Evaluating the rural and regional impacts or urban-based local food system initiatives

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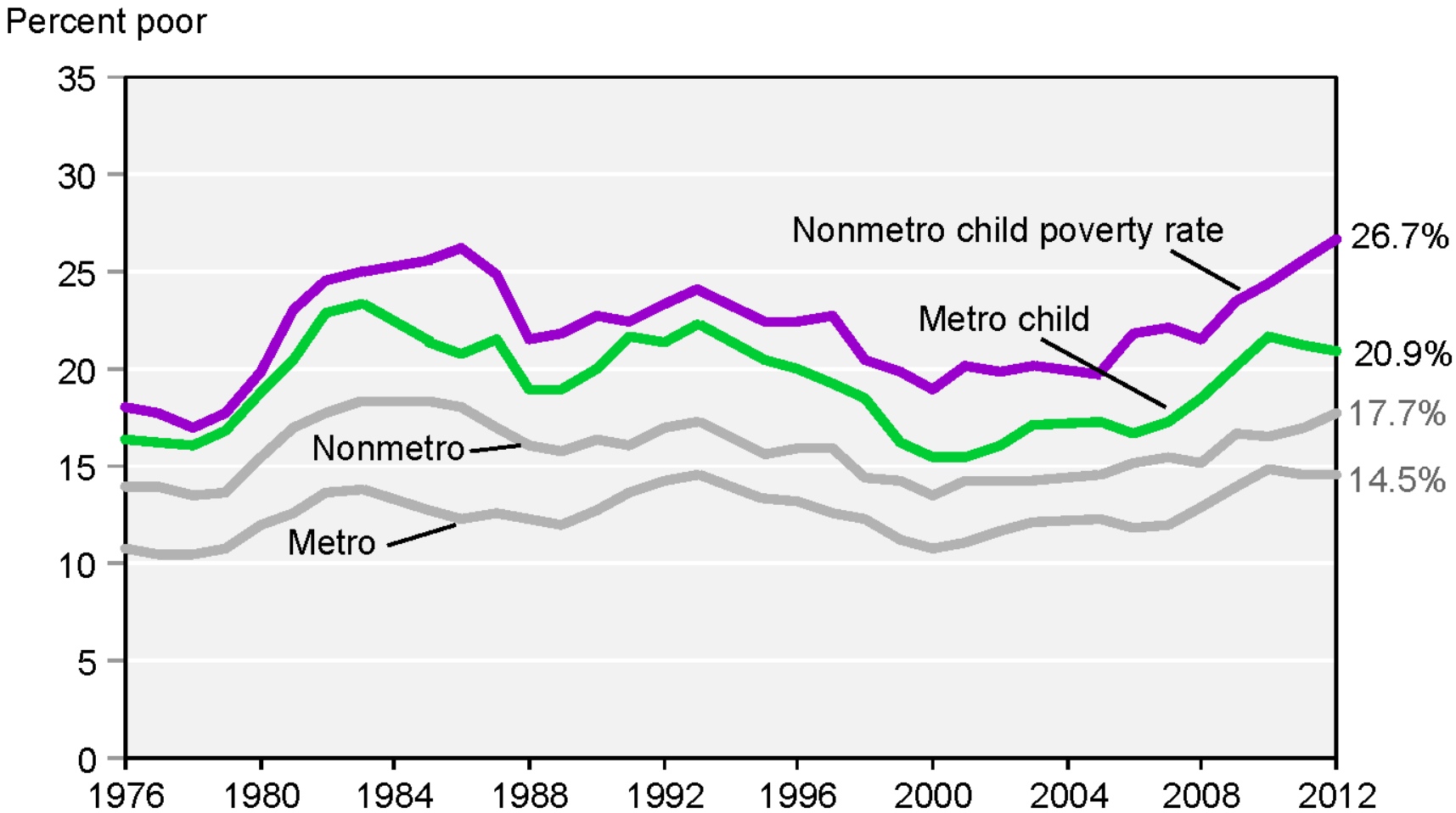
Food Distribution Research Society Annual Meeting
October 2, 2016

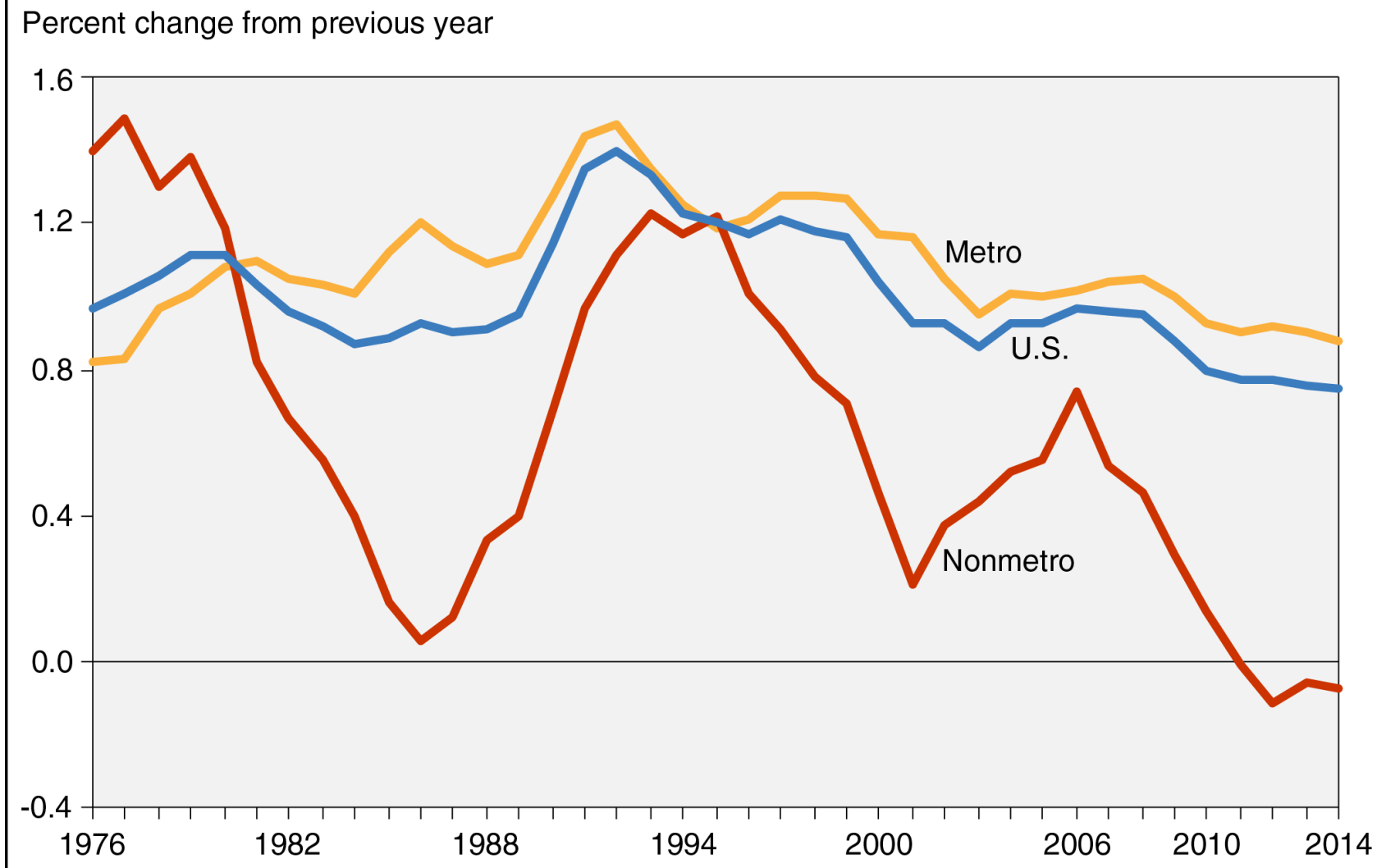
Funding Support

Child (and overall) poverty rates by metro/nonmetro residence, 1976-2012



Note: Metro status of some counties changed in 1984, 1994, and 2004. Metro and nonmetro rates are imputed for those years.
Source: USDA, Economic Research Service using data from U.S. Census Bureau and U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey (March Supplements and 2013 Annual Social and Economic Supplements).

