

## Intensive Case Study #3 Maria Carmen \*\* and animals in close proximity to living space.

Yellow highlights added occasionally for clarification to survey.

### Meta Data

Paty and Alejandro went to talk to her and her family about the intensive case study.

Set up 7/29/2019. Paty and Alejandro set up the appointment.

Survey Case

### Rationale for Case Study (Generic and from the Survey):

- The house is rudimentary and has mixed materials for the walls, including plastic tarps, galvanized metal, and brick. The floor is also made of dirt, which is a health hazard. We desire to understand the perceptions of the impact that this type of rudimentary building structure has on health.
- Animals, including chickens and pigs, are extremely close to the house, potentially leading to adverse health outcomes. There were chickens inside the house, walking on the table and beds. It is important to explore how animals in close proximity to living space can impact health and quality of life.
- \*\* 6 years old, has a disability and for some years went to physical therapy to help him walk. We want to better understand how he is able to use the house and how he interacts with the animals on the property.

### Synthesis of Case from Survey

- Maria Carmen \*\* is a single mother of a child with disabilities. She is 33 years old.
- In the house there are four people:
- They have lived in their house for 1.5 years. While not sure, this is more than likely due to earthquake damage in their previous home. *Do they plan on rebuilding another house? How were they able to make this one- choice of materials, location, who helped?*
- She has a son (\*\* 6) with Epilepsy (*we need to confirm this*) and takes him to speech therapy/medical monitoring 2 times a week in Atlixco. This is burdensome on her finances, requiring her to work as a hair dresser in the house of her brother on the weekends, while her mother takes care of her child. *How does this impact her ability to build a new home? How does her son interact with the house and animals?*
- She lives with her mother (Ana Margarita \*\*, 75, works at home), father ( \*\*, 77, works in field), Son (\*\* 6, was in preschool). *Is the son able to receive schooling or are the schools unable to adequately provide for his needs?*
- She stated that access to health care services are severely lacking in the community. She states that it is very hard for her to get treatment for her son due to transportation costs and time. She also states that there are hygiene issues in the community that affect health.
- She goes to the Hospital in Atlixco for health services and it is an hour drive away but the Combi can take longer. It is very expensive to get to the appointments and medicines but since she has Seguro Popular, she does not pay for the appointment.
- She was scared and sad after the earthquake. *Was her household greatly impacted by the earthquake?*
- She uses wood and carbon to cook.

- Her lot size is 12 by 15 and there is 1 room. It is a large room where they eat, cook, and sleep. There is humidity present in the room.
- They use jícara to shower and do not have a formal shower
- She has 6 brothers/sisters in the United States. She speaks to her sister weekly and they have been there in the U.S. for 10+ years. The family sends remittances to her every 6 months. *Does the mother/father get remittances more regularly?* Maria Carmen has not lived in the United States.
- We interviewed her in her brother's house, which was newly renovated and painted. She does not live in this house but she cuts hair in this house. *Why does she not live in this house? How long has her brother been gone? When does he plan on returning? Does she pay to use the space?*
- *Re-measure the air quality in the house*

## Report ASF & ARA

*Note:* Maria Carmen mentions several of her brothers, but we do not know the names so they are categorized as brother (A), (B), and (C).

- Brother (A): lives in Puebla whose house Maria Carmen used to live in and now uses it strictly for her hair salon and occasionally to sleep in
- Brother (B): shot last year
- Brother (C): lives in Indianapolis (USA) and is one of 2 main siblings that send remittances to Maria Carmen's family

### General

- We showed up at Maria Carmen's current house, but her sister-in-law said that she had just left to brother (A)'s house. We walked to the brother's house and found Maria Carmen, her mother, and son.
- When asked if she knew what we were there for, Maria Carmen said that she did not know exactly. Lorena, a neighbor that we also interviewed hair, called her the day before to tell her that the UT team wanted to talk to her. She did not know about the intensive case study, but she agreed almost instantly.

