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Data Notes

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ABSTRACT

Alternative food system initiatives are often advocated as ways to meet goals of food security, environmental security, and community well-being. This paper presents data on one form of alternative food system initiative, a community garden, specifically regarding current and potential contributions to food security and social integration. Related to these goals, the most successful aspects of the community garden are provision of space and equipment to people who lacked these resources, as well as the creation of opportunities for a diverse cross-section of the community to develop personal relationships.

INTRODUCTION

The ways our food is produced, processed, distributed, and consumed constitutes our food system. Ideally, a food system provides food security, environmental security, and social well-being (Ericksen 2008). As concerns about conventional food system practices, such as industrial agricultural techniques, and the failure of conventional production to ensure food security have grown, interest in alternatives to the conventional food system has increased. Alternative food system initiatives, such as small-scale farms and community gardens, are generally intended to reduce energy use in food production and transportation (Pirog and Benjamin 2003), improve community relationships and social integration (Feenstra 2002; Macias 2008), increase use of sustainable agricultural practices (Kloppenburg, Jr. et al. 1996), and increase access to fresh foods (Feenstra 2002). Assessments of alternative food system initiatives are few, however, leaving us with little understanding of whether or how they are meeting these social, environmental, and food system goals (Hinrichs et al. 1998; McCormack et al. 2010). This article discusses the Fairbanks Community Garden in Fairbanks, Alaska in order to test several metrics for assessing community gardening as one type of alternative food system initiative. I present findings related to the economic value of gardening to participating households, opportunities for social integration in the garden, and gardeners' motivations for gardening.

Few analyses of the impact of alternative food system initiatives on human and environmental health have been conducted. Studies of the amount of food produced in community gardens or the economic value of that food are scarce. Blair et al. (1991) estimated yields in community garden plots in order to assess the economic value of garden produce. Baker (2004) found that community gardens in Toronto produced food at a rate up to 5 times the national standard for mixed vegetables. Gladwin and Butler (1984) caution that gardening can save a family money, as long as the required labor inputs are not considered. A number of studies have found that community gardeners eat more fruits and vegetables than non-gardeners (Alaimo et al. 2008; Blair et al.1991; McCormack et al. 2010). A stumbling block for some alternative food system initiatives is often the goal of social integration; alternative food system initiatives have been found to be somewhat socially exclusive—catering to upper-income, well-educated, white households (Guthman 2008; Hinrichs and Kremer 2002; Macias 2008). Macias (2008) found that, although the upfront costs of community gardening can still limit low-income households' participation, opportunities for social integration are high.

FAIRBANKS, ALASKA

Fairbanks, Alaska is a community of 97,581 people located in Interior Alaska (U.S. Census Bureau 2010). The Fairbanks North Star Borough, which encompasses the City of Fairbanks as well as several smaller towns, functions largely as one community and is treated here as such. The state of Alaska produces only about five percent of its own food (University of Alaska Fairbanks Cooperative Extension Service 2006). The community has demonstrated a long-term interest, but little success, in food self-reliance (Papp and Phillips 2007). However, interest in local production is rising, as evidenced by the growing number of small farms in the area (187 in 2002 and 212 by 2007) (USDA 2009).

Fairbanks is located at 64°north latitude. Average temperatures range from -23° C in January to +17° C in July with 10 days per year below -40° C and 13 days above +27° C (Alaska Climate Research Center 2008a). The average growing season is 115 days (Alaska Climate Research Center 2008b).

Fairbanks' current food system is similar to that of other urban areas in North America. The community has nine supermarkets, 24 convenience stores, four small markets, a farmers' market that operates from June-September, and several community-supported agriculture enterprises. Table 1 summarizes the type of food store and number of people per store type. A previous analysis of the food system in Fairbanks found that access to supermarkets is similar for upper and lower income households, but identified gaps in access to locally grown produce for most households (Meadow 2012).

The Fairbanks Community Garden was founded in 1979 by the Alaska Federation for Community Self-Reliance as an attempt

TABLE 1. Overview of store types in Fairbanks.

Food Store Type	2007 Count	People served per store or entity
Supermarket	9	10,832
Convenience Store	24	4,062
Small/Specialty Market	4	24,371
Community Supported Agriculture Enterprise[1]	4	24,371
Farmers' Market[2]	1	97,484

[1] CSAs served approximately 350 households in 2007

[2] A second farmers' market opened in Fairbanks in 2010

to decrease Fairbanks' reliance on outside food sources (personal communication). The garden is located near the downtown, but draws people from all over the community (Figure 1). The 84 plots are larger than those found in many community gardens at 56 m^2—a size calculated at the garden's inception to be able to provide vegetables for a family of four for one year (personal communication). The land for the garden is leased on a long-term basis from the Fairbanks North Star Borough government. Fifty-nine people were members of the garden when data collection began in 2006. Several people maintain more than one plot so all the plots were in use during all three summers of research.

