

## **Perspectivas Locales NAFTA's Impact on Public Health in Southern Mexico**

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### **Abstract**

There is increasing evidence which suggests that trade liberalization is one of the fundamental determinants to public health in newly industrializing nations. Using primary source interview material from indigenous people of southern Oaxaca, along with a review of the literature and quantitative data, this article contends that the North American Free Trade Agreement (NAFTA) with its impacts on domestic farming practises and food sovereignty has negatively impacted the health of southern Mexicans. The objective of this research project is to provide a description of the negative impacts that NAFTA has had on southern Mexico. With NAFTA 2.0 negotiations underway, this paper advocates that the voices of indigenous people should be heard at the negotiating table. Their insight on how the trade deal has impacted southern localities is of critical importance moving forward.

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There are many factors that are known to impact the health of a population. In the case of southern Mexico in the last twenty years, some health professionals argue that the situation of public health in the region is depreciating in quality. Common factors that affect the health of a population include: the nutritional quality of staple foods, air quality, the presence and frequency of encounters with carcinogenic substances, conditions of drinking water, and the access to health care services. The interest of this project is to determine, which factors that have affected the health of southern Mexicans are directly related to NAFTA.

After spending time in the Chimalapas jungle of southern Oaxaca, Mexico, living and working with local indigenous people,<sup>1</sup> along with a thorough review of the literature, I have found that NAFTA has negatively impacted the health of southern Mexicans. According to the World Bank, life expectancy in Mexico has been on a steady rise since 1970, when life expectancy averaged 61.35 years to the 2015 rate (the most recent available data) when it reached an average of 76.92 years.<sup>2</sup> As Mexicans have begun to live longer, mortality rates for non-communicable diseases have also risen, which is a typical part of the development experience. What is concerning, however, is the degree by which cancer mortality rates have increased since the 1990s. My findings suggest that NAFTA's impacts on agriculture, food sovereignty, and the increased consumption of unhealthy foods have collectively had a negative impact on the health

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<sup>1</sup> **Acknowledgements:** I dedicate this piece to the indigenous Oaxaceños of the Chimalapas jungle. Without their contributions and their willingness to share their experiences with me, this project would never have left the ground. I would also like to extend particular thanks to Omar Martínez, a coordinator for Maderas del Pueblo del Sureste, who organized my interviews while in Oaxaca. Lastly, I would like to iterate my gratitude to Alejandra Torres, who assisted me with the final round of translating interview material.

<sup>2</sup> Life Expectancy, Public Data, Google, 2017, [https://www.google.ca/publicdata/explore?ds=d5bncppjof8f9\\_&met\\_y=sp\\_dyn\\_le00\\_in&hl=en&dl=en#!ctype=l&strail=false&bcs=d&nselm=h&met\\_y=sp\\_dyn\\_le00\\_in&scale\\_y=lin&ind\\_y=false&rdim=country&idim=country:MEX&ifdim=country&hl=en\\_US&dl=en&ind=false](https://www.google.ca/publicdata/explore?ds=d5bncppjof8f9_&met_y=sp_dyn_le00_in&hl=en&dl=en#!ctype=l&strail=false&bcs=d&nselm=h&met_y=sp_dyn_le00_in&scale_y=lin&ind_y=false&rdim=country&idim=country:MEX&ifdim=country&hl=en_US&dl=en&ind=false) (accessed January 23, 2018).

of Mexicans. The structure of the following presentation includes sections on methodology, literature review, changing farming practises, food sovereignty, and public health crisis for non-communicable diseases.

### **Methodology**

The aim of this project takes a different methodological approach that is normally undertaken by international trade analysts in the fields of economics and political science. Consequently, I embraced a bottom-up method, beginning my research at the local level, conversing with southern Mexicans, mostly indigenous and *campesinos*, about how their lives have changed since 1994 and what they think caused these changes. When I confirmed my original hypothesis that NAFTA has played an impactful role in the lives of southern Mexicans, and that they were aware of that fact, I then used economic data and international trade literature to explain these changes in living conditions.

My methodology can be characterized as a mixed methods approach, incorporating qualitative and quantitative data from both primary and secondary sources. The heart of the arguments I make, following my bottom-up approach, come from the voices of the people of the Chimalapas jungle of Oaxaca, Mexico. In the spring of 2017, I lived in the city of Matías Romero, which is located on the fringes of the Chimalapas jungle. During this time, I worked for the grass-roots not-for-profit organization Maderas del Pueblo del Sureste. For the last twenty years Maderas has advocated for the often-ignored rights of the indigenous who live in the Chimalapas jungle. Such work often involves ecological preservation efforts. During my time in the Chimalapas, I had the opportunity to conduct interviews with eight local people in order to determine how their lives have changed since the adoption of NAFTA. Four of the eight interviewees are directly quoted in this paper. These interviewees were indigenous campesinos with the exception of one NGO coordinator for Maderas del Pueblo Sureste. In the process of translating interview material, the integrity of the messages has been preserved; however, the translations were not done directly in an effort to best communicate the sentiments of the speaker using English vernacular.

This analysis offered a critique of NAFTA as a trade agreement, rather than as an expression of neoliberalism. It is, however, difficult to disentangle the one from the other. When analyzing complex variables such as public health, it is clear that many factors contribute to their outlook. It is not the intention of this project to place absolute blame for Mexico's economic failings on NAFTA, but rather to provide clarity, based on primary source material, on the critical impacts NAFTA has had on southern Mexicans.

### Literature Review

One of the critical lessons I learnt while living with the indigenous people of the Chimalapas is that food is more than just a commodity to be bought and sold. The diversity of human needs met by food is represented in the cultural, psychological and social dimensions of life. John Madeley wrote that "food is a feeling; it's in the imagination; it binds people. Food is the point of reference which everyone can recognize and share. Lack of food is the ultimate exclusion."<sup>3</sup> This process of exclusion is not only about limiting the amount of food (the original understanding of food security) as a necessary component to sustain life, but also withholding a vital element of the human experience. In 2007, the Forum for Food Sovereignty in Nyéléni, Senegal, defined food sovereignty as "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems."<sup>4</sup> Using Madeley's description of the important role that food serves to human beings, it is possible that food sovereignty (the ability to have a choice in the food one consumes) is in fact a requirement for genuine food security.

Different actors offer conflicting interpretations on the relationship between international trade and food sovereignty. Those advocating for agricultural trade liberalization, including international

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<sup>3</sup> John Madeley, *Hungry for Trade: How the Poor Pay for Free Trade*, (London: Zed Books, 2000), 25.

<sup>4</sup> Jennifer Clapp, "Food Security and International Trade: Unpacking Disputed Narratives," *Food and Agricultural Organization of the United Nations*, 2015, 3-4.

bodies such as the World Bank, the World Trade Organization (WTO) and the Organisation for Economic Co-operation and Development (OECD), see trade as an opportunity to enhance food security. Those more critical of trade liberalization, comprising various states (majority of which are located in the global south), the food sovereignty social movement, and numerous civil society organizations, typically regard free trade agreements as a threat to food sovereignty.

The food sovereignty movement is typically regarded as an alternative to neoliberal models of agriculture and trade. However, it does accept that trade can take place where domestic production falls short of needs, and where food producing regions have surplus available for export. The principal issue among food sovereignty scholars is the lack of consistency in a coherent and well defined vision for how that trade should take place.<sup>5</sup> For instance, neither the state-based nor the civil society-based approaches to food sovereignty are calling for complete food self-sufficiency, whereby a country closes its borders to all food trade. On the contrary, advocates of the food sovereignty approach campaign for the right of both nations and local communities to pursue their own food policies as they define them.