Population change by metro/nonmetro county status, 1976-2014



Note: Metro status changed for some counties in 1980, 1990, 2000, and 2010.
Source: USDA, Economic Research Service using data from U.S. Census Bureau.

Background


“Local food systems work for America: when we create opportunities for farmers and ranchers, our entire nation reaps the benefit.”
- President Barack Obama
#ruralmade
USDA
Tune in for a White House Rural Council Conversation on Local Food
www.whitehouse.gov/live - 12:45 ET, Monday, June 9

Background

USDA's (2015) Four Pillars of Agriculture and Rural Economic Development:

1. Production Agriculture
2. **Local and Regional Food Systems**
3. The Biobased Economy
4. Conservation and Natural Resources

Background

- 2009-2015 the USDA invested $1 billion in >40,000 local and regional food business and infrastructure projects

- 2014 Farm Bill tripled funding available for marketing and promotion of local and regional foods

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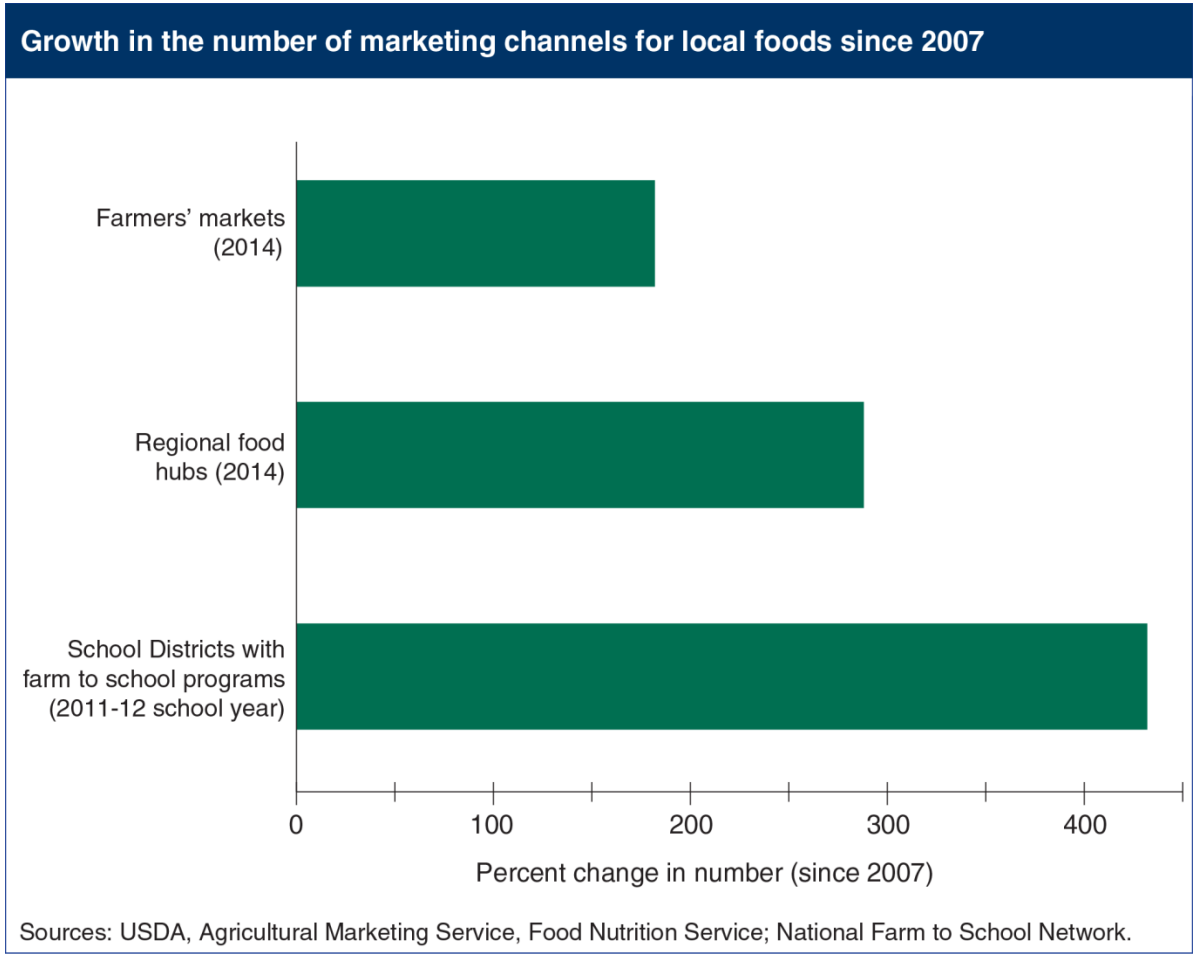
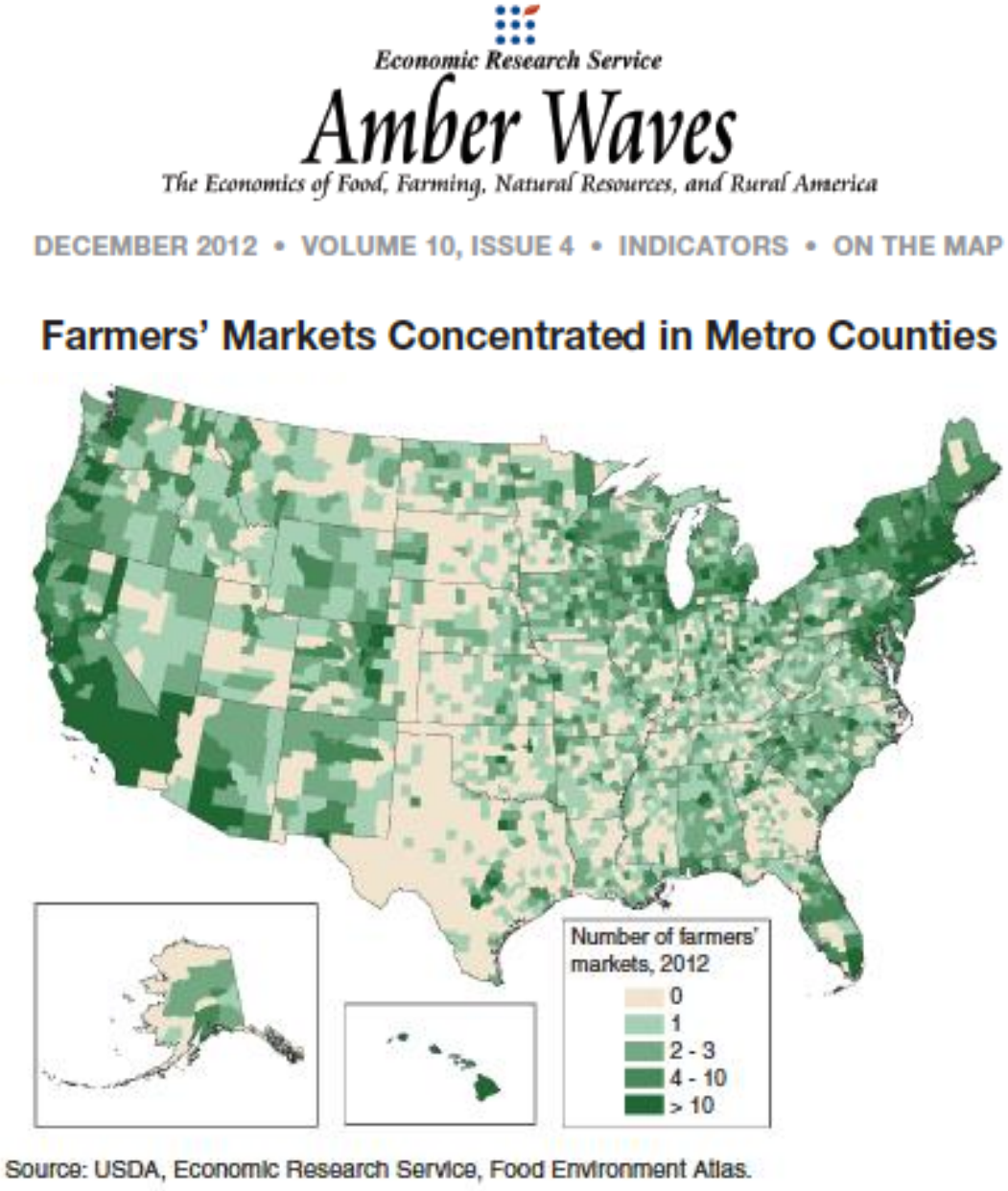


