

Needs Assessment in Juampas, Haiti

December, 2010-January, 2011

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This report details the results of a needs assessment survey conducted in Juampas, Haiti between December, 2010 and January, 2011. It aims to better understand the concerns and daily struggles of the community. One adult from each of 60 randomly selected households underwent two rounds of interviews with United States researchers and Haitian translators. The questions covered health, finances, politics, and daily life. The survey identified a vocational school, improved electricity, and better paved roads as the top priorities for community development. This report seeks to advise the Haitian Organization Program for Education and Health (HOPEH), Carroll County Haiti Mission Project (CCHMP), St. Paul's Church of Dedham, MA, and other parties dedicated to improving the quality of life in Juampas on the community's needs and goals. It outlines costs and implementation plans for the following potential initiatives: a vocational school, a community center, electrical innovations, paved roads, a university, clinic expansion, a reevaluation of the school sponsorship program, a public market, an irrigation system, public latrines, and a school bus.

Introduction

Since its independence in 1804, Haiti has been plagued by political turmoil, inequality, violence, and repression. On January 12, 2010, Haiti was struck by an earthquake that killed hundreds of thousands of citizens in and around the capital city of Port-au-Prince and left even more homeless. Not long after, a cholera epidemic reached the water supply, killing thousands. While international aid has been flooding in, danger lies in both implementing short-term fixes and in allowing long-term issues to escape public awareness.

Juampas is a rural community of 3,500 to 4,600 in Haiti's Central Plateau. Its inhabitants are mainly sustained by agriculture. As of 2000, the area had minimal healthcare infrastructure or post-secondary education opportunities. In 2001, the Carroll County Haitian Mission Project (CCHMP) partnered with the Haitian Organization Project for Education and Health (HOPEH) to begin construction on a medical and dental clinic. The organizations have since developed a school sponsorship program to help send impoverished children to school, initiated a water purification project, operated the clinic, and run community events, among other projects. While the organizations' current activities have had an important impact, future projects are needed to raise the quality of life for residents of Juampas and offer prospects for self-sustainability. The research presented in this report was undertaken to identify the community's daily needs and how to address them.

Methods

From December 28, 2010 to January 16, 2011, five university students from the United States traveled to Juampas to map the area, interview community members, and create a list of

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projects that could further benefit the community. The interview process identified community needs by speaking with randomly selected adults from randomly selected households. By communicating directly with community members, the researchers were able to hear from a representative sample of the community about their immediate needs, leading to a more comprehensive understanding of Juampas, its issues, and its inhabitants.

Personnel

Seven Haitians, ranging in age from 16 to 30, who have studied English and worked with HOPEH groups, volunteered to act as translators and guides. The United States students, with approval and training from the Institutional Review Board at Tufts University, wrote the questionnaire, conducted the interviews, and calculated the results. All research personnel, both from Haiti and the United States, were trained together on mapping and interviewing protocol during the first few days of the study. Teams of one or two Haitians and one US student conducted the interviews. All information was obtained in Haitian Creole then translated and recorded in English.

Mapping and Household Selection

Using satellite images of Haiti's Route 3 from Google Maps, the research teams established the community boundaries. The borders were marked by bridges on the highway. To the west of Juampas lies Lascahobas, a sizable market town with primary, secondary, and vocational schools, a hospital, and an infectious disease center. To the east, a bridge marks the edge of the greater Belladere area, a zone surrounding the town of Belladere. Between the two bridges lie the communities of Central Juampas and Bois-Pain along with scattered households in the mountainous countryside.

The teams split the map into quadrants; each of four mixed groups of Haitian guides and US researchers selected a quadrant. Starting at the boundaries, the groups walked along Route 3 and down all of the side paths, marking every house. This process produced a map with 583 houses. Using a random number generator, the teams obtained a simple random sample of 60 households to be interviewed. Upon arriving at a selected house, the interview team asked to speak to the adult (18+) whose first name began with the letter closest to the randomly selected letter for that day. After securing their verbal and written consent, the interview began.

Interviewing

The teams split each interview into two segments, spaced approximately one week apart. The first interview helped establish rapport between the subject and interviewing team before addressing more sensitive questions in the second segment. Each interview took between thirty minutes and an hour. The interviews were mainly conducted in the subject's yard or household. First round questions ranged from basic information about the subject to information about his or her household, employment, income, education, water treatment, farming, electricity, cellular phones, transportation, and community leadership. Second round questions addressed healthcare, the effectiveness of HOPEH and CCHMP initiatives, nutrition, mortality, daily challenges, and desired future initiatives. For copies of the data, see Appendix B. For copies of the survey questions asked, in English or in Haitian Creole, please contact the research team.

Statistical Methods

The data were entered into a secure spreadsheet in a password-protected computer in English. All sample statistics, confidence intervals, statistical tests, and graphs were computed in the programs Data Desk and R.

Results

Below are the relevant results of the survey, organized by category. Unless otherwise specified, the numbers presented represent population parameters instead of sample statistics, intervals estimate parameters with 95% confidence, and tests are significant at the $\alpha = 0.05$ (5%) level.

Population

- ❖ The average number of people per household is between 6.09 and 7.88 people, with the sample averaging 6.98 people per household. Multiplying these numbers by the number of homes in Juampas (583) estimates the population of Juampas as between 3,550 and 4,595 people.
- ❖ The mean age for adults (18+) in Juampas is between 33 and 43 years old. The number of adults and the number of children (0-18) in Juampas are not significantly different.
- ❖ Below are histograms of the ages at death of the parents of the interviewees. They are separated by sex and do not have enough data points to draw statistically significant conclusions. They are, however, a good starting point to compare spikes in the death-age histograms to known illnesses to identify common causes-of-death for Haitian adults.