The food sovereignty movement is closely related to environmental movements as it emphasizes the multiple roles that agriculture serves in a society, in order to limit the trade of foods that are damaging to one's health, as well as emphasizing the rights of small-scale farmers. Food sovereigntists often underscore agriculture's function in ecology and its part in supporting rural livelihoods, alleviating poverty, as well as its broader cultural significance. This view is supported by scientific evidence demonstrating that small-scale agro-ecological farming methods play an important role in the environmental sustainability of the land by offering opportunities for carbon absorption. Jennifer Clapp describes these methods as "climate cooling."<sup>6</sup> There is also an increasing amount of literature, which contends that such small-scale organic agriculture has a high rate of productivity per unit of land.

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<sup>5</sup> Clapp, "Food Security and International Trade: Unpacking Disputed Narratives," 18.

<sup>6</sup> *Ibid.*, 20.

Since the neoliberal reorientation in Mexican policymaking, the government has perceived small-scale farmers as inefficient producers who grow low-yield varieties of corn. Their policies can be understood as discouraging small-scale corn farming, by ignoring the impacts that imported hybrid and transgenic corn can have on people.<sup>7</sup>

Research conducted by various institutions, including the T.H. Chan School of Public Health at Harvard, have effectively demonstrated that free trade is among the key factors that have contributed to the spread of low-nutrient, highly processed foods popular in the global north, which has driven the obesity epidemics in developing countries such as China, India, and Mexico.<sup>8</sup> In an international trade agreement, it is the role of the Obligation of Conduct section(s) to put in place the parameters that safeguard a nation's food security. If the Obligation of Conduct section(s) does not effectively perform its duty, then food security could be threatened. In the case of NAFTA, Mexican food security has been negatively impacted by both a failure to protect, by the Obligation of Conduct, as well as from a number of elements of the trade agreement. Firstly, the agreement required Mexico to phase out restrictions on agricultural imports over a ten to fifteen-year period, depending on commodities. Secondly, NAFTA does not rule out de facto export subsidies, to the benefit of large corn producers in the US. Subsidized corn from the US, compounded with the investment and service sector rules that guaranteed access for Wal-Mart and other large-scale retailers, directly led to the destruction of 28,000 small to medium-sized Mexican agro-businesses.<sup>9</sup> Furthermore, NAFTA's investor rules promoted transnational agribusinesses to purchase former farm land and to set up industrial complexes in their

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<sup>7</sup> Marisa Brandt, "Zapatista Corn: A Case Study in Biocultural Innovation," *Social Studies of Science* 44, no. 6 (2014): 874-900.

<sup>8</sup> Andrew Jacobs and Matt Richtel, "A Nasty, Nafta-Related Surprise: Mexico's Soaring Obesity," *New York Times*, December 11, 2017, <https://www.nytimes.com/2017/12/11/health/obesity-mexico-nafta.html> (accessed December 12, 2017).

<sup>9</sup> Radhika Balakrishnan, and Diane Elson, *Economic Policy and Human Rights: Holding Governments to Account*. (London: Zed Books, 2011), 212.

stead. These factors have all contributed to the growing crisis of food insecurity and the subsequent public health crisis in Mexico today. The following sections will depart from the previous largely theory-based approach by presenting primary source narratives and dialogue, followed by a thorough analysis using academic literature and quantitative data.

### **Changes in Farming**

In June of 2017, I sat in the home of a *campesino* in a small village in the Chimalapas jungle. I was brought there by friends and colleagues who wanted to introduce me to a family of indigenous *campesinos* who, as they told me, lived a very traditional lifestyle in the jungle. I was first introduced to the patriarch of the family. The grandfather spoke about life in the jungle and I told him that I was researching how life has changed for southern Mexicans since the 1994 enactment of NAFTA. In a quiet moment, I asked him what, in today's world of increasing globalization, his family requires to maintain a happy and healthy life. He told me that:<sup>10</sup>

We do not work for the free trade, I work for myself and us. This work makes me happy. I do not have to get rid of my capital for seeds. I do not need to invest. I do the *criollo* (traditional style of indigenous farming)...I produce, I sell some, I keep some and I reinvest...I do not want cattle. I built a barn for citrus, tools and grain. (For others) the way of traditional work does not continue...I dedicate myself to the land.

The example of this *campesino* family is now a rarity in Mexico. The majority of farmers in southern Mexico now rely heavily on genetically modified seeds and fertilizers. The family identified above, however, demonstrates that it is not only possible to live, but also to thrive, and enjoy a traditional life, in an economically and environmentally sustainable way. Because of the family's willingness to maintain a traditional lifestyle, their way of farming has largely not been impacted by NAFTA. This life, of course, is not for everyone and I am not suggesting that the traditional

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<sup>10</sup> Community member 2, interviewed by author, Santa María Chimalapa, June 17, 2017.

*campesino* lifestyle is an ideal to which every Mexican should aspire; however, this family does offer important lessons about environmental sustainability and healthy living practises in farming.

My colleague later emphasized to me the importance of the *criollo* method, otherwise known as Milpa farming. He informed me that:<sup>11</sup>

90% of the people (indigenous living in the Chimalapas) live on Milpa (a traditional style of farming corn, pumpkin and beans). Small live stock are secondary. Milpa is a pre-Hispanic way of farming. When agricultural plagues occurred, Milpa was key because it diversified the supply. The plague would kill pumpkin, but not beans or corn. However, since the green revolution and the promotion of mass production (mono-cropping), disease can kill an entire crop –a family’s livelihood. Since NAFTA, people buy seeds from the US. These non-indigenous seeds need fertilizer and the plants need pesticides, which has created a dangerous cycle.

Milpa agriculture is a diverse growing system whereby, on one plot of land, a farmer typically grows the following: squash, which offers ground cover; beans, which are nitrogen fixing; chilies; mushrooms; fruits; and other vegetables.<sup>12</sup> For these peasant farmers, not to be confused with subsistence farmers, mono-cropping is fiscally a high risk. Milpa offers a way to naturally mitigate financial risk, by diversifying the supply. Producing a single crop makes a farmer vulnerable to large scale income loss due to agricultural plagues. However, this traditional and ecologically sound form of farming, offers a countervailing practise to monoculture farming, which uses high-yield genetically modified varieties.<sup>13</sup>

Furthermore, the increased use and now reliance on pesticides and chemical fertilizers have become a critical threat to the health of Mexican farmers, local people, consumers, and the natural

<sup>11</sup> NGO Coordinator 2, interviewed by author, Maderas del Pueblo del Sureste, Matías Romero, June 20, 2017.

<sup>12</sup> Marisa, “Zapatista Corn: A Case Study in Biocultural Innovation,” 881.

