

Factors of Stability and Life Expectancy Worldwide

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Life Expectancy

As defined by the United Nations, life expectancy is the average number of years a newborn could expect to live, if he or she were subject to the age-specific mortality rates of a given period.



Background info

- GIS gives us the necessary tools to be able to visualize the relationships between different factors across multiple mediums
- Our main goals for this project is to create and visualize how education, government involvement, and socioeconomic status affect life expectancy

Scope and Characteristics of Field Area

- Our perspective is global for big picture
- Not limited to physical environment
- Work with socio-demographic and secondary data



Objectives

- Explore the relationships between our chosen indicators and life expectancy
 - Upper Secondary Enrollment
 - Primary Education
 - Military Expenditure
 - Percentage of Government Expenditure on Education
 - Poverty Ratio at National Poverty Line
 - Income Share Held by the Lowest 20%
- Generate maps through GIS software to visually compare and contrast the different indicators with life expectancy

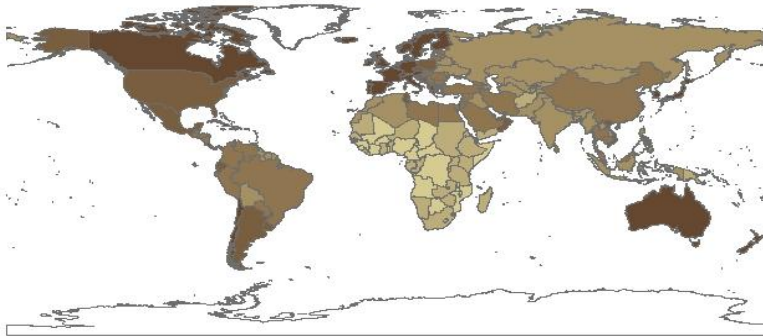
Effects of Education on Life Expectancy

Effects of Primary Education (Literacy) on Life Expectancy

- Literacy information was missing for many countries
 - US, Australia, Greenland, Canada, Most of Western Europe, etc.
- Reading and writing are building blocks of knowledge
- Literacy can be used as a tool to increase one's knowledge
 - Example: Ability to access information about disease prevention can increase overall Life Expectancy

Map Comparison

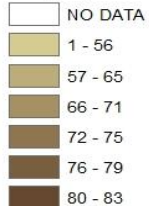
Life Expectancy



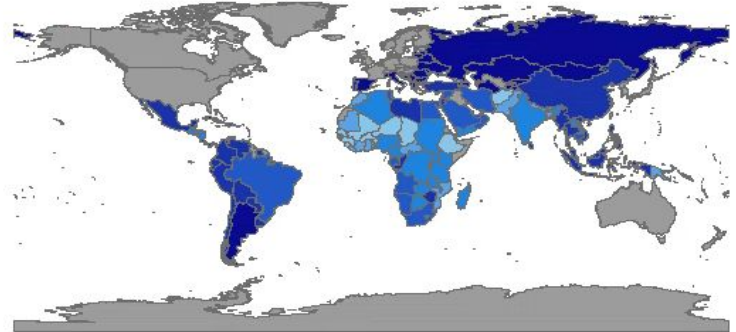
Legend

Life Expectancy 2015

Life_Expect



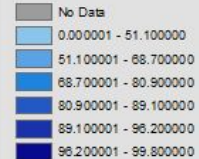
Literacy



Literacy Rates

Literacy - Male and Female

Value

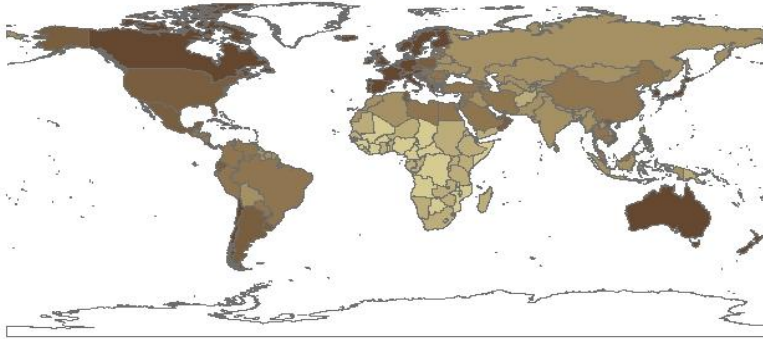


Effects of Upper Secondary School Enrollment on Life Expectancy

- Educated people are resources to their community and can use knowledge to help others
 - Example: doctors, teachers, etc.
- Highly educated people may emigrate to find better schools/ jobs, and potentially decrease overall Life Expectancy

