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CLAREMONT McKENNA COLLEGE
A PARADOX IN DEVELOPMENT: EXPLORING THE OBESITY PANDEMIC
IN LATIN AMERICA

SUBMITTED TO
PROFESSOR RODERIC CAMP
AND
DEAN NICHOLAS WARNER
BY
LAILA HEID

FOR
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ABSTRACT

The purpose of this paper is to explain the obesity pandemic in Latin America and identify the factors of development contributing to the pandemic. The paper uses the framework of the nutrition transition as presented by Barry Popkin to trace consumption patterns and changes in dietary habits in the region. The paper looks at three case studies: Mexico and Chile, two countries with high obesity rates, and Peru, the country with the lowest obesity rate in South America. This comparative framework is intended to determine which conditions are necessary for obesity, which conditions are sufficient for obesity, and any conditions that might limit high levels of obesity. The analysis includes ten distinct factors, but concludes that economic growth and urbanization were the most important determinants of a region developing obesity.

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CHAPTER 1

INTRODUCTION

Global discourse on the obesity epidemic has been dominated by a discussion of the First World. Global media outlets and international agencies alike have underscored the obesity crisis taking place in countries such as the United States, pointing to the U.S.'s shockingly high rates of obesity, diabetes, and heart disease as a warning to other industrialized nations. On the one hand, this warning is apt; obesity causes significant societal harm, not only at the individual level, but also in terms of national spending on healthcare and related infrastructure. On the other hand, however, these warning have been largely misdirected; they have focused almost exclusively on the First World and have ignored the burgeoning obesity crisis in the Third World. For the last two decades, the obesity epidemic has transformed into an obesity pandemic, extending beyond a handful of isolated industrialized Western countries and entering into developing countries in a very real and powerful way. Indeed, in just the last thirty years the number of people in the developing world affected by obesity has more than tripled, from 250 million to 904 million.¹ Despite being a non-communicable disease, it is indubitable that obesity has spread beyond its traditional host of the industrialized world. Obesity is no longer just a First World problem.

¹ Shandra Keats and Steve Wiggins, "Future Diets: Implications for Agriculture and Food Prices," *Overseas Development Institute*, January, 2014. 1.

It seems entirely contradictory that some of the historically poorest and least modernized countries have adopted the same primary public health concerns as some of the wealthiest and most developed parts of the world. Certainly it would seem that the Third World's primary public health problems would consist of issues related to under-nutrition and hunger. Here lies one of the greatest paradoxes in development: how is it that a country can be simultaneously underfed and overfed? How can regions continuously plagued by undernourishment and infectious disease experience such a degree of overconsumption? How has this nutrition transition been able to occur in these parts of the world?

This research project seeks to explain this very paradox and describe in concrete terms what factors in a country's development (what I characterize as "factors of development") have contributed to the rise of the obesity pandemic. This paper focuses on Latin America as a region with the intent of extrapolating the findings to the Third World at large.

Purpose of Research

For one of the most troubling, expensive, and deathly public health problems, there is a dearth of literature on obesity in Latin America and other regions in the Third World. While theorists have commented on general nutritional patterns and other forms of malnourishment, few sources apply theory and synthesize research to form a complete and cohesive narrative about shifts towards obesity in this specific region. Without understanding the narrative behind changes in consumption patterns and without being able to identify and explain the causes of the growing obesity pandemic, researchers

cannot hope to create well-targeted and effective policy to address the issue head-on. The ultimate purpose of this research is to begin changing the discussion about obesity in a way that is productive to policy and that evaluates obesity from a broader developmental level.

Through the in-depth analyses of three case studies, this paper will accomplish several goals. First, this paper will supplement existing literature on the nutrition transition and Third World development by exploring a topic that is under-studied in the region. This analysis will build upon existing literature on Latin American nutrition by updating research that has not been reviewed in several decades. Second, this paper will draw upon sources in many disciplines in an effort to provide an all-inclusive and complete picture of the obesity epidemic. Few authors provide an interdisciplinary and detailed exploration of malnutrition in these countries, and this paper hopes to pool existing literature into one comprehensive work. Third, this paper will identify the key factors of development contributing to Latin America's obesity epidemic by employing the theory of the nutrition transition as a framework for these specific cases. Finally, this paper will discuss important findings, assess existing nutrition policies, and explain the relationship between development and evolving nutritional patterns.

Methodology

In an effort to focus the research and provide a more meaningful and in-depth analysis, this paper narrows the scope of its study to one region, Latin America, a part of the world that has historically had high rates of under-nutrition but is increasingly seeing higher rates of obesity. The paper uses a comparative framework in order to identify

which conditions are necessary for obesity, which conditions are sufficient for obesity, and any conditions that might limit high levels of obesity. The paper looks at three case studies: Mexico and Chile, two countries with high obesity rates, and Peru, the country with the lowest obesity rate in South America. The goal of such an analysis is to identify which factors of development have had either promoted or stifled obesity in the area.

It is important to note that because this area of study in this region is relatively new and under-explored, literature was often unavailable, and therefore, some factors of development could not be included in all case studies. Additionally, in certain case studies, some factors were more relevant than in other case studies, and were therefore emphasized more heavily to highlight their importance in contributing to a country's obesity problem.

Structure of Paper and Introduction to Case Studies

The second chapter of this paper will consist of a review of the most influential literature on the development of the obesity epidemic in the Third World. It will examine two theories, the theory of obesogenic environments and the nutrition transition theory, in an effort to ground the case studies in existing literature. A discussion of the theories will also serve to support the legitimacy of the factors of development that I ultimately conclude promote or hinder the development of obesity. The three chapters that follow the literature review each constitute a case study and expand upon the existing literature.

*Case Study 1: Mexico. Obesity Rate of 32.8%*²

With nearly a third of its adult population meeting the defined standard for obesity, Mexico is a critical case study for this project.³ Since 1980, Mexico's obesity rate has more than tripled as a result of rapid changes in socio-economic conditions and in lifestyles.⁴ The Mexican obesity epidemic is perhaps the most complicated case presented in this research project. Factors contributing to the epidemic are diverse, and are linked to a wide array of policy areas, ranging from economic policy to agricultural policy to nutrition programs. While current literature contains a multitude of explanations for Mexico's obesity rate, this paper will focus on the modernization of Mexico's agricultural system; the ways in which improved socio-economic conditions have resulted in changes in eating patterns and buying habits; the effects of trade policy liberalization on traditional food systems; and the increased presence of transnational food companies. This chapter will also identify and evaluate the success of Mexico's recent efforts to combat obesity, and suggest that in order to attack the root causes of obesity, the country will need to incorporate nutrition-sensitive development programs into all aspects of policy.

Case Study 2: Chile. Obesity Rate of 29.1%

With 88% of its population living in an urban setting, Chile's obesity problem stems largely from the country's rapid urbanization and economic growth.⁵ These shifts

² Obesity rate of adults over 20 as of 2008. Obesity rates for all countries found in the Food and Agriculture Organization of the United Nations' 2013 report, "The State of Food and Agriculture."

³ *The State of Food and Agriculture*, FAO, 77.

⁴ Simon Barquera et. al., "Obesity and Central Adiposity in Mexican Adults: Results from the Mexican National Health and Nutrition Survey 2006," *Salud Publica de Mexico*, Vol 51, No. 4, S595-S603, 2009. 596.

⁵ Claudia Bambs, Jamie Cerda, Alex Escalona, "Morbid Obesity in a Developing Country: The Chilean Experience," *World Health Organization*, Vol. 86, No. 10, 737-816. October 2008. 737.

have been associated with notable cultural and lifestyle changes, including a shift toward unhealthy diets and low physical activity patterns. Although Chile's progress in recent decades has succeeded in reducing overall poverty levels, development has in many ways exacerbated obesity by compounding it with changes in social structure and the Chilean diet.

Since the election of President Sebastián Piñera in 2010, the Chilean government has adopted several new initiatives to reduce both childhood and adult obesity, ranging from exercise equipment in public locations to public service announcements. The Chilean government and Piñera have been praised internationally for their especially creative approaches to improving national health, but critics question whether new programs address the underlying roots of the country's obesity epidemic. However, critics claim that without addressing obesity at a greater institutional level, the Chilean government will be unable to achieve any notable reduction in national obesity rates.

Case Study 3: Peru. Obesity Rate of 16.5%

Those concerned about obesity in Latin America might applaud Peru for its slender population, but the country's obesity rate alone fails to accurately portray Peru's malnutrition problem. With the second highest stunting rate in South America, Peru's low incidence of obesity can largely be attributed to its undernourished population and its current stage in the nutrition transition.⁶ Other factors also contribute to the 16.5 percent figure; Peru's traditional diet is renowned for its healthful qualities, and the modern Peruvian lifestyle is well embedded with traditional consumption patterns. Still, despite its impressively low obesity rates, Peru should be on the public health researcher's radar.

⁶ Ibid.

Migration and urbanization patterns point to the potential development of obesogenic environments in Peru's major cities, most notably Lima. However, the Peruvian government has been proactive in establishing preventative nutrition plans and battling the food industry head-on, and with the proper legal infrastructure in place, perhaps the country need not experience the nutrition paradox occurring in the rest of Latin America.

Discussion of Findings

After a discussion of these three case studies, Chapter 6 will synthesize and compare the findings. It will lay out the most prominent obesogenic factors in Mexico and Chile and will explain why these factors are either not present in Peru, or why they have not resulted in the same dramatic spike in obesity rates. The chapter will conclude with remarks on policies that would curb increasing obesity rates in Mexico, Chile, and Peru without substantially hampering development in these countries. It will also provide readers with concluding thoughts on the case studies, and will extrapolate this paper's findings to the rest of Latin America and the developing world. It will suggest how the paper's case studies could further inform global governance over food systems and result in nutrition-sensitive development.

Definitions

This paper will use a number of technical terms related to health and nutrition. First, this paper distinguishes between weight statuses through the use of the most common measure of weight status, the body mass index ($\text{BMI} = \text{kg}/\text{m}^2$). The term *obesity* is defined as a body mass index (kg/m^2) of 30 or higher. The term *overweight* is defined

as a body mass index of between 25.0 and 29.9. A body mass index of between 18.5 and 24.9 is considered healthy. Body mass indexes of below 18.5 are considered underweight.

Second, this paper distinguishes between three types of nutrition. The term *under-nutrition* is defined as insufficient food and micronutrient intake, and includes being underweight for one's age and height. This term is used interchangeably with undernourishment. Throughout this paper, the term *stunting* will be used as a proxy for under-nutrition. Stunting is identified by comparing measurements of children's heights to the standard height for age. The term *over-nutrition* is defined as the overconsumption of nutrients and food to a point where it adversely affects health. The term *malnutrition* will be used to refer to both over- and under-nutrition.

Finally, this paper uses the term *factors of development* to refer to any activity associated with development that may contribute to malnutrition. Factors of development are built into the structure of a developing society, and include aspects of development such as urbanization, economic growth, and the industrialization of agriculture.

Implications

The research presented in this paper identifies a number of factors of development that have prevented or contributed to the rise of obesity in Latin America. These factors are found in a range of sectors and exist in varying degrees in different countries, illustrating the interdisciplinary and complicated nature of this field. However, the role of the identified factors in promoting obesity is not an experience unique to Latin America. As the Third World continues to develop and modernize, theory holds that countries in Latin America and beyond will observe important changes in both their nutritional and

epidemiological status. Although economic growth, urbanization, and other factors of development are objectively considered laudable national goals, history has shown that they come at a cost. Our current understanding of development encourages countries on a path toward obesity and away from healthy lifestyles. As both foreign governments and international agencies consider the future of the developing world, a re-conception of “development” is in order. By identifying and exploring how the factors of development contribute to obesity, the Third World might be able to modernize and develop in a way that is nutrition and obesity conscious. In this way, countries can limit the creation of obesogenic environments by addressing the problem at its source.

CHAPTER 2

LITERATURE REVIEW

Although obesity has grown to be one of the world's foremost health concerns, little research exists on its development, its systematic causes, or its strategies for prevention outside the context of the First World. Indeed, because the phenomenon is a fairly recent one, especially when considered on the global scale, historical data and resources on obesity are scarce. In the last two decades, however, obesity as a subject of study has become a burgeoning field. A handful of scholars have begun to track and observe overarching themes and trends in the global obesity pandemic, which have helped guide more regional and country-specific studies.

In order to provide a more complete and contextualized regional analysis, this chapter will draw upon two influential and interrelated theories in an effort to establish a theoretical structure for this paper. The first theory this chapter will describe is the theory of obesogenic environments, which posits that certain environmental factors promote obesity. The second theory this chapter will describe is Barry Popkin's theory of the nutrition transition, a five-pronged framework that explains how populations' diets have historically changed over time. These two seminal theories have predominately been applied to First World countries. This paper, however, will put these two theories in conversation with one another in an attempt to explain how external factors of development contribute to the nutrition transition. By putting this research into the

context of these two theories, this paper will give its readers a better understanding of how these theories are applicable to the development of the Third World; of the relationship between development and the rise of obesity; and how specific factors of development are contributing to obesity in the region of Latin America.

Theory of Obesogenic Environments

In the last two decades, scholars interested in the American obesity epidemic have cultivated a theory entitled “the theory of obesogenic environments.” The goal of this theory is three-fold. First, the theory seeks to establish environmental factors as the primary causes of obesity. Second, the theory seeks to reframe the discourse on the obesity epidemic to shift the blame from the individual level (i.e. your obesity is your fault) to a societal level (i.e. a population’s obesity level is the result of societal factors). Finally, the theory, when applied, is used to recommend policies that affect obesogenic factors that exist in a larger societal construct as opposed to policies that target individual behavior. Although the theory of obesogenic environments was originally intended to explain obesity in the United States and other developed countries, it is equally pertinent to obesity in the Third World.

The most immediate and basic source of weight gain, of course, is the overconsumption of energy relative to energy expenditure. The overconsumption of sugar-sweetened beverages, artificially sweetened foods, and foods with high fat and protein content, coupled with a shift toward a sedentary lifestyle, have all been linked to

excess caloric intake and therefore a greater risk of obesity.⁷ Yet what compels populations, particularly populations with limited resources, to consume more energy than needed is less fully explained. Public opinion polling suggests that people generally view poor individual choices, such as poor dietary decisions, as the primary cause of the obesity epidemic.⁸ However, while the general population might perceive obesity to be the result of individual nutrition choices, scholars who uphold the theory of obesogenic environments largely agree that such perspectives inaccurately frame the obesity epidemic and hinder widespread progress. Rather than framing the issue in terms of individual decisions and personal responsibility, theorists conceive the epidemic to be an environmental problem, positing that overconsumption and obesity are directly linked to larger, structural factors. Obesity is not just determined by an individual's choices, they contend, but by the sum of surrounding influences on a population's food culture: it is the result of an "obesogenic environment."⁹ Such environments are considered "toxic" to public health, as they encourage popular consumption of unhealthful foods by creating an atmosphere in which healthy decision making is burdensome or nearly impossible.¹⁰

The obesogenicity of an environment is determined by a number of aspects. The first set of elements is termed as "built environment aspects."¹¹ These include the

⁷ Andrew Drewnowski and Nicole Darmon, "The Economics of Obesity: Dietary Energy Density and Energy Cost," *The American Journal of Clinical Nutrition*, Vol. 82, No. 1, 265S-273S, July 2005. 265.

⁸ T. Tompson, J. Benz, J. Agiesta, K.H. Brewer, L. Bye, R. Reimer, D. Junius, "Obesity in the United States: Public Perceptions," *Associated Press-NORC Center for Public Affairs Research*, January 2013; Kelly D. Brownell, Rogan Kersh, David S. Ludwig, Robert C. Post, Rebecca M. Puhl, Marlene B. Schwartz, Walter C. Willett. "Personal Responsibility and Obesity: A Constructive Approach to a Controversial Issue," *Health Affairs*, Vol. 29, No. 3, 379-386, March 2010. 385.

⁹ Kelly D. Brownell and Marlene B. Schwartz, "Actions Necessary to Prevent Childhood Obesity: Creating the Climate for Change," *Journal of Law, Medicine & Ethics*, Volume 35, No. 1, 78-89, Spring 2007. 79.

¹⁰ *Ibid.*

¹¹ Amelia Lake and Tim Townshend, "Obesogenic Environments: Exploring the Built and Food Environments," *The Journal of the Royal Society for the Promotion of Health*, Vol. 126, No. 6, 262-267. October 31, 2006. 263.

physical design of an environment, land use patterns (i.e. residential, industrial, commercial), and transportation systems. Although not obviously related to nutrition, built environment aspects affect consumption, production, lifestyle, and food culture. For example, the availability of grocery stores and healthful food markers might be higher in commercial regions than in industrial or rural areas. The second set of elements is more directly related to nutrition, and referred to as “nutrition environment aspects.”¹² Nutrition environment aspects describe the people’s relation with pathways to food, such as the availability of highly processed foods or the role of eating out in a food culture. These factors, together with built environment factors, contribute to an environment promoting excessive and widespread weight gain, known as the “obesogenic environment.”

One aim of the theory of obesogenic environments is to reframe the obesity epidemic by emphasizing the way in which societal and economic factors promote widespread obesity. The theory of obesogenic environments posits that by addressing obesity from an individualist perspective, populations fail to create widespread, systematic change that addresses the root of the epidemic.¹³ This is further problematic because individuals without the means necessary to seek and receive medical help are unable to address their weight and its accompanying comorbidities, leaving them to cope with the social, economic, and physical effects of obesity without assistance.¹⁴ Obesogenic factors are therefore left unmitigated and remain a prevalent threat to vulnerable sub-populations.

¹² Ibid. 264

¹³ Brownell and Schwartz, “Actions Necessary to Prevent Childhood Obesity.” 82.

¹⁴ Ibid. 83

Therefore, in order to effectively address obesity, scholars claim that solutions must come from an environmental angle, targeting obesogenic factors such as food prices and healthful food availability.¹⁵ However, these policies do not necessarily need to come in the form of a nutrition-specific policy; rather, they might affect other sectors that have an impact on nutrition. Although urban development, for example, is not directly related to consumption patterns, the obesogenic environment model posits that urbanization significantly affects dietary patterns by influencing physical activity, the location of food sources, and the types of food available. Similarly, a government's food pricing schemes can have a significant effect on nutrition patterns, particularly if a government has a history of subsidizing caloric foods. The theory of obesogenic environments posits that these policy areas and development strategies, and others, can be designed in a manner that is "nutrition-sensitive," meaning that while the policy goal may not be to reduce obesity specifically, the policy still has the potential for positive impact in this realm.¹⁶

The Nutrition Transition

The second theory that has shaped scholarship on the obesity epidemic is the nutrition transition theory, proposed by Professor Barry M. Popkin of the University of North Carolina School of Global Public Health in 1994. The goal behind Popkin's theory is to explain how societies have transitioned from a hunter-gatherer food culture into the advanced and industrialized food system that exist in the First World today. Popkin's five

¹⁵ T. Andreyava, MW Long, KD Brownell, "The Impact of Food Prices on consumption: A Systematic Review of Research on the Price Elasticity of Demand for Food," *American Journal of Public Health*, February 2012.

¹⁶ *The State of Food and Agriculture 2013: Food Systems for Better Nutrition*. Rome: Food and Agriculture Organization of the United Nations, 2013. 9.

step theory traces nutrition patterns through various stages of development, and is useful in predicting the future trajectory of various food systems.

In the early 1990s, Popkin began to analyze correlational trends in economic and food availability data over a thirty year period, focusing specifically on the Third World. His findings were synthesized into his seminal paper, “The Nutrition Transition in Low-Income Countries: An Emerging Crisis,” which has served as a basis for subsequent research in the field of Third World obesity studies. Linking broader societal changes with epidemiologic transitions related to obesity, Popkin brought attention to patterns of change in food consumption and production and their connection to development. Popkin identified five stages of dietary patterns that populations experience as their regions undergo economic development, a process he coined as “the nutrition transition.”¹⁷ The concept of the nutrition transition, particularly the transition from Stage Two and Three to Stage Four, is pivotal to understanding Latin America’s obesity epidemic, and putting the obesity pandemic into the context of economic and development issues. Popkin associates each stage with a point of economic development and epidemiological change, and in doing so, effectively integrates nutrition with larger themes of development.

Stage One: Collecting Food

The first stage Popkin identifies is Collecting Food, a low-incidence of obesity stage in which the diet is characterized by wild plants, roots and berries, wild game, and fiber consumption, as well as by high levels of physical activity. Unlike populations living in an agricultural society, peoples in Stage One do not produce food, and as a result, their diets are very diverse. Variety is ensured by the seasonality of foods, as well

¹⁷ Barry M. Popkin, “The Nutrition transition in Low-Income Countries: An Emerging Crisis,” *Nutrition Reviews*, Vol. 52, No. 9, 285-298. September 1994.

as the nature of food collection activities. The first stage exists exclusively among hunter-gatherer populations who do not live in settlements and therefore lack the ability to participate in a robust economy or create an agricultural system.

Stage Two: Famine Stage

The second stage is described as a Famine stage, a period of chronic hunger and nutritional stress in which diets are unvaried and incomplete. This phase coincides with the development of agricultural systems and settlements, and marks the beginning of mass food production for a particular population. It is also characterized by economic scarcity and intensified social stratification. Compared to hunter-gatherers, the diets of those in the Famine Stage are much less varied; cereals dominate consumption, as people harvest grains instead of fruits, vegetables, or legumes. Because of the imprecision inherent in early agricultural models, food availability is subject to large fluctuations depending on the success of the harvest.

Stage Three: Receding Famine

Stage Three, Receding Famine, corresponds with the beginning of industrialization and modernization, specifically technological changes in agriculture and the rise of more modern urban societies. With these new advancements, agricultural productivity increases, stabilizing the food supply and allowing for a wider array of commodities. As a result, more individuals are able to consume fruit and animal protein, and populations begin to emerge out of nutritional stress. Furthermore, as technological advancements begin to replace the arduous tasks that had previously been performed by humans, inactivity and leisure are incorporated into the peoples' lives. This marks the beginning of the rise of sedentary lifestyles.

Stage Three continues to be characterized by social stratification, leading to a disparity in diet quality. As a result, some groups within a population maintain a healthy, varied, and stable diet, while poorer clusters continue to suffer from chronic famine. This stage is sometimes also referred to as the Double Burden of Malnutrition, meaning that within the same population, some people are experiencing over-nutrition while others are experiencing under-nutrition. Although not explicitly mentioned in Popkin's theory, Third World countries have historically been categorized as existing in the third stage of the nutrition transition.

Stage Four: Nutrition-Related Non-Communicable Disease

The fourth stage, Nutrition-Related Non-Communicable Disease, is characteristic of high-income societies, who experience rapid urbanization and rapid economic growth. The majority of the population is able to afford diets high in fat, sugar, and refined carbohydrates. Changes in diet are accompanied by increased sedentary behavior, as people have more time for leisure and modernization nearly eliminates laborious, physically demanding work. Rates of over-consumption are distributed fairly evenly across socioeconomic groups, ultimately resulting in high levels of obesity and its comorbidities throughout the population. Popkin claims that the First World and a few developing regions are either currently in or entering into Stage Four.