Food systems as economic development strategy focused on rural-urban linkages

Regionalization of *rural* for key USDA RD programs

- 2002 & 2008 Farm Bills: B&I program
  - Eligible businesses selling product within 400 miles of farm, or within the same state (USDA 2013).

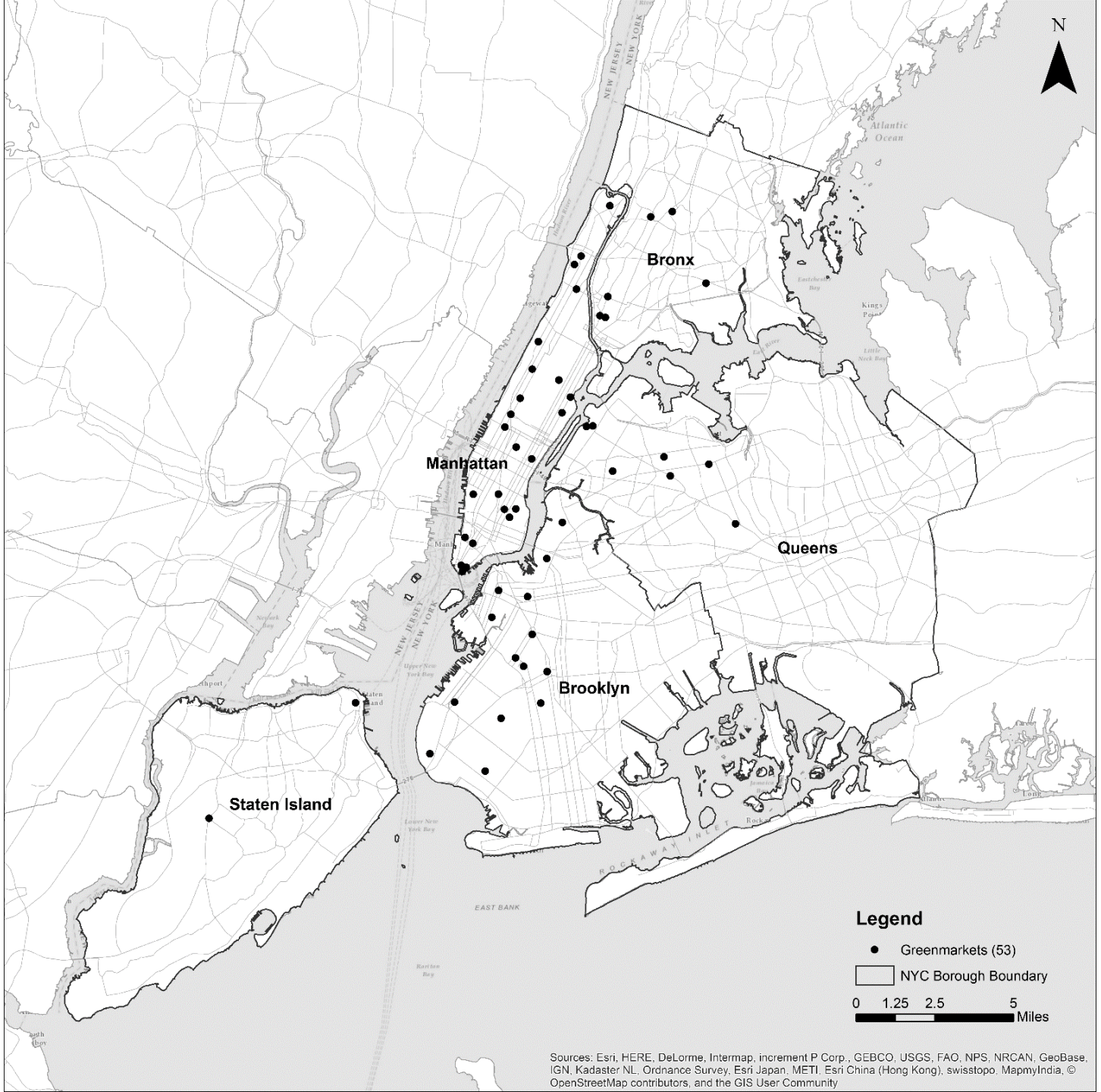


Research Question

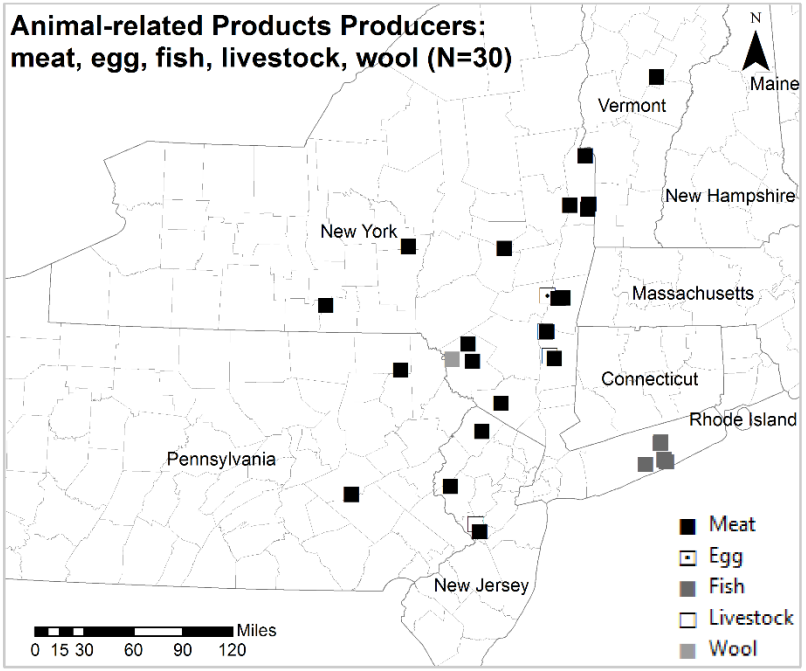
- Do urban-based local food initiatives support farmers and *rural* communities?
