# The Impact of Socioeconomic and Environmental Factors on Infant Mortality in the U.S.

**Tai Abukasis**[a]

**Abstract:**

This paper examines socioeconomic and environmental agents that may affect infant mortality rates among Whites, Blacks, and Hispanics in the United States. Data was collected at the state level from both federal and private databases. Three separate ordinary least squares regressions were taken for each of the aforementioned demographics. The correlations between the independent variables and infant mortality were examined from a racially-based perspective to further evaluate potential underlying causes regarding geographic, financial, and environmental constituents. Analysis of the regressions revealed that particular variables affect the rate of infant deaths among races differently and that racial disparity continues to exist in the U.S.

JEL Classification: I10, I30, Q53

Key Words: Infant Mortality, Environment, Socioeconomic

[a] Bachelor of Science in Applied Economics, Bryant University, 1150 Douglas Pike, Smithfield, RI 02917. Phone: (617) 543-6140. Email: aabukasi@bryant.edu

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## 1.0 Introduction

Although the U.S. rate of infant mortality has steadily declined since the early 1900's, the nation currently ranks 56th in the world—at 6.22 deaths per 1000 births (Central Intelligence Agency [CIA], 2009)[1]–and is of leading concern when examined from a socioeconomic perspective. Racial disparities are a central focus when studying the current state of infant mortalities, with African Americans and Puerto Rican's experiencing the highest rates and Japanese women remaining at the opposite spectrum (Hummer et al., 1999).

Escalating concerns over global warming, pollution, and exorbitant levels of energy consumption reiterate the importance of examining present environmental factors and the possible consequences that follow. This paper attempts to combine the socioeconomic variables from previous studies with current environmental data, and examine whether the variables within these two aspects affect the rate of infant mortality in the U.S.

The data collected is at the state level and evaluates the various socioeconomic and environmental impacts for Anglo Americans, African Americans, and Hispanics. Increased life expectancy reflects this overall decrease in infant mortality rates (IMRs) in which White females are expected to live on average four years longer than Black women in 2010 (Census, 2010). From a socioeconomic standpoint; medical, academic, and financial constituents are examined. Environmental variables inspected include per capita

[1] The Data was found on the CIA World Factbook page

energy consumption, $CO_2$ emission, and the number chemicals detected in drinking water.

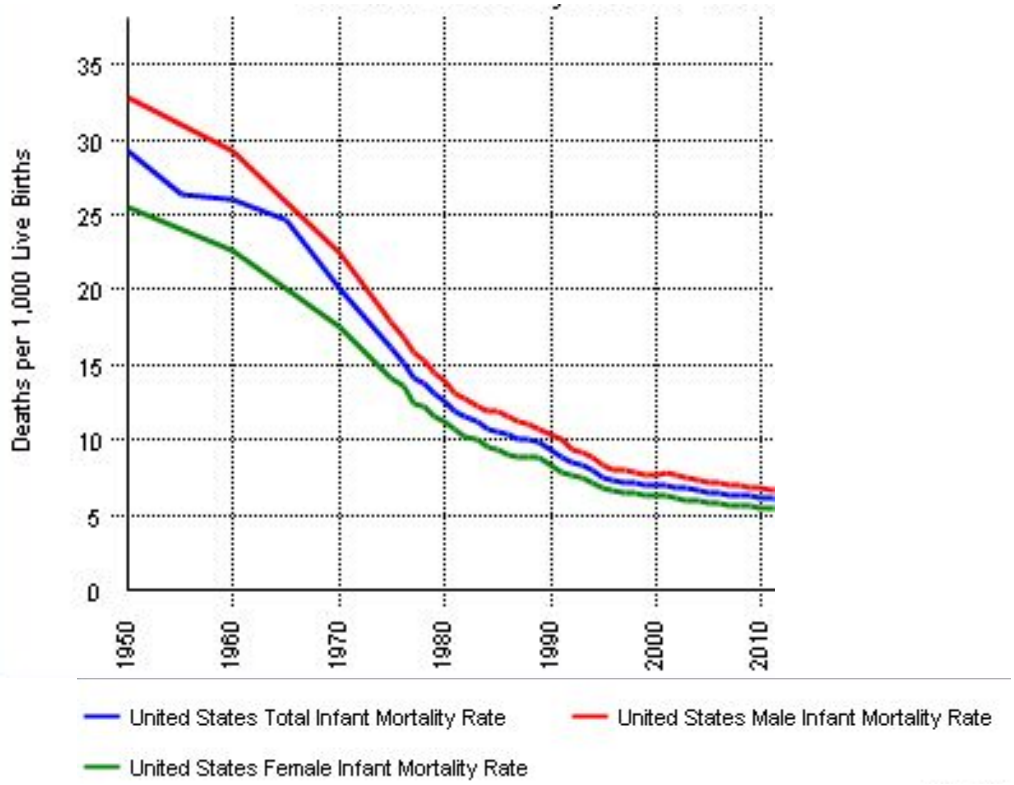
The purpose of this paper is to expand the understanding of infant mortality developments, and examine the extent to which environmental and socioeconomic factors may act in accordance with IMRs. There is a lack of empirical analysis conducted in which social and environmental elements are examined within a single study. This paper effectively fills that vacancy.