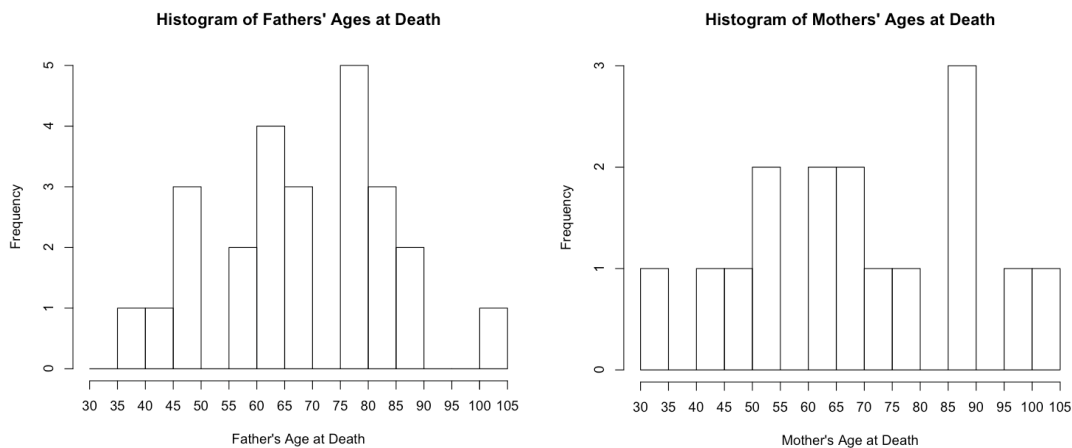


Figure 1. Ages at death of parents of interview subjects

Education

- ❖ Of adults in Juampas, the average highest grade completed is between third and sixth grade. From the sample of 36 respondents, one third had never gone to school.

- ❖ Between 62% and 81% of school age children are enrolled in primary, secondary, or post-secondary education.
- ❖ Although almost 100% of people who read and write in Juampas are literate in both Haitian Creole and French, literacy rates in the community may be as low as 45%. The illiterate portion of the population speaks Haitian Creole almost exclusively.
- ❖ On average, children in Juampas would spend between 10 and 20 minutes daily walking to the school nearest to their home, while some spend as much as an hour. Many children, however, cannot attend the closest school because of cost or academic restrictions. These students often walk for over an hour or incur extra transportation or housing costs to go to school in Lascahobas or Port-au-Prince.

Food and Water

- ❖ Between 87% and 99.9 % of families drink water that has been purified by reverse osmosis or with chlorine-based water purifiers like Clorox® and Aquatabs®.
- ❖ At least 84% of Juampas families farm; some have subsistence gardens while others sell their produce at Lascahobas' market. Of the population that grows produce, however, less than 26% irrigate their land. Of those families who do water their crops, most carry water from a nearby river, lake, or faucet. There is almost no irrigation infrastructure in place.
- ❖ There is no public market within three miles of the Mount Carroll Clinic - and much farther from local farmland - and there is minimal public transportation available for people and produce besides motorcycle-taxis on the rocky, unpaved highway.
- ❖ The average Juampas resident eats between 2.2 and 2.6 meals per day. In many households, a meal often consists of coffee and bread or just fruit juice.
- ❖ No more than 13% of the population claims to eat enough every day. In the sample, only two out of 59 subjects said they had the opportunity to regularly eat enough.
- ❖ Of the 59 households, only two had no female cooks. Of these two houses, one had no adult female residents. In the rest of the houses, women tended to take charge in the kitchen with men helping out from time to time.

Technology

- ❖ Only 22 out of 59 interviewed subjects had electricity in their homes.
- ❖ Thirty-three of 59 subjects owned cellular phones, but 52% of cell phone owners in the sample could not charge their phones in their homes. There is no significant difference in the gender of cellular phone owners.

- ❖ On average, one person per household owns a cellular phone. Because Juampas averages seven people per home, about 14% of the population own cell phones. Family members often share phones and children get news from their parents. As a result, the population with access to information distributed via text message is much higher than 14%. There are some houses, however, that do not have cell phones because they cannot afford them.
- ❖ In the sample, 78% of those who had cellular phones already knew how to send and/or receive SMS (text messages). Using Digicel, a popular Haitian cell carrier, incoming text messages are free.

Politics & Decision Making

- ❖ Approximately equal numbers of residents report having voted or abstained from voting in the November, 2010 presidential election. Of the adults sampled, 37% feel that they are not active participants in community decision making.

Health

- ❖ In Juampas, an area of the Central Plateau with only minimal exposure to cholera, on average between 38% and 65% of the population are sick and need medical treatment. Even the low end of the range (38% of the population reporting illness) severely strains Juampas' medical infrastructure.
- ❖ Of the 70% to 91% of the Juampas population that frequents the Partners in Health/*Zanmi Lasante* hospital in Lascahobas, at least 77% of them visit the Mount Carroll clinic beforehand. The vast majority of subjects who did not visit the clinic first were pregnant mothers who knew that the clinic did not offer pre-natal care.
- ❖ Over 84% of citizens of Juampas has visited the Mount Carroll clinic at some point, whether seeking treatment for themselves or for somebody they know. A typical citizen visits the clinic an average of four times a year.
- ❖ At least 94% of the population would claim that seeing the doctor at the clinic would be easier for them if it were less expensive.
- ❖ All respondents claimed to want more medical information. For a description of the medical information and services requested, see Table 2 below. If asked explicitly, between 68% and 92% of the population would express interest in information on contraceptives and over 81% would express interest in information about protection against sexually transmitted infections (STIs).
- ❖ The five subjects who asked for information to protect themselves against STIs but were not interested in contraceptives were all female.