- First study to look at the distribution of impacts from an urban-based local food system initiative.

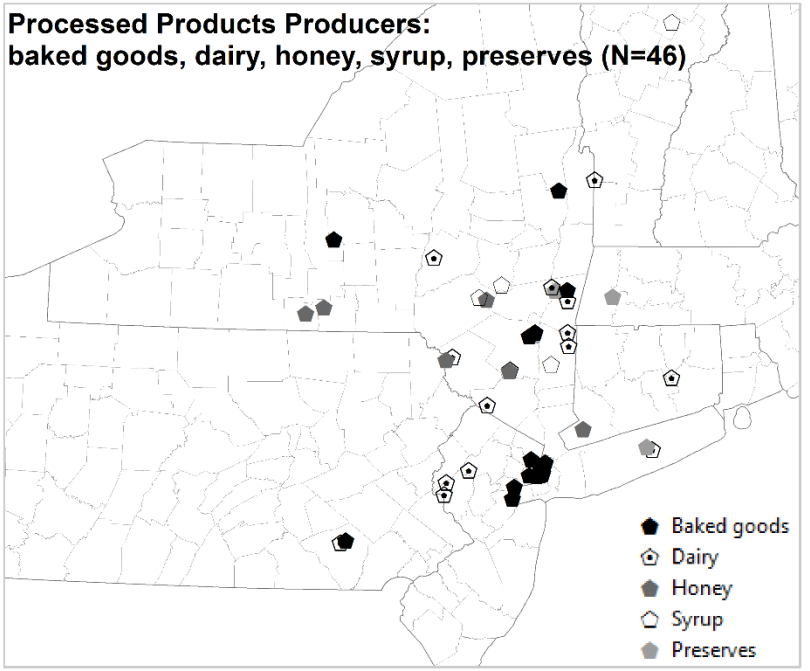
- Case study utilizing New York City's 

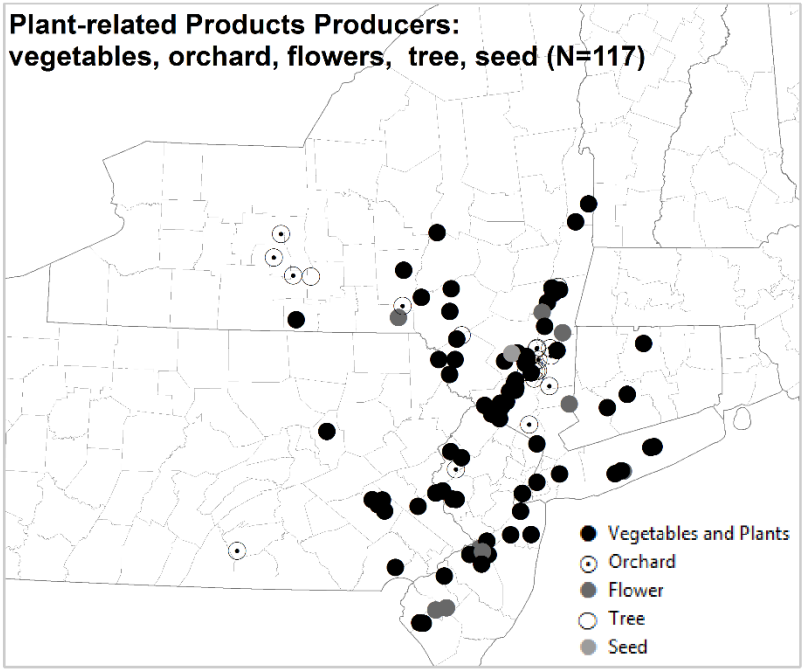
2015 Greenmarket Locations

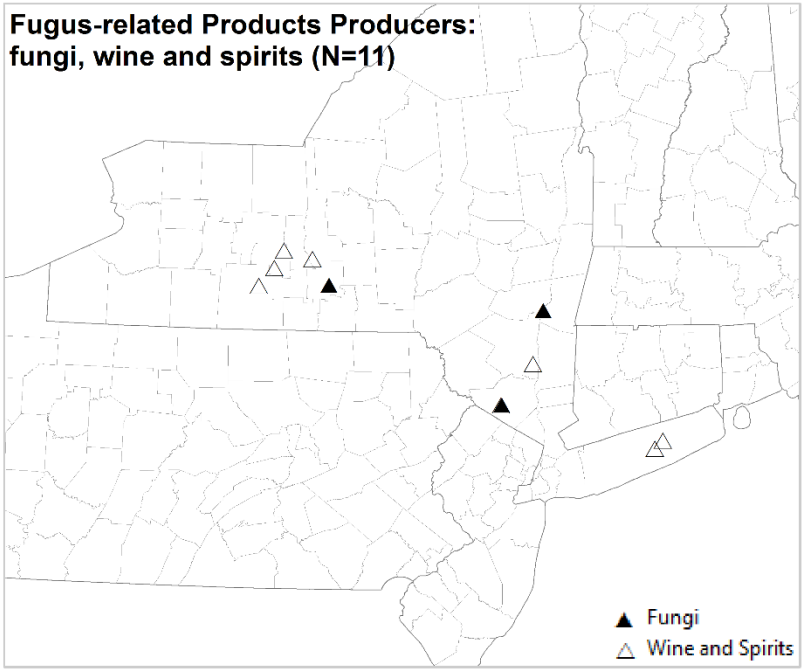


2015 Greenmarket Farm Locations by Commodity









Strengthened Rural-Urban Linkages to Support Rural Economic Development: the Case of Relocalized Food Systems