The remainder of the paper is organized as follows: Section 2 inspects current trends concerning particular variables within the model. Section 3 regards the literature review in which analysis conducted in previous studies is examined. The data utilized in the model and the empirical methodology is found in section 4. The results of the regressions are located in section 5. Lastly, section 6 encompasses concluding points, data limitations, and future implications.

## 2.0 Trends

While the perpetual decrease in IMRs is correlated with the decline in fatal cases of pneumonia, influenza, prematurity and low birth weights; social and economic inequalities between Whites and specific demographics have exponentially increased (Singh & Yu, 1995). Figure 1 illustrates the diminishing levels of IMRs among both men and women from 1950 to 2010.

**Figure 1: U.S. Infant Mortality Rate, 1950-2010**

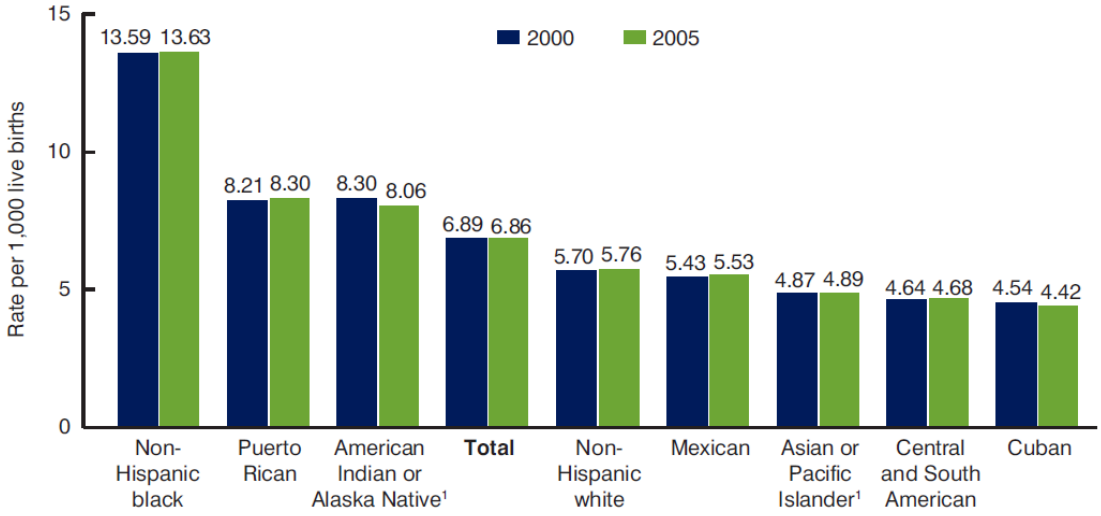



Source: Data360.org

Racial inequalities between Whites, Blacks, and Hispanics have long been documented. In 1950 the IMR for Blacks was 43.9 per every 1000 births, which was roughly 64% higher than Whites at that time (26.85). By 1991 the rate had dropped to 16.5 per 1000 for African Americans and 7.5 per 1000 for Whites. In that same decade Black infants had a 43% higher chance of dying than White infants in the neonatal stage, and in 1991 this number escalated to 130% for Black babies (Singh & Yu, 1995). Chinese, Filipino, and Japanese women have statistically shown the lowest IMRs among

women, while Puerto Ricans, African Americans, and Hawaiians generally exhibit the highest rates of infant mortality (1995). While the overall IMRs for Whites, Blacks, Asians and Hispanics have decreased from 1995-2002, the disparity levels between the ethnicities during this time period remained proportionally constant. Figure 2 reflects the unbalanced infant mortality levels among differing ethnicities and races.

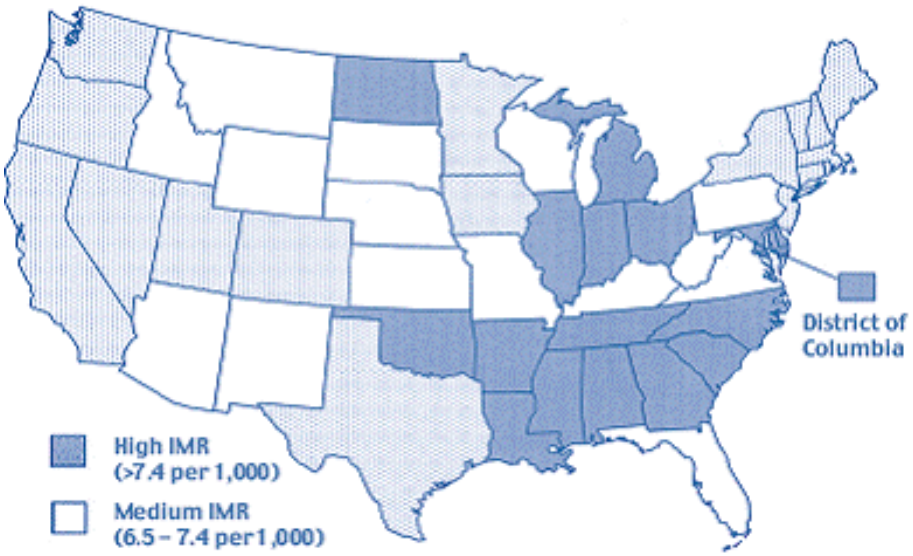
**Figure 2: IMRs by Race and Ethnicity, 2000 & 2005**




