

Research Note  
Human Development Index Trends and Inequality in Puerto Rico 2010-2015

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This research note applies the latest methodology of the United Nations Development Program to approximate the Human Development Index (HDI) and the Inequality Adjusted Human Development Index (IHDI), along with other inequality measures for the case of Puerto Rico.

**A. Human Development Index**

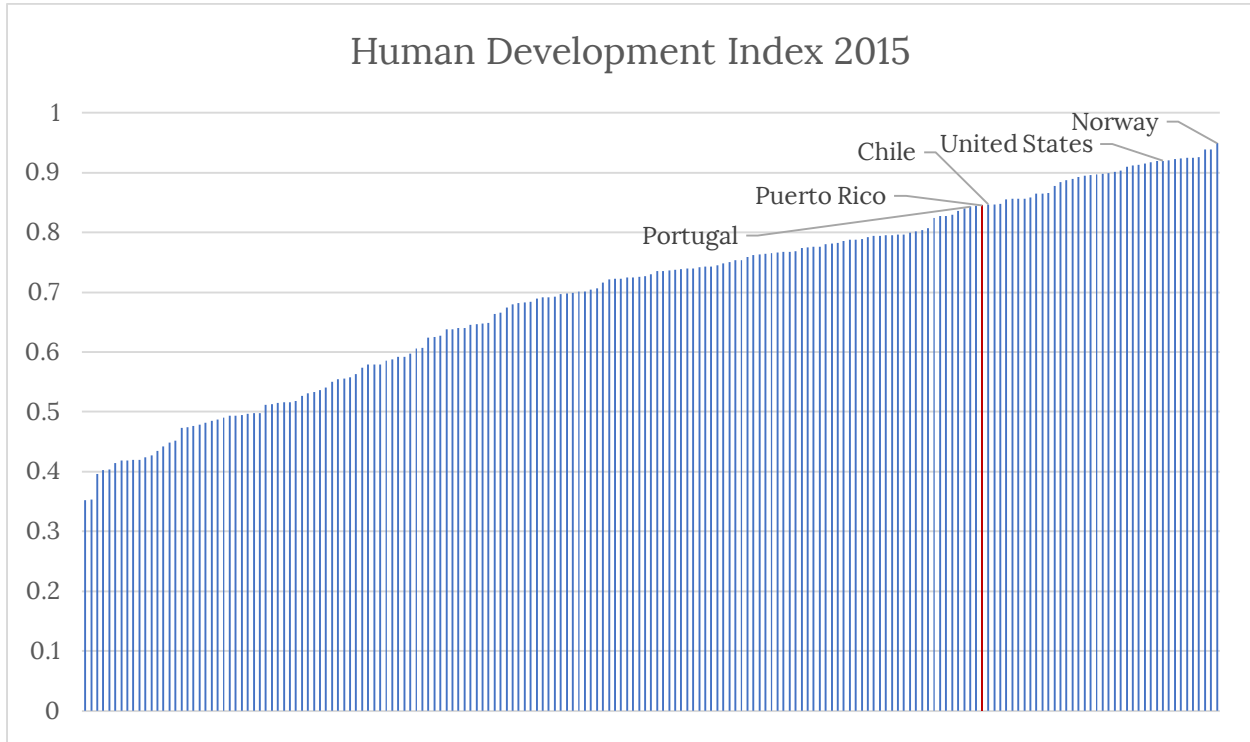
To calculate the HDI, individual indices are calculated for education, health, and living standards. To ensure that the indices are maintained between 0 and 1, the UNDP sets maximum and minimum values for each indicator (see Human Development Report Technical Notes 2016).

