Introduction

This analysis investigates whether income inequality predicts life expectancy across different countries. Income inequality will be measured using the GINI coefficients. Answering this research question is important because it can reveal if differences in income have an effect on the health of the overall population.

Data description and methods

The data used in our analysis comes from our world in data and the world bank. The GINI coefficient (0-100) is obtained from the world bank and the life expectancy (years) is obtained from our world in data. Life expectancy serves as a dependent variable while the GINI coefficient serves as the independent variable. Both data sets were cleaned, eliminating missing or incorrect values. Scatterplots were created to visualize if there was a relationship between the two variables.

Methodology

For this analysis, we used a general linear model to predict if GINI does in fact predict life expectancy. Before creating this model, we used some basic statistical strategies to summarize our data. This includes the mean, median, and the standard deviation. Scatter plots were created to provide a clear visual aid of the relationship. Simple linear regression tests were then used to determine the correlation between the two variables. While the GLM provides good evidence for linear models, it is only limited to these linear models, meaning if our data was not linear, the GLM would not be able to capture it effectively.

Results and analysis

The results that we found show a negative linear relationship between income inequality and life expectancy. This means that the countries with a higher GINI coefficient tend to have a lower life expectancy. Both the scatterplots and the summary statistics support this negative relationship. Our regression model further supports the relationship that a higher GINI coefficient is associated with a lower life expectancy. Some limitations that our model has could be that it does not account for other variables. For example, we did not take into account the different countries' access to healthcare and environmental conditions, which may also have an effect on life expectancy.

Conclusions

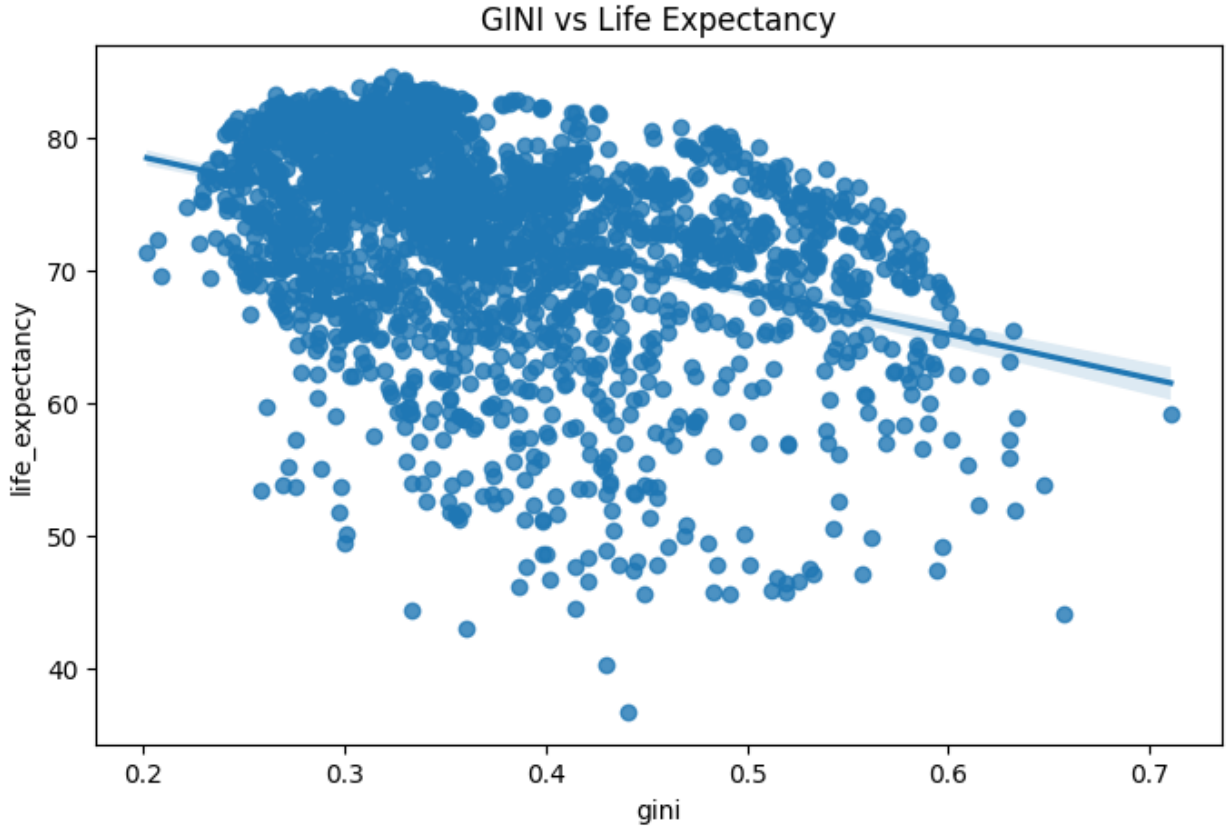
This study examines whether income inequality, measured with the GINI coefficient, predicts life expectancy in different countries. This data was obtained from our world in data and the world bank. Statistical summaries, scatter plots, and a simple linear regression model all indicate a negative relationship between the two variables. This means that countries with higher GINI coefficients typically have lower life expectancy. While our results are clear, we did not account for all confounding variables that may affect life expectancy of different countries. Despite this,

all the evidence that we gathered supports that there is a negative relationship between income inequality and life expectancy.

References

Our World in Data. Income Inequality Dataset (GINI Coefficient). https://ourworldindata.org
World Bank. World Development Indicators – Life Expectancy. https://worldbank.org

Rough visualization



OLS Regression Results

Dep. Variable:	life_expectancy	R-squared:	0.079
Model:	OLS	Adj. R-squared:	0.060
Method:	Least Squares	F-statistic:	4.186
Date:	Fri, 05 Dec 2025	Prob (F-statistic):	0.0461
Time:	01:15:47	Log-Likelihood:	-148.98
No. Observations:	51	AIC:	302.0
Df Residuals:	49	BIC:	305.8
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	83.5900	3.224	25.931	0.000	77.112	90.068
gini	-18.4153	9.001	-2.046	0.046	-36.503	-0.327

Omnibus:	3.676	Durbin-Watson:	2.457
Prob(Omnibus):	0.159	Jarque-Bera (JB):	3.351
Skew:	-0.553	Prob(JB):	0.187
Kurtosis:	2.404	Cond. No.	15.8

output^

	life_expectancy	gini
count	2240.000000	2240.000000
mean	72.843682	0.372173
std	7.816870	0.087102
min	36.720000	0.201866
25%	69.238550	0.308114
50%	74.303450	0.352482
75%	78.644550	0.421464
max	84.670300	0.710506

Summary statistics^

Data sources:

- ourworldindata.org
- worldbank.org

Life Expectancy (years)
GINI coefficient(0-100)