Can farmers’ markets simultaneously address food and farm security? A case study of San José, Costa Rica.
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<th>Acronym</th>
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<td>ACC</td>
<td>Administrative Committee on Coordination</td>
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<tr>
<td>CAC</td>
<td>Centros Agrícolas Cantonales</td>
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<td>CATIE</td>
<td>Centro Agronómico de Investigación y Enseñanza.</td>
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<td>CIAT</td>
<td>Center for Tropical Agriculture</td>
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<td>CNP</td>
<td>Consejo Nacional de Producción</td>
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<td>EBAIS</td>
<td>Los Equipos Básicos de Atención Integral en Salud</td>
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<td>EBT</td>
<td>Electronic Benefit Transfers</td>
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<td>FMNP</td>
<td>Farmers’ Market Nutrition Program</td>
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<td>FSA</td>
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<td>Programa Integral de Mercadeo Agropecuario</td>
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<td>Supplemental Nutrition Assistance Program</td>
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1. Introduction

Food security is an issue of global importance with almost 800 million worldwide who suffer from undernourishment (FAO, 2015a). There have been important advancements recently, most notably in developing regions. But these advancements are tempered by increasing political instability and growing economic inequality. The vulnerability of the global food system is also a concern as evidenced from the food price spikes in 2008 and 2011, which caused temporary but significant issues with food security (Brown, 2011). These events underscore the need to secure economic and physical access to adequate and nutritious food for all populations, and in particular for the poor and marginalized.

Some experts forward farmers’ markets as a way to address food security particularly since they have the potential to tackle both rural and urban food security (Guthman, Morris, & Allen 2006). Vendors can earn a livelihood from the sale of their produce, while also potentially gaining access to other vendors’ produce via trade or sale. At the same time, consumers have the possibility of accessing high quality and nutritious foods. Some have noted that farmers’ markets may not be the best way to address food security given the different interests of consumers and vendors; the former want low prices and the latter want high prices. Rather, farmers’ markets can serve as one component in a suite of measures to address food security. Moreover, the different social contexts in which farmers’ markets are embedded will alter the degree to which they may address food security.

A unique feature of farmers’ markets is that they may simultaneously address farm security by providing an economic livelihood for smallholder farmers. Smallholder farmers are a particularly vulnerable group, which faces physical and financial difficulties stemming from the wear and tear of farming practices and the uncertainty of a reliable income. Moreover many neoliberal policies over the last several decades have taken a particularly noteworthy toll on smallholder farmers. Policies that used to guarantee prices, provide beneficial credit arrangements, and important input subsidies have largely been reduced or dismantled. Farmers’ markets may be one venue that still allows smallholders to gain decent prices for their produce, particularly in the Global South.

Costa Rica provides an interesting case for studying the extent to which farmers’ markets address both food and farm security, as there has yet to be significant research conducted on this
topic. Farmers’ markets in Costa Rica are the most popular venue to acquire fruits and vegetables in the country (PIMA, 2013). Costa Rica also has a celebrated smallholder farmer legacy; Costa Rican scholar Carlos Monge Alfaro wrote, “We consider the farm laborer a great figure, worthy of reverence and deeper love, for he gave Costa Rica the fundamental basis of what would in time become its rural democracy” (Berube, 2012). Important policy changes since the 1980s, however, have eroded many of the programs supporting these smallholders. Costa Rica is quickly urbanizing and the prevalence of food-related health issues such as obesity and diabetes are increasing (PIMA, 2013). Moreover, poverty rates and income inequality continue to rise (INEC, 2014). In this context, it is important to understand the potential role farmers’ markets play in addressing food and farm security and how they can be strengthened to better address these issues.

This research report examines to what extent farmers’ markets in urban Costa Rica address the dual goals of food and farm security. It begins with an overview of the three main concepts of the report: food security, farm security and farmers’ markets. Then each of these terms is discussed in reference to Costa Rica. Section 4 details the research methods and analysis. Section 5 presents the results, which are then discussed in greater detail in Section 6. Section 7 concludes the study with a series of policy recommendations.

2. Conceptual Review

2.1. Food Security

Food security is a concept that has evolved significantly over time. In a now dated review of the term, Maxwell and Smith (1992) identified over 200 different definitions. This speaks to the difficulty in succinctly describing what is a highly contested global phenomenon, but which takes on different meanings depending on many contextual and scalar factors. Often the common definition at a particular time reflects biases and the dominant contextual factors of that period. For example, during the 1974 global food crisis, the definition of food security placed an emphasis on food distribution and stable food prices: “the availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (UN, 1975). This definition reflected a time of global shortages in food and focused on production reliability and global aggregate food supplies (Maxwell & Smith, 1992). It underscored the susceptibility of food supplies to the changing global market and the need for food reserves that could withstand population and price fluxes.
While this definition recognized the need for the global community to adapt to fluctuations in food availability, it failed to take into account the importance of food preferences and nutrition, and how these vary by country and region. Moreover, it failed to address inherent issues of scale and the role of a global political economy.

The 1996 World Food Summit refined the definition with the aim of creating a universal, coherent, and comprehensive approach to tackling barriers related to achieving food security. Increased interest in food security throughout the 1980s and 1990s can be attributed to the impact of the African Famine of 1984-1985 and concern surrounding the impact of structural adjustment programs on the global poor. As a result, the emphasis of food security shifted from global aggregate supply to concerns regarding regional and household access to food and the vulnerability of different populations (Maxwell & Smith, 1992). The process of amending the previous definition was negotiated by international leaders resulting in what is now the most commonly referenced definition of food security: “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” (WHO, 2015). Not only did this updated definition highlight a misconception surrounding food security - that sufficient food in itself is enough to achieve food security - but it both shifted focus to the neglected issues of access and nutrition.

Today it is commonly understood that food security has three main dimensions: availability, access and utilization. Availability refers to the presence of sufficient quantities of food on a consistent basis (WHO, 2015). Access involves having sufficient resources, both physical and economic, to obtain food (WHO, 2015). Utilization refers to both the way the human body is able to absorb nutrients from food and how nutrient value is dependent on non-food factors such as good sanitation, diseases, and access to health care (Pinstrup-Andersen, 2009). The 1996 definition of food security highlights the importance of meeting individual nutrition and dietary needs and incorporating food preferences. Food insecurity should not be associated with only limited access to food but also limited access to nutritious food. In other words, a sufficient amount of food in a particular region does not equate to household accessibility to calories nor does it guarantee that those calories are healthy and nutritious. Additionally, the cultural appropriateness of available food and the understanding that different cultures and communities have diverse nutritional requirements is an important aspect of food security.
The temporal dimensions of food security add another element to food security analyses. Food insecurity can exist as a chronic condition (when the inability to meet food needs is constant and ongoing) or transitory condition (when the inability to meet food needs is nonpermanent) (Maxwell & Frankenberger, 1992). Transitory food insecurity is further divided into two subcategories: cyclical and temporary. Cyclical refers to regular patterns of food insecurity that appear at somewhat predictable times of the year, for example, the season right before harvest. Transitory, on the other hand, refers to short-term food insecurity caused by sudden events like droughts, floods, natural disasters or even war (Hoddinott, 1999). Because of these variables, levels of food security need to be continuously measured in order to determine the current food security status of a given household (FAO, 2008).

Food security can be analyzed at different scales, with particular facets of food security being more relevant for a given scale. For example, an analysis of food security at the national scale may focus on overall food availability while an analysis of food security at the household level is likely to be more concerned with food access and utilization (Maxwell & Smith, 1992, p. 8). The scalar dimensions of food security can also lead to seemingly contradictory findings. A national-level analysis may find sufficient food available to feed the population but due to issues with access and utilization, sizable portions of the population may be food insecure. Therefore, it is important to understand the particular scale of a food security analysis, and to keep in mind that food security at one scale does not ensure it at another.

2.2 Farm Security

The term “farm security” is rarely used in the academic literature. However, we find the term useful because it generally refers to a suite of conditions necessary for farming households to sustain their livelihoods despite multiple pressures. The first reported use of the term was in the United States, when the U.S. government created the Farm Security Administration (FSA), a program that lasted almost a decade. The purpose of the FSA was to alleviate the severe rural poverty that farmers were facing in the U.S. during the 1930s (Baldwin, 1968). The FSA was established in September 1937 as one of Roosevelt’s New Deal programs and focused mostly on rural rehabilitation (Roberts, 2013).
More recently, Guthman, Morris, and Allen (2006) in *Squaring Farm Security and Food Security in Two Types of Alternative Food Institutions* use the term farm security in a general sense to discuss the role farmers’ markets in California play in securing livelihoods, although they fail to explicitly define or conceptualize the term. They identify financial gain from the sale of farm products as one of the most important aspects of farm security but simultaneously identify high input costs, high labor requirements and the ability to receive a “good price for their produce” as key challenges to farm security (Guthman et al., 2006, p. 679). They also note that farmers are an extremely vulnerable group who put at risk their own health and security by not paying for health insurance and exploiting their bodies to secure a livelihood. Significantly, they argue that direct markets and specifically farmers’ markets, can address some of these concerns by providing an outlet for farmers to earn more for their produce.

While the concept of farm security is rarely used, the related concept, “sustainable livelihood,” has been used with greater frequency and analytical precision. A sustainable livelihood refers to “the capabilities, assets (including both material and social resources) and activities required for a means of living… [and] is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base” (Scoones, 1998, p.5). This definition draws on earlier work by Chambers and Conway (1992), which defines livelihood strategies as the manner in which individuals and households achieve their means of living, including nourishment and tangible and intangible assets (Chambers & Conway, 1992; IFAD, 2014; Roberts, 2013). Scoones expands and clarifies this earlier work to incorporate employment and poverty reduction with sustainability. Scoones (1998) also mentions a variety of livelihood strategies, such as livelihood diversification, that are employed to achieve livelihood security. Diversification contributes to the security and sustainability of rural livelihoods because it improves resilience to unexpected or seasonal events that arise from a variety of different phenomenon including among others climate change, bad weather, or price fluctuations (Ellis, 1999; Scoones, 1998). Seasonality creates insecurity because it causes rises and falls in farm productive activities, while consumption demands remain constant (Ellis, 1999). Farm security, therefore, may not be achievable for some without securing other sources of income generating activities.

The concept of sustainable livelihoods is useful as an analytical framework since it identifies specific resources for the development of livelihood strategies. We draw from the
sustainable livelihoods framework to identify specific resources useful to achieve farm security. These resources are referred to as forms of capital. Scoones (1998) identifies four types of capital: (1) natural capital, which refers to natural resource stocks, services, and flows; (2) economic or financial capital, which refers to the capital necessary to advance a livelihood strategy; (3) human capital, referring to knowledge-related resources, health and labor; and (4) social capital, which refers to relationships and networks.

Though all forms of capital are important for achieving a sustainable livelihood and farm security, in this report we mainly focus on (2) economic or financial capital, and (4) social capital, since these are the forms of capital that farmers’ markets are most likely to address. Specifically, we analyze how farmers’ markets may improve the economic capital of farmers by providing a reliable and potentially higher source of income for their produce. Other studies have also identified farmers’ markets as a key mechanism for farmers to receive a higher price for their produce (Markowitz, 2010; Sommer, Wing & Aitkens, 1980; Griffin & Frongillo, 2003). In addition, we focus on social capital to determine whether and how farmers’ markets may serve the purpose of improving farmer livelihoods via intra-market relationships.

We analyze these two forms of capital for their contribution to sustainable livelihoods but we continue to use the term farm security both for its congruency with the other main concept of the report, food security, and since it can also refer to attributes outside of the sustainable livelihoods framework which affect the persistence of smallholder farming. As Scoones (2009) notes, the sustainable livelihoods framework and its focus on capitals neglects the processes of economic globalization and structural changes in rural economies, among others, which significantly affect smallholder farming households. The term farm security and the orientation of this report place an emphasis on the historical dimensions that affect smallholder farmers, including changes in macroeconomic and agricultural policy. These dimensions are elaborated in section 3.

2.3. Farmers’ Markets

Farmers’ markets are a place for the direct marketing of goods from the producer to the consumer. A 1948 United States Department of Agriculture (USDA) report defined farmers’ markets as recurrent markets at fixed locations where “farmers congregate to sell their own products” (Brown, 2001, p. 658). Farmers’ markets often include value added products, as is noted
in the Australian Farmers’ Market Association’s definition of a farmers’ market as a “predominantly fresh food market that operates regularly within a community, at a focal public location that provides a suitable environment for farmers and food producers to sell farm-origin and associated value-added foods and plant products directly to customers” (Coster & Kennon, 2005, p.vi).

Farmers’ markets have a long history in many places around the world and are just as broadly distributed. In many places in Latin America, for example, there exists small open-air markets or street fairs that offer direct contact at street corners between consumers and buyers providing the opportunity for farmers to sell their produce (Reardon & Berdegue, 2002). However, because the majority of the literature on farmers’ markets focuses on English-speaking North America and Western Europe, this section relies heavily on references to these areas. Accordingly, Basil (2012) notes that the tradition of direct agricultural marketing was first documented in 500 BC in Athens’ ancient Agora, where political decision making and the food market coexisted making this central location a hub for community activity. The first documented farmers’ market in English-speaking North America occurred in the seventeenth century and is attributed to European settlement (Sommer et al., 1980). Although urbanization and the modernization of food distribution systems led to a period of decline in the number of farmers’ markets in North America beginning in the 1990s, farmers’ market have experienced a ‘come-back’ marked by steady growth (Brown, 2001). In the global North in general, farmers’ markets are on the rise. Many potential reasons to explain this increase have been suggested including higher prices for farmers (Halweil, 2004), high consumer satisfaction given higher quality products (Govindasamy, Italia, Zurbriggen, & Hossain, 2002), and social benefits for both farmers and consumers (Hunt, 2007). There has also been a trend towards the construction of local food systems - with farmers’ markets a key component - as a way to address environmental and social justice issues related to agriculture and the distribution of food (Feenstra, 2002).