- ❖ Between 66% and 89% of the population use herbal remedies - including, but not limited to, brewing tea from local plant leaves - to treat their medical ailments.

Sanitation

- ❖ Between 43% and 70% of the population does not have access to “adequate” fecal waste disposal systems. This includes people whose fecal matter could habitually diffuse into the water supply. These families do not have toilets or latrines and typically defecate on the ground, in the trash, or in an unlined pit.
- ❖ At least 93% of the people in Juampas brush their teeth an average of 2.4 to 2.8 times per day. The only subject who never brushed her teeth was toothless.

HOPEH and CCHMP’s Services

- ❖ Over 90% of Juampas’ residents use HOPEH or Carroll County’s services including the clinic, the Plumpy Nut program, and the school sponsorship program. No respondents, however, cited the Biosand Water Filter project.
- ❖ Not a single respondent expressed a negative attitude towards the refugees from Port-au-Prince currently residing in Juampas. Sentiments ranged from positive to neutral including the representative responses, “They lost everything, I wish I could do more,” and “They have nowhere to go, so I guess I don’t mind if they stay.”

Community Opinions

After asking what conditions kept the subjects from working or achieving their goals, they cited the following five factors (listed in order of number of mentions): 1. The land is not consistently fertile and there is no irrigation. 2. Cannot make enough money to work or expand. 3. Sickness or chronic fatigue. 4a. Not enough affordable seeds; and 4b. not enough local jobs available.

The subjects were asked for a prioritized list of three initiatives that they would like to see implemented to improve quality of life in Juampas. Table 1 below summarizes the results:

Table 1. Desired initiatives in Juampas, based on priority ranking (first priority = 3 points, second = 2, third = 1; scores for each initiative added together to get score displayed below) and number of times mentioned by subjects

Initiative	Score Based on Priority Ranking	Number of Votes
Vocational School	60	26
Electricity	42	19
Better Roads	31	19
University	28	12
Hospital	26	11

Initiative	Score Based on Priority Ranking	Number of Votes
Affordable and Accessible Primary and Secondary Schools	23	11
Public Market	19	11
Clean Water	15	7
Irrigation	14	7
Jobs	13	9
Sanitary Public Bathrooms	11	7

The table above shows the prioritized ranking of projects as expressed by the random sample of citizens of Juampas. The list is longer, but the rest of the initiatives received less than five votes. All of the initiatives listed here are interrelated and implementing one will often preempt implementing another. For ideas on how to execute some of these ideas, see the “Discussion” section. For the complete responses to this question, see Appendix B.

Tables 2 and 3 below show priorities identified by the interviewees for medical services at the clinic and subjects taught at a potential future vocational school. Both tables extend longer but the rest of the responses received fewer than three or two votes respectively. For the complete data, see Appendix B.

Table 2. Desired medical services in Juampas organized by number of votes received.

Medical Service	Number of Votes
Delivery Room	14
Operating Room	9
A Better Stocked Pharmacy	8
Emergency Room Open 24/7	7
In-Patient Beds	7
Cholera Treatment	5
HIV/AIDS Treatment	5
Orthopedist	4
Tuberculosis Treatment	4
Typhoid Treatment	4
More Doctors and Specialists	4

Table 3. Desired vocational school subjects organized by number of votes received.

Vocational School Subject	Number of Votes
Tailoring/Sewing	8
Engineering	6
Medicine	6
Nursing	5
Mechanics	5
Agriculture	4
Electricity	4
Cooking	4
Plumbing	3
Construction	3

Discussion

Based on the data presented above, the researchers and translators developed and researched the following 11 project ideas. For each project, the financial costs and time constraints, required resources and personnel, potential benefits and challenges, and a brief proposal are laid out. Some projects are best suited to HOPEH and its partner organizations, some to other independent organizations or individuals working in Juampas or other rural regions of Haiti, and some to the Haitian government or other large-scale institutions.

A Vocational School

When asked what the community lacks but needs, the most popular response was a vocational school. If people living in Juampas want to receive institutionalized professional training, they must travel at least 20 miles to Mirebalais. A vocational school in Juampas would give the younger generation more applicable professional skills and a better opportunity for a quality job after graduation. While Juampas' economy is primarily sustained by small-scale farming, a vocational school would train specialized workers, diversifying the area's economy.

Based on a study done by Schools for the Children of the World, a five-classroom school with each classroom measuring 72 square meters would have a total construction cost of \$154,560 plus additional costs for administration, upkeep, and staff salaries.² The process necessitates a construction crew, experienced administrators, faculty, and maintenance personnel. In erecting the school, location is a primary concern. Since the local public school is in the center of the community, building the vocational school farther west would serve a larger portion of the population, especially the portion that has a harder time accessing the available resources in Lascahobas. The vocational school should be placed to ensure that resources are not disproportionately centered around the clinic or the existing public school.

To identify popular vocations, survey participants were asked to list subject areas they felt the school should provide. A complete list of the results can be found in Appendix B. The top three results were tailoring/sewing programs, an engineering school, and a medical/nursing/health worker program. Tailoring or sewing training would allow individuals to become less reliant on the market in Lascahobas for clothing and textiles and would allow them to profit by selling their goods. An engineering program could begin by educating electricians and builders and work up to training electrical and structural engineers. These careers impact other desired community improvements, including access to electricity and better road construction. Vocational training in the medical field would train community health workers and laboratory aids (see *Clinic Expansion Projects*, page 11). The creation of such a program could facilitate the clinic's efforts to expand its services.