Stage Five: Behavioral Change

The final stage of Popkin's nutrition transition is the Behavioral Change stage, an ideal state in which populations adopt new dietary patterns and replace their sedentary lifestyles with increased recreational physical activity in an effort to avoid obesity's comorbidities. These changes are typically consumer based, but are often prodded by

government policy. Popkin concludes by postulating that it is too early to observe any large-scale results from Stage Five, but suggests that adaptations in our conceptions of development and economic progress might assist countries in achieving Behavioral Change.

The Epidemiological Transition: An Addendum

Beyond the dietary and societal changes that accompany each of its stage, Popkin adds that an epidemiological transition occurs in conjunction with the nutrition transition. Specifically, populations in the first three stages experience separate and distinct diseases from populations in the final two stages. In states of famine or receding famine, people are more likely to contract and die from communicable diseases, and overall, populations have lower life expectancies. In stages beyond famine, however, populations suffer from non-communicable diseases, such as obesity, diabetes, heart disease, and cancer. Understanding this epidemiological transition as it relates to the nutrition transition is essential to understanding the significance of dietary changes to the current and future states of public health.

Evidence of the Nutrition Transition in Pre-Industrial and Industrial Societies

In the abstract, it might be difficult to understand how Popkin's five stages of the nutrition transition are applicable to dietary changes occurring in the Third World. It can also be difficult to appreciate the significance of this transition without supplementing the theory with other literature for reference. In order to elucidate Popkin's argument, it is therefore useful to examine the difference between more traditional diets and lifestyles and transitioned, non-traditional diets and lifestyles.

Health Benefits of Traditional Diets and Lifestyles

There is little dispute among public health researchers about the health benefits of most traditional diets, especially when compared to Western, industrialized diets. Traditional diets are generally associated with rural, non-European, pre-industrialized regions. Those who maintain traditional diets typically populate the Third World, whereas peoples who maintain non-traditional diets generally populate highly industrialized societies and urban areas. Non-traditional diets have historically been found in Westernized countries, but are gradually becoming a part of some developing regions. Traditional diets are largely plant based, rich in grains, legumes, vegetables, and fruit, with little or no animal products.¹⁸ Non-traditional diets, however, are characterized by significant amounts of meat, dairy, salt, fat, refined sugar, alcohol, carbonated drinks, as well as unrefined grains and processed foods.¹⁹

Research has shown time and again that these traditional diets are linked to more healthful outcomes. A 1986 study found that Australian aborigines who returned to a traditional diet of vegetables and shellfish exhibited fewer incidences of obesity's comorbidities than aborigines who remained on the urban diet of flour, potatoes, and fatty meat.²⁰ Furthermore, in a technical report by the World Health Organization published in 2000, researchers found that most adults who maintained a traditional lifestyle and diet gained little or no weight with age as compared with adults who did not.²¹

¹⁸ Robert Goodland, "The Westernization of Diets: The Assessments of Impacts in Developing Countries," *World Bank*, August 2001. 2.

¹⁹ *Ibid.*

²⁰ Kerin O'Dea, "Marked Improvement in Carbohydrate and Lipid Metabolism in Diabetic Australian Aborigines After Temporary Reversion to Traditional Lifestyle," *Diabetes Journal*, Vol. 33, 596-603, June 1984. 598.

²¹ *Obesity*, World Health Organization. 120.

The most iconic study illustrating the effects of nontraditional diets and lifestyles is the Pima Indians study, a research project that compared adult Pima Indians in Arizona who adopted an industrialized lifestyle, and their Mexican counterparts in the Sierra Madre mountains who maintained a more traditional lifestyle. Throughout this project, researchers assessed the rates of obesity, physical activity, and diabetes in both populations of Pima Indians. Because they were able to establish genetic similarity between both populations of Pima Indians, researchers were able to attribute any difference in obesity rates to diet and lifestyle rather than a genetic susceptibility to obesity. The researchers' findings were significant; obesity in U.S. Pima men was ten times more frequent than in Mexican Pima men, and three times more frequent in U.S. Pima women than in Mexican Pima women. They attributed this marked variance in obesity to differences in physical activity and diet. Levels of physical activity in Mexican Pimas were 7.5-fold greater for men and 2.5-fold greater for women, and the U.S. Pima diet was composed of fattier and more non-traditional foods than the high fiber staples of the Mexican Pimas' diet.²² This study, scholars have concluded, firmly illustrates the benefits of traditional diets and lifestyles.

Changes in Popular Food Consumption

Whereas high-fat diets were once restricted to Western, industrialized nations, rapid economic growth in low-income societies and the increased availability of fats have allowed for unhealthful eating habits to seep into Third World diets. Until the 1950s, the majority of fats available for consumption were animal fats, expensive luxuries such as

²² Leslie O. Schulz, Peter H. Bennett, Eric Ravussin, Judith R. Kidd, Kenneth K. Kidd, Julian Esparaza, Mauro E. Valencica, "Effects of Traditional and Western Environments on Prevalence of Type 2 Diabetes in Pima Indians in Mexico and the U.S.," *Diabetes Care*, Vol. 29, No. 8, 1886-1871, August 2006. 1869.

milk, meat, and butter that only members of a high social class could purchase regularly.²³ This changed however in the 1940s after World War II, when heightened research and popular attention to the need for protein resulted in an increased demand for fat-rich animal foods. At the same time, a number of technological advancements greatly reduced the production costs of oil-based fats, namely palm oil and soybean oil, thereby fueling a worldwide demand for vegetable oil. The result of these coinciding events was a threefold increase in the global production and processing of oilseed-based fats between 1960 and 1990.²⁴ In many developing countries, such as Brazil, Argentina, Indonesia, and Malaysia, where the aim is still that of increasing total food energy availability, the production of cheap vegetable oils has become central to economic growth and has therefore become a key facet of these countries' food systems.²⁵

As a result of this introduction of new fats beginning in the 1940s, flourishing economies significantly altered their fat consumption patterns. As a 1997 study by Adam Drewnowski and Barry Popkin illustrates, the relationship between fat consumption and income has undergone dramatic changes in the last fifty years. The past five decades have seen a "revolution" in fat consumption; with an increased availability of cheap fat sources, fat intake has grown less dependent on a nation's gross national product, allowing for those beyond the elite to enjoy fatty foods frequently.²⁶ Consequentially, the social stratification that characterizes the second stage of the nutrition transition no longer significantly affects the fat intake of non-affluent groups. Because of the recent declining

²³ Adam Drewnowski and Barry M. Popkin, "The Nutrition Transition: New Trends in the Global Diet," *Nutrition Reviews*, Vol. 55, No. 2, 31-43. February 1997. 34

²⁴ *Ibid.*

²⁵ *Obesity*, World Health Organization, 130.

²⁶ *Ibid.*

costs of fats, many Third World countries, particularly those in Latin America, have been pushed out of famine into the third and fourth stages of the nutrition transition.

Popkin notes that shifting away from new trends in popular food consumption may prove challenging. Both the taste and texture of fats increase the attractiveness and variety of foods, making a return to the healthful but less pleasurable Third World diet of coarse grains and tubers undesirable.²⁷ Furthermore, as world markets and diets globalize, foods are viewed less often as a matter of cultural significance; instead, populations begin to rely on peer pressure and other social conventions to determine their food choices, often drawing them away from traditional “good” foods and toward the more alluring “bad” foods of the United States and the Western world.²⁸ Drewnowski and Popkin conclude by speculating that consumers in Third World economies may be “unwilling” to return to diets of poverty once they can afford to enjoy sweeter, fattier, and tastier foods.

Theories Collide: Identifying Obesogenic Factors in the Nutrition Transition

For researchers, Popkin’s early work is useful in establishing a foundational framework with which to study both dietary changes and accompanying epidemiological changes. In many ways, it has provided an architectural structure for our understanding of both general changes in global nutrition, as well as a sense of how nutritional change is related to the process of development. Since his 1994 paper, Popkin and his peers have built upon the original framework laid out in the nutrition transition theory by applying the theory to studies of Third World development. Specifically, scholars have begun to

²⁷ *Obesity*, World Health Organization, 115.

²⁸ *Ibid.*

contextualize the nutrition transition by merging the original theory with the theory of obesogenic environments, thereby establishing a relationship between changing environmental factors and the rise of obesogenic factors, with changes in diet, lifestyle, and consumer behavior. In doing so, researchers have identified several environmental factors that exist at different stages of the nutrition transition. These factors have contributed to the rise of obesogenic environments and dietary shifts in the Third World.

First Factor of Development: Economic Changes

The economic development of Third World countries in the last three decades has had a profound effect on Third World food systems, shifting the meaning of malnutrition from famine to obesity, and sparking a “food system revolution.”²⁹ Rapid economic growth in developing countries has given rise to a number of changes within the food system affecting both supply and demand. With more complex economies, Third World food systems have become more mechanical and industrial, centralizing food processing facilities and creating large, whole-sale markets. Improvements in production, influenced by both private forces and larger, “food giant” firms of developed countries, have resulted in the emergence of supermarkets, fast-food restaurants, and processed foods.³⁰ These changes in food supply have not only led to a greater availability of food, but have resulted in the greater affordability of unhealthy foods, encouraging overconsumption and obesity.

The socio-economic condition of Third World consumers has also changed dramatically in the last thirty years. The developing world’s burgeoning middle class has

²⁹ Thomas Reardon and C. Peter Timmer, “The Economics of the Food System Revolution,” *Annual Review of Resource Economics*, Vol 4, 225-264, August 2012. 227.

³⁰ Ibid.

permitted many families to allocate more resources to food than ever before. Third World diets are increasingly diverse, particularly as families are able to afford more meat, sweets, and processed foods.³¹ However, although economic improvement has certainly permitted greater access to more foods, what is more intriguing are the ways in which socio-economic conditions have affected the way food is prepared. One of the most important outcomes of the Third World's rapid economic improvement on the food system revolution has been the change in women's role in food preparation as a result of their greater economic independence. Traditionally, women have borne primary responsibility for acquiring food, preparing meals, and serving their families.³² Yet as developing societies have industrialized, the job opportunities for women have expanded, and an increasing number of women have entered the job market.³³ In the last several decades, women have developed an economic influence that has allowed them to "dominate employment" in a number of industries.³⁴ However, while improved employment opportunities for women may seem like an objective societal good, women's active role in Third World economies has in some ways come at a cost to health. Although they maintain primary responsibility for food acquisition and production, employed women have considerably less time and energy to spend on shopping, cooking, and other tasks. As a result, demand for convenient, yet less healthful, food increases, as

³¹ Popkin, "The Nutrition Transition."

³² *The State of Food and Agriculture 2013*, FAO, 9.

³³ *Obesity: Preventing and Managing the Global Epidemic*, World Health Organization, Technical Report 894, 2004. 123

³⁴ *The State of Food and Agriculture 2013*, FAO, 10.

does the frequency with which families consume pre-prepared meals and meals away from home.³⁵

Second Factor of Development: Urbanization and Effects on Food Environment

Today, more than half of the world's population lives in urban cities, allowing for better access to clean water, healthcare, and education. However, building urban cities also builds new environments that promote poorer diets and sedentary lifestyles.³⁶ Research in public health has linked the several byproducts of urbanization with obesogenic environments. First, because urban neighborhoods are often perceived to be less safe than their village counterparts, people are less likely to spend leisure time outside, or walk or bicycle as a means of transportation. Instead, walking and bicycling has given way to cars and mopeds; and with the growth of mass media and computer technology, people turn to television and their computers for leisure.³⁷ Secondly, as countries industrialize, people no longer work highly active jobs, such as farming, and instead are employed in offices or manufacturing industries.³⁸ Even in more traditional jobs, such as farming or household work, labor saving devices have cut down the amount of human energy expended for work and chores.³⁹ Finally, rapid shifts toward urban lifestyles are also correlated with more food and beverage advertising depicting the West's overeating culture, transitioning consumer preferences away from traditional diets

³⁵ *Obesity*, World Health Organization, 125.

³⁶ Harvard School of Public Health, "Globalization: Why Weight Has Become a Worldwide Problem," *Obesity Prevention Source*. 2013.

³⁷ *Ibid.*

³⁸ *Ibid.*

³⁹ *Ibid.*

and toward more Western foods. Consequentially, the Third World is reshaped to resemble the urban, obesogenic environment of the West.

Third Factor of Development: Transnational Food Companies and Globalization

Extensive literature on the influence of Westernization on a global diet point to another culprit in Latin America's obesity epidemic: globalization. As populations shift away from their traditional diet, they are thrust into a Westernized, homogenized, and obesogenic lifestyle. Although traditional diets are linked to low rates of obesity and non-communicable diseases, transnational food and drink corporations are steadily displacing traditional food systems and replacing healthful diets with ultra-processed foods.⁴⁰ These corporations, collectively referred to as "Big Food," are typically headquartered in the U.S. and Europe, but have since expanded into the emerging markets of the Third World and have experienced great success.⁴¹ Targeting low-income consumers, companies like Coca-Cola and Nestle have penetrated areas as remote as the Amazon with little competition or resistance from local companies or governments.⁴² As a result, Big Food has successfully become a major part of dietary patterns in the Third World, increasing the consumption of soda and junk food fivefold in some countries during last 30 years.⁴³

The process of displacement is not limited to diets; it is also ideological. Big Food is linked to changed patterns of food consumption, including more snacking

⁴⁰ Carlos A. Monteiro and Geoffrey Cannon, "The Impact of Transnational 'Big Food' Companies on the South: A View from Brazil," *PLoS Med*, Volume 9, No. 7, July 2012.

⁴¹ *Ibid.*

⁴² *Ibid.*

⁴³ "Battle of the Buldge," *The Economist*, July 27, 2013.

between meals, snack foods replacing other foods at meal times, and a decreased focus on the cultural and familial aspects of eating.⁴⁴ These changes, compounded with changes in diet, promote the least healthful aspects of Western food culture, driving populations toward obesogenic lifestyles and changing their cultural outlooks on food.

However, although soda consumption and the rise of Big Food certainly contribute to the weight gain observed in Third World countries, it is important not to overemphasize this facet of the obesity epidemic. According to professor of epidemiology at the University of Washington Dr. Adam Drewnowski, standard descriptions of global dietary trends tend to “overstate the impact of the Big Mac” at the expense of more fully understanding global food politics, the nutrition transition, and the shift away from traditional eating habits.⁴⁵ Nonetheless, the ongoing globalization of dietary patterns has the potential to undermine public health and is therefore worth noting.

Fourth Factor of Development: \Globalization, International Policy, and Shifting Diets

Globalization’s effects extend beyond access to Western food industries, however. Changes in global agriculture and trade policies since the 1970s have also affected how the world eats, particularly low and middle income countries.⁴⁶ As developing countries became more economically efficient during the 1970s and 1980s, many began signing regional trade agreements to undergo a “structural adjustment” in

⁴⁴ Monteiro and Cannon, “The Impact of Transnational ‘Big Food.’”

⁴⁵ Adam Drewnowski, “Nutrition Transition and Global Dietary Trends,” *Nutrition*, Volume 16, No. 7, 486-487, July 2000. 487.

⁴⁶ Corinna Hawkes, “Uneven Dietary Development: Linking the Policies and Processes of Globalization with the Nutrition Transition, Obesity, and Diet-Related Chronic Diseases,” *Globalization and Health*, Vol. 2, No. 4, March 2006.

their agricultural production markets.⁴⁷ Liberalization of agricultural markets culminated in the 1994 Uruguay Round of General Agreement on Tariffs and Trade in which partaking countries agreed to reduce tariffs and export subsidies.⁴⁸ These types of trade liberalization agreements have resulted in both a more open global agricultural marketplace and cheaper food, and also, have given people access to different types of high-calorie, processed foods.⁴⁹ The passage of the North American Free Trade Agreement (NAFTA), for example, dramatically altered the Mexican diet by increasing the flow of corn, sweeteners, and ready-to-eat products from the U.S. to Mexico.⁵⁰ As a result, the Mexican food system has grown to look increasingly like the industrialized food system of the United States, characterized by an overabundance of obesogenic foods.⁵¹

The liberalization of agricultural markets has also enabled higher foreign divestment and the growth of transnational food companies. More open investment has made it easier for companies and products to cross national borders by reducing the transactions costs of buying and contracting with companies abroad. This has created incentives for food companies to expand into developing countries through vertical integrations and outsourcing.⁵² Because these companies are predominately Western fast food companies, developing countries have experienced a notable increase in the supply of unhealthful foods and have inextricably linked their economies to unhealthful food producers.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Harvard School of Public Health, "Globalization."

⁵⁰ Sarah E. Clark and Corinna Hawkes, "Exporting Obesity," *Institute for Agriculture and Trade Policy*, April 5, 2012.

⁵¹ Ibid.

⁵² Hawkes, "Uneven Dietary Development."

Conclusion: Contextualizing Theory

The two theories addressed in this chapter are critical to understanding the development of obesity in a region. Indeed, any evaluation of the obesity pandemic would be incomplete without some application of the nutrition transition and some form of the theory of obesogenic environments. At the same time however, these theories have generally been applied in either broad generic terms or in hyper-specific instances. No true, detailed survey of a region or country exists that adequately explains how obesity has affected the developing world.

This paper will set out to explain obesity in the region of Latin America using the two theories laid out in this chapter. The paper uses the theory of obesogenic environments to identify environmental factors that are contributing to the obesity epidemic. The assumption that environmental and structural factors are causing Latin American obesity is a crux of this paper. However, in order to emphasize that these factors are specific to the process of development, this paper will use the term “factors of development” to describe obesogenic conditions that occur only in the process of development.

The paper uses the nutrition transition as a theoretical framework for each case study, informally tracing each phase of the nutrition transition throughout each country’s history. The paper identifies obesogenic factors of development that occur concurrently with different stages of the nutrition transition in order to determine how countries move from one stage to the next. By integrating the literature in this way, this paper provides for a comprehensive analysis supported by and in support of the existing literature.

CHAPTER 3

CASE STUDY 1: MEXICO

In July 2013, obesity made the headlines of a number of major American newspapers for perhaps the first time since 2008 when Michelle Obama introduced her “Let’s Move!” campaign. This time, however, the media’s focus was not American obesity, but rather, the obesity problem of the U.S.’s southern-most neighbor, Mexico. The release of new data on obesity from the United Nations Food and Agriculture Organization revealed that Mexico had at last surpassed the United States in obesity levels.⁵³ The story caught the attention of many Americans, who rejoiced at the news that they no longer belonged to the fattest country on Earth. However, others were more critical of the new data; how could it be that a Third World country actually had higher obesity rates than those residing in the infamously fat United States? The results of the U.N.’s seemingly contradictory FAO report spurred a wave of op-eds and news clips that discussed potential explanations for these surprising statistics, the most popular being that Americans had inadvertently “exported” the obesity epidemic through the introduction of soda and fast food into Mexico’s food culture. Although further study of Mexico’s obesity problem would blame, in part, the heightened presence of U.S. food companies in Mexico, an analysis of Mexico’s food history and the process of its nutrition transition

⁵³ *The State of Food and Agriculture 2013: Food Systems for Better Nutrition*. Rome: Food and Agriculture Organization of the United Nations, 2013. 9.

would point to a combination of factors in the country's development that have ultimately resulted in the rapid fattening of the Mexican population. Through its unique rise from an undeveloped country to a middle class country, and its historical, economic, cultural, and political factors of development, Mexico has transformed out of a traditional and healthful food culture into and into an obesogenic one. This chapter will use the guide of Popkin's nutrition transition to trace the history of food and agriculture in Mexico, illustrating that Mexico's development and the evolution of Mexican food culture over time have created a ripe environment for the formation and diffusion of obesogenic factors of development, ultimately resulting in the obesity epidemic that Mexico is experiencing today.

Mexico's Nutrition and Epidemiological Transition

Before identifying the factors that have thrust Mexico's population into obesity, it is first important to identify relevant patterns in Mexican malnutrition over time. Mexico, like a number of Third World countries, has experienced a rapid epidemiological and nutrition transition in the last thirty years. Historically, Mexican public health has been characterized by poverty and under-nutrition and their associated diseases. However, in the recent past, over- and under-nutrition and non-communicable diseases, such as diabetes and heart disease, have come to define Mexican public health problems.⁵⁴

Although different forms of under-nutrition continue to plague rural and southern parts of the country, rates of under-nutrition have not changed nearly as dramatically as those of obesity. Between 1994 and 2008, Mexico's obesity levels increased from 20.2 percent to

⁵⁴ *The Double Burden of Malnutrition: Case Studies from Six Developing Countries*, Rome: Food and Agriculture Organization of the United Nations, 2006. 1.

32.8 percent, whereas Mexico's under-nutrition levels increased by less than one percent.⁵⁵ Epidemiological trends mirror this shift from under-nutrition to over-nutrition. Stunting in children, for example, has decreased from almost one-quarter of children under five in 1988 to 15.5 percent in 2008, illustrating the decline in health problems related to micro-nutrient deficiency and starvation.⁵⁶ Diseases like stunting have been replaced with other health concerns. Cholesterol levels in women, for example, have increased by over 30 percent between 1988 and 2008.⁵⁷ The prevalence of diabetes has also spiked to a concerning rate, with over 10 percent of the population afflicted by some form of the disease.⁵⁸ The mortality rate of diabetes increased by 47 percent from 1980 to 2000, and represented nearly 14 percent of all deaths in Mexico in 2009.⁵⁹ Indeed, after disaggregating cardiovascular disease (also considered a comorbidity of obesity), diabetes has been the primary cause of death among men and women in Mexico since 2000.⁶⁰

While these statistics are very telling, understanding Mexico's food cultures serves to weave many of these aspects of development into a more comprehensive picture of the obesity epidemic. Much of the story of Mexican obesity lies in the narrative of Mexican food culture and tradition. The remainder of this chapter will outline this story.

⁵⁵ Ibid. 181; *The State of Food and Agriculture 2013*, FAO, 77.

⁵⁶ *The Double Burden of Malnutrition*, FAO, 181; *The State of Food and Agriculture 2013*, FAO, 77.

⁵⁷ "Non-Communicable Diseases Country Profiles: Mexico," *World Health Organization*, 2011.

⁵⁸ Janet Long-Solis and Luis Alberto Vargas, *Food Culture in Mexico*, (Westport: Greenwood Press, 2005). 174.

⁵⁹ Simon Barquera, Ismael Campos-Nonato, Carlos Aguilar-Salinas, Ruy Lopez-Ridaura, Armando Arredondo, and Juan Dommarco, "Diabetes in Mexico: Cost and Management of Diabetes and its Complications and Challenges for Health Policy," *Globalization and Health*, Vol. 9, No. 3, February 2, 2013.

⁶⁰ Ibid.

