



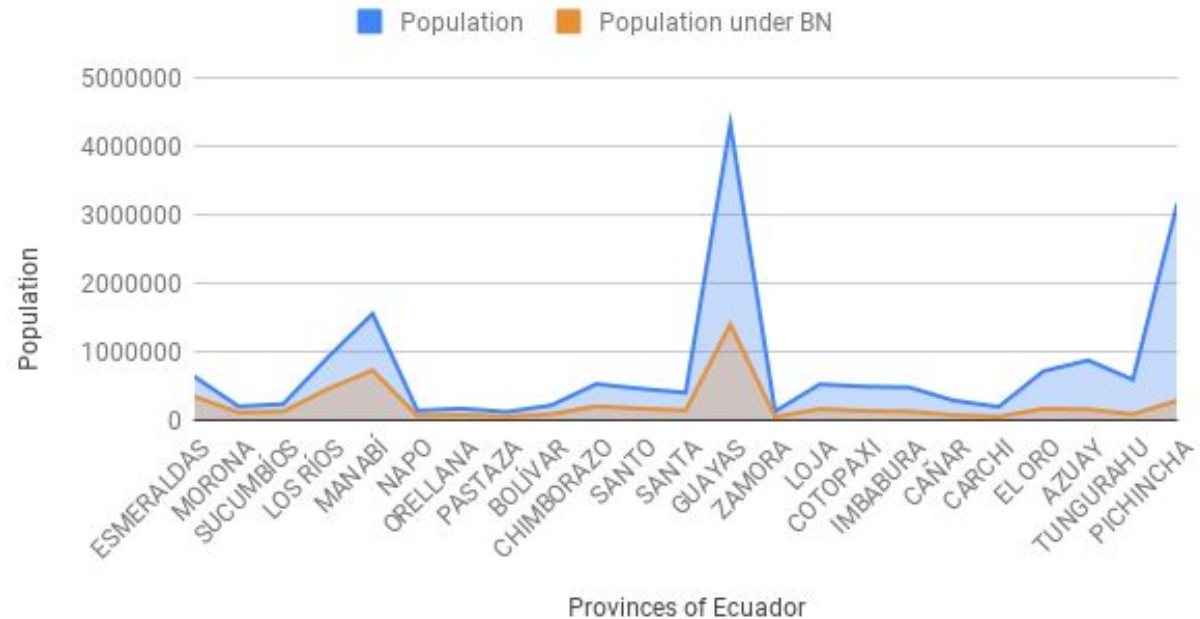
Ecuador - Education System

An Analysis of Primary and Secondary Schools across Ecuador

History of Ecuador - Economic Issues

- Poverty- 60% of the population in 2017

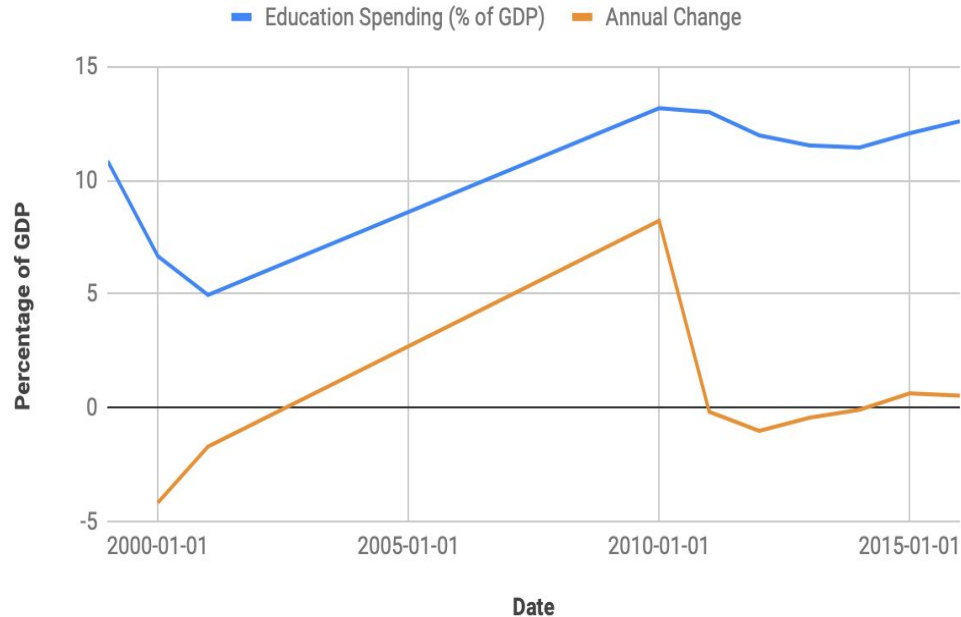
Province Population and Population Without Basic Needs