Map Comparison

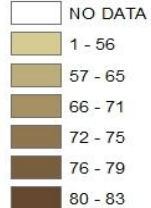
Life Expectancy



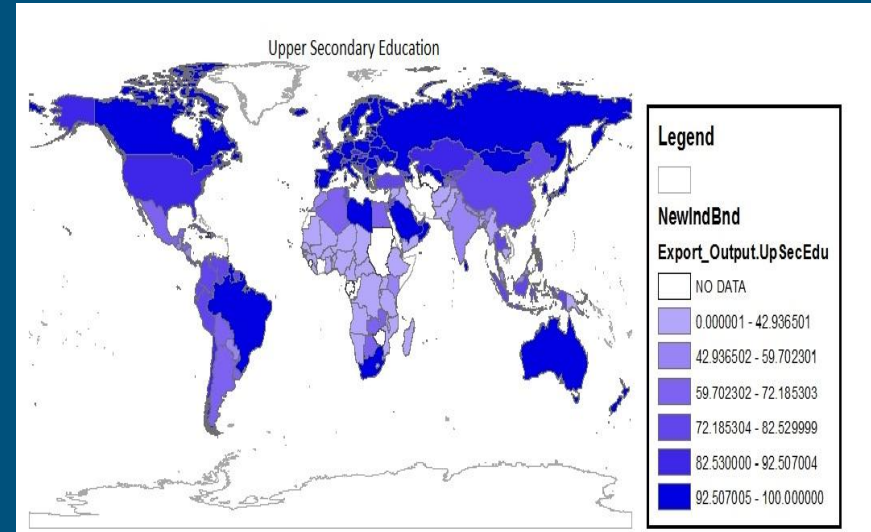
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Life Expectancy 2015

Life_Expect



Secondary Education



Conclusions Drawn

- Our Original Predictions:
 - Those with higher levels of education are less susceptible to an early death
 - Increased level of education leads to increased overall Life Expectancy.
- Observations From Literacy Map Comparison:
 - Africa and South America: Consistent with predictions
 - Western Europe (Spain + Portugal Only): Consistent with predictions
 - Russia: Inconsistent with predictions
- Observations From Secondary Education Map Comparison:
 - All with highest education had highest/2nd highest Life Expectancy
 - Russia + Eastern Europe were the outliers

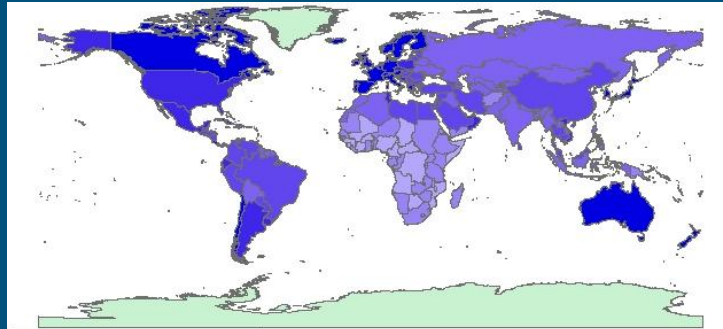
Effects of Government Expenditure on Life Expectancy

Effects of Military Expenditure on Life Expectancy

- Hypothesis:
 - The greater the expenditure on Military, the greater the life expectancy would be
 - A country with a strong army would lead to safer conditions
 - People live longer when country free from turmoil
- Results
 - Life expectancy was low in several countries with known strong armies
 - Russia, Middle East
 - Life expectancy was high in several countries with weaker armies
 - Canada, South America and Australia

