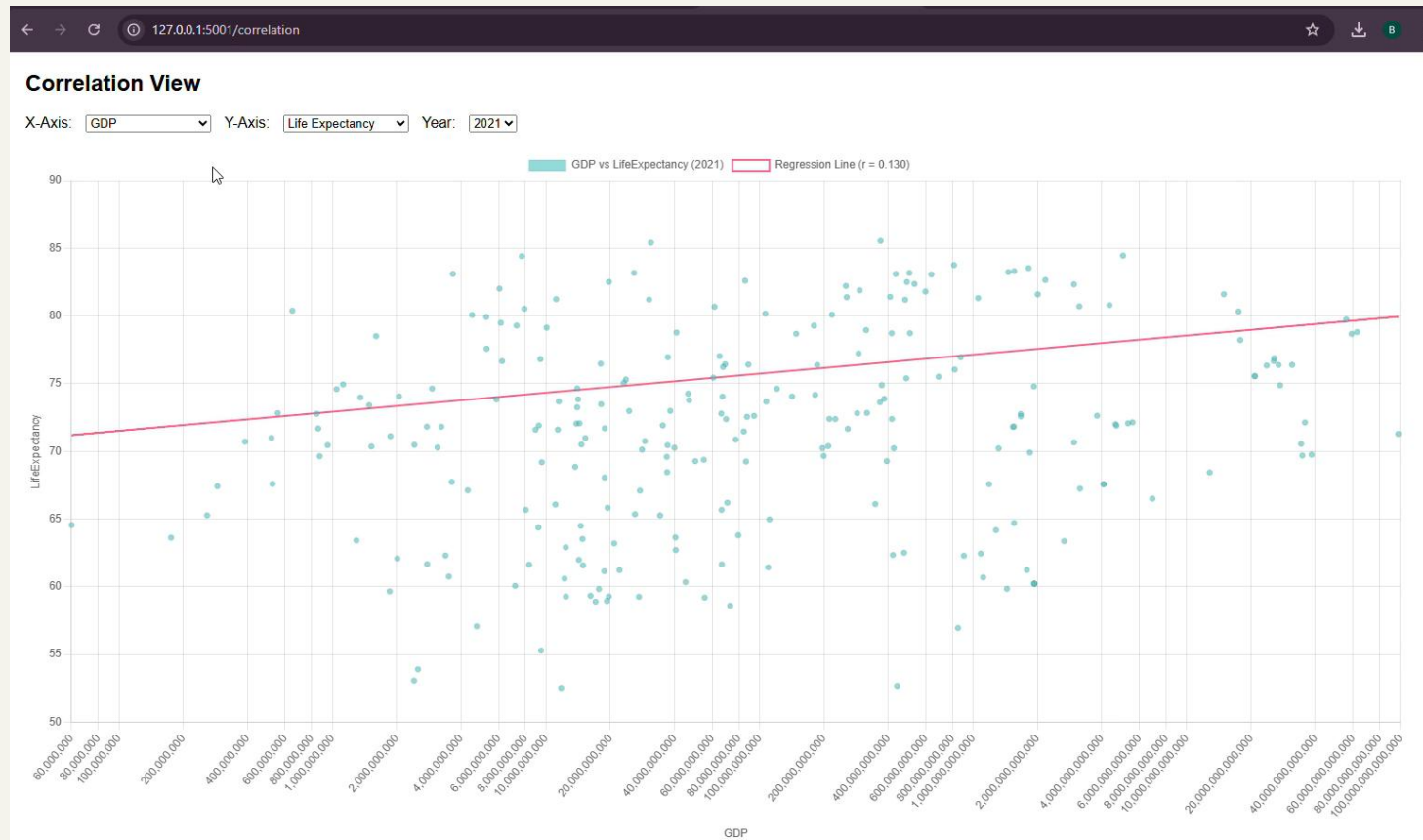


Country Location



Global
Distribution
View

Correlation View



Key Findings

- 1 GDP & Life Expectancy



Higher GDP tends to be associated with somewhat higher life expectancy, but GDP alone explains a limited portion of the variation.
- 2 GDP & Health Expenditure



Generally, as a country's GDP increases, its total spending on healthcare also tends to rise. However, other factors like healthcare system structure and policy also play a role.
- 3 GDP & Population



Generally, countries with larger populations tend to have higher overall economic output. However, the population size is not the sole determinant, as countries with similar populations can have varying GDP levels.
- 4 Health Expenditure & Life Expectancy



There is a general trend indicating that countries spending a higher proportion of their GDP on healthcare tend to have longer life expectancies. The effectiveness of healthcare spending, access to care, public health policies, and broader socio-economic conditions likely play a crucial role alongside the overall percentage of GDP allocated to health.



Thank you