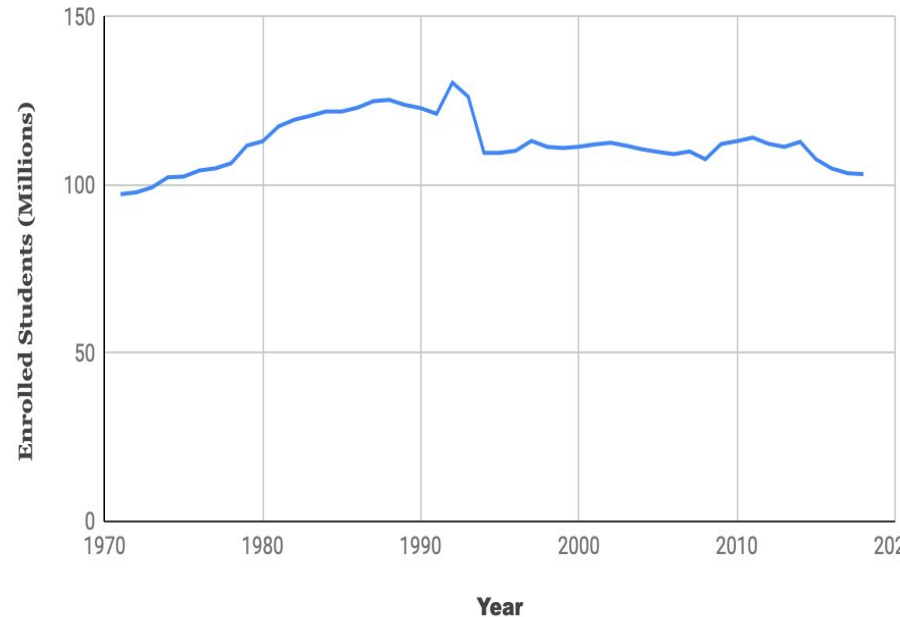
The Problem With the Education System

- System of free (or inexpensive) primary and secondary schools
- Increased Spending in improving education system
 - Benefits showed short term results

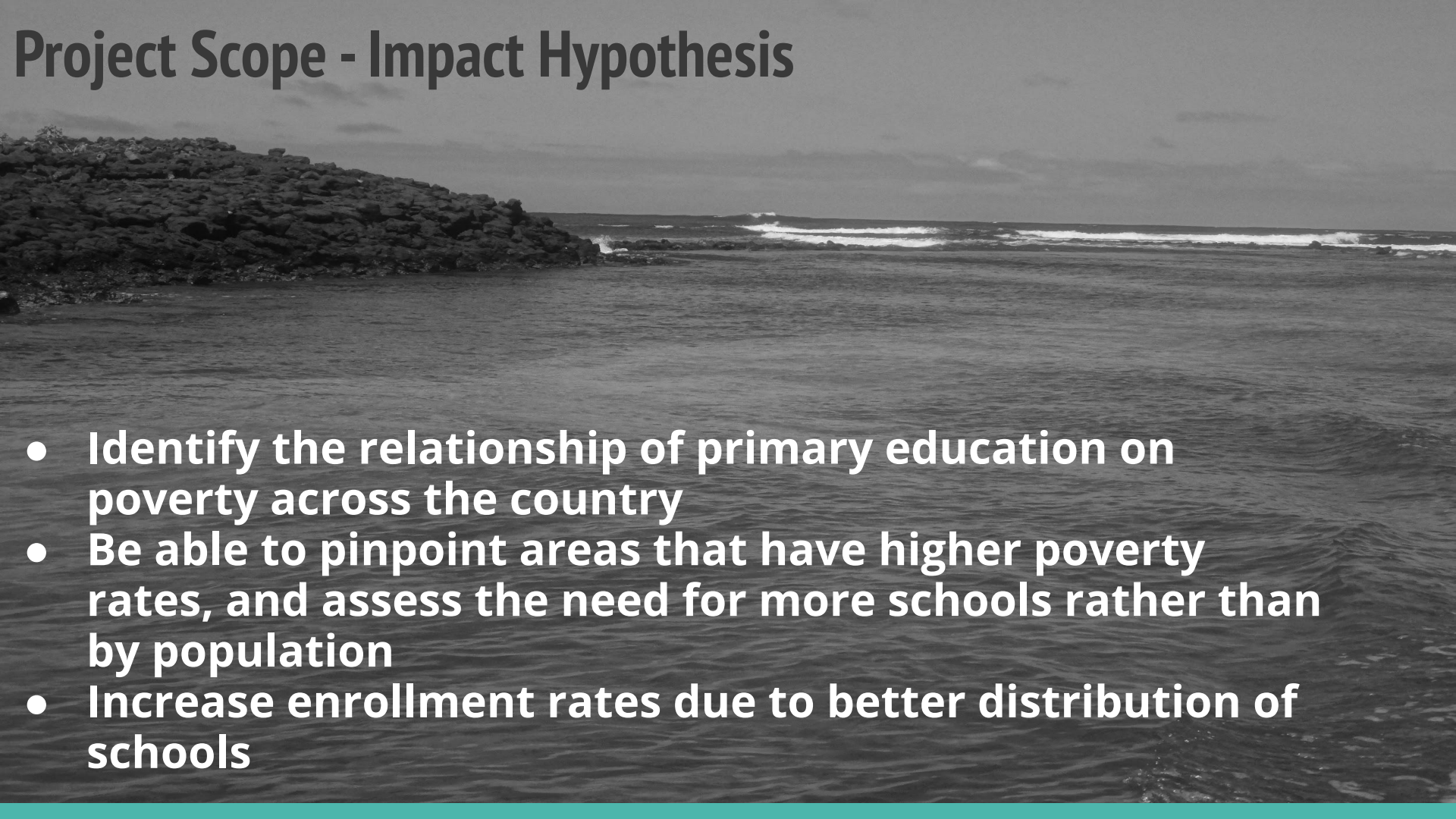
Education Spending (% of GDP) and Annual Change