An Historical Overview of Early Mexican Food Culture

Much of the story of Mexico's food culture predates modern history. As early as 3,500 B.C.E., many of the staples of the modern Mexican diet, namely tortillas, maize, beans, squash, and chili peppers, were already being cultivated by the Mesoamericans of modern day Mexico.⁶¹ Before the arrival of the Spanish in the sixteenth century, early Mexicans enjoyed the benefits of the first stage of the nutrition transition, including a varied diet of fruits, vegetables, and lean meats, all of which supplied the population with sufficient protein, vitamins, and calories for their diet.⁶² The balance between corn and beans specifically, supplemented by dog and turkey meat, gave Native American populations a healthful, high protein diet in the absence of domesticated animals.⁶³

Although the origins of the Mexican food tradition can be traced to well before the Common Era, however, Mexican food culture as we know it was birthed with the introduction of new European foods and preparation techniques.⁶⁴ The well-balanced, high-protein food system of pre-Columbian Mexico was largely supplanted by the inferior diet of the Spanish during the conquest of Mesoamerica in the sixteenth century. The Spanish, disdaining the corn tortilla and unfamiliar vegetables of the New World, turned much of the land taken from the Native Americans to the cultivation of wheat and sugar.⁶⁵ They also introduced Mesoamericans to cattle-raising, lard, cooking oils, and white bread and pasta, ultimately simplifying the peasant diet through the loss of

⁶¹ Long-Solis and Vargas, *Food Culture*, 1.

⁶² *Ibid.* 8

⁶³ Jeffrey M. Pilcher, "Industrial Tortillas and Folkloric Pepsi: The Nutritional Consequences of Hybrid Cuisines in Mexico," in *The Cultural Politics of Eating: A Reader*, ed. James L. Watson and Melissa L. Caldwell, (Malden: Blackwell Publishing, 2005). 237.

⁶⁴ Long-Solis and Vargas, *Food Culture*, 13

⁶⁵ Kathleen Musante DeWalt, *Nutritional Strategies and Agricultural Change in a Mexican Community*, (Ann Arbor: UMI Research Press, 1979). 22.

healthful foods and dietary supplements.⁶⁶ The introduction of these new crops, as well as new animal products such as milk and cheese, transformed Mesoamerican food traditions and infused the food culture of the Mayans and Aztecs with the Spanish diet.⁶⁷ As a result, many foods that had once been considered prestigious or preferred lost favor with the elite, who equated Spanish foods and wheat based-diets with status and modernity, and corn-based diets with backwardness.⁶⁸ This attitude toward Western foods and diets would be a trend that carried into the twenty-first century, and as a result, unhealthy foods came to dominate the Mexican food system. Although Mexicans maintained some aspects of their traditional diet, such as the tortilla, the fusion of food cultures characterized the Mexican diet for the next 400 years, lowering the overall quality of the peasant food system that had survived the previous 4,000.⁶⁹

The Industrialization of Agriculture and the Twentieth Century

For the centuries that followed the Spanish conquest, the Mexican diet remained mostly unchanged, leaving Mexicans in a state of famine and malnourishment. It was not until the late nineteenth century and early twentieth century, with the rise of new attempts at food regulation and agricultural industrialization, that Mexican food culture began to modernize and transform and that the Mexican people receded from famine. Beginning in the mid-1830s, local governments tried to impose laws regulating grain markets in an attempt to address the growing problems of food scarcity, illustrating, perhaps for the

⁶⁶ Ibid. 26

⁶⁷ Long-Solis and Vargas, *Food Culture*, 13

⁶⁸ Enrique C. Ochoa, *Feeding Mexico: The Political Uses of Food Since 1910*, (Wilmington: Scholarly Resources Inc., 2000). 25.

⁶⁹ DeWalt, *Nutritional Strategies*, 24.

first time, government willingness to assist in the feeding of the population.⁷⁰ Just a few decades later, these regional leaders expanded their efforts by improving rural investment through agricultural modernization and technological innovation. The combination of agricultural development, changes in the rural economy, and heightened government involvement in feeding the populace all prepared Mexico for significant changes in its food culture and its agriculture sector and helped push the country into the third stage of the nutrition transition.

Agricultural Change: Mexico's First Green Revolution (1940 – 1984)

The first half of twentieth century Mexico was predominately characterized by the promotion of agricultural mechanization, new pricing policies, and prolonged capitalist growth, the combination of which ultimately resulted in increased crop productivity. This period saw the industrialization of many growing processes, perhaps most obviously in the wheat crop. Agricultural modernization skewed production away from rural maize growth to mechanized wheat growth and resulted in an explosion in the productivity in the wheat crop, a phenomenon referred to as Mexico's First Green Revolution. A number of factors came together during this period to provide the raw ingredients for this explosion of agricultural production, including new government subsidies and wartime disruptions of trade.⁷¹ However, what really enhanced wheat production were breakthroughs in farming technology and agricultural practices the early 1940s and 1950s. First, the commercial release of new wheat seed varieties made it easier than ever before to grow wheat. This, coupled with improved fertilizers and better land

⁷⁰ Ochoa, *Feeding Mexico*, 23.

⁷¹ Billie R. DeWalt and David Barkin, "Mexico's Two Green Revolutions," in *Anthropology and Food Policy*, ed. Della E. McMillan, (Athens: The University of Georgia Press, 1989). 14.

management, more fully realized the crop's high-yield potential.⁷² Second, large-scale irrigation reform spearheaded by the state accelerated agricultural modernization and expanded the production of the wheat grain.⁷³ These modernizing factors combined ultimately increased wheat-productivity five-fold between 1940 and 1980.⁷⁴

The results of Mexico's First Green Revolution were substantial in changing food and agriculture traditions in Mexico. First, the increase in wheat productivity heavily influenced consumer tastes, particularly for those living in urban areas. The demand for wheat products increased concurrently with wheat productivity, resulting in a shift in food preference from traditional diet staples to wheat products, such as bread, cookies, crackers, and cakes.⁷⁵ Second, agricultural modernization did little to aid small farmers in rural Mexico. New technology and government policies primarily aided farmers who were already successfully producing massive amounts of grain, and effectively forced small farmers out of business.⁷⁶ As this paper will further explore, this shift in agricultural practices significantly impacted Mexico socially and nutritionally.

Mexico's Second Green Revolution (1965 – 1980)

While much of the world was focused on the success of wheat in Mexico, Mexican agriculture was undergoing other profound changes that eventually paved the way for Mexico's Second Green Revolution. Commercial changes in production technology and improved seeds stimulated both agricultural investment and research

⁷² Ibid. 20

⁷³ Ochoa, *Feeding Mexico*, 102.

⁷⁴ DeWalt and Barkin, "Green Revolutions," 18.

⁷⁵ Ibid. 22

⁷⁶ Ibid. 38

interest in agricultural modernization.⁷⁷ With the assistance of government subsidies and policies, other cash-crop farmers were able to ride on the coattails of the wheat industry.

The second wave of agricultural modernization was characterized by the phenomenal growth of the livestock sector. This growth was made possible in part through the modernization of the livestock industry and the industrialization of production.⁷⁸ With heightened interest in agricultural research and a greater demand for animal products, Mexican farmers were able to improve the technological systems necessary to mass-produce livestock. Newly cultivated pastures, improved breeds of animals, and the heavy use of antibiotics all allowed for a massive growth in the industry, tripling both poultry and hog production between 1960 and 1990.⁷⁹

The industrialization of the livestock industry was also made possible by the expansion of feed cultivation, specifically sorghum, a grass used for fodder. As a non-traditional part of Mexican agriculture, early researchers struggled to generate successful hybrid sorghum seeds. However, as a demand for animal feed increased in the 1960s and as agriculture technology advanced, sorghum production soared. During the period between 1965 and 1980, the amount of sorghum produced increased by 18 percent per year, and the area cultivated by sorghum grew at a rate of 13 percent per year.⁸⁰ The expansion of sorghum production served to intensify the growth of the livestock industry.

As a result of the Second Green Revolution livestock products such as eggs, dairy, and meat, were made more available to the Mexican population. Egg consumption,

⁷⁷ Ibid. 27

⁷⁸ Ibid. 29

⁷⁹ Ibid.

⁸⁰ Ibid. 31

for example, doubled between 1950 and 1990.⁸¹ However, although Mexico's Green Revolutions are worth considering as a standalone period in Mexico's agricultural history; they are also representative of an overall shift toward the prevailing model of capitalist farming and industrial food production. This model diffused rapidly in the 1950s and 1960s, and has come to dominate the system of agriculture as a whole. The example of the Mexico wheat crop is therefore not a singular instance of industrialized farming, but a microcosm for what was an emerging system at the time. The globalization of technology and agriculture intensified the transformation away from rural life and traditional food production, critically changing consumption patterns and pushing Mexico out of Popkin's Stage Three into Stage Four. With the modernization of agriculture, subsistence farming and rural agriculture came to be supplanted by industrial farming, ultimately changing what foods were available in the market and what people now eat.

Changing Role of Women in an Industrialized Mexico

The effects of industrialization extended beyond the expected changes to agriculture; it also affected Mexico socially. For nearly all of Mexico's history, cooking has been considered women's work. Until the advent of industrialized agriculture and the modernization of food processing, women were entirely responsible for the arduous task of preparing food for their families, rising before dawn to grind corn for cooking tortillas and tamales.⁸² While women are still responsible for feeding their households, modern cooking techniques have transformed the ways in which women prepare food, as well as the foods that they choose to prepare. The story of women as food preparers and the

⁸¹ Ibid.

⁸² Jeffrey M. Pilcher, "Taco Bell, Maseca, and Slow Food: A Postmodern Apocalypse for Mexico's Peasant Cuisine?," in *Fast Food/Slow Food: The Cultural Economy of the Global Food System*, ed. Richard Wilk, (Plymouth: Altamira Press, 2006). 70.

evolution of this role exemplify the track of the nutrition transition, and are worth exploring in detail.

Food prepared through industrialized methods did not initially take off in Mexico. Mexicans of the post-war era complained that technical flaws in the food production process stripped many of Mexico's traditional foods of their rich taste.⁸³ Women in particular disdained the mechanization of the food preparation process, in part because of a general dislike of processed food, but also because of the challenge mechanization posed to their established domestic role.⁸⁴ Knowledge of how to prepare a tortilla from scratch, for example, was a valued skill for which women took great pride, and was considered an essential trait for women seeking marriage.⁸⁵ Indeed, mechanized food was so uncouth, that peasant women who could afford to devote themselves exclusively to food preparation and domestic activities were considered to be of a higher status than their neighbors who chose to feed their families factory food.⁸⁶

Still, despite initial distaste, industrialized food eventually usurped women's primary role in the family. With the introduction of new technologies in the nineteenth and twentieth century, women no longer needed to spend as much time preparing meals, nor did they have to prepare entire meals from scratch. The industrialization of food freed women from several hours of daily work, and ordinary *campesinas* began to purchase processed foods for everyday consumption. Whereas peasant women had previously spent their entire days grinding corn for tortillas and chile for sauce, by the mid-nineteenth century, women were able to develop other skills that allowed them to enter

⁸³ Pilcher, "Industrial Tortillas," 239.

⁸⁴ Ibid. 238

⁸⁵ Pilcher, "Taco Bell," 71.

⁸⁶ Ibid. 239

the work world. So dramatic was this shift in women's roles that Mexican peasants referred to the industrialization of food processing as a "revolution of the women against the authority of the men."⁸⁷ This trend of women moving into the workforce has only intensified over the course of the century. Indeed, by 2012, women made up over 40 percent of the Mexican workforce, up from, 20 percent in 1990.⁸⁸

While the growth of women in the workforce seems like an objective good, in Mexico, it has come at a cost to nutrition. Whereas women previously focused nearly their entire day on their domestic chores, women in Mexico's heavily patriarchal societies must now serve as both the home-maker to maintain cultural norms as well as a bread-winner. Because they are forced into multiple roles, working women seek out cheap foods that take little time to prepare and can maximize the number of calories for their income. Working women are also much more receptive to processed, nontraditional foods than their predecessors because of their lack of time to prepare a traditional Mexican meal.⁸⁹ Additionally, many young women in contemporary Mexico report that they were not brought up to learn to cook because of the emphasis now placed on education and careers.⁹⁰ With less time and less knowledge, women have come to rely on serving high-sugar and high-fat snacks, which are easily accessible and easily prepared. These foods have largely supplanted the comparatively healthful, traditional foods that women used to prepare for their families.⁹¹ As a result, women over time have altered the

⁸⁷ Pilcher, "Taco Bell," 70.

⁸⁸ "Mexico: Selected International Labor Statistics, 2010-12," *United States Department of Labor: Bureau of Labor Statistics*, August 21, 2013; Robert McCaa, Albert Esteve, Rodolfo Gutierrez, and Gabriela Vasquez, "Women in the Workforce: Calibrating Census Microdata against Gold Standards, Mexico 1990-2000," *Mexico 1970-2000*, Vol. 21, No. 4, 2003. 1.

⁸⁹ Long-Solis and Vargas, *Food Culture*, 79.

⁹⁰ *Ibid.*

⁹¹ *Ibid.*

diet of the typical Mexican family, purchasing pre-prepared products from convenience stores more frequently than preparing a home-cooked meal.⁹² With women no longer dedicating immense amounts of time to food preparation, healthful, slow food has been replaced with the highly processed foods that Mexicans are familiar with today. This change in women's roles has ultimately reinforced the shift toward unhealthy, obesogenic diet, illustrating the effects of the nutrition transition that began during the industrial period and that has continued into contemporary Mexico.

Urbanization, Modernization, and the Role of Urban Centers

During the last 50 years, Mexico has seen a momentous increase in the percent of its population living in urban areas. With the advent of modern agriculture, the distribution of Mexico's population shifted from predominantly rural areas to predominantly urban areas. As *campesinos* were faced with fewer opportunities in rural areas, they immigrated to major urban centers en masse. The majority of this immigration occurred in the latter half of the century; between 1950 and 2007, the percentage of the Mexican population living in urban areas increased from 42% to 77%, the peak span occurring between 1970 and 1990.⁹³

There are two noteworthy trends related to the urbanization of Mexico and its effects on the country's obesity rates. First, with the development of urban centers, fewer people are able to partake in physical activity as a result. Indeed, one study found that

⁹² Ibid. 172

⁹³ Francisco Mere, "Rural Migration in Mexico," presented at the *Agriculture Outlook Forum*, Thursday March 1, 2007.

fewer than 20 percent of Mexican adults participate in semi-regular physical activity.⁹⁴ Another found that the percentage of Mexican adults that do not participate in any form of physical activity increased by 44 percent in the last eight years alone.⁹⁵

Second, as this paper has already discussed, there is a clear correlation between consumption patterns and place of residence; specifically, traditional, rural diets and lifestyles are generally more healthful than their urban counterparts. In Mexico, the difference between Mexican urban and rural diets is substantial. In its 2006 report, the Food and Agriculture Organization explored the differences between the average intakes of various types of available food in different regions in 1999. A sampling of the FAO's results is displayed in the table below.

The table serves to highlight the differences between rural and urban consumption patterns. As evidenced by the data, urban diets more closely resemble the unhealthy diets of First World urban regions than rural diets. As Mexico has urbanized, greater portions of the population have adapted their diets, shifting away from traditional choices and moving toward higher energy options, showing a strong correlation between urbanization, the nutrition transition, and the creation of obesogenic environments.

⁹⁴ Long-Solis and Vargas, *Food Culture*, 171.

⁹⁵ Catalina Medina, Ian Janssen, Ismael Campos, Simon Barquera, "Physical Inactivity Prevalence and Trends Among Mexican Adults: Results from the National Health and Nutrition Survey 2006 and 2012," *BioMed Central Public Health*, Vol. 13, November 11, 2013.

TABLE 3-1 Mean Intake of Food in Mexico by Region, 1999

	Mean Urban Intake (g)	Mean Rural Intake (g)
Wheat	68.1	48.0
Maize	154.9	287.1
Breakfast Cereals	4.8	.8
Meat	88.0	60.2
Processed Meat	11.0	5.6
Dairy Products	159.1	70.2
Sweet Drinks	230.8	122.6

Source: *The Double Burden of Malnutrition: Case Studies from Six Developing Countries*, Rome: Food and Agriculture Organization of the United Nations, 2006. 171.

Economic Disparity and Mexico's Obesity Epidemic

Recent economic prosperity in Mexico has significantly reduced the prevalence of under-nutrition and micro-nutrient deficiencies in Mexico. Since 1970, Mexico's gross national product per capita has increased by over 60 percent, classifying Mexico as a middle-income country.⁹⁶ As mentioned in the previous chapter, rapid economic growth, as exhibited by Mexico, not only results in access to more processed foods, but also results in the greater affordability of unhealthy foods. These economic changes encourage dramatic alterations to a country's food system, a country's diet, and a country's obesity rate, and Mexico has been no exception to this rule.

⁹⁶ *The Double Burden of Malnutrition*, FAO, 161.

As the figures in Table 3-2 show, Mexican men and women in upper and middle classes experience higher levels of obesity than those in lower classes. For example, both men and women in the lowest socioeconomic quintile were at least ten points less obese than men and women in the highest socio-economic quintile.

TABLE 3-2 Obesity Rates of Men and Women by Quintile of Socioeconomic Status, 2000

	I	II	III	IV	V
% of Men	24.2	21.5	18.4	15.3	9.2
% of Women	28.2	31.3	30.7	28.2	18.9

Source: Juan A. Rivera, Simon Barquera, Teresa Gonzalez-Cossio, Gustavo Olaiz, and Jaime Sepulveda, "Nutrition Transition in Mexico and in Other Latin American Countries," *Nutrition Reviews*, Vol. 62, No. 7, S149-S157, July 2004.

Although a causal relationship between socioeconomic status and obesity has not been established in Mexico, it is evident that the lifestyles and diets of those in higher socioeconomic groups are different than those in lower socioeconomic groups in such a way that contributes to obesity rates. One explanation for this disparity in obesity is the variation in diets between different classes. Table 3-3 shows that on average the mean consumption of unhealthful and untraditional foods, such as meat and wheat, is considerably higher among wealthier groups. The consumption of dairy products for example is four times as high among people with a high socioeconomic status as people

with a low socioeconomic status. These dietary differences likely contribute to the disproportionate obesity rates between different socioeconomic groups in Mexico.

TABLE 3-3 Mean Intake of Food in Mexico by Socioeconomic Status, 1999

	Mean Intake for Low SES (g)	Mean Intake for Medium SES (g)	Mean Intake for High SES (g)
Wheat	45.8	65.5	74.6
Maize	290.1	171.1	123.3
Meat	63.2	75.4	100.3
Processed Meat	6.0	8.6	13.4
Dairy Products	54.5	137.1	201.8
Sweet Drinks	139.8	190.4	266.8

Source: *The Double Burden of Malnutrition: Case Studies from Six Developing Countries*, Rome: Food and Agriculture Organization of the United Nations, 2006. 171.

While the variance in diets and rates of obesity between socioeconomic groups is important, it is also worthwhile to note that socioeconomic status is not the only factor at play. For over a decade, around 50 percent of the Mexican population has consistently lived below the poverty line, meaning that economic factors are unlikely causes of increased obesity rates in recent years.⁹⁷ What this data serves to show is that there is a relationship between wealth and unhealthy diets in Mexico. This chapter will offer

⁹⁷ “Poverty Headcount Ratio at National Poverty Line: Mexico,” *The World Bank*, accessed April 18, 2014.

some postulations for why this might be the case in a later section on the role of “status foods” and transnational food companies.

Trade Liberalization and The North American Free Trade Agreement

The industrialization and urbanization of modern Mexico gradually moved the country toward a more unhealthful, Western diet. However, in the 1990s, a monumental moment in Mexico’s economic history would serve to accelerate the degradation and Westernization of the Mexican food tradition. On January 1, 1994, Mexico signed The North American Free Trade Agreement (NAFTA), with the United States and Canada, a piece of legislation that would serve to liberalize the Mexican economy and open the country’s borders to foreign direct investment.⁹⁸ The intent and expectation of NAFTA was that Mexico’s welfare and production would progress by allowing the country access to the world’s biggest market, thereby elevating Mexico to an economic status closer to that of the United States.⁹⁹ For Mexico, the agreement broke new ground in addressing a number of issues and opening the door for foreign investment in the food and agriculture sectors. As a result, NAFTA effectively transformed Mexico’s agricultural economics and dramatically changed Mexican food culture and consumption patterns. The implementation of NAFTA opened Mexican markets to the importation of foreign foodstuffs, and allowed for U.S. food preparation and marketing techniques to cross borders. On a more fundamental level, however, NAFTA ultimately imposed a Western

⁹⁸ E.M. Young, *Food and Development*, (New York: Routledge Press, 2012). 201.

⁹⁹ Jorge Alcocer, “Mexico: Modernity without Equality,” *International Journal of Political Economy*, Vol. 24, No. 3, 41-70, Fall 1994. 61.

bias on Mexico's food system and transformed both Mexico's food supply and the country's diet.

Effects on Food Markets

At its most basic level, NAFTA altered the flow of food in and out of Mexico, as well as the types of crops grown within the country's borders. Although the United States has heavily imported fruits, vegetables, and sugar from its southern neighbor since NAFTA, for the most part, the flow of goods has been in the opposite direction. The exportation of corn from the U.S. to Mexico, for example, has nearly quadrupled in the twenty years since the passage of NAFTA.¹⁰⁰ Mexico's importation of soybeans has also increased significantly, especially since the removal of Mexican tariffs on soybeans in 2003.¹⁰¹ In the case of both of these commodity crops, NAFTA has resulted in the displacement of Mexico's domestic production. Because the price at which U.S. farmers sell their corn and soybeans is much lower than the cost at which they produce it, American farmers can sell their crops to Mexican intermediary consumers (i.e. Mexico's industrial corn flower mills) for a much better price. Mexican corn and soybean farmers consequentially often choose to stop production of these crops, and the country instead has come to rely on the affordability of American corn and soybeans.¹⁰²

The increased presence of foreign corn and soybeans has resulted in a number of notable changes to Mexico's food culture. Most notably, the increased presence of foreign corn increased the prices of corn products in Mexico. The price of a tortilla, for

¹⁰⁰ Sarah E. Clark and Corinna Hawkes, "Exporting Obesity," *Institute for Agriculture and Trade Policy*, April 5, 2012.

¹⁰¹ Ibid.

¹⁰² Raj Patel, *Stuffed and Starved*, (Brooklyn: Melville House Publishing, 2007). 53.

instance, was seven times higher in 1999 than it was in 1994.¹⁰³ Even from 2007 to 2008, the price of the tortilla increased by 66 percent as a result of continued importation of American corn.¹⁰⁴ The effects of changing tortilla prices on Mexican nutrition are varied, but equally grim; whether families decide to spend more of their disposable income to maintain their traditional diet, or whether they turn to cheaper forms of grain such as bread and pasta, the effects of NAFTA have forced many Mexican families to compromise their preferred, traditional patterns of consumption.¹⁰⁵

Another way in which NAFTA and the presence of American corn have disrupted Mexican corn markets is in the diversity of the crop. Mexico has historically been the source region for corn, growing more than forty varieties of the crop.¹⁰⁶ This biodiversity, which has survived thousands of years, has been severely threatened in the last twenty, as fewer farmers are cultivating corn and traditional knowledge and expertise with unique varieties are dying out.¹⁰⁷ Moreover, as a result of NAFTA, Mexico has become much more exposed to world market prices, foreign production techniques, and crop preferences, further limiting the opportunities for crop diversity. For example, although white corn, which is used to make tortillas, would make a potentially more attractive export, the bulk of U.S. corn exports to Mexico is yellow corn.¹⁰⁸ Yellow corn is a cheap input for the production of snack and fast food products, and is therefore a desirable

¹⁰³ Ibid. 52

¹⁰⁴ Young, *Food and Development*, 5.

¹⁰⁵ Pilcher, "Industrial Tortillas," 241.

