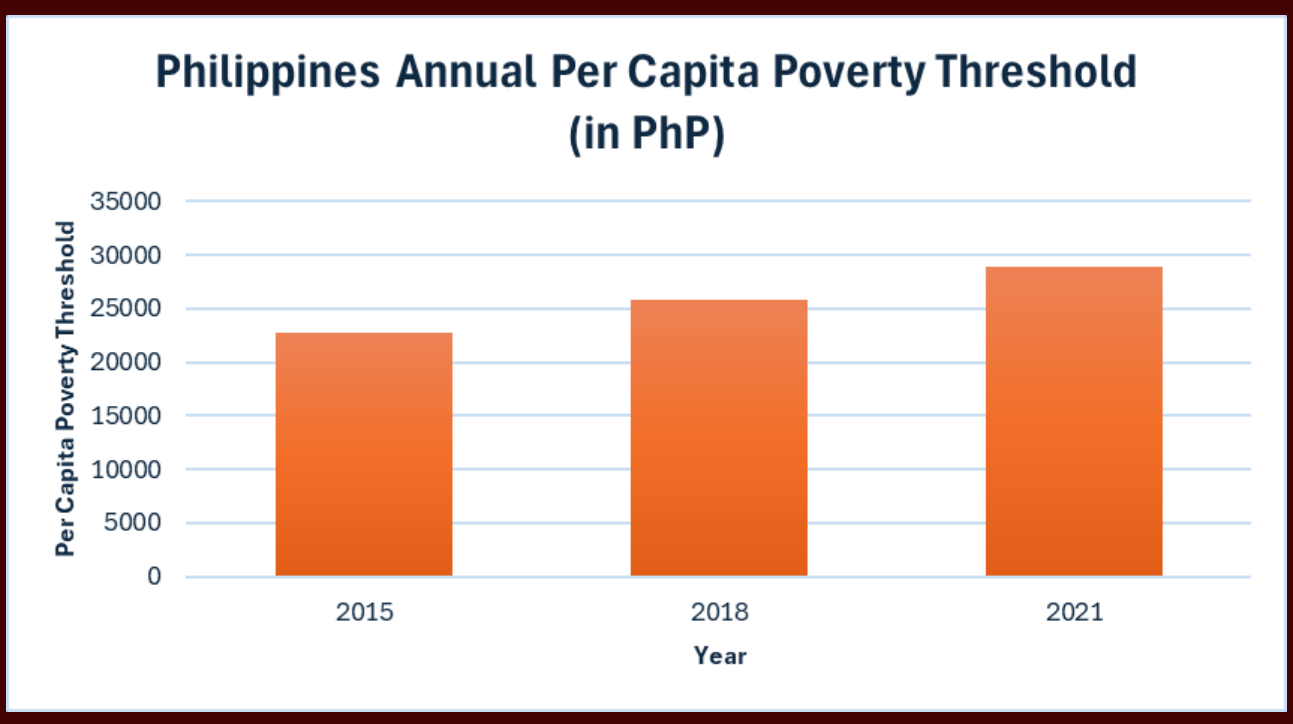
END POVERTY IN ALL ITS FORMS EVERYWHERE.