### Background

- When Maria Carmen was 2, her mom, Luisa, had facial paralysis. It has acted up about 3 times since. Luisa had an [egg cleanse](#) to help with the paralysis but she also went to doctor and eventually got better. She still has a little bit of tightness on muscles.
- When Maria Carmen was 12, her mom had arm problems, but a *curandero* helped her.
- A year ago (3 de enero) another one of her brothers was shot and killed here in Xochiteopan.
  - He was the president or first commander of a committee in charge of security, particularly of a well. This group was created because of previous attempts to steal the pump from the well. One day, Maria Carmen's brother (B) was shot and killed

and the person who shot him was never found. This was very tough on Maria Carmen's mom and it brought her arm pain back.

- Her mom recently tripped and hurt her foot, so they are currently staying in her brother's (A) house who lives and has his own family in Puebla City. They've been sleeping there for about 15 days.
- Her dad has had feet problems for about 10 years. He also has prostate problems.
  - Has done exams → no arthritis or anything
- Mom had 13 kids: 3 died at 1 year old (older than Maria Carmen), her brother (B) who passed away last year; now 7 boys left, 2 girls
  - Mom has divided property amongst children
- Maria Carmen \*\* Castillo left for Mexico City when she was 13 years old to attend middle school since at the time there was none in San Fco. Xochiteopan. She moved in with her cousin and stated that the first year was emotionally difficult for her because she had never lived apart from her parents. She said the longer she was away, the more distant she felt her parents were towards her. In school she felt left out and felt that people pointed her out for being the rural girl; at least that's what she imagined.
- She enjoyed her youth, played with her friends, basketball and sports. They would enjoy their time in a healthy way (no cellphones, etc.).
- She met the father of her kid in Xochiteopan, and it was going well, but his family started meddling and giving him ideas, so they split up. He decided he was not going to take care of his kid. They separated.
- In Mexico City, Maria Carmen initially wanted to be a social worker, but she got sick, so she got certified to be a hairdresser instead and eventually came back to Xochiteopan.
  - When asked what the illness was, Maria Carmen answered that she would have trouble breathing (possibly panic attacks).
  - She said she would have liked to stay in Mexico City, but she decided to go back to Xochiteopan to care for her parents.
- Maria Carmen expressed interest in migrating to the U.S. She said she used to fear the journey, but now she thinks it would be a good idea to move there to give her son, \*\*, a better life.

### **Son with Disability**

- Maria Carmen's 6-year old son, \*\*, has epilepsy ("media"?) since birth. When he was born, some liquid went into his brain and she thinks that is what caused his epilepsy. He had to spend 15 days in the hospital. On the fourth day, he began convulsing.
- After the first (or maybe few) convulsion, he did not have another for the first 4 years of his life. After he turned 4, they started again. He has 1-2 convulsions per year.
  - had a convulsion in May 2018, then November then this May 2019 again
- He went to physical therapy to learn how to walk. He finally walked at 2.5 years old, so he does not attend physical therapy anymore.
- He has not learned to speak fully. He says a few words in broken-Spanish (ex: "ia" instead of "mira"). Maria Carmen says he has the mind of a 2-3-year old. He used to go to

speech therapy twice a week in Atlixco, now he goes only once. The sessions cost \$60 MXN each.

- His medical appointments in Atlixco used to be monthly, but now it varies. His last appointment was in June, so his next one is 3 months from then. She is enrolled in Seguro Popular, so \*\* appointment is covered and so is his medicine, when available. This last time, for example, the hospital did not have the treatment, so she had to buy a bottle for \$69 MXN which lasts for about a month and a half. \*\* takes his medication every 8 hours and has been doing so since he was 4.
- Maria Carmen used to take the combi to Atlixco which costs about \$100 MXN roundtrip and takes about an hour to get there, and this used to be burdensome. When the new municipality president came into power a few months ago, they provided transportation for Maria Carmen at no cost. The only requirement is for her to fill out some paperwork. Now she uses this transport more.
- \*\* doesn't have mobility problems in the house.
- She goes to San Juan to get help since in Xochiteopan the *Casa de Salud* does not have the resources or the stability to give her attention, especially if there is a convulsion at a hard time of the day, say 4am.
  - Casa de Salud only open M-F from 8AM-4PM; not weekends.
  - Xochi clinic does not have the medicine
  - No permanent doctor, only "médicos pasantes"
  - When she asked what to do if her son had an episode during the night, the clinic suggested to go straight to San Juan because they do not have a stable doctor, especially in the weekends, and they also do not have the shot that San Juan gives to \*\* when he convulses.
- \*\* did have an accident in Maria Carmen's brother's house, she was doing the laundry and heard him cry. He was in the stairs and hurt himself with a brick, and his finger was hurt. She took him to the Xochiteopan clinic, and he was taken care of, but his fingernail fell. It has now recovered.

