EMPIRICAL ECONOMIC BULLETIN

Economic and Social Factors that Influence Life Expectancy and Infant Mortality

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Abstract:

This paper investigates life expectancy and infant mortality rates in randomly selected countries from around the world. This study takes into consideration many economic and social factors that could potentially have an effect on life expectancy and infant mortality in different countries. Factors are modeled using a least-squared regression model and are determined as significant based on their probability factor. Results show both positive and negative effects depending on the economic and social factor.

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1.0 INTRODUCTION

Life expectancy and infant mortality are two statistics that vary in great measure depending on which country around the world you are talking about. Thirty-nine randomly selected countries (See Appendix F) were taken in consideration overall, and the range from the highest life expectancy to the lowest one was nearly 45 years (Angola = 37.63 years - Japan = 82.02 years). The same two countries also had the highest and lowest infant mortality rates with Japan at about .28% while Angola's is about 18.44%. These are staggering numbers and one can only help but wonder what factors influence these two statistics. Do economic and social factors have an impact on life expectancy and infant mortality? This paper will seek to answer this question and show the empirical results of models that were developed to answer this question. The paper will also look at which factors do and do not affect life expectancy and infant mortality and whether these effects have a positive or negative correlation. Finally, this paper will explain why these factors have an impact on life expectancy and infant mortality.

The recent trend in life expectancy over the past 20-30 years has been an increasing one. On the other hand, infant mortality has had the opposite trend as it has been decreasing. These two are correlated because as infant mortality decreases, there are less people (infants) dying at a young age which increases the overall life expectancy age. Life expectancy has also been increasing due to medical advancements and people being more aware of their overall health. As medical care becomes more affordable people can have regular doctor's appointments to regulate and watch their health. This leads to a longer life and a higher overall life expectancy age.

Figure 1:

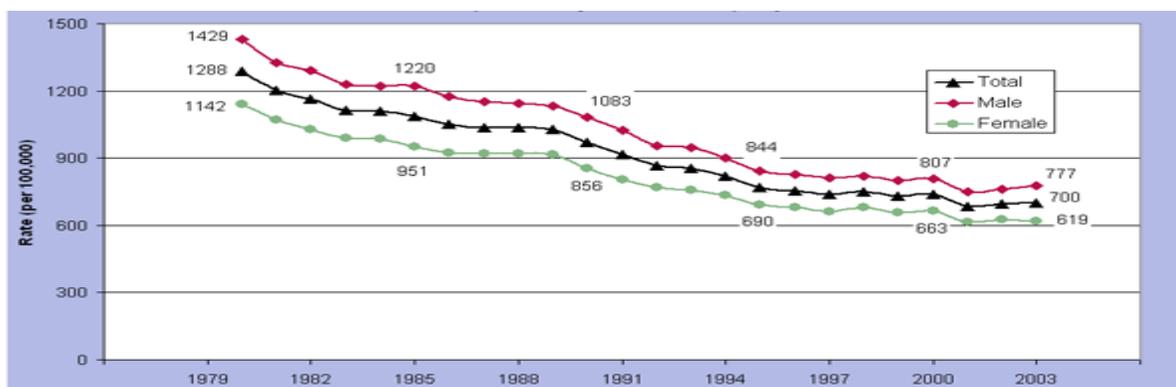**Modern World Trend in Life Expectancy**

www.childtrendsdatabank.org

In terms of infant mortality, medical advancements have also had a big impact. There have been increased technologies in the medical field that help track the health of babies throughout the birth process and this can lead to treatment if necessary. Increased medical treatment and attention leads to healthier infants being born and lessens the overall infant mortality rate.

Figure 2:

Modern World Trend in Infant Mortality

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Despite the increased medical care and technologies, there are still hindrances on life expectancy and infant mortality. The HIV/AIDS virus continues to grow in countries all over the world and especially on the continent of Africa. The lack of a solution for this virus is causing an increasing rate in deaths all over the world. As this virus continues to grow and spread, more people will continue to die and life expectancy will grow at a slower rate. When medical advances can be used to cure this virus and countries can learn all of the factors that are affecting life expectancy and infant mortality, then life expectancy will grow more rapidly and infant mortality will continue to decline around the world.

