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Brazil, Malnutrition

Brazil: Mobile Grocery Stores to Combat Malnutrition

When considering Brazil, many people think of the beaches, football, and good food. However, this is not the reality for millions of people. According to a recent study, approximately half of the population reported not having enough to eat and 33 million Brazilians are considered severely food insecure (Dominick). Not having enough to eat and suffering daily with malnourishment is unfortunately a regular occurrence not only in Brazil but all over the world. In this paper, I will provide context on Brazil's issue with malnutrition and introduce a possible solution that could potentially help people all over the world. But it is important to learn about a country to fully understand the issues facing it. Brazil is the largest country in South America with a population of about 213 million people ("Brazil Population 1950-2023"). Brazil is run by a representative democracy, allowing the people to choose government officials but they do not directly decide on every issue. Due to the size of the country, the climate and geography varies greatly. North and central Brazil are tropical regions with high temperatures and frequent rainfall. The south has a moderate climate but the northeast is much drier and prone to droughts. Most of the country receives anywhere from 40-70 inches of precipitation, with the northeast receiving only about 15-30 inches of precipitation. There is also much heavier rain near the Amazon rainforest. Snow is incredibly rare, even in the winter months, but it occasionally snows in the southernmost part of Brazil ("Climate of Brazil"). Throughout the country, there are dense forests, dry grasslands, hills, pine forests, wetlands and plateaus ("Brazil"). Much of the country's natural ecosystem has been destroyed, including the hardwood forests in the east and the Paraná pine trees in the south. Much of the animal wildlife are only found in zoos, and not in their natural habitat. This is largely due to deforestation and farming ("Climate of Brazil"). As of now, about 13 percent of the land is currently cultivated, with the major crops being soybeans, soybean products, corn, cotton, sugar cane, coffee, orange juice, meat, ("International Markets US Trade"). Approximately, 70 percent of Brazilian farms are larger than 500 acres, which is about the size of the country of Monaco ("US Brazil Farm Size Comparison"). Like the climate, the soil also varies greatly around the country. The south and southeast has purple soil that is rich in nutrients. Because of the highly effective soil, this is the most farmed region of the country. Soil in the northeast is also nutrient rich, but the land there has been less cultivated as a whole because the fields have less irrigation. And in the north, heavy rainfall has leached nutrients from the soil, inhibiting the potential and actual growth in that region ("Climate of Brazil").

The typical family size as of 2022 is 2.77 people ("Average Size of Households in Brazil (2010 - 2021)"). Brazilian families are largely very affectionate and interdependent. It is not uncommon for multiple generations to live in the same household (Scroope). There are many styles of architecture found throughout the country, with dwellings ranging from clay houses with mediterranean roofs to houses on stilts to modern apartments. Brazilian dwellings take influence from many different styles, including but not limited to Indigenous, African, and Portuguese architecture. Also, the largely varying climate and ecosystems have also had an impact on what the traditional architecture is in each region. There are many styles such as Portuguese Colonial, Neoclassical Brazilian, and even Twentieth Century Modernism (Gandhi). A typical Brazilian diet includes rice and beans, red meat, vegetables and fresh fruits. Most

people are able to purchase food at grocery stores and cook it at home. However, buffets by the kilogram are also a very popular option. The average wage is about 2754 reais or \$528 (“Average Size of Households in Brazil (2010 - 2021)”). Brazilians have all sorts of jobs, ranging from doctor to construction worker to lawyer, but their options are impacted by the education they receive. The federal constitution requires free public education at all levels and also requires free healthcare throughout the country. However, the more affordable education is considered to be largely inferior to the private options and free healthcare typically takes much longer to receive (Scroope). As long as Brazilians have the money, they have access to clean water, toilets, electricity, telephones, roads, and local markets, however lack of money can restrict these options. Many people can not afford these things even though they technically have access to them. There are many barriers families face in regards to income and access to nutritious food such as high crime rates and poorly distributed income between the rich and poor.

