

**Impacts of the U.S. Embargo on Cuba's Public Service Provisions: An Analysis of
the George W. Bush and Barack Obama Administrations**

Annie Gillani and Hana Manjusak

Sam Nunn School of International Affairs, Georgia Institute of Technology

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Dr. Mikulas Fabry

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The Cuban Revolution lasted from 1953 to 1959 and ended with the United States' backed dictator, Fulgencio Batista, fleeing the country. After the revolution, Fidel Castro assumed military and political power as Cuba's prime minister, and soon after enacted socialist policies, including the nationalization of oil refineries and property. These policies sparked both anger and an oil war with the United States, a country with close economic ties to Cuba prior to the revolution. Thus, in October 1960, the Dwight D. Eisenhower administration put an economic embargo into effect against Cuba, which pushed the country to become heavily dependent on the Eastern bloc (Julien, 1961). Decades of the U.S. embargo and sanctions followed and went through periods of both loosening and tightening of restrictions, depending on what administration was in power (Napier, 2010). Moreover, when the Soviet Union showed sure signs of collapse in 1990, the U.S. pressured an end to the preferential trade agreement with Cuba, drastically harming the Cuban economy (Lee, 2017). It has been over sixty years since the onset of the Cuban embargo, and it still remains in place today.

The stories of the 'failures of socialism' are emphasized frequently, particularly in liberal Western democracies. These anecdotes, however, are often not presented in conjunction with evidence of interference from the United States that is occurring simultaneously. The Cuban case is one that is very prominent in political and academic discourse in the United States, and the country is frequently cited as an example of a socialist state that fails to provide public goods and services to its people. Since the onset of the embargo, Cuba has faced many public service provision struggles, including nutrition hardships, public health issues such as the epidemic of optic neuropathy, a lack of medicine and medical supplies, and a lack of education resources,

among other examples. The level of hardship Cuba faces in providing public service provisions to their people, however, has fluctuated over the years, with the country performing better in providing them in some years rather than in others. Thus, the pressing question in this study is what causes this fluctuation to occur. Understanding whether there is a link between the U.S. interference and Cuba's struggles to provide public service provisions is therefore a compelling question, and the following research question is posed: *Is there a link between Cuba's struggles to provide public service provisions to its citizens under socialism and the United States' economically-driven embargo and sanctions against the country?*

Finding an answer to this question will be beneficial in learning what exactly causes a socialist country like Cuba to struggle in providing certain goods and services to its citizens, and scholars have offered two prominent reasonings behind these struggles. The first school of thought cited the United States embargo and sanctions as the driving factor for Cuba's struggles, and the second emphasized the socialist structure of Cuba itself as the problem. After close evaluation, the first school appeared to be the most compelling, though most of the data was constrained to the 1990s. Therefore, the theory explored through the rest of the paper is: *The U.S. embargo and sanctions against Cuba are the driving force behind Cuba's struggles to provide public service provisions to their people.*

To close the gap in the data and resolve the debate between the two schools, we conducted a comparison of the George W. Bush and Barack Obama administrations. This pairing provided both variation and control, as Bush and Obama had drastically different policies when it came to Cuba, but they both served two consecutive four-year terms and were in office during the post-Cold War era. In order to determine Cuba's ability to provide public service provisions to their people during these two administrations, we used data from the World Bank and CIA

World Factbook on different provisions and their measurements. After conducting two-sample t-tests for significance, our analysis found that out of the nine indicators that we explored, only three of them did not show a significant improvement in Cuba's public service provisions under the Obama administration. This shows that the majority of the time, easements on the U.S. embargo and sanctions towards Cuba led to the country providing public service provisions to its people in a more efficient and effective manner.

Data for this analysis was constrained, however, and analyzing more indicators than just nine could have led to different results. The research does still provide interesting insights, as for many provisions, there were multiple measures that were significantly improved under the Obama administration. Even if greater amounts of data were to show that the embargo does not affect certain provisions, some indicators such as healthcare and energy infrastructure are clearly impacted by the United States' embargo. With this research, one can see vast policy implications for both the United States and Cuba, as it points out the direction both countries should move toward in order to achieve their goals, as will be further explained later in the paper.