The purpose of this paper is to increase the understanding of what economic and social factors have an impact on infant mortality and life expectancy, and how countries can use this information to better help the people of their country. A number of these factors can be addressed in certain ways to help lower infant mortality and increase life expectancy, but most countries either do not know what these factors are or do not know how to fix them. This study will increase their knowledge on this subject and hopefully the information can be used to determine the most influential factors, and then, take the corrective steps to fix these problems.

The rest of the paper is organized as follows: Section 2 gives a literature review, Section 3 outlines the Data and Empirical Methodology, Section 4 presents and discusses the empirical results, and finally this is followed by a conclusion in section 5.

2.0 LITERATURE REVIEW

Five papers in total were used to build the model for this paper and help determine the results of the two models. The five papers have been combined to build one large model that takes into consideration various economic and social influences on life expectancy and infant mortality. The base model being used for this experiment comes from the paper by Kennelly et al (2002) and then other variables were added from the other papers whose models contained different variables. A few variables such as Unemployment and HIV/AIDS Deaths, that were not a part of any other models, were added to get a broader range of ideas for what could have an effect on life expectancy and infant mortality.

Kennelly et al (2002) use their model to determine the relationship between social capital and public health. In terms of public health they meant life expectancy and infant mortality as those were the two dependent variables used in their paper. In the basic model for their paper Kennelly et al (2002) used determinants such as GINI, GDP per capita, public health expenditure, doctors, fruit and vegetables, alcohol, and tobacco. In this paper these authors conclude that social capital had no effect on public health, but that GDP and public health expenditure do have a positive and negative effect on life expectancy and infant mortality respectively.

In another paper by Houweling et al (2001), they compared infant mortality to inequality in various countries. What was found was that literacy, GDP per capita, and inequality all influenced child mortality while healthcare expenditure had no effect. These factors are congruent with factors that are being run in the regression of this paper.

In a similar paper by Flegg (1982) we see a comparison of income, literacy, and medical care to infant mortality in various countries. In Flegg's (1982) model he uses GDP, GINI, literacy, and physicians as determinants of infant mortality along with a few other variables. These four factors are variables used in this paper to determine the causes of both life expectancy and infant mortality. The conclusion in Flegg's paper was that GINI, illiteracy, nurses, and

physicians all had an impact on infant mortality with nurses and physicians having a negative impact and GINI and illiteracy having a positive impact.

In Gortmaker's (1979) comparison of poverty and infant mortality we see a strong comparison between the two. Although Gortmaker took into consideration many other variables, poverty was the only one used in this paper. From his research he concludes that if poverty is higher in one country than another, infant mortality will also be higher in that country.

Last, we have a paper that shows the effect of the HIV/AIDS virus on life expectancy all over the world. In Neumayer's (2004) account on life expectancy we see that having the HIV/AIDS virus at birth has a significant impact on a person's life expectancy. This demonstrates a major problem occurring in certain countries around the world because most people do not know if they have the virus or not. The conclusion of this paper shows the virus has had a negative impact on life expectancy up until recently where new technologies, medicines, and better healthcare have changed that.

The determinants of all the preceding papers have been taken into account and combined to make models for life expectancy and infant mortality. These models will determine which factors do and do not impact life expectancy and infant mortality. These various economic and social factors plus the addition of a few extra determinants will be used in a basic regression model and observed to determine their impact on life expectancy and infant mortality in countries across the world.