As aforementioned, malnourishment is an incredibly prevalent issue in Brazil with approximately 33 million people reporting not having enough to eat (Dominick). Food insecurity and hunger is a worsening issue in Brazil, affecting millions more people than it has in previous years. The numbers have been exacerbated by the Covid-19 pandemic, which limited access to food for many. It has also been worsened by the removal of a federal anti-hunger program known as *Fome Zero*. This former initiative was implemented during the current President Lula’s first term in 2003, and aimed to reduce hunger through three main pillars- providing money to low income families, a national school nutrition program, and subsidies for agricultural families (“Going Hungry in Brazil”). Lula’s program was largely based on former President Fernando Henrique Cardoso’s program known as *Programa Comunidade Solidaria*, which had a similar purpose.

For the most part, Brazil is a very urban country, with approximately 13 percent of the population residing in rural areas and the remaining 87 percent being urban residents. This is a drastically increased number compared to the 1940’s, when only 42 million people lived in urban areas. By the end of the 1990’s, 20 million people resided in the São Paulo metropolitan area alone (“Brazil Economic Indicators”). It is also evident that residing in rural or urban areas can impact rates of food insecurity with 35.5 percent of rural Brazilians being malnourished compared to 29.9 percent of urban residents (“Going Hungry in Brazil”). This is largely due to residing further from grocery stores-also known as living in a food desert- and less potential for higher income jobs in rural regions.

While there are millions of people who are food insecure, certain demographics are more severely affected. Race and gender have also been shown to affect rates of malnourishment. Households led by Black people are approximately eight percent more likely to experience severe food insecurity than their white counterparts. Also, households run by women are also 8 percent more likely to experience severe food insecurity than their male counterparts (Dominick). Systemic racism and misogyny can inhibit the ability for black people, brown people, and women to receive proper education and are therefore more likely to be unemployed or employed in under paid positions. This contributes to the exacerbated rates of food insecurity amongst these demographics. These statistics make it clear that millions of Brazilians are experiencing food insecurity- some demographics at higher rates. Because being malnourished makes it much more difficult to complete daily tasks, many people are unable to live healthy and fulfilling lives. Something needs to be done.

In order to combat food insecurity, my proposed solution is to implement grocery stores on buses, known as a *Comibus* (play on comer-to eat and onibus- bus). These vehicles would carry fresh fruits and vegetables, fresh meat, poultry, dairy products, and bakery items such as bread. The buses would follow a regular route and pass through communities at least once a week. They would also run on ethanol in order to be more environmentally sustainable. Any produce that isn't sold and spoils would be sent to a facility and then converted back into ethanol to fuel more vehicles. The food provided would be sold at a lower than average price to ensure that the products are accessible to lower income families. This project takes inspiration from the *Fresh Moves Mobile Market*, a chain of mobile grocery stores in Chicago, Illinois in the United States. However, my solution would go even further by providing different transport opportunities, such as planes for extreme geographical regions, and buses for customers who may not be able to regularly make it to a grocery store. The planes would function similarly to the bus, with a wide variety of foods, whereas the bikes would be specific products catered to the customer; either options ordered online or custom made for those without access to the internet.

The *Comibus* would also accept food vouchers, a program known in Brazil as Vale-Alimentação which provides access to grocery store purchases (Buha). However, this program is not granted by the government, rather by businesses, so this specific aspect would not be as beneficial to low income people. Therefore, in order to be more widely acceptable, the *Comibus* would develop its own food voucher program. Low income families and persons would be able to provide a proof of their monthly income in order to be granted a food voucher. This voucher would be valid not for a specific value rather for an amount of food, allowing people and families to purchase enough without worrying about running out of money. By creating a voucher that would take care of the food for a household, families are able to not only become better nourished, but also turn their money to other things, such as better housing, education, healthcare and more. This would make the program more widely accessible to the impoverished and also have a greater all around impact.