Map Comparison

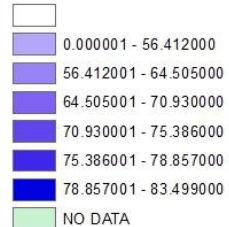
Life Expectancy



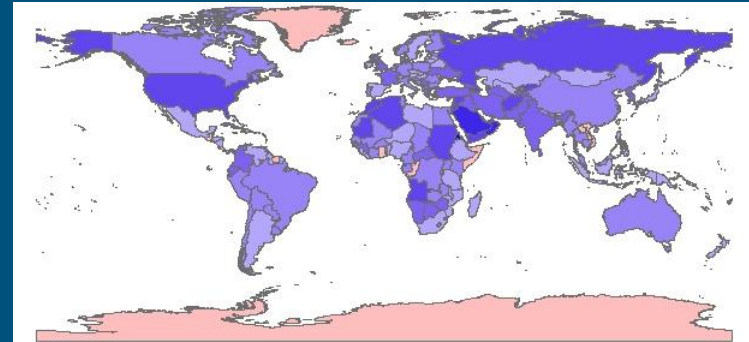
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LifeExpect2010_15

Life_Expect



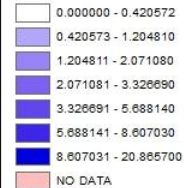
Military Expenditure



Legend

MilitExpPercGDP

Perc_GDP



Effects of Total Public Expenditure on Education on Life Expectancy

- Hypothesis

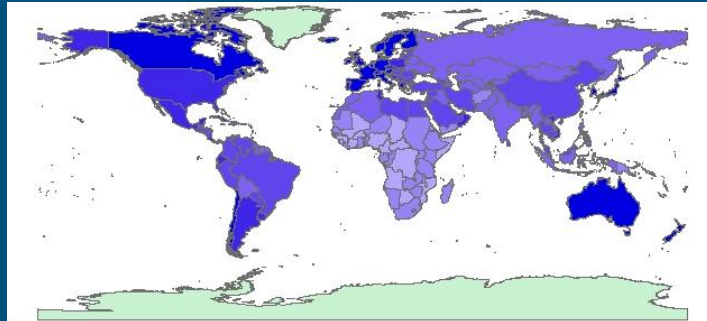
- Countries that spend more on education would have a smarter population
- The more knowledgeable people are, the more they take care of their health
- People would be able live longer.

- Results

- Many counties are missing from the map including most of Africa, Australia, and Greenland
- There is a correlation between education expenditures and life expectancy
- In many underdeveloped countries, education spending is limited

Map Comparison

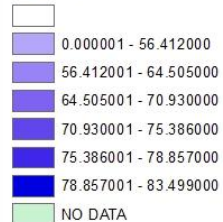
Life Expectancy



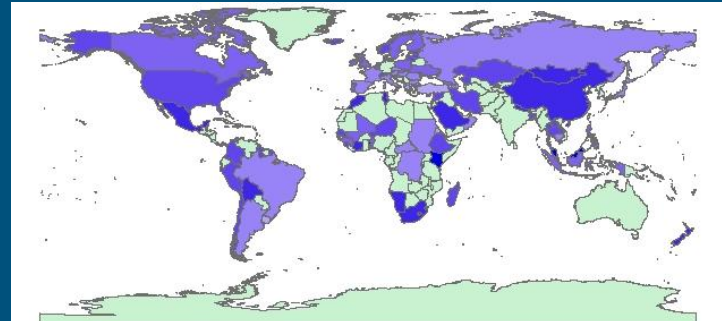
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LifeExpect2010_15

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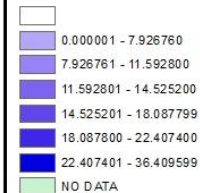
Expenditure on Education



Legend

EduExp2002

PercE duGov



Conclusions Drawn

- **Military expenditure**
 - Not a strong correlation between military spending and life expectancy.
 - Many of the top countries for military expenditures were in Africa and the Middle East
 - These countries had relatively low life expectancy
 - Military spending as a % of GDP is not a good indicator for high life expectancy
- **Government Expenditure on Education**
 - This indicator is more relatable to life expectancy
 - Countries with the highest values were small island nations with small population
 - It appears that the greater the percent of expenditure on education, the longer people live. More information is needed to be conclusive
 - Education expenditure as a % total government expenditure is a moderate indicator for high life expectancy

Effects of Socioeconomic Status on Life Expectancy

Effects of Income Level Held By the Lowest 20% on Life Expectancy

- Hypothesis

- Countries with a larger population that held the lowest quintile of wealth would be less advanced nations and therefore have a lower life expectancy.

- Results

- The results were inconclusive in the end.
- African nations that had large percentages of people owning the lowest 20% of land also had lower life expectancies, but other nations had higher.