FIGURE 1. The Fairbanks Community Garden is located in the Hamilton Acres neighborhood, just east of and across the Chena River from downtown.

METHODS

Data collection began in 2006 and continued through the summer of 2008. Surveys and interviews focused on gardeners' reasons for gardening, gardening practices, and basic demographics. Twenty-eight of 59 gardeners completed a written survey, which was distributed to all gardeners at the garden. Eleven people participated in semi-structured interviews, which were usually conducted at the garden or in the home of the gardener. All interviews were conducted in English.

The economic value of garden harvests were estimated by weighing the weekly harvests of a voluntary sample of 11 gardeners every one to two weeks over the nine possible weeks of harvest in 2008.[1] I compared the harvest records to the least expensive comparable food available for purchase at supermarkets or the farmers' market during the same week. For example, if a gardener harvested two pounds of carrots in a particular week, and carrots cost an average of $0.69 per pound at the local supermarkets, the economic value of that harvest was calculated at $1.38. Usually the supermarkets provided the least expensive option. If a comparable item was not available at the supermarket that week, the price from items at the farmers' market was used.

FINDINGS

Economic Value of Community Gardening

Upfront costs to participate in the Fairbanks Community Garden include a $30 per plot annual fee and a $20 clean-up fee, which is refundable in exchange for one day of maintenance work in the Fairbanks

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Community Garden. Garden fees have allowed the garden to offset most of the capital costs of gardening by providing running water throughout the garden, garden tools for members' use, and a large protective fence around the garden that keeps out the largest garden pest in Interior Alaska: moose.

Survey responses indicated that most gardeners (61 percent) spent more than $100 per year on supplies such as seeds, plant starts, and soil amendments. Twenty-nine percent of members reported spending between $50 and $100 each year. I calculated average annual costs to be $130 per year (assuming a refund of the $20 clean-up fee).

The average economic value of garden produce was calculated at $139.62 per plot, which indicates a small economic return (Table 2). Harvest surveys revealed a wide range of results from gardening efforts. Some people produced only a few dollars worth of vegetables each week while others were easily recouping their expenses. The range can likely be attributed to both the level of gardener skill and their choice of crops. Many of the most successful gardeners reported having years of experience, learning to garden as children, researching the practice on their own, and taking formal gardening education classes. What gardeners chose to grow also affected the economic value of harvest. Peas, for example, had a particularly high purchase price and were only available at the farmers' market.

TABLE 2. Economic value of harvests (per plot) from Fairbanks Community Garden in 2008.

	Cost to replace garden harvest
Per week range	$9.87 - $21.60
Per season range	$88.83 - $194.40
Per week average	$15.51
Per season average	$139.62

To put the garden harvests in perspective, Americans spend an average of $1.45 per person per week, or $5.80 for a household of four, for fresh vegetables (Blisard et al. 2004). The average replacement cost for a week of garden harvest was $15.51, a figure that supports previous findings that community gardeners eat more fruits and vegetables than non-gardeners (Blair et al.1991; McCormack et al. 2010)—assuming that the gardeners do eat everything they harvest.

Gardening can be a time-consuming activity, which could limit its efficacy as a food system component for those with work and family responsibilities. Fairbanks Community Garden members reported spending an average of eight hours per week for between six and 16 weeks per year. The hours per week ranged from two to 20, depending on the gardener. More detailed analysis correlating the hours per week and weeks per year spent gardening, as well as gardening skill, with levels of food production would be a useful step in this type of research, but was not completed in this study.

Building Relationships Across the Community

To assess the extent that the Fairbanks Community Garden is a socially integrated space, I focused on the socioeconomic and ethnic make-up of gardeners as well as gardeners' perception of the garden as a space where relationships develop across these demographic lines.