Source: National Center for Health Statistics

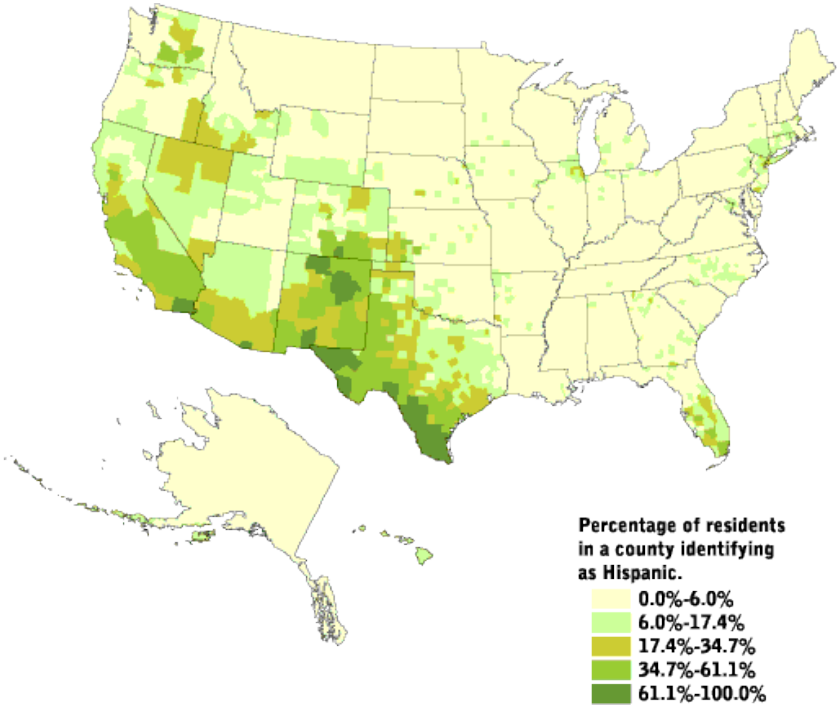
High rate of infant mortalities has historically concentrated in the Southern and Midwestern regions of the U.S. States within these regions often exhibit greater levels of overall racial disparity. African Americans predominantly live in the Southern area of the U.S., and Hispanics congregate more towards Southern Texas and California (Census Scope, 2000). Figure 3 reflects the IMRs of each state in 2002, Figure 4 illustrates the dispersal of Hispanics in the U.S., and Figure 5 demonstrates the geographic makeup of African Americans.

