

Quantifying Social Progress

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GDP is inadequate

GDP treats all types of spending the same

Ignores the costs of consequences

Ex. pollution



Why Social Progress Index (SPI)?

1. Actionable

54 unique
indicators

Provides
granular insight

2. Relevant to all communities

Broad
spectrum of
concerns

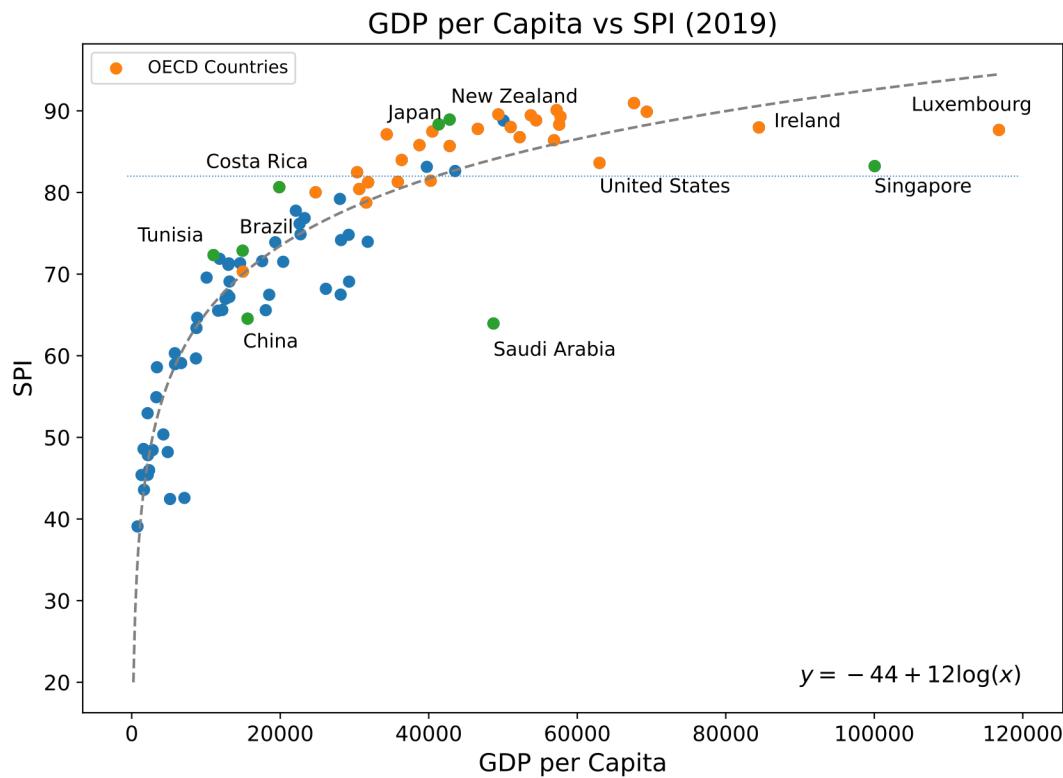
3. Inclusive of social & environmental factors