Photo by Adam Cohn

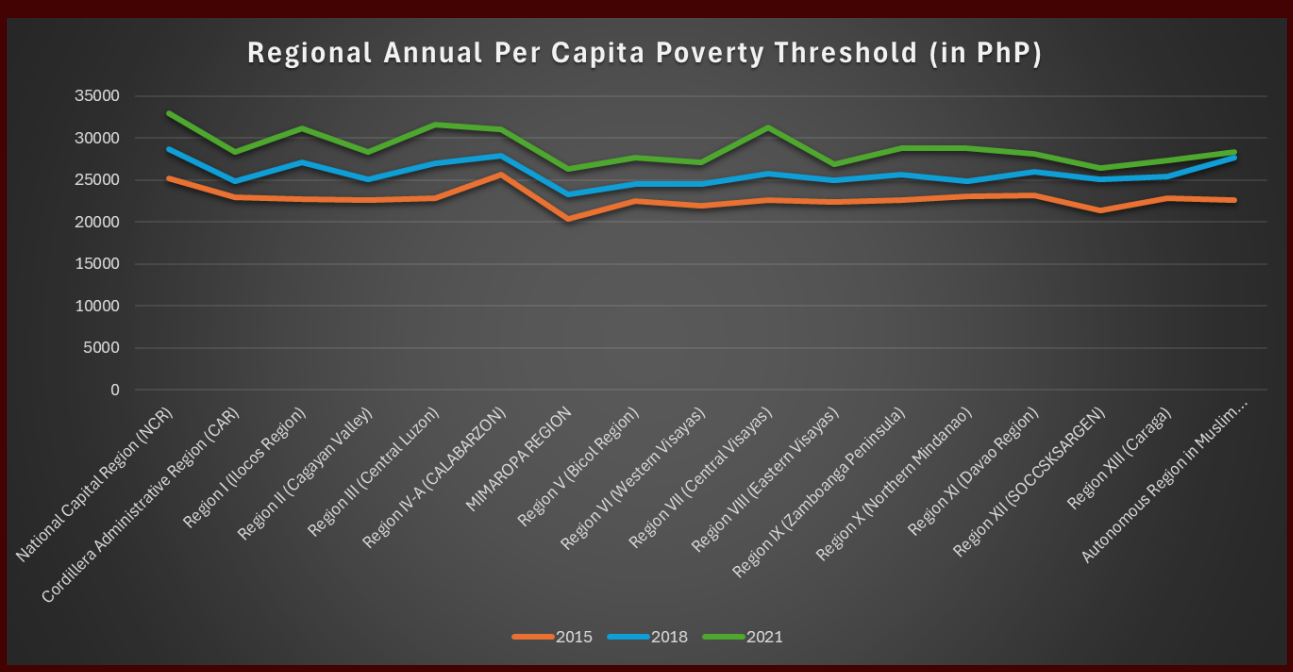
These are the words that describe the very first goal of the 17 that were set in the United Nations' 2030 Agenda for Sustainable Development. Simple and straightforward, the first goal sits at the heart and head of the Sustainable Development Goals (SDGs) and aims to bring everyone up from poverty to prosperity, leaving no one behind.

Since the adoption of the SDGs in 2015, the Philippines has made considerable effort in solving its poverty crisis. The proportion of the population below the international poverty line of living on less than $1.25 (69 PhP) per day has decreased to 2.7% (2018) from the baseline of 6.1% (2015).