**Figure 3: Geographic IMR Comparison by Race, 2002**



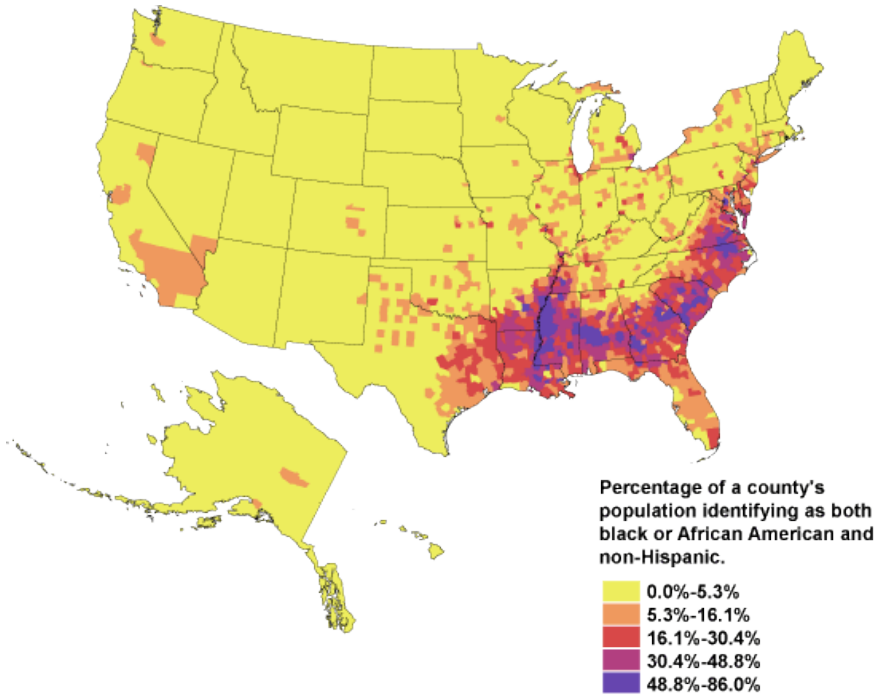

Source: Human Resources and Services Administration

**Figure 4: Racial Density of Hispanics in the U.S., 2000**




Source: www.CensusScope.org

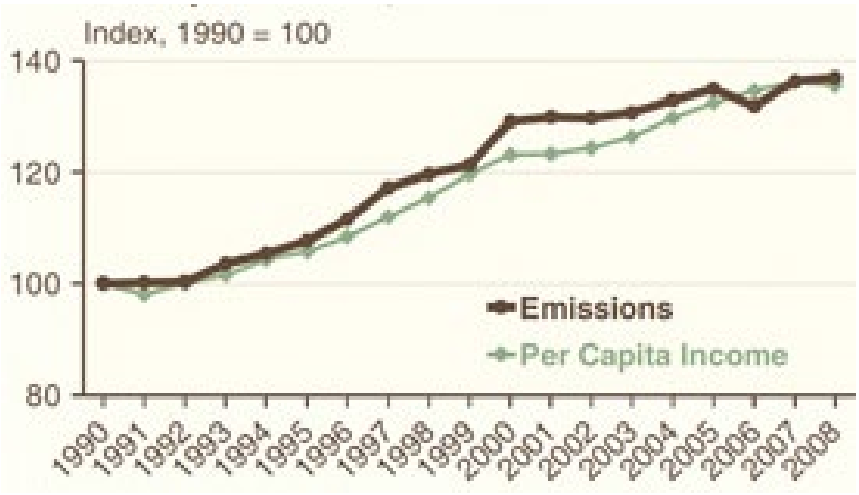
**Figure 5: Racial Density of Blacks in the U.S., 2000**




Source: www.CensusScope.org

Fears over global warming have mounted as energy consumption, fossil fuel combustion, and overall pollution levels rise throughout the world. These trends remains stable as globalization perpetually transforms the marketplace and large-scale industrialization remains the focal method of production. Commercial sector carbon dioxide emissions have ascended from 785.1 million metric tons in 1990 to 1,075.1 million metric tons in 2008 (U.S. Energy Information Administration [EIA], 2009). Figure 6 below illustrates the relationship between $CO_2$ emissions and per capita income in the U.S. and the exponential increase that has occurred over the past twenty years.

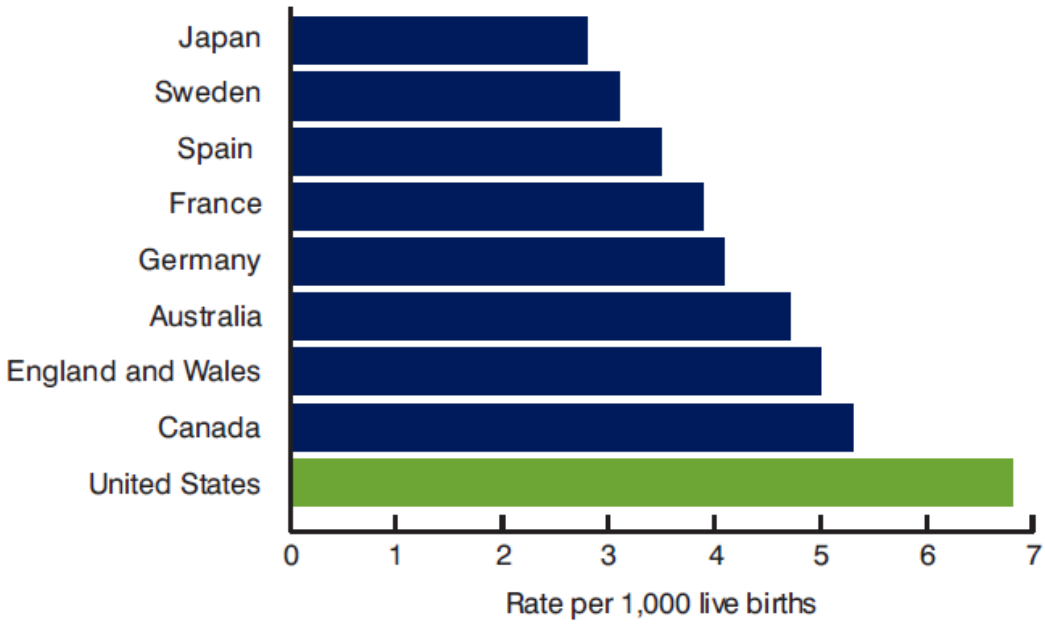
**Figure 6: U.S. Commercial Sector $CO_2$ Emissions & Per Capita Income, 1990-2008**



Source: U.S. Energy Information Administration

In terms of infant mortality, the U.S. has significantly lagged against other industrialized nations. In 1960 the U.S. ranked 12th globally, and in 1988 they slipped to 23rd (1995). As mentioned earlier, the U.S. stands 56th in the world with 6.22 deaths per 1000 births, which is a significant increase from the 2004 and 1990 rankings of 29th and 23rd, respectively (MacDorman & Mathews, 2008). Although not entirely accounting for this increase, the effective and consistent reporting and documentation of newborn deaths in the U.S. results in a higher rate when compared to less developed countries (2008). The graph below depicts America's IMR in relation to other developed nations.

**Figure 7: IMR by Country, 2007**




Source: Centers for Disease Control and Prevention

## 3.0 Literature Review

Infant mortality rates are accurate reflections of possible state failure and the overall welfare of that population. These underlying inferences reiterate the importance of analyzing the health of newborns and the factors that may hinder general wellbeing and life expectancy. Specific variables from the following studies were implemented when constructing this paper's model.

Hummer's (1993) study focuses on the divergent IMRs between Anglo and African Americans through a logistical regression model. Hummer claims that birth weight is the most important factor when analyzing racial discrepancies. The author determines that African American women and children are at a disadvantage when compared to their White counterparts. Finch (2003) conducts a framework similar to Hummer (1993) though he focuses more on the impact of affluence. His analysis

indicates that income levels have a significant positive impact on the rate of infant mortality at a diminishing rate of return.