Makes
sustainability
a priority

4. Focus on outcomes not inputs

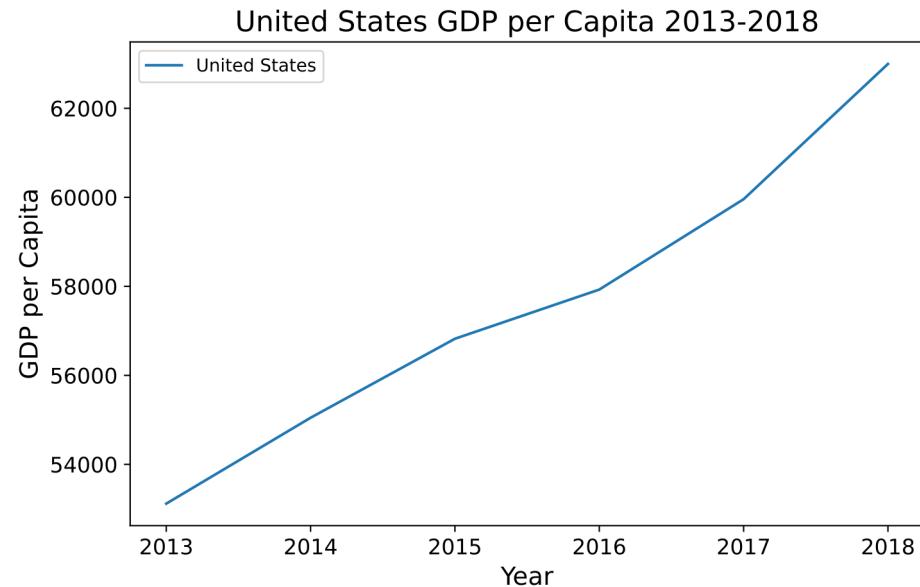
Independent
of economic
development

GDP vs SPI



Top Decreasing SPI Countries

Top Decreasing Countries	SPI '19-'14 Difference
Nicaragua	-2.73
United States	-1.12
Brazil	-0.72
Hungary	-0.32
Columbia	-0.25



Model

Data Sources



World Health Organization



United Nations
Educational, Scientific and
Cultural Organization



UNESCO
INSTITUTE
FOR
STATISTICS



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**SOCIAL
PROGRESS
IMPERATIVE**

Features

5 Macro Indicators

- GDP per Capita (PPP)
- Budget Surplus/Deficit (%GDP)
- Gross Savings (%GDP)
- Inflation Rate on Consumer Prices (%GDP)
- Tax Revenue (%GDP)

4 Gov't Expenditures (%GDP)

- Health
- Education
- Military
- Science, Tech, Innovation R&D

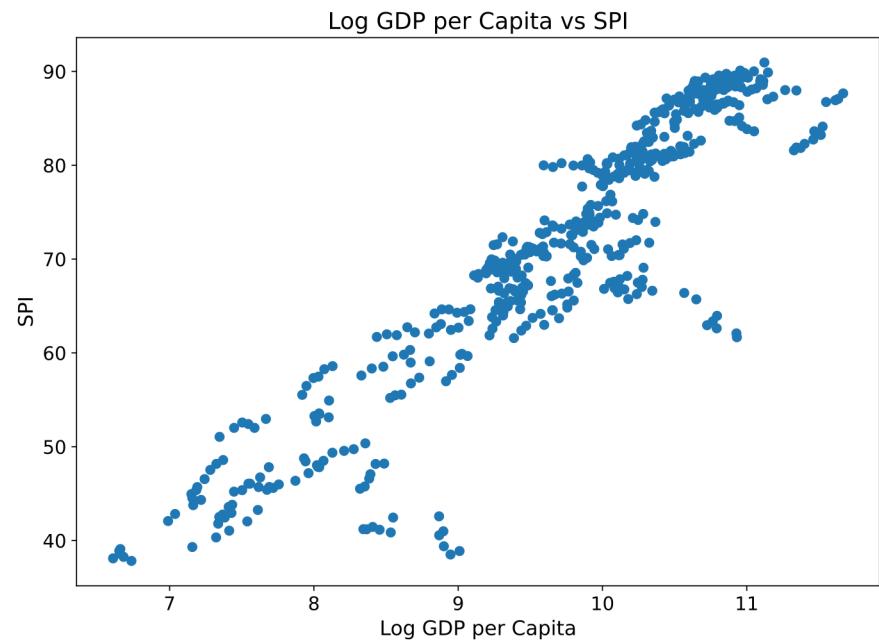
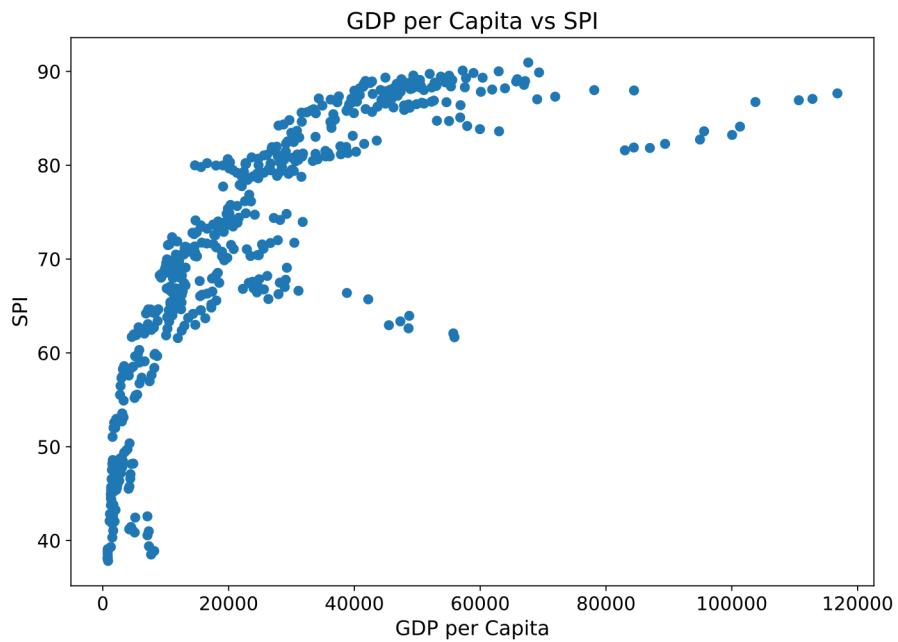
3 Energy Sources (%)