According to survey responses, Fairbanks Community Garden members tend to be well-educated professionals; 23 percent are educators (K-12 teachers or other education staff) and 17 percent identified themselves as scientists (either university researchers or federal agency scientists). However, other occupations reported include homemaker, fast-food worker, retired military, and cab driver. The range of incomes represented is large—from households earning less than $25,000 (11 percent) to those earning over $100,000 (11 percent), and skews slightly lower than community-wide averages. Of note is that no garden participant reported a

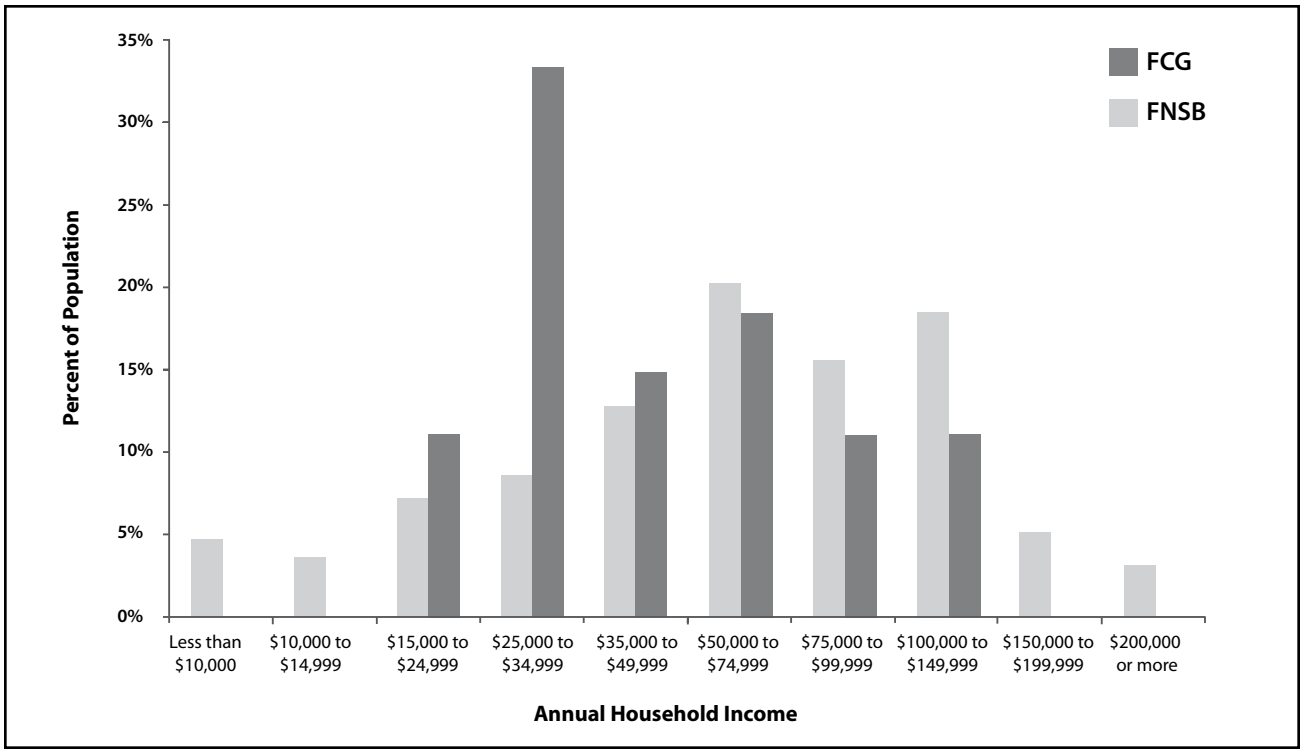

FIGURE 2. 2006 annual household income of residents of the Fairbanks North Star Borough and the Fairbanks Community Garden.

household income below $15,000 per year, although approximately 12 percent of the broader community falls into that category (Figure 2).

The ethnic make-up of the Fairbanks community as a whole is roughly 77 percent white, five percent African American, seven percent American Indian or Alaska Native, and three percent Asian (U.S. Census Bureau 2009). The ethnic diversity of garden members is roughly reflective of the community as a whole. Eighty-one percent of survey respondents were white, 11 percent American Indian or Alaska Native, four percent Asian, and four percent Hispanic. However, based on observation of the garden, I believe that the survey slightly undercounted some ethnic minorities due to language barriers (the survey was only provided in English) and question non-response (several participants declined to complete the demographic section).

Although the garden is located in one neighborhood, it draws gardeners from across the community. Only four gardeners reported living within 1.6 km of the garden. Six participants had to travel more than 40 km round-trip to work in the garden. The average round-trip for gardeners was 20 km. By drawing from the community as a whole, the garden increases opportunities for people to interact with those from different socioeconomic and ethnic backgrounds.

Respondents were not directly asked their political or religious affiliations or beliefs but observations from the garden suggest that the gardeners are a politically mixed group and that relationships have developed across political and religious lines. Discussions of long-term friendships often arose during interviews with gardeners. For example, a long-time member noted, "I feel like I've made some really good friends down there. I've met people that I wouldn't have met otherwise. And it's just interesting to get to know people … who I otherwise wouldn't have crossed paths with."