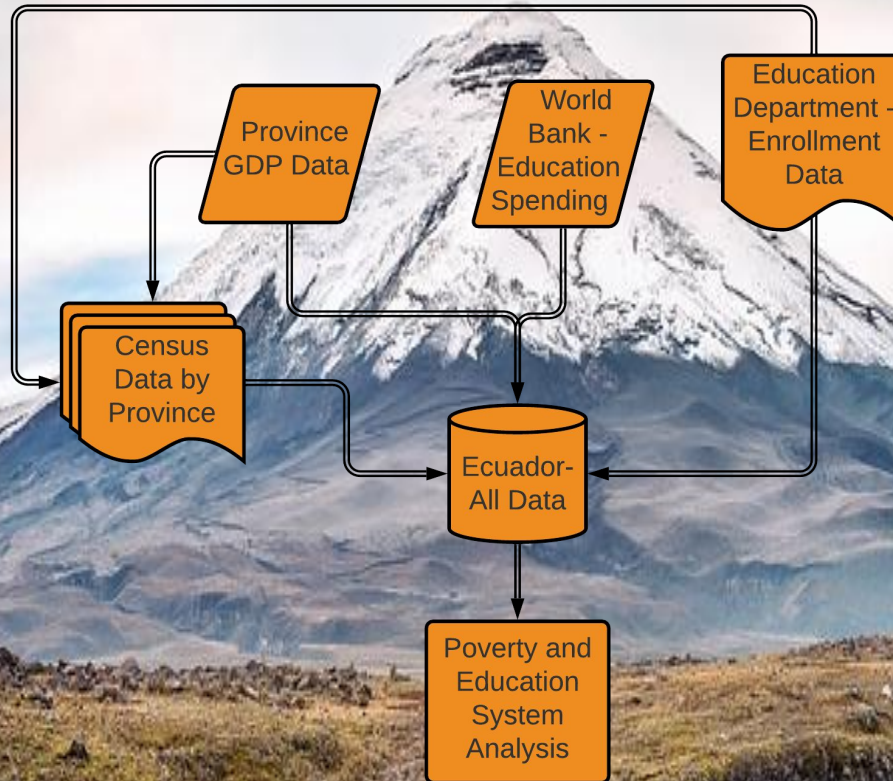
Number of Enrollments in Primary School



Project Scope - Impact Hypothesis

- 
- **Identify the relationship of primary education on poverty across the country**
 - **Be able to pinpoint areas that have higher poverty rates, and assess the need for more schools rather than by population**
 - **Increase enrollment rates due to better distribution of schools**

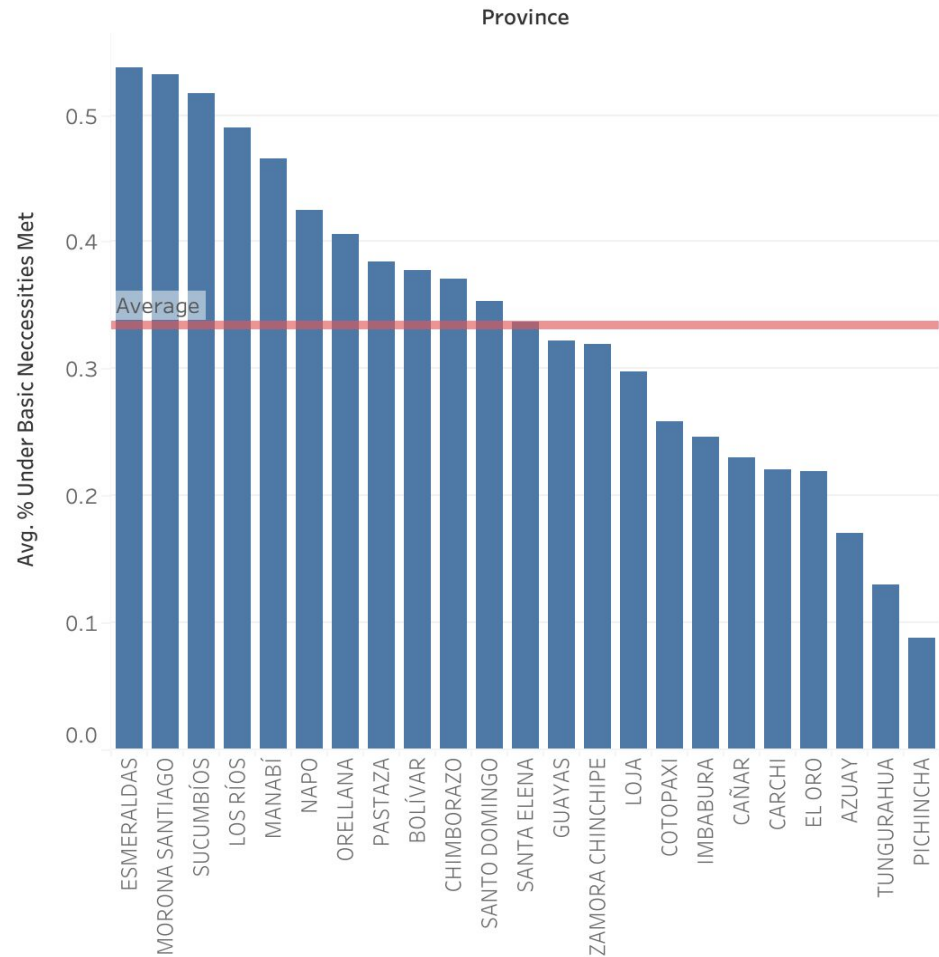
Using Data Science to address the Problem