In addition to working as an economic stimulant and job training center, the vocational school would bring the community together. The building or compound could be used to house an elementary school, a public library, and/or a community center. It could be a rallying point for community organizing, a place that inspires Juampas residents to feel pride in their community.

² Alejandra Madrid, et al., "School Construction Cost in Haiti," *Schools for the Children of the World*, <http://www.schoolsforchildren.org/wordpress/wp-content/uploads/2010/05/School-Construction-Costs.pdf> (August 28, 2011).

A Community Center in the Vocational School

A community center would help connect the vocational school and the community. The only costs required would be the construction of the facility, a salary for one employee to oversee the compound, and the cost of electricity. To address lack of accessible electricity, the second ranked priority for the region, the community center could provide public internet and electrical outlets, acting as a pilot project for making electricity more widely accessible. To make shared resources more widely available the community center could include a public library where community members could rent books and other media. Community members could rent out vocational school classrooms to host workshops or classes including cooking, parenting, child development, soccer, English, French, or Spanish, among others, all ideas presented by the survey. The center could also keep community members involved with HOPEH's ongoing projects and foster cooperation and dialogue between the organization and the community. The center could serve as a hub for community organizing, a place where active citizens could get together to discuss their own initiatives and communicate with HOPEH. The community center would connect the vocational school with the rest of Juampas while providing desired services and fostering a sense of community.

Electrical Innovations

In the survey, electricity was identified as the second highest priority after the vocational school. Only 37% of the sample had electricity in their homes, some from illegal connections to their neighbors' power lines. The two most viable mechanisms to expand the availability of electricity are through the public sector or community organizing. Electricite d'Haiti (EDH) is the national public utility provider, but less than 40% of the population has electricity, leaving 6.2 million without power.³ Part of EDH's grid runs through Juampas. An organization could work with EDH to expand electric power in the area. The cost of improving access to electricity through EDH depends entirely on the company. On the other hand, it may be easier and more cost effective to avoid public routes and instead construct a community system - like a solar field - based either at the vocational school, clinic, or another communal space. These initiatives will work best if they have community support and involvement; therefore micro-finance loans, education, and trained community electricians are important to this project.⁴

Alongside private electricity, researchers considered constructing streetlights, charged with small solar panels, with outlets at the base for community members to charge telephones. Lighting would make the roads safer at night. This initial project is small, locally sustainable, and benefits the whole community and is a precursor to expanding in-home electricity access.

Paved Roads

Improved roads were the third-ranked community priority. As opposed to the recently paved highway through Mirebalais and Lascahobas, the main route running through Juampas is

³ World Energy Outlook 2010, *Electricity Access Database*, http://www.worldenergyoutlook.org/database_electricity10/electricity_database_web_2010.htm (July 14, 2011).

⁴ Parliamentary Office of Science and Technology, "Access to Energy in Developing Countries," *Postnote* 101 (December 2002): 1-4.

mostly rock, dirt, and rubble. If feasible, road improvements would make the daily commute to school faster, easier, and safer. They would also make it easier to ship goods to Juampas from Port-au-Prince or Mirebalais and encourage safe traveling to Lascahobas' market from the countryside. Road improvements have the potential, however, to lead to conflict between the community or the organization that takes on the project and the Haitian government.

To pave Juampas' roads, an organization would need to contact the Haitian government to determine whether they have plans to improve the roads already. Without public assistance, road engineering and construction is a costly and complicated process. Several factors must be considered when discussing road improvements. Research has suggested that roads are impacted by quantity and type of traffic, along with environmental factors.⁵ Issues such as drainage and maintenance have a significant impact on the longevity of public roads. It is believed that using recycled concrete decreases costs 10 - 20%.⁶ In regards to funding, the Inter-American Development Bank (IADB) has financed road development in Haiti in the past. Looking to the IADB for funding may be beneficial for interested parties.⁷ The cost is currently undetermined and dependent on public assistance.

Several other projects outlined in the report would also be dependent on the improvement of community roads. The purchase of a community school bus (see *A Public School Bus*, page 13), for example, would prove more cost effective if paved roads allowed for fewer breakdowns and required less maintenance. Paved roads would also support a community market in Juampas which would bring business into the area and improve the community's economy. Paved roads have the potential to improve transportation speed and safety in Juampas.

A University

Identified as the fourth priority in Juampas, building, staffing, and financing a university in Haiti's Central Plateau would provide the opportunity for cheaper and more convenient post-secondary education than those offered in Port-au-Prince. It would also create more trained professionals to work to develop the local economy and infrastructure. A university, however, has the potential to widen the economic and achievement gap between those who can and cannot afford it. Also, building a university is a massive undertaking. It requires considerable time, money, and dedicated, knowledgeable professionals. Since HOPEH is working on a vocational school in Juampas, the most direct route to a university would be to expand the vocational school over time. For example, the vocational school will train electricians and public health workers. The university could expand these programs to train engineers, nurses, and doctors.

Given HOPEH's resources, the researchers do not recommend building a university today. HOPEH could, however, partner with a foreign educational organization like an existing

⁵ From Plans to Pavement: How a Road Is Built, *Michigan Department of Transportation*, <http://www.michigan.gov/mdot/0,1607,7-151-9615-129011--,00.html>, (June 7, 2011).

⁶ Recycled Concrete Could Reduce Road Paving Costs by 10-20%, *Aggregate Research*, <http://www.aggregate-research.com/articles/22062/Recycled-Concrete-Could-Reduce-Road-Paving-Costs-by-10-20.aspx> (June 7, 2011).

