

Examining the Relationship Between Local Food Market Availability and County-level Food System Related Economic Outcomes

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Agricultural economic decline associated with the conventional food system

In last 30 years, U.S. has suffered a loss of 72 million acres of farmland (Webster, 2014).

Between years of 2007-2012. 4.3 percent of U.S. farms ceased to exist (Webster, 2014).

The number of small-scale and mid-size farms has declined while the number of larger scale farms (1,000 acres or more) have remained more steady (Hoppe, MacDonald, & Korb, 2010; Stanton, 1990; Arita, Hemanchandra, & Leung, 2014)

Food system related issues as manifests of market failure (social justice perspective)

Market failures occur when free markets are “socially inefficient” (i.e. when social costs for a market or good outweigh the social benefits of the market/good) or when the full benefits for the use of social sources are not realized (Rocha, 2007:14).

Market failure arguments are usually efficiency based, however other perspectives are useful in defining market deficiencies such as perspectives grounded in social and distributive justice principles (e.g. food justice movement).

- Morally grounded principles that highlight the inequities that emerge from the design and structure of social and economic frameworks.

In this study, the insufficiency of available food markets in disadvantaged communities is viewed as market failure because it can lead to the inequitable distribution of market benefits and ultimately lead to unrealized social benefits and greater societal cost overall.

Logic of market failure based on local food market availability and local economic outcomes (Chapter 4)

Insufficiency of markets that sell locally produced goods

Little/No selling of locally produced food

Decline in farms and farmland (especially small and mid-size farms)

Increase food resource dependency;

Decrease in military installation buffers;
Diminish local food and social culture

The promise of LFS in mitigating food system inequities and promoting food justice

Local food system development has been promoted as a strategy or a theory of change toward improving a community's social, health and economic well-being.

The advocacy for LFS is grounded in social justice principles as they are believed to be:

“rooted in particular places, aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practices, and enhance social equity and democracy for all members of the community” (Feenstra, 1997:28).

Helping stabilize local economies and support local food infrastructure by providing viable more accessible markets for small and mid-sized farmers (Andreatta & Wickliffe, 2001; Martinez et al., 2010; Stevenson et al.; 2011; Schmidt et al.; 2011).

Theory of change in improving local economic sustainability through local food system development

Development of local food market systems

Increase market opportunities and access to disadvantaged groups (e.g. small and mid-size farms and enterprises)

**Increase local livelihoods reliant on the agriculture system &
Reduce the loss of farms and farmland**

Contribute to the sustainability of the local economy and national security

Government intervention in LFS development

In the 2008 Farm Bill USDA was commissioned to assess the prevalence of food deserts and other food market deficiencies and to provide measures to correct or mitigate the issues associated with existing deficiencies (USDA, 2010).

Through the Healthy Food Financing Initiative (HFFI), the Obama Administration allocated \$400 million towards establishing programs focused on developing and implementing strategies to mitigate these issues (U.S. DHHS, 2010; US White House, 2010).

➤ E.g. Farmers' Market Promotion Program

Local food systems are linked to numerous USDA priorities—including

- “enhancing the rural economy and the environment,
- improving food access and nutrition,
- informing consumer demand, and
- strengthening agricultural producers and markets” (Low et al, 2015).

Research Gaps

Limited evidence that local food systems are being developed in way that increases market access in disadvantaged communities or improve communities' health and economic well-being.

Lack of evaluation and evidence of the potential for government intervention to ameliorate food system market failures through local food system development assistance programs.

Study Purpose

1. Springboard for evaluating the potential for LFS development and government intervention in mitigating the food system related market failures.
2. Inform planning and policy decisions toward more effective and sustainable community economic development.

Data Sources

- U.S. Food Environment Atlas
- U.S. Census of Agriculture
- Know Your Farmer Know Your Food

Methods of Analysis

- County level of analysis
- Multivariate regression analysis w/ robust standard errors
- Missing data