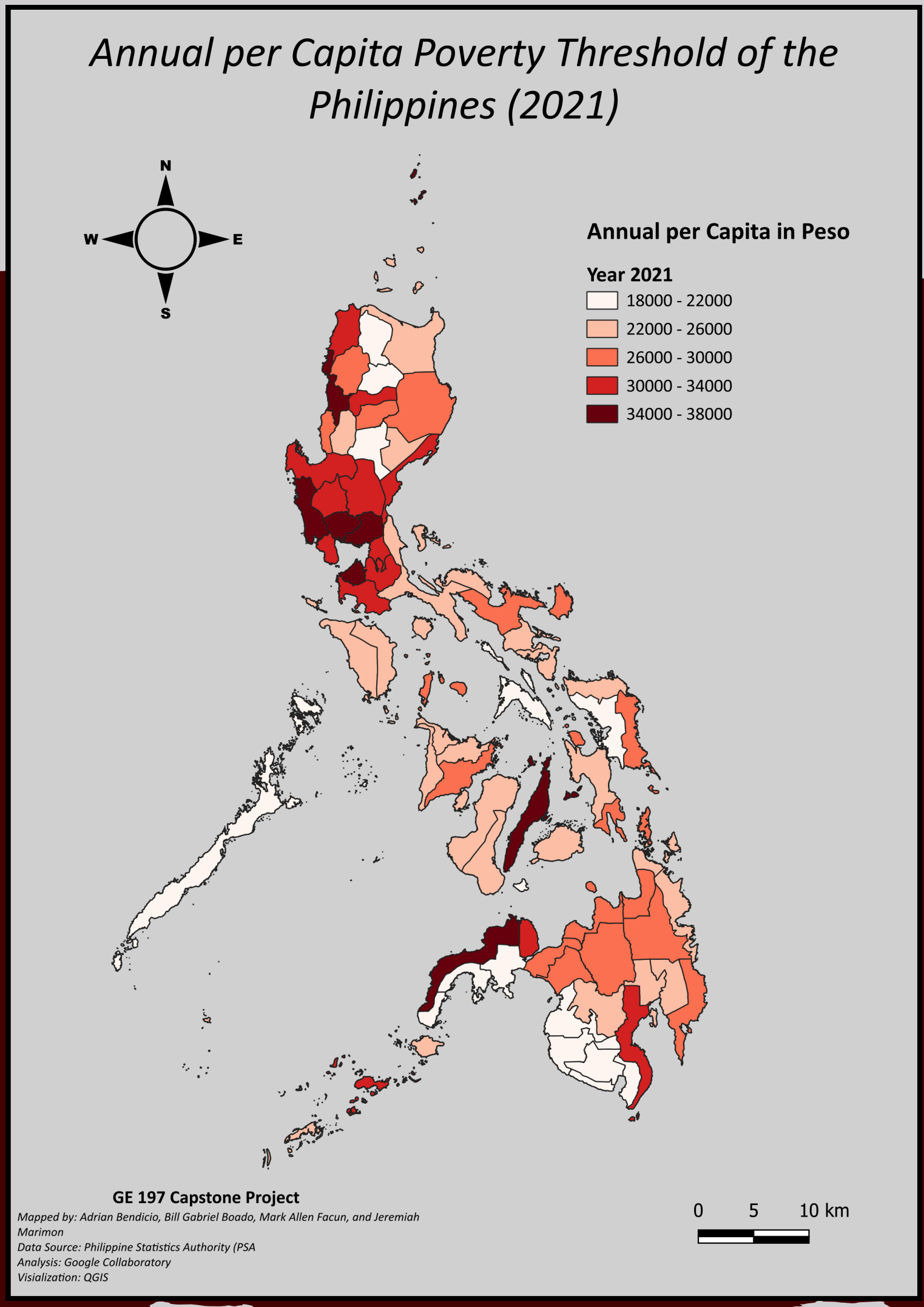
But besides the straightforward methods of measuring poverty it can also be looked at through more indirect lenses, one of which is the **Annual Per Capita Poverty Threshold.**

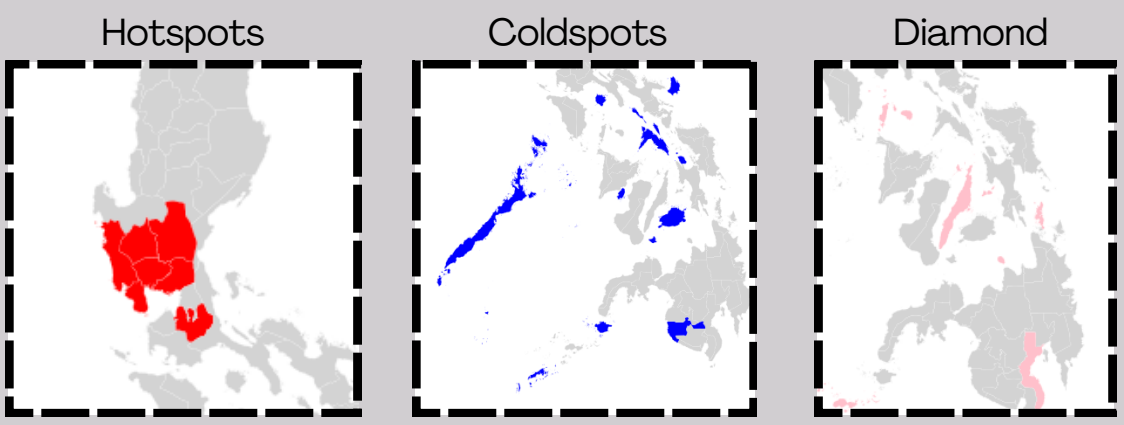


The **Annual Per Capita Poverty Threshold**, often referred to simply as the poverty line, is a measure used to determine the income level below which an individual or a family is considered to be living in poverty.



