



Farm Fresh Foods for Healthy Kids: Innovative Cost-Offset Community Supported Agriculture Intervention to Prevent Childhood Obesity and Strengthen Local Agricultural Economies

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Abstract

Objective: To better understand the potential of cost-offset community supported agriculture (CO-CSA) to improve dietary quality in low-income families by conducting research, extension, and education activities.

Description: The Farm Fresh Foods for Healthy Kids (F3HK) intervention included a cost-offset (50% subsidy) summer CSA share, weekly payments (including SNAP-EBT), 2-4 pieces of kitchen equipment, and 9 CSA-tailored education classes. F3HK participants were recruited from 12 rural and metropolitan communities in four states in spring 2016 and 2017, and individually randomized to intervention (n=148) or control (n=157). All had income <185% poverty and at least one child (2-12y) in the household. Using an intent-to-treat framework, multivariate multi-level regression models were used to examine change in outcomes over time for intervention relative to control. Geospatial data, participant focus groups, and farmer interviews were used to describe CO-CSA accessibility.

Evaluation: CO-CSA pickup sites averaged 6 miles (m) from participants' homes, which was closer than the farm (18m) but further than the supermarket (3m). F3HK farms reported efforts to reach low-income customers and strategized to modify the F3HK model to suit the local context; however, CO-CSA participants expressed mixed levels of accessibility. Relative to controls, F3HK intervention caregivers had improvement in some measures of attitudes, self-efficacy, skills, and dietary quality after one-season of participation, but not other measures. Lessons from the implementation and evaluation of F3HK informed the development of four undergraduate course modules: development of an intervention in a setting where "local food" is a foreign concept; assessment of dietary quality; economic impact analysis; and how to adapt CSA to open new markets for farmers.

Conclusion: CO-CSA plus education and kitchen tools is a promising mechanism to improve attitudes, self-efficacy, and skills among caregivers, with mixed results concerning dietary quality among caregivers and children. Longer-term outcome data will be examined for behavioral maintenance. An Extension toolkit for CO-CSA implementation is under development. Education modules are being piloted, and will be evaluated and refined before dissemination in 2020-21.

Objectives

- Examine whether CO-CSA plus tailored education improves dietary intake and quality in low-income households with children aged 2-12.
- Examine effects of CO-CSA plus education on knowledge, attitudes, beliefs, skills, and self-efficacy related to nutrition, meal planning, and meal preparation.
- Develop education modules for use in undergraduate courses.

Description

Farm Fresh Foods for Healthy Kids (F3HK)



Extension

Table 1. Average distance from participants home and CSA pick-up site, farm, and supermarket. Adapted from "A mixed-methods examination of the geospatial and sociodemographic context of a direct-to-consumer food system innovation," by McGuirt JM et al. *J Agric Food Syst Community Dev.* In press.

Distance from participants home and...	Average miles (standard deviation)
CSA pick-up site	6.2 (5)
Farm	18.4 (11)
Supermarket	2.9 (3.1)

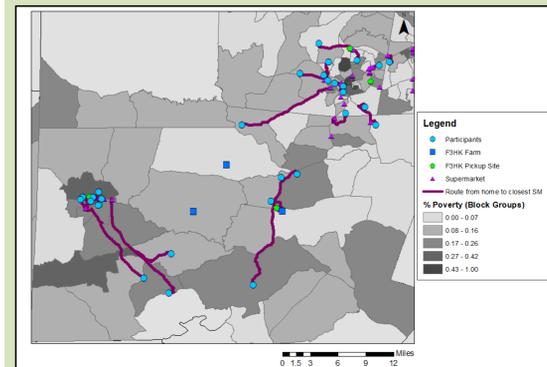


Figure 1. GIS road network analysis between participant addresses, pick-ups sites, farm, and retail food stores. Adapted from "A mixed-methods examination of the geospatial and sociodemographic context of a direct-to-consumer food system innovation," by McGuirt JM et al. *J Agric Food Syst Community Dev.* In press.