Non-Moderated models

Dependent Variables

Main Explanatory Variable

**Farmers' market
availability per
100K**

**Proportion of direct
sales to total
agriculture receipts**

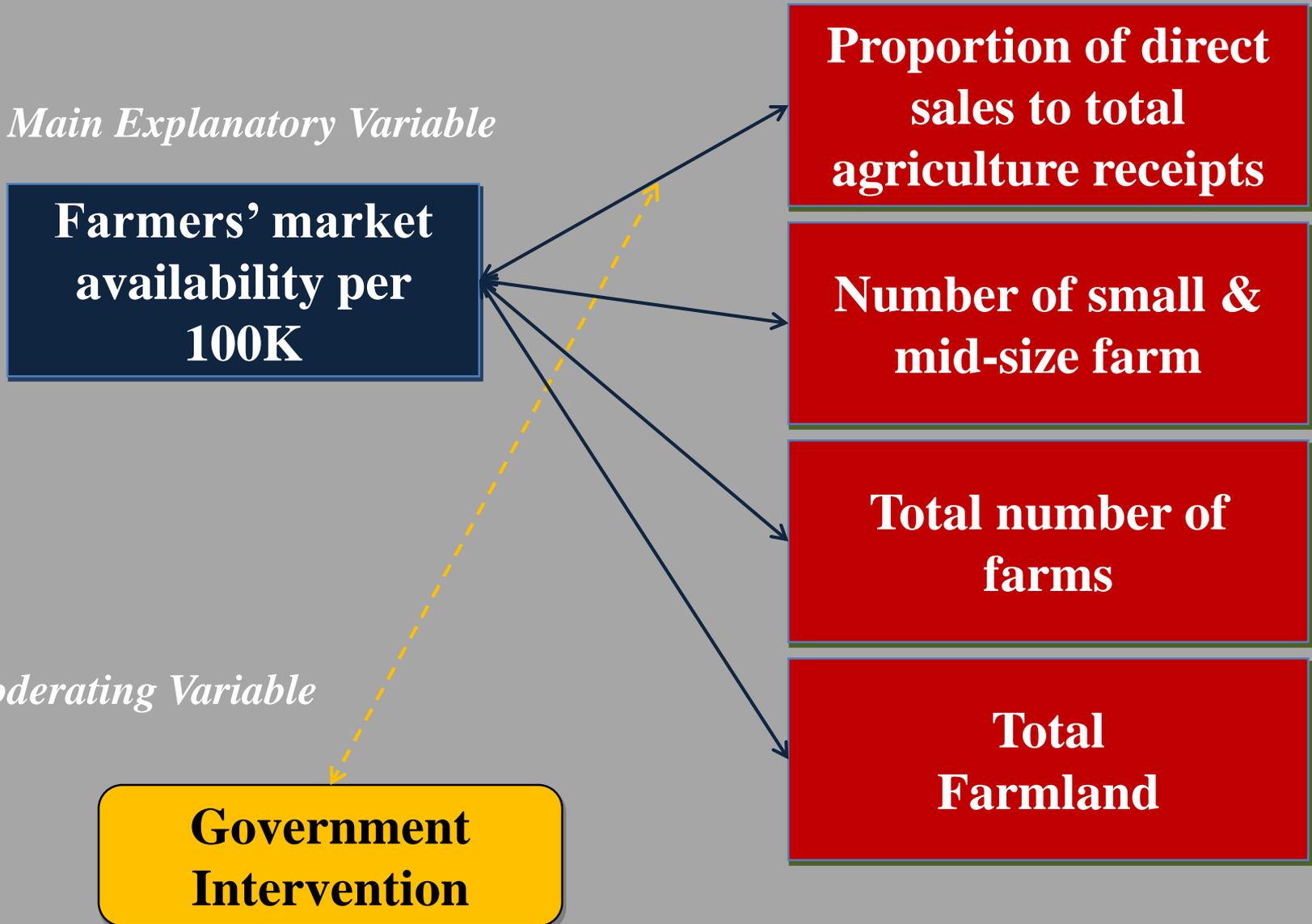
**Number of small &
mid-size farm**

**Total number of
farms**

**Total
Farmland**

Moderating Variable

**Government
Intervention**



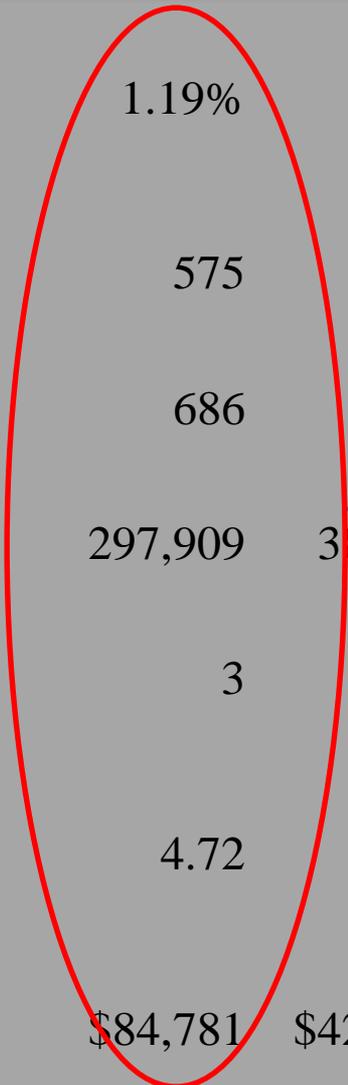
Sample size & Model fit

DVs	Non-moderated		Moderated	
	N	R ²	N	R ²
Proportion of direct sales to total agriculture receipts	2780	0.119	2780	0.122
Number of small and mid-scale farms	2993	0.114	2993	0.120
Total number of farms	3070	0.110	3070	0.115
Total farmland in acres	3048	0.279	3048	0.282

Table 7. Descriptive Statistics