An increasing trend in the poverty threshold in the whole country and in all regions from 2015 to 2021 meant that the cost of living and basic necessities has been rising. The pandemic may have made this situation worse leading to serious economic challenges and pushing more people below the poverty line.





The Local Moran's I, which is used to identify spatial autocorrelation to assesses whether the values of a variable are clustered, dispersed, or randomly distributed across a geographic area, was calculated for the poverty threshold of the country of year 2021.

High values of poverty threshold in red are found near Manila. Some of the low values are found in Palawan and Bohol. Cebu has a high poverty line but is surrounded by areas with low values.

POVERTY IN METRO MANILA

Indirect indices can also be used and combined to measure the poverty at a more local level.
The poverty severity in Metro Manila (0-0.2) is relatively low compared to other municipalities. It may be attributed to several factors such as the standard of living or the level of importance of the city. Based on SDG 1, the following indicators are selected to test whether the factors chosen really affect the poverty severity.

1

The Subnational Human Development Index (SHDI) highlights the cities' characteristic using the same markers of HDI: health, education, and standard of living while providing a more detailed view.

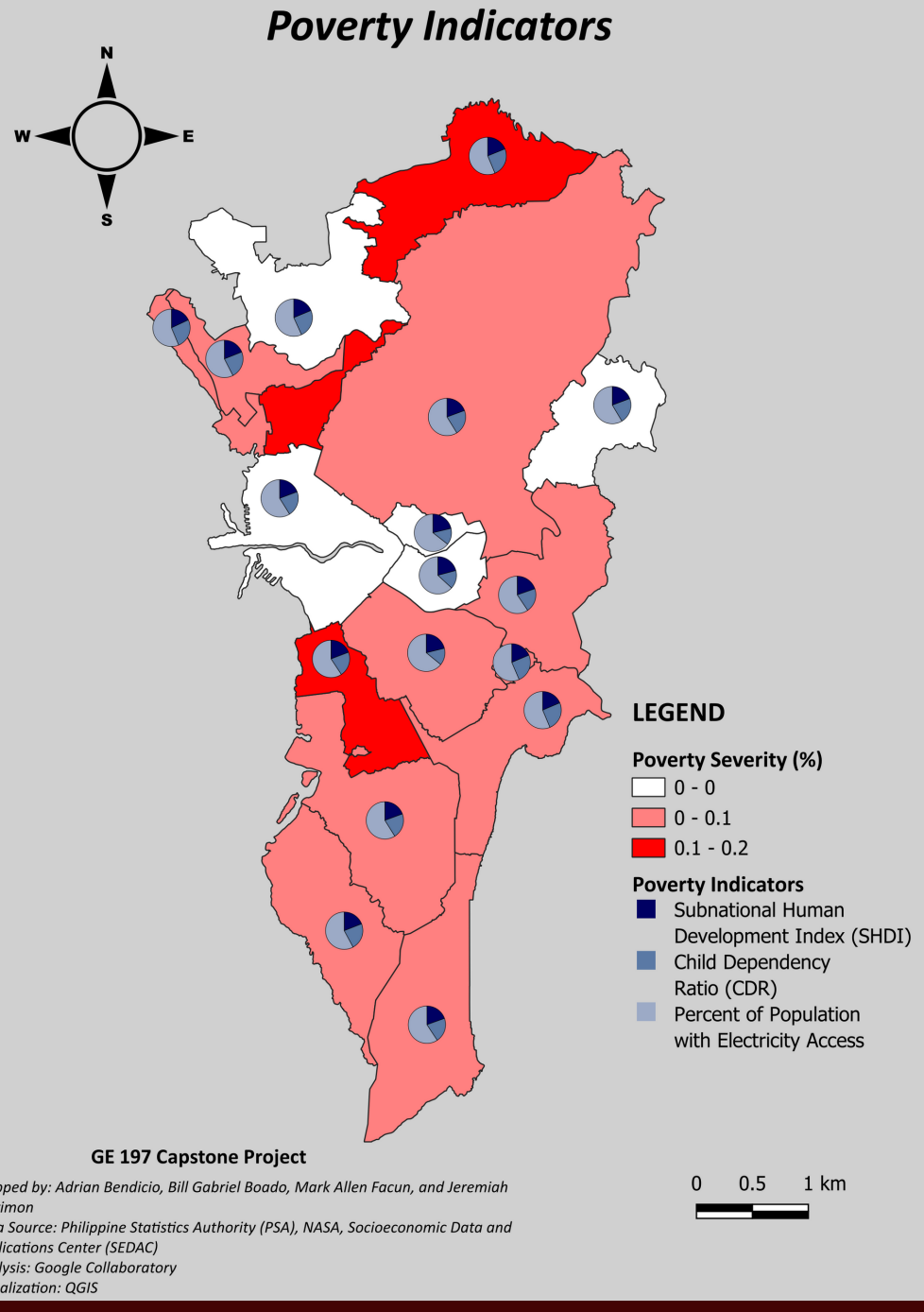
The child dependency ratio (CDR) is defined as the number of child dependents (aged 0-14) over the working age (aged 15 -65). It could indicate fewer resources provided per child making the household particularly vulnerable to poverty.