3.0 DATA AND EMPIRICAL METHODOLOGY

3.1 Definition of Variables

Life Expectancy

$$Y_i LifeExpect = \beta_0 + \beta_1 Infant + \beta_2 HIV/AIDS\ People + \beta_3 Poverty + \beta_4 PubHealth + \beta_5 Smoking + \beta_6 Unemploy + u_i$$

Life expectancy is the amount of years that a certain person is expected to live. This statistic varies from country to country with certain factors causing it to increase and others causing it to decrease. Life expectancy in this model is the dependent variable and it is represented by $Y_i LifeExpect$ in this model which shows what social and economic factors have an influence on Life Expectancy.

The Independent variables in this equation consist of six variables that were obtained from various sources. First, $\beta_1 Infant$ shows the infant mortality rate of the different countries and explains its effect on life expectancy around the world. Second, $\beta_2 HIV/AIDS\ People$ shows the amount of people in each country that contain the HIV or AIDS virus. Third, $\beta_3 Poverty$ shows the amount of people in each country that live below the poverty line. Fourth, $\beta_4 PubHealth$ shows the public health expenditure per capita in each country. Fifth, $\beta_5 Smoking$ shows the amount of cigarettes consumed in a country per capita. Sixth and final, $\beta_6 Unemploy$ is the unemployment rate in each country for the most recent year.

Infant Mortality

$$Y_i Infant = \beta_0 + \beta_1 Doctors + \beta_2 GDP + \beta_3 HIV/AIDSDeaths + \beta_4 HIV/AIDSPeople + \beta_5 Poverty$$
$$+ \beta_6 PUBHealth + \beta_7 Smoking + \beta_8 Unemploy + u_i$$

Infant Mortality is the percent of babies that pass away from birth up to an age of one year old. In this paper the rate is formed by using the amount of infant deaths per 1000 births. Infant Mortality in this model is represented by $Y_i Infant$ and it is the dependent variable. There are eight variables in this model and this regression will show which factors do and do not have an impact on Infant Mortality.

The dependent variables in this model consist of eight variables that were obtained from various sources. First, $\beta_1 Doctors$ is the amount of doctors per 100,000 people in a certain country. Second, $\beta_2 GDP$ is the Gross Domestic Product in country relative to PPP. Third, $\beta_3 HIV/AIDSDeaths$ shows the amount of people that have died from HIV/AIDS in a country in the past year. Fourth, $\beta_4 HIV/AIDSPeople$ is the amount of people in a country that have the HIV or AIDS virus. Fifth, $\beta_5 Poverty$ is the amount of people that live under the poverty line a certain country. Sixth, $\beta_6 PubHealth$ is the amount of money per capita spent on public healthcare in a given country. Seventh, $\beta_7 Smoking$ is the amount of cigarettes smoked per capita in a given year for each country. Eighth and final, $\beta_8 Unemploy$ shows the unemployment rate for each country in the past year.

3.2 Data

This study uses data that was most recently available, but most of the data comes from the past few years (2005-2007). The data for this topic came from various sources, but the majority of the information has come from the World Fact Book which can be found on the website of the Central Intelligence Agency (www.cia.gov). The data of countries that was not available through the World Fact Book was either not found or retrieved from other sources. The research data for this topic can be found in Appendix A.

Variable Description and Data Source

Economic/Social Factor	Description of Factor	Source
Doctors	Number of doctors for every 100,000 people in a country	http://earthtrends.wri.org/searchable_db/index.php?theme=4&variable_ID=1297&action=select_countries
GDP (PPP)	Overall GDP of a country	https://www.cia.gov/library/publications/the-world-factbook/index.html
HIV/AIDS (# of People)	Number of people in a country that have HIV or AIDS	http://hivinsite.ucsf.edu/global?page=cr06-mo-00 https://www.cia.gov/library/publications/the-world-factbook/index.html
HIV/AIDS (Deaths)	Number of people in a country who dies from AIDS in the past year	http://hivinsite.ucsf.edu/global?page=cr06-mo-00 https://www.cia.gov/library/publications/the-world-factbook/index.html
Infant Mortality	Number of infant deaths per 1,000 births	https://www.cia.gov/library/publications/the-world-factbook/index.html
Life Expectancy	Average age a person lives to in a given country	https://www.cia.gov/library/publications/the-world-factbook/index.html
Poverty	Percent of the population that lives under the poverty line	https://www.cia.gov/library/publications/the-world-factbook/index.html
Public Health	Public health expenditure as a percent of GDP	http://www.infoplease.com/ipa/A0934556.html
Smoking	Number of cigarettes consumed per capita in a given year	http://www.nationmaster.com/graph/hea_tob_cig_con-health-tobacco-cigarette-consumption http://www1.worldbank.org/tobacco/database.asp
Unemployment	Unemployment rate	https://www.cia.gov/library/publications/the-world-factbook/index.html