In the United States, farmers’ markets have grown considerably and have been shown to be a significant contributor to farmers’ income. Total farmers’ market sales in the U.S. are estimated to be about $1 billion annually (AgMRC, 2012), with the highest monthly sales reported from farmers’ markets located in urban areas with dense populations (Ragland and Tropp, 2009). The USDA’s Agricultural Marketing Service states that the U.S. farmers’ market sector has seen a large growth in the number of farmers’ particularly between the years 2000 and 2014. During this
time, the number of U.S. farmers’ markets rose from 2,863 to 8,268 - an impressive 189% increase and average annual growth rate of 13.5 percent. While this growth has slowed recently, the number of farmers’ markets is still increasing each year.

Farmers’ markets can support many different goals beyond the provision of food and finances. Farmers’ markets provide unique opportunities for social interaction, both among local residents and between consumers and vendors. Such opportunities for social interactions lead to economic and community benefits and can also improve overall community health by creating the opportunity to reconnect consumers with those who grow their food (Alia, Freedman, Brandt, & Browne, 2013). Not only can farmers’ markets provide a positive social experience, but they can also play a role in addressing social justice and moral issues tied to food production, such as racism and inequality. For example, they can be a vehicle for bringing fresh nutritious produce to racially diverse food-insecure areas and/or ensuring that food production is not exploitive (Alkon, 2008; La Trobe, 2001).

Farmers’ market benefits can also extend beyond more immediate social interactions to include the practice and production of environmentalism as well as sites for food and environmental justice activism. Alkon’s (2008) research in California reveals that markets can allow people to connect to non-human nature and thus practice environmentalism. Such non-human nature is presented by vendors as improved biodiversity, images of natural beauty of farm aesthetics, wilderness narratives of the mainstream environmental movement, and environmental education. Furthermore, according to Alkon (2008), farmers’ markets can be sites of environmental and food justice activism in lower-income neighborhoods. People also form social connections through regular attendance and the social events some markets create (Markowitz, 2010; Rice, 2014). Neighborhood revitalization and economic benefits for the surrounding area can also be goals of certain farmers’ markets (Hergesheimer & Kennedy, 2010; Rice, 2014).

Rice (2014) notes that farmers’ markets in the United States can also be exclusionary places that do not cater to the “average” community member; instead, they can attract more educated and wealthy white women. Pilgeram (2012), studying a market in the Pacific Northwest of the United States, noted that farmers’ markets reinforce inequalities, even if the patrons see the place as inclusive. Further, she determined that markets can make “full and equitable participation difficult” for a variety of people, such as those with mobility problems, people who use public transportation, and people who use food assistance programs (Pilgeram, 2012, p. 2). Gender and
race also played a role in the market and farms she studied; women were the primary consumers but were not common vendors signaling unequal opportunity and access to the means of production. Racial inequalities were also evident in the market: from those who performed the invisible manual labor to the location of minority vendors on the periphery of the market.

In the U.S., many farmers’ markets are trying to address the issues of inequality and exclusion. Guthman et al. (2006) found through their survey of farmers markets in California that the majority of managers have tried to make their markets more affordable for low-income consumers through various strategies. One strategy is through the acceptance of government-run food entitlement programs such as SNAP, or the Supplemental Nutrition Assistance Program. However, a great economic challenge for SNAP clients in accessing farmers’ markets in the US is the relatively low number of markets that accept electronic benefit transfers (EBT). Between the years of 1996 and 2002, a switch was in the SNAP program from paper food stamps to EBTs (Guthman et al., 2006). This change led to a decrease in the number of food stamp redemptions at farmers markets since EBTs require electronic systems and phone lines, both of which are often not feasible at the outdoor locations of many U.S. farmers’ markets. To remedy this, those farmers’ markets, which are capable of doing so, have set up central point-of-sale devices. These devices allow consumers to swipe their EBT cards, and in return, they receive either tokens or scripts, which may be used for purchases from the markets. In the fiscal year of 2014, over 20% or 5,175 farmers’ markets and direct marketing farmers in the US were accepting SNAP EBT payments (USDA-ERS, 2015). Numerous studies have demonstrated that the lack of EBT payment at farmers’ markets is an ongoing barrier for poor consumers in accessing fresh produce, and that increased acceptance of EBT would lead to significant increases in sales of fruits and vegetables at markets for card holders (Buttenheim et al., 2012; Leone et al., 2012; Hood et al., 2012; Jones & Bhatia, 2011; Young et al., 2011; USDA, 2010).

The Women Infants and Children’s (WIC) Farmers’ Market Nutrition Program (FMNP) is similar to SNAP, yet it avoids many of the constraints since the FMNP provides clients with paper vouchers instead of electronic cards for farmers’ market purchases (USDA, 2015b). The goals of WIC’s FMNP are, “To provide fresh, nutritious, unprepared, locally grown fruits and vegetables, from farmers’ markets to WIC participants who are at nutritional risk; and to expand consumers’ awareness and use of farmers’ markets.” To join the WIC program, one must be pregnant or have children aged 5 or under, be nutritionally at risk, and have a gross annual income equal to or below
185 percent of the Poverty Income Guidelines for the U.S. Thus, the FMNP is attempting to increase the accessibility of U.S. farmers’ markets for marginalized consumers.

Another strategy used to increase the participation of the poor and marginalized consumers at U.S. farmers’ markets is increasing accessibility for vulnerable communities by locating the markets in low-income areas. Ruelas and colleagues (2012) conducted a study from 2007-2009 on two new farmers’ markets that opened in low-income neighborhoods within Los Angeles. One market is located in South L.A., the other in East L.A., and both accept government assistance programs including SNAP/EBT, WIC FMNP vouchers, and Senior Farmers’ Market Nutrition Program checks, thereby increasing farmers’ market accessibility for the poor and marginalized in these areas. The study examined how markets help to bridge the divide between the affluent and low-income areas in terms of accessibility to healthy and affordable food. The majority of the consumers of these two markets were poor, Latina women and over 90% of consumers said they intended to return to the market. While it is not yet clear what the long-term benefits are for the poor and marginalized people of East and South L.A., the establishment of these two farmers’ markets in low-income neighborhoods shows that the U.S. is attempting to address some of the inequality and exclusion issues that many U.S. farmers’ markets present.

3. Costa Rica: Food and Agricultural Policies

3.1 Historical Dimensions

Costa Rica has a celebrated but contested history of smallholder agriculture. In Costa Rica’s Central Valley, 18th and 19th century agriculture was characterized by landlord/merchants who presided over a rural landscape of significant inequality and a clear division of labor. The emergence of the coffee export economy in the mid 19th century in many ways exacerbated these underlying social divisions (Gudmundson, 1983). This is different from celebrated understandings of pre-coffee history of Costa Rica as an egalitarian society comprised of predominantly autonomous smallholders on privately owned land (e.g. Facio, 1942). Nonetheless, coffee production remained predominantly in the hands of smallholders, primarily due to labor shortages. Concentration in the coffee industry came mostly in the processing sector where “coffee barons” controlled the mills where smallholders transported their raw coffee beans (Babin, 2012; Gudmundson, 1986).
The civil war in 1948 brought to power a new government interested in using revenues from coffee production for national development. This new policy framework was based on the prominent Costa Rican intellectual, Rodrigo Facio’s claim that small-scale agriculture was the cornerstone of future economic development and that regulating the debilitating effects of the coffee barons on small-scale agriculture was a necessity (Babin, 2012; Facio, 1942). A law passed in 1952 limited the maximum percentage of profits a mill could earn to 9% while at the same time requiring mills to pay an annual tax of 7% to the state. Revenues from this tax were used to fund infrastructure, and industrial and agricultural intensification projects and programs (Babin 2012; Winson, 1989). The new regime also nationalized the banking system allowing for credit to reach other neglected regions and sectors outside of the Central Valley (Edelman, 1999).

The new government put into place a set of policy reforms designed to favor smallholder producers and improve agricultural productivity. The Coffee Office was formed and set the price at which mill owners could purchase coffee and required mill owners to offer loans to producers on favorable terms. In 1943, the National Production Council (Consejo Nacional de Producción) was formed and became a semi-autonomous commodity board in 1957, which purchased grains at set prices above the market price and then re-sold those grains at subsidized prices in retail stores (Edelman, 1999). In addition to price and credit support, the Costa Rican government, as well as international donors, most notably the United States, supported efforts to intensify agricultural production via both research activities and extension programs (Babin, 2012; Edelman, 1999).

The significant national debts of the 1970s and the subsequent signing of structural adjustment loans in the 1980s ended the era of strong governmental support and set in motion a crisis of smallholder agriculture that has yet to subside. Costa Rica’s agreement to structural adjustment loan 1 (SAL1) in 1985 meant opening up the country’s market to the United States, the elimination of crop price support, subsidized production credit, and subsidized staple foods (Edelman, 1999). This period was marked as the ‘agriculture of change’, since farmers were pushed away from growing their traditional crops and redirected to produce ‘non-traditional export crops’ (NTEs), such as cut flowers, ornamental plants, citrus, mangoes, pineapples, and winter vegetables. Other factors such as the U.S. selling of grains through soft credits to Costa Rica and the “dumping” of yellow maize by the U.S. would eventually influence the government’s elimination of all agricultural subsidies and decimated domestic maize production. Under Structural Adjustment Loan II, signed in 1989, Costa Rica further opened its market to more
imports and shifted its efforts to increasing exports via improved storage facilities and infrastructure for transportation and irrigation (Edelman, 1999).

Smallholder farmers faced many obstacles related to these policy changes. Most lacked the money, access to credit and technical expertise to transition to NTEs and meet the demands of the country’s neoliberal adjustment (Edelman, 1999). Moreover, many were now in direct competition with larger and more capitalized operations attempting to exploit these new niche markets. These factors, coupled with the demise of agricultural subsidies and declines in world coffee prices left smallholders with few options.

3.2 Food Security in Costa Rica

Food insecurity is a growing problem in Costa Rica, but not for lack of food availability. Total food production in Costa Rica (in terms of millions of USD($) 2004-2006) has risen from $1,937 in 1997 to $2,915 in 2012 (FAO, 2014). FAO (2014) data demonstrates that per capita food supply in terms of kcal/capita/day has steadily increased over the years, from 2,713 kcal in 1996 to 2,898 kcal in 2011. However, an increase in food production does not necessarily indicate a fulfillment of domestic caloric needs, thus demonstrating a need for more locally focused evaluations of food security. As discussed earlier (see section 2.1 Food Security), adequate food production or even access to food on a national or regional scale may not correspond to similar conditions on regional or local scales.

The high percentage of total income spent on food by the average Costa Rican coupled with the liberalization of the food system means that many households likely experience a form of food stress. It is estimated that Costa Rican households spend about 30% of their total household income on food (USDA, 2012). According to Professor John Coveney, associate Dean of the School of Medicine and Professor of Public Health at Flinders University (Adelaide, Australia), ‘food stress’ occurs when low-income households have to spend more than 30% of their income to be able to eat healthily. He notes that the term is similar to ‘housing stress’, which has been used in the past to refer to people who have had to spend 30% or more of their income on rent or mortgages (NZPA, 2010). Ward et al. (2013) elaborate on the term ‘food stress’ by describing it as the stress associated with reduced economic access to expensive high-quality fresh foods and the lack of available income to spend on other household needs, including rent, transportation and health care. In Costa Rica, the liberalization of agricultural trade has likely compounded issues of
food stress for low-income Costa Ricans. While liberalization was designed to expand the availability of high-quality fresh products to all households in Costa Rica (FAO, 2003), only those who are able to afford expensive and high quality foods stand to benefit from their increased availability.

Poverty levels continue to rise in Costa Rica likely compounding issues of food insecurity and food stress. While average per capita incomes in Costa Rica have increased, data collected from the most recent National Household Survey (Encuesta Nacional de Hogares) indicates that 22.4% of Costa Rica’s population lives below the national poverty line, an increase from 20.7% in 2013 (INEC, 2014). The urban poverty line also rose from 100,943 colones in 2013 to 105,976 colones in 2014. While the Central Valley, of which the Metropolitan Area of San Jose comprises a significant portion, fairs better than all other regions surveyed (both average household income and income per capita are above national averages) poverty levels have also seen an increase, rising from 15.7% in 2013 to 17.2% in 2014 (INEC, 2014). In fact, poverty incidences in the Central Valley were higher in 2014 than during any other year since 2010 which mirrors the national trend of increases in poverty since 2010 save for some gains having been made in 2012 and 2013 (INEC, 2014)

The most severe poverty, however, is experienced in rural areas among landless workers and small producers. Farmers who grow traditional crops, especially those crops lacking proper irrigation and that are vulnerable to natural disasters, are among the most food insecure small producers. The lack of capacity of small producers to earn income in other activities exacerbates their state of food insecurity (Proyecto Estado de la Nación, 2000) At the same time, the poor in urban areas also experience significant food insecurity with the most food insecure sectors of society being women, children, and the elderly. State-run feeding and relief programs such as the Joint Institute for Social Assistance (Instituto Mixto de Ayuda Social) and the Social Development and Family Allowances Fund (Fondo de Desarrollo Social y Asignaciones Familiares) (FODESAF) assist these high-risk groups and allocate important volumes of resources for their assistance.