### **Physical Structure of House**

- Before the 2017 earthquake, Maria Carmen and her family used to live in her brother's (A) house down the street, but it collapsed during the earthquake. They received aid from the government and her brother (A), who is an architect, oversaw the reconstruction of the house.
- While they waited for the construction to be finished, Maria Carmen, her parents, and her son moved into the house they currently live in. It was originally built by her father around 10 years ago to store the truck and tractor many years ago, but after the earthquake, it became a place to live in. At the beginning it was only the brick wall and the ceiling, the laminas de aluminio and tarps were added right after the earthquake to serve as walls and make it livable. The house consists of one single room that serves as a dining room, a bedroom, and a sort of storage space. The floors are made of dirt and there is only one bed. Only Maria Carmen, her mom, and \*\* sleep there since her father decided to sleep in the brother's house for fears of someone breaking in.

### **Home/Space Arrangement**

- Maria Carmen said that even when her brother's (A) house was rebuilt, they decided to stay in their current house because this is where the animals (goats, sheep, pigs, turkeys, and chickens) are kept. It makes it easier for her to feed and care for them if they live in the same place rather than having to take trips back and forth.
- Her \*\* however, is in her brother's house. She works \*\* Most clients are from Xochiteopan, but she has others from Colonia Agrarista and on rare occasions from other places as well.
- In their current lot, they have 2 storage rooms next to the goat corral. One is where they turkeys are kept overnight and where they sometimes store chia, amaranto, etc. They keep fertilizers in the corner storage room, the one diagonal to the main house.
- Concerning renovations for the house, her brothers have been helping with it. They didn't have a bathroom since this lot, now they have one. He sent them the money for it. Given that this house was not used for living they didn't use to have one.

### **Animals in Proximity to Living Space**

- They have chickens, turkeys, goats, sheep, and pigs.
- She says they used to take the sheep and goats to the *cerro*, but now there isn't anyone that can take them, so they are always locked up.
- Some chickens are kept in an enclosed area, but others are always loose. These walk into the house and climb onto things, including the only bed shared by 3 people. The animals always sleep outside so at night they do not have access to the house.
- The pigs are located between her house and the goat pen. She cleans their area every 8 days.
- Does the kid play with the animals sometimes? She says he does; he goes into the goat corral and plays with the sheep and goats. He plays with everything, with the tree, with the pigs, the chickens.
  - Maria Carmen did not seem to find this as an issue
- He hasn't had trouble with the animals. He grabs the chicken by the neck, and they don't really hurt him at all.
- He became very friendly with the dog they have, so they know each other and there's no issues.

### **Long-Term Plan**

- Her parents want to stay here, because they have more space, and there is room for the animals. In the other house it is too small, and then they would have to keep coming back and forth which is complicated when there is rain and when she is cooking. So, she would rather stay here and do everything (feed everyone and the animals) rather than to cook there and have to go back.

## **Familial Support**

- Her father, her brother and her go to the fields.
- Her mother spends most of the time at home caring for \*\*.
- Maria Carmen's family receives remittances mostly from one brother (C) and one sister in the U.S. They all live in Indianapolis and some have been there for over 20 years. The money is used for medical appointments for Maria Carmen's parents and their medicines. Sometimes it is used for food and to pay the *peones* that the father hires to help him at the fields.
  - Peones are usually paid \$130/day. This is sometimes burdensome so Maria Carmen says that she tries to work in the fields as much as she can to lower the need for that additional expense, but she says this can be hard since she doesn't have the same endurance as others.
- Another brother has been in the US for 24 years and he inherited THIS piece of land where Maria Carmen is living in, but she does not know when or if he will ever come back.
- Some of Maria Carmen's nieces and nephews have been able to come visit her from the

## **Other**

- Maria Carmen mentioned that she had a conversation with Anahi (women who cooked our meals during our research and who was also interviewed) about things that could be useful for community, especially related to kids with disabilities. They go to the same therapy center. She says that some parents put a lot of effort into taking care of their kids with disabilities, but others do not.