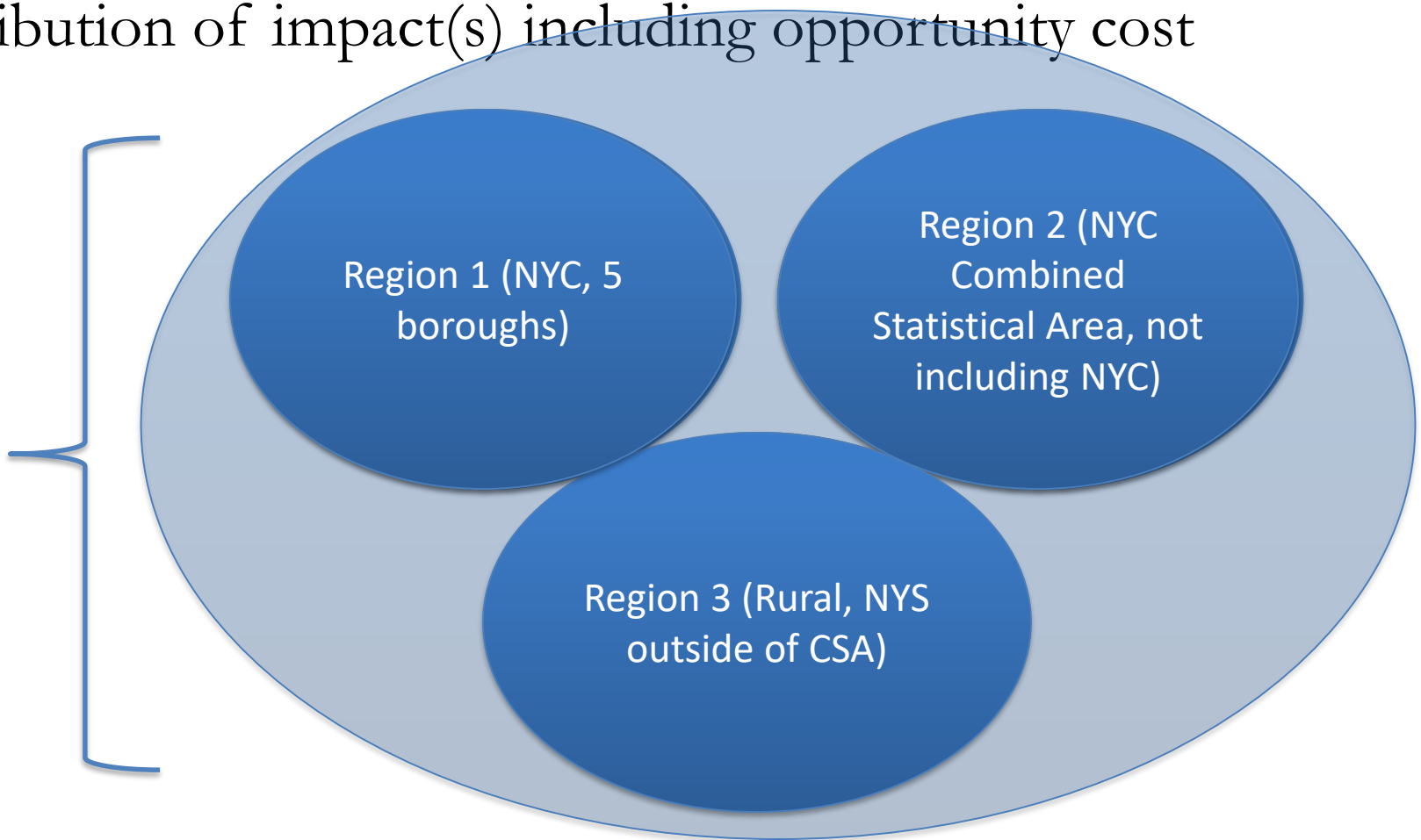
Farm Profitability Impact

- USDA financial data historically by commodity (not market);
- Evidence that local food producers receive larger share of the retail dollar;
- Also evidence that local food producers have different expenditure patterns;
  - Greenmarket producers we interviewed travel avg. 101.3 miles (129.4 minutes) to market.

Rural and Regional Economic Impacts

- Multi-regional Social Accounting Matrix Model
  - Distribution of impact(s) including opportunity cost

Total value of *regional* economic impact



Rural Wealth Creation

- Healthy/sustainable rural communities depend on investment in a broad range of assets (e.g., Arrow et al. 2010; Stauber 2007; World Bank 2011)

- Wealth defined as a community's assets, net of liabilities, that contribute to the wellbeing of an individual or group (Pender and Ratner 2014)


Greenmarket
FARMERS MARKET
grow NYC
Greenmarket
WWW.GROWNYC.ORG
GARDEN • TEACH • RECYCLE
grow NYC
GREENMARKET

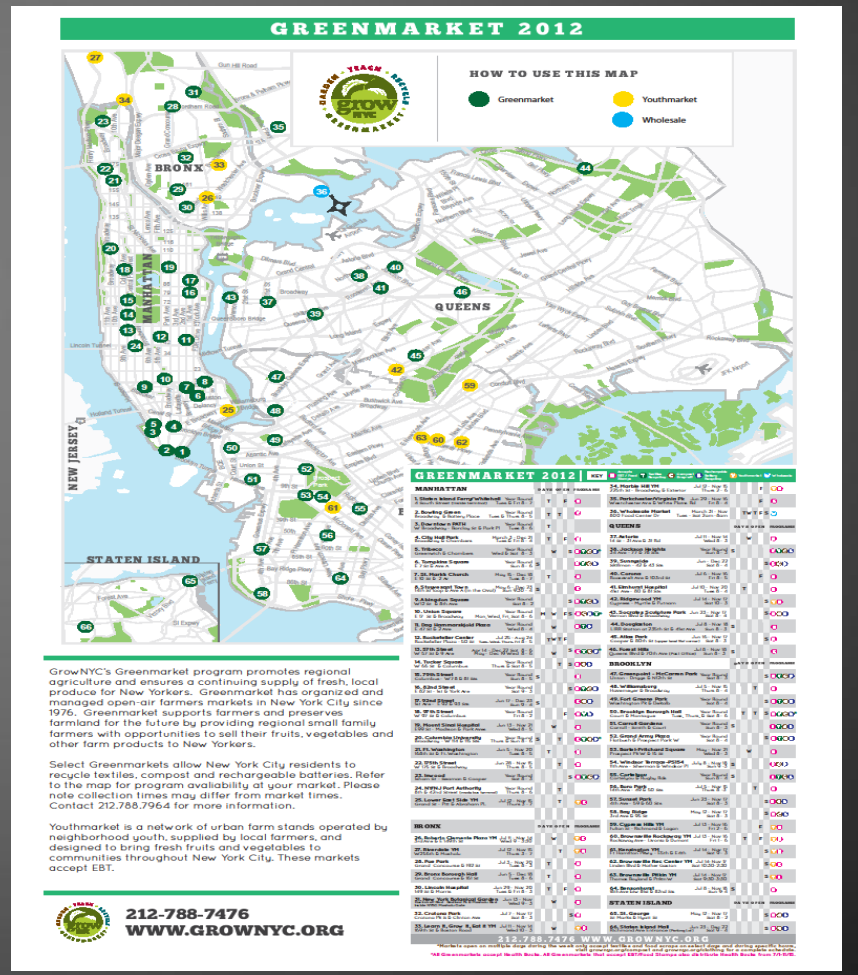
Greenmarket

Preserve area farmland by providing profitable places for local farmers to sell their homegrown crops and to ensure that *all* New Yorkers have access to the most healthful, most delicious locally grown foods.