Geographic location becomes an imperative aspect of comparison when examining possible racial inequalities. Perera (2008) evaluated the health impact fossil fuel (primarily $CO_2$) induced climate changes have on infant health. Her analysis reinforces the presupposed notion that children are at greater risk of developmental injury, low birth weight, and cancer when their mothers are exposed to fossil fuels prior to and during pregnancy. The author found that impoverished children in urban areas are at greatest risk of infant mortality. Contrary to this last claim, Poel et al. (2009) examine IMR disparities between rural and urban areas, and discover that rural areas experienced higher IMRs due to disadvantages in household conditions. Among the most influential variables examined is the relative lack of safe drinking water and proper electricity found in more remote locations. Sparks' et al. (2009) findings parallel that of Poel's et al. (2009) in that they found infant mortalities to be much higher in nonmetropolitan (rural) areas. The authors state that inadequate access to health services in these more isolated environments could pose as a possible explanation.

The sanitary condition of publicly available water sources have been shown to influence the rate of infant mortality. Paul et al. (2008) examined a positive correlation between water stream miles in poor ecological conditions and unusually high IMRs. The authors establish that inferior stream conditions and IMRs fluctuate in accordance, as impure water levels and infant deaths illustrated a positive correlation. Spangler and Spangler (2010) analyze manganese levels in groundwater and their possible connections

with IMRs. Their data reiterates the dangers of high chemical levels in drinking water by concluding that high manganese levels increase the probability of infant mortality.

While correlations between social status and infant mortalities have been well documented, Woodruff et al. (1997) investigate possible connections between particulate ($PM_{10}$) air pollution and IMRs. The data revealed a positive correlation between particulate matter and IMRs. Kaiser et al. (2004) support the findings of Woodruff et al. (1997) by stating that high levels of air pollution are shown to increase the risk of infant mortality in the U.S. through diminished fetal growth, low birth weights, and preterm birth.

When controlling the real incomes of the poor, Waldmann (1992) establishes that increased income disparities are positively correlated with IMRs. The author states that there is a possible correlation between inequality and the relative price of health care, and that a larger fraction of infants are born to poor families in countries with a high 'Rich Share.' Another plausible justification he presents is that government policies are tailored towards the needs of the wealthy. Kogan and Singh (2007) concluded that infants brought up in the most deprived environments are at greater risk of fatality when compared to newborns in the least deprived group (as calculated by the deprivation index). A lack of education also results in a substantial increase in the rate of infant mortality. The authors found that women lacking high school education were much more likely to smoke during pregnancy in contrast with women who obtained a college degree.

Kitsantas and Gaffney (2010) examine IMRs in terms of racial disparities between Whites, Blacks, and Hispanics. While the authors found concurring affects among races regarding neonatal mortality, their data illustrated an increased level of risk

for Black infants in the postnatal stage. A positive correlation was found between insufficient prenatal care and neonatal mortality for all three demographics. Lesser education levels affected IMRs among Black women and White women, but not Hispanic women, and low birth weight had the most substantial influence on the rate of Black infant deaths.

Shaw et al. (2010) inspect the relationship between ethnic population density and pregnancy outcomes. Their data reveals that areas of high same-race densities were negatively correlated with IMRs among Hispanics, and led to a decreased chance of smoking during pregnancy among U.S.-born Hispanic and Black mothers. Among Black women, they found that high levels of same-race density have no additional influence on IMRs, and moderate levels of same-race density were correlated with increased risks of low birth weight and preterm delivery. They justify these finding by affirming that Blacks lack the cultural cohesion, and social capital and networking found among Hispanics.

Hummer et al. (1999) examines the rate of infant mortality in terms of ethnicity and nativity. The authors' data reveals that women who migrated to the U.S. experience lower IMRs than native born Americans. The data indicates that cigarette smoking is far more prevalent among U.S.-born women than foreign-born women. In correspondence with the other studies, Black and Puerto Rican woman are at greatest risk of experiencing infant mortalities due to their sociodemographic position.

## 4.0 Data & Empirical Methodology

### 4.1 Definition of Variables:

The data acquired for this paper was obtained from select government and organizational databases and are measured at the state level. The dependent variable of infant mortality rate (LIM) is measured in terms of death per 1,000 births. The independent variable SMK reflects the percent of women who smoke between the ages 18-64. ND represents women with no high school diplomas and is taken as a percentage. Poverty rates (POV) are measured in terms of the federal poverty level in 2005 which was $19,350 for a family of four. Median household income is represented by MHI and measures the financial status of that demographic. The percentage of women with no health insurance coverage is signified by the acronym NHI. LBW reflects the births of low birth weight infants as a percentage of all births. The number of available hospital beds (HB) is calculated per 1,000 residents. Total per capita energy consumption (EC) is measured in million Btu, and carbon dioxide emissions (CO) released by fossil fuel combustion is calculated in million metric tons. CO figures are summations of commercial, industrial, residential, transportation, and electric power sectors. The number of chemicals detected (DC) in tap water is measured via public water utilities. Excluding CO, EC, and DC, all the variables reflect the condition of women in their respective states and by their ethnical background. A concise table containing the variables, their sources, and expected signs is found in Appendix A.