<sup>13</sup> Ibid.

environment at large. The new reliance on chemicals in farming was described to me by an NGO Coordinator and environmentalist as a “cycle of devastation.”<sup>14</sup> He informed me that with the use of chemical fertilizers to grow the same crops, “in the first few years of production, supply will skyrocket, but not after too long the production will fall. The production falls because of the chemical necessity; the plants continue to need an increasing amount of agrochemicals, then your soil dies and you need to change locations.”<sup>15</sup> Hence the cyclical nature of the new chemical-intensive farming entails additional risk for the farmers. Some of the chemicals used in Mexican coffee plantations are banned in industrial countries because of their carcinogenicity and long-term damage to the environment.<sup>16</sup> Due to their low cost, DDT, Lindane and Paraquat are top sellers in agrochemical stores in southern Mexico, in comparison to the less toxic alternatives.<sup>17</sup>

#### Heightened Cancer Rates in Agricultural Areas

Agrochemicals have been known to directly affect the health of rural inhabitants by leaching into neighbouring water sources or via inhalation.<sup>18</sup> I was told by the same NGO coordinator that, despite official statements from agribusinesses and the Mexican secretariat of agriculture, work with agricultural chemicals is not regulated. He stated that “there is no education or security. People use them without precautions and they are used near schools and homes.”<sup>19</sup> The result, as he put it, has been an increase in the prevalence of cancer mortality in agrarian regions.<sup>20</sup> The figures support the coordinator’s statement. Since the 1990s, cancer mortality rates rose in Mexico. It is often the case for developing nations that the mortality rates for non-communicable diseases such as cancer rise with an increase in life expectancy. However, cancer researchers

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<sup>14</sup> NGO Coordinator 2, interviewed by author.

<sup>15</sup> Ibid.

<sup>16</sup> Laure Waridel, *Coffee With Pleasure: Just Java and World Trade*, (London: Black Rose Books, 2001), 35.

<sup>17</sup> Ibid., 48.

<sup>18</sup> Ibid., 35.

<sup>19</sup> NGO Coordinator 2, interviewed by author.

<sup>20</sup> Ibid.

consider the degree by which cancer mortality rates have escalated in Mexico to be “alarming.”<sup>21</sup> In 2012 there were 53.6 cancer deaths reported for every 100,000 inhabitants, which almost triples the 1931 figure of 19.9 cancer deaths per 100,000.<sup>22</sup>

From 1995-2015, cancer has fluctuated between the second and third leading cause of death in Mexico. In 2013, cancer was responsible for 12.8% of all deaths, after heart disease (24.3%) and diabetes (14.3%).<sup>23</sup> The types of cancer with the highest absolute number of deaths between 2000 and 2013 were the following: lung cancer [6,678 average annual deaths (AADs)], gastric cancer (5,339 AADs), liver cancer (4,931 AADs), prostate cancer (4,859 AADs), breast cancer (4,496 AADs), and cervical cancer (4,181 AADs).<sup>24</sup> In this 13 year span, the mortalities from these six cancers represented 45% of all cancer-related deaths.<sup>25</sup>

On a state by state basis, the following had the highest mortality rates among men: Sonora, Baja California, Chihuahua, Nuevo Leon and Sinaloa.<sup>26</sup> For women, the highest mortality rates were for Colima, Sonora, Coahuila, Baja California and Nuevo Leon.<sup>27</sup> None of these states are in the South of Mexico, but, instead, are locations in central and northern Mexico, where large scale industrial farming occurs.<sup>28</sup>

It is important to note that the highest rates for bronchi and lung, colon, breast and ovarian cancers were reported for the northern states of Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon, Tamaulipas and Sinaloa. These states are also major

<sup>21</sup> Pedro Rizo-Ríos, et al., “Trends in Cancer Mortality in Mexico: 1990-2012,” *Revista Médica del Hospital General De México* 78, no. 2 (2015): 86.

<sup>22</sup> Ibid.

<sup>23</sup> Alejandro Mohar Betancourt, et al., “Cancer Trends in Mexico: Essential Data for the Creation and Follow-Up of Public Policies,” *Journal of Global Oncology* 3, no. 6 (2017): 741.

<sup>24</sup> Mohar Betancourt, et al., “Cancer Trends in Mexico,” 741.

<sup>25</sup> Ibid.

<sup>26</sup> Rizo-Ríos, et al., “Trends in Cancer Mortality in Mexico: 1990-2012,” 86.

<sup>27</sup> Ibid.

<sup>28</sup> See appendix 1, 2 and 3 for details.

agrarian centers, where there is intensive use of agro-chemicals and where production has increased since the implementation of NAFTA. These statistics support the previously mentioned NGO Coordinator's claims about the effect that agro-chemical use has had on agrarian Mexicans. Many of these products are highly carcinogenic, and when used intensively by hired farm hands, with little education on safety precautions, there is a strong likelihood that particular cancer mortality rates, such as bronchi and lung, would increase these areas. In the more southerly states, where large scale industrial farming is not as prevalent, including Chiapas, Oaxaca, Campeche and Yucatán, the highest mortality rates were for cervical, stomach and liver cancer.<sup>29</sup> In the final section of the paper subtitled: Public Health Crisis for Non-Communicable Diseases, there will be a more in-depth discussion on the reasons for the increase in stomach and liver cancers in the southern states. These differences are undoubtedly the result of individual characteristics of the population: lifestyles; political marginalisation; and socioeconomics.<sup>30</sup> For the purpose of this analysis, I am most interested in the heightened cancer mortality rates, which have proven to be highest in the agrarian states of the North. The apparent correlation between heightened cancer rates and increased use of agro-chemicals suggests a causal link between the two variables. However, more research is required to confirm this hypothesis for the Mexican case study. Though, there is considerable literature that links the use of agro-chemicals to environmental damage.

### **Food Sovereignty**

One of the most controversial aspects of NAFTA has been Mexico's loss of food sovereignty and no other region has been as negatively affected by this weakening as the southern part of the country. As noted earlier, food is a critical component of the human experience. In Oaxaca, the state commonly referred to as the culinary heart of the country, the loss of food sovereignty has hit especially hard. While in Oaxaca, I spoke with a young indigenous mother; I

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<sup>29</sup> Rizo-Ríos, et al., "Trends in Cancer Mortality in Mexico: 1990-2012," 93.

<sup>30</sup> Ibid.

asked her what she considered to be the basic needs she requires to live a happy and healthy life. At the top of her list was organic food. However, this necessity, as she referred to it, is now much more challenging to acquire. She informed me that: “today you cannot buy chicken at the super market because of the hormones. You cannot buy US products because of the chemicals.”<sup>31</sup> This community member was confident in her beliefs that the new, imported “mechanized foods,” as she called them, were making local people sick. Throughout our discussion about life in the community, and how it has changed in the last twenty years, she continually came back to the challenge of acquiring healthy food. To the question of what she would consider to be the chief difficulties experienced in the community today, she replied as follows:<sup>32</sup>

The foods with chemicals are the cheapest foods. People buy the bad products because now, they no longer know how to grow and prepare what they need in order to be healthy. People have now assimilated with American practises. Before, sugar was not used in tea or coffee, now people cannot do without it. People used to enjoy boiled beans, now they are cooked with oil and salt.

A study, conducted by Agriculture and Agri-Food Canada in 2013, titled: “Modern Mexican Consumer: Behaviour, Attitudes and Perceptions Toward Food Products,” supports what I was told by the previously mentioned community member. Processed foods have entered the Mexican market at price levels often below that of fresh produce.<sup>33</sup> The foods Mexicans routinely consume have changed dramatically since the 1990s. The root cause of this

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<sup>31</sup> Community member 1, interviewed by author, Matías Romero, June 13, 2017.

<sup>32</sup> Ibid.

<sup>33</sup> Agriculture and Agri-Food Canada, “The Modern Mexican Consumer: Behaviour, Attitudes and Perceptions Toward Food Products,” (Ottawa, 2013), <http://www.agr.gc.ca/eng/industry-markets-and-trade/international-agri-food-market-intelligence/united-states-and-mexico/market-intelligence/the-modern-mexican-consumer-behaviour-attitudes-and-perceptions-toward-food-products/?id=1410083148554> (accessed January 7, 2018).

dietary transformation has been the increased importation of cheap American processed foods.