¹⁰⁶ Young, *Food and Development*, 203.

¹⁰⁷ Ibid.

¹⁰⁸ Steven Zahniser, "NAFTA at 11: The Growing Integration of North American Agriculture," *Economic Research Service of the USDA*, February 2005.

import for the fast food industry and transnational companies located in Mexico.¹⁰⁹

However, the augmented presence of yellow corn in the Mexican market has led to the overpricing of healthier alternatives, as well as other varieties of corn.¹¹⁰ With the influx of American corn that has come along with NAFTA, the Mexican diet has shifted away from the diversity of their traditional food culture toward the homogenous, pricier diet of the United States.

Although corn and soybeans were two of the most heavily impacted markets, NAFTA of course, affected the markets of other commodities. Since NAFTA, Mexico has seen a huge increase in the amount of livestock products imported from the United States. The quantity of chicken imported, for example, increased by 307 percent from 1991-1993 to 2007-2009.¹¹¹ The quantity of pork imported in the same period increased by 687 percent.¹¹² These imports are not only limited to what is generally considered as a livestock product (i.e. eggs, dairy, cuts of meat), but also, products imported for the purpose of creating processed meats and fast food.¹¹³ These meats, which are not considered traditional components of the Mexican diet, have become a greater part of Mexico's food culture since the passage of NAFTA, and encourage fattier diets.

Another commodity of great interest to this analysis is the effect of NAFTA on the Mexican sugar and sweetener market. Although the flow of sugar is typically from Mexico to the United States, the results of a 2006 dispute about NAFTA regulations augmented Mexico's domestic sweetener consumption. In the early 2000s, the Mexican

¹⁰⁹ Ioulia Fenton, "Can Trade Policy Really Impact Public Health? An Obesity Case Study from Mexico," *Nourishing the Planet*, July 19, 2012.

¹¹⁰ Ibid.

¹¹¹ Clark and Hawkes, "Exporting Obesity."

¹¹² Ibid.

¹¹³ Ibid.

Congress announced a 20 percent sales tax on all beverages sweetened with any sweetener other than cane sugar. As one of the biggest consumers of soft drinks in the world at the time, the law was intended to decrease soda consumption and encourage the use of more healthful sweeteners.¹¹⁴ However, although not the primary purpose of the law, the new tax also virtually stopped all U.S. exports of high fructose corn syrup between 2002 and 2004.¹¹⁵ In 2006, the United States claimed that the measure violated Mexico's obligations under NAFTA, and as a result, since 2008, there have been no duties or restrictions on the importation of U.S. products with high-fructose corn syrup, increasing the availability of these products in Mexico.

Effects on Food Producers

The effects of NAFTA went beyond transforming the food being produced; it also changed the lives of the food's producers. This is perhaps one of NAFTA's greatest critiques. By meshing Mexico's economy with those of two significantly wealthier countries, the enactment of NAFTA pitted the livelihoods of Mexico's *campesinos* with the highly industrialized agricultural powerhouses of the United States and Canada.¹¹⁶ In the corn market specifically, Mexican peasant farmers stood no chance; the three million Mexican corn producers, who were cultivating over 60 percent of Mexican farm land at the time, simply could not compete with American corn farmers' subsidized prices. According to scholar Raj Patel, with the advent of trade liberalization through NAFTA, "it was clear that U.S. corn... would destroy the livelihoods of the poorest in the Mexican

¹¹⁴ Zahniser, "NAFTA."

¹¹⁵ Clark and Hawkes, "Exporting Obesity."

¹¹⁶ Patel, *Stuffed*, 48.

rural economy.”¹¹⁷ Compounded with crash of the Mexican peso in 1994 and the increased prices of basic goods, the rural poor were hit hard by NAFTA.¹¹⁸ Indeed, as a result of NAFTA’s effects on corn and other crop prices, 1.3 million Mexican *campesinos* were forced off their land, funneling thousands of people into major urban centers.¹¹⁹

The example of the peasant plight of the last 15 years is informative in further understanding Mexico’s nutrition transition. In order to escape the poverty of the countryside, rural Mexicans migrated to cities by the thousands, driving down wages and perpetuating poverty in urban regions.¹²⁰ As discussed extensively at other points in this paper, such a flux in urbanization creates an environment that promotes obesogenic lifestyles. Additionally, with the increase of staple food prices after NAFTA, neither urban nor rural Mexicans were able to rely on affordable basic goods. With the introduction of cheaper foreign foods made especially available in urban regions, the Mexican diet shifted away from healthful staples, such as rice and beans, toward pre-prepared foods and American products, nudging Mexican consumption patterns toward a caloric, unhealthful, and fattening diet.¹²¹

Increased Presence of Transnational Food Companies

Although the following section will more fully explain the role of transnational food companies to the obesity pandemic, it is important to identify the connection between NAFTA and the increased presence of transnational food corporations in

¹¹⁷ Ibid. 49

¹¹⁸ Ibid.

¹¹⁹ Ibid. 53

¹²⁰ Ibid.

¹²¹ Ibid. 63

Mexico. Eager to invest in the emerging markets of the Third World, foreign food manufacturing and processing companies capitalized on the liberalization of Mexico's food and agriculture sectors.¹²² With its young population and rising incomes, Mexico made an exciting market for food corporations, guaranteeing high profit margins and less competition than the markets of first world economies.¹²³ Both food companies and food retailers alike rapidly entered Mexico and saturated the new market, significantly shaping Mexican food culture. Indeed, 20 years after NAFTA, over 55 percent of the market in medium to large Mexican cities is dominated by major foreign supermarkets and convenience stores.¹²⁴ According to development scholar Elizabeth Young, this increased presence of foreign food retailers and manufacturers "transformed the diets of whole generations in Mexico," shaping both the food available to the population, as well as influencing their food choices.¹²⁵ Soda, pre-prepared foods, and snack items have become highly present in the diets of Mexicans, particularly for those in urban areas who are more exposed to foreign advertising and for whom these products are more accessible. Since the signing of NAFTA, transnational food companies have enjoyed a large presence in the Mexican marketplace, and as a result, the Mexican food system has come to look increasingly like the industrialized food system of the United States.

Effects on Mexican Food Consumption Patterns

Although existing analyses on the impacts of NAFTA focus almost exclusively on the agreement's economic effects, a consideration of concurrent changes to agricultural markets reveals how impactful a change in the food supply can be to a population's daily

¹²² Young, *Food and Development*, 202.

¹²³ Ibid.

¹²⁴ Ibid.

¹²⁵ Ibid.

diet. Scholars widely accept the role that NAFTA has played in changing dietary trends, and substantial data exists to illustrate dietary changes. For example, between 1992 (two years before the signing of NAFTA) and 2002, the mean daily consumption of soda increased from 211 milliliters per day to 242 milliliters per day, a 15 percent increase.¹²⁶ The caloric intake from sweetened beverages more than doubled from 1996 to 2002, nearing 20 percent of an individual's calories per day.¹²⁷ The consumption of fats and oils also increased by 14 percent between 1992 and 2002, raising the fat content of the Mexican diet from 23 percent to over 30 percent.¹²⁸

A number of scholars have identified broader trends in changed consumption patterns since the adoption of NAFTA. Sarah Clark and Corinna Hawkes of the Institute for Agriculture and Trade Policy, for example, explore the particularly notable increase in the consumption of snack food and pre-prepared food. Between 1989 and 2002, they note, the proportion of households consuming ice cream and other frozen desserts tripled.¹²⁹ The consumption of pre-prepared meats also increased by 70 percent in the same time period.¹³⁰ Mexicans have also begun purchasing snack food in general in greater quantities since NAFTA, from \$1.54 billion in 1999 to \$1.750 billion 2001.¹³¹

While many of NAFTA's results are certainly not as distasteful as those that have been described above, overall, the effects of NAFTA on Mexican consumption patterns have been unhealthful and unfortunate. Obesity scholars bemoan the shift toward unhealthful diets, lamenting that the market supply has forced unhealthful options on the

¹²⁶ *The State of Food and Agriculture 2013*, FAO, 175.

¹²⁷ Barry M. Popkin, Linda S. Adair, and Shu Wen Ng, "Global Nutrition Transition and the Pandemic of Obesity in Developing Countries," *Nutrition Reviews*, Vol. 70, No. 1, 3-21, January 2012. 8.

¹²⁸ Popkin, Adair, and Ng, "Global Nutrition Transition," 173; Vargas, *Food Culture*, 171.

¹²⁹ Clark and Hawkes, "Exporting Obesity."

¹³⁰ *Ibid.*

¹³¹ *Ibid.*

Mexican people. Scholars also disdain the homogenization of a more varied diet pre-NAFTA, noting the Westernization of much of Mexican food culture. Although the U.S. influence on Mexican markets is not entirely to blame for Mexico's dietary transition, understanding NAFTA's role in changing consumption patterns helps to explain the rapid and relatively recent spike in Mexican obesity.

The Role of Transnational Food Companies

In his 2008 book, *The End of Food: The Coming Crisis in the World Food Industry*, author Paul Roberts writes: "The meaning of food is being transformed: food cultures that once treated cooking and eating as central elements in maintaining social structures and tradition are slowly being usurped by a global food culture, where cost and convenience are dominant, the social meal is obsolete, and the art of cooking is fetishized in coffee-table books and on television shows."¹³² Although Roberts' book speaks to the transformation of food across the globe, his insight is particularly relevant to the case of Mexico. With its proximity to the U.S., its untapped markets, and its openness to U.S. influence, Mexico has been particularly susceptible to the effects of the global food culture. The early influences of transnational food companies in Mexico, compounded with the increased appeal of convenient, processed foods, have transitioned Mexico away from their traditional food culture toward a globalized, homogenized, and unhealthy food culture. As a result, Mexico's population now consumes a diet loaded with unhealthy Westernized foods, driving many Mexicans toward obesity.

¹³² Paul Roberts, *The End of Food: The Coming Crisis in the World Food Industry*, (London: Houghton Mifflin, 2008). xii.

Introduction of Transnational Food Companies

Beginning in the 1920s and 1930s, foreign food companies began to establish themselves in Mexican markets in a major way. Companies such as Nestle, Coca-Cola, Pepsi, and McCormick began setting up factories throughout Mexico, collaborating with local production companies to reorganize and modernize the Mexican food industry.¹³³ Transnational companies experienced great success upon their settlement in Mexico. In addition to offering new, tasty foods, these companies provided the Mexican poor with foods that solved a number of their other nutrition problems. With a high calorie content, these foods offered hungry Mexicans more bang for their buck. Furthermore, in regions where clean drinking water was unavailable, soda and other sweetened beverages offered an appealing, safe alternative to poor communities.¹³⁴

Beginning in the 1980s, levels of foreign investment in Mexico spiked. Corporations like Nestle and PepsiCo began investing in manufacturing facilities for foods such as soft drinks, snacks, and dairy products.¹³⁵ Foreign food processing has experienced an enormous growth rate since the 1980s; U.S. foreign direct investment in sodas alone amounts to close to \$180 million annually.¹³⁶ It is no accident that major changes to the Mexican diet coincided with the increased presence of these companies in Mexico. As a result of the soda industry's augmented investment in Mexico, it is

¹³³ Long-Solis and Vargas, *Food Culture*, 28.

¹³⁴ Young, *Food and Development*, 46.

¹³⁵ *Ibid.* 140.

¹³⁶ Clark and Hawkes, "Exporting Obesity.

estimated that Mexicans drink 42 gallons of soda per capita annually, giving the country the world highest rate of soda consumption.¹³⁷

Food producers are not the only transnational companies saturating Mexico's market, however. Foreign food suppliers have also come to dominate the region, resulting in the "supermarketization" of Mexico and other Latin American countries.¹³⁸ Indeed, in the last ten years alone, super markets in Latin America have grown from accounting for 10-20 percent of the market to between 50-60 percent.¹³⁹ Mexico has been no exception to this trend. The retail giant Wal-Mart, for example, has planted itself firmly in Mexico in the last 25 years, and has become ubiquitous across the country. The number of Wal-Mart outlets in Mexico has expanded immensely, from 193 outlets in 1998 to over 1,700 in 2010.¹⁴⁰ Wal-Mart and other massive supermarket chains have reshaped Mexican markets, accelerating the sale and consumption of packaged and processed foods. The result has been a decline in the availability and consumption of fresh foods, as well as a decline in the healthfulness of the Mexican diet.¹⁴¹

Despite the success of multi-national food companies in urban areas, manufacturers have faced opposition from a Mexican desire to preserve traditional Mexican cooking. However, these companies have been undeterred by cultural resistance. In order to keep their foothold in Mexico and maintain their advantage in the market, food distributors have developed in a "hybrid" fashion, combining aspects of

¹³⁷ John Norris, "Make Them Eat Cake: How America is Exporting its Obesity Epidemic," *Foreign Policy*, September 3, 2013.

¹³⁸ Young, *Food and Development*, 123.

¹³⁹ *Ibid.* 128

¹⁴⁰ Enrique Ochoa, "Feast and Famine: The Growth of Corporate Wealth and Food Insecurity in Neoliberal Mexico," Paper presented at Yale University's international conference on food sovereignty, New Haven, Connecticut, September 14-15, 2013. 15.

¹⁴¹ *Ibid.* 14

Mexican cuisine with their original product.¹⁴² For example, both Coke and Pepsi have introduced lines of soda flavors adapted to Mexican tastes, including new orange and mango sodas.¹⁴³ Similarly, in search of a Mexican counterpart to breakfast egg dishes, American producers introduced Mexicans to *huevos rancheros*, a reduction of several regional dishes.¹⁴⁴ The dish is now considered a “traditional” Mexican egg dish.¹⁴⁵

Transnational companies have been extremely successful in incorporating themselves into Mexico’s diet and the Mexican conception of traditional food. American producers in particular have seen a positive outcome from appropriating elements of Mexican food into their products. As a result, foreign food companies have come to flood the Mexican market, allowing for the pervasiveness of the unhealthy foods.

Marketing

Although this paper is more concerned with the effects of development on the transformation of diets and the creation of obesogenic environments, it is important to acknowledge the powerful role of corporate marketing and advertising in shifting diets as well. Advertising campaigns by major food corporations are increasingly understood as a contributing factor to the obesity pandemic, particularly as target countries such as Mexico become more affluent and modern.¹⁴⁶ Food companies have taken to a wide array of advertising methods, including websites, product placement, and in-school

¹⁴² Pilcher, “Industrial Tortilla,” 244.

¹⁴³ Ibid. 245.

¹⁴⁴ Ibid. 243

¹⁴⁵ Ibid.

¹⁴⁶ Young, *Food and Development*, 143.

marketing.¹⁴⁷ These methods appear successful, as more people are consuming these companies' sugary and fatty products than ever before.¹⁴⁸

In the case of Mexico, transnational corporations have taken a unique approach to incorporating their products into the Mexico diet. Since the 1940s and 1950s, food manufacturers have been winning over customers by featuring their products in cultural and nationalistic images.¹⁴⁹ The Coca-Cola Company, for example, has appealed to Mexican customers by advertising their products with nostalgic scenes of Mexican families drinking Coke in cultural centers like Chapultepec Park.¹⁵⁰ Such an approach has proven successful for Coke; a recent survey showed that Mexicans drink more Coke products than any other nationality.¹⁵¹ While corporate advertising is just one role of transnational food companies play in promoting obesity, it is representative of their approach to increasing the popularity of their products abroad and their success in incorporating unhealthy products into the Mexican food culture.

Eating Out and Mexican Fast-Food

Since the 1980s, the number of eating establishments in Mexico has increased tenfold.¹⁵² Although originally established to fulfill the demands of the tourist industry, these eating establishments increasingly cater to locals in urban areas, where women are a greater part of the labor force and more people are looking for cheap, quick food. The popularity of restaurants and street food is not only limited to urban centers, however.

Food expenditure at restaurants and food stands has increased in all parts of Mexico. In

¹⁴⁷ Ibid. 141

¹⁴⁸ Ibid.

¹⁴⁹ Pilcher, "Industrial Tortillas," 243.

¹⁵⁰ Ibid.

¹⁵¹ Matt Phillips and Roberto A. Ferdman, "Your Beloved Mexican Coke is in Trouble," *The Huffington Post*, November 4, 2013.

¹⁵² Long-Solis and Vargas, *Food Culture*, 123.

2012, for example, over 20 percent of total food expenditure was spent outside the home.¹⁵³

Mexican street food is perhaps the longest standing example of fast-food in Mexico's history, and easily the most popular. Indeed, street food is often the most convenient choice available, offering quick, ready-made food in public markets.¹⁵⁴

Although there are a number of advantages to street foods, namely their affordability and proximity to places of employment, the downside of this fast food is its nutritional value.

Most street food is high energy food, quesadillas and tacos being the most popular.

Elotes, corn covered in cheese, mayonnaise, and salt, are another popular street food option. Although some vendors offer fruits and non-fried foods, overall, popular street food and fast-food is generally fried, salty, and fattening, offering little nutritional value to its consumers.

Food as a Status Symbol

Mexico has a long history of using food as an indicator of social and economic status. Since the arrival of the Spanish and the diets of the Old World in the sixteenth century, Mexican food culture has been characterized by a peculiar dichotomy between the perceived value of traditional foods and their foreign counterpart. Fueled by Spanish conceptions of elitism, early Mexicans often equated the wheat-based diets the Old World with modernity, wealth, and status, and Mesoamerican corn-based diets with backwardness.¹⁵⁵ Even after Mexico's independent government expelled the Spaniards, Spanish and European style foods maintained their prestige. Formal luncheons and

¹⁵³ Martha Pineda, "2012 National Survey of Mexican Household Income and Expenditures," *USDA Foreign Agricultural Service*, December 19, 2013.

¹⁵⁴ Long-Solis and Vargas, *Food Culture*, 124.

¹⁵⁵ Ochoa, *Feeding Mexico*, 25.

dinners continued to serve European “status” food, conserving the esteem of foreign cuisine.¹⁵⁶ Although there have been times in Mexico’s food history where people rally behind traditional foods and preparation methods (the earlier example of home-ground cornmeal as a status marker among women exhibits this point), overall, foreign food continues to typify the Mexican conception of high-quality food. Particularly with the introduction of American food companies in the country, Mexico has replicated the Third World experience of fast food and American food as a middle class privilege.¹⁵⁷ Currently, American companies such as Kentucky Fried Chicken, Domino’s Pizza, Subway, and Burger King reign as the popular status food in Mexico.¹⁵⁸ Serving the same high-fat foods as they do in the U.S. but with a Mexican touch, these franchises appeal to the young crowds of urban areas, who eat these foods regularly.

It is important to note that Mexican food culture does continue certain long-standing practices, and much of the Mexican diet is made up of uniquely Mexican food. Mexicans continue to take pride in their hearty traditional dishes, many of which are distinct from those in foreign cuisines. Nonetheless, Mexico’s preoccupation with non-traditional foods is very real, and it has come at the expense of health. These non-traditional, American foods are considered status foods for their taste and association with the First World, not for their nutritional value; they are undeniably unhealthful. With a greater portion of its population able to afford the perceived “status food” of American fast-food, Mexico has fallen victim to the nutritional trap of transnational food

¹⁵⁶ Long-Solis and Vargas, *Food Culture*, 25.

¹⁵⁷ Pilcher, “Taco Bell,” 74.

¹⁵⁸ Long-Solis and Vargas, *Food Culture*, 136.

companies. This cultural conception has only served to promote Mexican obesity, as more people are drawn to the high-fat menus of American fast-food.

Conclusion: Mexican Policies Addressing Obesity

In recent years, the Mexican government has been highly effective at addressing the nutritional status of the country. Social policy in Mexico has included a wide array of food aid programs, and has integrated other facets of nutritional problems, such as poverty alleviation and access to healthcare, into these programs. However, while Mexico has developed an effective strategy to deal with nutritional problems related to hunger, the government is still finding its footing in establishing policies to address obesity and obesity prevention.

Mexico's most aggressive attack against obesity has been the Ministry of Health's move against sugar sweetened beverages and junk foods. Just last year, the Mexican government and legislators approved a ten percent tax on sugar sweetened beverages and an eight percent tax on high calorie foods.¹⁵⁹ This new legislation is intended to discourage people from consuming unhealthy foods, and targets middle-income families who are more likely to be consumers of these unhealthy products. However, there is very limited research to show that an increased cost of food will change overall diets. It is unclear whether people would make healthier food choices if the price of more unhealthy foods increased, or if they would instead substitute unhealthy foods and beverages with other refined carbohydrates and refined foods.¹⁶⁰

¹⁵⁹ Isabel Crowley, "Mexico Combats 'World's Fattest Country' Label," *The Guardian*, February 25, 2014.

¹⁶⁰ Barry M. Popkin, Linda S. Adair, and Shu Wen Ng, "Now and Then: The Global Nutrition transition: The Pandemic of Obesity in Developing Countries," *Nutrition Review*, Vol. 70, No 1, 3-21. 12.

Although these policies are certainly a movement in the right direction, it is still too soon to evaluate their success. Moreover, because Mexico's obesity problem is so deeply rooted in a longstanding food culture, it is unclear whether these policies will dissolve the root causes of obesity and lift Mexico out of the fourth stage of the nutrition transition.

CHAPTER 4

CASE STUDY 2: CHILE

For a country known for its fruit production and its fisheries, it may come as a surprise to readers that Chile is the third most obese country in South America.¹⁶¹ It may come as an even greater surprise that Chile's present obesity status is not a recent development. Since the 1960s, Chile has observed a steady increase in its population's average weight, and by the 1980s, obesity levels reached such a peak that they became cause for national concern. Indeed, in a 1980 report, Chile's National Council for Food and Nutrition declared obesity to be the "principal nutritional problem of Chilean adults."¹⁶² Still, Chile's ascent into obesity and the country's nutritional transition are occurred fairly rapidly. For several decades, the coexistence of severe under-nutrition alongside over-nutrition precluded many researchers from focusing on Chilean obesity, and stopped policy makers from addressing the problem head-on. In the years that followed the 1980s, the Chilean diet became more unhealthful, and the Chilean lifestyle, more sedentary. By 2008, Chile's national obesity rate was 29.1 percent for adults,¹⁶³ 22 percent for children,¹⁶⁴ and 39 percent for Chilean adolescents.¹⁶⁵

¹⁶¹ "Country Profile: Chile," *Food and Agriculture Organization of the U.N.*, 2013.

¹⁶² *Consejo Nacional para la Alimentación y Nutrición*, "Food & Nutrition Policy in Chile," (Santiago: 1980). 22.

¹⁶³ *The State of Food and Agriculture 2013: Food Systems for Better Nutrition*. Rome: Food and Agriculture Organization of the United Nations, 2013. 78.

¹⁶⁴ "Nutrition in Chile: Global Challenges, Local Solutions," *The Economist Intelligence Unit*, 2013. 1-10. 7.

The case of the Chilean obesity epidemic is especially interesting because it occurred concurrently with important economic, agricultural, and demographic changes in the nation's history. However, because the nutrition transition is so intricately tied with these other major developments, the literature on Chilean development focuses less on the country's nutrition transition than on other changes during this period. This chapter will fill this gap in the literature by drawing connections between Chilean modernization, Chilean lifestyle changes, and the country's obesity epidemic, and will use this information to identify factors of development contributing to the country's obesity epidemic.