Cuba's Struggles to Provide Public Service Provisions: Two Prominent Views

To begin, exploring existing answers to this research question was beneficial in identifying prominent schools of thought and the debate that exists around this topic. The first school of thought identified answers to our research question with a yes, claiming that the U.S. embargo and sanctions against Cuba are a driving force in the state's struggles to provide public service provisions to its people. The second school of thought, on the other hand, answered the research question with a no. This view claims that Cuba's internal socialist structure is the primary reason for its struggles to provide public service provisions to its people. The first school of thought is strong in that it provides a multitude of evidence showing just how the U.S.

embargo and sanctions have harmed different aspects of Cuba's public service provisions. It does lack, however, a recent analysis, as most arguments focus on Cuba's struggles from the 1990s.

As for the second school, there are some compelling statistics and theories, though the arguments citing Cuba's internal socialist structure as a driving force of struggle can be easily debunked with additional elements taken into account.

School #1: U.S. Embargo as a Driving Force of Struggle

Previous research conducted by scholars on this topic provides a vast amount of information on the link between the U.S. embargo and Cuba's ability to adequately provide public service provisions to its people. Julio Zaldívar and Sara Kozameh explain how the embargo has overall caused massive suffering and poverty on the island, citing a UN estimate that the embargo has cost Cuba a total of \$130 billion over the last 60 years (2020). Kamran Nayeri specifically explains how in 1993, Cuba's imports for public health cost an additional \$45 million due to the U.S. embargo and the 1992 Cuban Democracy Act (1995). By this time, the U.S. embargo had cost the Cuban economy an estimated \$41 billion in total, and this severely limited the economic base upon which the healthcare system could have developed (Nayeri, 1995).

Even though the healthcare system was firmly in place, the economic crisis caused by the embargo works against Cuba's efforts to provide healthcare to all of its people (Nayeri, 1995). As a result of this, there was a shortage of food, a neuropathy epidemic, electricity and water outages in schools, as well as a shortage of pencils and paper (Nayeri, 1995). There was also a massive shortage of soap, detergents, toilet tissue, and insecticides, and three hundred different medicines were in short supply (Nayeri, 1995). This clearly outlines the Cuban healthcare system being under siege due to the U.S. embargo. Other scholars emphasize this by reiterating that the

U.S. embargo, by causing difficulties to provide healthcare, food, education, water, and electricity, was harming human rights in the name of promoting them (Coll, 2007).

Other scholars go on to say that by reducing access to essential medicines and medical supplies from other countries and preventing their purchase from U.S. firms, the embargo contributed to a rise in morbidity and mortality (Garfield & Santana, 1997). This sentiment was further emphasized by Roberg and Kuttruff who stressed Cuba's situation in 1995 (2007). A report from that time showed that when individuals checked into a hospital, they had to bring their own sheets, toilet paper, soap, and other essential personal items (Roberg & Kuttruff, 2007). Additionally, prior to 1991, there were 1297 medicines readily available in Cuba, but this number dropped to 889 by 2007 (Roberg & Kuttruff, 2007). Since U.S. drugs were no longer available, 80% of the medicines in Cuba were manufactured internally, and intellectual property laws made it so they could only manufacture generic drugs (Roberg & Kuttruff, 2007).

The 1992 "Torricelli Bill," also known as the Cuban Democracy Act, tightened the embargo, and by the end of the 20th century, few international pharmaceutical companies supplied essential medicines or raw chemicals to Cuba (Drain & Barry, 2010). There was an association between these medicine shortages and a 48% increase in tuberculosis deaths from 1992 to 1993 (Drain & Barry, 2010). The Cuban Democracy Act in 1992 also ended Cuba's ability to buy food from U.S. corporations abroad and raised Cuba's shipping costs substantially (LeoGrande, 2015). Following this, the proportion of newborns weighing under 2500g grew 23 percent from 1989 to 1993, and from 1988 to 1993, the percentage of women with inadequate weight at pregnancy rose 18 percent (Garfield & Santana, 1997). Food rationing and supplemental feeding programs were the reason these rates did not rise even more (Prevost, 2007). Since during this time, the best-quality foods were primarily being given to pregnant

women, children, and the elderly, the Cuban epidemic of optic neuropathy became extremely prevalent in men, with many losing vision in both eyes (Claudio, 1999). A reduced food supply and lack of vitamins were the perfect conditions for this epidemic to arise (Claudio, 1999).