Variables	Mean	SD	Min	Max
Proportion of direct sales to total agriculture receipts	1.19%	3.64%	0.0002%	81.8%
Number of small and mid-scale farms	575	485	18	5555
Total number of farms	686	554	1	5732
Total farmland in acres	297,909	387,306	12	5,515,557
Farmers' market availability	3	6	0	127
Farmers' market availability per 100,000 residents	4.72	8.07	0	101
Total local food grant funds awarded between 2009 - 2011 (\$)	\$84,781	\$420,581	\$0	\$10,100,000

The average county



County-level associations between food related economic outcomes and per capita farmers' markets adjusted for demographic, socioeconomic, and geographic characteristics (NON-MODERATED MODELS)

Main Dependent Variables

	Proportion of direct sales to total agriculture receipts	Number of small and mid-scale farms	Total number of farms	Total farmland in acres
Main Dependent Variable	<i>β</i>			
Farmers' market availability per 100,000	0.016*	-2.26*	-1.93*	39

County-level associations food related economic outcomes and farmers' market availability adjusted for demographic, socioeconomic, and geographic characteristics moderated by government intervention (MODERATED MODELS)

Main Dependent Variables

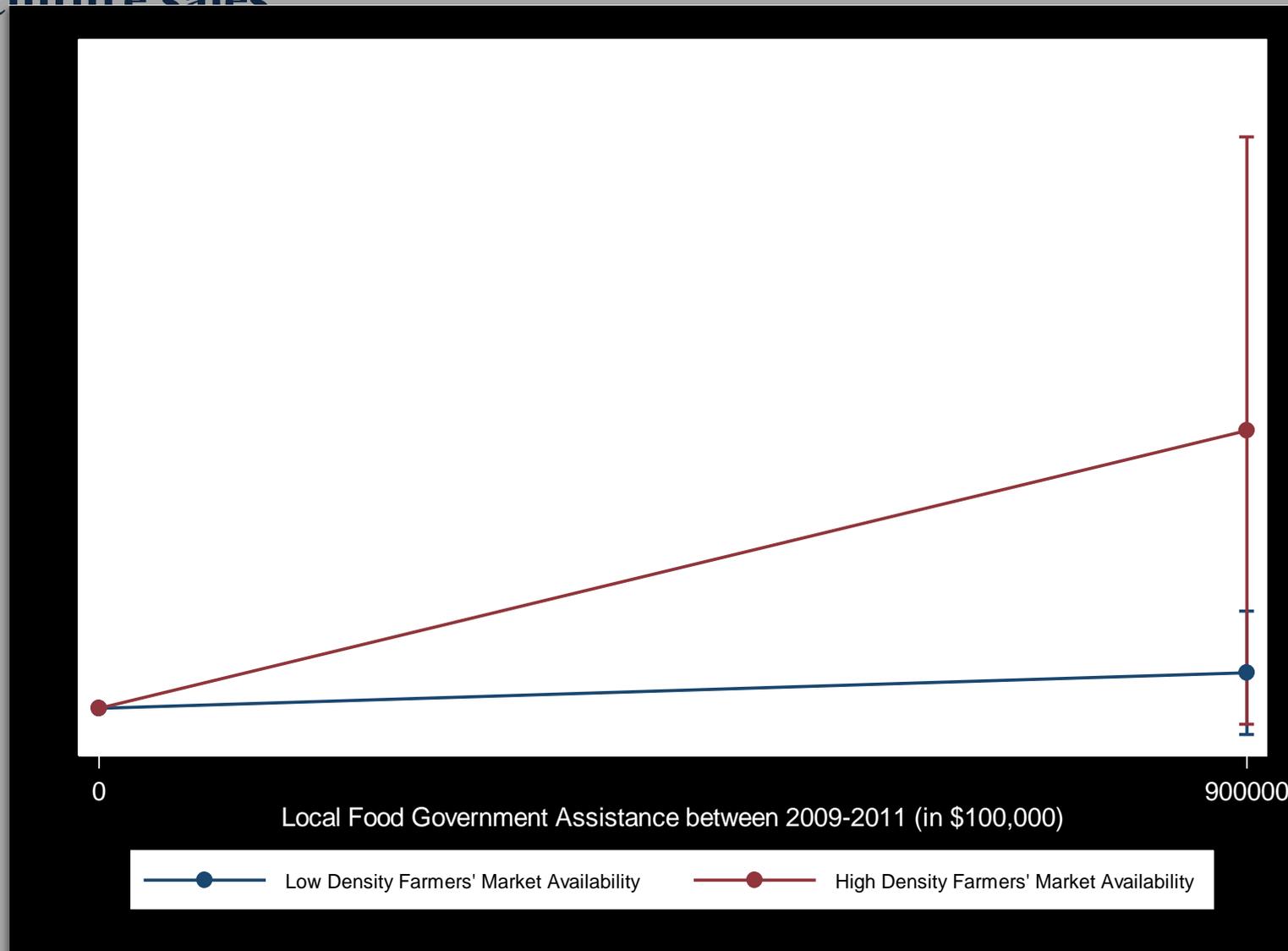
	Proportion of direct sales to total agriculture receipts	Number of small and mid-scale farms	Total number of farms	Total farmland in acres
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Main Independent Variables

