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**Puerto Rico, Factor 16: Education**  
**Puerto Rico: Changing Stereotypes Through Education**

Imagine a land 100 miles long by 35 miles wide, drenched in tropical sunshine with a year round growing season. You might expect such a place to have an abundance of healthy fruits and exotic produce. But instead, this island imports 85% of its food, making themselves vulnerable to additional transportation costs and cutting down on the number of fresh vegetables and fruits available for purchase. This 110 by 35 mile land is the island of Puerto Rico. And this food insecurity is partially responsible for the territories \$72 million in debt.

However, this wasn't always the case. In 1914, according to the US Census, agriculture was 70% of the island's Gross National Product. Today, it is less than one percent. The island was home to many plantations raising coffee, pineapples, bananas and cane sugar. During the last one hundred years the island has shifted from this agricultural base, as cane sugar lost popularity. Devastating hurricanes felled coffee trees, which take three to five years to reach maturity. Sugar plantations were divided up and the government used the land for living areas for the unemployed. People began to seek industrial jobs instead of farm work. The island of Puerto Rico lost over a million acres of prime farmland after the fall of the sugar industry and the rise of industry. At the same time, the stereotype of the jibaro became firmly ingrained in the Puerto Rican culture. Jibaro, or farmer, means peasant and originates from the sugar plantation days. To today's islanders, it means ignorance and poverty. For generations, older members of families have told the upcoming generations not to farm. In Puerto Rico, the average family size is 3.2 people, however, by tradition, aunts, uncles, cousins and grandparents are all very close and their opinions are highly valued. Despite the loss of industrial jobs, people have heeded their elders and not returned to agriculture.

One reason Puerto Ricans believe this about agriculture, is because growing crops on the island tends to require a lot of manual labor and today it is hard for the farm owners to compete with welfare payments to employ laborers. This labor need is higher because there are not many row crops like the ones we are accustomed to seeing, in part because the tropical climate is favorable for weeds and insects. Instead, coffee is the island's most valuable crop.

Currently farm families must subsidize their farming with fishing or odd jobs called chirpas. These odd jobs can be hard to find as unemployment rates are as high as 17.34%. According to the 2012 Census of Agriculture, Puerto Rico is home to 13,159 farms covering a total of 584,988 cuerdas. A cuerda is the equivalent of about .971 acre. Eighty-three percent of these farms are smaller than 50 acres, compared to the average farm size of 484 acres on the United States mainland. Thirty-nine percent of the Puerto Rican farms are smaller than 10 acres. Only 13% of the farms have agricultural product sales of \$40,000 or more and only 17% of Puerto Rican farmers receive more than 75% of their income from farming. Fifty-three percent received less than \$5000 in sales and 23% of farms brought in less than \$1000 a year. Dairy is the top commodity and milk is the only agricultural product Puerto Rico does not have to import. Other products include pineapple, coffee, plantains and bananas.

Diet on the island is made up of rice, beans, plantains, fish, chicken and pork. Vegetables are hard to find and are usually fried, probably due to the long time it takes food to reach the consumers. Farming practices are beginning to change, for instance irrigated land has increased 34 % from 2007 to 2012 and there was a 72 % increase in organic fertilizer use in this same time period.

Food is purchased at grocery stores. There are actually 65 Walmart owned stores on the island, which include Sam's Club and Amigos Supermarkets. There are more Walmart stores on the island per capita than anywhere in the United States. Finding a farmer's market is actually challenging. Only recently did one open in San Juan. As of last fall, there were a dozen farmers' markets, three times as many as there were four years ago. Foods offered there are brought in from around the island. With 37.7% of all households receiving food stamps, shopping at Walmart is much easier. This is also an obstacle to making a food stand profitable for a local farmer. Fortunately, most Puerto Ricans have access to safe water, with 93.6% having improved water.

Another basic necessity is in danger now, though. Sixty percent of the islanders are on Medicaid or Medicare. Puerto Rico has been in an economic depression for a decade. The current financial crisis of the island, 72 billion dollars of debt, is largely created by the health care system there. While islanders pay the same Medicare tax as mainlanders, they receive half of the federal healthcare funding then the mainland states. This created a deficit and the island government borrowed more and more to cover the needs. In 2012, the United States provided \$2 billion in food stamps to Puerto Ricans. About 1/3 of the population received this governmental aid. However, the resources these Puerto Rican's received were distributed in cash, meaning there was no way to trace what the money was actually used for.

Doctors are working for half the pay as their mainland counterparts and are moving mainland. They are losing a doctor a day. There are long lines at the doctor offices even before they open for day. Numbers are passed out and when the available for the day is reached, patients are told to come back the next day. The lines at the hospitals have been referred to as "the walking dead" because those suffering medical emergencies may not get care in time. Islanders face the highest rates of diabetes and asthma in the United States. Proper food and education would benefit their diabetic patients. Even the islanders are leaving. Around 500,000 are leaving per year. Natural disasters like hurricanes and the recent Zika outbreak also affect the health care system. The Center for Disease Control estimated that 25% of the inhabitants would be infected with Zika.