4.0 EMPIRICAL RESULTS

The purpose of this paper is to determine which economic and social factors impact life expectancy and infant mortality around the world. Using a simple least-squares regression model, data of different factors was entered to obtain results. Thirty-nine countries were taken into consideration, but not all the data could be found for each country. Each regression takes into consideration a different number of observations depending on the data that was available for each factor in the different countries. For both Infant Mortality and Life Expectancy there were five variables that were statistically significant. The results of these regressions can be found in Appendix D for Infant Mortality and in Appendix E for Life Expectancy.

Infant Mortality

In terms of Infant Mortality there were eight variables that were tested, but only five proved to be statistically significant. HIV/AIDS Deaths, Poverty, Unemployment, Doctors, and HIV/AIDS People were all found to be significant while Public Health, Smoking, and GDP were found not to have any significance. Of these five variables, Doctors was the only one found to be significant at the 1% level, while HIV/AIDS Deaths, HIV/AIDS People, and Unemployment were all found to be significant at the 5% level. Also, Poverty was the only variable found to be significant at 10% level. These five variables all proved to have some type of influence on Infant Mortality in countries around the world. The results of the infant mortality regression can be found in Appendix D.

Results – Infant Mortality

Variable	Observations	Probability	Coefficient	Min	Max
HIV/AIDS DEATHS	32	0.0239**	8.14E-07	100	310,000
POVERTY	32	0.0507*	0.069411	8%	86%
UNEMPLOYMENT	32	0.0318**	0.104357	2.5%	80%
DOCTORS	32	0.0073***	-0.000186	3	425
HIV/AIDS OF PEOPLE	32	0.0356**	4.95E-08	500	5,100,000
PUBLIC HEALTH	32	0.4781	3.89E-06	$26	$6,096
SMOKING	32	0.3457	8.36E-06	77	3023
GDP PPP	32	0.2291	-3.27E-15	$6.186 Billion	$13.86 Trillion

Note: ***, **, * denote significance at 1%, 5%, and 10% respectively.

Doctors was the only variable that demonstrated a significance at the 1% level, and this variable shows how many doctors a country has per 100,000 people. This shows that the Doctors variable is extremely significant in its effect on infant mortality. Doctors also showed a negative coefficient which means that as the amount of doctors per 100,000 people increases, infant mortality in that country will decrease. The negative coefficient correlates to two other papers, where the amount of doctors increased and the infant mortality fell [Flegg (1982) and Kennelly et al (2002)]. From this, it is proven that the more doctors available for births will lessen the chance of an improper birth, and therefore lower infant mortality.

HIV/AIDS Deaths shows the amount of people in each country who have died from having this virus. This factor was one of the factors used to expand the model and show how it also has an impact infant mortality. HIV/AIDS Deaths showed significance at the 5% level which means this factor is moderately significant in its impact on infant mortality. HIV/AIDS Deaths also demonstrated a negative coefficient, similar to Doctors, which means that as more people die from HIV/AIDS there will be a decrease in infant mortality. This occurs because as more people die from HIV/AIDS there are less people that have the virus and less of a chance of passing it on to their new-bourns who will most likely die from the virus. This once again, will lower infant mortality.