⁷ Bate, Peter. Haiti Invests Heavily in Rebuilding Roads, *Inter-American Development Bank*, <http://www.iadb.org/en/news/webstories/2009-04-13/haiti-invests-heavily-in-rebuilding-roads,5339.html> (June 7, 2011).

university. In this type of partnership, the other institution would provide knowledge and financial support while HOPEH would contribute on-the-ground knowledge and experience in Haiti. The best way to work towards a university is to focus on smaller projects like the vocational school and seek out a partnership with an interested institution. For now, a university is a goal to have in mind while working on Juampas' vocational school.

Clinic Expansion Projects

Clinic expansions were rated as the fifth priority in the survey. Since its inception, the clinic has been a welcome addition to Juampas; more than 84% of the community has visited it. The clinic has the potential to expand the scope of its services to better meet the community's needs. The cost of these expansions depend on the project, as do the personnel. Community members voted on potential future additions to the clinic. For the results, see Table 2 on page seven. Until the clinic has a development staff, these improvement must be implemented by the HOPEH boards in the US and Haiti and through CCHMP and other volunteer trips.

Although not specifically mentioned by the subjects, community health workers (CHWs) could provide a way for the clinic to reach its services into the remote areas of Juampas. When people cannot travel to a doctor because of poor roads and injuries, a CHW can visit them, bring them medicine, and take their vital signs. When asked about the clinic, multiple respondents expressed disappointment that the home visits instituted by a formerly employed physician have ceased. CHWs also work to identify areas of high disease incidence and find patients in serious need of medical attention who otherwise would not receive care. Haitian CHWs could train other community members in safe sanitation practices and conduct community analyses. Additionally, the clinic could use other communication methods including SMS and loudspeaker announcements with the CHWs' assistance to relay public health information. While the necessity for CHWs in Juampas is evident, the community's primary concern is not the CHW program, but service improvements at the clinic. HOPEH and other interested organizations should work to improve the clinic, expand its services, and broaden the population served.

Regulation of HOPEH's School Sponsorship Program

HOPEH's school sponsorship program currently operates under a first-come first-serve basis. Regulating the program would get the neediest children into school and prevent the most assertive and well-connected families from taking precedence. Participants who are already being sponsored, however, would retain their sponsorship and not be affected by the policy change. This regulation would require advance planning, a one-week implementation trip, and a salary for one Haitian employee to regulate the program. A plan must be designed for choosing participants (children and families) based on certain criteria. These criteria could include, but should not be limited to, parents' income, child's age, highest class completed, and location of residence. A quantitative method could then be set up to classify each potential participant based on need. An application could be designed to be filled out by the parents, or a HOPEH employee if the parents are illiterate, that includes the relevant information. To attract as many citizens as possible, a central location should be selected and announced to the community where applications will be filled out. A trained HOPEH employee from Juampas would then rank

students based on need from the criteria mentioned above. All participants should be sponsored, but the neediest should have the highest priority.

A Public Market in Juampas

At least 62.7% of Juampas' population makes some, if not all, of their livelihood by selling goods in the public market or on the street. A market in Juampas, the seventh-ranked priority, would facilitate local trade and limit the distance Juampas' vendors need to travel with their wares. A public market would not be overly demanding to construct, but would require a competent staff to maintain. The market costs include purchasing the land, erecting a basic covered structure, and paying staff to maintain and regulate the market. The market could charge a portion of profits as rent for a stall berth, as the Lascahobas market does. The employee salaries would be paid by these rental fees, as would any maintenance costs. The only costs needed from an outside party are start-up costs for construction; after this initial donation, the market would be financially self-sufficient. The only potential danger with a market in Juampas is the competition it would pose to the larger markets in Lascahobas and Belladere. Having a public market in Juampas would facilitate local commerce and minimize travel to distant markets.

An Irrigation System

At least 84% of Juampas families farm in some capacity and less than 26% irrigate their land. An irrigation system, ranked ninth priority, would greatly benefit the community. It would supply crops with adequate and dependable water, regardless of climate and weather patterns. Today, many farmers wait for the level of the lake to descend in the dry season and plant their crops in the fertile land exposed. Often, as in 2010, the lake does not recede until the planting season ends. This reduces farmers' crops and incomes. A dependable irrigation system would make farmers more self-sufficient. Because roughly half of Juampas' farm land lies on hillsides while the other half is flat and borders the lake, the system would have to account for both types of terrain and would require technical expertise to construct. It could use rain-water collection on the hillside and route the water strategically down the mountain. The cost depends entirely on the determined construction method. The plan must be carefully thought out as it could lead to social strife if the system only benefited one part of the community. This project would consume significant time and resources, but it has the potential to benefit almost all of Juampas' citizens.

Public Latrines

Because at least 43% of the population does not have access to a sanitary place to defecate, public latrines would improve community sanitation. Pit latrines cost \$250-\$1,500 while Sustainable Organic Integrated Livelihoods (SOIL) composting latrines cost from \$2,300 to \$2,900. SOIL charges \$12,000 to train a construction and maintenance crew and set them up to start building latrines. This project would require Haitian staff and a full time maintenance employee.⁸ If constructed, the latrines would be spaced at regular intervals throughout the community to be used by the surrounding households. Although the major focus of implementing this relatively low-cost project is sanitation and disease reduction, SOIL composting latrines

⁸ SOIL, Home, <http://www.oursoil.org> (July 13, 2011).

would also make a good addition to Juampas' agricultural system. These latrines separate urine and feces and compost both to make a nutrient-rich fertilizer that can be used to nourish a garden. SOIL latrines are better ventilated than the average pit latrine but cost significantly more and require slightly more maintenance. To adequately reach all members of the community who do not have access to sanitary facilities, the project should begin with three to five pilot latrines with the goal of expanding to 20 or more latrines around Juampas.⁹

A Public School Bus

A public school bus is a relatively simple project compared to many of the others. It entails purchasing a bus and hiring a driver. The only costs would be that of the bus, the driver's salary, gas, and repairs. If the salary and bus repairs were subsidized by an organization, the bus could provide free rides. If not, the bus could charge a modest fee for riding privileges. The most difficult aspect of this project would be to design the bus' route and to determine who is eligible for rides. To be eligible for free bus rides, students must live a certain distance from school, be from families below a certain income level, and be currently enrolled in a school, among other criteria. During non-school times, the bus could transport disabled patients to the clinic or countryside vendors to market. The bus would make it easier and safer for more children to receive an education and could also be used productively in the community.