"We started staying until 6:30 because people needed a little bit more [time]...Yeah, to get off of work and get across town in the traffic to get to us."
-Farmer

"I offered to switch pick-up locations..."
-Farmer

Farmers reported efforts to make pick-up more convenient for low-income customers. However, CO-CSA participants expressed mixed levels of accessibility.

"I would pick my oldest up from practice and then come all the way over here to go all the way back home...like it was basically a big circle around town."
-CO-CSA member

"It's literally a mile from my house. It was very easy to just hop in the car, hop over there in the afternoon and then be done with it for the day."
-CO-CSA member

Figure 2. Farmers efforts to make pick-up convenient. Adapted from "A mixed-methods examination of the geospatial and sociodemographic context of a direct-to-consumer food system innovation," by McGuirt JM et al. *J Agric Food Syst Community Dev.* In press.

Participants who found pick-up challenging mentioned barriers such as:

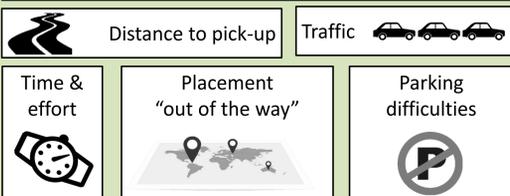
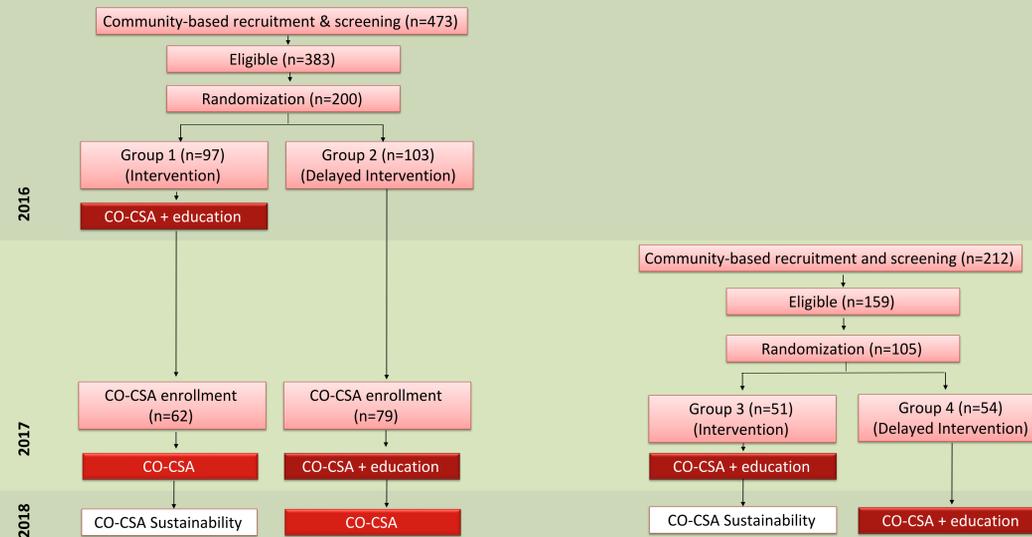


Figure 3. Barriers to CO-CSA pick-up. Adapted from "The perceived influence of cost-offset community-supported agriculture on food access among low-income families," by White MJ et al., 2018, *Public Health Nutrition*, 21(15), pp. 2866-2874.