Indicators of major food-related illnesses and disease are on the rise in Costa Rica. The United Nations Food and Agricultural Organization (2014) recognizes that poor nutrition can lead to reduced immunity, increased susceptibility to disease and impaired human physical and cognitive development. The prevalence of undernutrition in Costa Rica is on the rise, increasing
from 5.2% in 1999-2001 to 5.9% in 2012-2014 (FAO, 2014). Other worrisome trends were discovered in a study conducted by the Costa Rican Comprehensive Agricultural Marketing Programme (PIMA) in 2013. Findings in their report included the following: 62% of Costa Ricans are either obese (26%) or overweight (36%); type-2 diabetes is on the rise with 8% of Costa Ricans being diagnosed in 2004 and rising to 10.5% in 2005; and high blood pressure rose from 25.6% of the population in 2006 to 31.6% in 2010 (PIMA, 2013). These chronic diseases can contribute to cardiovascular disease, heart attacks or strokes, which can result in severe disabilities or death (PIMA, 2013). In addition, this study found that only 20% of the Costa Ricans consume fruits and vegetables regularly and that even among this group, most only consume three of the recommended five servings.

One major factor correlated with malnutrition in both rural and urban areas is low socioeconomic status (FAO & WHO, 2014). In recognition of the importance of ensuring access to sufficient nutritious food, the Costa Rican Ministry of Health has established a number of state-run programs: 2014-2018 Plan to Tackle Child Malnutrition; 2011-2020 Action Plan on the Reduction and Control of Micronutrient Deficiencies; 2011-2021 National Policy on Food Security and Nutrition; National Plan for Food and Nutrition Security 2011 – 2015; National Strategic Health Plan of Adolescents 2010-2018; National Plan or Physical Activity and Health 2011-2021; National Plan to Reduce Salt Intake/ Sodium in the population of Costa Rica 2011 – 2021; Child Development and Nutrition Program; and the Food and Nutrition Program for Schoolchildren and Adolescents (Ministerio de Salud, 2011). Some of the principal objectives of these programs and initiatives include the eradication of childhood undernutrition and obesity in low-income families, as well as provision of free meals and promotion of healthy eating habits (SUN, 2014). The impact of these on-going programs and initiatives is yet to be determined.

3.3 Farm Security in Costa Rica

Agriculture is a vital sector in the Costa Rican economy, though its relative importance has waned in recent years. While the sector employs 13% of the population in Costa Rica - making it the second largest source of employment in the country - agriculture only accounted for 5.6% of the GDP in 2011. This represented a decline of 3.1% from 2001 while over that same stretch of time the Costa Rican economy grew 4.1% (World Bank, 2015). Agriculture accounted for 22% of
the nation’s total exports from 2009-2013 (World Bank, CIAT, & CATIE, 2014). Exports, including bananas (21%), pineapple (20%), coffee (10%), oil palm (4%), melon and cantaloupe (2%) were valued to be $3.061 million. At the same time, Costa Rica currently imports substantial fresh and processed foods amounting to 13% of the total value of imports (a value of USD $1.206 million) including maize (13%) soybean (9%), wheat (7%) and beans (3%) (World Bank, CIAT, & CATIE, 2014).

Agricultural production has increased in recent years at the same time as the rural population has declined. In 2000, food production was measured at 87.2 while it is currently measured at 123.5 (where production equaled 100 in the 2004-2006 base period) (World Bank, 2015). The FAO food production index accounts for food crops that are considered edible and that contain nutrients, not including coffee and tea. The higher current value indicates a significantly higher agricultural production since 2000. Total land area designated as used for agriculture in 2012 was 36.9%, a 1% increase since 2002. While land use has not seen a significant change over the decade, rural populations have seen a steady decrease over the same time period. In 2000, 41% of the population of Costa Rica was considered rural. By 2013, that figure decreased to 25% of the total population. Rural to urban migration has decreased employment in the small-scale farm sector from 16% in 2002 to 13% in 2012 (World Bank, 2015). The increase in agricultural land amid decreasing employment in the agricultural sector may also be attributed to the rise of large-scale industrial farms.

Rural poverty rates have risen over the last several years. From 2013 to 2014, the incidence of rural poverty in Costa Rica jumped from 27.8% to 30.3% which represents a higher increase in poverty than what has been observed in urban zones over the same time span and is also the highest recorded level of rural poverty over the period 2010-2014 (INEC, 2014). Levels of extreme rural poverty also increased from 10.1% to 10.6% from 2013 to 2014 which is also the highest level recorded since 2010 although this is not considered to be statistically significant. According to the National Household Survey report released by the National Institute of Statistics and Census (INEC, 2014), the rise in the total number of people in poverty can be partially explained by higher increases in prices compared to per capita household incomes, especially among the lowest-income households. Other reasons for poverty in rural areas include historic situations, availability of resources, topographic and climatic characteristics, distance to urban centers and institutional support and access ((Ministeria de Agricultura, 2011).
Quality regulations from supermarkets and other upstream food system actors have made it difficult for smallholders to remain competitive. For example, coastal smallholder farmers focused on sugarcane, pineapple, palm and bananas have struggled to maintain stringent standards imposed by large multinational companies such as Dole and Chiquita (World Bank, CIAT, & CATIE, 2014). The expansion of supermarkets has also posed challenges for smallholder producers. Supermarkets entered the food distribution system in Costa Rica in the early 1960s and accounted for 50% of the retail food market at the beginning of the 2000s (Reardon & Berdegué, 2002). The emergence of supermarkets has brought the creation of dedicated wholesalers who set stringent quality standards and work with contract farmers to provide fresh fruits and vegetables. One observer notes that “the smallest and least-capitalized growers [face] the biggest challenge in meeting the requirements of the system” (Alvarado & Charmel, 2002, p. 484).

Volatility in commodity prices and devastating pathogens have been additional hurdles for smallholder farmers. Coffee growers have been hit particularly hard by these events especially with the dissolution of the international coffee agreement in 1989, which had insured relatively stable and high coffee prices. For instance, in 2000 growers saw coffee prices tumble to their lowest level in the last 100 years (Babin, 2012). Such market volatility has disproportionately affected producers of low quality lowland coffee; many have had to sell their farms, convert their fields into pasture or invest in other crops. On top of this, farmer stress due to low prices has often divided families with many migrating to cities seeking consistent employment (Sick, 2008). On this front, fair trade certification is often heralded as a viable means of improving farmer livelihood by guaranteeing fair prices and working conditions. However, many studies have demonstrated that fair trade certification tends to only benefit skilled coffee growers and farm owners rather than farm workers and seasonal workers (Dragusanu & Nunn, 2014). Additional concerns for agriculture in Costa Rica include the decline of the coffee as well as banana industry by plant-damaging diseases like black sigatoka and la roya or coffee rust. Furthermore, the agricultural sector’s heavy dependence on agrochemicals - which is among the highest in the world - has been a growing source of concern pertaining to human health, biodiversity and ecosystem resilience (World Bank, CIAT, & CATIE, 2014).

Recently, the Costa Rican government enacted a new agricultural policy to address some of these challenges. The “Policy for the Agrifood Sector and Costa Rican Rural Development”
(effective from 2010 until 2021) aims to create an agricultural sector that is inclusive, modern, competitive and environmentally responsible. In doing so, the government hopes to close the development gaps across the country by integrating commercial production circuits and by being able to adequately finance the different needs of small and medium producers with the ultimate goal to achieve an export economy that remains internally competitive (Ministerio de Agricultura, 2011). According to the Costa Rican government, challenges to achieving these stated goals include achieving higher competition among rural actors, increasing innovation and technological development, incorporating small producers into rural economies, and providing adaptation techniques for climate change and environmental protection factors in the agricultural system in general.

The government aims to address these challenges through a plan based upon three core pillars: competitiveness, technological innovation and rural management. First, the policy focuses on increasing the level of competitiveness of the Costa Rican agricultural sector within institutional structures. It will do this by addressing strategic issues such as safety of the agricultural sector, financing and insurance, information and communication systems, efficient markets management, and production infrastructure that supports development and management of rural areas. The second pillar prioritizes transferring technology to producers so that they are exposed to innovative approaches of improving their agricultural methods. The third pillar addresses management of rural areas to improve social indicators and sustainability of natural resources (GAIN, 2010). It remains to be seen whether this policy will significantly aid smallholders or whether it will facilitate continued rural out-migration and the growth of more capitalized farmers.

One pathway for smallholder producers to remain relevant has been through the production of vegetables for domestic markets. Vegetable farming for the national market became prominent in the early 20th century and expanded as road infrastructure improved (Galt, 2014). By 1963, 80% of Costa Rican farmers were selling goods underscoring their increased integration into international and domestic markets (Galt, 2014). Vegetables were likely sold in neighborhood markets and vegetable stands, both of which comprised the principal forms of purchasing fruits and vegetables, at least up until the 1980s (Alvarado & Charmel, 2002). In the 1980s, selling in government-run farmers’ markets became a viable marketing outlet and are described in greater detail below.
3.4. Farmers’ Markets in Costa Rica

Farmers’ markets in Costa Rica are a relatively new but understudied phenomenon. Although markets in central plazas and neighborhoods likely existed early in the 20th century, they are not well documented. The first recorded farmers’ market occurred in 1974, when a few smallholder farmers sold their products directly to consumers in Turrialba, a town in central Costa Rica (R. Morales, personal communication, May 28, 2015). Farmers’ markets officially begin in Costa Rica in 1979 after disgruntled orange growers began selling their produce on the corners of San Jose in protest of the low prices offered by intermediaries. Their direct marketing was so successful that it led to discussions with President Rodrigo Carazo who, in October 1979, established the first farmers’ market in Plaza del Zapote in San Jose with the participation of 88 producers (Díaz-Knauf, Vargas, Aguilar, & Sommer, 1992). Since 1979, farmers’ markets have grown considerably; by 2015, the number of markets had expanded to 76 nationwide, providing spaces for approximately 8,000 vendors (Consejo Nacional de Producción [CNP], 2014).

![Distribution of farmers' markets in Costa Rica and locations of surveyed farmers' markets](image)

**Figure 3.4.1**: Distribution of farmers’ markets in Costa Rica and locations of surveyed farmers’ markets

Heavy state involvement has characterized farmers’ market governance. The Ministry of Economy, Industry, and Commerce was first given the responsibility for connecting farmers and...
consumers. Within a year, this task was passed onto the Ministry of Agriculture and Livestock (MAG) (Díaz-Knauf et al., 1992). By 1984, under the jurisdiction of MAG, farmers were required to obtain identification (carné) from a national bureau and meet the provisions for sanitation and hygiene set for selling products at these markets (Díaz-Knauf et al., 1992). Government agencies such as the Agriculture Co-operative Extension Agency, the Ministry of Public Health, and the Ministry of Economy became involved in the bureaucracy of farmers’ markets.

In the early 1990s, the Agricultural Cooperative Extension served as the principal administrative government agency for farmers’ markets. The agency’s main responsibilities were to identify farmers, issue licenses to farmers and agricultural co-operatives, and inspect farms (Díaz-Knauf et al., 1992). These responsibilities were transferred to the Consejo Nacional de Producción (CNP) in 1995 (Morales, 1996). The responsibility for managing farmers’ markets is conferred by MAG in the Regulation of the Law Regulating Farmer Trade Fairs (Reglamento a la Ley de Regulación de Ferias del Agricultor) (MAG, n.d.b). However, the management of farmers’ markets is not without controversy. In 2013, some believed a bill proposed by MAG would restructure the management of farmers’ markets and potentially eliminate the CNP (Arias, 2013a; Arias, 2013b). Since this bill has not yet come to pass, the CNP continues to administer farmers’ markets though the CNP has been in crisis and almost had to shut its doors. Currently, it is undergoing a redesign process (C. Lopez, personal communication, May 21, 2015).

Individual administrative entities are responsible for managing the organization of local farmers’ market, and they must be properly constituted and authorized by their respective Regional Committee (MAG, n.d.b). The majority of farmer’s markets (71%) are administered by regional agricultural centers, known as Cantonal Agricultural Centers (Centros Agrícolas Cantonales) (CAC) (CNP, 2014). For example, Hatillo is administered by the CAC de Santa Ana and Alajuelita by the CAC de Mora, while Lomas del Rio is administered by a local organization, Progressive Development Association (Asociación Progresista de Desarrollo). At the local level, these administrators and volunteers assist with the logistics, such as collecting farmers’ fees for market spaces, the designation of vendor stalls, and communicating the official prices of goods at farmers’ markets. The official ceiling price for goods is set by the CNP every Friday prior to market day.

The entities are also now responsible for issuing the identification card, or carné, after an inspection of the farm. The length of the validity of the carné accounts for seasons and duration of crop cycles for the products that the vendor will sell. They are valid for no longer than 6 months
with the ability of renewal for a similar length of time. Products for which the vendor is authorized to sell are listed on the card and vendors may sell in any market in the country, permitted they comply with the regulations established by the corresponding administrative entity. In cases where production warrants it, a maximum of two vendor assistant carnés may be issued per farm, but they only allow for one vendor space per market. Given that family members and spouses may also use these carnés to sell at farmers’ markets, products from the same farm could be sold at several different ferias on the same day (MAG, n.d.b.).