From 1994-2011, 42% of the food consumed in Mexico has been imported.<sup>34</sup> During the years of economic and agricultural protectionism, the country spent an average \$1.8 billion USD a year on food imports.<sup>35</sup> In recent years, however, this figure has increased substantially to \$24 billion USD.<sup>36</sup> Research conducted by Ernesto Ladrón de Guevara found that for some basic foods, the dependency on imports is staggering, at 80% for rice, 95% for soybeans, and 56% for wheat.<sup>37</sup> From the US, exports to Mexico have been dominated by corn, meat and soybean.<sup>38</sup> The US department of agriculture estimates that if Mexico's current trend of food importation continues, 80% of the nation's food will come from abroad, most of it from the US.<sup>39</sup>

The collapse of certain domestic markets has had serious ramifications on the Mexican state. Mexico's domestic dairy market is such an example. Due to subsidized dairy in both Canada and the US, as well as the market takeover by transnational powdered milk corporations, Mexico's once-thriving dairy sector has been devastated. Today, Mexico is the world's number-one importer of powdered milk.<sup>40</sup> Some Mexican public health professionals have linked the collapse of domestic dairy production to the current crisis in youth malnutrition.<sup>41</sup>

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<sup>34</sup> Laura Carlson, "NAFTA is Starving Mexico," *Huffington Post*, October 20, 2011, [https://www.huffingtonpost.com/laura-carlsen/nafta-is-starving-mexico\\_b\\_1067761.html](https://www.huffingtonpost.com/laura-carlsen/nafta-is-starving-mexico_b_1067761.html) (Accessed December 17, 2017).

<sup>35</sup> *Ibid.*

<sup>36</sup> *Ibid.*

<sup>37</sup> Carlson, "NAFTA is Starving Mexico."

<sup>38</sup> Jacobs and Richtel, "A Nasty, Nafta-Related Surprise: Mexico's Soaring Obesity."

<sup>39</sup> Carlson, "NAFTA is Starving Mexico."

<sup>40</sup> *Ibid.*

<sup>41</sup> *Ibid.*

According to the Mexican government, levels of malnutrition have improved over the last twenty years countrywide.<sup>42</sup> However, in 2014, Miguel Vazquez De La Rosa, Anti-Poverty Campaigner, told Al Jazeera that he was skeptical of the Mexican government's insistence that only 7 million Mexicans suffer from malnutrition. He contended that, in reality, the number could be as high as 20 million.<sup>43</sup> In southern Mexico, particularly in indigenous communities, malnutrition remains very prevalent. Silvia Novoa, chairperson of WorldVision Mexico, claims that child malnutrition levels in the states of Chiapas, Guerrero, Oaxaca and Veracruz reached 36.4%, mainly affecting those five years of age or younger.<sup>44</sup> One of the most common signs of malnutrition is anemia, which is caused by nutritional deficiencies, especially in iron. As of 2016, one in ten Mexican non-pregnant women of reproductive age suffered from anemia.<sup>45</sup> A study conducted by Oaxaca's School of Nutrition found that the quality of the modern Mexican diet needs to be improved in order to address the problem of heightened rates of non-communicable diseases. They determined that with a diet that better incorporates necessary vitamins and nutrients, as the per-NAFTA diet of Oaxacanos did, there would be a reduction in chronic degenerative diseases as well as malnutrition.<sup>46</sup>

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<sup>42</sup> Andrew D. Jones, et al., "Household Food Insecurity in Mexico Is Associated with the Co-occurrence of Overweight and Anemia among Women of Reproductive Age, but Not Female Adolescents," *Maternal & Child Nutrition* 13, no. 4 (2017): 2.

<sup>43</sup> Al Jazeera, "Mexico's Poor: Chronic Malnutrition hits Families," August 9, 2014, <https://www.youtube.com/watch?v=LltJLEUDc6w> (accessed January 6, 2018).

<sup>44</sup> "Mexico Malnutrition Comparable to Africa," *Mexico New Daily*, April 29, 2015 <https://mexiconewsdaily.com/news/mexico-malnutrition-comparable-to-africa/> (accessed January 4, 2018).

<sup>45</sup> Andrew D. Jones, et al., "Household Food Insecurity in Mexico," 2.

<sup>46</sup> Lizbeth Martínez-López, et al., "Relación entre Indicadores Antropométricos-Factores Dietéticos en Niños de 1 a 3 Años Adscritos a una Estancia Infantil en la Ciudad de Oaxaca, México,"

In the Istmo region of Oaxaca, there has been a problem of malnutrition amongst the general population for the last fifteen years. The infant mortality rate in the area has been reported by local doctors to be twice the national average.<sup>47</sup> The Istmo region's problem of malnutrition is a product of an unbalanced diet, lacking necessary vitamins and minerals. Laure Waridel describes the diet in the region to be based on tortilla and black beans, while lacking traditionally enjoyed vegetables.<sup>48</sup> These vegetables are accessible and still grown in the area. However, local people have seemingly lost an interest in consuming them. The changed tastes of the local population is exemplified by products sold in the village of San José el Paraiso, where there are thirteen locations to buy soft drinks, but only one that sporadically sells fresh fruits and vegetables.<sup>49</sup>

Not all are so critical of NAFTA's contributions to the problem of malnutrition. Some contend that the trade agreement has been a positive force in combatting malnutrition. In my own interviews, I was frequently told that today in southern Mexico, there was not a problem with the quantity of available food. A study conducted by the Instituto Nacional de Salud Pública, found that from 1988 to 2012 the percentage of underweight women aged 20–49 years declined from 8.8% to 1.5%.<sup>50</sup> Andrew D. Jones et al., found that the problem of malnutrition in Mexico today was not the result of a lack of availability of food, but rather the result of a diet lacking important nutrients and variation. NAFTA has surely played an important role in providing food for the Mexican people, but, as Waridel points out, the question that needs to be asked is what kind of food has been introduced and how has this food impacted the people.

NAFTA has had such a dramatic impact on Mexican agriculture. This influence is made evident by the fact that not

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Escuela de Nutrición, Oaxaca (2017): 6,  
<http://www.jonnpr.com/pdf/1181.pdf> (accessed January 3, 2018).

<sup>47</sup> Waridel, *Coffee With Pleasure: Just Java and World Trade*, 45-46.

<sup>48</sup> Ibid.

<sup>49</sup> Ibid.

<sup>50</sup> Andrew D. Jones, et al., "Household Food Insecurity in Mexico," 2.

long before NAFTA, agricultural production was the foundation of the Mexican economy. Since the trade agreement, however, government investment in agriculture has been reduced by 95.5% and available credit for the rural sector by 64.4%.<sup>51</sup> This degree of disinvestment in Mexican agriculture has resulted in the inability of Mexican agricultural enterprises to compete with subsidized US commodities. The United States maintains domestic subsidies that allow it to export goods such as wheat and cotton at an average of 46.5% below cost-effective Mexican prices.<sup>52</sup> This uneven trade practise is known as asymmetrical trading or more commonly known as “dumping” and is deemed illegal in world commerce, but is permitted under NAFTA.<sup>53</sup>

After only five years into NAFTA, Mexican corn lost 64% of its pre-NAFTA value and beans lost 46%, all the while prices of staple consumer goods rose 257%.<sup>54</sup> Nevertheless, in 2006 the Office of the US Trade Representative remarked that NAFTA had been a success in Mexico, allowing for a growth in Mexican agricultural exports by \$5.6 billion US in the first 10 years of NAFTA.<sup>55</sup> Yet, the reality experienced by the average Mexican is that producers continue to abandon agricultural endeavors *en masse*. In the first eight years of NAFTA, farmers vacated 1.6 million hectares of cultivated land.<sup>56</sup> Gilbert Gonzalez and Raul Fernandez contend that NAFTA has resulted in the “complete inability of the Mexican nation to produce the food required to feed its own people.”<sup>57</sup> In summary, the asymmetrical nature of the trade agreement has opened Mexico to the inflow of US products, while US producers are protected with subsidies on Mexican products.