Provinces in Poverty Trap

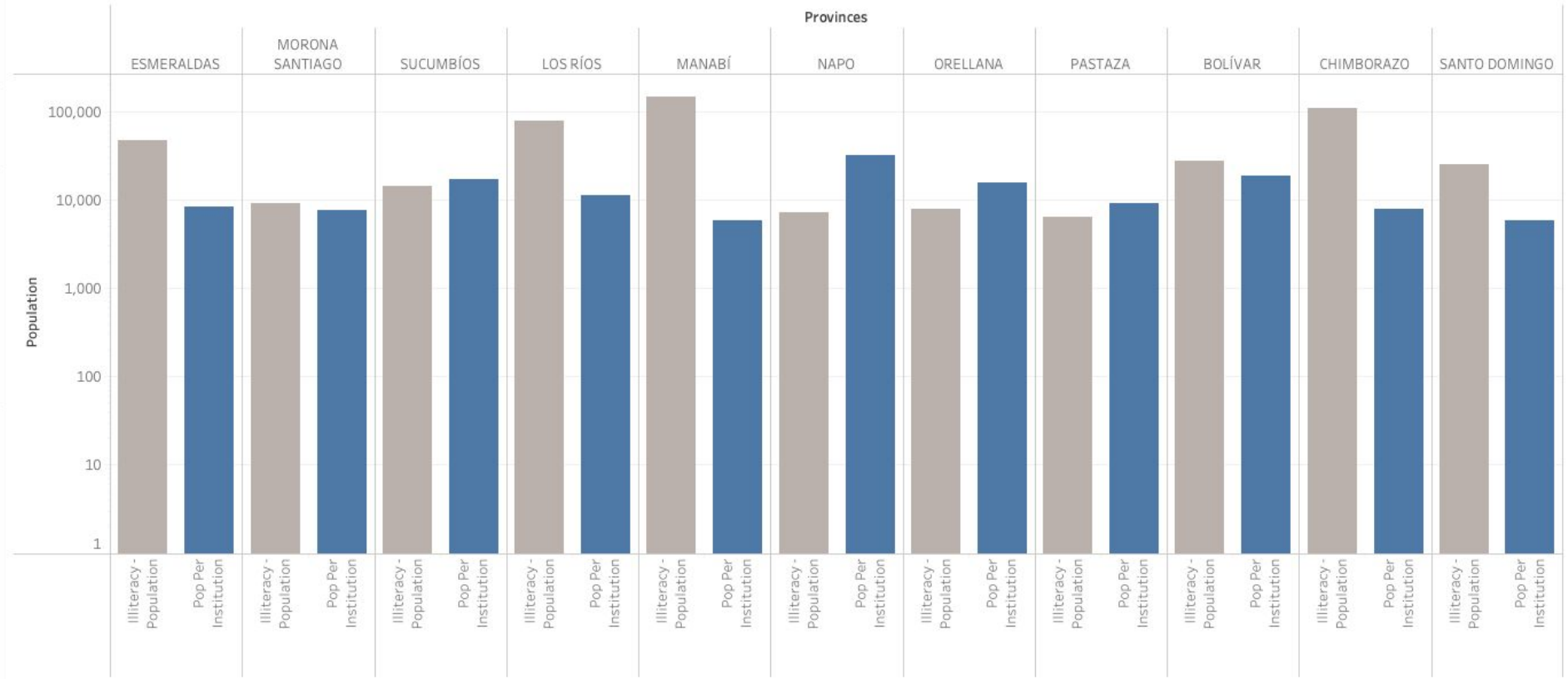
Poverty Trap - "Poverty trap is a spiraling mechanism which forces people to remain poor. It is so binding in itself that it doesn't allow the poor people to escape it."