In Costa Rica, farmers’ markets are typically held on Saturdays, though some operate on Thursday, Friday and Sunday (CNP, 2014), and their operating hours are usually between 5:00am and 2:00pm (Díaz-Knauf et al., 1992). The number of vendors varies widely according to the market, from 5 to 361 (with an average number of 107 and median of 50) (CNP, 2014). It is unknown how many vendors sell at multiple markets.

Farmers’ markets in Costa Rica are designed to cater to small and medium-scale producers. According to CNP, “Ley 8533, La Gaceta N° 159 del 18 de agosto de 2006”, which governs farmers’ markets, vendors must be small or medium sized to sell their products at the farmers’ market (CNP, 2006). The MAG determines whether a particular farmer is small or medium-sized based on the type of crops produced on the farm. For example, a banana vendor would have to farm an area smaller than 100 hectares to be included within the medium size category and 25 hectares or smaller to be included in the small category. A cucumber vendor farming less than 3 hectares is considered medium-sized while another farming less than one hectare of cucumbers is considered small-sized (Ministerio de Agricultura y Ganadería, n.d.a).

When it comes to buying produce, Costa Ricans prefer to purchase their fruits and vegetables from farmers’ markets (PIMA, 2013). Farmers’ markets have consistently remained at the top of the list as preferred purchasing locations for produce for over a decade\(^1\) (see Figure 3.4.2). Interviews from 2003-2004 onwards included new categories such as pulperías and wholesale markets which likely help to explain the slight decrease in preference for farmers’ markets for some years.

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\(^1\) The study was not undertaken in the years 2005-2008 and 2010-2011.
In 2008, the Costa Rican government directed funds for the modernization of farmers’ markets to improve quality and efficiency (SEPSA, 2008). According to SEPSA (2008), encouraging and promoting farmers’ markets in Costa Rica is one of the national planning objectives for increasing agricultural opportunities. Accordingly, farmers’ markets are viewed as important poverty-reducing mechanisms that simultaneously help to reduce smallholders’ vulnerability by providing food access, and also play a fundamental role in promoting local food production to ensure local consumption needs are being fulfilled.

4. Research Methods

This research was conducted by a team of 19 Master’s students and their professor from the University for Peace (Universidad para la Paz) as part of the course, “Advanced Studies in Environment and Society”. The research methods used in this study were approved by the University for Peace Research Ethics Committee. The main question driving this research was: can and to what extent do farmers’ markets simultaneously address food and farm security in Costa Rica. We used multiple methods to answer this question, including a structured survey complemented by ethnographic observations at three different farmers’ markets in urban San Jose.
Spatial data were also used to visualize distance to markets and to highlight poverty data. We also drew extensively from national statistics and relevant academic and grey literatures, which included a review of government documents on farmers’ markets in Costa Rica.

### 4.1. Sample Characteristics

In total, 251 consumers were surveyed comprising an almost equal proportion of men (51.4%) and women (48.6%) (Table 4.1.1). Almost all consumers self-identified as Costa Rican (93%) and 5.6% self-identified as Nicaraguan and 3 consumers self-identified as Panamanian, Cuban and US-American, respectively. Ages varied and were relatively evenly distributed from 20 to over 60. Forty three percent of households reported having dependents less than 15 years old and 36% reported having dependents 65 years old or older. Fifty-one percent of households had 3-4 members and 23% had 5-6 members.

In total, 124 vendors were surveyed with the vast majority being male sellers (88.7%) and 11.3 % being female sellers. All vendors (100%) self-identified as Costa Rican. Most vendors (57%) were between the ages of 41 to 60 years old. The majority (53%) reported having dependents under the age of 15, and 14% reported dependents over the age of 65. Vendors principally sold produce demonstrated by the fact that 94% of surveyed vendors sold only fruits and vegetables. Additionally, 71% reported selling produce derived exclusively from the farms they operate.

**Table 4.1.1: Demographic data of consumer (n=251) and vendor (n=124) households.**

<table>
<thead>
<tr>
<th>Category</th>
<th>Classification</th>
<th>Consumers (%)</th>
<th>Vendors (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td>Male</td>
<td>48.6</td>
<td>88.7</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>51.4</td>
<td>11.3</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>Less than 20</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>20-30</td>
<td>10.4</td>
<td>13.7</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>15.1</td>
<td>16.9</td>
</tr>
<tr>
<td></td>
<td>41-50</td>
<td>20.7</td>
<td>30.6</td>
</tr>
<tr>
<td></td>
<td>51-60</td>
<td>26.7</td>
<td>26.6</td>
</tr>
<tr>
<td></td>
<td>Over 60</td>
<td>27.1</td>
<td>9.7</td>
</tr>
<tr>
<td><strong>Family Size</strong></td>
<td>1-2 persons</td>
<td>20.3</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>3-4 persons</td>
<td>51</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>5-6 persons</td>
<td>22.7</td>
<td>30.6</td>
</tr>
<tr>
<td></td>
<td>7-10 persons</td>
<td>6</td>
<td>14.5</td>
</tr>
<tr>
<td><strong>Dependent Members</strong></td>
<td>Less than 15 years</td>
<td>43.4</td>
<td>53.2</td>
</tr>
<tr>
<td></td>
<td>More than 65 years</td>
<td>36.3</td>
<td>13.7</td>
</tr>
</tbody>
</table>

### 4.2. Survey design
Two surveys were developed by the researchers, one to survey market vendors, which focused on selling practices and farmer livelihoods; the second was used to survey market consumers and focused on purchasing practices and household food security. Both questionnaires included ranked, closed and open-ended questions. A trial run of the surveys was conducted by the research team at the Ciudad Colon farmers’ market on February 21st, 2015 and the research team subsequently revised it according to observations. All data collected from the surveys were coded and converted into SPSS for analysis. Copies of the final questionnaires are found in Annexes A and B.

Many of the questions in the consumer survey, which relate to household food security, were derived from an earlier study by Gonzalez et al. (2008). Gonzalez and colleagues conducted a study in San Jose, Costa Rica with the purpose of determining whether a generic questionnaire could be developed and adapted for use in assessing household food insecurity. After conducting 49 in-depth interviews with low- and middle-income urban women using a semistructured interview guide, a 14-item food insecurity questionnaire was created. A field study involving 213 households was then employed and the results determined that the questionnaire was indeed a quick, simple and valid method to measure household food insecurity in urban Costa Rica and that it may also be useful in measuring food insecurity in other middle-income countries (Gonzalez et al., 2008).

4.3. Site Selection and Sample Size

We conducted surveys at three farmers’ markets: Lomas del Rio, Alajuelita, and Hatillo. These markets were chosen from a list of farmers’ markets operated by the CNP based on: (1) placement within the boundaries of the Metropolitan Area of San José, (2) relative size (must contain at least 80 vendor spaces), and (3) location in a relatively low-income area. We sought out farmers’ markets located in low-income urban areas since a key point of interest in our research was whether farmers’ markets can address urban food insecurity. As of 2011, in the Canton of San José, where districts Pavas and Hatillo are located, 100% of the population is considered to be urban and in the Canton of Alajuela, where district Alajuelita is located, 99% of the population is considered to be urban (Programa Estado de la Nación and INEC, 2013). Markets were selected based on the above size requirement to avoid possible bias resulting from surveying a low number of vendors and consumers. Lomas del Rio is a neighborhood located in the Pavas district which
designates 102 spaces for vendors. The Alajuelita market located in the district of Alajuelita next to the Morera Soto Stadium, designates 133 spaces for vendors. The Hatillo market is organized in the neighborhood Hatillo 2 in the district of Hatillo, and designates 470 spaces for vendors. We settled on a sample size of approximately 80 consumers and 40 vendors at each market, based on both the desire to obtain a relatively high number of samples from each market and the feasibility of conducting a large number of surveys with a relatively small number of surveyors.

All three markets are located in areas with a higher density of lower-income residents (Figures 4.3.1 and 4.3.2). Low-income status was measured in three ways, (1) using census poverty data from 2000-2001 (Figure 4.3.1), (2) using portable computer ownership rates as a proxy for poverty from the 2011 census (Figure 4.3.2), and (3) from the 2011 census showing the percentage of the population with unsatisfied basic needs (Figure 4.3.3). Other socio-economic characteristics of these areas also demonstrate that lower-income groups were likely to reside in the neighborhoods surrounding these farmers’ markets, which was interpreted as indicating a higher probability that such groups may use these markets. For example, one study conducted in 2008 in the Municipality of San José with collaboration from the Ministry of Housing and Human Settlements (Ministerio de Vivienda y Asentamientos Humanos) (MIVAH) showed that districts Pavas and Hatillo had the highest number (12 and 9, respectively) of *asentamientos en precario* (squatter settlements or informal housing) out of all 11 districts in the Canton of San José. Despite proposed strategies to eradicate such extreme poverty, these types of housing conditions have continued to exist throughout four successive periods of government and it is estimated that since the 2008 study, more settlements of this nature have appeared (Departamento de Observatorio Municipal, 2011).

Prior to data collection, a small group from the research team visited each market to receive permission from farmers’ market managers to administer the surveys and to verify that the markets indeed met the selection criteria. Surveys were administered in Lomas del Rio on March 7th, 2015, in Alajuelita on March 14th, 2015, and in Hatillo on March 15th, 2015.
Figure 4.3.1: Farmers’ markets in municipal area of San Jose and rates of poverty in San Jose Canton

Figure 4.3.2: Farmers’ markets and rates of portable computer ownership (as surrogate for rates of poverty) in municipal area of San Jose (average rate of ownership for Costa Rica is 34%)  

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4.4. Data collection

Researchers were grouped into pairs according to their proficiency in Spanish. Each pair had at least one intermediate-advanced level Spanish speaker who was responsible for asking the survey questions and clarifying/translating responses to their partner who recorded all answers on a separate questionnaire. There were a total of eight pairs; four pairs surveyed consumers and the other four pairs surveyed vendors. We performed a preliminary round of surveys at the Ciudad Colon farmers’ market (located in the Canton Mora, Metropolitan Area of San José) to test the validity of the questionnaires and to familiarize the researchers with their content. For practical reasons and to improve the content and flow both questionnaires were slightly revised and then finalized.

Prior to conducting the survey, oral consent was obtained from participants by the lead surveyor. At the end of each surveying day, the course instructor checked each form for completion and overall consistency. Data were coded and entered by only two researchers to avoid

Figure 4.3.3: Percent of the population with unsatisfied basic needs (2011 Costa Rica Census) 4

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bias and other errors. Each researcher also wrote ethnographic field notes that highlighted particular aspects of their experiences, observations, and conversations with farmers’ market attendees. Observations primarily focused on pre-established themes of interest including vendor selling techniques, and vendor-vendor and consumer-vendor interactions.

4.5. Limitations

The research design comes with inherent limitations, which restricts the scope of the research findings. Due to the fast paced and busy nature of the markets, we were unable to engage in lengthy discussions regarding individual situations or thoroughly document the particularities of food utilization among household members. Our survey of vendors only interrogates certain aspects of farm security; more lengthy interviews of vendors in their homes and farms would allow for a greater understanding of the dynamics influencing their farm security. The qualitative data is also limited given that some of the lead surveyors only had intermediate Spanish language skills making conversation about sensitive topics difficult to initiate or carry on. Our moderate sample size of 251 consumers and 124 vendors across three farmers’ markets also limits the generalizability of our findings.

5. Results

5.1. Food security

5.1.1. Food insecurity among survey participants

This research reveals compelling evidence that a significant portion of survey participants may be suffering from various degrees of food insecurity (See Figure 5.1.1). First, 46% of consumers reported an average monthly per capita household income of less than ₡100,000⁵ (US$ 189.7⁶), which falls below Costa Rica’s 2014 poverty line⁷.

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⁵ Ranges of households’ total monthly incomes are used to compute households’ average monthly income per capita. These ranges are divided by the number of households’ members to identify ranges of households’ average monthly income per capita. For example, the first consumer reported than her household’s total income is between ₡200,000-299,000 (US$ 378-565) and her family’s members are 6. The household’s average monthly income per capita is therefore between ₡33,333-49,833 (US$ 63-94.2). Based on the Costa Rican poverty line (2014), the household’s average monthly income per capita was then sorted into the different categories shown in Figure 1.

⁶ We used the exchange rate of the date of the last survey, March 15th, 2015. According to Oanda’s currency converter, that exchange rate was US$1 = 528.8 Colones, from http://www.oanda.com/currency/convertor/
Second, a majority of households spend a substantial share of their total income on food (Table 5.1.1); 70% of those surveyed reported spending at least 40% of their total income on food every month, and 21% spent more than 60% of their total income on food.

Table 5.1.1: Percentage of total household income spent on food (n=251)

<table>
<thead>
<tr>
<th>% of HH spending on food</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 19%</td>
<td>5.6</td>
</tr>
<tr>
<td>20%-39%</td>
<td>32.7</td>
</tr>
<tr>
<td>40-59%</td>
<td>40.2</td>
</tr>
<tr>
<td>60-79%</td>
<td>15.9</td>
</tr>
<tr>
<td>More than 80%</td>
<td>4.8</td>
</tr>
<tr>
<td>Missing</td>
<td>.8</td>
</tr>
</tbody>
</table>

Third, 23% of surveyed consumers reported worrying about having sufficient food to serve their families and their children (Table 5.1.2). In addition, 17% of consumers disclosed that they served less food to household members, and another 6% revealed that they or someone else in their household has had to skip meals due to insufficient resources to obtain food. Four percent of households reported serving less food to their children, and 2% reported that their children have had to skip meals.

