RECENT AND EMERGING EVIDENCE OF FOOD SYSTEMS AS ECONOMIC DEVELOPMENT

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Harvesting Opportunity in Kansas
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Credit: Urban Design Lab, Columbia University

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FARM/ RANCH VIABILITY

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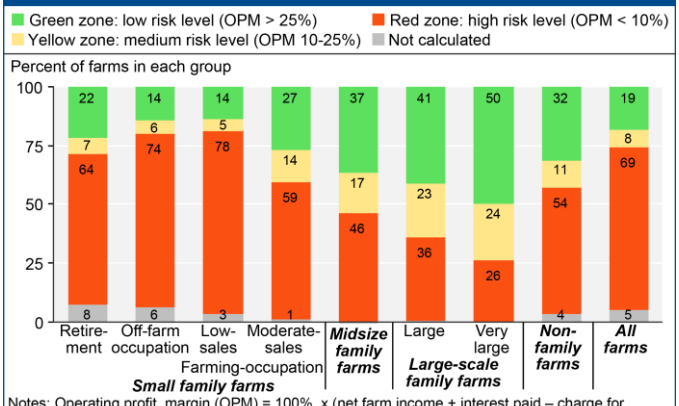
Profit Margin Increases with Farm Size

Farms by operating profit margin (OPM) and farm type, 2015



Notes: Operating profit margin (OPM) = 100% x (net farm income + interest paid – charge for operator and unpaid labor – charge for management) ÷ gross farm income. Small family farms have annual gross cash farm income (GCFI) < $350,000. Midsize family farms have GCFI of $350,000-$999,999. Large-scale family farms have GCFI of $1,000,000 or more.
Source: USDA, Economic Research Service and National Agricultural Statistics Service, 2015 Agricultural Resource Management Survey (data as of December 2016).

Documented consumer willingness to pay a premium for local food

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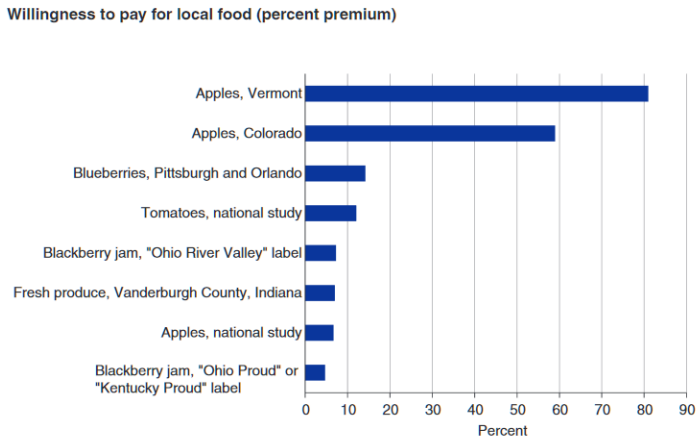
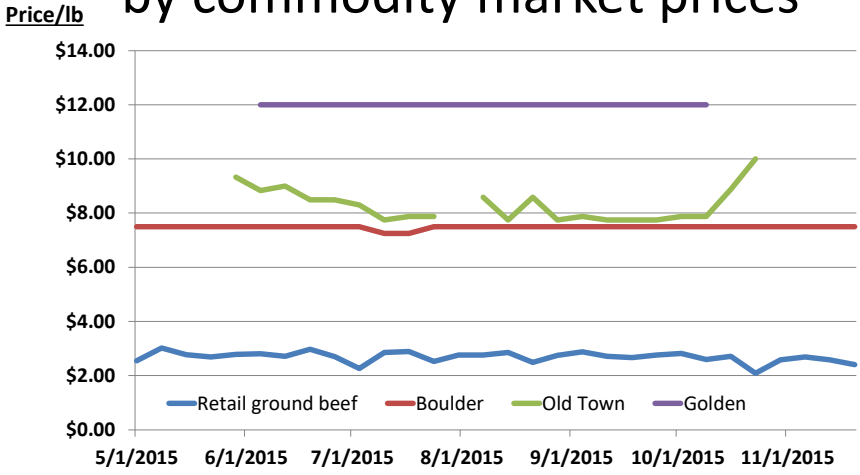


Source: Willingness to pay as a percent of base price calculated from reported results from the following: Apples/ Vermont from Wang et al., 2010, averaged over respondents that had and had not purchased organic food. Apples/ Colorado from Costanigro et al., 2011. Blueberries from Shi et al., 2013. Tomatoes/national and Apples/national from Onozaka and Thilmany, 2012. Blackberry jam from Hu et al., 2012. Fresh produce/Vanderburgh County from Burnett et al., 2011.