Conclusion

The research conducted in this report provides a relatively comprehensive understanding of health, social interactions, and daily life in Juampas. Eleven different projects, based on the information gathered, have been proposed which hopefully HOPEH, its partner organizations, and other interested parties will consider pursuing. The outcome of this report will depend upon the willingness of these groups and organizations, available financial resources, and receptiveness in Juampas. Members of this research team plan to return to Juampas in 2012 to pursue one or more of the above initiatives. Whichever project(s) is(are) chosen, the researchers recommend that a committee of citizens from Juampas forms to oversee the progress. That way, the community members can monitor the projects and get involved in directing new initiatives.

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⁹ SOIL headquarters, authors' personal visit, June 2010

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Appendix A - Juampas Quick Fact Sheet

Population & Households

Within the borders of the map (see Appendix C): 3,550-4,595 people

Those sampled who feel they are “active participants” in community decision-making: 63%

Average household: 6.09-7.88 full time residents

Most common water sources: Public pumps and natural spring water

Percentage of population that treats their drinking water: at least 87%

Most common locations to urinate and defecate: In a latrine and on the ground

Percentage of households that cultivate land and grow crops: At least 84%

Percentage of those who cultivate land and irrigate it: Less than 26%

Percentage of sample households with electricity: 37%

Percentage of interview subjects with a cell phone: 56%

Percentage of the sample cell phone owners who send and receiver texts: 78%

Average number of men (18+) per household: 1.8

Average number of women (18+) per household: 1.9

Average number of boys (0-17) per household: 1.5

Average number of girls (0-17) per household: 1.7

Based on the survey, the researchers found no correlations between location of household and percentage of children enrolled in school, family literacy, number of meals eaten per day, or to the number of people living in the house.

Food

Average number of meals per day: 2.2-2.6

Respondents who claimed to have enough to eat every day: 4%

Most common food sources: Food grown in one’s own garden or purchased at the local market

Occupation

Most common jobs: Farming, selling goods/produce at market, driving trucks or motorcycles

Education

Literacy rate: At least 45%

Percentage of children (ages 3 to 25) in school: 62-81%

Most common subjects desired for a vocational school: tailoring/sewing, engineering, medicine, nursing, mechanics

Community Politics

In the most recent national election, percentage of population that voted: 50%

Percentage of subjects who do *not* feel that they actively participate in community decision-making: 37%

Health & Sanitation

Percentage of the population without access to adequate sanitation facilities: 43-70%

Percentage of the population that use herbal medicine (including leaf-brewed tea): 66-89%

Percentage of the population that brushes their teeth daily: At least 93%

Percentage of Juampas households that had at least one sick resident in January, 2011: 38-65%

Average percentage of the sick people who are actively receiving treatment: 76%

Appendix B - Rough Data and Sample Statistics

Unless otherwise specified, the following data is rough, unanalyzed, and *not yet applied to the entire Juampas population*. To conduct your own analyses, feel free to use the following sample data. If you have any questions about the given data or would like more numerical data describing the population of Juampas, please contact the researchers.

House Location

12/51 (23.5%) On the main road
15/51 (29.4%) On a side road
13/51 (25.5%) Removed from main road on a foot path
3/51 (5.9%) Removed from a side road on a foot path
8/51 (15.7%) Countryside

Floor Material

23/37 (62.2%) dirt floor
14/37 (37.8%) cement floor

Roof Material

30/37 (81.1%) tin
3/37 (8.11%) wood
4/37 (10.8%) thatched roof
1/37 (2.7%) straw roof
1/37 (2.7%) cement roof

Age

Mean: 38
Standard deviation (s): 17.02
Number of Responses (n): 59

Gender

28 Male
31 Female

Education Level

21/36 (58.33%) have gone to school
15/36 (41.67%) have no formal education
Of those who have gone to school the mean highest grade completed is 6th.

Employment

14/59 (23.73%) Unemployed
27/59(45.76%) Farmer
8/59 (13.56%) Trader
4/59 (6.78%) Student
2/59 (3.39%) Truck Driver
1/59 (1.69%) Market Vendor
1/59 (1.69%) Mechanic
1/59 (1.69%) Cobbler/Painter/Construction Boss

Population per Household (full time)

Mean: 6.98
s: 3.49
n: 61
This leads to a 95% Confidence Interval for the total Juampas population (583 households) of between 3550 and 4595.

Population per Household (not year-round)

Mean: 0.38
s: 1.14
n: 61

Literate Population per Household

Mean: 4.36
s: 3.00
n: 59
74.70% of people ages 3-25 are enrolled in school.

Distance Walking to Nearest School

Mean: 15.09 minutes
s: 14.33
n: 41

Do the Children Who Attend School Attend the Nearest School?

Yes: 16/51 (31.4%)
No: 17/51 (33.3%)
Some: 18/51 (35.3%)

Why?