HIV/AIDS People is the variable that shows the amount of people in a country that have the HIV/AIDS virus. This factor also showed significance at the 5% level, but instead of a negative coefficient, this factor showed a positive coefficient. The coefficient for this factor showed a positive sign because the more people that contain the HIV/AIDS virus means that there are more people in that country to pass the virus onto their offspring. This in turn would kill these infants and increase the infant mortality rate in that country.

Unemployment was the third factor that showed significance at the 5% level. Unemployment is the unemployment rate for each country, and this significance level shows that unemployment has a moderate effect on infant mortality overall. Unemployment was another factor that was added to this model to show its effect on infant mortality and build upon other models. Unemployment showed a positive coefficient in this model meaning that as unemployment increases, infant mortality increases. This happens because when people are

unemployed they have less money to spend on medical treatment and for doctors which leads to a higher risk of infant mortality.

Poverty, the last significant factor, shows the percentage of people in a given country that are living under the poverty line. Poverty has a significance level of 5% when it comes to infant mortality which means that is has a moderate influence on the number of infant deaths. Poverty, like unemployment, showed a positive coefficient which correlates to the paper "Poverty and Infant Mortality in the United States" by Gortmaker (1979) where poverty has a positive significance on infant mortality. This can be explained by the fact that if people are poor and cannot afford necessities like food, water, and medical care then their baby will not be born with proper nutrition and medical care because it is not affordable. This in turn will lead to higher infant mortality.

Life Expectancy

In the Life Expectancy model there were six variables that were used, and five of them proved to be significant. Public Health, Poverty, Infant Mortality, HIV/AIDS People, and Unemployment all proved to be significant while Smoking proved to be insignificant. Of the five significant variables, Unemployment and Infant Mortality both had a significance level of 1%, Public Health and Poverty had a 5% significance level, and HIV/AIDS people had a 10% significance level. These five variables all demonstrated some sort of significance on life expectancy in countries around the world. The results of the life expectancy regression can be found in Appendix E.

Results - Life Expectancy

Variable	Observations	Probability	Coefficient	Min	Max
PUBLIC HEALTH	34	0.0204**	0.001629	$26	$6096
POVERTY	34	0.0192**	-14.91305	8%	86%
INFANT MORTALITY	34	0.0000***	-135.3439	100	310,000
HIV/AIDS OF PEOPLE	34	0.0774*	-1.51E-06	500	5,100,000
SMOKING	34	0.1216	-0.002025	77	3023
UNEMPLOY	34	0.0006***	-25.03279	2.5%	80%

Note: ***, **, * denote significance at 1%, 5%, and 10% respectively.

The unemployment factor, as with infant mortality, also proved to be significant when determining life expectancy. Unemployment is once again the unemployment rate in each of the countries and it showed a 1% significance level when determining life expectancy. Unemployment proved to have a negative coefficient which implies that when unemployment rises, life expectancy falls. This occurs because when there is more unemployment, people do not have as much money to spend on necessities such as food, water, and shelter. Also people cannot afford to pay to go to the doctors and have routine checkups. This once again causes higher health risk and therefore will lower life expectancy.

Infant mortality proved to have a huge influence on life expectancy. Infant mortality shows the number of infant deaths per 1,000 births. Infant Mortality had a significance factor at the 1% level which means that it is extremely significant when determining life expectancy. Infant mortality also proved to have a negative coefficient which means that the more infant deaths there are, the lower the life expectancy age will be. This can be explained by the fact that as more infants are dying, their age of death is going to lower the overall life expectancy age and therefore affect it negatively.

Public health shows the amount of money spent per capita for public health care. This proved to have a moderate influence on life expectancy as it was at the 5% significance level. Public health expenditure demonstrated a positive coefficient when it came to life expectancy which means that as public health expenditure increased so did life expectancy. This is congruent with another model [Kennelly et al (2002)], where we see that public health expenditure has a positive impact on life expectancy. This can be justified by the fact that more money spent on healthcare reduces health risks and chances of developing sicknesses. If this occurs then people will live for longer and increase the average life expectancy age.