- Fossil Fuels
- Hydroelectric Plants
- Other Renewable Sources

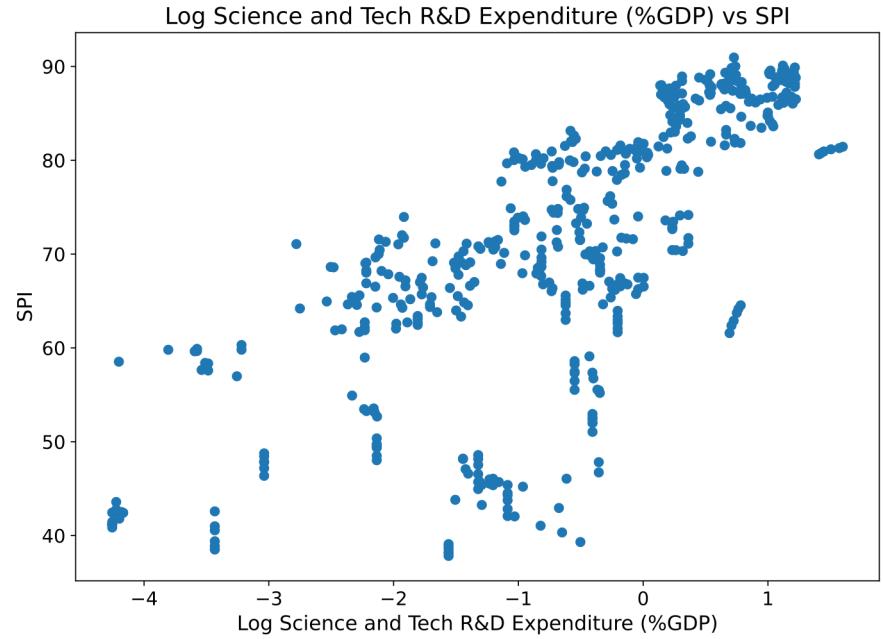
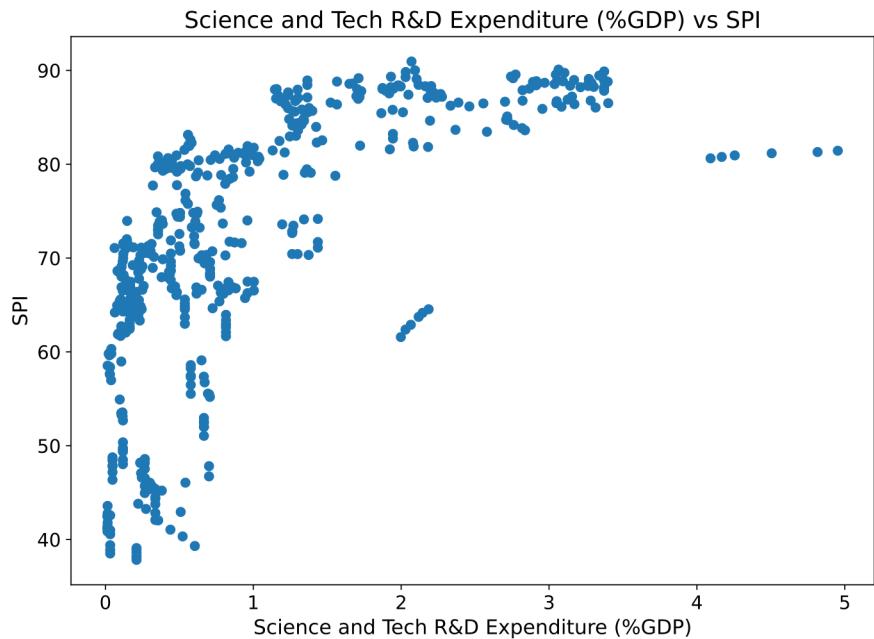
Regression Methods