Evaluation

Research



Baseline Characteristics	
CAREGIVERS	
• Majority of caregivers were <u>women</u> (97%)	
• Mean <u>age</u> was <u>36.1</u> years	
• About half were <u>single parents</u> (47%)	
• About half earned <u>at least a college degree</u> (49%)	
HOUSEHOLDS	
• 50% of households received SNAP/EBT	
• 39% of households participated in WIC	
• 57% were <u>food insecure</u>	
CHILDREN	
• About half were girls (52%) and half boys (48%)	
• Mean <u>age</u> was <u>6.1</u> years	
No significant differences between RA groups	

	Intervention		Control		
	Baseline Mean	Change	Baseline Mean	Change	Sig.
CAREGIVER					
FV Intake (cups/day)	4.4	+0.3	4.0	-0.4	
FV Intake w/o juice (cups/day)	3.7	+0.4	3.4	-0.4	*
Dermal Carotenoids	29,518	+2,442	29,039	-777	*
CHILD					
FV Intake (cups/day)	4.3	-0.1	3.8	-0.3	
FV Intake w/o Juice (cups/day)	3.2	0.0	2.9	-0.3	
Dermal Carotenoids	35,606	-881	34,744	-1,647	
FOOD SECURITY					
Food Secure (%)	42.6	+12.0	44.0	-5.1	**

* P<0.05 ** P<0.01

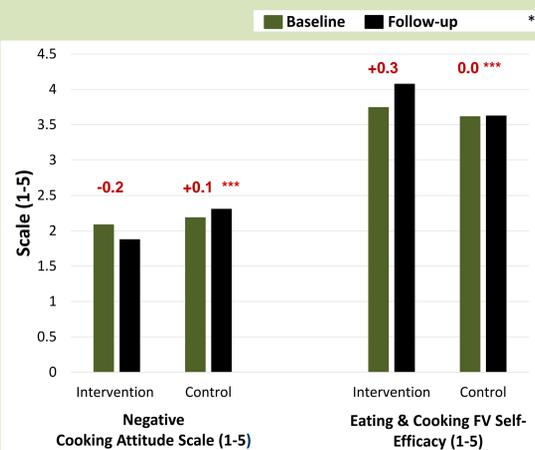


Figure 4. 1-Season Outcomes in Caregiver Attitudes and Self-Efficacy by Group

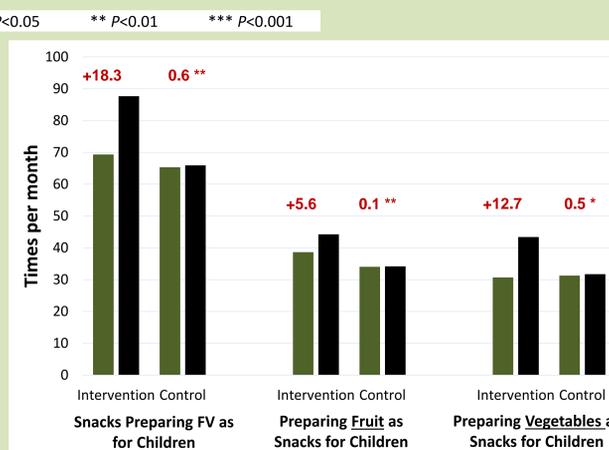


Figure 5. 1-Season Outcomes in Caregiver Preparation of FV by Group

Education

Design, Implementation, and Evaluation of Local Food Initiatives for Farms and Families Education Modules

- ✓ Four distinct but related modules
- ✓ Modules can be delivered together or individually
- ✓ Designed for use in undergraduate courses
- ✓ Suggested modifications allow modules to be adapted and delivered in graduate courses

Module 1

What's a CSA? Creating a community-based local foods intervention where "local food" is a foreign concept

Module 2

Assessing dietary quality in community-based local foods interventions and evaluations

Module 3

What is an Economic Impact Study? Identifying how local food systems add to the economic engine of a community

Module 4

Adapting a CSA to open new markets for farmers and increase low-income families' access to local foods

Conclusions

- CO-CSA plus education and kitchen tools is a promising mechanism to improve attitudes, self-efficacy, and FV intake among caregivers.
- Positive changes among caregivers may be a first step toward improved dietary quality among children but more research is needed to explore this link.
- Longitudinal outcome data will be examined for maintenance of behavior change.
- Education modules are being piloted, and will be evaluated and refined before dissemination in 2020-21.

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