Percentage of Population Not Meeting Basic Needs



Preliminary Analysis - Trends in Province Measurements

Poverty Trap - Literacy and Institutions



Preliminary Analysis - Correlation

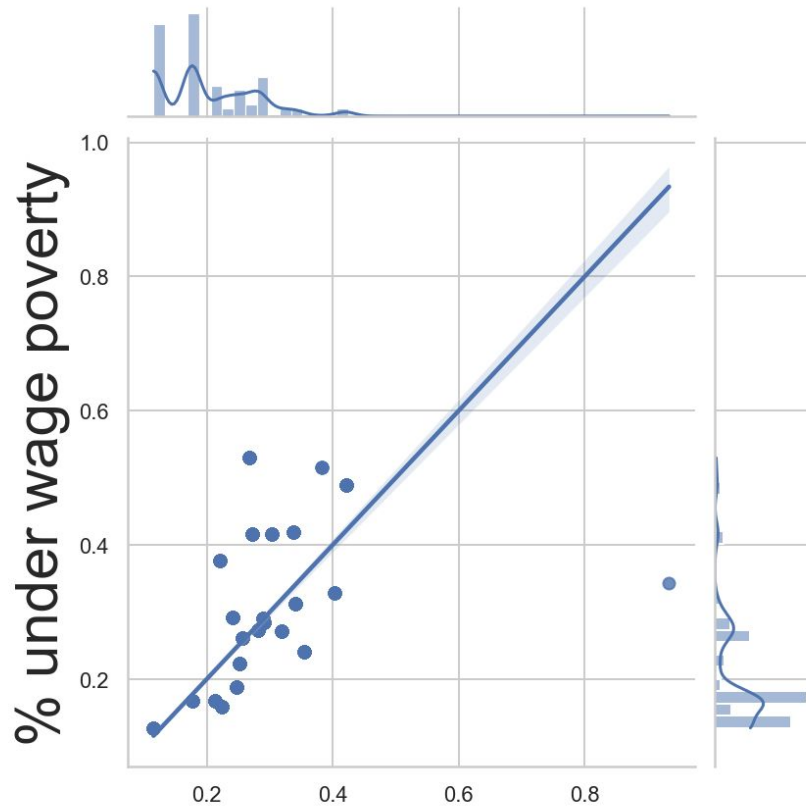
Results of SSE: 8.83

Results of RMSE: 0.05

Results of MAE: 0.03

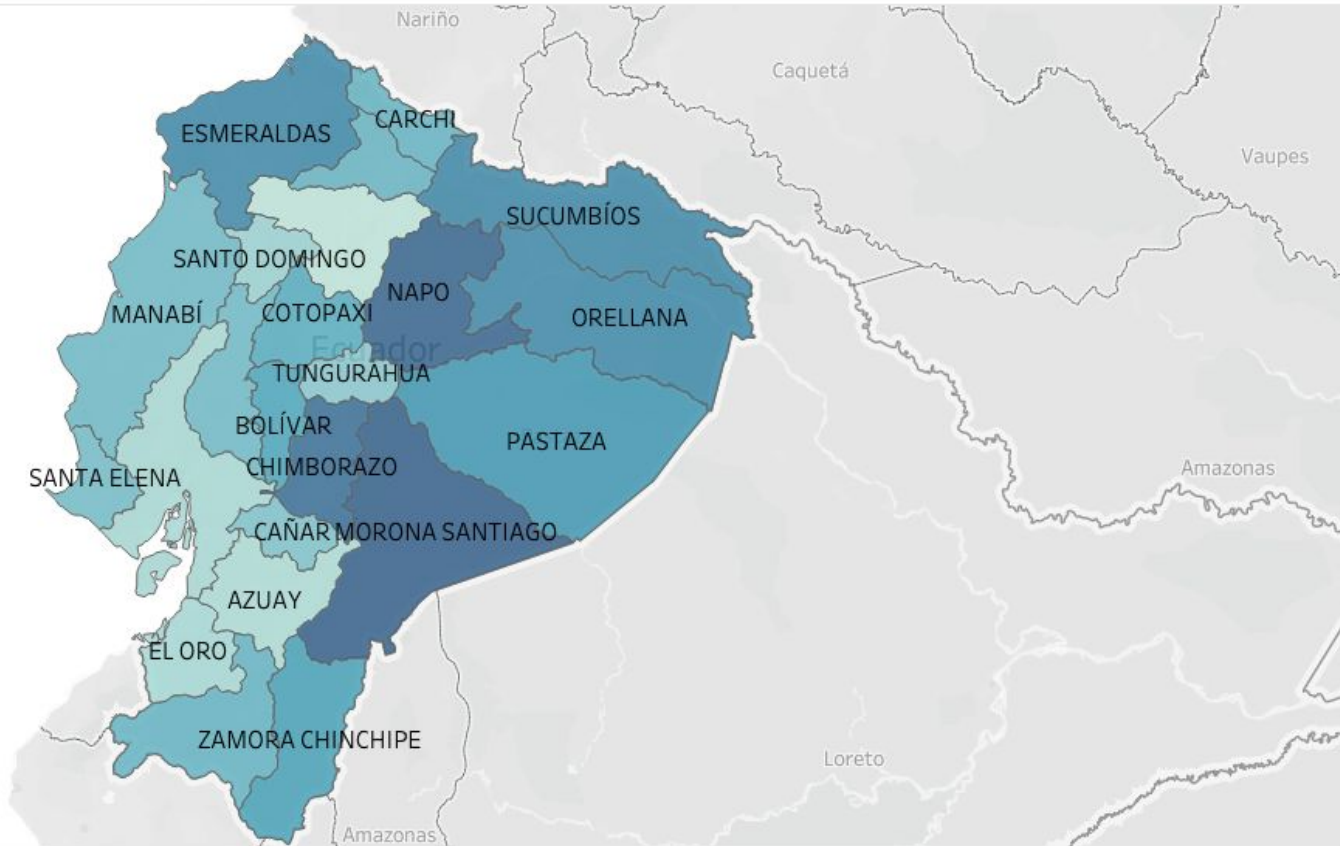
Results of Rsq: 0.70

Features Used: Illiteracy Percentage, Institutions per capita, Average Years of Schooling