Low et al. 2015

Ground beef prices at farmers markets not impacted by commodity market prices

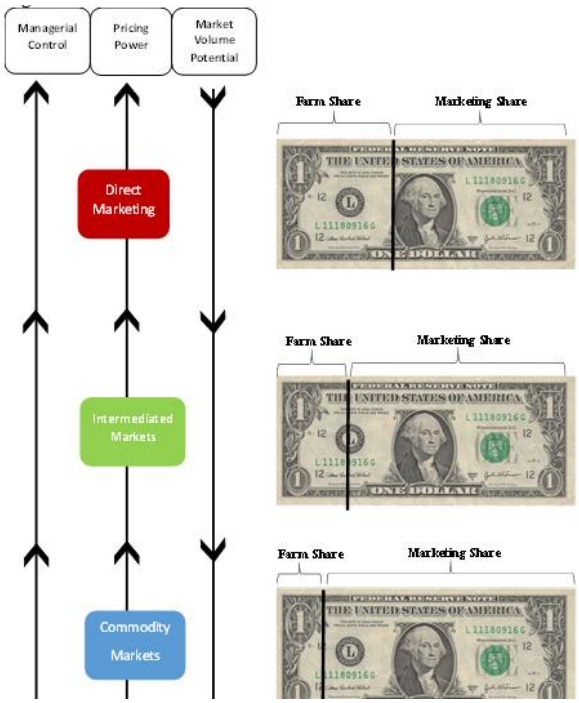


Non-significant, but negative relationship between USDA retail ground beef prices and Larimer (Old Town) market prices; r (20) = -.415, p<.05

Note: Weekly average retail ground beef prices from https://www.marketnews.usda.gov.

Sullins et al. 2016

In local food channels do farmers retain more of the food dollar? New pricing reports!



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There is a likely tradeoff between volume of sales and two key management factors:

1) Managerial control retained by producers

2) Pricing power of producers

Is there an "optimal" place on continuum for an operation?

Mixed Evidence of Farm Performance:
Local food producers grew less between 2007 and 2012, but more likely to have 'survived'

Percent change in sales 2007-12 by initial farm size and marketing arrangement

	All operations		Beginning farmer in 2007	
2007 sales category	No direct sales in 2007	Direct sales in 2007	No direct sales in 2007	Direct sales in 2007
$1-9,999				
Arc percent change, 2007-12	36.9	31.8***	41.5	35.4***
Observations	225,862	28,981	76,121	11,521
$10,000-49,999				
Arc percent change, 2007-12	2.8	-12.1***	2.1	-16.7***
Observations	158,367	16,057	35,902	4,736
$50,000-249,999				
Arc percent change, 2007-12	12.1	-3.3***	14.6	-6.5***
Observations	128,175	8,350	20,941	1,736
$250,000+				
Arc percent change, 2007-12	12.3	3.9***	11.5	-9.8***
Observations	130,434	4,336	17,936	559
All				
Arc percent change, 2007-12	19.3	13.5***	25.6	17.9***
Observations	642,838	57,724	150,900	18,552

Notes: Asterisks denote rejection of the null hypothesis that the difference in means is zero at the (*) 10%; (**) 1%; and (***) 0.1% statistical significance levels. Sample includes all operations with positive sales in 2007. The percent change for farm i is defined: $100*(x_{it+1} - x_{it})/0.5*(x_{it+1} + x_{it})$.

Source: USDA, NASS, Census of Agriculture, 2007, 2012.