Table 5.1.2: Percentage of consumers who responded never, sometimes or many times to a series of questions related to food insecurity (n=251)

7 The poverty line in Costa Rica (2014): less than €105.967 (US$ 200.4) per person in urban area and €81.344 (US$ 153.8) in rural area (INEC, 2014).
8 The household’s average monthly per capita income is categorised at the lowest level of US$190 (€100.472). This is the level that determines poverty (€105.967) in urban areas where most of surveyed consumers come from.
5.1.2. Contributions of farmers’ markets to food security

Generally, contributions of farmers’ markets to food security in urban San José can be seen through the lens of food quality and accessibility. Consumers reported freshness as the most important factor in their choice to purchase products at farmers’ markets, with 54% mentioning it in an open-ended question (Figure 5.1.2 A & B). Similarly, 45% of consumers reported using product quality as the principal criteria when deciding from which vendor to purchase.

<table>
<thead>
<tr>
<th>Food Insecurity Questions</th>
<th>Level of food insecurity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worry about insufficient food?</td>
<td>%</td>
</tr>
<tr>
<td>Serve less food due to insufficient food?</td>
<td>77.3</td>
</tr>
<tr>
<td>Skip 1 meal per day due to insufficient food?</td>
<td>82.5</td>
</tr>
<tr>
<td>Serve less food to children due to insufficient food?</td>
<td>94</td>
</tr>
<tr>
<td>Skip child’s meal per day due to insufficient food?</td>
<td>39</td>
</tr>
<tr>
<td>Skip meals the entire day due to insufficient food?</td>
<td>41.4</td>
</tr>
</tbody>
</table>

Figure 5.1.2: The percentage of responses given by consumers to the open-ended question of why they choose to purchase foods at farmers markets and from certain vendors (n=251)

Our data also demonstrated that farmers’ markets in urban San José can promote both economic and physical food accessibility. In terms of economic accessibility, 46% of consumers stated low prices was a main reason for shopping at farmers’ markets. As an open-ended question, low prices or affordability was the second most cited reason for shopping at farmers’ markets. Interestingly, discounts were discovered to be another dimension of farmers’ markets, which may further account for the ability of farmers’ markets to increase economic access to food since 49%

9 56.6 % of the surveyed households did not have children for which there were only 43.4% of them responded to the question about food insecurity toward children.
of consumers reported receiving discounts from some vendors. With regard to physical accessibility, most farmers’ market customers lived within close proximity to the markets, which also helps explain why the majority reported that their principal mode of transportation was walking. Sixty-one percent of consumers reported walking to the farmers’ markets while 31% reporting using a privately owned automobile (Figure 5.1.4). Eighty-two percent of consumers travelled less than 2 kilometers from their homes to farmers’ markets and 67% travelled less than one kilometer. Significantly, 89% of farmers’ market consumers who walked lived within 1 kilometer of the farmers’ market and 97% of those who walked lived within 2 kilometers (Table 5.1.4). In addition, most surveyed consumers are frequent shoppers at farmers’ markets with 76% percent reporting that they visit a farmers’ market every week (Figure 5.1.3), and nearly 80% reported that they purchase over 75% of their food from the market. Product quality was the top reason for purchasing at farmers’ markets across all income groups (Table 5.1.3). Moreover, 27% of consumers also noted that they choose from which vendor to purchase based on the price of the goods they offer (Figure 5.1.2 B).

![Figure 5.1.3: Number of times a consumer visits a farmers’ markets each month (n=251)](image)

*Figure 5.1.3:* Number of times a consumer visits a farmers’ markets each month (n=251)

*Table 5.1.3:* Percentage of consumers who report different reasons for purchasing products at farmers’ markets divided into three per capita income groups

10 Person with average monthly income less than 105,967Colones (US$ 200.4) per month is considered as living in poverty (Costa Rica’s poverty line 2014). The exchange rate was applied on 15th March, 2015. US$1 = 528.8 Colonese. From Oanda’s currency converter, [http://www.oanda.com/currency/](http://www.oanda.com/currency/)
<table>
<thead>
<tr>
<th>Reasons for buying foods from farmers’ markets</th>
<th>Average monthly income per capita (US Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>less than 190 (n=116)</td>
</tr>
<tr>
<td></td>
<td>191-378 (n=72)</td>
</tr>
<tr>
<td></td>
<td>more than 378 (n=61)</td>
</tr>
<tr>
<td>Quality / Freshness</td>
<td>53.4%</td>
</tr>
<tr>
<td>Low prices</td>
<td>54.2%</td>
</tr>
<tr>
<td>Convenience</td>
<td>55.7%</td>
</tr>
<tr>
<td>Others</td>
<td>40.5%</td>
</tr>
<tr>
<td></td>
<td>48.6%</td>
</tr>
<tr>
<td></td>
<td>52.5%</td>
</tr>
<tr>
<td></td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>38.9%</td>
</tr>
<tr>
<td></td>
<td>29.5%</td>
</tr>
<tr>
<td></td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>16.7%</td>
</tr>
<tr>
<td></td>
<td>18%</td>
</tr>
</tbody>
</table>

**Figure 5.1.4**: Percentage of consumers who travel to farmers’ markets via different forms of transportation (n=251)

**Table 5.1.4**: Percentage of consumers walking to farmers markets calculated in association with distance from their households to farmers markets (n=154)

<table>
<thead>
<tr>
<th>Distance from HH to farmers’ markets</th>
<th>Percentage of consumers who walk to farmers’ markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1km</td>
<td>89%</td>
</tr>
<tr>
<td>1.1-2 km</td>
<td>8.40%</td>
</tr>
<tr>
<td>2.1-3 km</td>
<td>1.30%</td>
</tr>
<tr>
<td>3.1-4 km</td>
<td>1.30%</td>
</tr>
</tbody>
</table>

We also found that market size may be correlated with the distance that consumers travel. Consumers who shop at smaller markets tend to live closer. The smaller markets, Lomas del Rio and Alajuelita, drew a high percentage of people living directly around the market (Figures 5.1.5 and 5.1.6) whereas the much larger Hatillo market attracted consumers from a larger geographic area spanning six different cantons (Figure 5.1.7).
Figure 5.1.5: Residence of shoppers at the Lomas del Río farmers’ market (n=80\textsuperscript{11})

Figure 5.1.6: Residence of shoppers at the Alajuelita farmers’ market (n=85\textsuperscript{12})

\textsuperscript{11} The location of five interviewees were not recorded.
\textsuperscript{12} The location of one interviewee was not recorded.
Social interactions between vendors and consumers may improve food access. Apart from high quality products and low prices, consumers cited relationships or friendship as reasons to purchase from a particular vendor (Figure 5.1.2 B). In fact, 29% of them choose to purchase foods from a particular vendor due to their relationship/friendship (Figure 5.1.2 B). Many consumers choose to purchase from the same vendor; 53% reported purchasing from the same vendors all the time, and another 15% reported purchasing from the same vendor most of the time (Figure 5.1.8). Consumers report that the reason for purchasing from the same vendor include the quality of the products (39%), the relationship with the vendor (24%), and the low price (20%) (Figure 5.1.9). The relationships between consumers and vendors often times results in a discount. Ninety two percent of vendors stated that they reward their frequent customers with product giveaways and/or price discounts. Sixty percent of those who receive discounts believe they do so because they are frequent customers (and have established relationships) (Figure 5.1.10).

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13 The location of 8 interviewees could not be determined.
Figure 5.1.8: Frequency of consumers purchasing food from the same vendors (n=251)

Figure 5.1.9: Percentage of consumers’ reasons for purchasing foods from the same vendors (n=251)

Figure 5.1.10: Reasons stated by consumers for why they receive a discount (n=124)

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124 out of 251 surveyed consumers reported that they receive discount from vendors.
5.2. Farm security
5.2.1 Economic Capital and Farmers’ Markets

Our analysis found that farmers’ markets are essential sources of farmer income. Overall, sales at farmers’ markets account for over 80% of total household income for 48% of the vendors we surveyed. Additionally, 88%\(^{15}\) of vendors reported earning at least 40% of their total household income from sales at farmers’ markets (Figure 5.2.1).

\[\text{Figure 5.2.1: Distribution of the percentage of total household income derived from sales at farmers markets (n=124)}\]

Farmers’ markets were also vendors’ preferred channel to sell their products; fifty-four percent stated that they only sell their products in farmers’ markets, with 68% of all vendors selling at multiple farmers’ markets (Figure 5.2.2). The vast majority of vendors (90%) reported that they regularly obtain the highest prices for their products at farmers’ markets\(^{16}\). Moreover, vending households stated that they have been selling at farmers’ markets for a considerable amount of time; 40% reported selling at farmers’ markets for over 20 years and 46% between 10 and 20 years. Only 14% of vendors report selling at farmers’ markets for less than 10 years (Figure 5.2.3).

\(^{15}\) This percentage comprises 25% of households earning 40-59% income, 14.5% of 60-79% and 48.4% of more than 80% income (Figure 5.2.1)

\(^{16}\) This 90% represents 51 out of the 57 vendors who also sold products in other venues. This question was only asked to those vendors who sold in other places.
At the same time, per capita household incomes of vendors are generally very low. The majority (57%) of vendors reported their households’ average monthly per capita incomes to be less than Costa Rica’s 2014 rural poverty line of US$ 153 (¢81,000)\(^{17}\) (Figure 5.2.4). Another 14% of surveyed vendors reported that their households are living just above the poverty line with the average monthly per capita income ranging from US$ 154 to US$ 200.

\(^{17}\) The rural poverty line of Costa Rica (2014) is less than ¢81.344(US$ 153.8) per person per month (INEC 2014).
Most vendors travelled a relatively short distance to their selling market and cultivated small plots of land. Half of all farmers’ market vendors travelled less than 50 km to the farmers’ market. Fifteen percent travelled more than 100 km and 12% travel less than 20 km (Figure 5.2.5). The vast majority (71%) of vendors cultivated 5 hectares or less including 33% who cultivated less than 2 hectares of land. Fifteen per cent of vendors cultivated between 5-10 hectares and only 14% of vendors cultivated more than ten hectares (Table 5.2.1).

Table 5.2.1: Farm sizes and percentage of farm owners (n=124)

<table>
<thead>
<tr>
<th>Farm Size (hectares)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2</td>
<td>33.1</td>
</tr>
<tr>
<td>2 - 5</td>
<td>37.9</td>
</tr>
<tr>
<td>5 - 7</td>
<td>10.5</td>
</tr>
<tr>
<td>7 - 10</td>
<td>4.8</td>
</tr>
<tr>
<td>More than 10</td>
<td>13.7</td>
</tr>
</tbody>
</table>

18 The household’s average monthly per capita income is categorised at the lowest level of US$ 153 (£81.344). This is the level that determines poverty in rural areas where most of surveyed vendors come from.
19 12% of surveyed vendors travel less than 20 km and 38% of them travel between 21 and 49 km. Meanwhile, 35% of those vendors have to travel more than 50 km, from 50 to 100 km, and 15% travel more than 100 km.
5.2.2 Farmers’ Markets and Social Capital

Some benefits for vendors at farmers’ markets are derived from relationships with consumers and other vendors. Some 15.6% of vendors stated that they choose to sell their products at farmers’ markets because of the opportunity to develop relationships with consumers and other vendors. Relationships with consumers may also be a strategy to build customer loyalty. Almost all vendors (93.5%) reported that they reward regular customers in several ways: 35% of vendors reported giving price discounts; 32% give extra product for free and 25% said they use both reward types (Figure 5.2.6).

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20 Twelve farmer locations could not be determined.
Furthermore, vendor-to-vendor relationships were discovered to be highly beneficial and most vendors (76%\(^{22}\)) reported maintaining relationships with other vendors at farmers’ markets (Figure 5.2.7). Price reductions\(^{23}\), mutual support\(^{24}\), and product exchange and trading are the most often cited benefits of fostering relationships with other sellers. Of those who trade with other vendors, 58.1% (72 vendors) report that they do so at least one time per month and 50% (62 vendors) of those report that they do so every time they attend the farmers’ markets (Figure 5.2.8).

\(^{21}\) Eight vendors reported that they do not offer any reward to their customers.

\(^{22}\) Twenty four percent of surveyed vendors reported that they do not benefit from social relationships with other vendors (Figure 5.2.7).

\(^{23}\) Price reductions refers to the below the market value price vendors are willing to sell their product to other vendors. This could be for consumption or re-sale at market value prices..

\(^{24}\) Mutual support relates to those activities which help vendors both in the selling of their product and in building relationships with their fellow vendors. This includes sharing the same stalls or umbrellas, sharing in small talk, sharing in transport, sharing food, aid in the selling of products, giving free produce, and watching over the produce stand, among others.
5.2.3 The Key Challenges of Farm Security

Although farmers’ markets account for a substantial portion - and in the majority of cases, the primary source - of farmers’ income, most farmers (79%) expressed concerns regarding the financial viability of their farming operations. The largest reported concern to an open-ended question was high input costs (41%), followed by high risk (30%) and climate change (16%) (Figure 5.2.9).