- Operates 53

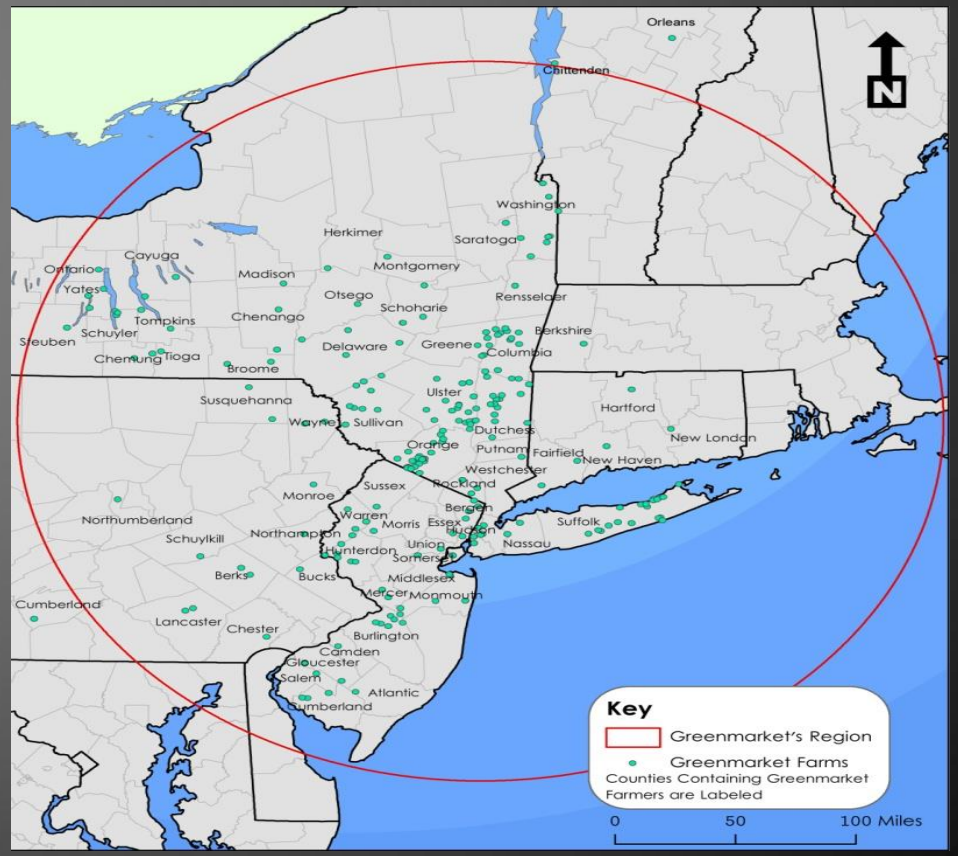
  producer-only markets throughout the

  5 boroughs, 22 year round
- Create viable civic spaces where people shop, interact, learn



Who are the Producers?

- Everything grown, raised, caught and baked regionally.
- 120 miles to the south, 170 miles east and west, and 250 miles north of NYC.




CANADA
LAKE ONTARIO
BURLINGTON
MONTPELIER
VERMONT
NEW HAMPSHIRE
MAINE
CONCORD
MANCHESTER
ALBANY
NEW YORK
MASSACHUSETTS
BOSTON
PROVIDENCE
RHODE ISLAND
HARTFORD
CONNECTICUT
BRIDGEPORT
LONG ISLAND SOUND
NEW YORK CITY
see local map
NEW JERSEY
TRENTON
HARRISBURG
PENNSYLVANIA
MARYLAND
DISTRICT OF COLUMBIA
DELAWARE
ATLANTIC OCEAN
N
W
E
S
MAP KEY
TYPES OF FARMS
FRUIT ORCHARDS
VEGETABLES
DAIRY
BAKED GOODS, GRAINS & LEGUMES
EGGS, POULTRY & LIVESTOCK
FISH
PRESERVES, HONEY & MAPLE SYRUP
WINERIES & BREWERIES
FLOWERS & PLANTS
The shaded circular border indicates Greenmarket's region. Products sold at Greenmarket come from 250 miles north, 120 miles south, and 170 miles east and west of the city.
State borders
County borders


FURUNO

Today's Markets


Zucchini Blossom
$7.00


THONY ROAD WINERY
CERTIFIED ORGANIC &


Keith's Farm ORGANIC PRODUCE
KEITH'S FARM
ZAGAT SURVEY
ROCAMBOLE GARLIC $10.00
Dining In
The New York Times
CERTIFIED OR
Rocambole GARLIC
SAGE
$1.50 per bunch
ROSEMARY
$1.50 per bunch
ROCAMBOLE GARLIC CLUSTERS
$1.50 per bunch
Our smaller bulbs store better!


ORGANIC
Mixed
Box
PORCINI POWDER
FRESH


EAT GREEN LEAVES + Bulbs
RAMPS
#3.00
Bunch
Springs Extra Special TREAT "WILD LEEKS"
garlic - very strong flavored eat raw
- nice and sweet when cooked
sauteed
side dish
over pasta
with fish or


ROSA BIANCA


FIERY-RED
HOT
MEDIUM TO HOT
HOT
Santa Fe Grande
$3.00 - ½ pound
MILD to MEDIUM
HOT
Mild Jalapeno
$3.00 - ½ pound
MILD
HOT
Anaheim
$3.00 - ½ pound
Italian
Roaster
HOT
Cayenne Thin-
Red or Golden
$4.00 - ½ pound
Delicious
SWEET
$1.50
Excellen
baked,


Green Grape Tomatoes
$3.00 pound
SUPER TASTE
Ripe when slightly Yellow
TASTE ONE
TASTE ONE
TASTE ONE
ALL Tomatoes
$3.00 pound
You may MIX + match
OUT of the Boxes
TASTE ONE!!!

Greenmarket Builds Community


RITE AID
McDonald's

FARMroots


WinMalt
Strider

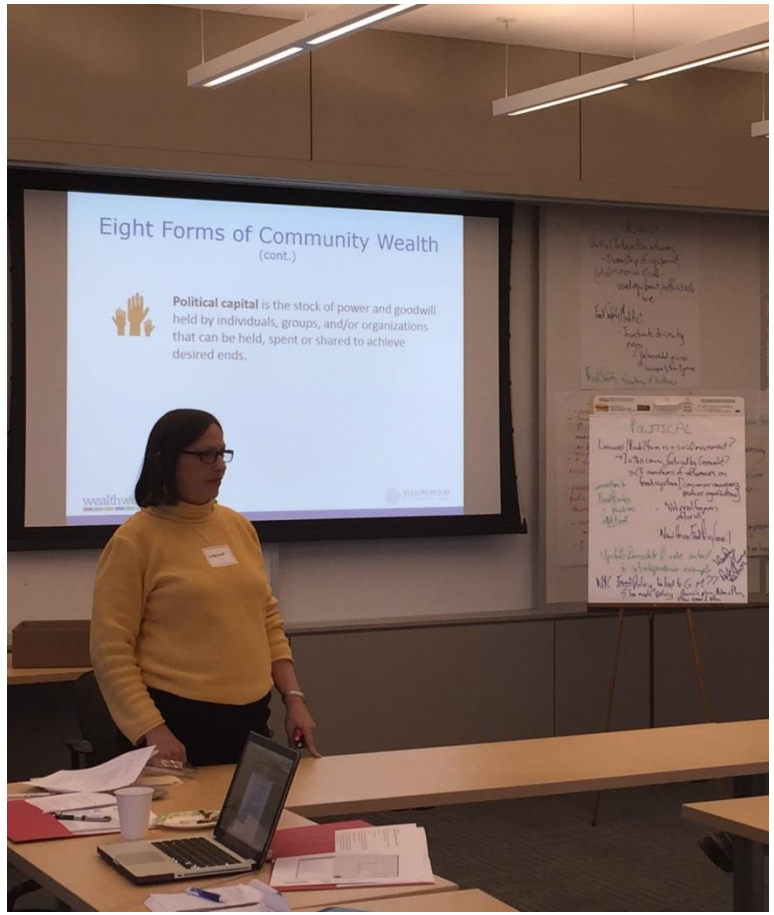

THE
VEGGIE
VAN
FROM THE FARM TO YOUR TABLE
Council on the Environment, Inc.
GrowNYC
51 Chambers Street
New York, NY 10007
USDOT-2146354
GVW- 25999