Garfield and Santana add to this argument by explaining how the economic decline in the 1990s further led to a reduction in the products needed to ensure clean water, and from 1990 to 1994, the proportion of the population with domestic water connections declined from 83% to 81% in urban areas and from 30% to 24% in rural areas (1997). Additionally, the country's ability to produce chlorine declined, which reduced the population covered by chlorinated water systems from 98% to 26% between 1988 and 1994 (Garfield & Santana, 1997). When the Soviet Union, who Cuba was depending on since the onset of the embargo, showed sure signs of collapse in 1990, the U.S. pressured an end to its preferential trading agreement with Cuba, drastically harming Cuba (Lee, 2017). In the subsequent years, water and power outages occurred daily. The embargo limited Cuba's access to water treatment chemicals and spare parts for its water supply system, and this resulted in an increase in water-borne diseases that doctors could not treat effectively (Roberg & Kuttruff, 2007).

School #2: Socialist Structure as a Driving Force of Struggle

There are numerous scholarly articles arguing that Cuba's internal socialist structure is the primary driving force of its struggles. Like the preceding school of thought, various parts of this literature focus on the 20th century and early 21st century. Al Campbell wrote of Cuba's long-standing economic issues since the onset of the socialist regime. Cuban housing was recognized as a pressing issue, which was mistakenly not prioritized during post-Revolution policy decisions (Campbell, 2008). Moreover, Campbell argued that a "chronic weakness" to the Cuban economy was its deteriorating infrastructure; a lack of proper maintenance and

organization of Cuban infrastructure generated worsening conditions for Cubans, which were exemplified through the countless blackouts caused by reductions in electrical output (Campbell, 2008).

Other scholars have highlighted further elements of Cuba's inefficient economic model that produced underwhelming results for public service provisions. For example, from 2007-2017, Cuban agricultural output rates decreased from 7.3% to -1.5%, and the author largely attributed this to farmers having to sell large parts of their production to the state at below-market prices adjusted by the government (Mesa-Lago, 2020). Even dating back to the failed 1970 sugar harvest, Cuba had to reevaluate its socialist strategies and attempt to emphasize material incentives for individuals (Dietz, 1979). Furthermore, Cuban exports have declined, and energy sources have also been inadequately utilized; overall, the socialist policies of giving the state ultimate control have led to underperformances (Azel, 2015; Mesa-Lago, 2020; Monzon, 2020).

Additionally, Cuba's national policy decisions to rely heavily on other socialist countries, including first, the Soviet Union, and next, Venezuela, factored into the country's struggles. Indeed, from 1960-1990, Cuba's dependence on the USSR accumulated to an estimated \$65 billion (Mesa-Lago, 2020). In addition, from 2007-2017, dependence on Venezuela was an estimated \$122 billion (Mesa-Lago, 2020). The impacts of the collapse of the Soviet Union have been mentioned. On account of Venezuela's economic crisis, Cuban exports declined, leading to a reduction in GDP and less money to allocate for public services. This crisis also significantly harmed Cuba's energy supply (Mesa-Lago, 2020). Cuba's decisions of strong dependencies hurt the country in the long run, according to this school of thought.

Evaluation

The first school of thought provides a thorough analysis of how the U.S. embargo drastically affected Cuba's ability to provide many public service provisions, including healthcare, education, food security, water and energy infrastructure, to its people. A prominent flaw present in this school is that existing research primarily focuses on data from the 1990s, so there is no comprehensive 21st century analysis surrounding the research question at hand. Due to this, there is a large gap in the data that needs to be closed. While the second school of thought illustrates plausible statistics and economic theories, the story seems to be incomplete. Inadequacies of infrastructure can be linked to a lack of external resources available to Cuba. Similarly, the relationship between agricultural production and the need for imports of agricultural components and supplies is something the school should recognize in more detail. Furthermore, the decision to have a heavy dependence on one specific country could be avoided if Cuba had better economic alternatives, which are strained due to the embargo.