Business survival rates 2007-12 by initial farm size and marketing arrangement

	All operations		Beginning farmer in 2007	
2007 sales category	No direct sales in 2007	Direct sales in 2007	No direct sales in 2007	Direct sales in 2007
$1-9,999				
Survival rate, 2007-12	0.453	0.549***	0.416	0.507***
Observations	484,211	51,535	177,392	22,170
$10,000-49,999				
Survival rate, 2007-12	0.581	0.667***	0.521	0.611***
Observations	268,758	23,729	68,053	7,647
$50,000-249,999				
Survival rate, 2007-12	0.656	0.738***	0.593	0.649***
Observations	194,563	11,270	35,364	2,661
$250,000+				
Survival rate, 2007-12	0.728	0.791***	0.66	0.704***
Observations	178,515	5,450	27,115	800
All				
Survival rate, 2007-12	0.553	0.609***	0.474	0.543***
Observations	1,126,047	91,984	307,924	33,278

Notes: Asterisks denote rejection of the null hypothesis that the difference in means is zero at the (*) 10%; (**) 1%; and (***) 0.1% statistical significance levels. Sample includes all operations with positive sales in 2007. The survival rate is defined as the share of 2007 Census respondents with positive sales who reported positive sales in the Census in 2012.

Source: USDA, NASS, Census of Agriculture, 2007, 2012.

Low et al. 2015

Matt LeRoux, Cornell Cooperative Extension of Tompkins County

Market Channel Assessments

USDA Agricultural Marketing Service

How do you evaluate a market opportunity?

Six interacting factors impact the "performance" of a marketing channel including:

Preliminary CO case study evidence:

Marketing Profit Margin Percentiles, Direct Channels

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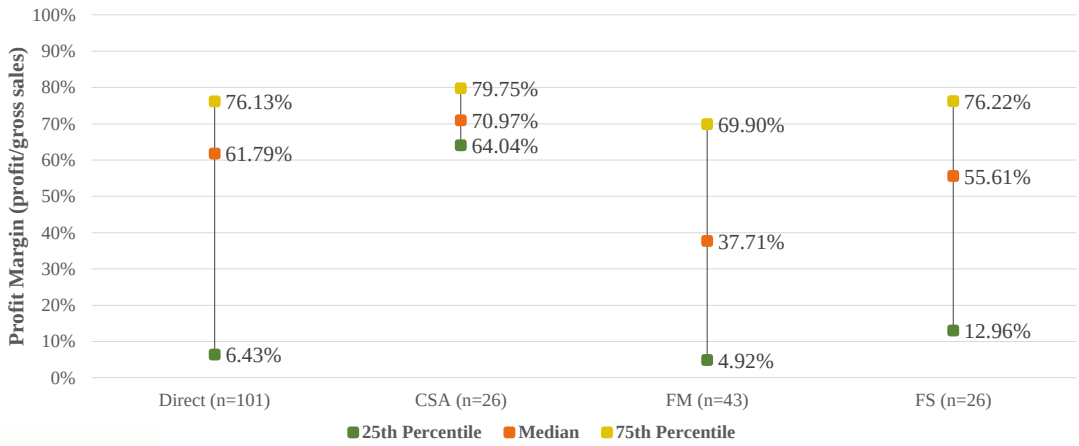
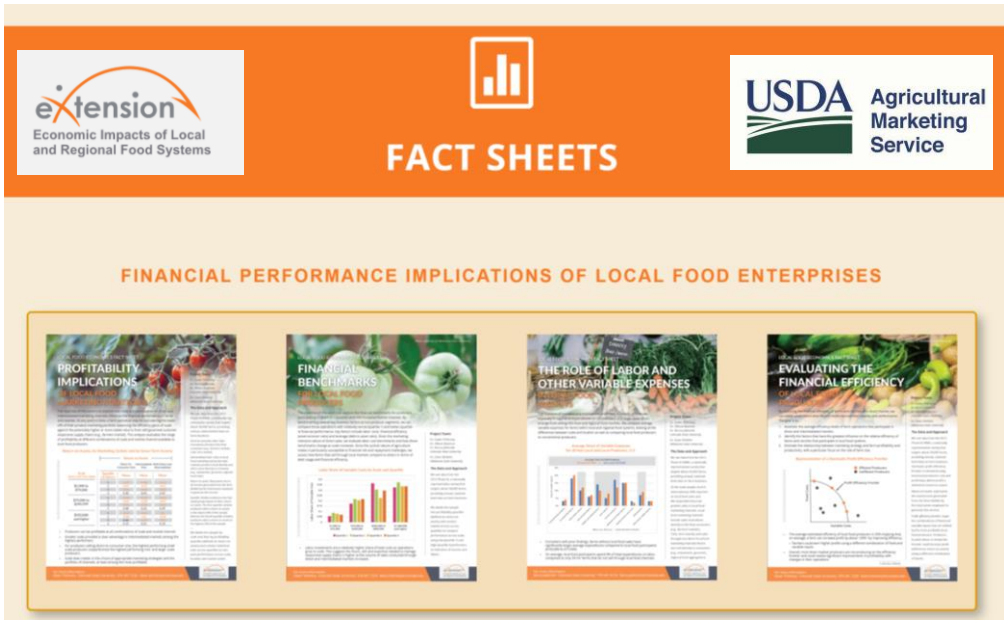