In regards to funding, the *Comibus* would follow the approach of the *Fresh Moves Mobile Markets*. The Chicago buses were initially funded by the former Chicago mayor and the USDA ("Fresh Moves Mobile Market"), and are now funded both privately and publicly. For the *Comibus*, the federal government would provide the initial funding in order to get the project running, then it would rely on both public and private investments. This is a feasible approach because as aforementioned, President Lula has demonstrated his willingness to fund efforts combating food insecurity with his efforts with project *Fome Zero*. This shows that he would likely be supportive of the *Comibus*. However, if President Lula is not immediately willing to fund the *Comibus*, citizens should take charge by bringing up this solution to their local officials, until the President is forced to recognize and implement this option. This approach to funding would result in a stable start to the program, allowing it to take off before receiving private funding. If reliance on private investors was necessary to start the program, there would likely be less consistent funding at the beginning which would inhibit its initial effectiveness. In order to receive more funding, businesses would have the opportunity to advertise their service on the vehicle, in the form of billboards, packaging, and even word of mouth from the workers. Non-financial support would also be required in order for this project to be successful. Members of the community where the bus is located would be necessary to staff the buses. Each grocery store would likely only require three employees- a cashier and two people to assist customers. Farmers are also required in order to provide nutritious produce, as well as butchers to provide the meat and bakers for the bakery goods, particularly bread. The price of the goods would be set to provide appropriate payment for the farmers, butchers, and bakers,

however, it would be more affordable than a traditional grocery store to ensure that anyone can have access to nutritious foods.

The Fresh Moves Mobile Markets greatly and positively impacted Chicago by nearly doubling the amount of farmers markets in the city. The program also increased the amounts of farmers markets in low income neighborhoods by over four hundred percent. Another benefit they had was supporting healthy eating habits for all. (“Fresh Moves Mobile Market.”). The *Fresh Moves Mobile Markets* spend approximately an hour and half to two hours at each stop they make to ensure enough time for their customers to purchase what they need. The *Comibus* would also likely spend approximately two hours or more at each stop because there would be more people serviced by the *Comibus* and it would likely cover a greater area than the buses in Chicago. One difference between *the Fresh Moves Mobile Markets* and the *Comibus* is that the *Comibus* would run on ethanol, which is a feasible alternative because millions of vehicles in Brazil run on ethanol. Ethanol has been found to release forty to fifty percent less greenhouse gasses than traditional gasoline (“Ethanol vs. Gasoline: Which One Is Better for the Environment and the U.S.?”). Brazil has largely been regarded as the ethanol capital of the world, and ethanol can be found at any gas station. This small difference from the *Fresh Moves Mobile Markets* would result in a much more environmentally sustainable option, and there would be significantly less carbon dioxide emissions overall. In another effort to be more sustainable, any produce that is not sold and inevitably goes bad would be sent to a facility and converted into ethanol to be used for fuel. Brazil also already has almost 400,000 buses in circulation as of 2020 (Carrier), and it would be relatively easy to gradually convert a small number of those to *Comibus*'s. Initially, only a few would be transformed into grocery stores- approximately one hundred dispersed throughout the country- then the program would expand as more funding is received.

Like any business, there are potential security risks. Due to the high crime rates in Brazil, it is possible that some people may try to rob the stores. While this is very unlikely, it should be predicted in order to be prevented. This could be combated by having a panic button that would immediately call the police when pressed and in more dangerous regions, police officers could be stationed at each *Comibus*. However, like any country, Brazil has faced issues with police brutality, so any officer stationed at the stores would have to undergo further background checks and evaluations before being approved in order to protect the citizens. This factor obviously could not be implemented with the bikes, however due to the low quantity of food carried by each bike, there likely would not be as many or any security issues, reducing the need for security measures.

Overall, food deserts and food insecurity is a widespread problem in Brazil and requires creative solutions to make a difference. The *Comibus* is a simple, sustainable, and potentially life changing solution for millions of people, helping by bringing healthy and affordable food to those in need. Further increasing its impact by providing food vouchers in order to be accessible to all.

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