Too Expensive: 9/31 (29.03%)
Closest Schools Don't Provide for All Ages both old and young: 18/31 (58.06%)
Not enough space to enroll: 4/31 (12.90%)

Employment by Household

Of 79 employed individuals from 54 household:
53 Farmers
12 Businesswomen
5 Produce Vendors
2 Motorcycle Drivers
3 Truck Drivers
1 Mechanics
1 Nurse
1 Mystic
1 Household Servants
1 Clerk
1 Painter
1 Cobbler
1 Construction Boss

Language Spoken

Kreyol: 52/52 (100%)
French: 9/52 (17.3%)
Spanish: 3/52 (5.8%)
English: 1/52 (1.9%)

Do you have any Conditions that Make Doing Your Job Difficult?

Yes: 45/50 (90.0%)
No: 5/50 (10.0%)

For a listing of these conditions, see "Conditions Individuals and Families Have that Impede on their Livelihood (n=52)" below.

Cost of Education per Year per Household

Mean: 4,879.00 HTD
s: 7,989.38
n: 47

Where Drinking Water Comes From

Purchased Water 2/63 (3.2%)
Natural Spring: 8/63 (13.0%)
Boulie, a specific water pump 6/63 (9.5%)
Public Water Pump 38/63 (58.7%)
Lake Water 4/63 (6.3%)
Dug Well 3/63 (4.8%)
River Water 1/63 (1.6%)
Water from Roots of Plants 1/63 (1.6%)

Do you Treat your Water?

54/59 (91.5%) Typically Treat Water
3/59 (5.1%) Don't Treat Water
2/59 (3.3%) Sometimes Treat Water

Does your Household have Electricity?

22/59 (37.2%) Have electricity
36/59 (61%) Don't have electricity
1/59 (1.6%) Sometimes have electricity

Cell Phones?

32/59 (54.2%) Have cell phones
27/59 (45.7%) Don't have cell phones

Do you Send Text Messages (SMS)?

14/40 (35%) No
26/40 (65%) Yes

Cost of Purchasing a Cell Phone

Mean: 246.52 HTD
s: 163.7
n: 25

Number of People per Household with Cell Phones

Mean: 1.37
s: 1.14

n: 59

81 out of 449 people in all of the households surveyed (18%) Have cell phones

Did you Vote at the Last Election?

32/59 (54.2%) Voted

27/59 (45.7%) Did not vote

Are you an Active Member in Community Decision Making?

36/57 (63.16%) Yes

21/57 (36.84%) No

Is Anyone in Your House Sick?

29/59 (49.15%) Everyone is healthy

30/59 (50.85%) At least one person is sick

Percentage of Sick People Being Actively Treated

23/30 (76%) of people who are not healthy are being treated

People who have Visited the Juampas Clinic

53/58 (91.3%) Have been to the clinic

5/58 (8.6%) Have not been to the clinic

If Clinic Cost Less, Would it be Easier for you to Go?

56/57 (98.25%) Yes

1/57 (1.75%) No

Number of Meals Eaten per Household per Day

Mean: 2.37

s: 0.78

n: 56

Do You Eat Enough?

6/56 (10.71%) Sometimes

48/56 (85.71%) Rarely

2/56 (3.57%) Always

Gender of the Household Cook

74/80 (92.5%) Female

6/80 (7.5%) Male

Where Members of the Household Defecate

1/58 (1.7%) In the trash

29/58 (50.0%) In a sanitary latrine

22/58 (37.9%) On the ground

4/58 (6.9%) In a sanitary toilet

2/58 (3.4%) In an unlined pit

Do You Brush Your Teeth?

54/55 (98.2%) Yes

1/55 (1.8%) Sometimes

0/55 (0.0%) No

Would You be Interested in Receiving More Medical Information?

55/55 (100%) Yes

Information on Contraception?

40/50 (80%) Yes

10/50 (20%) No

Information on Sexually Transmitted Infections?

44/49 (89.8%) Yes

5/49 (10.2%) No

People who have used CCHMP and HOPEH's Services

49/51 (96.1%) Yes

2/51 (3.9%) No

Attitude Towards the Earthquake Refugees in Juampas

32/55 (58.2%) Positive

23/55 (41.8%) Neutral

0/55 (0.0%) Negative

Need to be Addressed	Number of Appearances	Additive Point Score (1st=3 points, 2nd=2, 3rd=1)
Vocational School	26	60
Electricity	19	42
Good Roads	19	31
University	12	28
Hospital	11	26
Affordable and Accessible Primary and Secondary Schools	11	23
Public Market	11	19
Clean Water	7	15
Irrigation	7	14
Jobs	9	13
Bathrooms	7	11
High School	4	8
School for Orphans	2	6
Money	2	5
School in Bois-Pain	2	5
Cemetery	2	4
Soccer Field	2	4
Hotel	1	3
House	1	3
Farming Machines	2	3
Factory	2	3

Need to be Addressed	Number of Appearances	Additive Point Score (1st=3 points, 2nd=2, 3rd=1)
Food	2	3
Bank	1	2
Place for the Elderly	1	2
Better Sanitation	1	2
Public Park	1	2
Recreation Center	1	2
Running Water	1	2
Home Economics Course	1	2
Clinic Improvement	2	2
Travel Options for Children at School in Lascahobas	1	2
Orphanage	1	1
Security	1	1

Ideas to alleviate Juampas' problems (n=75 responses)

8/75 (10.7%) Unity/work together as one

8/75 (10.7%) Send children to school

7/75 (9.3%) Paved Roads

6/75 (8.0%) Vocational School

5/75 (6.7%) Electricity

4/75 (5.3%) Congress of people/task force for problems

4/75 (5.3%) More food

4/75 (5.3%) Jobs

4/75 (5.3%) Clean water

3/75 (4.0%) Bathrooms

3/75 (4.0%) Help the poorest people

2/75 (2.7%) Orphanage

2/75 (2.7%) Development projects

2/75 (2.7%) Build houses

2/75 (2.7%) Aid

2/75 (2.7%) Irrigation system

1/75 (1.3%) Stores

1/75 (1.3%) Study whole community, send all children who can't afford it to school