### 4.2 Data:

IMR was taken as a log through yearly averages from 2004-2006 for Whites and Blacks and 2003-2005 for Hispanics. LIM for Whites and Blacks were found on the

Kaiser State Health Facts website, while the mortality figures for Hispanics was found on the Centers for Disease Control and Prevention database. The statistics pertaining to the environmental variable SMK and the socioeconomic independent variables ND, POV, MHI, NHI, and HB were collected from the Kaiser State Health Facts website as yearly averages from 2004-2006 and, with exception to HB, are segmented by state and race. LBW parallels the other socioeconomic independent variables but was taken for the year 2006. The Environmental variables CO, EC, and DC do not take race into account and were found at the state level for the year 2006 from the U.S. Environmental Protection Agency (EPA), the Energy Information Administration, and the Environmental Working Group's website, respectively.

**4.3 Research Methodology:**

Three separate linear regressions were constructed using an ordinary least squares (OLS) model specified at the state level for White, Black, and Hispanic Americans. The software EViews was used to run the regressions and analyze their potential correlations. The log of the dependent variable was taken for all three regressions to simplify and enhance the accuracy of the results. Therefore a single unit increase in any of the independent variables results in a percentage increase or decrease—depending on the correlation—for LIM. All the data was collected at the U.S. state level, with all the variables—excluding DC, CO, and EC—concerning racially specified figures. Excluding MHI and HB, all the variables have an expected positive sign. The model applies to all three demographic groupings and is depicted as so:

$$\mathbf{LIM}=\beta_0+\beta_1 WND-\beta_2 MHI+\beta_3 POV+\beta_4 LBW+\beta_5 NHI-\beta_6 HB+\beta_7 SMK+\beta_8 DC+\beta_9 CO+\beta_{10} EC+\varepsilon$$

## 5.0 Empirical Results

The principal objective of this study is to analyze the significance of socioeconomic and environmental variables on IMRs among Whites, Blacks, and Hispanics. The number of observations varies between the three demographics—with Whites possessing the greatest number of data points—due to the difficulty of capturing figures derived from regions lacking Black and Hispanic populations. Variables that generated inconsequential results were removed from the analysis. To assist negating some of the study's data limitations, probability results ranging from 15%-17% were considered statistically significant at the 10.0% level. Represented by the probability f-statistic, the overall significance was at 1.0% for all three models which further reinforces the regression results. African Americans exhibited the strongest overall statistical correlation, while Hispanic IMRs corresponded least with the data. This measure of empirical correspondence is depicted by $R^2$ which was calculated at .76 for Blacks, .74 for Whites, and .64 for Hispanics. The statistical results for Whites, Blacks, and Hispanics are found in Table 1, Table 2 and Table 3, correspondingly.

**Table 1: Regression Results for Whites**

| Variable | Coefficient | T-Statistic | Expected Sign |
|---|---|---|---|
| ND | 1.194276*** | 2.883563 | + |
| MHI | -4.71E-06*** | -3.958546 | - |
| POV | -1.763524*** | -3.581551 | + |
| LBW | 2.678988*** | 2.825952 | + |
| NHI | 0.104618 | 0.420740 | + |
| HB | -0.010028* | -1.373875 | - |
| SMK | 0.224121 | 1.159135 | + |
| DC | -0.000157 | -0.863874 | + |
| CO | 4.80E-05 | 0.927456 | + |
| EC | 4.20E-06 | 0.105958 | + |

Note: *** indicate significance at 1.0%, ** indicate significance at 5.0%, * indicates significance at 10.0%

Five of the ten independent variables are statistically significant for Whites, with four of these five data points significant at 1.0%. These variables consist of women with no high school diplomas, median household income, poverty rate, and percent of low birth weight infants born per 1,000. The number of hospital beds per 1,000 is significant at 10.0%.

Women lacking a high school diploma exhibited the expected sign in which there is a positive correlation between a lack of proper education and IMRs. This coincides with the finding of Singh and Kogan (2007) and Gaffney and Kitsantas (2010) who stated that deficient levels of education substantially increase the risk of infant death. Greater levels of education are often correlated with higher wages and increased financial opportunities which would therefore expand the ability of a mother to take care of herself and her infant. This concept in reinforced by Gaffney and Kitsantas (2010) who found that inadequate prenatal care is positively correlated with IMRs.

The second significant variable among Whites is MHI, which demonstrates the expected negative sign. Finch's (2003) study reflects this verdict in which he states that increased wealth results in a decreased rate of infant death. The results of this inverse relationship reiterate the abovementioned finding that higher levels of income decrease IMRs by expanding available resources, and improving healthcare options and household conditions.

The rate of poverty deviates from the expected sign by illustrating a negative relationship with IMRs. This result does not directly correspond with any of the studies examined in this paper and implies that an increase in the rate of poverty would decrease the number of infant deaths. The financial, familial and social cohesion Shaw et al.

(2010) examined among Hispanics could possible relate to Whites as well, and may therefore justify this finding. Another possibility is that specific government policies benefit those in poverty, which creates incentives to remain within a certain income bracket. This would convolute that actual portion of society categorized as impoverished.