2

3

In some areas of the Metro, there is still a lack of access to electricity. As poor energy access is directly correlated with low income, electricity access data can reveal inequalities especially through the lights as seen from space at night (Kamil, 2005).

Poverty Severity in Metro Manila in relation with Poverty Indicators



GE 197 Capstone Project

Mapped by: Adrian Bendicio, Bill Gabriel Boado, Mark Allen Facun, and Jeremiah Marimon
Data Source: Philippine Statistics Authority (PSA), NASA, Socioeconomic Data and Applications Center (SEDAC)
Analysis: Google Collaboratory
Visualization: QGIS

From the map we could discern that the percent of poverty severity is highest in Pasay and Caloocan while Manila, San Juan, Mandaluyong, Marikina, and Valenzuela have relatively low measures of poverty severity.

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1 NO POVERTY

Discussion of Results

Of the three indicators, the one with the highest correlation with poverty instance is the CDR with 0.35. Noticeably, the 'Percent of Electricity Access' is *negatively* correlated with poverty instance. This may be due to the fact that only specific areas and settlements *within* the cities lack access to electricity while the results gathered treats the city as a *whole*, hiding the inequality.

Regarding multicollinearity, all pairwise variables have correlation coefficients of less than the 0.8 threshold. Therefore, the project overall does not exhibit multicollinearity and therefore can be used for least squares regression.

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REGRESSION RESULTS
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SUMMARY OF OUTPUT: SPATIAL TWO STAGE LEAST SQUARES
--------------------------------------------------
Data set            :     unknown
Weights matrix      :     unknown
Dependent Variable  :     Poverty                Number of Observations:          17
Mean dependent var  :      0.0824                Number of Variables   :           5
S.D. dependent var  :      0.0636                Degrees of Freedom    :          12
Pseudo R-squared    :      0.9976
Spatial Pseudo R-squared: omitted due to rho outside the boundary (-1, 1).

------------------------------------------------------------------------------------
            Variable     Coefficient       Std.Error     z-Statistic     Probability
------------------------------------------------------------------------------------
            CONSTANT         0.37500
                SHDI         0.00732
                 CDR         0.00034
                %Elec        0.00879
            W_Poverty       -14.75000
------------------------------------------------------------------------------------
Instrumented: W_Poverty
Instruments: W_%Elec, W_CDR, W_SHDI
Warning: *** WARNING: Estimate for spatial lag coefficient is outside the boundary (-1, 1). ***

DIAGNOSTICS FOR SPATIAL DEPENDENCE
TEST                              DF       VALUE           PROB
Anselin-Kelejian Test             1          -0.000          1.0000
================================ END OF REPORT =====================================
```

Based on the spatial two stage least squares, the spatial lag model exhibited a pseudo R-squared of 0.9976. Meaning, the logistic regression model exhibited a high linear relationship with the instrumented (Poverty Severity) and the instruments (SHDI, CDR and Population percentage having access to electricity). Spatial lag model is used since the data is spatial; hence, autocorrelation is automatically present.

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Screenshot of social media post

Jeremiah Marimon
3m ·

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