1/75 (1.3%) Clean water

1/75 (1.3%) Cars

1/75 (1.3%) NGOs should take everyone's opinions into account

1/75 (1.3%) Refrigerators

1/75 (1.3%) Rice and corn mills

1/75 (1.3%) Manufacturing in Juampas

1/75 (1.3%) Common market

1/75 (1.3%) Hospital

Desired Healthcare Developments (n=105 responses)

14/105 (13.3%) Delivery rooms
11/105 (10.5%) Hospital
9/105 (8.6%) Operating room
8/105 (7.6%) Solution to all health problems
8/105 (7.6%) More medications available
7/105 (6.7%) Emergency room
7/105 (6.7%) In-patient rooms
5/105 (4.8%) HIV/AIDS treatment
5/105 (4.8%) Cholera treatment
4/105 (3.8%) Orthopedist
4/105 (3.8%) TB treatment
4/105 (3.8%) Typhoid treatment
4/105 (3.8%) Clinic needs to be bigger, more like a hospital
4/105 (3.8%) More doctors/specialists available
3/105 (2.9%) X-ray machine
3/105 (2.9%) Dentist
2/105 (1.9%) Malaria treatment
1/105 (1.0%) Better hospitals
1/105 (1.0%) A doctor for house visits
1/105 (1.0%) Eye care

Conditions Individuals and Families Have that Impede on their Livelihood (n=52)

14/52 (26.9%) Land problems (inconsistent, not fertile, irrigation problems)
5/52 (9.6%) Economic Problems
5/52 (9.6%) Sickness/Fatigue
3/52 (5.8%) Not enough money to plant/buy seeds
3/52 (5.8%) No jobs available in the community
3/52 (5.8%) Doesn't make enough money
3/52 (5.8%) Not enough money to work
2/52 (3.8%) Money problems
2/52 (3.8%) Physical pain
2/52 (3.8%) Not educated enough to have an actual job
2/52 (3.8%) Not enough money to buy products for business

1/52 (1.9%) Bad knees
1/52 (1.9%) Not enough money for a plowing machine
1/52 (1.9%) Mechanical problems with Motorcycle
1/52 (1.9%) Can't afford to go to school
1/52 (1.9%) Traffic
1/52 (1.9%) Security problems while driving
1/52 (1.9%) Getting too old
1/52 (1.9%) Miscommunications

Subjects Desired in a Vocational School (n=65 responses)

8/65 (12.3%) Tailoring/Sewing
6/65 (9.2%) Engineering
6/65 (9.2%) Medicine
5/65 (7.7%) Nursing
5/65 (7.7%) Car/Motorcycle Maintenance (Mechanic)
4/65 (6.2%) Agriculture
4/65 (6.2%) Electricity
4/65 (6.2%) Cooking
3/65 (4.6%) Plumbing
3/65 (4.6%) Construction
2/65 (3.1%) Carpentry
2/65 (3.1%) Accounting
2/65 (3.1%) Floral arrangements
2/65 (3.1%) Computer
1/65 (1.5%) Auxiliary vocations
1/65 (1.5%) Driving School
1/65 (1.5%) Child care
1/65 (1.5%) Literacy
1/65 (1.5%) Administration
1/65 (1.5%) Teaching
1/65 (1.5%) Beauty/Hair-care
1/65 (1.5%) English cars
1/65 (1.5%) Theater

100% of Respondents Claimed to Desire more Medical Information. When asked "What type of information?" The n=55 responses were as follows:

20/55 (26.9%) Cholera

8/55 (14.5%) Whatever is available
4/55 (7.3%) Fever/Headache and what medication to alleviate them
3/55 (5.5%) How to live a healthier life
3/55 (5.5%) Information on Medications
3/55 (5.5%) Dental health
2/55 (3.6%) Colds
2/55 (3.6%) Preventative medicine
1/55 (1.8%) Self-Treating
1/55 (1.8%) Handicap/Mental retardation
1/55 (1.8%) All medical information
1/55 (1.8%) Sanitary cooking habits
1/55 (1.8%) Pain
1/55 (1.8%) Heart health
1/55 (1.8%) HIV/AIDS
1/55 (1.8%) How to care for children
1/55 (1.8%) Diseases

Most Important Step Haiti Must Take to Recover from the January 12, 2010 Earthquake (n=83)

37/83 (44.6%) Rebuilding
10/83 (12.0%) Help for unemployed Haitians with job finding
6/83 (7.2%) Foreign aid
4/83 (4.8%) Love, respect, and unity
3/83 (3.6%) Universities
3/83 (3.6%) A better president
3/83 (3.6%) More food
2/83 (2.4%) Plant trees
2/83 (2.4%) More hospitals
2/83 (2.4%) More schools
2/83 (2.4%) God
1/83 (1.2%) Agricultural improvements
1/83 (1.2%) Government aid for the people
1/83 (1.2%) Efficient allocation of money
1/83 (1.2%) Building in the countryside
1/83 (1.2%) Better government
1/83 (1.2%) Build more roads
1/83 (1.2%) Build vocational schools
1/83 (1.2%) People should work harder
1/83 (1.2%) Aid the orphans

Appendix C - Map of Juampas Households with Landmarks*

Juampas 2011



Important locations are marked with polygons and labels while a cross denotes a small church. Each numbered dot represents one household. For a larger version or more copies of the map, please contact the researchers.

*Map is not to scale