1. Simple Linear
2. Ridge
3. LASSO
4. 2nd Degree Polynomial

Log Transforming GDP per Capita



Log Transforming R&D Expenditure



Model Results – Macros Coefficients

	Coefficient
GDP per Capita (PPP)	0.107
Budget Surplus/Deficit %GDP	0.0053
Gross Savings %GDP	-0.29
Inflation Rate on Consumer Prices	-0.095
Tax Revenue %GDP	0.019

$$R^2 = 0.94$$

$$RMSE = 3.45$$

$$MAE = 2.69$$

Coefficients – Expenditures & Energy

Expenditure %GDP	Coefficient
Health	0.024
Education	0.32
Military	-1.41
Science, Tech, and Innovation R&D	0.0212

Energy %	Coefficient
Fossil Fuels	0.012
Hydroelectric Plants	0.022
Other Renewable Energy Sources	0.054

Conclusion

GDP has a higher impact on SPI when initial GDP is low

Afterwards, it would be most beneficial to focus on education and R&D funding



Thanks!
Any questions?

Social Progress Index

Basic Human Needs

Foundations of Wellbeing

Opportunity

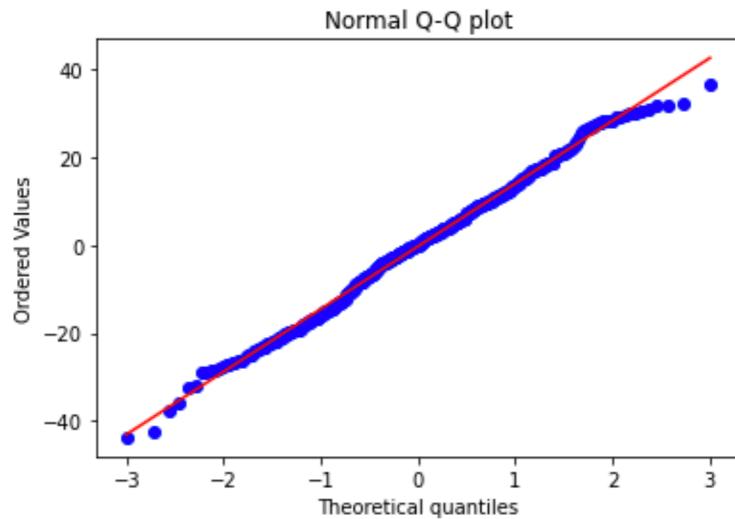
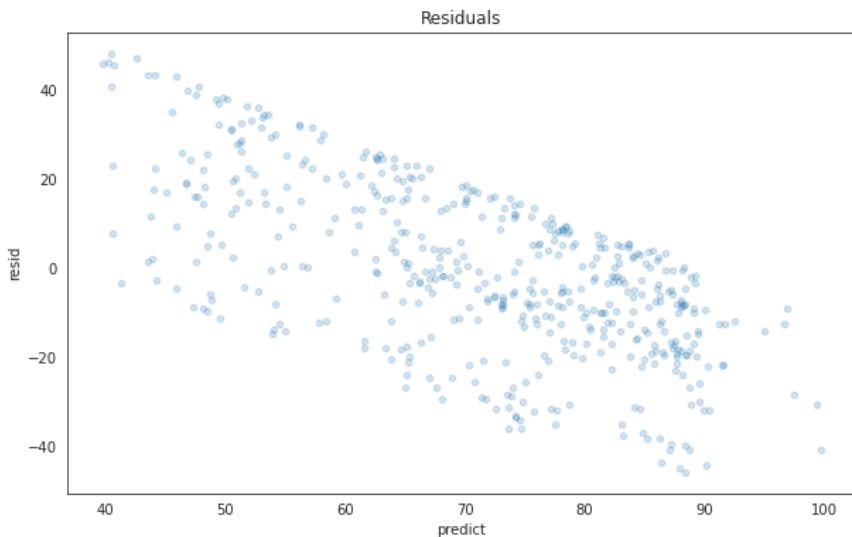
Personal Rights

Personal Freedom and Choice

Inclusiveness

Access to Advanced Education

Appendix: Linear Assumptions



Appendix: Top Increasing Countries

Top Increasing Countries	SPI '19-'14 Difference
Ethiopia	6.10
Burkina Faso	4.88
Sri Lanka	4.51
Angola	4.07
Luxembourg	4.04