### The Case of Corn

<sup>51</sup> Miguel A. Cabañas and Alfredo Carlos, “Mexico ‘Under Siege,’” *Latin American Perspectives* 41, no. 2 (2014): 53.

<sup>52</sup> Ibid.

<sup>53</sup> Ibid.

<sup>54</sup> Ibid.

<sup>55</sup> Ibid.

<sup>56</sup> Ibid.

<sup>57</sup> Ibid.

One of the most commonly referenced negative impacts that NAFTA has had on Mexico relates to US subsidized corn and its affects on indigenous people in the South of the country. Although the consumption of corn has, at numerous times in recent years, been criticized as backward and unhealthy, corn cultivation has always been significant to both the ecology and culture of southern Mexico. For the millions of small-scale farmers in the country, corn has historically been at the center of communal life. Marisa Brandt, one of many that has written on the foundational role the corn has in Mayan culture, wrote that “it is the basis for social structure, religion, and daily life.”<sup>58</sup> The farming of corn has played a critical role in the history of the Mayan people, contributing to the development of their precise calendar.<sup>59</sup> Furthermore, in Mayan cosmology humans were literally formed out of corn.<sup>60</sup> Corn has always had a central role in the lives of the indigenous of south Mexico. However, today this staple, and its many varieties, has been threatened by the introduction of subsidized American imports.

There are a number of traditional corn varieties enjoyed by the indigenous of southern Mexico. However, a *campesina* informed me that the native varieties of purple, white, red and natural yellow, have become exceptionally difficult to find. As she put it, “now we only have US yellow” (a genetically modified variety).<sup>61</sup> However, for making the Mexican cuisine’s most important food staple, the corn tortilla, white maize is the only culturally palatable variety. Echoing thousands of years of tradition, in southern Mexico, white maize farmers have rain-fed farms and hand make tortillas for their families. Leftover grain is either sold in nearby markets or stored.<sup>62</sup> On the other hand, urban southern Mexicans, unable to grow their own

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<sup>58</sup> Brandt, “Zapatista Corn: A Case Study in Biocultural Innovation,” 881.

<sup>59</sup> Ibid.

<sup>60</sup> Ibid.

<sup>61</sup> Campesina, interviewed by author, Matías Romero, June 19, 2017.

<sup>62</sup> Mesbah Motamed, Kenneth., and Wallace E. Tyner. “Applying Cointegration and Error Correction to Measure Trade Linkages: Maize Prices in the United States and Mexico.” International Association of Agricultural Economics, Purdue University (2008), 30.

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white maize, purchase their tortillas from countless neighborhood *tortillerías*, which now use US yellow corn.<sup>63</sup>

US production of corn is dominated by a few agribusiness firms such as Cargill and Archer Daniels Midland, who receive an exceptional degree of government support. As of 2014, the annual subsidy to US exports to the Mexican market is between \$105 and \$145 million, which exceeds the total household income of the 250,000 corn farmers in the state of Chiapas.<sup>64</sup> These subsidies have been a critical factor enabling the US to produce both 20 times as much corn as Mexico, as well as sell it at prices lower than what it actually costs to produce.<sup>65</sup> Despite the fact that US corn was supposed to be imported only as cattle feed, US genetically modified yellow corn has entered into every area of the Mexican corn market.<sup>66</sup> The influx of imported corn has driven down the prices received by native farmers, and with that, increasing the rates of rural poverty and further driving them from their land. The International Food Policy Research Institute determined that the agriculture subsidies from all the industrialized nations that trade with Mexico, cost the country's agricultural and agro-industrial sectors an annual \$980.6 million USD in lost income from 1994-2008.<sup>67</sup>

From 1998-2008, US exports of corn to Mexico more than quadrupled according to Mexican estimates, all the while real prices for corn declined by at least half.<sup>68</sup> What is so surprising, however, is that the total acreage of Mexican land used for corn cultivation has increased. This increase in production is the result of the growth of the largest industrial producers, located primarily in Jalisco and

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<sup>63</sup> Ibid.

<sup>64</sup> Brandt, "Zapatista Corn: A Case Study in Biocultural Innovation," 880-881.

<sup>65</sup> Ibid.

<sup>66</sup> Ibid.

<sup>67</sup> Motamed, Foster, and Tyner, "Applying Cointegration and Error Correction to Measure Trade Linkages: Maize Prices in the United States and Mexico," 30.

<sup>68</sup> Anjali Browning, "Corn, Tomatoes, and a Dead Dog Mexican Agricultural Restructuring after NAFTA and Rural Responses to Declining Maize Production in Oaxaca, Mexico," *Mexican Studies/Estudios Mexicanos* 29, no. 1 (2013): 89-90.

Sinaloa; some of those producers are owned in part or in whole by US corporations.<sup>69</sup> In the case of small and medium-size corn producers, the surface area of farms may have increased, due to the more wealthy farmers' ability to consolidate land; however, the overall number of producers, as well as their yields have both decreased.<sup>70</sup> With the increase in mechanized, chemical dependent farming, there has been an increase in the instances of soil erosion, salinization, and accumulation of chemical residues on commercial farms.<sup>71</sup> Furthermore, in areas with industrial irrigation systems, replenishment rates for aquifers have become critical.<sup>72</sup> Advocates of NAFTA in Mexico, often point to figures that suggest both national corn production and consumption have increased with the advent of large corporate plantations in Sinaloa and elsewhere. The domestic consumption of corn has risen exponentially since 1994, when it was 20250 (metric tons) to the 2017 rate of 42300 (metric tons).<sup>73</sup> However, given the nature of the new production methods and techniques, the cost of this shift in production is felt by both the environment, the health of the people and, in the long term, their culture itself.

With the widespread loss of available seeds to plant traditional corn varieties, the decreased purchasing power for farmers and the drop in prices for agricultural goods, rural people have turned away from Milpa and have become more reliant on imported goods, therefore, making local people susceptible to the volatility of the global economy. Increased illness among local people has been a visible result of the loss of food sovereignty, as I was told by an NGO coordinator in Oaxaca. He explained to me that "in the past diseases like diabetes, constant stomach flu and colds were called diseases of the poor, as they are associated with malnutrition.

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<sup>69</sup> Ibid.

<sup>70</sup> Browning, "Corn, Tomatoes, and a Dead Dog," 89-90.

<sup>71</sup> Ibid., 91.

<sup>72</sup> Ibid.

<sup>73</sup> "Mexico Corn Domestic Consumption by Year," Index Mundi, 2018, <https://www.indexmundi.com/agriculture/?country=mx&commodity=corn&graph=domestic-consumption> (accessed January 25, 2018).

However, since NAFTA everyone suffers from these illnesses.”<sup>74</sup> Many public health experts also associate the rise in these non-communicable diseases with the introduction of processed foods popular in Canada and the US.