Patterns in Chilean Obesity

Before examining the factors contributing to the Chilean obesity epidemic, this chapter will first provide readers with relevant data on obesity patterns in Chile. Since 1987, Chile's Ministry of Health has tracked the prevalence of obesity among men and women. These surveys are not entirely representative of Chile's population, as data from early surveys on obesity came almost exclusively from urban centers and are almost always disaggregated by gender. Nonetheless, as the numbers in Table 4-1 show, obesity levels among Chilean adults have clearly increased over time. Among women, levels of obesity have increased by 125 percent since 1987; among men, obesity levels have increased by 285 percent. Whereas a small minority of Chileans was obese in the late 1980s, nearly a quarter of Chilean men and over a third of Chilean women are now categorized as obese.

¹⁶⁵ USDA Foreign Agriculture Service, "Chile Has Sixth Highest Occurrence of Child Obesity in the OECD," *Global Agricultural Information Network*, March 2, 2012.

TABLE 4-1 Obesity Rates of Men and Women over 24 Years, 1987 - 2010

	1987	1992	1997	2004	2010
% of Men	6	11	16	23.6	23.1
% of Women	16	24	23	32.1	36.2

Source: *Chile Saludable: Oportunidades y Desafíos de la Innovación*, Santiago: Fundación Chile, 2012; Fernando Vio del Rio, “The Nutrition Transition in Chile,” in *Case Studies in Food Policy for Developing Countries*, ed. Per Pinstrup-Anderson and Fuzhi Cheng, (Ithaca: Cornell Press, 2009). 115-124; Ricardo Uauy, Cecilia Albala, and Juliana Kain, “Obesity Trends in Latin America: Transiting from Under- to Overweight,” *The Journal of Nutrition*, 2001, 893-899.

The gender disparity in obesity prevalence displayed in Table 4-1 is also worth noting. As the table illustrates, Chilean women have consistently experienced higher obesity rates than Chilean males. Furthermore, the rate at which obesity has increased among men is not nearly as great as the rate at which obesity has increased among women. Whereas male obesity rates have plateaued around 23 percent, obesity rates have continued to rise among females. This trend is representative of a regional gender disparity in obesity, as well as an economic one; middle-income developing countries, particularly those in Latin America and the Middle East, observe a higher prevalence of obesity among women than among men.¹⁶⁶ This trend suggests that characteristics unique to the development of the Third World have resulted in a nutrition transition that affects the genders unequally.

¹⁶⁶ Rebecca Kanter and Benjamin Caballero, “Global Gender Disparities in Obesity: A Review,” *American Society for Nutrition*, Vol. 3, 2012. 491-498.

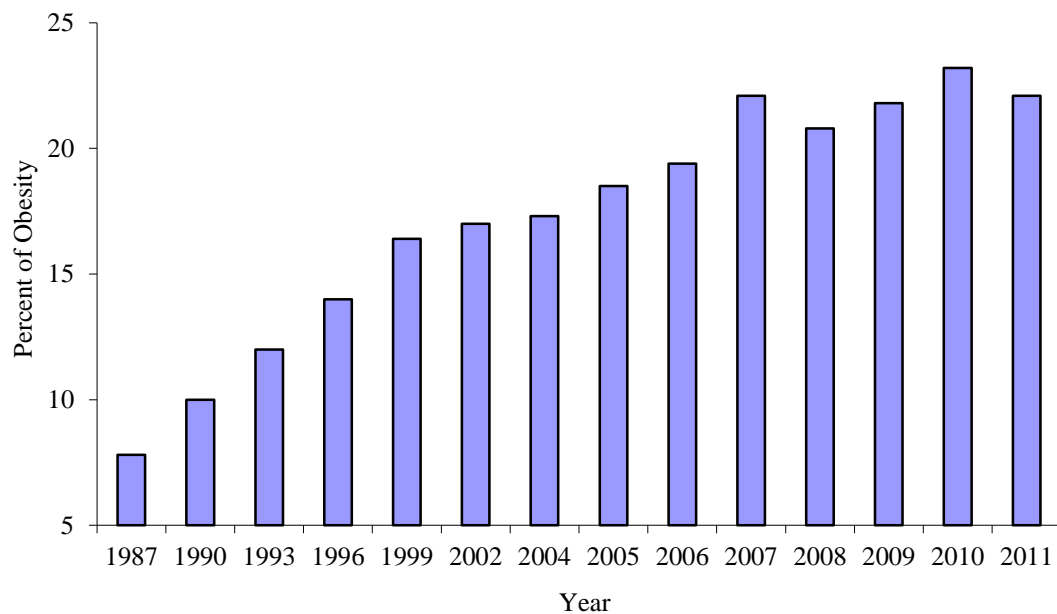
Trends in adult obesity are mirrored in rates of childhood obesity. As shown in Figure 4-1, obesity prevalence in primary school children in both urban and non-urban areas has more than tripled in the last two decades. This increase in obesity has corresponded with a significant decline in under-nutrition and malnutrition's comorbidities, such as stunted growth and child mortality.¹⁶⁷ Not only does this increase in childhood obesity echo a similar increase in adult obesity, but higher rates of childhood obesity are also a reflection of increased rates of adult obesity. In his article, "The Nutrition Transition in Chile," scholar Fernando Vio del Rio states that a child's weight is inextricably linked to the weights of their parents. According to Vio del Rio, when one parent is obese, children have a 40 percent likelihood of being obese.¹⁶⁸ This number doubles when both of a child's parents are obese.¹⁶⁹ The rates of childhood obesity in Chile have increased even more quickly than rates of adult obesity, reflecting the correlation between adult obesity rates and the prevalence of obesity among children. Chile's present rates of childhood obesity could also result in an even greater prevalence of adult obesity in the decades to come, reinforcing a cycle of popular over-nutrition.

¹⁶⁷ *Chile Saludable: Oportunidades y Desafíos de la Innovación*, Santiago: Fundación Chile, 2012. 9.

¹⁶⁸ Fernando Vio del Rio, "The Nutrition Transition in Chile," in *Case Studies in Food Policy for Developing Countries*, ed. Per Pinstrup-Anderson and Fuzhi Cheng, (Ithaca: Cornell Press, 2009). 116.

¹⁶⁹ *Ibid.*

FIGURE 4-1 Prevalence of Obesity in Primary School Children, 1987 – 2011



Source: *Chile Saludable: Oportunidades y Desafíos de la Innovación*, Santiago: Fundación Chile, 2012; Fernando Vio del Rio, “El Preocupante Incremento de la Obesidad Infantil en Chile,” *Instituto de Nutrición y Tecnología de los Alimentos*, 2013; Fernando Vio del Rio, “The Nutrition Transition in Chile,” in *Case Studies in Food Policy for Developing Countries*, ed. Per Pinstrup-Anderson and Fuzhi Cheng, (Ithaca: Cornell Press, 2009). 115-124.

As this chapter will show, Chile’s obesity epidemic has come about rapidly, and its epidemiological effects have been profound. Tracing the nutrition transition through Chile’s narrative of development will be useful in illustrating the parallel trends of economic growth, urbanization, and the rise of obesity.

An Historical Overview of Chilean Food Culture

Like most cases of mass obesity, Chile’s obesity epidemic derives its roots in part from the history of its food culture. Whereas researchers have taken a great interest in the

historical food cultures of the Incans, Mayans, and Aztecs, little is known about the culinary traditions of pre-Columbian Chileans. The traditional diets and ancient procedures of some seminomadic tribes, such as the *Mapuches* of central Chile, have been partially preserved, as the Spanish never conquered the peoples of this region.¹⁷⁰ As a result, we know that inhabitants of central Chile cultivated potatoes, beans, corn, pumpkins, and quinoa, and that these tribes used an array of spices in their food preparation, making for a number of very flavorful dishes.¹⁷¹ However, little else is known about traditional meals or crop harvesting in the rest of the country during this time.

In addition to sedentary farming, Chile holds a long tradition of fishing. Indian tribes, such as the *Alaclufes*, *Yagunes*, and the now extinct *Onas*, all settled along the coastal region, engaging in canoe sailing and seafood harvesting.¹⁷² The tribes even left archaeological evidence of their bountiful harvest; mounds of clam and mussel shells dating back to 10,000 A.D. have been found in former tribal settlements, reemphasizing the historic importance of seafood to Chilean food culture.¹⁷³ Chile's positioning along the Pacific coastline was and continues to be ideal for gathering seafood, and as a result, several pre-Columbian traditions of seafood preparation have survived. Common contemporary dishes, such as seaweed casserole and *ceviche* have their origins in ancient native food tradition.

The Spanish arrived in Chile in the sixteenth century, bringing their food traditions and foodstuffs with them. As they had in Mexico, the Spaniards brought wheat,

¹⁷⁰ Mirtha Umana-Murray, *Three Generations of Chilean Cuisine*, (Los Angeles: Lowell House, 1997). 7.

¹⁷¹ Ibid.

¹⁷² Ibid.

¹⁷³ Ibid.

livestock, and livestock byproducts (i.e. milk and cheese) to Chile.¹⁷⁴ Perhaps more so than in Mexico, the Spanish adapted to Chilean food traditions as well, particularly those involving the harvesting and preparation of seafood.¹⁷⁵ As a result, aspects of Chilean food traditions remained intact. After Chile gained independence from the Spanish in 1810, Chilean food began to incorporate dishes from all over Europe. Foods such as risotto, mayonnaise, pasta, and bread all became a part of local cuisine, with native foods continuing to slip out of the country's food culture.¹⁷⁶ This blend of foods from the New World has continued to characterize Chilean food culture into the present day.

More recently, other aspects of Chile's development have affected the country's food culture. Changes in Chilean urbanization, economic growth, and the country's demographic changes have all played a role in thrusting Chile into the fourth stage of Popkin's nutrition transition. Chile's development has rapidly changed the traditional diet to more closely resemble the "Western diet" of other obese countries. The remainder of this chapter will outline these factors of development and illustrate their relation to Chile's nutrition transition.

Urbanization, Modernization, and the Role of Urban Centers

The connection between urbanization, modernization, and obesity has been well established in literature on the nutrition transition. Research has shown that as regions become more urbanized, there are fewer opportunities for physical activity; fresh healthful food is more difficult to come by; and more people turn toward sedentary

¹⁷⁴ Ibid. 8

¹⁷⁵ Ibid. 4

¹⁷⁶ Ibid. 9

leisure activities instead of more active leisure activities or labor. Although Chile has not strayed from this pattern completely, the country presents an interesting case for studying the relationship between obesity and urbanization. Unlike many countries in Latin America, Chile was already fairly urbanized by the 1970s. Indeed, in 1970, 75.1 percent of the population already lived in an urban area. As Table 4-2 shows, this number has increased over time, but not nearly as dramatically as literature on the nutrition transition would suggest. Indeed, by the time obesity rates truly spiked, over 80 percent of Chile’s population lived in an urban center. What then, is the role of urbanization in Chile’s nutrition transition?

TABLE 4-2 Percentage of Population Living in Urban Areas, 1970 - 2012

	1970	1982	1992	2002	2013
% Urban Population	75.1	82.2	83.5	86.7	89.0

Source: Fernando Vio and Cecilia Albala, “Nutrition Transition in Chile: A Case Study,” presented at an FAO technical workshop on “Globalization of Food Systems,” Rome: October 8-10, 2003; “Field Listing: Urbanization,” *The CIA World Factbook*, accessed April 15, 2014.

First, it is worth acknowledging the increase in the urban population in the last 40 years, even if it has been gradual. As Chilean agriculture modernized at the end of the twenty-first century, farms became more industrialized and the need for sustenance and local farming decreased. As a result, many farmers were pushed out of rural areas and

into the city centers.¹⁷⁷ Second, in times of economic prosperity, specifically the late 1970s and early 1990s for Chile, urban life became more appealing. Chileans in urban areas enjoyed “easy money” during these times, and were attracted to the foreign goods, such as cars and electronics, that were cheaply available in the city.¹⁷⁸ As people moved from rural areas to cities like Santiago and Valparaiso, their lifestyles shifted toward the sedentary lifestyles that characterize urban areas.

Still, in the case of Chile, it is less the physical urbanization than the modernization associated with urban areas that really pushed Chile into its obesity epidemic. For example, with the presence of mass media and transnational companies in urban Chile, highly processed foods are much more available than in rural areas. Not only are they more available, but they are also cheaper. While processed foods are expensive in rural areas, the converse is true in cities.¹⁷⁹ Moreover, whereas grains, fruits and vegetables are the most affordable foods in rural areas, natural foods are harder to come by and less favorable in urban areas.¹⁸⁰ Because so much of Chile’s population lives in urban areas, these obesogenic factors have the potential to reach a wide swath of the Chilean population. It is therefore important to note these obesogenic factors of development exist only in urban Chile and not in rural Chile.

¹⁷⁷ Michael Duquette, *Building New Democracies: Economic and Social Reform in Brazil, Chile, and Mexico*, (Toronto: University of Toronto Press, 1999). 187.

¹⁷⁸ Joseph Collins and John Lear, *Chile’s Free-Market Miracle: A Second Look*, (Oakland: The Institute for Food and Development Policy, 1995.) 27.

¹⁷⁹ Uauay, Albala, and Kain, “Obesity Trends in Latin America,” 894.

¹⁸⁰ *Ibid.*

Economic Growth, Increased Purchasing Power, and Malnutrition

The literature on malnutrition in developing countries consistently identifies economic status as a key indicator of nutritional health. Indeed, the link between malnutrition and poverty has been so well established that it can practically be considered common knowledge. Less frequently discussed, however, is the relationship between malnutrition and economic prosperity. As has been discussed earlier in this paper, economic growth is one of the necessary conditions for a rise in obesity. It is no surprise, therefore, that Chile's nutrition transition occurred alongside major economic developments in the country's history.

Overview of Chile's Recent Economic History and its Relation to Nutrition

During the 1970s, poverty and unemployment were major problems in Chile. Throughout most of the decade, about 40 percent of the available income was distributed to only 80 percent of the country's population.¹⁸¹ As is consistent with theories on the nutrition transition, this period coincided with high levels of under-nutrition. Although both malnutrition and poverty progressively improved during the decade, Chile's economic crisis caused both an economic and nutritional setback. With levels of unemployment at record highs, food became one of the greatest expenses, particularly for the poor. Indeed, in the 1980s, more than 50 percent of a family's income was spent on food, particularly cheap and high-energy foods with high proportions of salts, fats, and sugar.¹⁸² By the end of the 1980s, Chile's economy bounced back, and economic growth

¹⁸¹ Patrick Conway and Frank Warnock, "Macroeconomic Stability and Income Inequality in Chile," presented at the Economic Development Institute's "Economic Management Training Conference." Marrakech: April 23, 1997.

¹⁸² Fernando Vio del Rio and Cecilia Albala, "Nutrition Transition in Chile: A Case Study," presented at an FAO technical workshop on "Globalization of Food Systems," Rome: October 8-10, 2003.

came to characterize the early 1990s. Incomes doubled between 1987 and 1997, increasing quality of life and allowing Chileans to purchase more cars, appliances, and processed food.¹⁸³ While overall quality of life improved, however, nutrition status in the country did not; the unbalanced, excessive food intake of the economic crisis remained, and the coexistence of malnutrition and obesity became underlying factors in a larger transitional period in the country's history, setting Chile in a classical post-nutrition-transition phase.¹⁸⁴ Since this period of growth, Chile has remained in Popkin's fourth phase of the nutrition transition characterized by poor diets and mass obesity.

Effects of Economic Growth on Consumption

Changes in Chile's economy over the past three decades have played an important role in changing consumption patterns, particularly in urban areas. As Chile's economy improved in the late 1980s and early 1990s, Chilean households across the socioeconomic spectrum experienced an increase in purchasing power. At the same time, Chile underwent a transformation in food processing technology and observed an increased presence of food manufacturers, both of which resulted in a greater availability of high-energy, processed foods. These factors in conjunction with one another resulted in a discernible shift in consumption patterns in all socio-economic groups.¹⁸⁵

The first noticeable change in consumption since the 1980s is that absolute food expenditure has increased throughout the country. Food expenditure has increased the most among lower income groups, but has also rose significantly in higher income brackets as well. Between 1987 and 2007, for example, food expenditure in the second

¹⁸³ "Nutrition in Chile," *The Economist Intelligence Unit*. 5.

¹⁸⁴ Vio del Rio, "The Nutrition Transition in Chile," 116.

¹⁸⁵ Vio and Albala, "Nutrition Transition."

lowest income quintile grew by 52.9 percent and by 42.4 percent in the highest.¹⁸⁶ This increase in food expenditure occurred across almost every food group for most incomes, although not necessarily evenly across food groups.

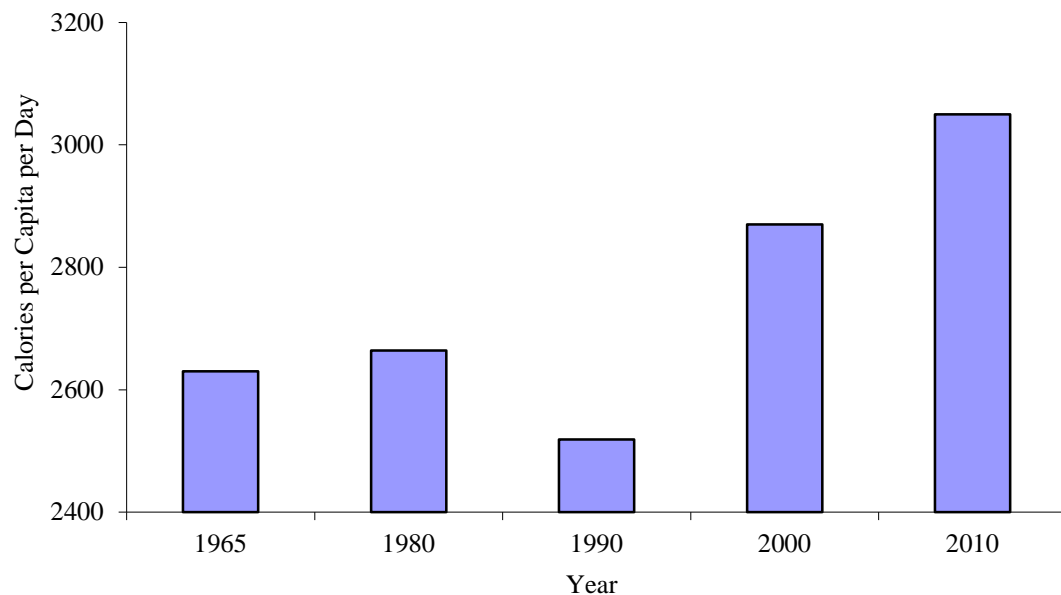
A related change is the rise in caloric intake per day. As shown in Figure 4-2, caloric intake in Chile has increased by close to 500 calories per day in the last 20 years. The graph shows the dip in caloric intake that occurred during Chile's economic crisis between 1980 and 1990, when under-nutrition once again became a serious problem in Chile. It also illustrates the upshot in caloric intake that occurred in the years after Chile's economic boom in the early 1990s, and the dramatic exponential increase in caloric consumption that has occurred since.

Finally, as Chilean purchasing power increased, so did Chilean tastes for pre-prepared foods and less healthful foods. With more disposable income, families that could previously only afford a more traditional diet could now afford items that were once luxuries, such as meat and beverages. These foods are higher in fat content, sugar, and calories. Since the 1980s, the principal components of food expenditure among the average Chilean family have been bread, meats, and soft drinks. Indeed, as Figure 4-3 illustrates, just over 60 percent of a family's food expenses are dedicated to these categories. In addition to the high levels of consumption of unhealthful foods, the consumption of fruits and vegetables is relatively low. As the chart depicts, only 15 percent of the average Chilean family's budget is dedicated to fruits and vegetables. Although the relative affordability of produce in the country may account for the low budgetary allocation towards fruits and vegetables, other data suggests that consumption

¹⁸⁶ Ibid.

of produce is low as well. According to a 2012 study by Fundación Chile, a Chilean think tank focused on social issues, only half of Chileans consume the daily recommended amount of fruits and vegetables.¹⁸⁷ This shift in food preferences and expenditures is a certain contributing factor in the higher prevalence of obesity in the country.

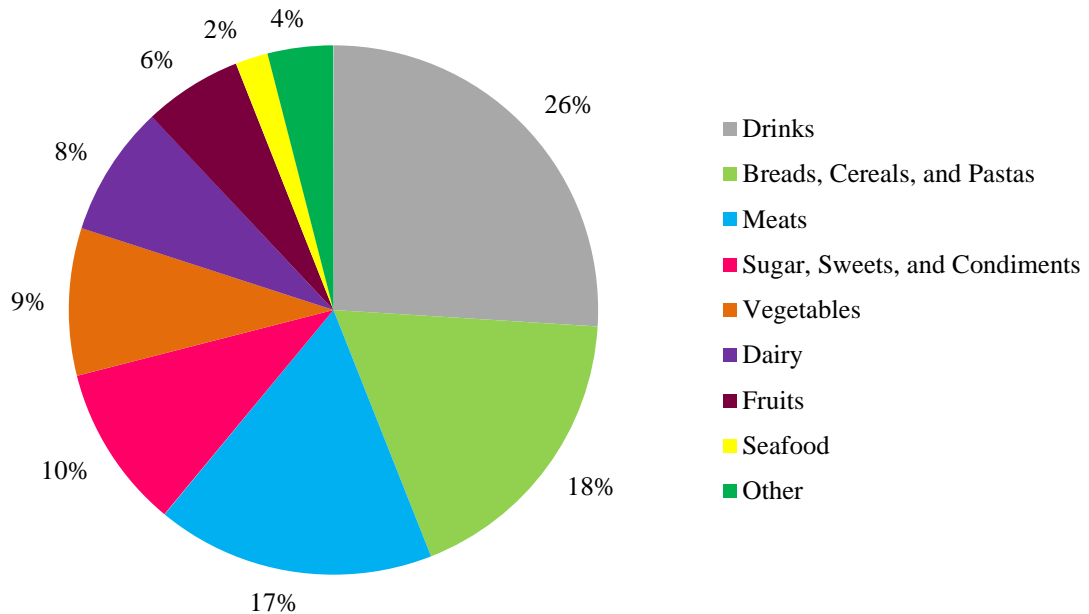
FIGURE 4-2 Caloric Intake in Chile, 1965 – 2010



Source: Fernando Vio and Cecilia Albala, “Nutrition Transition in Chile: A Case Study,” presented at an FAO technical workshop on “Globalization of Food Systems,” Rome: October 8-10, 2003; *Chile Saludable: Oportunidades y Desafíos de la Innovación*, Santiago: Fundación Chile, 2012.

¹⁸⁷ *Chile Saludable*, Fundación Chile, 41.

FIGURE 4-3 Average Food Expenditure by Category, 2007 - 2008



Source: *Chile Saludable: Oportunidades y Desafíos de la Innovación*, Santiago: Fundación Chile, 2012.