USDA Agricultural Marketing Service

Profit Margin = (Gross sales - Marketing Labor Cost - Travel Costs) / Gross sales



NIFA

LocalFoodEconomics.com

USDA AMS sample of Local Food Producers, Farmers and Ranchers, 2013

- 2013 Phase III ARMS data
- Nationally representative survey that targets about 30,000 farms, providing annual, national-level data on farm business

	No. of observations	Population size
Market Channel		
D2C	664	124,186
Intermediated	136	11,703
D2CIntermediated	213	24,012
Alllocalfood	1,013	159,901
Nonlocalfood	16,416	1,935,568
Local food producers by farm scale (GCFI)		
1kto75k	534	112,563
75kto350k	214	21,104
350to1Million	104	3,922
Million and higher	107	3,607

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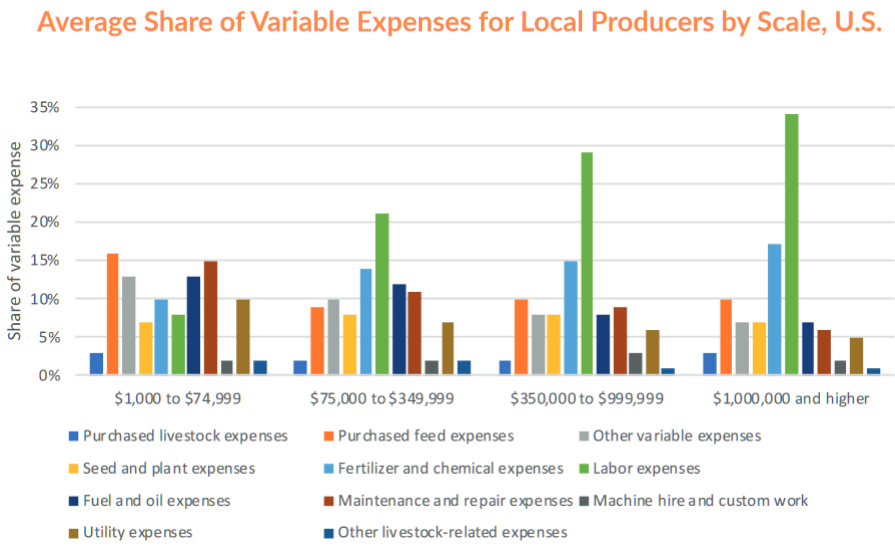
The Role of Labor and Other Variable Expenses



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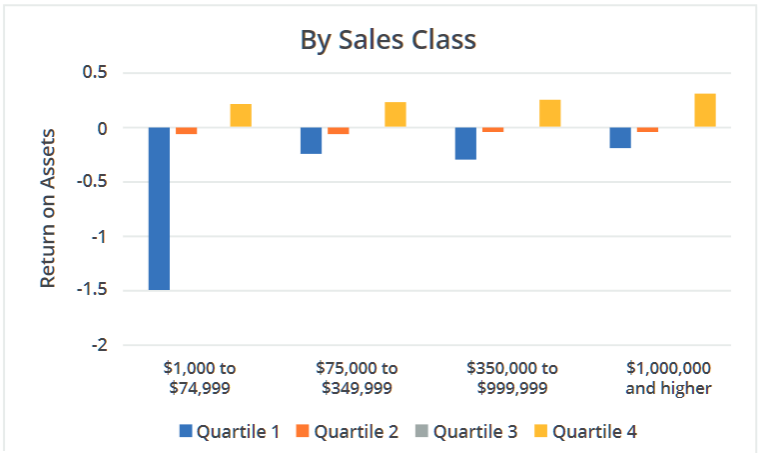
Source: Bauman, Thilmany, Jablonski 2018

