Final Project: Factors affecting Life Expectancy

Executive Summary

Team Gapminder

Our findings confirm our work from the Gapminder project early in the semester that per-capita GDP and average life expectancy by country are strongly, positively related and that considering continent in addition to per-capita GDP does add explanatory power. We found this upward sloping relationship to be similar between different continents, but it appears that African countries have lower average life expectancies than Asian, European, and American countries even after controlling for per-capita GDP.

We found that per-capita healthcare spending does not explain any variation in average life expectancy beyond what per-capita GDP already explains. As one might expect, per-capita healthcare spending and per-capita GDP are very closely related since countries that produce more per person tend to spend more per person. Per-capita healthcare spending does explain variation in life expectancy, but it appears to explain the same variation that per-capita GDP explains. However, we found per-capita GDP to be a stronger explanatory variable so per-capita healthcare spending does not add any explanatory power. These findings remain the same after also controlling for gini coefficient.

We found that the gini coefficient does explain some variation in average life expectancy by country beyond what per-capita gdp and continent can explain. However, the gini coefficient appears to only add explanatory power in African countries. In Europe, Asia, and the Americas, we found that the gini coefficient doesn't tell us any information about average life expectancy beyond what the main effects of per-capita GDP and continent already tell us. However, in Africa, there appears to be a negative relationship between the gini coefficient and average life expectancy even after controlling for per-capita GDP. This relationship was very weak and perhaps insignificant in 1995 but grew more strongly negative over the time period from 1995 to 2009.

While plausible, we do not assert that the negative relationship between the gini coefficient and average life expectancy in Africa after controlling for per-capita GDP is actually causal. This is due to the fact that there are many political, cultural, and geographic differences between countries within and between continents that we can't appropriately account for with the data we have. Moreover, potential problems regarding the correctness of the data, the amount of it, and the suboptimal distribution of it over the feature space limit the reliability of our findings.