Of the two schools of thought presented above, School #1 provides the most compelling argument for the driving factor behind Cuba's struggles to provide public service provisions to its people. The argument that the U.S. embargo and sanctions against Cuba are the driving factor has much more data backing it up than does the opposing thought that the internal socialist structure of Cuba is the main problem. Thus, the theory explored throughout the rest of this paper is: *The U.S. embargo and sanctions against Cuba are the driving force behind Cuba's struggles to provide public service provisions to their people.* The rest of the paper will serve to close the gap that exists in the first school of thought in order to resolve the debate surrounding the research question presented earlier in this paper.

Research Design and Methodology

An analysis of two different U.S. administrations is helpful in order to accurately test whether or not the United States' embargo and sanctions against Cuba are actually the driving force in the country's ability to adequately provide public service provisions to its people. By comparing two administrations who had drastically different policies towards Cuba—the George W. Bush (2001-2008) and Barack Obama (2009-2016) administrations—one can clearly see whether strict policies are really the driving factor. These two administrations will serve as the independent variables in this research design. For the purposes of this paper, the George W. Bush administration will subsequently be addressed as the Bush administration, and the Barack Obama administration will be referred to as the Obama administration.

A prominent control is that both the Bush and the Obama administrations were in office after the year 2000; this is important because choosing an administration prior to 2000 would result in a difficulty to separate complex variables and identify the causal factor, such as the Soviet Union's collapse. This is significant as prior to the collapse of the Eastern bloc, the U.S. embargo did not affect Cuba at the same level, as they were able to depend on the Soviet Union and other allies. Furthermore, as aforementioned, numerous literature on Cuba's public service provisions focuses on the 1990s hardships Cuba faced. So in order to connect existing discussions to modern circumstances, choosing the Bush and Obama administrations proves to be insightful.

Additionally, these two administrations are equal in length of time, allowing for the independent variable to be uniform. Indeed, the serious contrasts between the Bush and Obama administrations' policies will aid in determining the causal factor in Cuba's ability to provide public service provisions. Under the Bush administration, his policies were greatly influenced by

the Commission for Assistance to a Free Cuba (CAFC), which released two reports detailing recommendations for the U.S. in order to spread democracy to Cuba (Coll, 2007). During the period of his administration, President W. Bush tightened sanctions on Cuba with policies including severely restricting the travel of U.S. residents, significantly reducing humanitarian assistance, lessening remittances, and harming Cuba's international image (LeoGrande, 2015).

Contrarily, the period of the Obama administration saw sharp differences. President Obama's reformed policies included lifting restrictions on travel and remittances for Cuban Americans—and later for United States residents in general—, removing Cuba's designation as a state sponsor of international terrorism, and easing restrictions on “sales to private businesses, financial transactions, travel, and the sale of telecommunications equipment and services to Cuba,” (LeoGrande 2015). Thus, the complete polarity of the two U.S. administrations is evident and provides a justification for the choice in independent variables.

The outcome, or dependent variable, being studied in this research is Cuba's public service provisions. Public service provisions (PSPs) are essential goods and services that a government provides to its citizens. The ones being examined in this study are healthcare, education, food security, and energy infrastructure. There are numerous indicators that are helpful in measuring these public service provisions. For healthcare, the indicators inspected are maternal mortality ratio, infant mortality rate, life expectancy at birth, and people using safely managed sanitation services. Moreover, the education indicators are primary school enrollment and literacy rate, and the food security measurement is prevalence of undernourishment. Finally, the indicators for energy infrastructure include electricity production and railways.