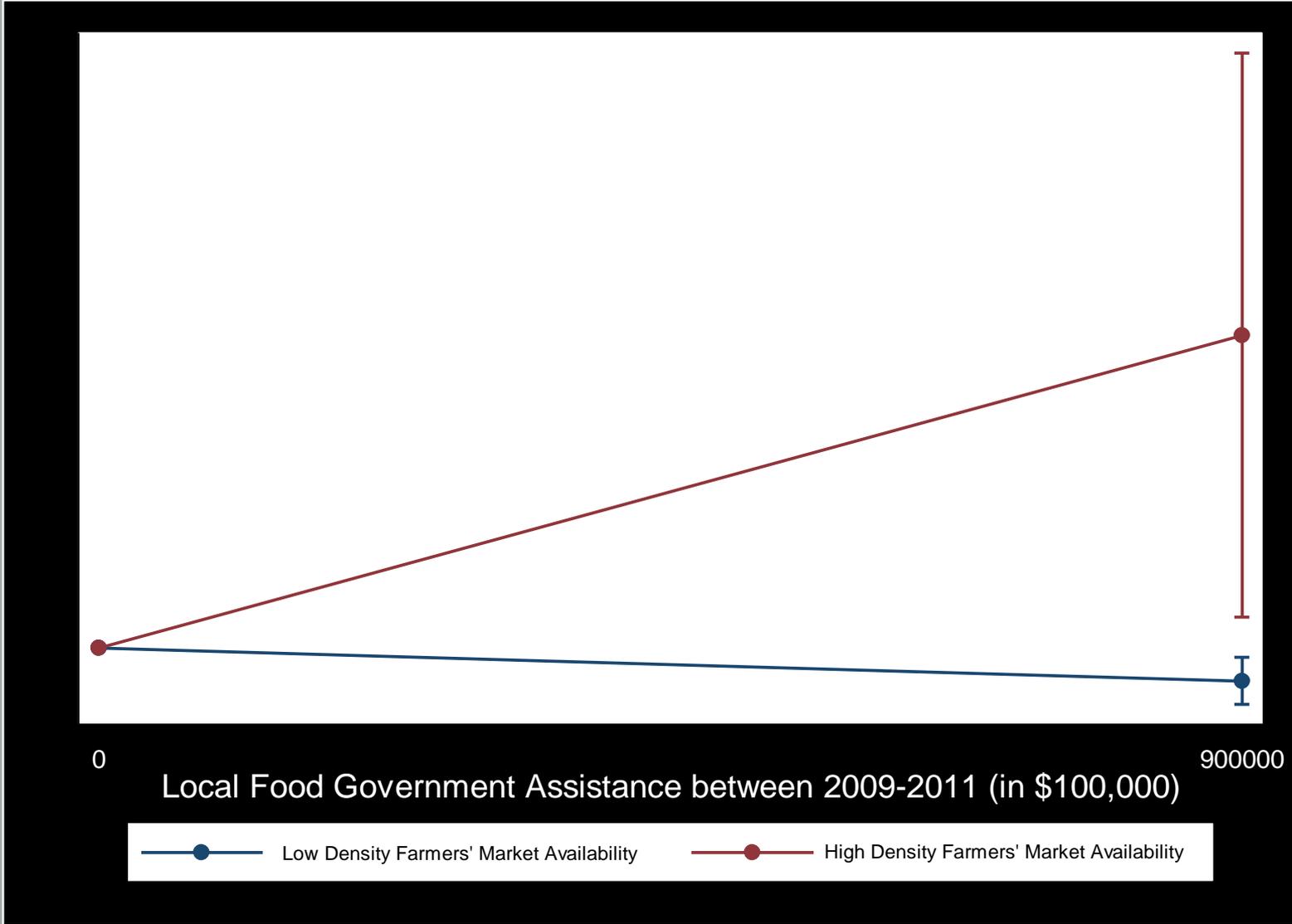
β

Farmers' market availability per 100,000	0.013*	-2.57*	-2.32^	-126
Total local food grant funds awarded (in \$100K)	0.033	6.49	4.04	-7236*
Farmers' market availability per 100,000 * Total local food grant funds (in \$100K)	0.003^	0.455	0.703	521*

Interaction effect between farmers' market availability per 100,000 residents and federal grants/loans awarded on the predicted value of the proportion of direct sales to total agriculture sales



Interaction effects between farmers' market availability per 100,000 residents and federal grants/loans awarded on the predicted value of total farmland in acres



Discussion & Implications

Findings suggest that local food markets have the potential to promote desirable social-economic outcomes/conditions...

- Greater farmers' market availability was associated with positive economic outcomes such as higher shares of revenue generated from locally produced food (i.e. retainment of local revenues)

However, other findings suggest that LFS may be susceptible to market failures similar to CFS...

- A higher density of farmers' markets in counties was associated with fewer farms and even less small/medium farms.

Discussion & Implications Continued...

Findings also suggest that programs under the KYF2 did target some disadvantage populations and contributed to the generation of positive community benefits associated local food system development in some ways...

- **More government assistance flowed in counties with less farmland and low farmers' market density.**

but also targeting advantaged counties...

- **Greater government assistance flowed in counties with high density farmer's markets and more acres of farmland.**

Policy Implications

In order for organizations and communities to achieve food justice goals, interventions (e.g. policy- and grant-making) to increase food system related economic outcomes must be designed and structured to:

- Target the most critical stakeholders— socioeconomically disadvantaged communities (diminishing economies) and groups (small and mid-scale farms) (Scorza, Henderson, & Castillio, 2012) .
- Fit the environmental, social, and cultural conditions that exist in a given environment
- Be holistic or systems based (i.e. multi-level, multi-perspective, and multi-interventional approach toward identifying and mitigating barriers to food market availability and accessibility that these groups face)

Study Limitations

- Causal limitations (cross sectional data)
- County level of analysis
- Endogeneity
 - Omitted variable bias

Future Research

- Should evaluate other types of local food markets
- Conduct longitudinal analysis
- Evaluations should consider multi-level and multi-perspective factors that influence market availability and accessibility.

Thank you for your time & attention

Questions???

Economic based systems approach to increasing the development and sustainability of local food systems

Supply-side Interventions

Community development and planning policies to support LFS development (e.g. zoning)

Education, outreach, and training programs for farmers

Incorporating the aggregation and marketing services at farmers' markets

Altering other agriculture policy that is limiting (e.g. food safety policies)

Demand-side Interventions

Food education and outreach programs for residents

Leveraging resources provided by existing food assistance programs (e.g. SNAP)

Voucher Programs (e.g. food purchase, transportation)

Other transportation (car-pooling) & food distribution systems (e.g. mobile markets)