Socio-Economic Disparity in Diets

Although obesity rates are alarmingly high across all socio-economic groups, it is important to emphasize the disparity in obesity as it relates to socio-economic status. According to a paper published by The Economist Intelligence Unit, more than 35 percent of Chileans living below the poverty line are obese, as compared to 24.7 percent of middle class Chileans, and 18.5 percent in the upper class.¹⁸⁸ This disparity can be explained in part because, as in many countries, those in higher income brackets face a greater social pressure to conform to fitness and weight standards.¹⁸⁹ Additionally, with more financial resources, high-income Chileans have greater access to fitness facilities,

¹⁸⁸ "Nutrition in Chile," *The Economist Intelligence Unit*. 5.

¹⁸⁹ *Ibid.*

healthy foods, and nutrition knowledge than those with fewer resources, making it easier to avoid the effects of the nutrition transition. This disparity can be further explained by changes in lifestyle among groups who experienced a greater positive change in their income levels after the steady economic growth of the late 1980s and early 1990s. For example, data obtained in Santiago in the late 1990s showed that with more disposable income, low-socioeconomic groups bought more televisions, increasing the number of hours spent watching television to an average of three to four hours a day from one to two hours a day.¹⁹⁰

Still, those with higher incomes are not entirely separate from those in lower income brackets. As Table 4-3 illustrates, the diets of the upper class and lower classes have grown more similar over time, and have also followed similar trends. The table also illustrates, however, some very important differences in food expenditure. For example, those in the second quintile spend much more of their income on processed meats and meat products than those in the upper quintile. Additionally, the lower income quintile is exhibiting an increase in expenditure on dairy and sugar-sweetened beverages, whereas the upper quintile has exhibited no such increase. On the other hand, those in the fifth quintile spent a substantial portion of their income on foods prepared outside the home, including pre-prepared foods and fast food. The data indicates that those in lower-income brackets are consuming more animal products and greater amounts of animal fat than those in higher income brackets, while a significant proportion of the calories of those in the fifth quintile are coming from pre-prepared meals. This may help to explain the

¹⁹⁰ Vio del Rio and Albala, "Nutrition Transition in Chile."

difference in obesity rates among classes, as well as explain the nutritional causes of obesity within different income groups.

TABLE 4-3 Percentage of Food Expenditure by Income and Year in Santiago, 1986 - 2007

Income Quintile and Year

Food (% of total Expenditure)	Second Quintile			Fifth Quintile		
	1986-1987	1996-1997	2006-2007	1986-1987	1996-1997	2006-2007
Bread, Pastas and Cereals	30.4%	22.7%	22.4%	15.8%	16.9%	13.8%
Meats and Processed Derivatives	19.7%	20.4%	19.1%	20.6%	18.7%	13.2%
Dairy Products	6.7%	7.8%	7.9%	9.5%	10.0%	7.8%
Sugar-Sweetened Beverages	4.1%	9.6%	9.2%	4.0%	9.8%	7.0%
Food Prepared Outside the Home	5.0%	7.4%	12.0%	19.1%	8.2%	30.7%

Source: Mirta Corvetto and Ricardo Uauy, "Evolution of Spending on Processed Food in the Population of Greater Santiago in the last Twenty Years," *Chilean Medical Journal*, Vol. 140, No. 3, 2012; Cecilia Albala, Fernando Vio, Juliana Kain, and Ricardo Uauy, "Nutrition Transition in Chile: Determinants and Consequences," *Public Health Nutrition*, Vol. 5, No. 1A, 124-128. 126.

The U.S.-Chile Free Trade Agreement

In 2004, Chile signed the U.S.-Chile Free Trade Agreement (FTA) which made 80 percent of exports to Chile duty free.¹⁹¹ Since then, U.S. goods exported to Chile have increased by 548 percent, rising from \$2.7 billion in 2003 to \$17.6 billion in 2013.¹⁹²

Although a large portion of these exports were various forms of machinery, the agreement also opened Chile's markets to transnational food companies, food producers, and food providers. For example, since the U.S.-Chile FTA, Wal-Mart has risen as the highest grossing food distributor in Chile, representing 33 percent of the market share.¹⁹³ Currently, Wal-Mart has 277 outlets in Chile, and has serves as the primary supermarket for Chileans.¹⁹⁴ More traditional food stores, on the other hand, represent only around 18 percent of the market.¹⁹⁵

The results of the U.S.-Chile FTA can be best seen in the increase of Chilean imports from the United States between 2004 and 2010, as shown in Table 4-4. As the table shows, the U.S. has flooded Chilean markets with higher calorie food products. Although it cannot be determined whether this has altered consumption patterns, at the very least, it has increased the availability of less healthful food options.

¹⁹¹ "U.S.-Chile Free Trade Agreement (FTA)," *Export.gov*, April 9, 2014.

¹⁹² *Ibid.*

¹⁹³ Richard Hartley, "Chile: Retail Foods," *USDA Foreign Agricultural Service*, December 30, 2011.

¹⁹⁴ *Ibid.*

¹⁹⁵ *Ibid.*

TABLE 4-4 Comparative Chilean Food and Agricultural Products Imports Between 2004 and 2010

Product	U.S. Imports, % Change
Beef	362.0
Dairy Products	177.4
Pork	272.3
Poultry	1700.4
Rice	181.24
Snack Foods	29.2

Source: Richard Hartley, “Chile: Retail Foods,” *USDA Foreign Agricultural Service*, December 30, 2011.

Still, while the U.S.-Chile FTA is important to consider, its effects are not nearly as dramatic as those of NAFTA. Whereas NAFTA caused an avalanche of foreign investment, the U.S.-FTA did not radically change bilateral trade. While the agreement has still contributed to the reshaping of the Chilean food landscape, it has by no means transformed Chilean food culture in the way that NAFTA transformed the Mexican food system.

Transition Out of Tradition: The Case of the Mapuche

One methodology that scholars use to establish the link between environmental factors and obesity is to compare genetically similar populations who have experienced different levels of exposure to obesogenic environments. In Chile, this population has

been the Mapuche, a major aboriginal group who settled in the southern part of Chile's central valley and Patagonia. The Mapuche have been an ideal population with which to study the nutrition transition for a number of reasons. First, because they were not conquered by the Spanish, the traditional diet and lifestyle of the Mapuche were largely preserved after Chile's colonization. Second, the Mapuche represent a sizable minority within Chile. Chile's 2002 census indicated that five percent of Chilean adults identified as Mapuche, and many more identified as white-Amerindian.¹⁹⁶ Although researchers cannot extrapolate data on this group to the Chilean population as a whole, the group itself is a notable minority. Third, as a result of economic and social changes in the country, over a third of the Mapuche have migrated from their original rural conditions to large, urban centers, thereby offering an excellent comparison group to the traditional rural Mapuche.¹⁹⁷

Like many Chileans, the Mapuche have changed their diet and lifestyles to fit an industrialized country model. Their diet now consists completely or in large part of Western foods¹⁹⁸ or non-traditional foods, including soft drinks, refined grains, sugar, and salt.¹⁹⁹ Furthermore, with such a large proportion of Mapuche now living in urban centers, the population has adapted to the sedentary and physically inactive lifestyles typical of urban centers. Under these circumstances, the urban Mapuche, and progressively the rural Mapuche as well, have observed a greater prevalence of obesity and related diseases than they have historically. For example, between 1985 and 2001,

¹⁹⁶“Official Results of the Population Census of 2002,” Santiago: Chilean National Center for Statistics, 2002.

¹⁹⁷ Uauy, Albala, and Kain, “Obesity Trends in Latin America.” 895.

¹⁹⁸ Ibid.

¹⁹⁹ Anastasia Moloney, “Protests Highlight Plight of Chile's Mapuche Indians,” *The Lancet*, February 6, 2010.

the prevalence of obesity among the Mapuche increased by 27.5 percent, a dramatic change for a 16 year period.²⁰⁰ Statistics on the prevalence of diabetes are even more telling. In 1985, the prevalence of type-2 diabetes in both urban and rural Mapuche populations was less than one percent. However, studies conducted in the late 1990s and early 2000s found that the prevalence of diabetes had risen to 4.1 percent in rural Mapuche populations and to 9.8 percent in the urban Mapuche.²⁰¹

Although other factors, such as income and food availability, are likely to affect rates of obesity and diabetes within this ethnic group, the shift toward a modern lifestyle has indubitably promoted obesity within this population. Mapuche groups, and other indigenous populations, that have largely maintained both their traditional diet and their physically active lifestyles, are much less likely to observe changes in the rate of diabetes or in obesity.²⁰² By studying a group like the Mapuche over time, researchers can more firmly assert a causal link between particular factors of development, such as urbanization, Westernization, and the nutrition transition.

Consequences: Chile's Epidemiological Transition

The effects of Chile's development have not had an isolated effect on diets and nutrition; they have been far reaching, affecting the country's public health and spurring an epidemiological transition. Chile's rapid modernization since the 1990s had a number of positive effects on health concerns. Economic growth improved sanitation, and

²⁰⁰ Uauy, Albala, and Kain, "Obesity Trends in Latin America." 895; Francisco Pérez-Bravo, Elena Carrasco, José Luis Santos, Marcelo Calvillán, Gladys Larenas, and Cecilia Albala, "Prevalence of Type 2 Diabetes and Obesity in Rural Mapuche Population from Chile," *Nutrition*, Vol. 17, No. 3, March 2001, 236-238.

²⁰¹ Uauy, Albala, and Kain, "Obesity Trends in Latin America." 896.

²⁰² *Ibid.*

increased access to health education, potable water, and effective sewer systems, all of which nearly eliminated the communicable diseases and health problems usually associated with the Third World.²⁰³ By 2000, the number of deaths in Chile caused by infectious disease and perinatal causes were a quarter of what they were in 1970.²⁰⁴ During this period, the average life expectancy also increased, from 62 years to 80 years, an increase of 18 years.²⁰⁵ Furthermore, the prevalence of diseases related to under-nutrition has also decreased significantly. For example, in 1968, over 50 percent of children were so severely malnourished that they were below the expected height corresponding to their age.²⁰⁶ In 2008, only two percent of children were stunted, a proxy for malnourishment.²⁰⁷

As death by communicable diseases decreased in the past few decades, death by non-communicable diseases has increased. Currently, cardiovascular diseases are the primary cause of death in Chile (27.9 percent of deaths), followed by malignant tumors (24.2 percent of deaths), and other chronic diseases.²⁰⁸ Indeed, according to the World Health Organization, over 70 percent of deaths in Chile are caused by non-communicable disease.²⁰⁹ These prevalent illnesses are caused by a series of risk factors, the most important being food, nutrition, and weight. Increased consumption of fats specifically has presented a hazard for Chilean health. In the 20 year period between 1980 and 2000 alone, average fat consumption increased by 30.4%.²¹⁰

²⁰³ Vio and Albala, "Nutrition Transition in Chile."

²⁰⁴ Ibid.

²⁰⁵ "Chile Statistics," *Unicef*, last updated December 24, 2013.

²⁰⁶ *CONPAN*, "Food & Nutrition," 18.

²⁰⁷ *The State of Food and Agriculture 2013*, FAO, 77.

²⁰⁸ Vio and Albala, "Nutrition Transition in Chile."

²⁰⁹ G. Kergen and J. Dzenowagis, "Chile," *Connecting for Health: WHO Series*.

²¹⁰ Ibid.

The effects of the nutrition transition in Chile are more than just obesity; they are also the roots of a serious epidemiological shift toward non-communicable disease. While changes in consumption patterns and public health have improved some problems of malnutrition, new dietary factors are the main causes of death in Chile. Due to the rapidity of the nutrition transition and the corresponding epidemiological transition, Chile's public health system has been underprepared to address obesity and its comorbidities. Consequentially, the country has thus far been unable to curb obesity rates.

Conclusion: Chilean Policies Addressing Obesity

As this chapter has shown, obesity in Chile is a serious issue that shows no signs of changing in the near future. The epidemic is strongly connected to other aspects of the country's development and the population adjusting to new lifestyles and the affordability of more foods. With both childhood and adult obesity rates at all-time highs, obesity will not decline on its own. Because the country maintains some of the world's highest obesity rates, recently, the Chilean government has begun to address obesity with a heavier hand in response. Presently, Chile is tackling the epidemic from various angles in an effort to support healthy diets and active living. In the past ten years, the Chilean government has addressed the obesity problem creatively and comprehensively while acting as a global trailblazer in combatting obesity.

Although Chile's obesity epidemic was well underway by the 1980s, the Chilean government did not shift its resource allocation from addressing under-nutrition to addressing over-nutrition until nearly twenty years later. It was not until 1998, when the

Chilean government established the National Board of Health Promotion (VIDA-Chile), that the country adopted an aggressive strategy to combat obesity.²¹¹ In its first few years, VIDA-Chile introduced a calorie-reduction policy in Chilean schools, and incorporated greater amounts of fruits, vegetables, and fish into school meals.²¹² By 2005, however, it was clear that the country was not sufficiently reducing national obesity levels. As a result, the Ministry of Health launched a number of additional initiatives, including *Elige Vivir Sano (Choose to Live Healthily)*, a program that encourages healthy eating and frequent physical activity. The program mandated an increase in physical activity in schools from two to four hours a week, and also installed exercise equipment in public “active plazas.”

After 14 years of intensive health promotion, however, obesity levels in Chile continued to increase. As a result, in July 2012, the Chilean Senate approved the Law of Food Labeling and Advertising, an extensive regulatory framework that reformed food labeling procedure and food marketing laws. From a policy standpoint, this new law has pioneered the realms of food label reform and nutrition information reform. The law requires improved front of label packaging, including warning labels on foods defined as unhealthy; heightened regulation of food available at schools; the prohibition of marketing foods designated as unhealthy with toys and stickers; and a restriction of marketing, advertising, and sales targeted at children.²¹³ The law is the first in the world to set warning labels on foods high in fat, sugar, and salt, making the law’s tight labeling

²¹¹ “Nutrition in Chile,” *The Economist Intelligence Unit*. 6.

²¹² *Ibid.*

²¹³ C. Corvalan, M. Reyes, M. L. Garmendia, and R. Uauy, “Structural Responses to the Obesity and Non-Communicable Diseases Epidemic: The Chilean Law of Food Labeling and Advertising,” *Obesity Reviews*, Vol. 14, No. 2, 79-87. November 2013.

regulations stricter than those of most first world countries.²¹⁴ It is expected to reduce obesity levels dramatically, and is a tremendous strike at the food industry and unhealthful products.

While Chile's comprehensive anti-obesity policy platform is expected to make a significant impact on obesity rates, it is still too early to evaluate the government's success. Still, Chile's multi-sectoral approach is expected to see results. As in Mexico, Chile's obesity problem is systemic, affecting and affected by a breadth of factors of development, and therefore cannot be considered in isolation. Such a comprehensive and aggressive strategy may serve as a model for other developing countries in the future.

²¹⁴ Ainhoa Larranaga, "Chile Revises Labeling and Advertising Regulation," *European Advisory Services*, April 22, 2012.

CHAPTER 5

CASE STUDY 3: PERU

Thus far, this paper has examined two cases of countries with high levels of obesity. It has identified a number of obesogenic factors in both of these countries, and has shown how these factors arose as the countries developed. Through two related narratives, this paper has been able to speculate as to what factors of development create obesogenic environments in the region and in the Third World. However, in order to establish more conclusive evidence about the relationship of these factors to the rise of Latin American obesity, this paper introduces a third case: Peru. With an adult obesity rate of 16.5 percent (almost half of Mexico and Chile's obesity rates), Peru is the least obese country in South America and the second least obese country in all of Latin America and the Caribbean.²¹⁵ Through an examination of this case and comparing it to the previous two, this paper will identify which conditions are necessary for obesity, which conditions are sufficient for obesity, and any conditions that might limit high levels of obesity.

Beyond its title as the least obese South American country, Peru presents an interesting case for those interested in the nutrition transition. Peru has a rich food history and tradition, much of which has been maintained by the Peruvian people over time.

²¹⁵ *The State of Food and Agriculture 2013: Food Systems for Better Nutrition*. Rome: Food and Agriculture Organization of the United Nations, 2013. 78. Note: Data was not available for all countries in the Caribbean.

Furthermore, with its unique geographical makeup, the country is sharply divided into the more modern and urbanized coastal region, the largely indigenous Andean highlands, and the rural jungle region. Whereas the latter two regions adhere to an agrarian tradition, the urban population's lifestyle more closely resembles those of other Latin American urban populations. These distinct geographic regions make for clearer comparisons between urban and rural lifestyles, as well as between traditional and non-traditional lifestyles. Finally, because Peru has not arrived at Popkin's fourth stage of the nutrition transition, the country makes an excellent comparative case vis-à-vis Mexico and Chile. At the same time, Peru shows signs of progressing toward a more advanced nutritional state. Tracking Peru's progress in the nutrition transition from this point onward may therefore be useful to future scholars who are interested in studying the nutrition transition in Latin American countries. This case may also be useful for those interested in establishing preventative policies in Peru as the country continues to develop.

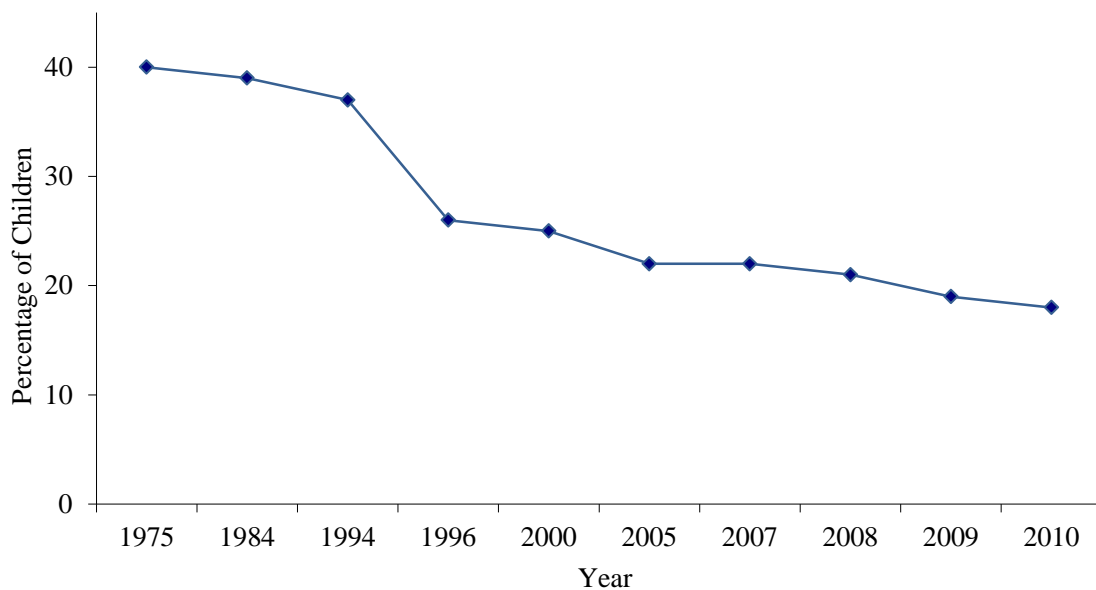
Patterns in Peruvian Malnutrition

Throughout its history and into the present, under-nutrition has plagued Peru, hindering the country's development and fostering a number of hunger-related diseases and illnesses. More recently however, Peru has seen rates of chronic under-nutrition improve, falling to historically low levels. At the same time, the rates of over-nutrition have increased as the country begins to transition out of poverty. Scholars categorize countries like Peru as regions experiencing the "double burden of malnutrition" (also described in Popkin's third stage of the nutrition transition), meaning that the country suffers from both severe under-nutrition alongside over-nutrition. In order to fully

understand Peru’s nutrition situation, it is vital to describe trends in both types of malnutrition.

Rates of under-nutrition in Peru have decreased significantly in the last 40 years, particularly in children. As Figure 5-1 shows, chronic child under-nutrition has halved since 1975. The rates in under-nourishment among women have also over halved in the last 20 years. These recent trends in under-nutrition are encouraging, and illustrate the success of Peru’s economic development programs and poverty-reduction strategy.²¹⁶

FIGURE 5-1: Chronic Child Under-Nutrition, 1975 - 2010



Source: Andrés Mejía Acosta, “Analysing the Success in the Fight Against Malnutrition in Peru,” *Institute of Development Studies*, May 2011.

²¹⁶ Monica L. Mispireta, Angel M. Rosas, Jose E. Velasquez, Andres G. Lescano, Claudio F. Lanata, “Transición nutricional en el Perú, 1991 – 2005,” *Revista Peruana de Medicina Experimental y Salud Publica*, Vol. 24, No. 2, 129-135, June 2007.

Still, although Peru has clearly progressed in reducing rates of under-nutrition, Figure 5-1 also shows that Peru has far from overcome under-nourishment. Close to a fifth of Peru's children are still chronically undernourished. Stunting rates, a proxy for under-nourishment, also remain high. According to data from the Food and Agriculture Organization of the United Nations, Peru's stunting rate is the third highest in South America at 19.5 percent.²¹⁷

While under-nutrition still reigns as Peru's greatest nutrition priority, the country has simultaneously seen a rise in obesity rates. Because obesity is a relatively recent phenomenon in Peru, there is less historical data on national obesity rates than in some other Latin American countries. Nevertheless, there are a few trends worth highlighting. First, the prevalence of childhood obesity has steadily increased in most of Peru. For example, in the four year span between 2008 and 2011, childhood obesity rates increased from seven to ten percent of school-aged children.²¹⁸

Another pattern worth noting is the gender disparity in Peruvian adult obesity. The prevalence of obesity among Peruvian women is significantly higher than it is in Peruvian men. In 2008, 21.7 percent of Peruvian women were estimated to be obese, compared to just 11.1 percent of men were estimated to be obese.²¹⁹ This pattern is representative of a larger pattern observed in the region; 29.7 percent of women in South

²¹⁷ *The State of Food and Agriculture 2013*, FAO, 77.

²¹⁸ Carolina Tarqui-Mamani, José Sánchez-Abanto, Doris Alvarez-Dongo, Guillermo Gómez-Guizado, and Sarai Valdivia-Zapana, "Tendencia del Sobrepeso, Obesidad y Exceso de Peso en el Peru," *Revista Peruana de Epidemiologia*, Vol. 17, No. 3, December 2013.

²¹⁹ "Peru: Health Profile," *World Health Organization*. accessed April 13, 2014.

America were estimated to be obese in 2008 compared to 23.5 percent of South American men.²²⁰

Of course, while the prevalence of obesity in Peru might be increasing, under-nutrition remains a significant public health problem. Unlike Mexico and Chile, Peru is truly doubly burdened by both types of malnourishment. This indicates that Peru has not progressed as far in Popkin's nutrition transition, and suggests that the degree to which various factors of development are at play in Peru is somehow different than in the previous two cases.

An Historical Overview of Peruvian Food Culture

Peru's historical food culture has stood out as a subject of fascination for scholars, and is key to understanding the country's low obesity rates. The country's exceptionally rich pre-Columbian history, its unique geography, and the preservation of and appreciation for its ancient culture and traditions have all aided and encouraged scholarship in the region. Not only has Peru's historical food culture encouraged research into Peru's past, it also very much influences the country's present. Peru's ancient diet and lifestyle, particularly the traditions of the Incas, continue to be relevant to modern Peruvian food culture and food production, much more so than in either Mexico or Chile. In order to fully understand the culture of Peru's food system today, it is necessary to paint a fuller portrait of Peru's food and agricultural history in this case than it was in the previous cases.

²²⁰ Ibid.