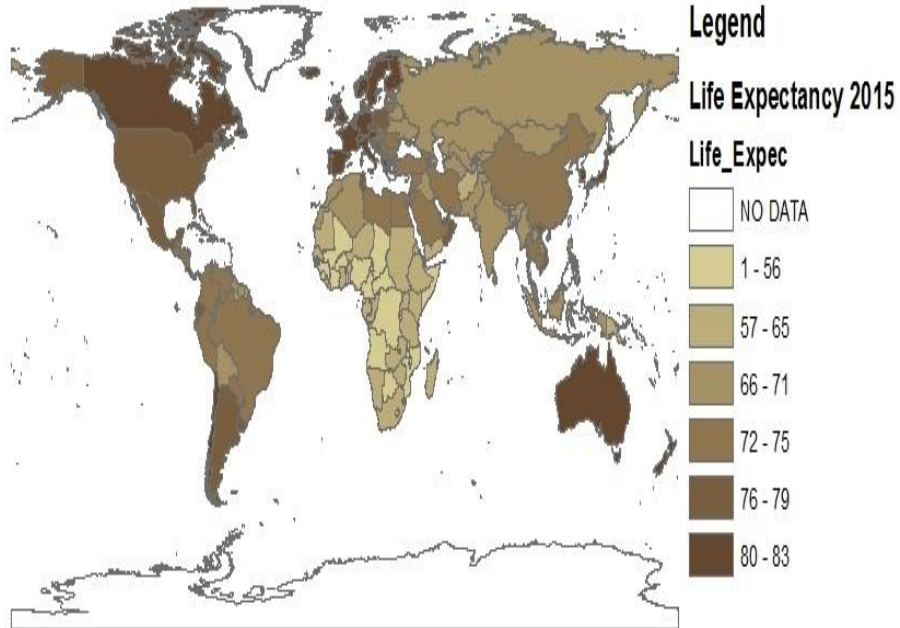
- Explanation

- Nations with higher percentage of people in the lowest quintile also had higher life expectancies on average. Germany, Scandinavian Nations, China.

Map Comparison

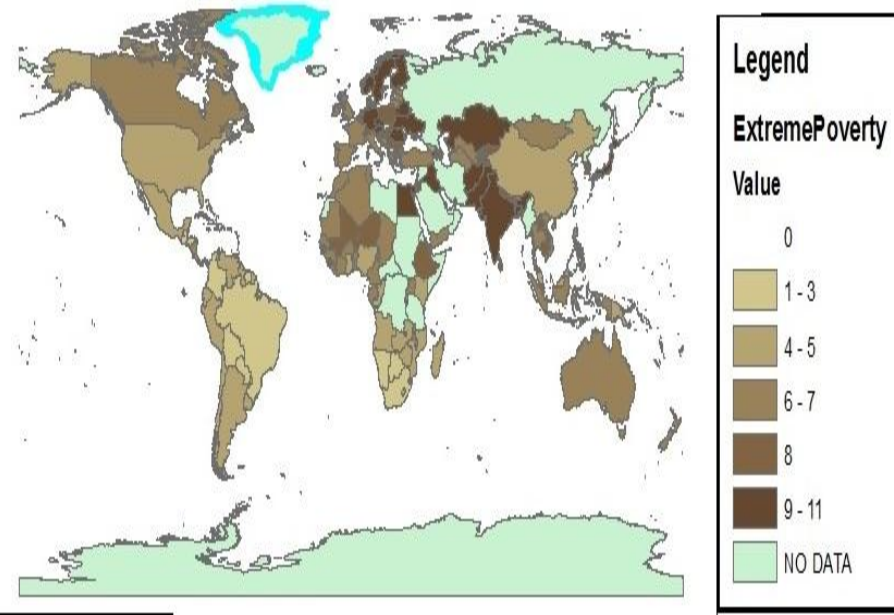
Life Expectancy

Life Expectancy



Income of Lowest 20%

Income Share Held By Lowest 20%



Effects of the Poverty Ratio on Life Expectancy

- Hypothesis

- Nations with a higher poverty ratio would be less developed and with that would have a lower life expectancy. African nations would have the highest percentage and lowest life expectancy.

- Results

- The results were in line with our hypothesis.
- Nations in Africa had a higher poverty ratio and also a lower life expectancy.