Methodology: Profitability implications of local food marketing strategies

- We divide the sample into quartiles, segmented by profitability
  - Profitability is defined as return on assets.
  - A % representing the net income made per dollar of assets invested in a farm, common competitive returns for industry are 10-15%
  - For segments: Quartile 4-best performers, Quartile 1-lowest performers
- Provides benchmark information for comparisons across groups and time (as more years become available)

Profitability by Scale and Channel

Return on Assets by Quartile
(Quartile 4 is the most profitable)



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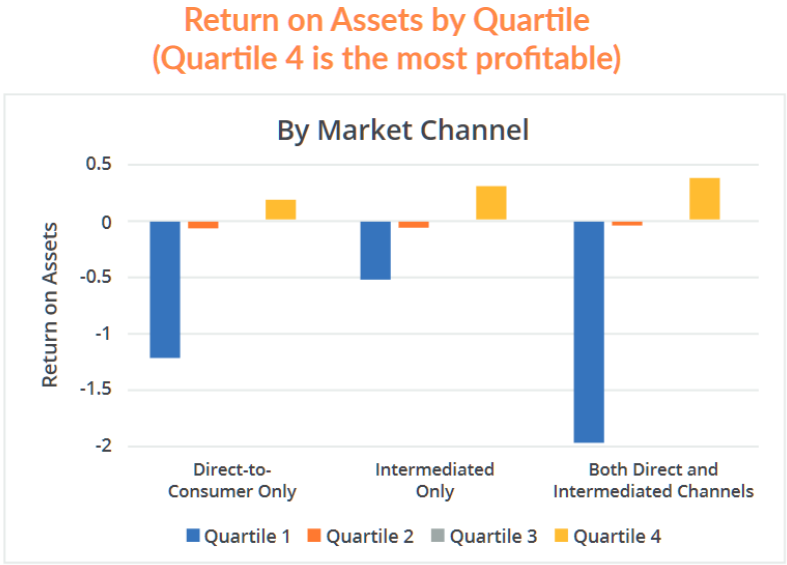
Source: Bauman, Thilmany, Jablonski 2018

Profitability by Scale and Channel



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Source: Bauman, Thilmany, Jablonski 2018

Regional Economic Development

Food Systems led economic development is an opportunity to strengthen rural-urban linkages

2012 CENSUS OF AGRICULTURE
COUNTY PROFILE

Denver County
Colorado

	2012	2007	% change
Number of Farms	10	24	- 58
Land in Farms	143 acres	609 acres	- 77
Average Size of Farm	14 acres	25 acres	- 44
Market Value of Products Sold	(D)	$561,000	
Crop Sales (D)			
Livestock Sales (D)			
Average Per Farm	(D)	$23,356	

Denver Mayor Michael Hancock set the city's 2020 sustainability goals:

Acquiring at least 25 percent of food purchases through Denver's municipal government supply chain from sources produced entirely within Colorado.

Wage rate for local food producers, U.S.

Key takeaways

- Average wages are slightly higher in metro areas ($26 vs. $23 and $21 in metro-adjacent and nonmetro, respectively), there are no significant differences.
- Given the substantial literature that focuses on persistent wage gaps between rural and urban places (e.g., Marré 2017; Young 2013), this finding is unexpected.
- Shows potential for those who see local food systems as one strategy for rural economic development.

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Source: Jablonski, Bauman, and Thilmany under review

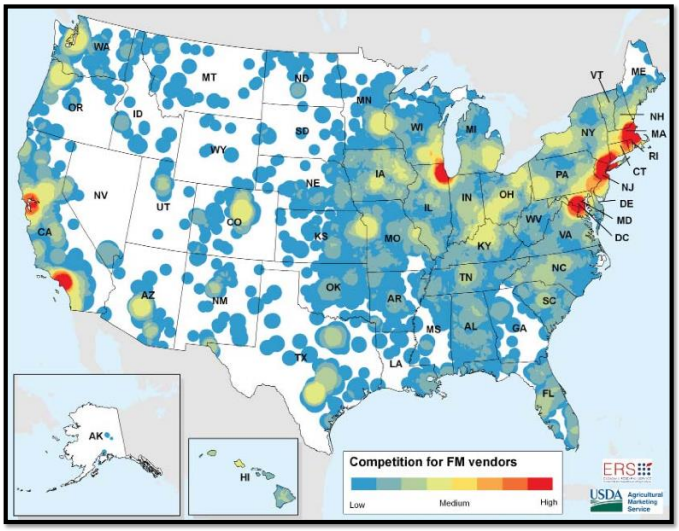
Regional Economic Impacts of Local Food System Investments Generally Demonstrate Relatively Small, Short-Term Gains