### **Public Health Crisis for Non-Communicable Diseases**

NAFTA has seemingly enabled the US to export an exceptional amount of foodstuffs to Mexico and as Mexicans have developed a taste for the American diet, they have, with great efficiency, surpassed them as the most obese nation in the world.<sup>75</sup> The World Health Organization defines obesity as an “abnormal or excessive fat accumulation that may impair health.”<sup>76</sup> While the causes of obesity are multifaceted, often involving genetics, lifestyle as well as other factors, numerous studies have connected weight gain with the consumption of processed foods that are high in salt, sugar and fat.<sup>77</sup> According to the Institute for Health Metrics and Evaluation at the University of Washington, in 1980, 7% of Mexicans were obese, though by 2016 this figure had tripled to 20.3%.<sup>78</sup> Today, diabetes is Mexico’s top killer, with 80,000 diabetes related deaths a year, as reported by the World Health Organization.<sup>79</sup> Along with the spike in obesity and diabetes, mortality rates due to heart attacks and high blood pressure have increased significantly.<sup>80</sup> Health and wellness

<sup>74</sup> NGO Coordinator 2, interviewed by author.

<sup>75</sup> Alana D. Siegel, “NAFTA Largely Responsible for the Obesity Epidemic in Mexico,” *Washington University Journal of Law and Policy* 50 (2016), 195.

<sup>76</sup> World Health Organization, “Obesity and Overweight,” October 2017, <http://www.who.int/mediacentre/factsheets/fs311/en/> (accessed January 5, 2018).

<sup>77</sup> Jacobs and Richtel, “A Nasty, Nafta-Related Surprise: Mexico’s Soaring Obesity.”

<sup>78</sup> Jacobs and Richtel, “A Nasty, Nafta-Related Surprise: Mexico’s Soaring Obesity.”

<sup>79</sup> *Ibid.*

<sup>80</sup> Judy Bankman, “Mexico: Public Health, Rising Obesity and the NAFTA Effect,” Foodtank: the Think Tank for food,

researchers contend that the main driver behind the increased rates of non-communicable diseases in Mexico are a direct result of the change to the energy-dense, but nutrient-poor Western diet.<sup>81</sup>

In a conversation about Mexico's current status as the world's most obese nation and the health problems that come with that title, a local NGO coordinator summarized the situation as follows: "Mexico is currently experiencing a cultural conversion, trying to imitate the states."<sup>82</sup> The phenomenon highlighted by the NGO coordinator is corroborated by interview material compiled by other field researchers. In San Cristóbal de las Casas, the capital city of Chiapas, interviewers Andrew Jacobs and Matt Richtel wrote about their experiences with one family in particular. When the children of the family began to put on considerable weight in their late teens, their father, according to Jacobs and Richtel, was not worried. But rather, regarded the weight gain as a point of pride. The father told them that: "we were in a good financial position so we could offer them foods heavy in protein and also fast food. We'd say to one another, 'If they are a little fat, it means they are well fed.'"<sup>83</sup> There is clearly a sentiment amongst southern Mexicans that to be overweight is representative of an elevated social status, a sentiment that some attribute to a larger process of Americanisation.

Health scholars refer to the shifting food norms taking place in countries such as Mexico as the "Nutrition Transition."<sup>84</sup> This dual process of dietary convergence is understood as both a move towards processed food consumption as well as a dietetic adaptation to a broader range of processed foods. With the changing global food system, an increasing population has come to eat more of a Western diet, which is based on animal products, vegetable oils, sweeteners, and processed foods.<sup>85</sup> From a countervailing perspective, this has

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<https://foodtank.com/news/2013/07/mexico-public-health-rising-obesity-and-the-nafta-effect/> (accessed December 10, 2017).

<sup>81</sup> Ibid.

<sup>82</sup> NGO Coordinator 2, interviewed by author.

<sup>83</sup> Jacobs and Richtel, "A Nasty, Nafta-Related Surprise: Mexico's Soaring Obesity."

<sup>84</sup> Siegel, "NAFTA Largely Responsible for the Obesity Epidemic in Mexico," 202.

<sup>85</sup> Ibid.

meant a move away from the traditional diet that was high in fruits, vegetables, grains and occasional animal protein. Nutrition transitions almost always accompany economic transitions. For this reason, countries that are getting wealthier are also starting to eat a more Western diet, making them particularly vulnerable to chronic disease.<sup>86</sup>

In an interview with a family that strives to live as traditionally as possible, in the Chimalapas jungle, I asked about the typical foods that the family consumed. The elder of the family told me that they mostly eat “tilapia from the river, deer (that they hunt), *caracol* (a type of snail), *tepezcuintle* (lowland paca), *chayote* (a type of gourd), tortilla, and corn.”<sup>87</sup> These foods are considered to be traditional components of the indigenous diet in the area and are both environmentally sustainable and serve important nutritional roles in the larger diet. Though, when I asked if their diets had changed at all in the last twenty years, he reflected on the fact that they “once ate more *chayote* and ground pumpkin seeds to make *caracol*. (Also), before tortillas were made by hand and they were large, but today they are machine made and all uniform.”<sup>88</sup> This family’s efforts to maintain a traditional diet, I was informed by my colleagues, had become almost an anomaly, even within the jungle communities. When asked if the diet of other community members had changed since the 1990s, he replied with the following:<sup>89</sup>

In the past, food used to be very healthy and clean; now they use oil and I do not like it. The trend of cooking with oil began with the practise of *Manteca* (boiling in animal fat), then cooking with oil was brought in. *Manteca* was better because it was made from our animals. Today, little *tiendas* even within this jungle community do not sell products like beans, corn, fruit and vegetables. Now it is all *chatara* (junk food) like soda. People used to go to the city to eat pizza, but recently a couple went to the city and learned the trade and now they live in the town and deliver

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<sup>86</sup> Bankman, “Mexico: Public Health, Rising Obesity and the NAFTA Effect.”

<sup>87</sup> Community member 2, interviewed by author.

<sup>88</sup> Ibid.

<sup>89</sup> Ibid.

on motorbike. People also vend hot dogs and hamburgers. Kids like the tin soup; these products are addictive and they cause cancer. Now young people are breaking away from the social practise of learning to cook from their parents. Young people prefer the industrial pre-made food. Currently people are malnourished and obesity is a big problem. The issue with nutrition is critical, but it is not because of a lack of food.

Even while living in one of the most remote and often isolated regions of Mexico, locals have become exceedingly aware of the effects that addictive processed foods are having on the health of consumers. This family elder has witnessed growing malnutrition in his community, and recognizes that the causes of malnourishment are not a result of a lack of availability of food as they were historically, but rather the impact of a new diet, lacking in important nutrients and variation.

Although Mexican corn as an agricultural commodity, experienced a devaluation due to the introduction of imported American cattle corn, NAFTA in fact brought an increase in the prices of staple foods, such as tortilla, bread and cereals at a rate higher than that of inflation.<sup>90</sup> The increase in the prices of staple foods was a consequence of the expansion of processed foods in the Mexican market. In December, 1995, one year after the commencement of NAFTA, the Consumer Prices Index rose by 52%, however, the price of staple foods increased by 79%.<sup>91</sup> The heightened cost of staple foods, naturally hit the poorest Mexicans the hardest. In 2006, the poorest 10% of households allocated 79% of their income to the purchasing of food.<sup>92</sup> The increased prices of both staples as well as fruit and vegetables accompanied by decreases in the price of meat and processed food, created the consumer environment that led to the change in the Mexican diet.<sup>93</sup> The evidence would suggest that NAFTA has not assisted in securing an

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<sup>90</sup> Balakrishnan and Elson, *Economic Policy and Human Rights: Holding Governments to Account*, 191.