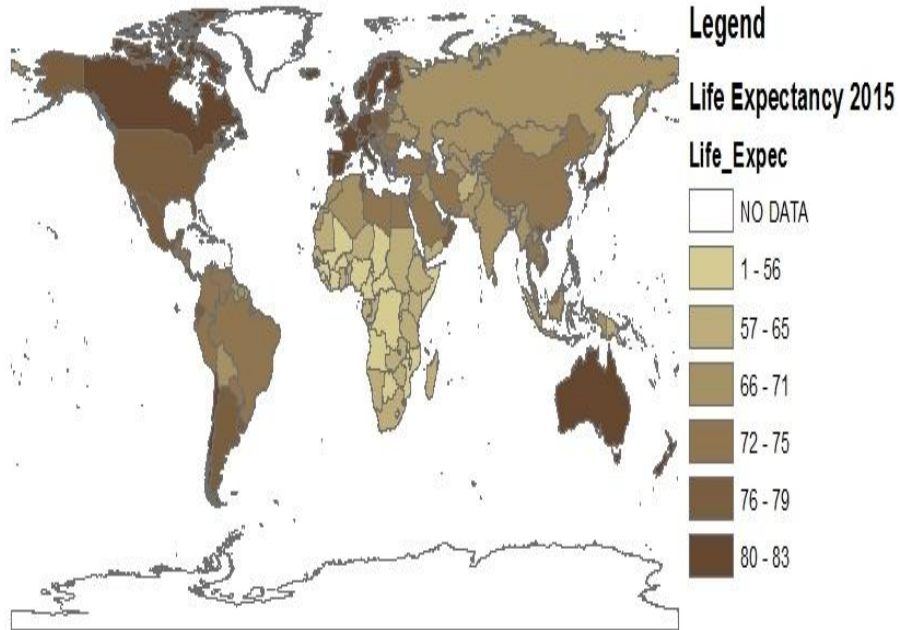
- Explanation

- By looking at a nation through the data based on the individual vs the data based on group it allows for a better estimate of life expectancy.

Map Comparison

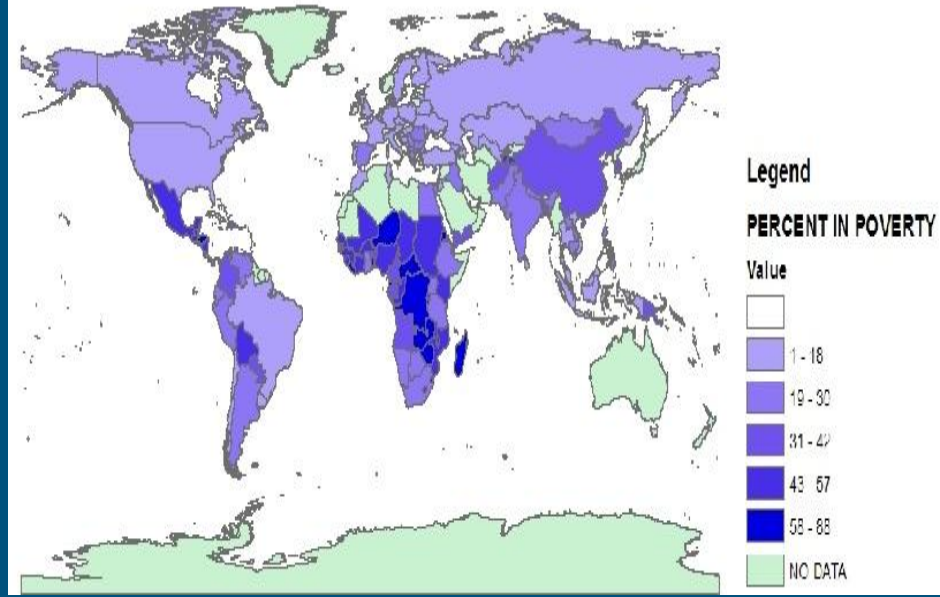
Life Expectancy

Life Expectancy



Poverty Ratio

Percent In Poverty



Conclusions Drawn

We conclude that by solely using the lowest 20% as a judgement of life expectancy would not produce accurate results and estimates. However, by using the percentage of citizens living in poverty we were able to accurately guess which nations were to have a lower life expectancy.

Final Conclusions

- Limitations on data yielded mixed results
- Military Expenditure had no recognizable pattern with life expectancy
- Global perspective on Life Expectancy
- Applications of GIS beyond physical environment

Questions? Comments?