- Impacts on employment, output, labor income
  - Gunter & Thilmany 2012; Hughes & Isengildina-Massa 2015; Hughes et al. 2008; Jablonski et al. 2016; Schmit et al. 2016; Swenson 2010
- Spatial econometric models
  - Deller et al. 2014; Brown et al. 2014

Words of caution in thinking about economic impacts

- Finite resources (e.g., land, consumers dollars, public dollars) so every decision involves a choice.
- Incorporated into economic impact assessments by estimating the **net** rather than the **gross** impact of changes in a local/regional food system.
- Can be on supply (production) or demand (consumer) side, or both.

Competition for Vendors at Farmers Markets

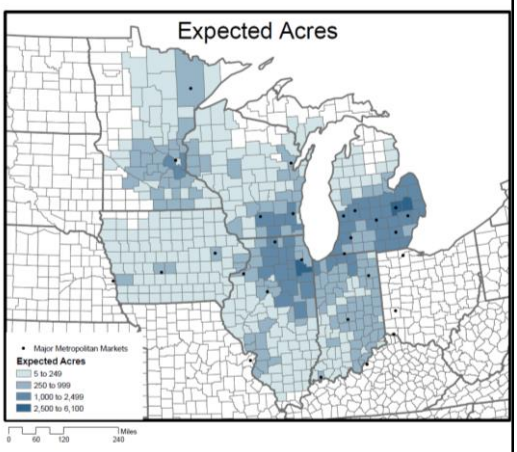


Source: Lohr and Diamond 2011

Arable land is likely already in production!

Study from Midwest estimates county-level fresh fruit and vegetable production potentials and expected sales based on current population.

- Corn and soybean are the dominant crops in these states, and net impacts would occur from shifts to fruit and vegetable.
- Land needed to satisfy regional fruit and vegetable demand is small, production consequences would be nominal.



Source: Swenson, D. 2011. The Regional Economic Development Potential and Constraints to Local Foods Development in the Midwest. Iowa State University

Example Economic Impact Assessment Food Hub

- Surveyed 305 of Regional Access' customers
  - 49% purchased less from other sources due to purchases from RA
  - Average reduction >23%
- Opportunity Cost associated with $1 increase in final demand for food hub sector ~ $0.11
- Reduced Total Output Multiplier from 1.82 to 1.63 (>10%)

Source: Jablonski, Schmit, and Kay 2016

Regional Access'
25,000 sq ft warehouse, Trumansburg, NY

Other Economic Impacts

- Businesses near farmers' markets reported higher sales on market days
  - Additional sales found to directly support the businesses themselves, but also generated extra tax revenue for the communities in which the markets were located.
- Farmers' markets increase property values in the market district

Evaluating long-term economic impacts more difficult, but potentially where more important impacts lie!

- Farmers' markets as **business incubators** by providing the infrastructure necessary to build skills and gain business experience.
- Regular interactions can generate and circulate **knowledge** that vendors might use to develop new products and creative ways of marketing them.
- Sales income may be less important than the **skills and business experience** developed through participation in farmers' markets.

Example: Human Capital

- 75% of farms made (or intend to make) changes to their farm business (ideas for a new product and/or marketing technique) based on these ideas.
- 45% of farms made these changes to product sold in both rural and urban markets.
- 82% reported that they shared ideas (or intend to) that they got through Greenmarkets with farmers in their home communities.

Source: Schmit, Jablonski, Christensen, Kay, and Minner 2017

Integrating Community and Modeling Efforts to Evaluate Impacts and Tradeoffs of Food System Interventions

Can urban food policies, programs, and initiatives support farmers, ranchers, rural communities and economies?