In order to acquire the data for each of these indicators, we utilize data from sources including the World Health Organization, the CIA World Factbook, and more. Since simply

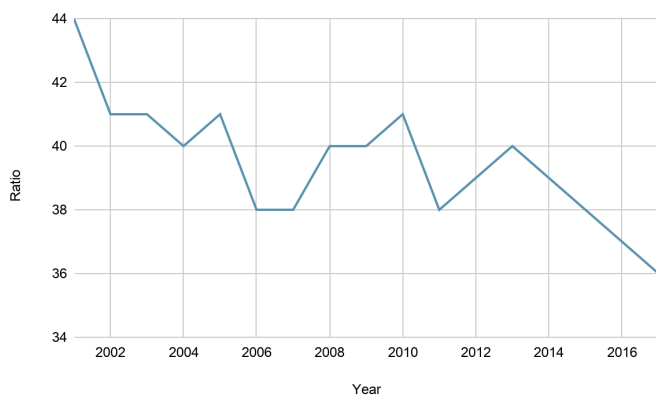
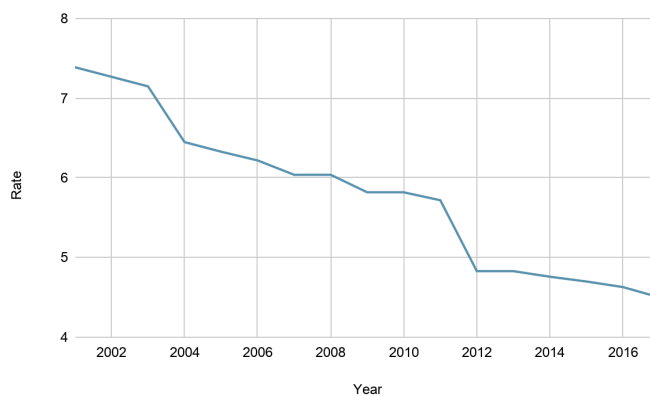
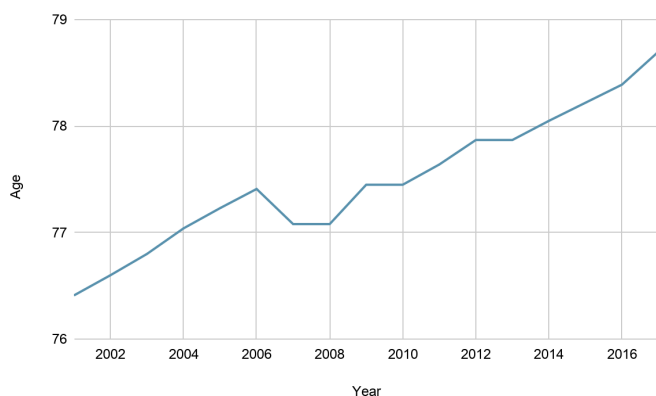
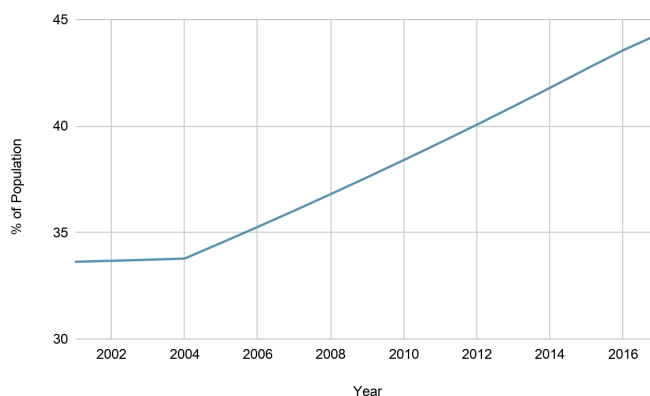
viewing the numbers for each indicator does not provide any adequate insight into an explanation of significance, however, two-sample t-tests will be conducted in order to ensure that any improvements found in the measurements are actually significant and are not simply unsubstantial or due to chance. In contingency with the theory outlined earlier, we expect to see significant improvements in Cuba's ability to provide public service provisions to its people when the United States is under the Obama administration, as compared to the state's ability to provide under the Bush administration.

Findings

After thorough research on the different public service provisions in Cuba during the respective periods, it is clear that in general, there are distinct differences between the Cuban government's adequacy in providing these goods when the United States was under the Obama administration as opposed to when it was under the Bush administration. The details of each public service provision are expressed below.