<sup>91</sup> Ibid.

<sup>92</sup> Ibid., 192.

<sup>93</sup> Balakrishnan and Elson, *Economic Policy and Human Rights: Holding Governments to Account*, 193.

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environment in which low-income Mexicans can satisfy their right to quality, nutrient rich food.

### Increased Presence of Fast Food and Soft Drink TNCs

Chapter one of NAFTA outlines the objectives of the treaty. It reads as follows “to eliminate barriers to trade in, and facilitate the cross-border movement of, goods and services between the territories of the Parties...To increase substantially investment opportunities in the territories of the Parties.”<sup>94</sup> Both the people of southern Mexico and investment figures confirm that the parties achieved the outlined objectives in Mexico. Economic studies, though differing in the exact percentage, agree that NAFTA has enabled an increase in the inflow of FDI in Mexico of between 40 and 70%.<sup>95</sup> For the food and beverage sector in particular, US based FDI into Mexico grew from 2.3 billion USD in 1993 to 7.5 billion USD in 2016.<sup>96</sup>

The experience of NAFTA in Mexico demonstrates how trade liberalization can have a dramatic impact in determining what food is accessible in developing countries. Judy Bankman recorded that as of 2008, in southern Mexico, Coca-Cola billboards dotted rural highways, and roadside *tiendas* sold Coca-Cola, where traditional hibiscus water or organic fruit drinks would have been sold.<sup>97</sup> Only since NAFTA has Mexico consumed more gallons of sugary beverages per year, than any other nation of the world.<sup>98</sup> In 2011, Mexicans drank 172 liters of Coca-Cola per-capita, in comparison to the 1991 pre-NAFTA level of 69 liters per-capita.<sup>99</sup>

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<sup>94</sup> NAFTA.

<sup>95</sup> Siegel, “NAFTA Largely Responsible for the Obesity Epidemic in Mexico,” 192.

<sup>96</sup> United States Department of Agriculture: Economic Research Service, “Mexico Trade & FDI,” January 3, 2018, <https://www.ers.usda.gov/topics/international-markets-trade/countries-regions/nafta-canada-mexico/mexico-trade-fdi/> (accessed January 7, 2018).

<sup>97</sup> Bankman, “Mexico: Public Health, Rising Obesity and the NAFTA Effect.”

<sup>98</sup> Ibid.

<sup>99</sup> Ibid.

US based FDI into Mexican food and beverage companies rose from \$2.3 billion prior to NAFTA to \$10.2 billion in 2012.<sup>100</sup> The US Department of Agriculture confirmed that “many of these investments were initiated following implementation of NAFTA.”<sup>101</sup> Today in Mexico, the top two grocery chains and most of the commercial food service outlets are American financed or partners with corporations such as Pizza Hut, Subway or Walmart.<sup>102</sup> Oxxo, one of Mexico’s most prolific convenience store chains, is owned by the Mexican based umbrella corporation, Femsa. However, even Femsa received hundreds of millions of dollars in foreign investment, which was an essential component enabling Oxxo’s expansion from 400 to 16,000 stores since 1990.<sup>103</sup> Walmart is now Mexico’s largest food retailer. A study published in 2015 found that Mexicans bought, on average, 1,928 calories of packaged food and beverages a day, 380 more calories than in the US and more than people in any other country tracked by the market research firm Euromonitor International.<sup>104</sup> After a review of both the quantitative and qualitative data, it becomes clear that NAFTA has not only negatively impacted the health of southern Mexicans, but Mexicans in general.

### **Possible Solutions**

The modern free-trade market is celebrated for its ability for setting optimum prices; however, the market, as of yet, is not capable of incorporating the true production costs associated with the products one purchases. If the hidden social and environmental costs of a product such as coffee were included in the price paid by consumers, then one could expect a spike in the demand for organic and fair-trade coffee, as they would become the more affordable commodity. Laure Waridel predicts that such a revolution in pricing would lead to an improvement in the standard of living for coffee

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<sup>100</sup> Jacobs and Richtel, “A Nasty, Nafta-Related Surprise: Mexico’s Soaring Obesity.”

<sup>101</sup> Ibid.

<sup>102</sup> Ibid.

<sup>103</sup> Ibid.

<sup>104</sup> Jacobs and Richtel, “A Nasty, Nafta-Related Surprise: Mexico’s Soaring Obesity.”

farmers as well as an improvement in environmental conditions more generally.<sup>105</sup> National actions to address the problem of ecologically unsustainable farming could involve methods such as border adjustment fees for carbon, heightened taxes for agribusinesses that do not meet environmental objectives, or subsidies for renewable energy sources. The people of southern Mexico have been in desperate need of a better social security system from the state. Government policies that can ensure a distribution of winnings between the losers and winners of free trade is essential if Mexico is to ever confront its problems of inequality.

The WTO considers the environment as an “important non-trade concern.”<sup>106</sup> However, Mexico’s experience with NAFTA suggests that more attention needs to be paid to the environmental implications of international trade agreements, with particular emphasis on the types of agricultural techniques that are supported by different trade models. Furthermore, greater attention to environmental sustainability and the ecological implications of trade need to be considered in the redesign of NAFTA for reasons of Mexican food security. As the demand for American food increases in Mexico and as climate change naturally affects food systems, it is critical to ensure that food security is achieved using sustainable methods. NAFTA needs to include stronger regulations to ensure a more environmentally sustainable food system for Mexico or the natural resource base for which domestic food production depends will be threatened. For Mexico to prioritize food security over commercial concerns, while still taking part in free trade agreements, it would need to increase the percentage of food it produces in relation to its consumption, thereby reducing its reliance on imported foods. In order to do so, NAFTA 2.0 will need to allow for Mexico to implement food policies such as public stockholding agreements and/or guaranteed purchase prices.

In order to address Mexico’s growing problem of obesity and its associated non-communicable diseases, the approach will need to be multi-faceted. At the local level, formal arrangements should be developed between organic farmers and schools. These connections

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<sup>105</sup> Waridel, *Coffee With Pleasure: Just Java and World Trade*, 36.

<sup>106</sup> Clapp, “Food Security and International Trade: Unpacking Disputed Narratives,” 31.

serve two purposes, they support local economies as well as promote healthy eating for school-aged children. At the international level, trade agreements, such as NAFTA, should be rewritten in order to prevent the current massive inflow of US corn, soy, meat and dairy products into Mexico. No trade agreement will ever be symmetrical in nature. However, the current dumping that occurs under NAFTA as a result of US subsidies in corn and other grains can no longer be tolerated. The WTO is adamantly opposed to the practise of dumping.<sup>107</sup> The required agreement of WTO members, allows governments to act against dumping where “there is genuine injury to the competing domestic industry.”<sup>108</sup> Preventing US dumping of corn would be a major step forward in Mexico regaining some of its lost food security, as well as assisting the nation in dealing with the associated public health crisis.

### **Conclusion**

After comparing the findings from both the interview materials and the broader literature as well as quantitative data, one quickly discovers how accurate an understanding local people have about not only what is causing their local populations to be ill, but why these broader changes in lifestyle have occurred. Perhaps if these local people were invited to play a larger role in the formation of trade policies, Mexico’s current public health crisis could have been avoided. The ultimate lesson that the current NAFTA negotiators should take away from this paper is that the voices of indigenous southern Mexicans should be heard at the negotiating table.