Each dimension index is calculated with the following formula, and the HDI is the geometric mean of the three indices:

$$\textit{Dimension Index} = \frac{\textit{Actual Value} - \textit{Minimum Value}}{\textit{Maximum Value} - \textit{Minimum Value}}$$

**Puerto Rico HDI 2015<sup>a</sup>**

Rank	Human Development Index	Life Expectancy	Expected years of schooling	Mean Years of Schooling	GNI Per Capita (2011 PPP)
#40	0.845	79.59 <sup>b</sup>	14.59 <sup>c</sup>	12.97 <sup>d</sup>	\$18,322 <sup>e</sup>
<p>a. Following UNDP methodology, values for 2015 or the most recent available year are utilized.</p> <p>b. World Bank</p> <p>c. CIA World Factbook</p> <p>d. Author's calculation with <i>American Community Survey</i> PUMS</p> <p>e. Author's calculation with Puerto Rico Planning Board data.</p>					



It should be noted that Puerto Rico no longer occupies the highest rank in Latin America, currently occupied by Chile (#38). Furthermore, it should be emphasized that since 2010, the UNDP clarifies that due to it not incorporating inequality, the HDI should be interpreted as an indicator of *potential* development. The actual level of development of a country would be reflected in its Inequality Adjusted HDI.

### B. Inequality Adjusted HDI and dimension indices

To estimate the Inequality Adjusted HDI, a level of inequality is calculated for each indicator with the following formula:

$$A_x = 1 - \frac{\text{Geometric mean}}{\text{Arithmetic Mean}}$$

Each index is adjusted to incorporate inequality such that:

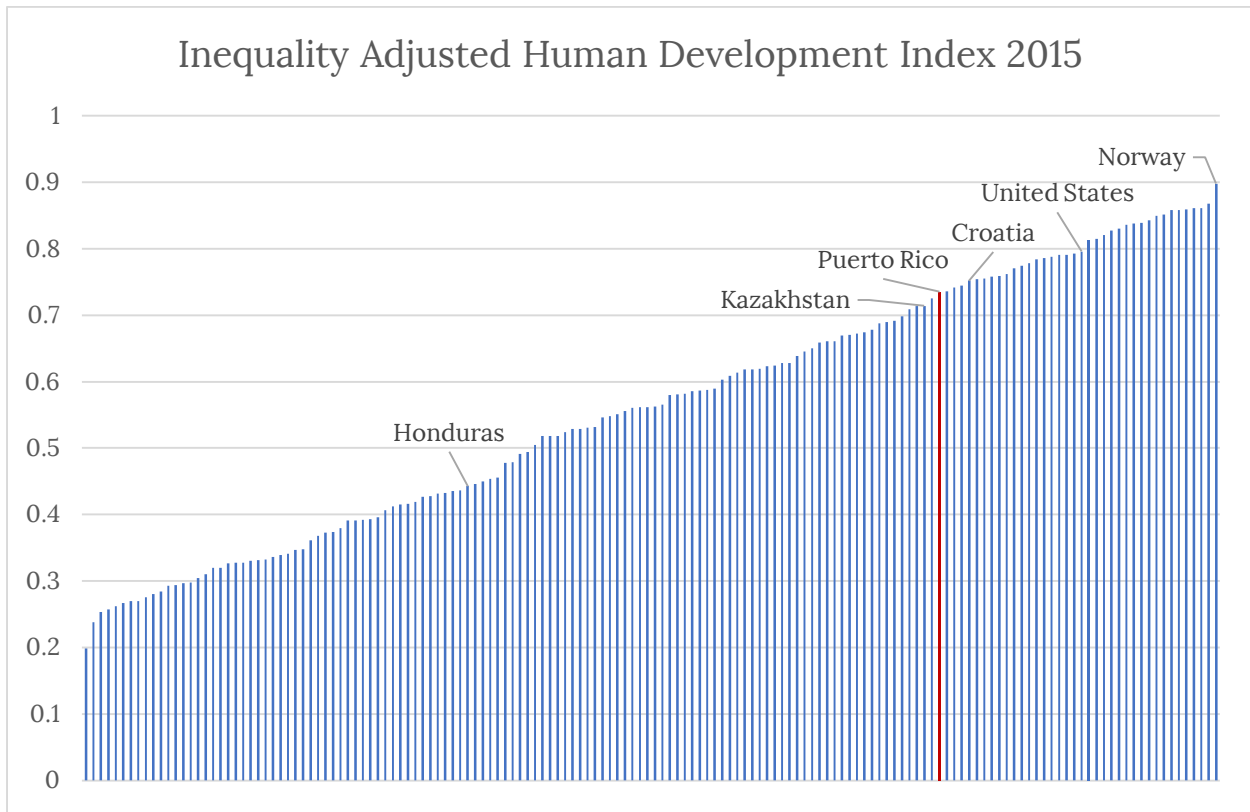
$$I_x^* = (1 - A_x)I_x$$

Finally, the Inequality Adjusted HDI is calculated with the following formula:

$$IHDI = (I_{Health}^* \cdot I_{Education}^* \cdot I_{Income}^*)^{1/3}$$

### IHDI and components Puerto Rico 2015

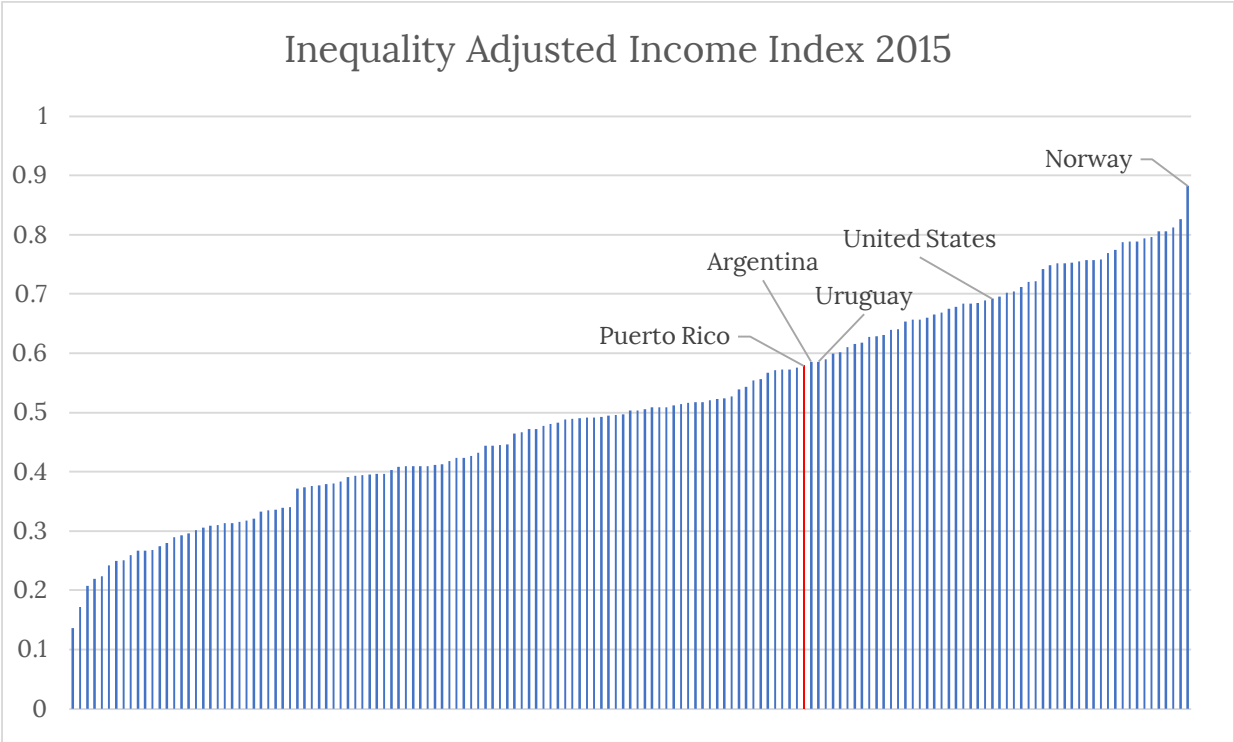
Rank	Inequality Adjusted HDI	Inequality Adjusted Health Index	Inequality Adjusted Education Index	Inequality Adjusted Income Index
#38	0.735	0.842	0.814	0.579