Preliminary Analysis - A Closer Look at Geography

Poverty (Wage) Across the Country



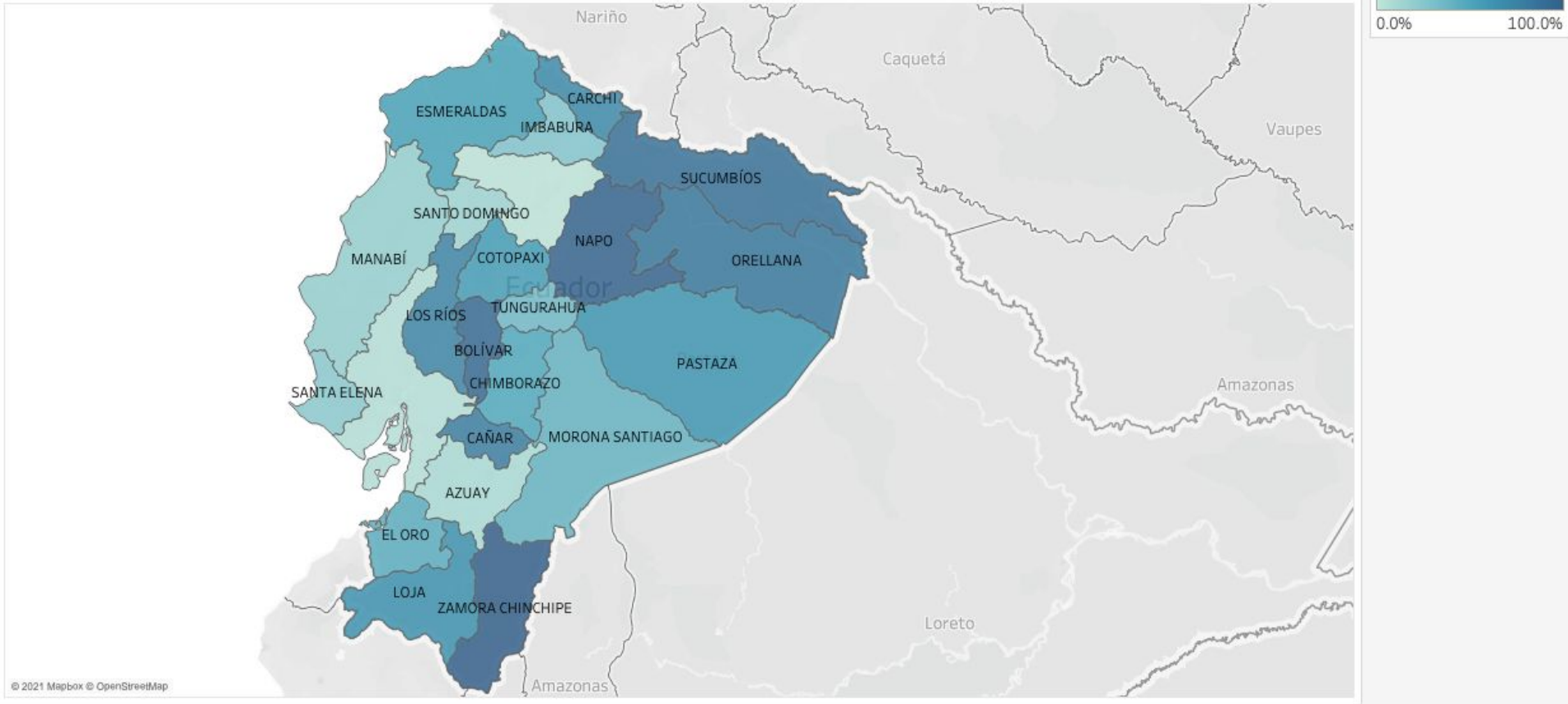
Under Wage Poverty

0.1269

0.5295

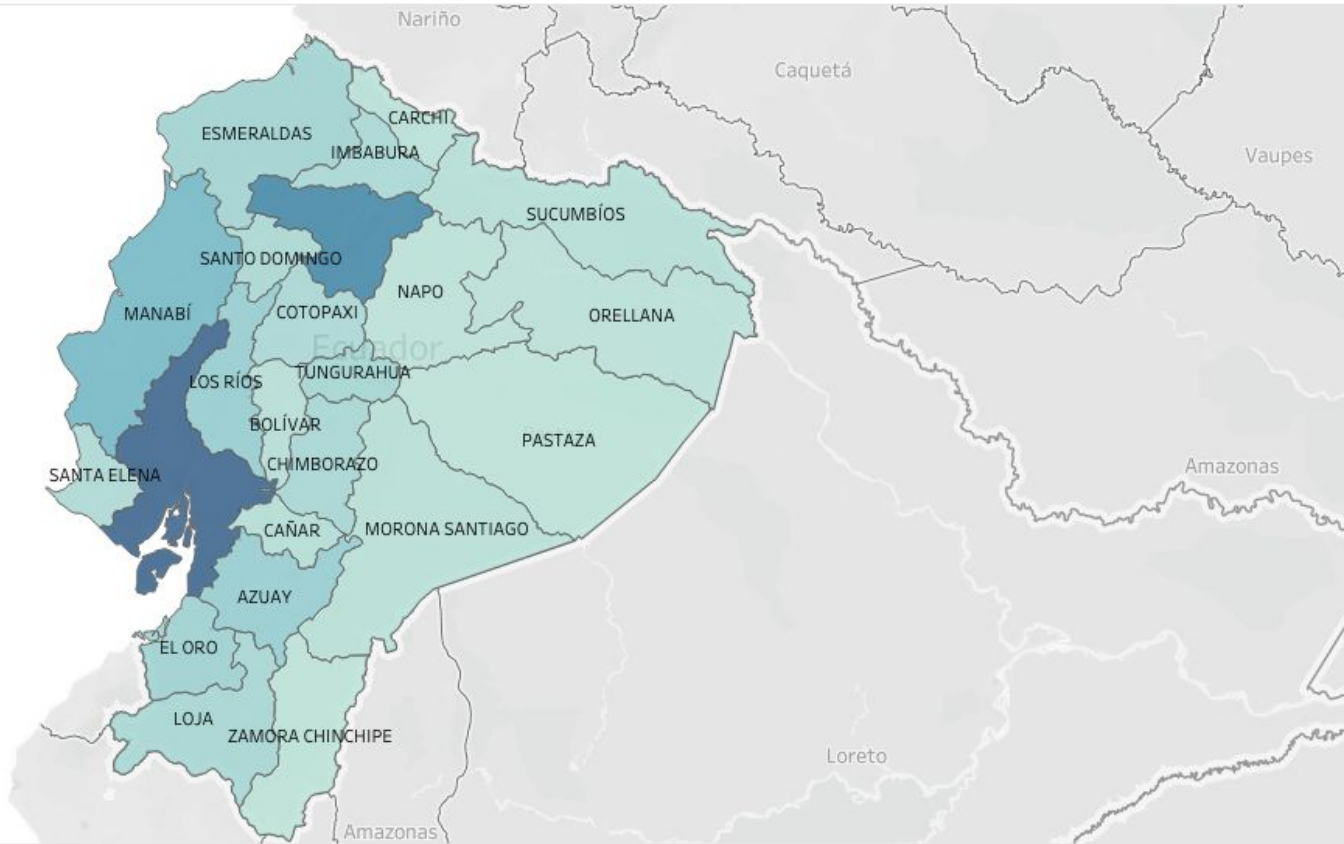
Preliminary Analysis - A Closer Look at Geography