About 42% of the farmers have a high school degree or higher education and the average age of a farmer is 59. Ninety-two percent are men. But education in Puerto Rico is not the same as it in the mainland. Ninety-five percent of graduates finished school at a sub-basic level. Drop-out rates are huge, with 40% of all students entering 10<sup>th</sup> grade dropping out. The state ran university graduates 50,000 per year, but there are only 6,000 job openings awaiting those graduates and only a quarter of those require degrees. When you look at islanders in general, the average wage is \$8.08 per hour and the average household income is \$27,017.

According to the LA Times, 150 schools closed just this past year, in an attempt to lessen the island's massive debt. However, by doing this, they are actually being counter-productive. Students attending

Janorschke 3

schools that are closing are being reassigned to other schools, however most of these locations are in rural areas, meaning transportation will be an issue.

Today, the greatest challenge facing the 3,578,056 Puerto Ricans and their agriculture is education. Education to remove the stigma of the jibaro, as well as general agricultural education and more knowledge of technology to help the farmers supply food. They need to be taught to demand and make changes. An agricultural revolution, fueled by education, could save Puerto Rico from its debt and health care woes. The education will need to be supported by the federal and territorial governments.

The first step in educating the population is getting beyond the stigma of the jibaro. And what seems to be working more efficiently than the government at this task is El Departamento de la Comida, or the Department of Food. Now you might think that is a government agency, but actually, the Departamento is an organic food supplier that opened in 2011 and also serves fresh foods in a warehouse in San Juan. These foods are grown on the island. Several other restaurants are beginning to serve the foodie interests of travelers. There is also a fresh food festival now. When this all started, it was hard to find locally grown items, now farmers are stepping up to meet the needs. Restaurant owner, Loyda Rosa stated in a 2013 interview, "What I have noticed is that there is a very, very strong commitment, and it's a new wave of farmers. It's a different farmer than in the old decades, who were just country men. Now it's a lot of young professionals, agronomists, and many of them do have some degrees, and they're growing food with a different mindset."

These restaurants are introducing locals to new foods and creating interest in the farm-to-table movement. Before, farmers had a hard time selling certain products because consumers didn't know what the items were or how to cook them. This movement is educating people about healthy, fresh foods. At the same time, the government is being forced to find ways to get out of debt. And agriculture looks promising. The time is right for these private parties and the government to educate. For instance the United States Department of Agriculture has sent 60 million dollars on recent efforts, including building community gardens and teaching about food choices.

According to Dr. Myrna Comas Pagan, secretary of the island's department of agriculture, "It's about recovering our lands and changing the culture of our people to make agriculture a way of life," she said in a recent interview. Recently 30,000 acres of land that was abandoned but arable, became available for farming. Now the island has a total of 637,000 acres. This number had not increased for decades. Some of the crops being planted will take time to produce. The island recently saw 8,000 acres of avocados and 8,000 acres of coffee trees planted, but it will be years before they produce. Comas Pagan says that agricultural income grew 24% since 2011. The government is helping support 350 farms. The started an initiative for local rum plants to use locally sourced sugar cane again.

Aquaponic crops are being grown with help from Farm Service Agency loans. This means more food can be grown in a smaller space, inside green houses or abandoned warehouses. It's a different kind of farming and is attracting new farmers willing to technology. Last May, Agrohack was held on the island. It was the first conference designed to bring chefs, consumers, growers and sellers together. Technology was heavy on the presentation list, with drones, aquaponics and computer apps all topics.

Janorschke 4

Most current farms are on the west side of the island. The Roosevelt Roads Promise Zone is a large area on the northeast side of the island. Recently a naval station closed and the unemployment rate is over 17%. In 2013 President Obama launched initiatives for promise zones that are locally coordinated. Currently they are working to establish a food hub, promote and educate consumers on healthy foods and plan to raise foods via hydroponics. They are building a science park and investing in STEM education.

They will focus on rebuilding hotels and other infrastructure as well. There are at least 14 groups working to make better lives for the 33,813 people living there. Almost one half are living in poverty there now.

In the private sector, Monsanto and Bayer are investing. Last fall Bayer announced plans to build two biotech facilities and Monsanto has cotton, soy and corn fields.

All of this work is an excellent step in increasing food production in Puerto Rico and thus improving health and the economy. In order for Puerto Rico to become debt free, the federal and local governments, along with the private corporate sector and farmers, must continue to work to educate about agriculture and new technologies. They must recruit young people in order for these programs to continue and grow. We should focus too, inside the classroom. FFA membership is about 2000. Many more students should get involved with the changing agricultural technology. Perhaps with more partnerships with Monsanto and Bayer, like job shadowing and internships.

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Janorschke 5

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Janorschke 6

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