In terms of poverty, there is a moderate effect on life expectancy due to 5% significance level that is demonstrated. Poverty represents the amount of people that live under the poverty line in a given country for that year. Poverty proved to have a negative coefficient when it came to life expectancy which shows that people who live in poverty will die at a younger age. This can be elucidated because the people who live in poverty have less money to purchase necessities and pay for health care. This in turn shows that these people are at a greater risk of dying at a younger age then people who live above the poverty line. Without everyday

necessities and good health you have a better chance of dying at a younger age, and henceforth the average life expectancy age is lowered.

HIV/AIDS People tells the amount of people in each country that have the virus in that given year. The number of people with HIV/AIDS proved to have a minor influence on life expectancy being in the 10% significance interval. HIV/AIDS people showed a negative coefficient in terms of life expectancy meaning as the number of people with the virus increases, the average life expectancy age falls. This can also be seen in Eric Neumayer's (2004) paper "HIV/AIDS and Cross-National Convergence in Life Expectancy," where life expectancy is affected negatively when more people obtain the virus. This theory is vindicated by the fact that the more people that have the virus, have a better chance of dying at a younger age, which in turn lowers their life expectancy.

5.0 CONCLUSION

Infant mortality and life expectancy are just statistics when it comes down to it, but they are important statistics. As we have seen from the results, there are many social and economic factors that influence these two statistics, both negatively and positively. Awareness of these factors and their impact on these statistics are what change a person's life. Hopefully with more effort and research, countries can see that infant mortality is a huge problem (especially in parts of the world like Africa) that can be fixed. Hopefully, countries can also see that life expectancy is not just a number, but a centerpiece for how much time people spend on this planet. With more dedication to the cure of HIV/AIDS, ending poverty, and lowering unemployment, countries can make a huge impact on how long people live for. Better allocation of resources to healthcare and health awareness around the world can help lead to lower infant mortality and a higher life expectancy. It is not realistic to believe these problems will ever fully be resolved, but with more effort, time, and better allocation of resources to these different factors, there can be an enormous impact made. The HIV/AIDS virus is a huge problem in Africa, and if more resources and time are devoted to this problem for testing and awareness, then the overall amount of people who have the virus could decrease greatly. This study should lead to better awareness of this subject and the breakdown of these factors should help increase the understanding of what can be done in countries around the world. Eventually with more time and research, these problems can receive devotion from countries to help people live a longer, healthier, more fulfilling life.

Appendix A:
Variable Description and Data Source

Economic/Social Factor	Description of Factor	Source
Doctors	Number of doctors for every 100,000 people in a country	http://earthtrends.wri.org/searchable_db/index.php?theme=4&variable_ID=1297&action=select_countries
GDP (PPP)	Overall GDP of a country	https://www.cia.gov/library/publications/the-world-factbook/index.html
HIV/AIDS (# of People)	Number of people in a country that have HIV or AIDS	http://hivinsite.ucsf.edu/global?page=cr06-mo-00 https://www.cia.gov/library/publications/the-world-factbook/index.html
HIV/AIDS (Deaths)	Number of people in a country who dies from AIDS in the past year	http://hivinsite.ucsf.edu/global?page=cr06-mo-00 https://www.cia.gov/library/publications/the-world-factbook/index.html
Infant Mortality	Number of infant deaths per 1,000 births	https://www.cia.gov/library/publications/the-world-factbook/index.html
Life Expectancy	Average age a person lives to in a given country	https://www.cia.gov/library/publications/the-world-factbook/index.html
Poverty	Percent of the population that lives under the poverty line	https://www.cia.gov/library/publications/the-world-factbook/index.html
Public Health	Public health expenditure as a percent of GDP	http://www.infoplease.com/ipa/A0934556.html
Smoking	Number of cigarettes consumed per capita in a given year	http://www.nationmaster.com/graph/hea_tob_cig_con-health-tobacco-cigarette-consumption http://www1.worldbank.org/tobacco/database.asp
Unemployment	Unemployment rate	https://www.cia.gov/library/publications/the-world-factbook/index.html