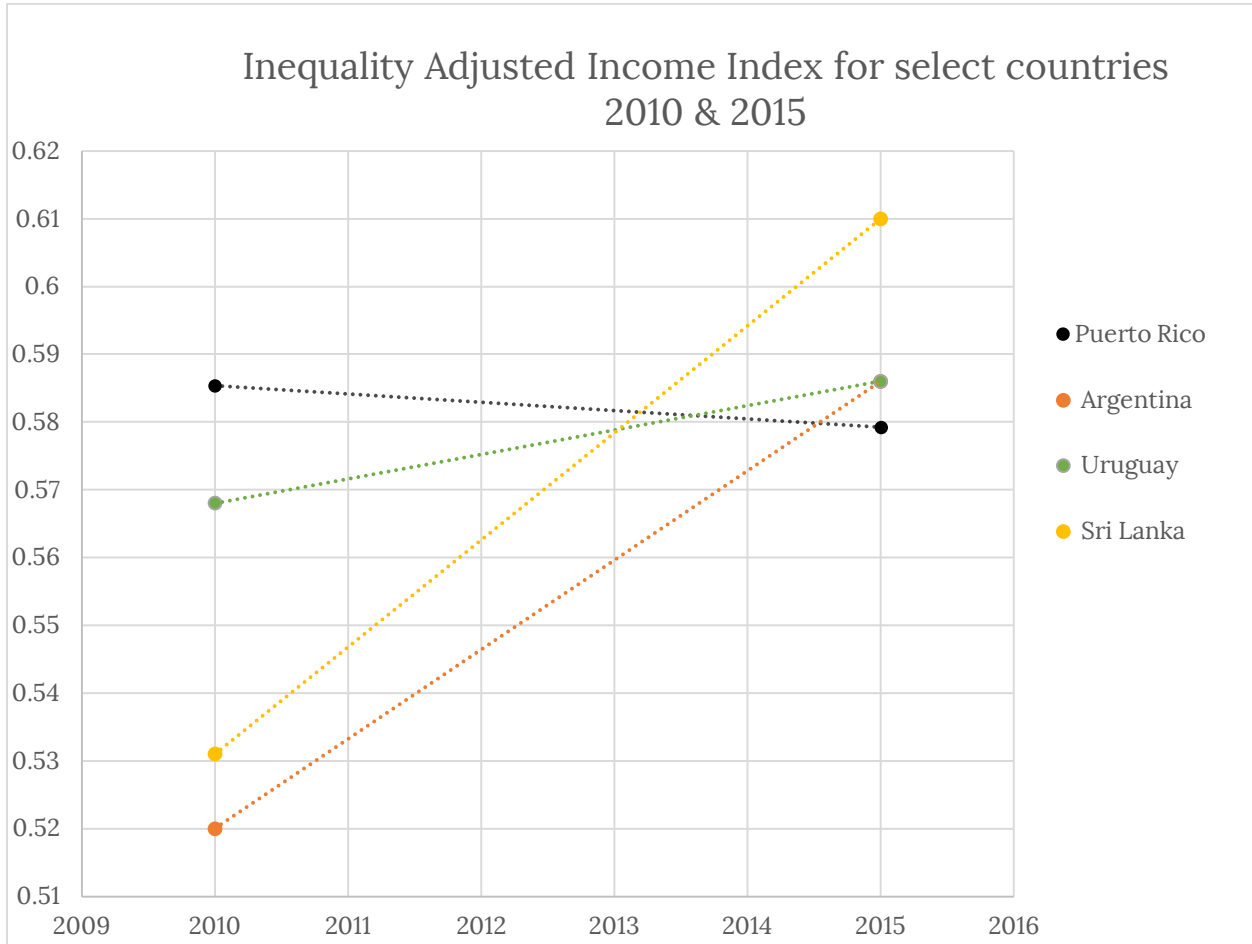


The actual level of development in Puerto Rico is significantly lower relative to its potential. According to these indicators, Puerto Rico could potentially approach the current level of development of countries such as Canada (IHDI = 0.839) or Finland (IHDI = 0.843). However, due to its high levels of inequality, Puerto Rico has a current level of development closer to countries such as Croatia (IHDI = 0.752) and Kazakhstan (IHDI = 0.714).