PROVISIONS
STAF


WEEK'S BOX


grow NYC
LOVE
NYC

Rural Wealth Creation



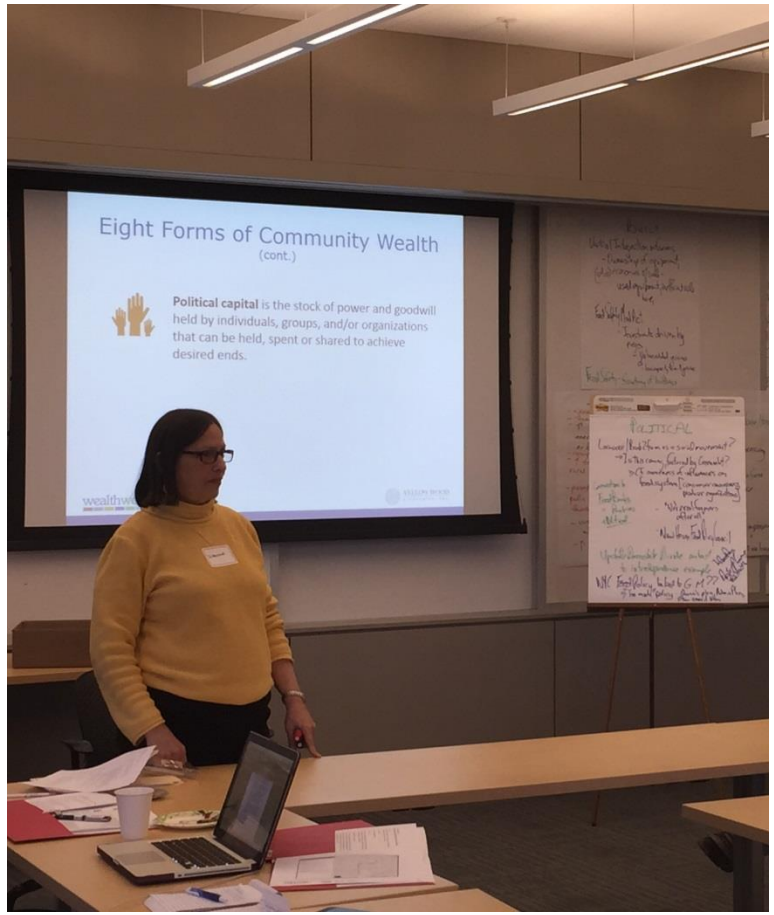
YELLOW WOOD
associates, inc.

Wealth defined as a community's capital assets, net of liabilities, that contribute to the wellbeing of an individual or group (Pender and Ratner 2014)

Types of capital assets:

- Financial
- Built
- Individual
- Social
- Intellectual
- Natural
- Political
- Cultural

Rural Wealth Creation



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- Cultural

"**data and measurement issues are as challenging as ever**" (Johnson et al 2014, 52)

Delphi Method

- Group of experts anonymously reply to questionnaires, and subsequently receive feedback based on a "group response," after which the process repeats itself.

- Goal to reduce the range of responses and arrive at something closer to expert consensus.

- Largely employed to problems "where no historical data exist, or when such data are inappropriate" (Rowe et al. 1991, p .236).

Research Advisory Team

- Shorna Allred, Natural Resources, Cornell
- Brian Baker, Independent Consultant
- Catherine Brinkley, VMD/Planning, UPenn
- Hope Casto, Education, Skidmore
- Amity Doolittle, School of Forestry, Yale
- Mary Jo Dudley, Cornell Farmworker Program
- Amy Guptill, Sociology, SUNY Brockport
- Chris Henke, Sociology, Colgate
- Clare Hinrichs, Rural Sociology, Penn State
- John Pender, USDA, Economic Research Service
- Samina Raja, Planning, SUNY Buffalo
- Jonnell Robinson, Geography, Syracuse
- Brian Schilling, Ag Econ, Rutgers
- Jennifer Tiffany, Human Ecology, Cornell
- Jennifer Wilkins, Public Health Food and Nutrition, Syracuse
- Steven Wolf, Natural Resources, Cornell

Extension Advisory Committee

- Laura Biasillo, Agricultural Marketing and Community Development Program Work Team, Cornell University Cooperative Extension
- Sarah Brannen, Program Manager, Local Economies Project, New World Foundation
- Erica Campbell, Farm to Plate Program Director, Vermont Sustainable Jobs Fund
- Challey Comer, Chief of Staff, NYS Dept. of Agriculture and Markets
- Tom Cosgrove, Vice President, Public Affairs and Knowledge Exchange, Farm Credit East
- Beth Feehan, Director, New Jersey Farm to School Network
- John Fisk, Director, Wallace Center at Winrock International
- David Haight, NYS Director, American Farmland Trust
- Liz Harris, Assistant Deputy Secretary for Food and Agriculture, NYS Governor's Office
- Jinny Khanduja, Chair, Food Systems Committee, American Planning Association, New York Metro Chapter
- Matt LeRoux, Agriculture Business Specialist, Cornell Cooperative Extension of Tompkins County
- Kathleen Masters, Executive Director, Amagansett Food Institute
- Beth Forster, National Farm Sourcing Manager, Blue Apron
- Monika Roth, Agricultural Issue Leader, South Central NY Regional Team, Cornell Cooperative Extension
- Dana Stafford, President, Regional Access LLC
- Anu Rangarajan, Director, Small Farm Program, Cornell University
- Chris Wayne, Director, FARMroots
- Michael Hurwitz, Director, Greenmarkets
- Jim Hyland, CEO, Farm to Table Co-packers

Results of Delphi Method Process

- Ended up with prioritized impacts from both the research and extension advisory teams.
  - Very similar!

- Also, a list of proposed indicators.