NAFTA’s impacts on public health in southern Mexico are discernable. The incentivized mono-culture system of farming is not only environmentally unsustainable and ecologically damaging, but there is an identifiable correlation between increased pesticide use and heightened cancer rates for both farmers, as well as the rural inhabitants at large. The indigenous people of southern Mexico have

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<sup>107</sup> World Trade Organization, “Anti-Dumping, Subsidies, Safeguards: Contingencies, etc,”

[https://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/agrm8\\_e.htm](https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm8_e.htm) (January 7, 2018).

<sup>108</sup> Ibid.

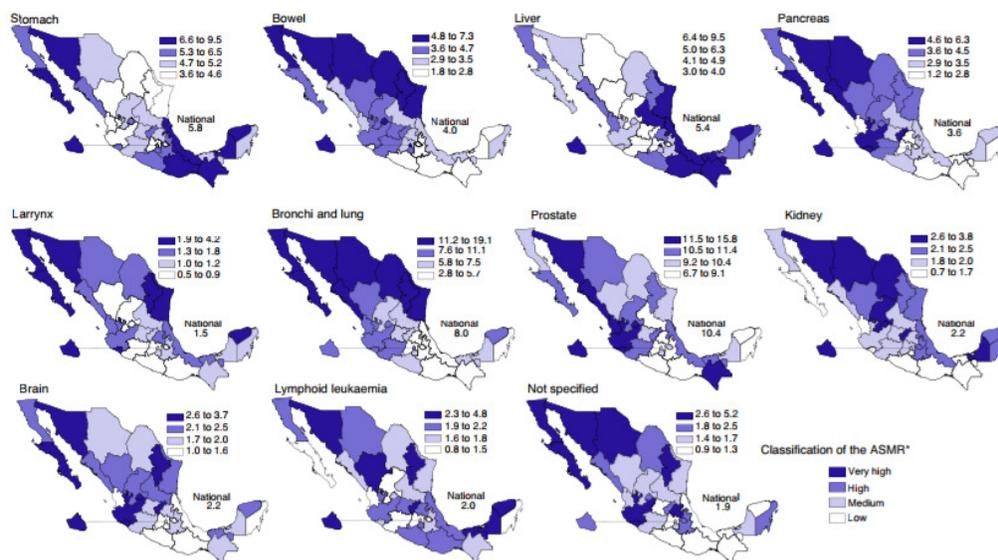
been the biggest losers of the trade deal. The three Mexican states with the lowest life expectancies, as of 2014 (most recent available data), were Chiapas, Oaxaca, and Guerrero with a combined average of 70.2 years, which is 6.32 years below the national average.<sup>109</sup> Surely southern Mexicans' loss of food sovereignty as a result of NAFTA and the subsequent increased levels of malnutrition, diabetes, anemia, cancers and obesity are correlated with the low levels of life expectancy in southern Mexico.

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<sup>109</sup> "Measuring Wellbeing in Mexican States," Better Life Initiative, Organisation for Economic Co-operation and Development (2014), 38, <http://www.oecd.org/cfe/regional-policy/Mexican-States-Highlights-English.pdf> (accessed January 23, 2018).

Appendix 1

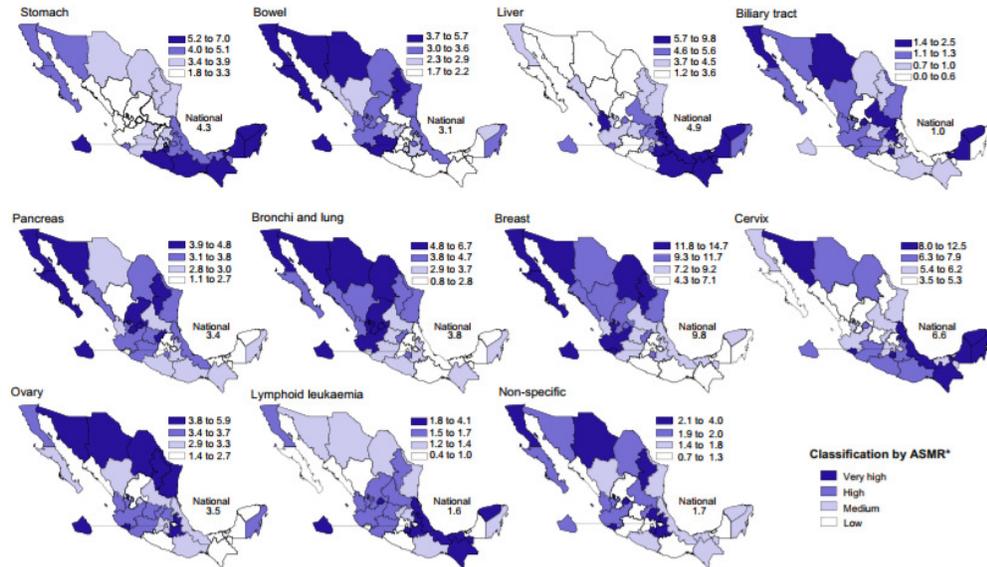
Geographical Distribution of Principal Malignant Tumours in Males, 2012.



Note: mortality rate standardised by age from 2012.

Source: Pedro Rizo-Ríos, Aurora González-Rivera, Felipe Sánchez-Cervantes, Pedro Murguía-Martínez, "Trends in Cancer Mortality in Mexico: 1990-2012," *Revista Médica del Hospital General De México*, 2015, 92.

Appendix 2  
Geographical Distribution of Principal Malignant Tumours in Females, 2012.



Note: mortality rate standardised by age from 2012.  
 Source: Pedro Rizo-Ríos, Aurora González-Rivera, Felipe Sánchez-Cervantes, Pedro Murguía-Martínez, “Trends in Cancer Mortality in Mexico: 1990-2012,” *Revista Médica del Hospital General De México*, 2015, 92.

### Appendix 3

The states with the highest instances of breast cancer (national rate of 9.8) were as follows:

Mexico City (14.7), Nuevo Leon (14.0), Baja California (13.6), Baja California and Colima (13.3); the lowest rates were for Guerrero (5.8), Campeche (4.9) and Oaxaca (4.3). The states with the highest ASMR for lung and bronchi cancer (national rate of 8.0 for men) were Baja California (19.1), Sinaloa (18.1), Sonora (17.7), Chihuahua (14.1) and Nuevo Leon (13.0); and the states with the lowest rates were Oaxaca (3.7), Hidalgo (3.6) and Tlaxcala (2.8). The states with the highest ASMR for cervical cancer (national rate of 6.6) were: Colima (12.5), Chiapas (9.4), Yucatan and Sonora (8.4), Campeche (8.2) and Morelos (8.1). The lowest rates were for the states of Durango (3.9), Zacatecas (3.6) and Hidalgo (3.5). The states with the highest for stomach cancer (national rate of 5.8 for men and 4.3 for women) were for men and women, Chiapas (9.5 and 7.0), Sonora (8.3 and 4.3), Oaxaca (7.4 and 5.7), Mexico City (7.4 and 5.9) and Campeche (7.4 and 5.7); the lowest rates were for the states of Nuevo León (4.3 and 3.9), Nayarit (4.0 and 2.7), Durango (4.6 and 2.1), Coahuila (3.6 and 3.9) and Aguascalientes (1.8 for women).

Source: Pedro Rizo-Ríos, Aurora González-Rivera, Felipe Sánchez-Cervantes, Pedro Murguía-Martínez, "Trends in Cancer Mortality in Mexico: 1990-2012," *Revista Médica del Hospital General De México*, 2015, 92.

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