The fourth variable of low birth weight was statistically significant and illustrates the expected positive sign. This relationship is consistent with Hummer's (1993) findings and indicates that an increased number low weight births will amplify the number of infant deaths. Inadequate birth weight is related to unhealthy maternal dietary habits which reduces the chances of survive for that newborn.

The availability of hospital beds was the least significant of the variables and confirmed the expected negative sign. This implies that an increase in the quantity of hospital beds will decrease the chances of infant mortality among Whites. Former studies support this finding by stating that proper medical care will translate into more successful births and therefore fewer deaths.

**Table 2: Regression Results for Blacks**

| Variable | Coefficient | T-Statistic | Expected Sign |
|---|---|---|---|
| ND | -0.697121 | -1.329248 | + |
| MHI | -1.62E-05* | -1.766553 | - |
| POV | -0.440642 | -0.801247 | + |
| LBW | 4.453961*** | 3.134210 | + |
| NHI | 0.667286** | 2.122692 | + |
| HB | -0.122297*** | -3.689230 | - |
| SMK | 0.841003*** | 2.716500 | + |
| DC | 9.53E-05 | 0.243369 | + |
| CO | -0.000103 | -0.916976 | + |
| EC | -0.000110 | -0.452096 | + |

Note: *** indicate significance at 1.0%, ** indicate significance at 5.0%, * indicates significance at 10.0%

Among African Americans, five of the ten variables are statistically significant, with three of these categories significant at 1.0%. These most influential variables include low birth weight, hospital beds, and women who smoke. Women lacking health insurance is significant at 5.0% and median household income is substantial at 10.0%.

The regression results involving low birth weight and infant mortalities corresponded with the expected positive sign. As explained among Whites, low birth weights imply unhealthy maternal habits and obstruct the already complex process of fetal development. Gaffney and Kitsantas (2010) found that low birth weight had the greatest affect among Blacks which fortifies the findings of this study.

The rate of Black women who smoke substantially affects IMRs in an expected positive relationship. This relationship connotes a positive correlation in which an increase in the number of Black women who smoke will simultaneously increase the rate of infant mortality. Cigarette smoking has been shown to cause low birth weight and reduce maternal health, therefore increasing this behavior will concurrently worsen the infant's wellbeing. Hummer et al. (1999) and Shaw et al. (2010) reiterate this relationship by asserting that cigarette smoking increases these fatalities. The latter study elaborates by stating that a dense same-race environment—which is the geographic case for many African Americans—decreases the chances of mothers smoking during pregnancy.

An increase in the number of hospital beds adheres to the expected negative sign. This relationship implies that an escalated quantity of hospital beds will decrease the IMR among Blacks. Supplying pregnant women with proper medical attention suggests improved success rates. Gaffney and Kitsantas (2010) reiterate this concept by asserting

that a lack of prenatal care results in increased rates of infant mortality. Therefore proper attention will diminish the chances of newborn death.

The fourth significant variable among Black women is NHI, which exhibits the expected positive relationship. This correlation signifies that a growth in the number of women without health insurance will increase the number of newborn deaths. Singh and Kogan (2007) found that economically and socially deprived environments lead to greater health risks for infants. Denying women proper coverage decreases the ability to verify current health conditions and maintain proper hospital check-ups.

The final significant variable among Black women is median household income which follows the expected negative correlation. According to this data, increasing household income decreases the rate of infant mortality. White women are similarly affected by MHI and the reasoning for both remains equivalent. Increased income generates improved opportunities for the mother from an academic, social, and medical perspective; all of which reduce possible health complications.

**Table 3: Regression Results for Hispanics**

| Variable | Coefficient | T-Statistic | Expected Sign |
|---|---|---|---|
| ND | -0.059680 | -0.447986 | + |
| MHI | 5.57E-06 | 1.134156 | - |
| POV | 0.995823*** | 2.600207 | + |
| LBW | -0.372436 | -0.291569 | + |
| NHI | 0.042424 | 0.277366 | + |
| HB | 0.011075 | 0.658718 | - |
| SMK | 0.400056** | 2.026043 | + |
| DC | -0.000989*** | -3.571259 | + |
| CO | 0.000122* | 1.541692 | + |
| EC | -0.000266* | -1.532984 | + |

Note: *** indicate significance at 1.0%, ** indicate significance at 5.0%, * indicates significance at 10.0%

Hispanics exhibited five significant variables among the ten total categories, with two variables at the highest level of relevance. Poverty and detected water chemicals represent the most significant of the five variables, while smoking was significant at 5.0%, and $CO_2$ emissions and energy consumption were significant at 10.0%.

Poverty exhibited the expected positive relationship with IMRs. As the rate of poverty rises the number of infant mortalities increases as well. Singh and Kogan (2007) state that infants brought up in deprived environments are most susceptible to unexpected deaths. Higher poverty levels limit the availability of resources and the opportunities presented to those raised in superior school systems and communities. Less money results in lower quality healthcare, financial stress, and compromised circumstances.

The second variable of detected chemicals in tap water deviates from the expected positive relationship, asserting that an increase in the contamination level of tap water decreases the rate of infant mortalities. This finding differs from the studies conducted by Paul et al. (2008) and Spangler and Spangler (2010) who claim that chemicals and infant mortality maintain a positive relationship. A possible justification is that Hispanics live in environments that contain overtly unsanitary tap water, and they therefore turn to drinking bottled water, or any other alternative, in an attempt to reduce the consumption of these known impurities.