Land ownership among farmers’ market vendors was high. Almost 76% of surveyed vendors owned the land they farm and 19% of them reported renting at least some of their
agricultural land. Most vendors reported off-farm income. Thirty-one\textsuperscript{25} percent of vendors reported that there is at least one member of their household working off-farm. Of those households who reported off-farm work, 58.9\% reported that the contribution from off-farm works to their households’ total income is more than 40\%.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{difficulties.png}
\caption{Difficulties mentioned by those households who worry about the economic sustainability of their farms (n=98).}
\end{figure}

VI. Discussion

6.1 Food Security

Below we discuss the various ways in which farmers’ market customers reported that farmers’ markets have contributed to their household food security. We categorize our findings into three main themes: (1) food insecurity among farmers’ market consumers, (2) physical and economic access to nutritious food, and (3) consumer/vendor relationships.

6.1.1 Food Insecurity among farmers’ markets consumers

Food insecurity is a problem in many urban settings, yet it is difficult to assess. We use a combination of three data points to assess the food insecurity status of farmers’ market consumers in urban Costa Rica: (1) specific questions regarding household food consumption patterns, (2) total household income and (3) the percentage of total household income spent on food. Based on

\textsuperscript{25} 39 out of 124 surveyed vendors reported that there is at least 1 member of their households working off-farm.
these data we find that food insecurity is a significant problem for many farmers’ market consumers. These findings show the potential of farmers’ markets to address urban food insecurity in Costa Rica.

In order to assess food insecurity, we asked consumers a series of questions regarding if they worried about having sufficient food and whether they served less food or skipped meals within the last 12 months due to a lack of access to food. Similar to the questionnaire developed by Gonzalez et al. (2008), our questions were ordered in a manner that reflected a scale of severity. Worrying about having sufficient food indicates the least severe form of food insecurity and skipping or cutting back on meals because of a lack of food indicates the most severe form of food insecurity (NRCNA, 2005). We first asked consumers if in the past 12 months they had worried that there was not enough food in their home and that they could not obtain more. Over 20% of those surveyed responded *sometimes* or *many times* demonstrating that food insecurity is a real concern for a substantial proportion of households (Table 5.1.2). The uncertainty associated with being able to obtain food in socially acceptable ways causes worry in addition to mental, emotional and physical stress, which also may lead to changes in behavior in order to avoid lacking food (NRCNA, 2005). Respondents reported various coping strategies for dealing with a lack of sufficient food. For example, over 15% of respondents answered *sometimes* or *many times* when asked if in the past 12 months they have needed to serve less food because they were unable to obtain enough food for their family. In addition, we documented 15 consumers who responded *sometimes* or *many times* when asked if they or another adult in their household had skipped a daily meal within the past 12 months because there was not enough food. Such adjustments to household food management whereby adults limit their food intake by reducing meals or serving sizes or by skipping meals altogether indicate moderately severe levels of food insecurity (Cook et al., 2004).

We also found that food insecurity in some households is so severe that food intake even among children has been affected. This was evidenced by the 11 consumers who answered *sometimes* to whether within the last 12 months any child in their household has had to skip a daily meal because there was not enough food at home. Generally speaking, parents buffer their children from the effects of food insecurity by further reducing adult food intake so consumption among the children does not suffer (NRCNA, 2005; Rose, 1999; Dowler, 1997). The result is that by this point food insecurity amongst adults is so extensive that they may go through entire days without
food. Depending on the severity and duration of this level of food insecurity, hunger and undernutrition may occur (Cook et al., 2004; Dowler, 1997). Therefore, it is in this way that reduced food intake among children serves as a proxy for a severely food insecure household (Casey et al., 2004; Rose, 1999; Dowler, 1997).

We supplement these questions with data on household income and the percentage of household income spent on food to get a more comprehensive picture of the food insecurity status of farmers’ market consumers. Both of these data points are good proxies for household food insecurity (FAO, WFP & IFAD, 2012; Smith et al., 2010; Fiedler et al., 2008; Smith & Subandoro, 2007; Rose & Richards, 2004; Rose, 1999). Additionally, poverty lines were also an important measurement for our study since in Costa Rica they are used as indicators to represent the minimum amount required for a person to satisfy “nutritional and non-nutritional needs” (English translation added; INEC, 2014, p. 21). Our findings show that almost 50% of respondents reported their households’ average monthly incomes per capita to be less than 100,000 colones (USD $190) (Figure 5.1.1). At the same time, another 20% of those surveyed reported household incomes hovering near the official poverty line at 200,000-250,000 colones (USD $191-284) per month. Considering the poverty lines noted above, even by Costa Rican standards, these figures are significant.

The high percentage of household income spent on food further demonstrates that a significant proportion of surveyed households experience food insecurity. Our data indicated that over 60% of consumers spend more than 40% of their income on food (Table 5.1.1). Households that spend a large proportion of their income on purchasing food are more vulnerable to experiencing various aspects of food insecurity. This is because regardless of their current level of consumption, a reduction in disposable income due to constrained resources would likely result in reduced food consumption or in the quality of food consumed (Coleman-Jensen et al., 2014; Smith and Subandoro, 2007). Coupled with low economic status, as in our survey population, a high percentage of income spent on food can lead to significant vulnerabilities. Food spending is considered a flexible (weekly) expenditure, more likely to be manipulated among low-income households especially to release cash to pay bills (Dowler 1997). In fact, when financial resources are limited, research has shown that decreases in fruit and vegetable intake is much more likely to occur among lower income groups (Smith et al., 2010; Smith et al., 2013; Ricciuto et al., 2006). This may be because fruits and vegetables are no longer affordable for low-income households.
who would have to dedicate a larger proportion of their overall income in order to meet daily nutritional requirements (Smith et al., 2010).

As poverty rates in Costa Rica continue to rise, we are likely to see an increase in the number of families suffering from food insecurity. INEC’s National Household Survey revealed that overall levels of poverty have increased in the country from 20.7% in 2013 to 22.4% in 2014 which represents an increase of 32,727 households that fell below the poverty line bringing the total to 318,810 households. Levels of extreme poverty also increased over the same time period from 6.4% to 6.7% representing a rise from 88,835 to 94,810 households now living in such conditions (INEC, 2014). Higher incidences of poverty can partially be explained by the fact that increases in the cost of living are outpacing rises in household incomes, which are sourced mainly (approximately 60%) from paid work. For example, from 2013 to 2014, Costa Rica experienced a 4.6-point increase in the consumer price index while average income per household experienced a decrease by 0.4 points and per capita income only grew by 2.1 points (INEC, 2014). Overall, what can be discerned from this data is a general loss of purchasing power among households as living expenses rise and wages remain stagnant, putting vulnerable populations at an increased risk of experiencing food insecurity.

6.1.2 Economic and Physical Access to Nutritious Food

Economic Access

We found that contrary to findings from the general literature, farmers’ markets in Costa Rica appear to be economically accessible to lower-income consumers. Almost half of those surveyed stated that they choose to shop at farmers markets because of low prices (Figure 5.1.2 A). This finding is especially significant given that this was an open-ended question; respondents voluntarily stated that low prices are one of the most important reasons why they shop at farmers’ markets. This demonstrates that the farmers’ markets we surveyed are likely playing a significant role in improving economic access to nutritious food for a large segment of the San Jose Metropolitan Area. Further research would need to be conducted to compare consumer perceptions with actual pricing between farmers’ markets and other food outlets. However, a study carried out by Diaz-Knauf et al. in 1992 in Costa Rica comparing the prices of four pre-selected produce items between farmers’ markets, produce markets and supermarkets also in the San Jose Metropolitan Area found that in all cases, prices were significantly cheaper in farmers’ markets. In addition,
almost half of respondents reported that they receive discounted goods at the farmers’ market (further elaborated below). This further highlights the way in which farmers markets may contribute to improving economic access to fruits and vegetables and may also demonstrate the importance of consumer-vendor relationships and the ability to negotiate prices - aspects not found at the supermarket.

Our findings run contrary to the general literature on farmers’ markets, and may be explained by the geographic bias towards the global North location of these studies. Many farmers’ market studies have shown that prices are often times higher than in other food outlets (Lucan et al., 2015; Pearson et al., 2014). Lucan et al. (2015), in their study of farmers’ markets in New York City, found that while produce was often fresher than at nearby stores, prices, even for commonplace produce, were generally higher. This same finding is echoed in Valpiani et al.’s (2015) study of farmers’ markets in New Zealand, which found that contrary to popular belief prices for certain items may be significantly more expensive in farmers’ markets than in supermarkets.

The academic literature has consistently found that higher relative prices of fruits and vegetables and constrained resources continue to be limiting factors for accessing healthy foods for low-income groups (Smith et al., 2013; Gonzalez et al., 2008; Cassady et al, 2007; John & Ziebland, 2004; Treiman et al., 1996; Marshall et al., 1995; Reicks et al., 1994). Lower-income groups on tight budgets may be less inclined to frequent farmers’ markets if prices of fruits and vegetables are higher or perceived to be higher than in other food outlets. This may limit access for poorer populations to what is otherwise one of the best sources of fresh produce (Lucan et al., 2015; Ruelas et al., 2012; Lee et al., 2010; Smithers et al., 2008; Grace et al., 2007).

At the same time, much attention has been put towards improving accessibility to farmers’ markets for lower-income groups. In the global North, most notably the U.S., efforts have revolved around introducing government assistance programs such as food vouchers or cards that can be used to purchase food at farmers’ markets (described in detail in Section 2.3). The geographic bias towards the global North of these studies neglects that in the global South, and in the specific case of Costa Rica, the prices offered by vendors may be sufficient to attract low-income residents, and may be cheaper than other outlets. Improving access via the inclusion of government assistance programs is only relevant in places where government assistance programs exist, and where they are needed to improve accessibility to low-income households. Costa Rica currently does not offer
such a government assistance program. Though prices alone appear to be sufficient to attract low-income households in Costa Rica, a government assistance program targeting farmers’ markets sales may still be a way to incentivize purchases at farmers’ markets, and may be a way to subsidize vendors, the majority of whom are low-income, as well.

Other issues, in addition to price, may still be limiting factors for low-income residents to access farmers’ markets in Costa Rica. Other research has shown that limited and/or inconvenient hours of farmers’ markets can limit accessibility for the poor (Grace et al. 2007; Lee et al. 2010; Lucan et al. 2015). In Costa Rica, the vast majority of farmers’ markets take place on Saturdays from 5am to 2pm. These limited hours are likely to exclude some residents from considering farmers’ markets as an option. Issues with accessibility found in the literature, such as the cultural appropriateness of food (Lucan et al., 2015), how farmers’ markets can be culturally exclusionary places for the marginalized (Alkon and McCullen, 2010; Ruelas et al, 2012; Rice, 2015), or that farmers’ markets provide a higher percentage of more expensive organic foods (Lucan et al., 2015; Alkon and McCullen, 2010), do not appear to be problems in Costa Rican farmers’ markets.

Despite the fact that many farmers’ markets have long cultural traditions and are experiencing interesting social revivals in many places including Peru, Ghana, Lebanon and India, the existing literature does not capture the role played by such markets in the global South (see Schneider, 1945; Hirsch, 2013; Mereatur, Mouzawak, & Lacourt, 2010; Rengasamy et al., 2003). Instead, the overwhelming majority of the academic literature that deals with farmers’ markets concentrates on farmers’ markets in the global North - North America, the UK, Australia and New Zealand. The significance of this geographical bias of the literature is that it does not allow for a full appreciation for how farmers’ markets in other parts of the world and in other development contexts may be addressing the needs of low-income residents to access healthy food nor does it allow for a fuller discussion and appreciation for how to strengthen the linkage between farmers’ markets and urban food security.

**Physical Access**

Physical access is also recognized as an essential element of food security and has been found to be especially important in urban settings (EC-FAO, 2008). Numerous studies on neighborhood food environments have shown that urban areas often suffer from a lack of physical access to nutritious foods particularly for low-income groups (Larsen and Gilliland, 2009; Alwitt
and Donley, 1997). Time and transportation constraints, in particular, have been cited as key impediments for low-income households to access healthy foods (Lee et al., 2010; Bader et al., 2010; Ruelas et al., 2012). For example, the placement of farmers’ markets in relatively wealthy communities can present physical barriers to accessing healthy foods for low-income families and individuals who may not be able to afford a vehicle nor have the time to take public transit. Several studies have also found that farmers’ markets often tend to be more prevalent (and even more accessible in terms of hours of operation) in more affluent areas (Ruelas et al., 2012; Lee et al., 2010). Similar to supermarket “redlining”, this type of planned market placement in geographically expansive areas where public transportation and walk-ability is limited, such as Los Angeles, may severely decrease access to fresh and nutritious foods for poor communities (Bader et al., 2010; Ruelas et al., 2012). In Costa Rica, the placement of farmers’ markets may be less of an issue but can still present barriers to lower-income groups who are not as mobile and who may be further hindered by the limited hours of operation of markets.

Our study reveals that more than 60% of farmers’ market customers surveyed walk to the farmers’ market (Figure 5.1.4). Importantly, almost 90% of those consumers who walk to the farmers’ market noted that they walk less than 1 kilometer (Table 5.1.4) indicating that market proximity is a critical factor in strengthening physical access to nutritious foods. In addition, when asked why they shop at the farmers’ markets, approximately 40% of consumers listed convenience, which also came in as the third most cited response after quality/freshness and low prices. These findings indicate that placing farmers’ markets in populated urban locations may be ideal for increasing access to nutritious and affordable foods to a significant population, particularly those households without private transportation. This could be significant particularly given the reported link between income status and private transportation. Luciani (2005) (as cited in Larsen and Gilliland, 2009) identified a correlation between low-income neighbourhoods and a decreased number of households with access to private transportation. We found that 54% of those shoppers who walk also reported average monthly per capita incomes of less than $190 USD, likely indicating that most do not own a form of private transportation. Our study also found that those with lower incomes are more likely to cite convenience (i.e. physical proximity) as an important factor in their decision to purchase fruits and vegetables at farmers’ markets (Table 5.1.3). The large financial burden associated with purchasing and owning a car or motorcycle or relying on a taxi or the time constraints associated with using public transportation emphasizes the importance
of being able to walk to the farmers’ market. While walking certainly complicates the process of purchasing heavy and bulky fruits and vegetables at the farmers market, living in close proximity to the market and being able to walk also makes shopping there more convenient. This demonstrates how farmers’ markets may also strengthen physical access to healthy foods for low-income groups in populated urban areas.