Healthcare

By first examining the statistics of each measurement, one can see the trends throughout the Bush and Obama administrations. For the first public service provision of healthcare, there is an overall decline of maternal mortality ratio and infant mortality rate when moving from the Bush administration to the Obama administration, as shown in Figures 1 and 2 (World Bank Group, n.d.; "The World Factbook- Cuba", n.d.). There is also a general increase when looking at life expectancy at birth and people using safely managed sanitation services, as seen in Figures 3 and 4 ("The World Factbook- Cuba", n.d.).

Figure 1*Maternal Mortality Ratio (per 100,000 live births)***Figure 2***Infant Mortality Rate (per 100,000 live births)***Figure 3***Life Expectancy at Birth***Figure 4***People Using Safely Managed Sanitation Services*

Though looking at these figures does allow for one to visually notice a trend, significance tests are required to ensure that these increases and decreases are not solely due to chance. For this study, two-sample t-tests were conducted to test for significance between the two administrations. Conducting a t-test for maternal mortality ratio resulted in a t-value of 1.67194 and a p-value of .116728. Since significance is determined at the <0.05 level, a p-value of .116728 means that this result is not significant. As for infant mortality rate, the t-value is 4.28506. The p-value is .000755, so the result is significant at $p < .05$. Life expectancy at birth and people using safely managed sanitation systems both output significant values, with t-values

of -5.39248 and -6.83041 and p-values of .000095 and <.00001, respectively. Overall, three out of four of the indicators for healthcare show a significant improvement under the Obama administration as compared to the Bush administration.

Education

Moving on to the two education indicators, at first glance, primary school enrollment rate appears to be randomly distributed throughout both administrations as displayed in Figure 5, and this is confirmed with the t-test results, as the t-value is 1.59339, and the p-value is .133393, so the result is not significant at $p < .05$ ("The World Factbook- Cuba", n.d.). The second indicator of literacy rate, on the other hand, shows visible stability during the Obama years, as demonstrated in Figure 6, and has a significant t-test result at the $p < .05$ level with a t-value of -4.56403 and a p-value of .000373 ("The World Factbook- Cuba", n.d.). This ultimately illustrates that one of the two education measures was significantly improved under the Obama administration through numeric values as well as relatively stable rates of change, and the other indicator had no significant change between the two administrations being observed.

Figure 5

Primary School Enrollment (% gross)

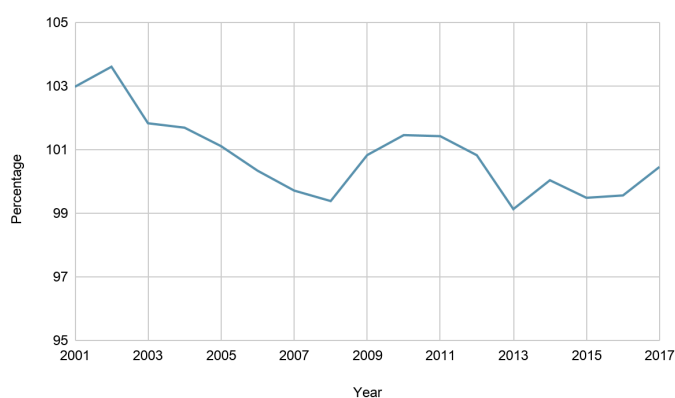
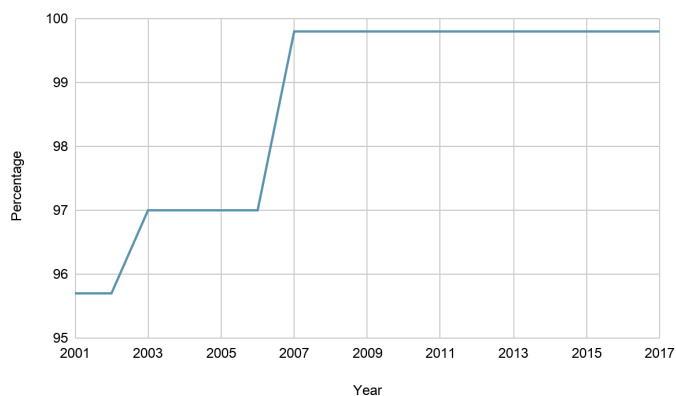