Focus on rural-urban linkages!

Partners

Ongoing food policy/programing efforts in CO

Food Systems Colorado State University

Denver Public Health & Environment	Denver Food Vision	National Western Center	The 2017 Colorado Blueprint of Food and Agriculture
Newly funded grant, including 5 public health agencies (Adams, Arapahoe, Denver, Douglas and Jefferson Counties). Primary goal is to implement food system policies that increase equitable access to healthy, affordable foods.	City/county effort that involved substantial community outreach. Resulted in an evolving policy docket for the Council, and the Denver Food Action Plan 2020, which should be approved by the mayor shortly.	250 acres of redeveloped land that will support Denver's global standing as a world-class hub for agriculture and innovation.	State-wide effort that included community and industry engagement effort. Identifies action items to support key food system opportunities.

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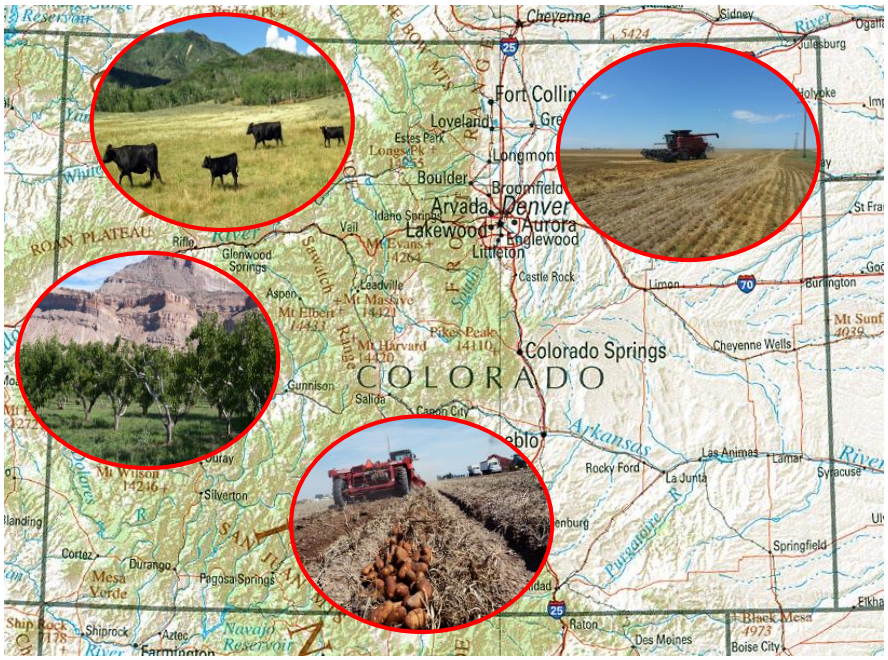
Ongoing food policy/programing efforts in CO

Example initiatives include:

- Healthy food in public facilities
  - Reduction and/or elimination of sales of 'unhealthy' items in public facilities and vending e.g., concessions in rec centers, the zoo, libraries, cafeterias in jails, the National Western Center.
- Food System Infrastructure
  - Develop and enhance regional food system infrastructure, including aggregation and storage facilities, commercial kitchens, food retail locations, and public market spaces to better support Denver food-based businesses and strengthen connections between businesses and Colorado farms and ranches.
- Promotion of an innovative food culture
  - Actively encourage efforts to promote Denver as a regional 'food destination' through efforts such as supporting high-performing food businesses and public relations campaigns.



Focus on 4 rural communities in collaboration with key industry/ commodity partners

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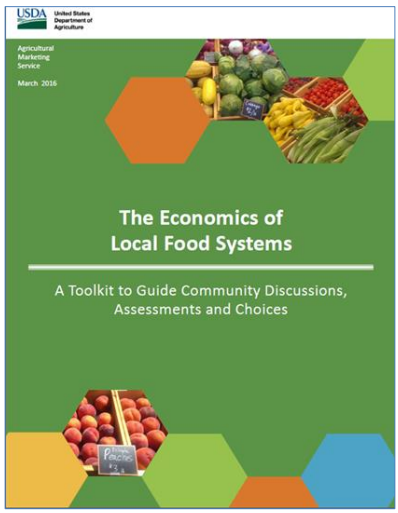
localfoodeconomics.com



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