Among the three dimensions explored by the UNDP, Puerto Rico has significantly high levels of inequality in income. In the case of the Inequality Adjusted Income Index, Puerto Rico ranks # 3 in Latin America. Argentina and Uruguay have already surpassed Puerto Rico in living standards. The UNDP establishes four categories of development: *very high human development* ( $x > 0.800$ ), *high human development* ( $0.799 > x > 0.700$ ), *medium human development* ( $0.699 > x > 0.550$ ), and *low human development* ( $x < 0.550$ ). In other words, Puerto Rico has the health and education levels of a highly-developed country, but the living standards of a middle-income country. Regarding the total change in the Inequality Adjusted Human Development Index from 2010 to 2015, the level of human development in Puerto

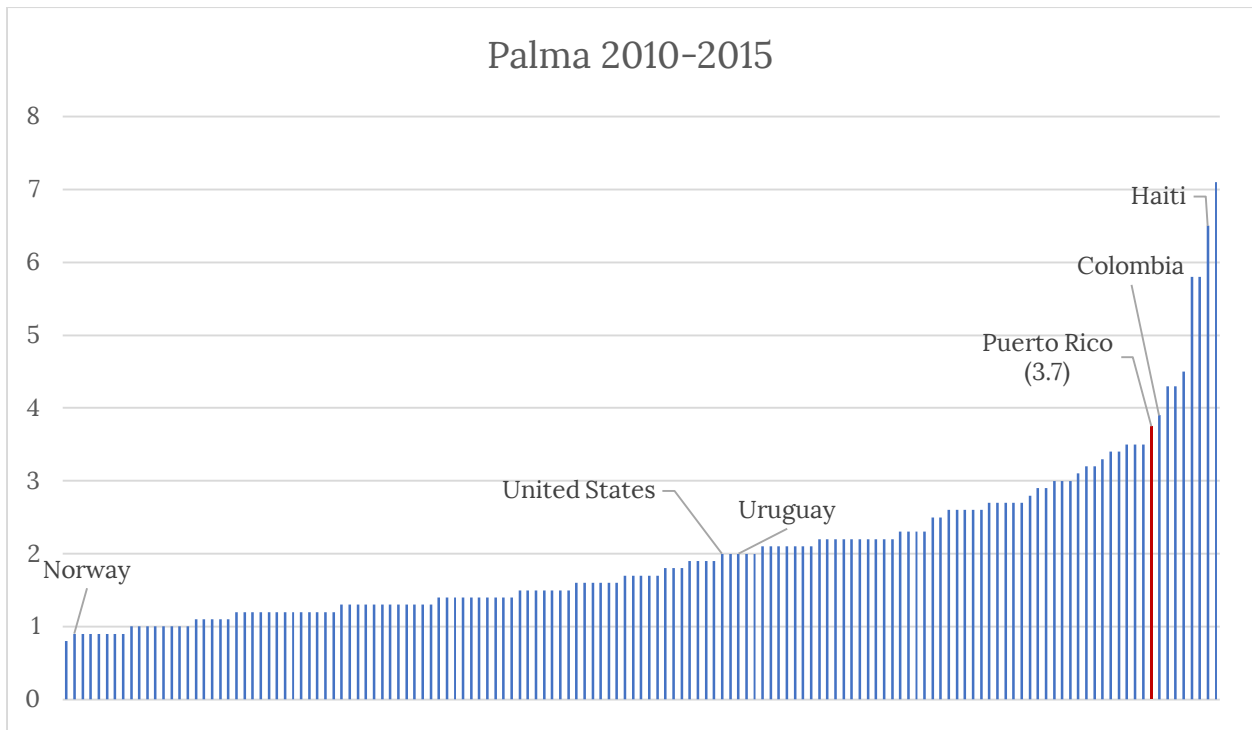
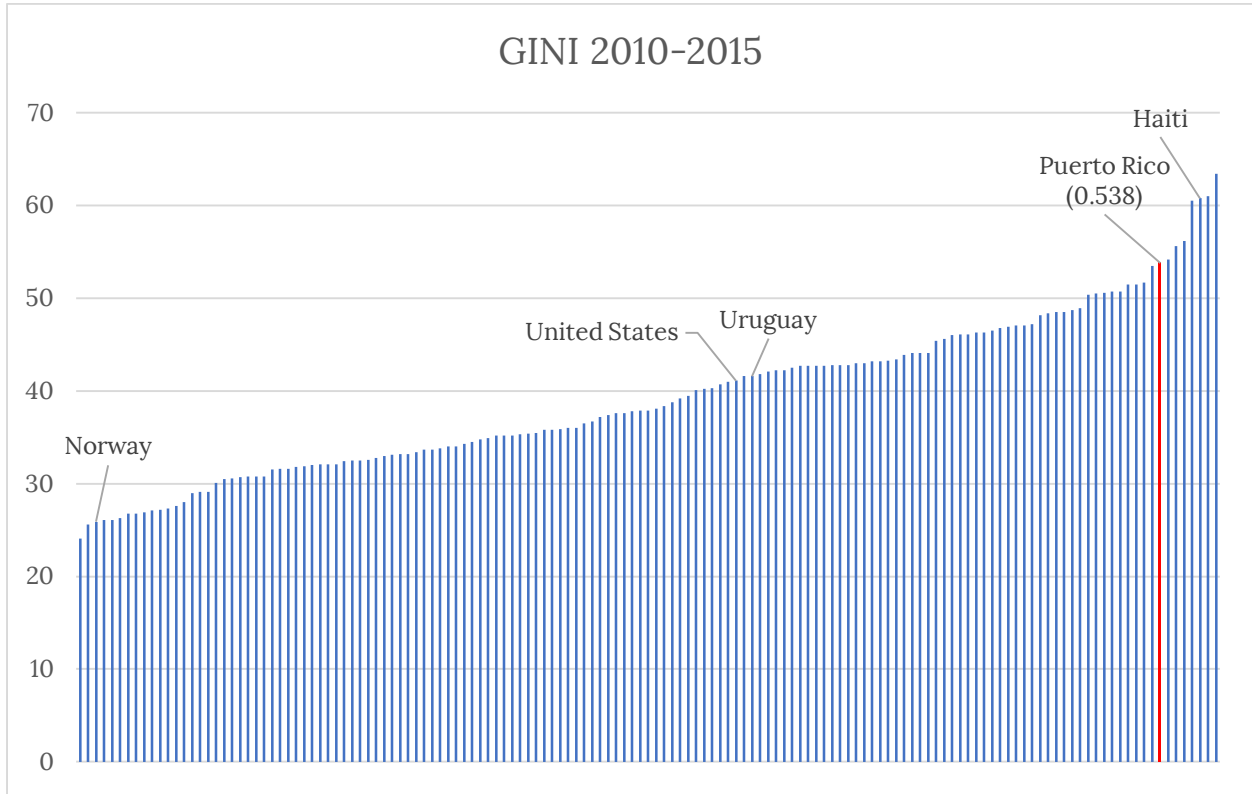
Rico has been decreasing, while several countries have surpassed the island.





### C. Inequality Measures (GINI and Palma)

The latest Human Development Report included an average GINI Coefficient and average Palma Ratio for the 2010-2015 period. Puerto Rico’s GINI is published by the US Census Bureau, and the Palma Ratio can be estimated using the American Community Survey’s Public-Use Microdata Samples. According to its GINI, Puerto Rico was the second most unequal country in Latin America, and the eighth most unequal country in the world. According to its Palma Ratio, Puerto Rico was the third most unequal country in Latin America, and the ninth most unequal country in the world.





References

United Nations Development Programme. (2010). *The Human Development Report*. Human Development Report.

United Nations Development Programme. (2016). *The Human Development Report*. Human Development Report.