Traditional Peruvian Diet

The traditional indigenous diet is known to be varied and rich in nutrients, providing the Andes' inhabitants with a balance of proteins, vitamins, and amino acids.²²¹ The core of the native diet consisted primarily of two high-protein foods, quinoa and potatoes. Quinoa, a grain native to the Andes region, was vital to the native diet; indeed, quinoa was so important to the Incans that it was considered sacred.²²² The potato was also integral to the Incan diet. Farmers harvested over 4,000 varieties of potato, and frequently incorporated the tuber into traditional Andean dishes.²²³ In addition to potatoes and quinoa, the Incans integrated an array of legumes, vegetables, and fruits into their traditional diets, including different varieties of squash, berries, beans, and tree fruits.²²⁴ It is also worth noting that the Incans did not include large quantities of meat in their diets. Beyond *cuy* (guinea pig), a meat only available as a “luxury food,” animals and animal products were not incorporated into the Incan food tradition.²²⁵

Incan Agriculture

The Incan infrastructural and agricultural systems were perhaps some of the most advanced in the world at the time. In an extensive, mountainous empire with dozens of microenvironments, the Incan agricultural system was a true feat. They were master agriculturalists, systematically cultivating their crops across tens of thousands of hectares.²²⁶ The Incans purposefully bred roots and seeds, and successfully grew a wide

²²¹ Alison Krogel, *Food, Power, and Resistance in the Andes: Exploring Quechua Verbal and Visual Narratives*, (Plymouth: Lexington Books, 2011). 28.

²²² Advisory Committee on Technology Innovation, *Lost Crops of the Incan Empire*, (Washington: National Academy Press, 1989). 149.

²²³ Krogel, *Food, Power, and Resistance*, 21.

²²⁴ Advisory Committee on Technology Innovation, *Lost Crops*.

²²⁵ Krogel, *Food, Power, and Resistance*, 31.

²²⁶ Advisory Committee on Technology Innovation, *Lost Crops*, 6.

variety of crops, many of which are unknown to modern man, demonstrating their advanced agricultural knowledge. Furthermore, the Incans established the agricultural infrastructure to support massive farming structures that some archaeologists speculate were better than modern techniques for similar terrain.²²⁷ Perhaps what is most impressive is the incredible market system established by the Incas. The Empire established an extensive transportation network that allowed Indians in the region to move massive amounts of food, allowing the Incans to enjoy a varied and balanced diet and also encouraging non-subsistence agriculture.²²⁸

The Arrival of the Spanish

The Spanish arrived in Peru in 1532. Despite the impressive infrastructure that the Incans had established, the Spanish oppressed the natives, suppressing their traditions and much of their agricultural system. The conquistadores considered the Incans to be backward, and attempted to destroy and dominate the native culture. In addition to destroying much of the Incans remarkable agricultural infrastructure, the Spanish attempted to overhaul the traditional Andean diet, as they had a strong dislike for the indigenous cuisine. In the words of one Spaniard, Incan food was “so rustic and crude that there was nothing that wasn’t badly cooked, and even more poorly roasted.”²²⁹ Beyond an overall distaste for indigenous food, transforming the Indian diet was part of a larger colonization strategy. In the words of Allison Krogel, the Spanish attempted to dominate through “gastronomical colonization.”²³⁰ The conquistadores deliberately

²²⁷ Ibid. 8

²²⁸ Ibid. 6

²²⁹ Krogel, *Food, Power, and Resistance*, 6.

²³⁰ Ibid.

replaced honored indigenous crops with their own; wheat, barley, carrots, and broad beans, replaced the unique tubers, legumes and fruits of the Andes.²³¹

Still, although the Spanish for the most part disdained the indigenous diet and food system, they did incorporate aspects of the Incan diet into their own tradition. The potato, for example, quickly became a vital food source for Spaniards in the Andes, and the tuber even travelled overseas to Europe.²³² The Spanish also actively cultivated maize, calling this new crop “the wheat of the Indies.”²³³ It is interesting to note, however, that while maize became an important part of the Spanish diet, the Incans did not hold maize in much esteem, and it was certainly not a core part of the traditional Incan diet. Indeed, in the words of one Incan leader, maize made men “large bodied and fat; greasy.”²³⁴ Thus, the sense of gastronomical superiority was not unique to the Spanish. This mutual disdain for the other’s food tradition prevented a true melding of old and new diets.

Despite their active attempts, the Spanish were not entirely successful in ridding the Andes of indigenous food traditions. Indeed, the indigenous people of the Andes have preserved many of their growing techniques, as well as their diet. While some crops have disappeared from Peru, and new crops have become a part of the current Peruvian diet, indigenous food traditions maintain respect in modern Peru.²³⁵

²³¹ Advisory Committee on Technology Innovation, *Lost Crops*, 1.

²³² Krogel, *Food, Power, and Resistance*, 22.

²³³ *Ibid.* 27

²³⁴ *Ibid.* 24

²³⁵ Advisory Committee on Technology Innovation, *Lost Crops*, 12.

The Role of Traditional Food Culture in Modern Peru

Centuries after the invasion of the Spanish, many aspects of Peru's traditional food culture remain intact. The modern Peruvian diet still closely resembles the diet of pre-Columbian indigenous tribes, and as a result, Peruvians have access to a wide variety of nutritious food options. There are several reasons as to why Peru has managed to uphold its traditional food structure.

Indigenous Communities: Maintaining Ancient Tradition

As of 2009, indigenous peoples made up 45 percent of Peru's population; those of mixed Indian and white descent made up 37 percent of the national population.²³⁶

Although some of the indigenous population has followed the patterns of the nutrition transition by acclimating to the lifestyles of urban centers and emerging out of their traditional food culture, many indigenous groups have preserved their agricultural traditions, continue to participate in subsistence agriculture, and consume a traditional diet of potatoes, quinoa, legumes, and vegetables.²³⁷ The influence of indigenous tribes in Peru also remains high. As a substantial part of the population, Indian tradition, food traditions and otherwise, are pervasive across the country. Peruvians continue to eat the healthful diets of their predecessors.

However, it is important not to over-romanticize the lifestyle, traditions, and diets of Peruvian indigenous populations. Although agrarian life and traditional diets have prevented obesity in these populations, indigenous groups still suffer considerable marginalization. In 2000, an estimated 62.8 percent of indigenous families lived in

²³⁶ "The Peruvian Consumer- Behavior, Attitudes, and Perceptions Towards Food Products," *International Markets Bureau of Canada*, June 2010.

²³⁷ Ricardo Uauy, Cecilia Albala, and Juliana Kain, "Obesity Trends in Latin America: Transiting from Under- to Overweight," *The Journal of Nutrition*, 2001, 893-899. 896.

conditions of poverty, and 22 percent lived in conditions of extreme poverty.²³⁸ In this way, it is very clear that much of Peru's population still exists in Stage Three of the nutrition transition rather than in Stage Four. Furthermore, as this chapter will later discuss, the food traditions of some indigenous groups are modifying as a result of food aid intervention and urbanization. Therefore, although the traditional food culture has been maintained, malnutrition persists, and as a result, indigenous tribes might be encouraged away from their traditional diets and lifestyles.

Food Hierarchy and Identity

Although there is considerably more food diversity in contemporary Peru than in pre-Columbian Peru, the remnants of a food hierarchy remain. European foods such as white rice, bread, and pasta all enjoy a certain “allure” in market places, as they are known as a kind of “prestige” food eaten by whites.²³⁹ Furthermore, even centuries after the Spanish conquest, some Indian foods are stigmatized and are equated with lower status.²⁴⁰ Still despite European attempts at gastronomical colonization, European, “urban,” or “white” foods continue to have little appeal in the Andes.²⁴¹ Some Peruvians consider foods such as white rice and pasta as a sign of white cultural superiority, a symbol of forced assimilation.²⁴² Other less militant views include the pervading cultural sense that European foods are less “substantial” than foods like quinoa, beans, and potatoes.²⁴³ Traditional foods, on the other hand, are thought of as “good” and “trustworthy” food, “food that warms you up,” ties you to your community, and most

²³⁸ E.M. Young, *Food and Development*, (New York: Routledge Press, 2012.) 238.

²³⁹ Krogel, *Food, Power, and Resistance*, 7.

²⁴⁰ Advisory Committee on Technology Innovation, *Lost Crops*, 11.

²⁴¹ Krogel, *Food, Power, and Resistance*, 6.

²⁴² Ibid.

²⁴³ Ibid.

importantly, leaves you feeling full.²⁴⁴ While European foods maintain some novelty value, they by no means characterize the diet of the contemporary Peruvian; the Peruvians' preference lies with the traditional diet.

State of Peruvian Agriculture

Although much of Peru's population has moved into urban centers, agriculture and food production still dominate many Peruvian households' primary activities. Indeed, in some parts of Peru, time working in agriculture exceeds over 30 percent of daily activity.²⁴⁵ In the Andes and in the Jungle Region, many households continue to practice "intensive, permanent, diversified agriculture" on relatively small plots of land in dense areas.²⁴⁶ This form of agriculture is not the modernized or industrialized form of agriculture that Popkin discusses; it is much more sustenance based and small-scale. This form of subsistence agriculture shapes both Peruvian lifestyles and diets, providing the people in rural regions with active work and more healthful diets.

Women as Maintainers of Food Culture

Women have historically acted as maintainers of the Peruvian food tradition. From the Incans to the modern peoples of Peru, women have been and continue to be the primary food preparers and distributors in their homes and communities. The role of the woman as a food preparer is two-fold. First, women are the chief food providers in their households. As child caretakers, food producers, and food preparers, they are heavily responsible for the food security and nutrition of their families. Secondly, women are

²⁴⁴ Ibid.

²⁴⁵ Cherly Doss, "The Role of Women in Agriculture," *The Food and Agriculture Organization of the United Nations*, March 2011. 7.

²⁴⁶ Enrique Mayer, *The Articulated Peasant: Household Economies in the Andes*, (Boulder: Westview Press, 2002). 14.

active in the food security and nutrition of their community. Close to 30 percent of women, for example, assist in local subsistence agriculture efforts, and help to produce food for their communities.²⁴⁷ Furthermore, women play a chief role in food markets. Many tasks, such as preparing and processing ingredients to sell in the market are considered women's tasks; in this way, they are considered responsible for organizing, regulating, and stabilizing the food supply.²⁴⁸

As chief food providers, Peruvian women are responsible for the nutritional well-being of their communities. Because women are part of the traditional food landscape of Peru, they continue to prepare and provide healthful foods to their families. In considering the future of Peru's development and nutritional status, the role of women cannot be overlooked. This topic will be further discussed in the final chapter of this paper.

Role in Development

Although maintaining traditional dietary habits cannot be considered a factor of development, it is worth mentioning for the way in which it has prevented the rise of other factors of development that have arisen in Mexico and Chile. Although this chapter will discuss these factors in more detail, it should be noted here that factors such as the appeal of foreign food or the Westernization of diets have not occurred in Peru as a result of this factor. Because Peru's population has upheld its traditional diet, it has avoided the rise of certain obesogenic factors.

²⁴⁷ Doss, "The Role of Women in Agriculture," 7.

²⁴⁸ Krogel, *Food, Power, and Resistance*, 78.

Urbanization and Malnutrition

Although Peru's Andean and Jungle Regions are celebrated for their biodiversity and natural beauty, in the last several decades, Peru has also developed large, urban centers. Indeed, as Table 5-1 shows, 77 percent of Peru's population now lives in urban areas, a substantial increase from 1985. However, urbanization has not occurred ubiquitously or evenly. The majority of this urbanization has concentrated along the coastal area of the country, where the growth of Peru's vast fishing network in the 1950s transformed the coast into a zone of intense modernization.²⁴⁹ Cities such as Lima and Ica grew dramatically in this period, and have since continued to further develop and urbanize.

TABLE 5-1 Percentage of Population Living in Urban Areas, 1985 – 2010

	1985	1990	1995	2000	2005	2010
% Urban Population	66.9	68.9	70.9	72.8	74.6	77

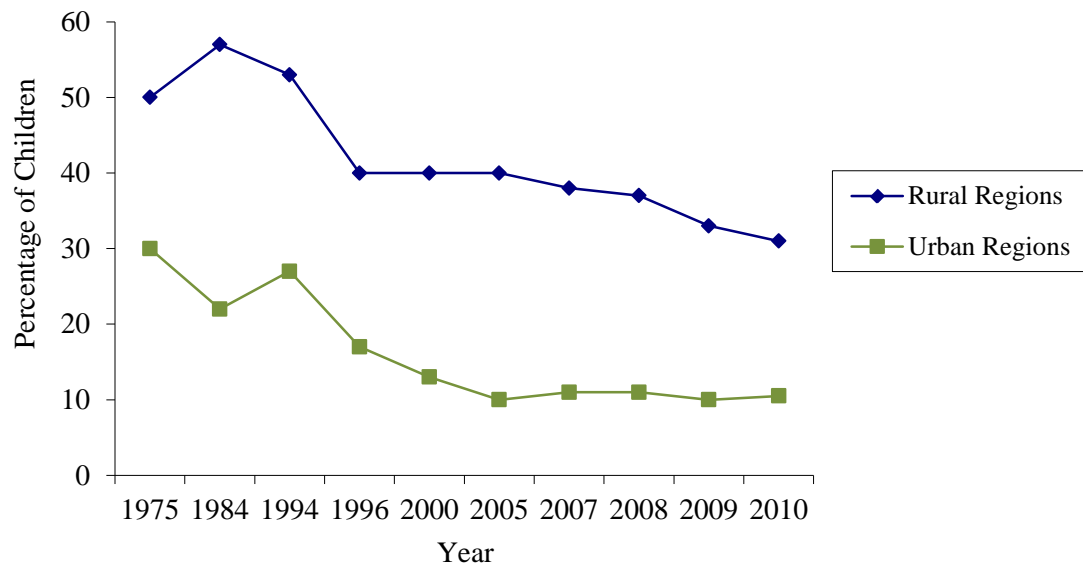
Source: "Urban Population (% of total) by Country," *The World Bank*, accessed April 15, 2014.; "Peru," *United Nations Human Settlements Programme*, accessed April 15, 2014.

The correlation between prevalence of malnutrition and geographic region has been well established in both the literature and this paper. The case of Peru is no different. Figure 5-2 depicts the disparity in under-nutrition in Peruvian children living in urban and rural areas. As the graph illustrates, the rates of under-nutrition in urban

²⁴⁹ Paul L. Doughty, "The Food Game in Latin American," in *Anthropology and Food Policy*, ed. Della E. McMillan, (Athens: The University of Georgia Press, 1989). 158.

children have been consistently lower than rates of under-nutrition in rural children. Currently, the rates of under-nutrition in rural areas are close to three times what they are in urban areas. However, it is worth noting that the rates of under-nutrition have decreased in both rural and urban populations in the last 40 years. Figure-5-2 reflects this trend, showing that since 1975, rates of under-nutrition in both urban and rural children have decreased by 20 points.

FIGURE 5-2 Chronic Under-Nutrition in Children by Region, 1975 – 2010



Source: Andrés Mejía Acosta, “Analysing the Success in the Fight Against Malnutrition in Peru,” *Institute of Development Studies*, May 2011.

Although urban centers might have a lower prevalence of under-nutrition than rural regions, urban areas must also combat malnutrition, but of a different kind. In Peruvian cities, such as Lima or Arequipa, obesity rates are comparable with those of

other global urban cities. These urban obesity rates are much higher than those in Peru’s rural regions. The World Health Organization, for example, found that the average rate of obesity among women in urban areas was at least twice as high as it was among women in rural areas.²⁵⁰ This data reinforces the patterns that this paper has explored in both Chile and Mexico, as well as patterns discussed in public health literature.

Peru’s Economic Development and Its Relation to Consumption Patterns

Peru’s economic development has been recent and rapid. As late as 2006, nearly half of Peru’s population was still living below the national poverty line; this number has halved in just the last six years. Still, Table 5-2 shows that even though poverty levels have been decreasing quickly over time, they have been consistently high in recent history. As of 2012, a quarter of Peruvians were living below the poverty line.

TABLE 5-2 Percentage of Population Living below Poverty Line, 2004 – 2012

	2004	2006	2008	2010	2012
% National Population	58.7	49.1	37.3	30.8	25.8

Source: “Poverty Headcount Ratio at National Poverty Line: Peru,” *The World Bank*, accessed April 18, 2014.

The economic status of the Peruvian population is highly relevant to its consumption patterns. Because Peruvians have historically had less disposable income to spend on luxury foods, such as sweets, soda, and fast food, they spend a great proportion

²⁵⁰ “Peru: Urban Health Profile,” *World Health Organization*, 2005.

of their income on food that are more affordable in Peru, such as fruits and vegetables.²⁵¹

This may help account for Peru's low obesity rates.

Food expenditure, of course, varies widely throughout the country. There is an important difference between urban and rural dietary habits, for example. Urban households tend to spend more on meat products than their rural counterparts; they also spend more on food and beverages prepared away from home, and on wheat and rice products.²⁵² Rural consumers, on the other hand, purchase more potatoes than urban consumers, as potatoes are cheaper in rural areas than in urban areas.²⁵³ Despite some minor regional differences, however, Peruvian purchasing habits are generally very healthful. For example, Peruvians on average spend approximately 40 percent of their food budget on fruits and vegetables, and fewer than ten percent of consumers purchase beef regularly.²⁵⁴ This data on Peruvian consumption and purchasing habits reaffirms that Peruvians have largely maintained their traditional, healthful diet.

Despite current consumption patterns, however, it is worth re-addressing Table 5-2. As the table shows, the economic state of the Peruvian population is quickly improving. As their income improves, literature suggests that Peruvians may also increase their consumption of luxury food items, such as dairy or processed foods, while also changing their other dietary habits. This hypothesis is already beginning to manifest itself within the population; in 2006, for example, 57 percent of the population over 12 reported drinking soft drinks several times a week.²⁵⁵ Furthermore, as demand for luxury

²⁵¹ "The Peruvian Consumer," *International Markets Bureau of Canada*.

²⁵² *Ibid.*

²⁵³ *Ibid.*

²⁵⁴ *Ibid.*

²⁵⁵ *Ibid.*

foods increases, the number of large supermarkets and retail food sales also increase, shifting the country towards the Westernized model of food production of the United States and Mexico.²⁵⁶ The correlation between economic status and dietary behavior is strong, and if the theories behind the nutrition transition are true, Peru might expect a flux in obesity rates in the next ten to twenty years.

Geographic Disparity in Malnutrition

One way in which to observe the effects of Peru's economic development on forms of malnutrition is to compare high income regions of the country with low-income regions. In 2012, Pia Chaparro and Leobardo Estrada performed a study in which they compared the health problems of Peru's richest departments with its poorest. They compared different stages of the nutrition transition for each department within Peru, and evaluated the presence of over-nutrition and stunting, a proxy for under-nutrition. The results showed that poorer regions had high levels of stunting and low levels of obesity, while richer regions had the inverse condition. In the Andean region's Huancavelica, Peru's poorest department, the prevalence of stunting was 54.6 percent.²⁵⁷ Other poor departments had similarly high stunting rates; Cajamarca, Huánuco, Apurímac, and Arequipa all had stunting rates higher than 35 percent. Wealthier, more urbanized regions, such as Lima and other departments located in the Coastal Region, had stunting rates below 15 percent.²⁵⁸ These departments, however, all had higher rates of obesity. Ica, Moquegua, and Tacna, for example, were all found to have a combined prevalence of

²⁵⁶ Ibid.

²⁵⁷ M. Pia Chaparro and Leobardo Estrada, "Mapping the Nutrition Transition in Peru: Evidence for Decentralized Nutrition Policies," *Rev Panam Salud Publica*, Vol. 32, No. 3, 2012.

²⁵⁸ Ibid.

overweight and obesity of more than 60 percent.²⁵⁹ Huancavelica, by contrast, had a combined overweight and obesity level of less than 30 percent.

Chapparro and Estrada's study is illuminating to those interested in Peru's role in the phenomenon of the nutrition transition. First, the study underscores the important relationship between income and nutrition. As the study plainly illustrates, the poorest regions experienced much higher levels of stunting and much lower levels of obesity than the wealthier coastal regions. Second, the study adds insight into our understanding of the role of urbanization in promoting obesity rates. Although not mentioned by Chapparro and Estrada, the poorest departments with the highest levels of stunting are also some of the least urbanized regions in Peru, whereas departments like Lima and Tacna are much more urbanized and developed.²⁶⁰ Finally, a review of Chapparro and Estrada's work would suggest that Peru has yet to enter Popkin's fourth stage of the nutrition transition. Under-nutrition and poverty pervade, and while Peru is doubly burdened with obesity, it seems relatively contained in the southern coastal region; it is not yet the experience of the country as a whole.

U.S. Influence on Peru's Food System: Free Trade and Transnational Companies

The United States has played an important political, economic, and social role in Latin America in the last century. It should come as no surprise then that the U.S. has also contributed to the shaping of Peru's food system. Through trade, aid, and its food

²⁵⁹ Ibid.

²⁶⁰ Raúl R. Vera, "Country Pasture and Forage Resource Profiles: Peru," *Food and Agriculture Organization of the United Nations*, May 2006.

companies, the United States has helped to reorganize food production systems and the agricultural landscape of Peru.

Peru Trade Promotion Agreement and the Effects of Free Trade

In 2009, the United States-Peru Trade Promotion Agreement (PTPA) went into effect, eliminating tariffs and removing barriers to U.S. exports.²⁶¹ Although the onset of the financial crisis makes it difficult to assess the implications of the law, history points to a possible series of adverse effects of free trade on developing countries. While free trade is touted as a way to raise the economic standing of developing democracies, the playing field between Western industrialized countries and the Third World remains highly unequal. In *Food and Development*, E.M. Young outlines a number of ways that free trade harms developing countries. First, Young argues that the nature of ‘free trade’ is fiction; trade rules, usually crafted by the developed country, benefit the already powerful and marginalize the less powerful.²⁶² Big businesses and stronger, wealthier governments are the primary beneficiaries of such agreements. She cites a 2002 study illustrating these unbalanced effects, wherein researchers found that OECD countries had double the subsidies to agriculture as developing countries.²⁶³ The notion of fair competition in free trade, she asserts, is completely nonsensical.

Secondly, Young writes that free trade limits the “development space” of Third World countries.²⁶⁴ She argues that free trade can in fact impede a country’s industrial or agricultural expansion by making certain policy options unavailable. Instead, developed

²⁶¹ “Peru Trade Promotion Agreement,” *Office of the United States Trade Representative*, accessed April 12, 2014.

²⁶² Young, *Food and Development*, 106.

²⁶³ *Ibid.*

²⁶⁴ *Ibid.*

countries maintain a privileged position in which they use their political muscle to advance their own economic and regional agendas. In Young's words, these policies allow developed nations to "enshrine policies that [favor] their economic development" onto less powerful nations.²⁶⁵ While this "global governance" has the potential to improve the national economic condition of a Third World country, it usually comes at the expense of empowering Third World farmers, governments, and rural populations.²⁶⁶

Peru is expected to align with the theory that Young describes. Allison Krogel, a scholar of Peru's food landscape, predicts that the PTPA will harm rural farmers. She posits that small, regional food operations that do not produce food for export will be unable to compete against the heavily subsidized foods from the United States, whose products will enter local and regional markets in bulk.²⁶⁷ Farmers who are driven out of the market by U.S. imports will either be forced out of agriculture or nudged into other agricultural markets. For example, some Peruvian farmers have already been encouraged to organically grow more obscure products in order to appeal to U.S. markets.²⁶⁸ To meet the market demands of the U.S., these farmers have been discouraged from industrializing or growing for subsistence. While a demand for products unique to Peru, such as Peruvian quinoa, could potentially mean greater profits for Peruvian farmers, it is unlikely. Transnational companies often control access to markets for "organic" products, and therefore small-scale farmers are unlikely to have the adequate resources to

²⁶⁵ Ibid.