Figure 6

Literacy Rate

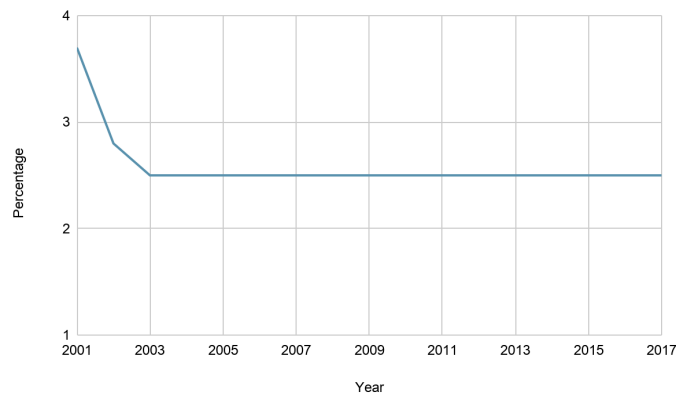


Food Security

As for food security, the only indicator with data available for the dates needed was the prevalence of undernourishment in Cuba ("Cuba - Prevalence of undernourishment (% of population)", n.d.). As shown in Figure 7, this statistic is relatively stable throughout both administrations, and the t-test result is insignificant at the $p < .05$ level with a t-value of 1.25562 and a p-value of .229807. Consequently, food security remains nearly unchanged throughout both U.S. administrations.

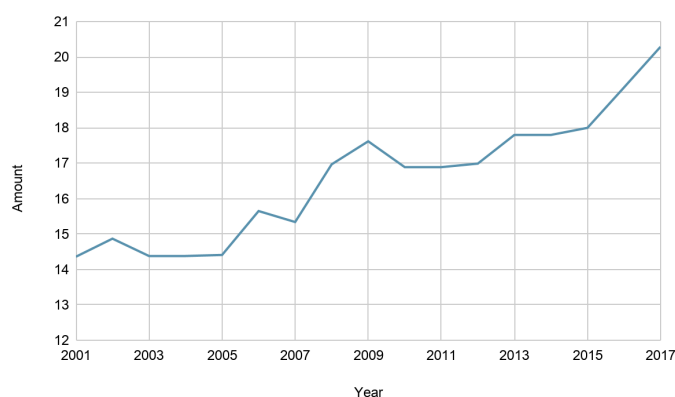
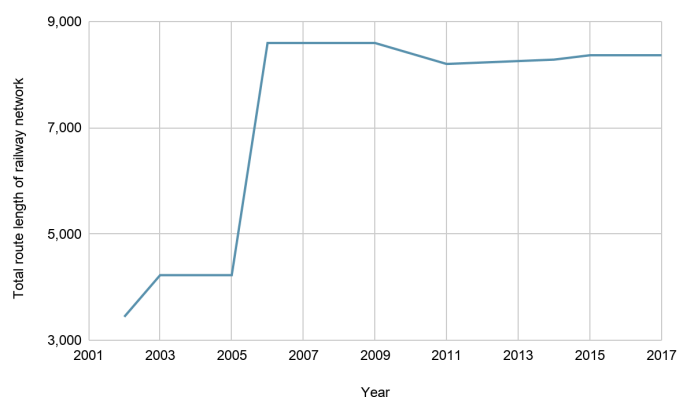
Figure 7

Prevalence of Undernourishment (% of population)



Energy Infrastructure

Finally, the energy infrastructure measurements of electricity production and railways, displayed in Figures 8 and 9, respectively, both show improvements under the Obama administration that are also significant at the $p < .05$ level ("The World Factbook- Cuba", n.d.). They have t-values of -6.16705 and -3.35233 and p-values of .000024 and .008492, respectively.