Nutritious Food

It is widely recognized that a diet rich in fruits and vegetables provides significant health benefits. Taken as a whole, the nutritional value and health-promoting properties of this diverse group of plant foods include higher concentrations of vitamins, especially vitamins C and A; and minerals, especially electrolytes and phytochemicals, which act as antioxidants, phytoestrogens and anti-inflammatory agents (Slavin and Lloyd, 2012). As a recommended and good source of dietary fiber, fruits and vegetables are associated with a decreased incidence of cardiovascular diseases and obesity and also help to maintain healthy bowels (Slavin and Lloyd, 2012; Bazzano, 2006; Willett, 2005). Additionally, fruit and vegetable consumption has also been linked with the prevention and control of other chronic diseases such as diabetes, certain types of cancer as well as warding off the development of two common eye diseases - cataracts and macular degeneration (Bazzano, 2006; Willett, 2005). Given this array of health benefits, it is no wonder that national health authorities of many countries such as Canada, the US, the UK, Australia and New Zealand promote a diet high in fruits and vegetables (Canada’s Food Guide, 2011; USDA & HSS, 2010; Public Health England, 2014; AG NHMRC and AG Department of Health, 2015; New Zealand Ministry of Health, 2012).

In order to maximize the nutritional benefits found in fruits and vegetables, research has shown that they should be harvested when they are at their “peak maturity” (Rickman et al., 2007, p. 930). This is because once harvested, the fruit or vegetable becomes separated from its source of nutrients and this begins the process of nutrient loss and quality deterioration (also known as senescence) which makes many fresh fruits and vegetables safe or desirable for consumption for only days post-harvest without the use of storage or processing technologies. Canning, freezing and drying are processing technologies that have long been used to increase the shelf-life of fruits and vegetables by transforming them into products that can be transported all over the world and be made available to consumers year-round (Rickman et al., 2007; Slavin and Lloyd, 2012).
However, depending on the commodity and technology, processing can lead to significant decreases in consumption of nutritional components although storage of fresh fruits and vegetables usually causes them to lose nutrients and degrade more rapidly than canned or frozen foods. Other factors related to storage and cooking techniques are also important for determining final nutrient intake (Rickman et al., 2007). This indicates that one of best ways to take advantage of the health-promoting properties found in fruits and vegetables is to consume them fresh or as closest to the time of their harvest as possible and in their rawest form (Willett, 2005).

Our study demonstrates that farmers’ markets are one of the most important and popular outlets among consumers living in urban San Jose for purchasing fresh produce. Freshness was the number one reported reason for why consumers choose to shop at farmers’ markets. Although vendors were not asked when their fruits and vegetables were harvested, qualitative evidence suggests that they are harvested directly before market days. This may indicate that the fruits and vegetables sold at farmers’ markets are fresher than other options for consumers, and thus may hold more nutritional value. Moreover, farmers markets are frequently visited and often the primary source of acquiring fresh fruits and vegetables. Almost 80% of those surveyed reported buying over 75% of their fruits and vegetables from farmers’ markets. In fact, shopping at the farmers’ market is a weekly routine for the vast majority of those surveyed; seventy six percent of consumers stated that they shop at farmers’ market four times per month. These findings suggest that is it very likely that farmers’ markets in urban San Jose are providing their customers with healthy and nutritious food.

One concern not directly covered in this study is the issue of pesticide residues on fruits and vegetables in Costa Rica, which demands further research, and possibly, government regulation. This is especially important because farmers who produce vegetables for the national market use some of the highest levels of pesticides in the world (Galt, 2014). In fact, Galt (2014) calls Costa Rica “the most pesticide-intensive nation on the planet” owing to the fact that in 2001, Costa Rican farmers were spraying 20.4 kg/ha/year of pesticides - the highest weight per area out of any other country in the world that year (p. 5). Citing figures from FAO (2004), Galt (2014) notes that this ratio surpassed Latin America’s average of 6.8 kg/ha/year, Europe’s average of 3 kg/ha/year and Africa’s average of 1.9 kg/ha/year. By 2010\textsuperscript{26}, Costa Rica had actually increased its

\textsuperscript{26} Costa Rica has not reported data on pesticide use to the UN Food and Agriculture for the period 2002-2009 and 2011 onwards, making years 2001 and 2010 the most relevant and latest comparable data available.
pesticide intensity to 24.56 kg/ha/year (FAO, 2015b). In addition, Galt’s research in Northern Cartago and the Ujarrás Valley, an area where many of the farmers’ market vendors we surveyed live (see Figure 5.2.5), has shown that pesticide levels in vegetable production are so high that farmers in Costa Rica spray more pesticides per hectare than vegetable producers in California - a place commonly thought of as the archetype of modern industrial agriculture. He found that “on average, Costa Rican vegetables are sprayed with 3.4 times more pesticides than Californian vegetables” (Galt, 2014, p. 8). Yet national market production practices generally run contrary to those geared towards export markets: “...farmers that export to the United States and Europe have lowered their pesticide use and adopted agroecological methods to comply with export requirements” (Galt, 2014, p. 4), while national market vegetable farmers view high pesticide use as a way to guarantee a return on their investment in the crop (Saborío Mora, 1994, cited from Galt 2014). At the same time, the state of agriculture in Costa Rica should not be viewed in black and white terms; almost all the crops (6 out of 8) cultivated in Galt’s study sites that are exported also receive high quantities of pesticides or, in Galt’s terminology, can be regarded as “pesticide intensive” (chayote, mini-squash, banana and green bean) or “very pesticide intensive” (sweet corn and carrot) crops. Overall, though, vegetables produced for the national market are more pesticide intensive than those that are exported, receiving 46.1 kg ai/ha/cycle versus 19.3 kg ai/ha/cycle (Galt, 2014). Furthermore, Galt found potatoes to be the most pesticide-intensive crop receiving 11.5 times the national average of chemicals. He noted that after comparing pesticide ratios with potato farmers in the US and then specifically in California, Costa Rican potatoes are “one of the most heavily sprayed crops in the world” (Galt, 2014, p. 8). As a result, issues with pesticide use and residues warrant further research, and likely, government regulation.

6.1.3 Consumer-Vendor Relationships

The ability for farmers’ markets to provide a space for the building and strengthening of social interactions between consumers and vendors has been documented in numerous studies (Hughes and Matteson, 1992; La Trobe, 2001; Payne, 2002; Oberholtzer and Grow, 2003; Alia et al., 2013). Our research further demonstrates that human relationships not only help to shape the social character of farmers’ markets, but that they also may play an important role for strengthening food (and farm) security. We have found that an important benefit of these human connections and relationships is a flexibility in price for the quantity of goods being transferred.
For example, over 90% of vendors surveyed disclosed that they reward their frequent customers with price discounts or with extra product. Our observations also showed that giving away free product was common across all three markets and often referred to by vendors as giving “una feria” (freebie or something extra) or giving something “regalado” (gifted). Interactions with vendors during our research indicated that giving ferias may be used as a strategy to build a customer base by introducing customers to new products or for building a rapport with customers. To investigate further into this culture of discounts and ferias at farmers’ markets, we asked customers why they think they receive discounts. Among the approximate 50% (124) of shoppers who said they receive discounts from vendors, 80% (100) believed they receive discounts because they are frequent customers and/or have a strong relationship with the vendor. These findings may have several implications. First, they may suggest that consumers who regularly buy from the same vendors have an increased chance of receiving a price or product reward. In fact, the possibilities of this occurring are quite high since almost 70% of consumers reported that they buy food from the same vendors ‘always’ or ‘most of the time.’ Secondly, if consumers believe that they receive discounts because they are frequent customers of particular vendors or have a personal relationship with those vendors, then they are probably more likely to buy from those vendors. Based on vendors’ self-reported behavior, this would mean that their chances of receiving a discount is also very likely. Therefore, the practice of giving discounts may simultaneously increase access to healthy foods for shoppers who buy from particular vendors regularly since they are more likely to receive a ‘bigger bang for their buck’ while also increasing the customer base for those vendors who are perceived to be giving discounts based on shopper loyalty.

In contrast to other food outlets such as supermarkets where social interactions are minimal and prices are fixed (Payne, 2002), these types of human dynamics present at farmers’ markets may have positive impacts for food security among lower-income groups. Yet there might also be other benefits for low-income individuals/families who buy from the same the vendor(s) on a regular basis and/or who develop a personal connection with their vendor(s). For instance, when one vendor surveyed in the Hatillo market was asked how he rewards his frequent clients, he answered that he allows some to pay for the food they get from him at the end of the month. For lower-income households, this may be a very meaningful practice since Costa Ricans typically get paid once, at the end of the month. However, further research would also need to be conducted in order to determine how widespread this practice is and how vendors decide with whom to allow
deferred payments. In the meantime, we should note that evidence for this type of behavior among vendors has been documented in Kassandra et al. (2013) who observed farmers in one farmers’ market located in a low-income (predominantly minority) rural county in South Carolina often giving deals to customers who were using federal food assistance programs (i.e. vouchers) to purchase food and even to those who were unable to afford their purchase.

Interestingly, our analysis indicated that the importance of consumer-vendor relationships may differ based on market size. While the Lomas Del Rio and Alajuelita markets have space for 102 and 133 vendors respectively, the Hatillo market has space for 470 vendors. Our findings showed that over 30% of customers in the smaller markets reported friendship as a reason for choosing particular vendors from which to buy their goods, while in Hatillo, this number drops to around 20%. One possible explanation for this difference may be that in smaller markets, customers may not mind spending an extra few minutes to locate their preferred vendor, whereas in larger markets like Hatillo, this could mean walking 15 minutes to reach the opposite end of the market. Instead, in larger markets, some shoppers may opt to choose their vendor based on factors such as price, quality or stall location, as opposed to personal connections. Additionally, in many farmers’ markets in Costa Rica - Hatillo included - stalls are rotated on a regular basis in order to ensure the equitable distribution of more highly desired locations. Consequently, in larger markets the redistribution of stalls could mean that one month a seller is located in the east end of the market and the next month in the west end of the market. This change could significantly disrupt loyalty and relationship building patterns between consumers and vendors, since taking the extra time to walk to the opposite end of a market may be inconvenient for many shoppers such as the elderly or those with small children, for example. In fact, based on our qualitative interactions, some customers indicated that they would rather purchase closer to their point of entry to the market rather than have to walk throughout the market to find a preferred vendor.

6.2 Farm Security

The term farm security groups a number of factors contributing to the stability of farming households, including land tenure, changes in rural economies, and access to markets, among others. Below we focus on two attributes of farm security, economic and social capital, which farmers’ markets may address. We also briefly analyze how the influence of farmers markets on economic and social capital fits into a broader context of farm security in Costa Rica.
6.2.1 The Economic Significance of Farmers’ Markets

Farmers’ markets were found to play a significant role in sustaining economic livelihoods for smallholder farmers in Costa Rica. We identified three factors that contribute to the economic significance of farmers’ markets: (1) the opportunity for farmers to receive a higher price point than at other outlets, (2) the ability of farmers to rely primarily on farmers’ markets to sell farm products, and (3) the stability of farmers’ markets.

Our study reveals that farmers’ markets provide important contributions to household incomes for smallholder producers because they enable farmers to receive a better price per unit for their products compared to other outlets. This was demonstrated by the 92 vendors (74%) who answered ‘more profit’ or ‘better price [per unit]’ when asked why they choose to sell at farmers’ markets. Of the 57 vendors (46%) who said they also sell in other places besides farmers’ markets, only 3 reported receiving a better price for their products in these other venues. Not only do farmers’ markets provide farmers with an easy-to-access point of sale, but they also eliminate intermediaries in the transaction process, allowing farmers to make a higher percentage of income from the same amount of produce (Guthman et al. 2007; Rengasamy et al., 2003; Vecchio, 2009). Vendors expressed that the absence of intermediaries is a main reason they are able to depend on the markets for at least half of their income. A portion of farmers (8%) noted that while they occasionally sell surplus products to supermarkets, the farmers’ markets are where they are able to generate the bulk of their monthly income. Our interviews with farmers, together with other studies that examine farmer motivations for selling at farmers’ markets echo this data (Vecchio, 2009; Hunt, 2007; Griffin and Frongillo, 2002).

Our research demonstrates that the financial benefits associated with selling at farmers’ markets have provided a stable source of income for many vendors. Eighty percent of farmers interviewed have been selling at markets for more than 10 years, and over 40% have been utilizing farmers’ markets for more than 20 years. Moreover, farmers are able to sell products year-round, distinguishing tropical farmers markets from those at higher and lower latitudes. While other factors contributing to farm security may be fluctuating, it is important for a farming household to have a reliable outlet to sell their produce and maintain a relatively consistent income.