## **Maria Carmen's Intensive Case Study: Health Hazard Commentary**

### **Health Hazards**

The main house on the lot has uneven dirt floors. Parasites can enter the house through foot traffic, spillage of unclean water, or fecal matter of animals or children. Individuals, especially children, residing in houses with dirt floors have a higher likelihood of contracting a parasitic infection because the floors are hard to clean, better facilitating parasites to live and breed in the house. Parasitic infections can be very serious in children as they can lead to malnutrition or diarrhea (<https://www.aeaweb.org/articles?id=10.1257/pol.1.1.75>). Dirt floors have also been associated with the presence of insects which can also transmit diseases. Chagas disease has been found to be more concentrated in houses with dirt floors. *Triatoma dimidiata*, an insect, is the disease vector for Chagas disease and thrives in dirt floors.

(<https://www.ncbi.nlm.nih.gov/pubmed/6424484>)

Large animals including pigs, cows, and horses are extremely close to the living space. The close proximity of the animals to the living space likely increases the probability that fecal matter will enter the house, whether through shoes that have traces of fecal matter or rain water that spreads the fecal matter around the lot. Insufficient separation of animals and human living

spaces can increase human exposure to animal fecal matter through fecal contamination of fingers, food, floors, and water sources.

[\(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5647569/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5647569/)

Chickens, turkeys, and dogs were allowed in the house. Chickens were witnessed walking on the bed and table where food was prepared. Animal droppings were seen in the house. This is an extreme health risk as the animals can cause contamination, potentially transmitting parasites to inhabitants. An important step to preventing parasitic infection is proper hygiene and sanitation, including infrastructure to keep water and living spaces clean and free from animals. The lack of separation of living space and animals poses a serious threat to health due to potential contamination and transmission of diseases.

[\(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5708844/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5708844/)

[;https://www.sciencedirect.com/science/article/abs/pii/S0020751905002092?via%3Dihub](https://www.sciencedirect.com/science/article/abs/pii/S0020751905002092?via%3Dihub)  
(Human behaviour and the epidemiology of parasitic zoonoses) )

\*\* Maria Carmen's 5 year old son, is intellectually challenged and as a result he interacts with the house and environment differently than the adults in the house. He plays with the dirt floor and puts his hands in his mouth, increasing the likelihood of an infection. He also goes into the goat pen and plays with the animals. He touches and plays with all the animals, a health hazard as it is likely that a parasitic infection can be transmitted from animals to him through fecal matter present on the ground, on the animal, or in the water they drink.

The walls are very rudimentary as 2 of the 4 walls are made of a mix of tarp and galvanized metal. This material allows moisture and humidity to affect the house. Moisture can increase mold in the house, leading to upper respiratory infections. When it rains, a mudslide can potentially bring in fecal matter, and in turn diseases, due to the house's close proximity to animals.

The walk up to the house within the lot has an incline and it can be difficult for Maria Carmen's mother and father to safely reach the house. The pathway to get up to the house is uneven and littered with branches and roots, further decreasing ease of mobility. This slope lacks a clear pathway increasing the likelihood that a fall will occur. Maria Carmen stated that when it rains the slope to get up to the house is slippery and the mobility issues of her mother and father are increased.

There was a large amount of wood very close to the house, which is a potential fire hazard. Large piles of wood can also harbor parasites and insects that can transmit diseases and since this wood pile is close to the house, it can introduce a breeding ground for insects and parasites that are transmitted into the primary living area.

There was a large amount of clutter inside the house. Dust, mold, and animal dander can collect on these items, decreasing air quality and increasing the likelihood of incidents of allergies and asthma. These items can also allow for crevices where animals and insects can burrow, another potential vector of disease.

### **Other Information Regarding Use of Space**

Maria Carmen and her family are currently temporarily living in her brother's house (which was also measured) which is newly renovated and painted. This house is around 0.2 miles from the main house. They are staying there because her mother recently suffered an injury, making it hard to get around on the main lot. They do not plan to live in the brother's house long-term because they are too far from their animals and they have more space at the main lot. The renovated house poses a lot of health benefits as it is better constructed (stable walls, glass windows, and sturdy door) and increases the mother's mobility.