Institution per Capita Distribution



Preliminary Analysis - A Closer Look at Geography

Population Distribution



Population

32,320

4,327,845

Preliminary Analysis- Key Takeaways

- Implementation of schools are not distributed equally
- Regions with higher poverty rates, also contain a much lower number of institutions for the population
- Despite improvements in certain areas, certain areas are neglected and continue to suffer in the Poverty Trap



Project Scope - Measures of Success



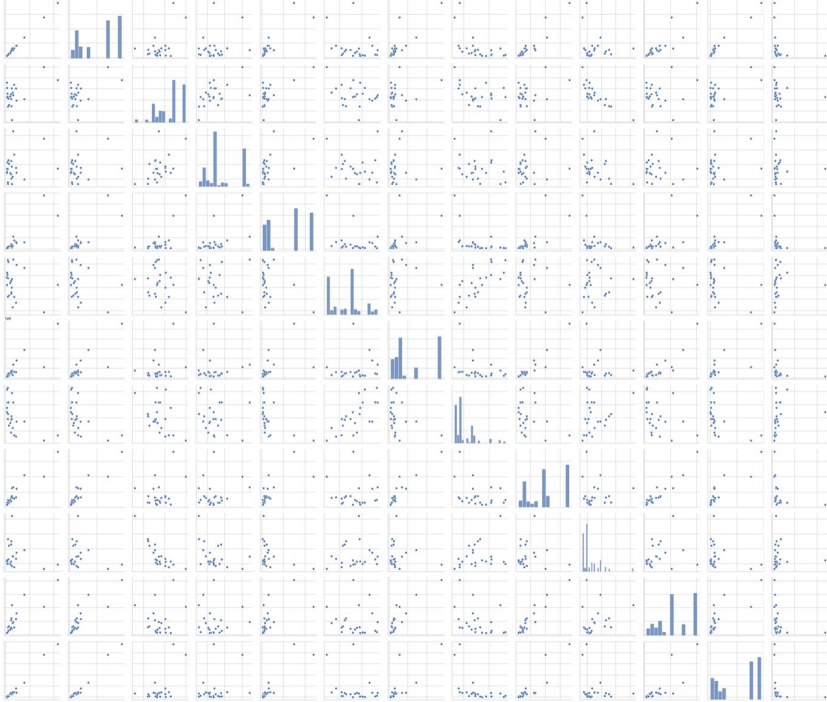
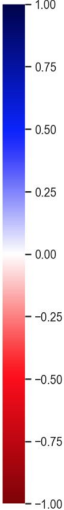
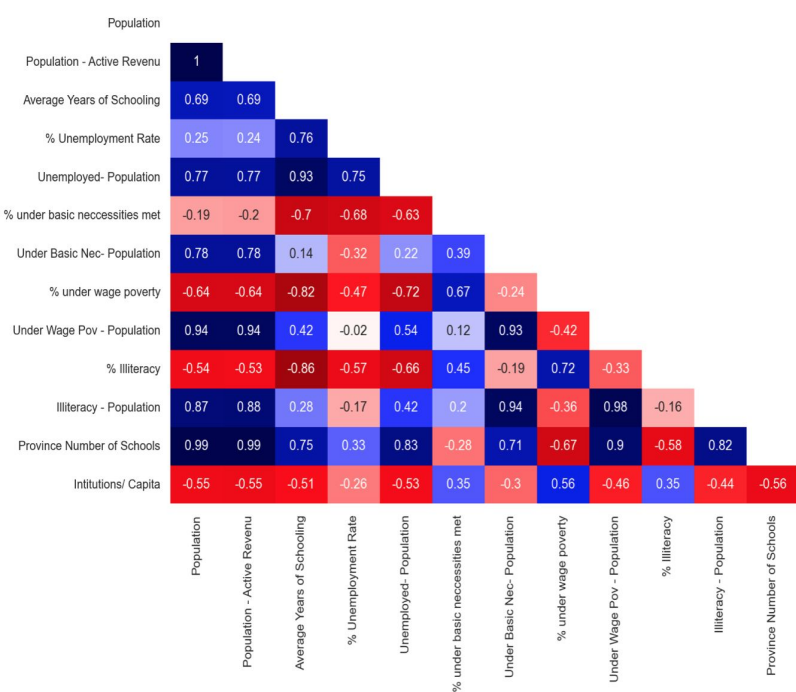
- Create a model that can heavily predict impact of factors in areas of higher poverty
- A percentage increase of enrollment rates on a national level, and province level
- A decrease in illiteracy rates over 10 years
- A 5% in overall income, and job opportunities