Figure 8*Electricity Consumption (billion kWh)***Figure 9***Railways (km)*

Analysis

Ultimately, out of all nine indicators analyzed, only three were deemed to show insignificant changes from the years of the Bush administration to the Obama administration, meaning that the original theory was partially proven. This shows that in most cases, the United States' economic embargo and sanctions against Cuba *are* the driving factor in the state's struggles to provide public service provisions to their people. In the other cases, it is not that the socialist structure is causing the problems, but simply that the embargo and sanctions do not have a *significant* effect on the outcome at hand. This can be concluded through the observation that not a single indicator showed a greater ability to provide public service provisions in Cuba when the United States was under the Bush administration.

Potential Confounding Variable

It is evident that at nearly the same time President Obama came into office, Raúl Castro replaced Fidel Castro as the Communist leader of Cuba. With Raúl's years in power came new reforms and a new constitution (Monzon, 2020). One could attempt to attribute these changes to the improvements in Cuba's public service provisions; however, most of his reforms did not target public service provisions. One area of his reforms that did target public service provisions

was agricultural reforms, but our study has shown that food security was an indicator with no statistical significance. Even further, his agricultural reforms did not yield advantageous results, as discussed briefly in the literature review (Mesa-Lago, 2020). Moreover, even the reforms that did not target public service provisions have been mostly incompetent (Jamison, 2009; Mesa-Lago, 2020; Pérez, 2012). In detail, as one scholar points out, “restrictive macroeconomic policies have hurt economic growth, whereas growth-and efficiency-enhancing measures are yet to produce results,” (Torres, 2016). Thus, we deduce that Raúl Castro was not mainly responsible for the changes observed in this study.

Conclusion

This paper adopted the theory that the United States’ embargo and sanctions against Cuba are the driving force behind Cuba’s struggles to provide public service provisions to its people. The United States’ power over Cuba is unmistakable; public service provisions in Cuba have varied through years, reaching nearly a breaking point in the 1990s when the United States’ policies struck the hardest. In order to assess the U.S. embargo and sanctions’ current effects on Cuban public service provisions, we compared the George W. Bush administration, which is infamously stern with Cuba, with the Barack Obama administration, which is known to have quelled tensions with Cuba. Our hypothesis was that Cuban public service provisions would see improvements during the Obama administration, and out of nine indicators for public service provisions, six of them saw positive significance.

This research has vast policy implications for both the United States and Cuba, as it shows both countries which policies and structures are effective for their goals and which are not. For the United States, it shows that the country should no longer use Cuba as an example of a socialist state that struggles to provide public service provisions to its people. This is very

common rhetoric in the American political and academic field, but this research clearly shows that the majority of the time, it is the United States' interference that causes struggles to arise in Cuba, not Cuba's internal socialist structure. The research additionally shows that it is, however, in Cuba's best interest to strive for diplomatic relations with the United States. When Cuba and the United States are interacting diplomatically, it often leads to easements on the embargo—as was the case during the Obama administration—and this, as was proven, often leads to a greater ability to provide public service provisions.

Though unfortunate, data from Cuba is severely limited, so the analyses conducted throughout this research were constrained to the data that was readily available. This is the reason why there were not an equal amount of measurements for each public service provision, as well as why only four public service provisions were analyzed throughout the research. For some public service provisions, there were more measurements with data available; however, the data did not span the entire 2001-2016 timespan, as needed, so data such as this had to be left out of the indicators used.

Additionally, there is data available spanning the years of the Donald J. Trump administration (2017-2020), which leaves some room for future research. Since Trump only served one four-year term, data from the years of his administration could not be included in this research, as the timespan would no longer have been a controlled variable, calling the results into question. If President Joe Biden (2021-Present), only serves one term, however, future researchers could explore the research question further by comparing Cuba's public service provisions during the Trump administration to the Biden administration. There is already information out there showing a tightening of the embargo and sanctions under the Trump administration. In 2017, Trump reimposed sanctions against Cuba, and in 2019 he activated Title

III of the Helms-Burton Law (Zaldívar & Kozameh, 2020). This enabled lawsuits against companies profiting from property that was expropriated by Castro after the Cuban revolution (Zaldívar & Kozameh, 2020). If a comparison of these two administrations leads to similar conclusions, it will further solidify that the U.S. embargo and sanctions against Cuba *are* the driving factor in the state's struggles to provide public service provisions to its people.

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