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Gardeners Frame Gardening

Although I chose to examine several food system functions of the Fairbanks Community Garden, I recognized early in the study that participation in food system development was not the primary motivation for most gardeners. Gardeners were asked to rank their three most important reasons for gardening, from a list of eight choices, based on literature regarding benefits of gardening and local food production. I used weighted average scores in order to see the relative importance placed on each choice—not just how many people selected one reason, but how many people considered that reason more important than others. The weighted average scores showed that "enjoyment" (1.82 out of a possible 3) was the most important reason for most gardeners (Table 3). "Better quality food" and "increased self-sufficiency," both more in line with alternative food system goals, were the second and third most important reasons, at .96 and .82 respectively.

Choosing to participate in a community garden is a different issue than choosing to garden at home and was addressed in a separate question regarding reasons for joining the Fairbanks Community Garden Many of the gardeners noted that they could not have homegardens due to poor soil, lack of space, and land-tenure issues. The highest ranked reason for joining the community garden was lack of adequate space at home (2.07) (Table 4). However, a social motivation—the chance to talk to other gardeners—was the second highest ranked reason at .86. The third most important reason given for joining the community garden (.71) was a 4 m high chain-link "moose" fence that encircles the entire garden. A fence of the size and quality of the one at the Fairbanks Community Garden would be extremely expensive for the average homeowner.

TABLE 3. Reasons for Gardening.

Reason	Weight	Rank
Enjoyment	1.82	1
Better quality food	.96	2
Self-sufficiency	.82	3
Better nutrition	.46	4
Save money	.36	5
Improve environment	.36	5
Stress relief	.32	6
Other	.29	7
Exercise	.11	8

TABLE 4. Reasons for joining the Fairbanks Community Garden.

Reason	Weight	Rank
No space at home	2.07	1
Meet other gardeners	.86	2
Protective Fence	.71	3
Plots were already set up	.64	4
Other	.50	5
Soil at home is poor	.36	6

The role of the community garden as a resource for those without the ability to garden at home was driven home by the experience of one former gardener who saw it as a refuge for the plants given to her by her recently deceased spouse.

> Every Christmas or anniversary [he would always give me] a rose bush or a perennial or some present of some growing thing. After he died, I knew I was going to stay in Fairbanks, but I was in the process of losing our home and everything we had. I didn't know where I was going to end up . . . I had these plants that were more precious to me than anything else I had and I didn't have any ground to put them in. And that's when I heard about the community

> garden . . . I knew if I could get my plot I could keep the things that were most precious to me safe.

CONCLUSIONS: LESSONS FOR FOOD SYSTEM DESIGN

This study provides some examples of metrics that can be used to elucidate the role of community gardens as alternative food system initiatives: the economic value of gardening, opportunities for social integration, and gardeners' motivations for engaging in community gardening.

When the Fairbanks Community Garden is viewed through the lens of an alternative food system initiative, there are moderate successes. On average, gardeners can produce more food than it costs to participate in the community garden, if labor time is not included. But labor time cannot be completely discounted from the equation. Gardening is time-intensive and, therefore, raises the question of whether those with limited leisure time can participate in this food system form. An additional issue is the influence of gardeners' skill level on harvest levels, which requires more study.

While the economic successes of the Fairbanks Community Garden are moderate, it does seem to meet the goal of creating a space for social integration. The garden is roughly representative of the ethnic diversity of the broader community and gardeners perceive that it provides an opportunity for greater, and more personal, interaction among people of different ethnic and social backgrounds than might be possible in other contexts. The lack of representation of households on the lowest income scale raises the question of whether some threshold of income is required to facilitate participation in gardening, given the upfront cost requirements. If this proves to be the case in future research, it has implications for the success of community gardening as both a contributor to food security and to social integration.

Because the Fairbanks Community Garden was founded explicitly to localize the Fairbanks food system, I expected to find that current gardeners were similarly motivated. Instead, I found that most gardeners identify "enjoyment" as their primary reason for gardening, with improved food quality and food self-sufficiency as second and third concerns. A commitment to food system goals is clearly not necessary to participate in an alternative food system enterprise. We should be open in our thinking about how to attract people to such enterprises. A dedicated non-food gardener, like the woman who used the garden as a safe home for her personal plants, can be the reason a community garden survives as a resource for food production.

Efforts to re-design our food systems to meet the goals of food security, environmental security, and social well-being require greater research attention to the successes and challenges of various food system forms. More assessments, particularly long-term studies, of alternative food system initiatives can help us develop a set of best practices in food system design that can be adapted for use in a variety of communities. This study represents one step in that process.

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NOTES

1. Unusually cold, rainy weather delayed the start of 2008 harvests until late July and a hard frost ended them in the third week of September.

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