Appendix B:
Variables and Expected Signs – Life Expectancy

Economic/Social Factor	Description of Factor	Expected Sign	Rationale
HIV/AIDS (# of People)	Number of people in a country that have HIV or AIDS.	_	More people with HIV/AIDS means that more people will die at a younger age, therefore lowering life expectancy.
Infant Mortality	Number of infant deaths per 1,000 births.	_	More infant deaths lead to a decrease in the average age length, thus lower life expectancy.
Poverty	Percent of the population that lives under the poverty line.	_	Higher poverty rates mean more people that cannot afford necessities to live which results in a lower life expectancy.
Public Health	Public health expenditure as a percent of GDP.	+	Higher health expenditure leads to better health services and a higher life expectancy.
Smoking	Number of cigarettes consumed per capita in a given year.	_	High cigarette consumption leads to higher health risk and a lower life expectancy.
Unemployment	Unemployment rate.	_	Higher unemployment means less money per family for necessities and therefore a lower life expectancy.

Appendix C:
Variables and Expected Signs – Infant Mortality

Economic/Social Factor	Description of Factor	Expected Sign	Rationale
Doctors	Number of doctors per 100,000 people in each country.	–	More doctors for people to go to when they have children means better individual medical attention and lower infant mortality.
GDP	Gross Domestic Product relative to PPP in each country.	–	Higher GDP means more money to spend on general necessities and medical expenses which would lead to less infant mortality.
HIV/AIDS (# of Deaths)	Number of deaths in a given country from the HIV and AIDS viruses.	–	The more people that die from the HIV/AIDS viruses means that there are less people to pass on the viruses to their children and less infant mortality.
HIV/AIDS (# of People)	Number of people in a country that have HIV or AIDS.	+	More people with HIV/AIDS mean that there are more people to have kids and pass the viruses on to them which would lead to higher infant mortality.
Poverty	Percent of the population that lives under the poverty line.	+	Higher poverty rates mean more people that cannot afford necessities to live or medical expenses which results in a higher infant mortality rate.
Public Health	Public health expenditure as a percent of GDP.	–	Higher health expenditure would lead to better healthcare and lower infant mortality.
Smoking	Number of cigarettes consumed per capita in a given year.	+	High cigarette consumption leads to higher health risk and a higher infant mortality rate.
Unemployment	Unemployment rate.	+	Higher unemployment means less money per

			family for medical care and therefore an increase in infant mortality.

Appendix D:
Results – Infant Mortality

Variable	Observations	Probability	Coefficient	Min	Max
HIV AIDS DEATHS	32	0.0239**	8.14E-07	100	310,000
POVERTY	32	0.0507*	0.069411	8%	86%
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DOCTORS	32	0.0073***	-0.000186	3	425
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Note: ***, **, * denote significance at 1%, 5%, and 10% respectively.

Appendix E:
Results - Life Expectancy

Variable	Observations	Probability	Coefficient	Min	Max
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SMOKING	34	0.1216	-0.002025	77	3023
UNEMPLOY	34	0.0006***	-25.03279	2.5%	80%

Note: ***, **, * denote significance at 1%, 5%, and 10% respectively.

Appendix F:
Countries

Afghanistan
Algeria
Angola
Argentina
Australia
Bolivia
Brazil
Canada
Chad
China
Denmark
Egypt
France
Germany
Guatemala
India
Iran
Iraq
Ireland
Ivory Coast
Japan
Kenya
Malaysia
Mexico
Mongolia
Morocco
Nicaragua
Niger
Russia
Saudi Arabia
Spain
Sudan
U.K.
U.S.A.
Ukraine
Vietnam
Yemen
Zambia

Zimbabwe

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