²⁶⁶ Ibid. 355

²⁶⁷ Krogel, *Food, Power, and Resistance*, 188.

²⁶⁸ Ibid. 190

commercialize their products independently.²⁶⁹ Peru is therefore likely to experience the kind of limited development space of which Young speaks.

The Prevalence of Transnational Food Companies

In addition to transnational agro-businesses, Peru has seen a significant upshot in the number of fast food restaurants and large food providers in urban areas. Peru, like many other Latin-American countries, has been identified as an excellent emerging market for restaurants. Since 1981, U.S. food chains have been entering the Peruvian market, but it was not until recently that they have come to truly saturate urbanized Peru. Indeed, according to data compiled by Bloomberg, Peru now has the greatest concentration of eateries in the world.²⁷⁰ With the average wage of the urban worker increasing, and rates of urban unemployment falling to below ten percent in some places, American fast-food in Peru has seen adequate levels of success.²⁷¹

Still, although processed food consumption is on the rise, Peruvians do not consume high levels of ultra-processed foods compared to other countries in Latin America. Indeed, according to a presentation by the Pan American Health Organization, Peruvians buy the least amount of processed food in all of South America.²⁷² This is due to a number of factors. First, despite increased migration to urban centers, Peru is still substantially rural, which means that it is unlikely for transnational companies to expand into regions other than existing urban centers. Second, most of Peru's population still has limited purchasing power; while fast food is cheap, it is still considered a treat rather than

²⁶⁹ Ibid.

²⁷⁰ John Quigley and Ari Altstedter, "KFC Rules in Peru as Nation is Bastion of U.S. Fast Food," *Bloomberg*, October 14, 2012.

²⁷¹ Ibid.

²⁷² Miguel Davila, "Foro Seguridad Alimentaria: Desafios del Futuro y Tareas del Presente," a presentation by the Pan American Health Organization, 2013.

a staple of the diet.²⁷³ Finally, customer tastes in Peru do not lean toward fast food. Peruvians often still prefer traditional diets over Western foods, and the population frequently prefers fresh food.²⁷⁴ In addition to keeping processed foods out of the Peruvian diet, these conditions may constrain the continued spread of transnational food companies in the coming years.

The Role of International Food Aid

Despite the urbanization and economic growth that have taken place in the country, Peru has largely maintained its historically low levels of production and consumption.²⁷⁵ This trend has been reflected in other Latin American countries as well; instead of new technology positively impacting production, Latin America has seen less production as countries modernize.²⁷⁶ Of course, there are a number of factors influencing changes in production. As countries become more urban, for example, the agricultural industry becomes less dominant. However, some researchers have identified a less obvious cause of low production levels: U.S. food aid. For Peru, U.S. food aid has in many ways contributed to rather than solved economic and social problems by causing a dependency on foreign agriculture.²⁷⁷ Despite its rich resources and strong agrarian history, Peru has fallen into a cyclical trap of food assistance.

The story of food aid in Peru begins in the 1950s after a three year drought robbed the country of its agricultural productivity. In order to cope, Peru received additional U.S.

²⁷³ “Peru Country Profile,” *Food Export Association of the Midwest USA*, 2011.

²⁷⁴ *Ibid.*

²⁷⁵ Doughty, “The Food Game,” 145.

²⁷⁶ *Ibid.*

²⁷⁷ *Ibid.*

foreign assistance. Despite early concerns within the Peruvian government about the drought relief program, the United States continued to provide aid to Peru through its PL 480 Title I program. Admittedly, the United States' interests were more political than altruistic; at the height of the Cold War, the United States was primarily interested in maintaining democracies in Latin America, Peru included.²⁷⁸ However, in terms of economic development in Peru, the results have been "ambiguous at best."²⁷⁹ The main beneficiaries of the PL 480 program have been urban dwellers in the middle and upper classes rather than needier rural groups.²⁸⁰ Furthermore, the program indirectly encouraged rural farmers to move to urban areas by relieving the country of the need for food self-sufficiency and lowering urban food prices.²⁸¹ With fewer local agricultural industries and a disincentive to engage in subsistence agriculture, impoverished communities have become even more sensitive to fluctuations in global food prices, oftentimes decreasing their daily caloric intake and creating an even greater dependence on international food aid.²⁸² The result of such trends is that despite increased foreign aid, hunger in Peru among the neediest populations has been left relatively unaffected.

The effects of food aid on Peru's food system are notable. Food aid's significant presence in Peru historically has shifted production power from rural farmers to large-scale, global agro-businesses primarily from North America.²⁸³ Small, local farmers who lack the resources to compete with food aid are often forced out of business, thereby

²⁷⁸ Ibid. 159

²⁷⁹ Ibid.

²⁸⁰ *World Development Report 1989*, World Bank (New York: Oxford University Press, 1989).

²⁸¹ Doughty, "Food Game," 159.

²⁸² Sarah Edwards, "Food Aid isn't Working: Lessons from Peru," *Health Poverty Action*, December 10, 2013.

²⁸³ Michelle Davis and Sarah Edwards, "Killing Us with Hunger," *Health Poverty Action*, October, 2013. 7.

decreasing the production of more traditional dietary options.²⁸⁴ Furthermore, food aid has lacked substantial nutritional value, providing regions with high-calorie but low-nutrient foods like rice, wheat, milk, and processed foods. In rural areas, where diets are traditionally nutrient-rich, some populations have actually seen a decline in their nutritional quality.²⁸⁵ Moreover, food aid lacks cultural adaptation. For example, in the indigenous Ashaninka populations, a group with a biological sensitivity to lactose, receiving large quantities of milk in aid fails to curb hunger, and also wastefully allocates food aid resources.

Although food aid assistance programs are not entirely to blame for Peru's malnutrition, food aid complicates a number of important aspects of development, all of which affect a country's food landscape. While international food aid programs have become more efficient over time, their role in perpetuating poor nutrition and promoting less nutritious diets may be worth further examination.

Peruvian Domestic Policies Addressing Malnutrition

The Peruvian government is often applauded for the major steps it has taken to address nutrition problems, particularly in the last decade. Although progress in addressing malnutrition in the region has been "slow and very uneven," the case of Peru appears to be an "encouraging exception to the rule."²⁸⁶ Peru was one of the first countries in South America to establish an aggressive anti-hunger strategy, and the results have proven fruitful. In the coming years, however, the Peruvian government will also

²⁸⁴ Ibid.

²⁸⁵ Ibid. 17

²⁸⁶ Young, *Food and Development*, 209.

need to consider how to address the escalating problem of over-nutrition. Understanding how Peru has confronted hunger and its related diseases might help researchers predict how the country can preemptively tackle obesity in the coming decades.\

Policies Addressing Under-nutrition

In a country with prevalingly high rates of hunger and stunting, under-nutrition has taken a priority over most other public health issues. The Peruvian government had had a long history of involvement in fighting under-nutrition, beginning in 1972 with the creation of the National Office for Food Support (ONAA) and later, the founding of the Ministry of Nourishment in 1974.²⁸⁷ This momentum continued into the 1980s, when the government took a more prominent role in direct food assistance through the Direct Food Assistance Program (PAD) and the *Vaso de Leche* program, both of which were intended to benefit at risk populations.²⁸⁸ ONAA also coordinated local direct feeding programs run by neighborhood organizations and NGOs.

Despite the political drive behind nutrition programs, Peru did not see any major reduction in stunting rates or hunger early on. Between 1975 and 1990, Peru saw less than a five percent decrease in stunting rates, from 40 percent of children under five to around 37 percent.²⁸⁹ By 2002, Peru was spending over \$250 million on nutrition programs, but to little avail.²⁹⁰ One related factor was poor allocation and targeting of government resources. Specifically, government money was funneling into already healthy districts, leaving the poorest and most destitute districts without sufficient

²⁸⁷ Andrés Mejía Acosta, "Analysing the Success in the Fight Against Malnutrition in Peru," *Institute of Development Studies*, May 2011. 20.

²⁸⁸ *Ibid.*

²⁸⁹ Daniel Cotelear, "A New Social Contract for Peru: An Agenda for Improving Education, Health Care, and the Social Safety Net," *The World Bank*, January 2006. 9.

²⁹⁰ Acosta, "Malnutrition in Peru," 20.

government aid. In 2000 for example, close to a third of the most stunted regions received no nutrition services, whereas nearly half of districts with a low prevalence of stunting received services. Although programs were highly visible and pervasive, the government failed to develop a focused and targeted approach, and as a result, Peru's poor did not see an improvement in their diets or lifestyles.

In the last decade, however, the Peruvian government has altered its programs and bureaucracy to radically reduce stunting rates and tackle under-nutrition head-on. With the support of the donor community and a number of international organizations, the Peruvian government was able to improve its national coordination structures and increase spending on nutrition and social programs. In 2007, the government established CRECER, a coordinated, multi-sector poverty reduction strategy. The strategy was comprehensive, addressing not only hunger, but also water sanitation and family-level poverty reduction as well.²⁹¹ This change in strategy has already started to lead to results; in 2010, chronic malnutrition rates fell to 17 percent nationwide.²⁹²

Policies Addressing Over-nutrition

It was not until recently that Peru's government took a stand against obesity and unhealthy eating. In May of 2013, Peru's president Ollanta Humala signed a bill into law that is intended to curb the advertising of junk food to children. Specifically, the law regulates advertising fatty foods and soft drinks in schools, and sets the groundwork to ban some junk food in schools altogether.²⁹³ The law also plans to set up stands to sell

²⁹¹ Ibid. 22

²⁹² Young, *Food and Development*, 209.

²⁹³ "Peru Cracks Down on Junk Food in Schools," eNCA, May 17, 2013.

more traditional, healthy foods in schools, such as quinoa.²⁹⁴ Although there was discussion within Humala's administration of establishing a tax on junk food, Humala's move to reduce junk food advertising is really the government's first major step in addressing increasing obesity rates.

Significance of Nutrition Policy in Explaining Low Obesity Rates

Although this paper has shown that the causes of obesity are complex and interrelated, the government's approach to nutrition policy may help to explain malnutrition in Peru, as well as assist researchers in projecting the future of the country's nutrition status. Unlike many of its neighbors, Peru has only seen a rise in obesity in recent years. The country's relatively ineffectual attempts to address chronic malnutrition allowed widespread under-nutrition to persist well into the 1990s. As a result, obesity was comparatively not a public health issue and therefore not made a public health priority. Now that obesity is becoming an increasing concern for the Peruvian government, it is able to rely on the policy experiences of its South American neighbors. Humala's anti-junk food stance, for instance, comes at an early stage in Peru's obesity story, and if they can follow the lead of countries like Chile in creative and large-scale obesity policies, Peruvians may avoid the frighteningly high obesity rates of much of Latin America.

Conclusion: The Double-Burden of Malnutrition

The effects of the nutrition transition are not ubiquitous in Latin America. Indeed, as this case study shows, Peruvians have largely maintained their traditional lifestyle,

²⁹⁴ Ibid.

diet, and food culture. A number of factors have helped to preserve Peru's healthful food tradition. First, Peru's unique and elaborate indigenous history suggests that Indians did not adapt to Spanish food culture as much as the indigenous groups of other regions. The traditional diet has been revered in Peru and has served as a source of pride to its people. It has therefore been preserved. Second, Peru's distinct geographical divides and mountainous terrain have left much of rural Peru untouched by the effects of modernization and urbanization. As a result, the rural lifestyle of subsistence agriculture and healthy eating has remained intact. Finally, the average Peruvian has historically had less disposable income to spend on processed foods and luxury foods, such as meat and dairy. Although this has perpetuated, and continues to perpetuate, under-nutrition in parts of the country, it has established a culture of healthful, traditional eating.

Peru currently exists in what scholars have called a "double-burdened state." The population is plagued by not only under-nutrition and communicable disease, but increasingly by obesity and its accompanying comorbidities. As Peru settles into Popkin's third stage of the nutrition transition, the country will continue to face both kinds of malnutrition. It should therefore not be assumed that Peru is immune to the effects of a nutrition transition. Peru like most of the Third World is continuing to modernize and urbanize, two factors that have been shown to increase the prevalence of obesity. Although the effects of Peru's development have not manifested themselves as clearly in Peruvian nutrition habits as they have in those of Chile and Mexico, Peru is still experiencing a national weight gain. For example, while the rates of Peruvian obesity may be comparatively low, the number of Peruvian adults who are overweight is increasing steadily; a 2004/2006 survey for instance found that close to 40 percent of

Peruvian adults aged 18-75 were overweight.²⁹⁵ Furthermore, rates of childhood obesity in Peru are also rising; currently, over 20 percent of school-aged Peruvian children are either overweight or obese.²⁹⁶ This number is twice as high as it was in 2000.²⁹⁷ Moreover, poor eating habits and obesity have already started affecting Peru beyond the individual's level of health. A 2012 article in *Peruvian Times* claimed that non-communicable diseases associated with unhealthful eating and obesity, such as diabetes and high blood pressure, are costing Peru over \$8 billion a year.²⁹⁸ If these levels are not reversed by government intervention or other development policy, Peru could potentially transition into an obesity epidemic in the coming decades.

²⁹⁵ "Overweight and Obesity in South America," *Obesity HQ*, 2012.

²⁹⁶ Jaime Pajuelo Ramirez, "La Obesidad en El Peru: Estadísticas y Perspectivas," presentation for students at Universidad Nacional Mayor de San Marcos, Lima 2010.

²⁹⁷ "De Cada 100 Niños Obesos 30 Presentan Resistencia a La Insulina," Ministerio de Salud, November 13, 2011.

²⁹⁸ "Poor Eating Habits Cost Peru \$8 Billion Per Year," *Andean Air Mail & Peruvian Times*, January 5, 2012.

CHAPTER 6

CONCLUSION

Through a thorough analysis of three case studies, this paper has demonstrated that the obesity epidemic is not limited to just the United States or a handful of industrialized countries in the First World; it is a growing, international pandemic with environmental and structural causes. By tracking the nutritional history of three case studies against the nutrition transition framework, this paper has shown the way in which obesity evolves alongside different factors of development. Furthermore, this comparative analysis has been able to identify specific factors of development that are necessary conditions for high obesity rates, as well as explain why and how these factors contribute to a growing obesity pandemic. In doing so, this paper has contributed to existing literature by painting a fuller portrait of not only the obesity pandemic, but also of development theory.

Results

Table 6-1 illustrates the results of this study. The rows represent the most important factors of development discussed in this paper. An X indicates that the factor was present in the country. When the factor of development was present in both Mexico and Chile but not in Peru, this suggested that the factor was necessary for obesity. When the factor was present in either Mexico or Chile but not in Peru, this suggested that the

factor was sufficient for obesity. When the factor was present in Peru but not in Chile or Mexico, this suggested that the factor was preventative of obesity. When the factor was present in all three cases, or when the factor was present in either Mexico or Chile and also in Peru, this suggested that the factor did not contribute to or prevent obesity. The exception here was the “Healthful Traditional Diet” factor, which was preventative to obesity in all three cases.

TABLE 6-1 Presence of Factors of Development in Mexico, Chile, and Peru

	Mexico	Chile	Peru
Healthful Traditional Diet	X	X	X
Abandonment of Traditional Diet	X	X	
Industrialization of Agriculture	X		
Urbanization	X	X	
Economic Growth		X	
Trade Liberalization	X	X	X
Presence of Transnational Food Companies	X		X
Unhealthy Status Food	X		
U.S. Food Aid			X
Traditional Women’s Roles			X

Necessary Conditions

This study showed that two factors of development were necessary for high obesity rates. The first factor was Abandonment of Traditional Diets. In both Mexico and Chile, research showed that in general, people in these countries no longer consume healthful, pre-modern diets. Peruvian consumption patterns on the other hand still very closely resemble those of their pre-Columbian ancestors. The second necessary factor of development was Urbanization. In Mexico and Chile, two countries that are very urbanized and have been urbanized for several decades, obesity rates are much higher than in less recently urbanized Peru.

Sufficient Conditions

This study revealed three factors of development to be sufficient for high obesity rates. In Mexico, both Unhealthy Status Food and the Industrialization of the Agricultural Sector contributed to higher obesity rates. However, because these factors were not found in Chile, they cannot be considered necessary for obesity. Similarly, rapid economic growth quickly increased the prevalence of obesity in Chile. This factor was therefore sufficient for obesity in this study.

Preventative Conditions

There were two factors observed in Peru that were not observed in Chile or Mexico. First, women in Peru have largely maintained their role as food preparers and providers. Second, Peru has historically received substantial food aid from the United States and international organizations. Because neither of these factors was observed in the first two case studies, this paper's findings suggest that these two factors of development might prevent high obesity rates.

Discussion

As this paper has shown, the narratives behind each factor of development are vital to understanding the factor's contribution to an obesity epidemic. In comparing the narratives of three different countries in the same region, this paper has not only identified contributors to the Latin American obesity pandemic, but has also illustrated how these factors are a part of a larger story about a transition away from health and tradition toward unhealthful lifestyles and obesity. In order to understand the value of this paper's results, this section will highlight a few identified factors of development.

The Role of the Traditional Diet

As all three cases showed, traditional consumption patterns and lifestyles are closely related to health and non-obesogenic diets. Populations that have retained a varied diet of primarily fruits and vegetables have not observed the increased obesity rates of their transitioned counterparts. When populations abandon their traditional diet as a result of urban development, economic growth, or other environmental pressures, they are highly likely to adopt an obesogenic diet and lifestyle.

Of course, as the theory of the nutrition transition highlights, maintenance of traditional diets is generally aligned with a higher prevalence of disease, poverty, higher rates of under-nutrition, and shorter lifespans. Although the composition of the traditional diets is better balanced and more varied, it is unrealistic to propose that families retain a grueling agrarian lifestyle in order to uphold such diets. As globalization increasingly exposes the developing world to the industrialized West, the forces that compel populations to abandon tradition become ever the more present. It is therefore

unsurprising that the people of both Mexico and Chile, as well as people in other parts of the developing world, have shifted toward a different diet.

Urbanization and Regional Disparities in Obesity

This study has shown that consumption patterns in rural and urban areas are dramatically different from one another. Whereas rural diets consist of traditional foods, fruits, and vegetables, urban diets are comprised of processed foods, soda, dairy, and meat. This paper demonstrated this idea through a comparative analysis of case studies, showing that in the more urbanized countries, Mexico and Chile, obesity rates were higher than in the less urbanized country, Peru.

This factor of development was not only shown in the comparison of the country cases, but was also shown in each country internally. A major difference in diet composition and obesity rates was found between the rural and urban regions of each country, including Peru. This paper concludes, therefore, that urbanization is one of the most significant factors contributing to obesity.

Economic Growth and Socioeconomic Disparities in Obesity

The case of Chile demonstrated the link between economic prosperity and obesity. The case study showed that as a country's economy grows, the population consumes more calories and more unhealthful food. When compared with Peru, a country with a much lower GDP and a higher percentage of people living below the poverty line, the case of Chile emphasizes the role of economic factors in creating obesogenic environments.

Although this study initially set out to examine the effects of economic growth on obesity, it also revealed an important relationship between socioeconomic status, diets,

and weight. Although no dramatic spike of economic growth has occurred in either Mexico or Peru in the recent past, there is still a positive relationship between income and weight such that as income increases, weight also increases. Research showed that this was in part related to dietary differences between people of different socioeconomic statuses, as well as regional differences (i.e. urban regions had a higher concentration of affluence than rural regions). Because continued economic growth can be expected in both Mexico and Peru, increased obesity rates in both countries seems inevitable.

Trade Liberalization

In both Chile and Mexico, trade liberalization and changes in consumption patterns occurred concurrently. Although the nature of this study cannot confirm a causal relationship between free trade and obesity in either Mexico or Chile, both the evidence presented in this paper and the literature on trade liberalization advance the idea that free trade between developed and developing countries can promote obesity in the Third World. The U.S.-Chile FTA, and to an even greater extent, NAFTA were partially responsible for the changes in diets that occurred in the 1990s and early 2000s in Chile and Mexico respectively.

One element of free trade worth underscoring is the relationship between trade liberalization and the presence of transnational food companies. Trade liberalization makes it easier for transnational food companies to enter Third World markets. Because they have a strong competitive advantage in these markets, transnational food companies come to saturate developing regions and drive out local competition. As a result, these companies are able to transform a country's food landscape, and reshape the way populations eat.

Concluding Remarks: Nutrition-Sensitive Policy, Food Sovereignty, and Third World Development

One of the primary goals of this paper was to bring to light the relationship between development, nutrition, and obesity. In doing so, this paper established that obesity is a global health problem, a veritable pandemic that requires the attention of health policy makers and developmental theorists alike. This comparative work synthesized several interdisciplinary sources and applied data to create a narrative about how development has contributed to the spread of obesity. Such a work naturally begs a number of questions: what should be done to address this problem? How can governments put a halt to the obesity pandemic, and prevent its further spread? How can we employ our knowledge about the progression of the nutrition transition in such a way that would improve dietary habits and prevent the construction of obesogenic environments?

As this paper has discussed, Mexico, Chile, and Peru have all attempted to address these quarries through the creation of policies specifically targeting obesity and malnutrition. Although it is too early to evaluate the success of the aforementioned policies, the efforts of these countries' governments must be commended. Acknowledging the pandemic and attempting to reverse it is laudable and worthwhile. However, government policy alone is not sufficient for stopping the growth and spread of obesity; the problem needs to be confronted at a much more fundamental level.

In order to tackle the obesity pandemic head-on, a re-conception of our understanding of development is required. For several decades, development has been conflated with industrialization, urbanization, and the rise of multi-national corporations.

This Western conception of development has historically been promoted in the developing world by the United States and international organizations, as they attempt to progress the Third World into modernization. However, this notion of development has posed harm to both the First World and the Third World. As this study has shown, factors typically associated with development have been found to promote and create obesogenic environments. Progress in terms of the factors of development mentioned in this paper may create countries that more closely resemble the First World, but they also simultaneously generate significant public health problems and spread the issues facing the First World into the developing world.

Moreover, the Western conception of development in many ways strips the Third World of its food sovereignty. While urban expansion, economic growth, and opportunities for women, for example, are all objectively positive aspects of development, the development process also currently entails changes to the Third World's food landscape that have hurt traditional culture, local producers, and health. As it stands, developing nations are frequently not in control of their own food-producing systems or food retailers; as a result, the First World reshapes healthful food cultures to more closely mirror its own industrialized systems, consequently spreading its food culture's flaws into other regions

Although this study has focused specifically on Latin America, the author does not find these conclusions limitable to just this region; as obesity rates steadily increase around the globe, it is important to consider how we define development as well as understand how different factors of development can contribute to greater public health problems.

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