Future Work and Future Goals

- Further Analyze other major factors that have an effect on the Poverty Trap
- Demographic of rural areas
- Government Budgets
- Analysis of population density and institution distances

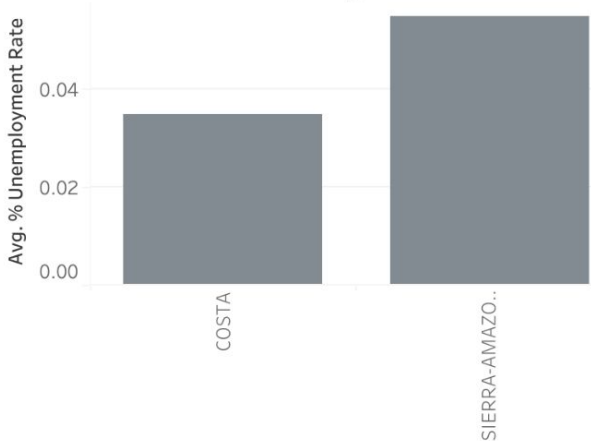
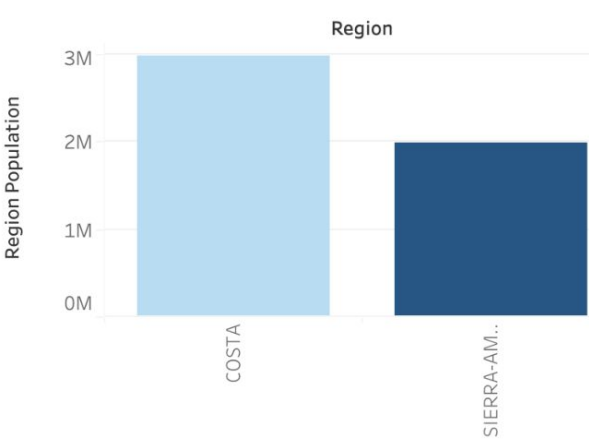


Appendix

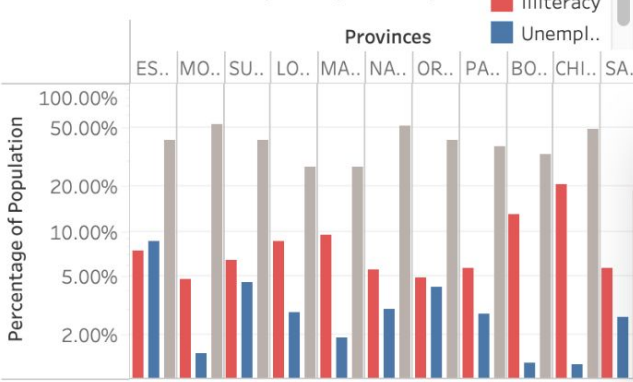


Region Overall Population and Institution / Capita

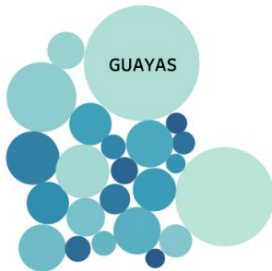
Ecuador Regions - Unemployment Rate



Poverty Trap Analysis



Provinces - Populations and Institutions Distribution



Rank of Avg. Intitutio..

1 23

Province Summary Stats

Provinces	Avg. Popul..	Avg. Popul..	% Inactive ..	Illiteracy	Avg. % U
AZUAY	867,239	411,223	3.53%	6.65%	17.0
BOLÍVAR	208,384	105,329	1.31%	13.29%	37.7
CAÑAR	276,819	133,717	4.05%	11.10%	23.0
CARCHI	185,523	81,868	3.38%	5.35%	22.0
CHIMBORA..	519,777	310,480	1.28%	21.11%	37.1
COTOPAXI	482,615	266,793	2.05%	12.61%	25.9
EL ORO	707,204	315,121	5.35%	3.79%	21.9
ESMERALD..	635,227	253,133	8.58%	7.40%	53.7
GUAYAS	4,327,845	1,904,122	3.43%	4.69%	32.1
IMBABURA	470,129	212,882	4.48%	11.48%	24.6
LOJA	516,231	255,685	3.70%	4.24%	29.8

Active Population Map