It is also relevant to note that the travel distance for many vendors is relatively low, though often time consuming. Half of all surveyed vendors traveled less than 50 km to sell at the market, and 85% traveled less than 100 km. Nonetheless these relatively short overall distances can often
times mean travel times of several hours due to infrastructural issues. Travel time and distance were not mentioned by surveyed vendors when asked for reasons to worry about the economic stability of the farm. This likely indicates that travel time and distance to the market are not a significant impediments to market participation, nor do they significantly affect the profitability of choosing to sell via farmers markets as opposed to other venues.

The economic significance of farmers’ markets for vendor households is underscored when noting the relatively small portion of household income derived from off-farm sources. The farmers we surveyed are able to make a significant contribution to their family household, and generally do not seek financial gain from off-farm income, but rely on farmers’ market sales alone. Typically, smaller farm households depend on off-farm income as a permanent source of income while larger farm households depend on off-farm income only when financial pressures rise (Poon, 2011). However, 71% of the farmers that we surveyed cultivate less than 5 hectares, and nearly 50% of farmers generate more than 80% of the entire household income directly from the farmers’ market.

It is unclear why such a high percentage of vendors fall below the poverty line yet apparently do not have off-farm sources of income to significantly augment their income. Fifty-seven percent of vendor households live below the poverty line, but 68% of vendors reported that they themselves nor anyone else living in their household work outside the farm. The reason for such a low percentage of vendors using off farm income to contribute to their overall household income is unclear. Farmers may not necessarily experience extreme financial pressure, though their per capita income suggests this is not true. Alternatively, members of farming households may not have the skills or educations to secure off-farm employment, or other employment opportunities may not be amenable to continuing the farming operation. There may also not be many alternative employment opportunities to secure. In order to better understand the dynamics and relative importance of on- and off-farm income, further research is necessary.

6.2.2 Market relationships

Farmers employ many strategies to secure a stable clientele and improve sales at farmers markets. As described in detail above (see Section 6.1.3), one strategy farmers use to incentivize sales is relationship-building with consumers. One benefit of building relationships is customer loyalty. In our study over 70% of consumers reported that they visit the same vendor most or all of
the time, and over 90% of farmers reported rewarding frequent customers. This may suggest that customers trust that vendors will consistently provide quality produce week after week, and that vendors show their appreciation for customer loyalty by rewarding them with discounts or extra produce. In addition to improving sales, these personal relationships may also lead to other social benefits, including better consumer knowledge about how and where their food is produced, and more solidarity between rural and urban populations. The auxiliary benefits from consumer-vendor relationship is an important area for further research.

Interestingly, our study indicates that the size of the market may cause variation in the types of relationships established between consumers and vendors, which likely affects selling strategies and economic returns for vendors (see also Section 6.1.3). Our research suggests that vendors can better establish customer loyalty in smaller farmers’ markets compared to larger ones. The difference in market size could also indicate a shift in selling strategies for vendors. In Hatillo, over 50% of respondents answered that the reason for buying foods from a certain vendor is the quality of their products, whereas in the smaller markets of Lomas del Rio and Alajuelita, the number of respondents who cited quality as a reason dropped to around 40%. Moreover, consumers in Hatillo were less likely to state a relationship with the vendor was their reason for choosing where to purchase. Just over 20% of Hatillo consumers reported a relationship with the vendor as a reason for purchasing there compared to 33% of consumers in the smaller markets of Alajuelita and Lomas del Rio. This may suggest that in larger markets, where relationships may be less important, a stronger focus on other elements such as quality and price could be effective ways for vendors to increase sales.

Aside from the economic benefits that result from creating and maintaining relationships with consumers, we also documented a number of benefits arising from vendor-vendor relationships. For example, our study reveals that almost 60% of farmers trade products with other farmers at the markets, and of those who do so, 50% reported trading on a weekly basis. Vendors indicated that trading products amongst each other may either be for personal household consumption or to get rid of the excess of a certain product. Over 20% of vendors reported that the traded products they received from other vendors included a price discount. Additionally, vendors cited several non-economic benefits they receive from other vendors including friendship (20%) and a few mentioned simple things such as watching over their stall when they need to use the bathroom or being able to rely on a neighboring vendor for menudo (change).
6.2.3 The Challenge of Farm Security

Despite the benefits derived from farmers’ markets, there still remain multiple barriers to achieving farm security for smallholder households in Costa Rica. Farmers markets play a significant role in delivering economic benefits, but these are still a subset of what is needed to secure a stable and sustainable livelihood.

Nearly 80% of farmers reported worrying about the economic sustainability of their farm. When asked why they worry about the economic sustainability of their farm, they reported a series of concerns including the high cost of inputs, price fluctuations, unstable yields, unstable income, lack of government subsidies, and climate change, among others (listed in order or importance reported by vendors). Thirty-two percent of those concerned with the economic sustainability of their farm mentioned high inputs costs as a chief concern. This is congruent with a main concern of farmers in other parts of the world including the United States (Griffin and Frongillo, 2002). The importance of high input costs is underscored by the relatively high pesticide use ratios in Costa Rica (Galt 2014), and the dismantling of some input credit support and subsidy programs formerly provided by the Costa Rican government.

In addition to these proximate concerns, there are a number of well-documented obstacles to smallholder farm security. One of these concerns is issues surround land rights and ownership. Land ownership is a key aspect of natural resource capital which is critical to farm security (Scoones, 1998); among farmers interviewed land ownership was high, with over 75% of the farmers claiming to own the land that they farm. Though many problems exist in parts of the global South related to incomplete or imperfectly enforced land rights (see Banerjee and Duflo 2007), there is little evidence that such issues persist in Costa Rica. Nonetheless, the average land size of farmers’ markets vendors was relatively low, which could limit their ability to compete with other larger farming operation in the future. It is also unclear the overall quality of the farming land owned by farmers’ market vendors, which could play a role in their ability to remain financially sustainable. Moreover, as urban development increase, and export markets for agricultural goods continues to rise, land prices could also rise, effectively pushing out smaller farming operations.

An area of particular concern is Costa Rica is the expansion of supermarkets and the related loss of domestic market share for smallholder farmers. As discussed in section 3.3, supermarkets
have expanded rapidly over the last three decades and now comprise over 50% of the total domestic food retail market (Reardon & Berdegué, 2002. Accompanying the rise of supermarkets are a host of dedicated wholesalers, which dictate food production regulations and quality standards. It is often more difficult for smallholder farmers to achieve these new production regulations and standards, effectively eliminating them from access to a sizable part of the domestic fruit and vegetable market (Alvarado & Charmel, 2002). The continued advancement of supermarkets and their dedicated wholesalers will likely be a significant hurdle for the persistence and sustainability of many smallholder-farming households.

7. Conclusions and Policy Recommendations

The persistence and rise of many social issues in Costa Rica warrant increasing governmental attention. Income inequality is a growing problem and poverty rates continue to rise while GDP per capita grows. Such inequality presents itself in differential access to food. The recent efforts to liberalize trade have resulted in a larger variety of high quality foodstuffs, but most of these remain out of reach for low-income residents. Public health issues related to food are also an area of increasing concern. Food-related ailments such as hypertension, obesity, and type 2 diabetes are increasing at faster than expected rates (PIMA, 2013).

At the same time, Costa Rican smallholder farmers face multiple pressures significantly threatening their food-production livelihoods. Coffee prices have tumbled at the same time as important government support for smallholders, including preferential credit schemes and secure and subsidized markets have been reduced or dismantled. Many smallholders have retreated to the production of fruits and vegetables for domestic consumption. However, the increase in the share of supermarkets as a preferred venue for fruit and vegetable purchase, and the high regulations associated with selling to supermarkets, have left fewer marketing avenues for smallholder producers.

Farmers’ markets are one way to address these twin concerns. Although formally organized farmers’ markets are relatively new to Costa Rica, they are the preferred venue for the majority of Costa Rican consumers to acquire fruits and vegetables. This research demonstrates that farmers’ markets address issues related to urban food security. Farmers market service many low-income residents, many of whom are living below the Costa Rican poverty line. Most surveyed consumers get the vast majority of their total weekly fruit and vegetable consumption from farmers’ market.
Many farmers’ markets consumers report that price and quality are key reasons for shopping there. The physical proximity to low-income areas is also important since many consumers walk, and those with lower-income status are more likely to indicate that the convenience of farmers’ markets is why they shop there. The social relationships forged between consumers and vendors may be a way for low-income households to acquire cheaper or additional access to fruits and vegetables.

This research also indicates that farmers’ markets contribute to rural farm security by providing a significant source of revenue for smallholders. A majority of farmers’ market vendors in our survey fall below the rural poverty line. Yet, almost half of surveyed vendors receive over 80% of their total household income from farmers’ market sales. Most vendors indicated that farmers’ markets offer the best price for their goods, and most farming households have been selling at farmers’ market for over ten years. Social interactions including trading or selling to other vendors allows for access to other types of food and also help to promote sales.

Farmers’ markets may address many issues, but they should not be seen as the one policy strategy to address food and farm security. In farmers’ markets, consumer and vendor interests often conflict. Vendors seek higher prices for their products, while consumers want access to cheap yet good quality fruits and vegetables. This could result in the poor selling to the poor with and neither group able to benefit significantly in order to improve their economic standing. Without substantial government support, this dynamic will persist in such a way that trying to improve farm security via higher prices may exacerbate food insecurity by reducing food access for the poor. Moreover, farmers’ markets currently do not address potential concerns with pesticide residues. Vendors must receive a government permit to sell at farmers markets, but very high pesticide use statistics, particularly for domestically sold produce (Galt, 2014), may put consumers at higher risk of pesticide exposure.

Nonetheless, farmers’ markets address food and farm security in intriguing ways that could be further strengthened given increased government assistance and careful attention to particular policy choices. Below we outline some recommendations based on our findings.

**Policy Recommendations**

- **Reframe farmers’ markets as spaces which address social equity and public health.**
  
  Farmers’ markets are areas where people gain access to the fruits and vegetables needed for a healthy diet. They are also spaces where low-income farming households gain a majority
of their income and low-income consuming households gain a substantial portion of their dietary needs. Farmers’ markets are currently under the jurisdiction of the Ministry of Agriculture. But a closer relationship with other Ministries, notably the Ministry of Health, could open these spaces to interventions from government health clinics and other entities to promote healthy eating and lifestyle changes. These could include cooking demonstrations or even free health consultations with nutritionists. Farmers’ markets can also be seen as an intervention to address rural and urban poverty. Increased sales at farmers’ markets will increase revenues for low-income vendors. Strategies to simultaneously increase sales and increase access to low-income households should be explored (see below).

- **Improve physical access of low-income households to farmers’ markets.** Physical access to farmers’ markets plays a crucial role in food security especially among low-income households. Those households which do not live within close proximity to farmers’ markets may miss out on what is the preferred and lowest cost option to access fruits and vegetables in Costa Rica. Currently, many farmers’ markets are located in low-income areas. But there could be other ways to improve physical access to farmers’ markets including the creation of additional farmers’ markets and their placement in low-income areas, increased low-cost or free transit options to farmers’ markets from low-income areas, and additional days or hours of operation of particular farmers’ markets. Exploring additional ways to improve physical access should be a component of a larger feasibility study we recommend below.

- **Explore innovative ways for the government to incentivize farmers’ market sales, particularly for low-income households.** Our study indicates that farmers’ markets are likely to contribute to the twin goals of food and farm security. However, Allen and Guthman (2007) also note that this win-win situation likely requires some sort of public or private subsidy. This concept is echoed through our results, as many farmers are still concerned with their ability to maintain farm security in future years. Additionally, we can see that there is a significant proportion of farmers’ market shoppers who are living below the urban poverty line. Government programs or subsidies to assist in achieving the twin goals of farm security for small farm holders and food security for low-income populations would have significant benefits for communities and the country as a whole. Governments
can explore innovative ways to subsidize the purchase of healthy food at farmers’ markets by low-income consumers. Low-income residents spend a disproportionate amount of income on food, and oftentimes fruits and vegetables can be one of the first areas to reduce when funds are low. Neither municipal nor Federal government agencies in Costa Rica currently subsidize the purchase of fruits and vegetables at farmers’ markets. Subsidizing their purchase via government-sponsored vouchers linked to farmers’ markets (as was done recently in New York State, see Branch, 2015) could be a way to increase fruit and vegetable consumption while subsidizing smallholder farmers. Moreover, since ceiling prices are set for fruits and vegetables every week by the CNP, using these vouchers would ensure that vendors achieve those ceiling prices. Another area of particular interest could be the establishment of a voucher program for pregnant and lactating mothers linked to their regular health visits to local government-run health clinics (*Los Equipos Básicos de Atención Integral en Salud* (EBAIS)). Other more traditional forms of subsidies including for farm inputs, may have the added benefit of decreasing production costs and thus reducing prices for consumers.

4. **Fund more research on how to strengthen the contribution of farmers’ markets to food and farm security.** Our study indicates that farmers’ markets contribute to both food security and farm security. However, these are preliminary results that warrant further research and investigation. One striking finding is that there is relatively little research or data collection on farmers’ markets in Costa Rica, or in Central America in general. Basic research could go a long way towards devising strategies to improve the social outcomes associated with farmers’ markets. We recommend that the Ministry of Agriculture allocate sufficient funds to conduct basic data collection as well as to fund targeted feasibility studies on topics of interest (e.g. how to improve physical access of farmer markets to low-income households, how to form a government subsidy program to incentivize farmers’ market purchases by low-income households). These would be relatively inexpensive but could go a long way towards improving farmers’ markets, as well as food and farm security, in Costa Rica.

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