Smoking among Hispanic women follows the expected positive relationship, where an increase in the number of women smokers simultaneously increases the number of infant deaths. This regression result parallels that of White women, in which smoking causes a variety of illnesses for the mother and the child, and therefore increases the likelihood that death will occur.

As expected, $CO_2$ emissions are positively correlated with IMRs, which translates into an increased level of emissions concurrently increasing the number of infant deaths. This finding reiterates that of Woodruff et al. (1997), Perera (2008) and Kaiser et al. (2004) whose studies found that particulate air pollution and fossil fuel emissions substantially increase IMRs. Exposure to such chemicals causes developmental injury, low birth weight, diminished fetal growth, and preterm birth—all of which supplement potential infant death.

Lastly, per capita energy consumption deviates from the expected positive correlation, connoting that IMRs decease as energy consumption increases. This differs from the aforementioned studies for $CO_2$ emission, in which greenhouse gasses harmfully impact infant livelihood. A plausible justification is that, increased per capita energy implies increased income due to the expenses associated with consumption (reference Figure 6). Therefore possible indicating that Hispanic mothers are capable of providing improved resources for their newborns which reduce the likelihood of infant death.

## 6.0 Conclusion, Limitations, and Implications

### 6.1 Conclusion:

While the U.S. IMR has steadily declined in the past century, racial disparities among Whites and certain minority groups continue to escalate. Social discrepancies are a likely contributor to the U.S.'s inordinately high rate of infant deaths among industrialized nations. This study explicates infant mortality trends by combining socioeconomic and environmental data in hopes of capturing a more comprehensive race-driven analysis. The previous studies examined were taken from a diverse range of topics

concerning racial disparities, geographic location and racial density, water conditions, and air pollution. The three variables that diverged from their expected signs consist of detected chemicals in tap water and per capita energy consumption for Hispanics, and poverty rate for Whites.

The overall analyses revealed that Hispanics are disproportionately affected by environmental pollutants and poverty, while Blacks are more vulnerable to medical deficiencies. Whites are excessively influenced by social, academic and financial instabilities, and have a higher susceptibility to the negative aftermath induced by low birth weight deliveries. African Americans exhibited the highest overall correlation, while all three models displayed strong overall significance at 1.0%. Many of the discordant correlations displayed in the regression analyses are rooted in the data limitations as they concern precise demographics and geographic locations.

**6.2 Limitations:**

Environmental studies are often based on scientific empiricism which is difficult to obtain without direct involvement in the procedure or a comprehensive recognition of environmental sciences and mathematics. By recognizing this complication future papers will be better suited in evaluating the implications of differing environmental components on infant health. The concentrated geographic composition of Blacks and Hispanics makes obtaining certain figures improbable due to insufficient data points. The combination of state level and racially focused statistics required a realized tradeoff between the collectability of the data and the utility of the study for further exposition. Though more of a long-term circumstance, the relativity or race—particularly amongst

Hispanics—causes data to fluctuate and therefore skew concluding results. This study was limited by the technical aspects associated with environmental examinations and the concentrated distribution of Blacks and Hispanics within the U.S.

**6.3 Implication:**

Racial and gender inequality is a perpetual circumstance that is exemplified through state comparisons due to the explicit disparities among differing geographic locations. Diffusing racial discrimination is a laborious process convoluted by ideological bureaucracy. Therefore a systematic and multifaceted approach is imperative for successful implementation. The affects the Obama administration's new healthcare bill may have on the rate of infant mortality will be an intriguing topic to analyze in the coming times. The initial expectation is a decrease in the rate of infant mortality as public healthcare is presented to millions of formerly uninsured Americans. From a converse perspective, the reforms could diminish the quality of health services Americans receive which would negatively impact the number of infant deaths. Inequality among races is a deeply rooted crisis in the world today, and an effective solution must properly localize and contextualize each particular circumstance within the boundaries of that environment.

**Appendix A: Variable Descriptions and Data Sources**

| Acronym | Variable | Source | Expected Sign |
|---|---|---|---|
| LIM | The Dependent Variable; Infant mortality rate measured in terms of death per 1,000 births | Kaiser State Health Facts for Whites and Blacks. Centers for Disease Control and Prevention for Hispanics | |
| SMK | The percentage of women who smoke between the ages 18-64 | Kaiser State Health Facts | + |
| ND | Women with no high school diplomas | Kaiser State Health Facts | + |
| POV | Poverty rate measured in terms of the federal poverty level in 2005 ($19,350) | Kaiser State Health Facts | + |
| MHI | Median Household Income | Kaiser State Health Facts | - |
| NHI | No Health Insurance Coverage | Kaiser State Health Facts | + |
| LBW | Births of low birth weight infants as a percentage of all births | Kaiser State Health Facts | + |
| HB | The number of available hospital beds per 1,000 residents | Kaiser State Health Facts | - |
| DC | The number of chemicals detected in tap water | Environmental Working Group | + |
| CO | Carbon Dioxide emissions released by fossil fuel combustion and measured in million metric tons | Environmental Protection Agency (EPA) | + |
| EC | Total per capita energy consumption measured in million Btu | EPA | + |

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