Results of the Delphi Method application with the Research and Extension Advisory Teams on prioritized impacts and associated indicators regarding Intellectual Capital in rural areas from farmer participation in Greenmarkets (GM).[1]

Prioritized Impacts from Advisory Teams		Proposed Indicators
Extension Team	**Research Team**	
GM educates people (farmers and consumers) that it is possible and cool to be a farmer, a career with a future, promoting rural youth retention in agriculture	**Market and industry education to and from urban and rural communities** • Demystification - of city for farmers, of farming for customers (+) • Increased knowledge of food system among consumers (+) • Increased knowledge for farmers of consumer demands (+) • Urban consumer experimentation with new products, new ideas (+/-) • Promotes youth education on cooking, agriculture, health (+) • Strain on rural human resources, expertise, capacity, competition (-) • Limit on public resources (cooperative extension, schools) to help facilitate innovations and new farmer training (-)	○ Urban perceptions of agriculture and rural places ○ Urban understanding of policy issues related to agricultural and rural communities ○ Farmers better informed of consumer demands ○ Level of public education on agriculture
Marketing to GM leads to collective knowledge of opportunities and exploration of other and/or newer markets	**Rate of entrepreneurial innovation and idea sharing among farmers** • Increasing collaborative networks of farmers, idea sharing at GM (+) • Limited intellectual network expansion with rural (non-GM producers) (-) • Immediate feedback with a larger consumer audience at GM (+) • Increased knowledge of and stimulus to traditional/new production practices, new products, impacts on profitability (+/-) • Greenmarket rules may limit innovation (-)	○ GM farmers share new ideas, marketing techniques with other GM farmers ○ GM farmers share new ideas, marketing techniques with rural area farmers ○ Change in farmer products, varieties, practices
GM formal and informal education leads to new kinds of value chain linkages and product development/processing initiatives	**Product and value chain innovations to meet or create consumer demand** • Creative class connections (creating an environment in which entrepreneurial people want to live and work) or gentrification, rural redevelopment (+) • Promotes linkages with local supply chain intermediaries (+) • Misalignment with rural technical, infrastructure capacity (-) • Limited farmworker sharing of ideas about what is required (-)	○ Farmers expand into processed products ○ Farmers increase linkages with downstream intermediaries ○ New or increased capacity of rural value chain infrastructure

Capital Definition

Intellectual capital is the stock of knowledge, innovation, and creativity or imagination in a region.

Example: One Intellectual Capital Impact

Prioritized Impacts from Advisory Teams		**Proposed Indicators**
Extension Team	**Research Team**	
Marketing to GM leads to collective knowledge of opportunities and exploration of other and/or newer markets	**Changing rate of entrepreneurial innovation and idea sharing among farmers (+/-)**	○ GM farmers share new ideas, marketing techniques with other GM farmers ○ GM farmers share new ideas, marketing techniques with rural area farmers ○ Change in farmer products, varieties, practices

Primary Data Collection

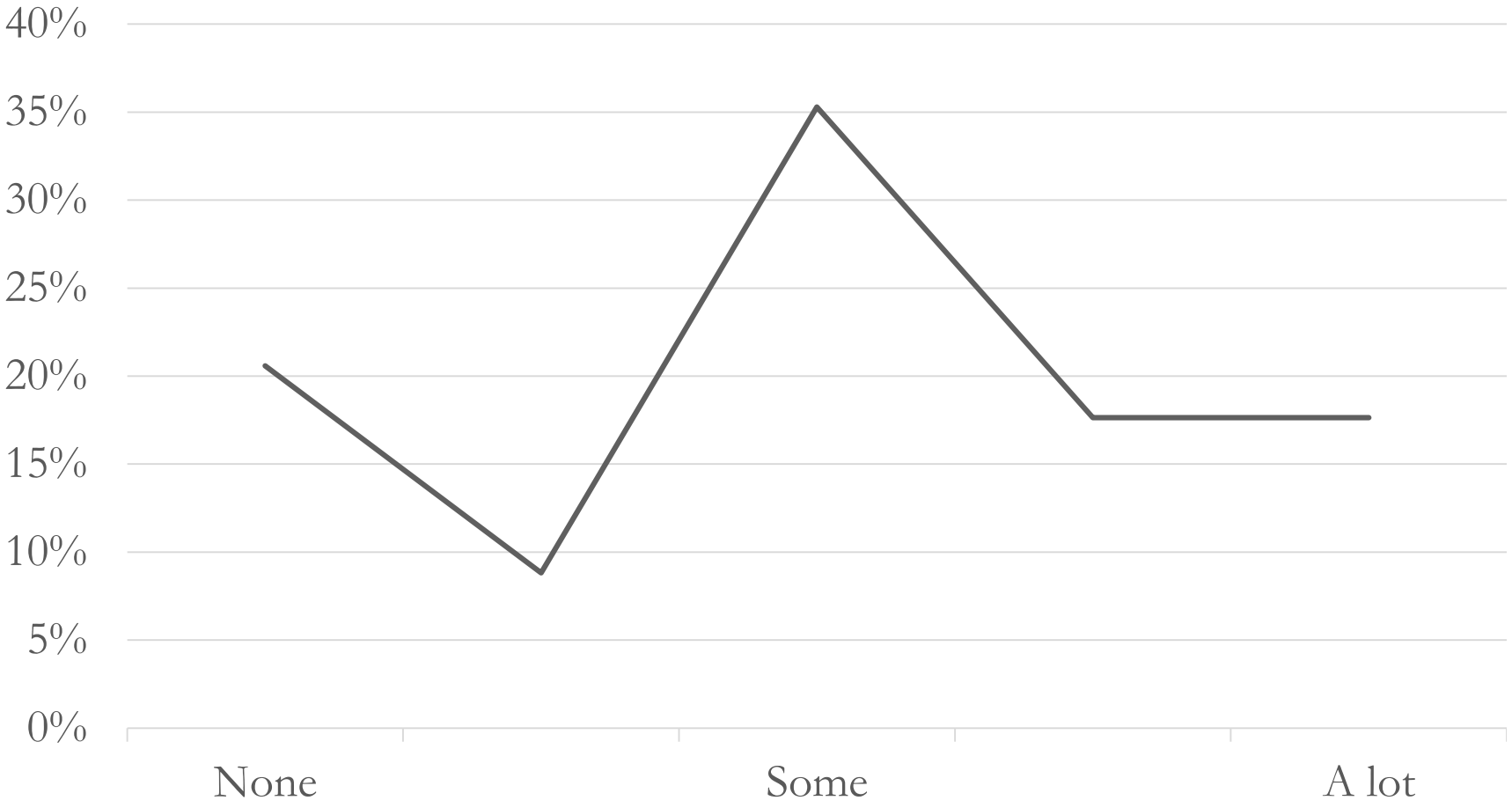
- In-depth interviews with 41 farms that sell through Greenmarkets;

- Rapid Market Assessments with 824 farmers market customers at eight Greenmarkets.

Intellectual Capital

- Farm interview questions:
  - Has participation in Greenmarkets led to **changes in your production practices**, the number of products and varieties you grow, or production of processed (value added) products?
  - Has participation in Greenmarkets supported the **development of new ideas** for products and marketing techniques as a result of interacting with other vendors at the Greenmarket, by talking to a Greenmarket manager, or a via conversations with Greenmarket customers? Have you also implemented these ideas in your home (rural) markets you participate in?
  - Have you **shared new ideas** for products or marketing techniques learned from Greenmarket interactions **with other farmers or individuals back in your home (rural) community**?

Farm got idea(s) for new product and/or marketing technique directly through Greenmarket (N = 34)



Summary results of Greenmarket farm vendor responses (1 to 5, 1= none, 3=some, 5=a lot)

Intellectual 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.

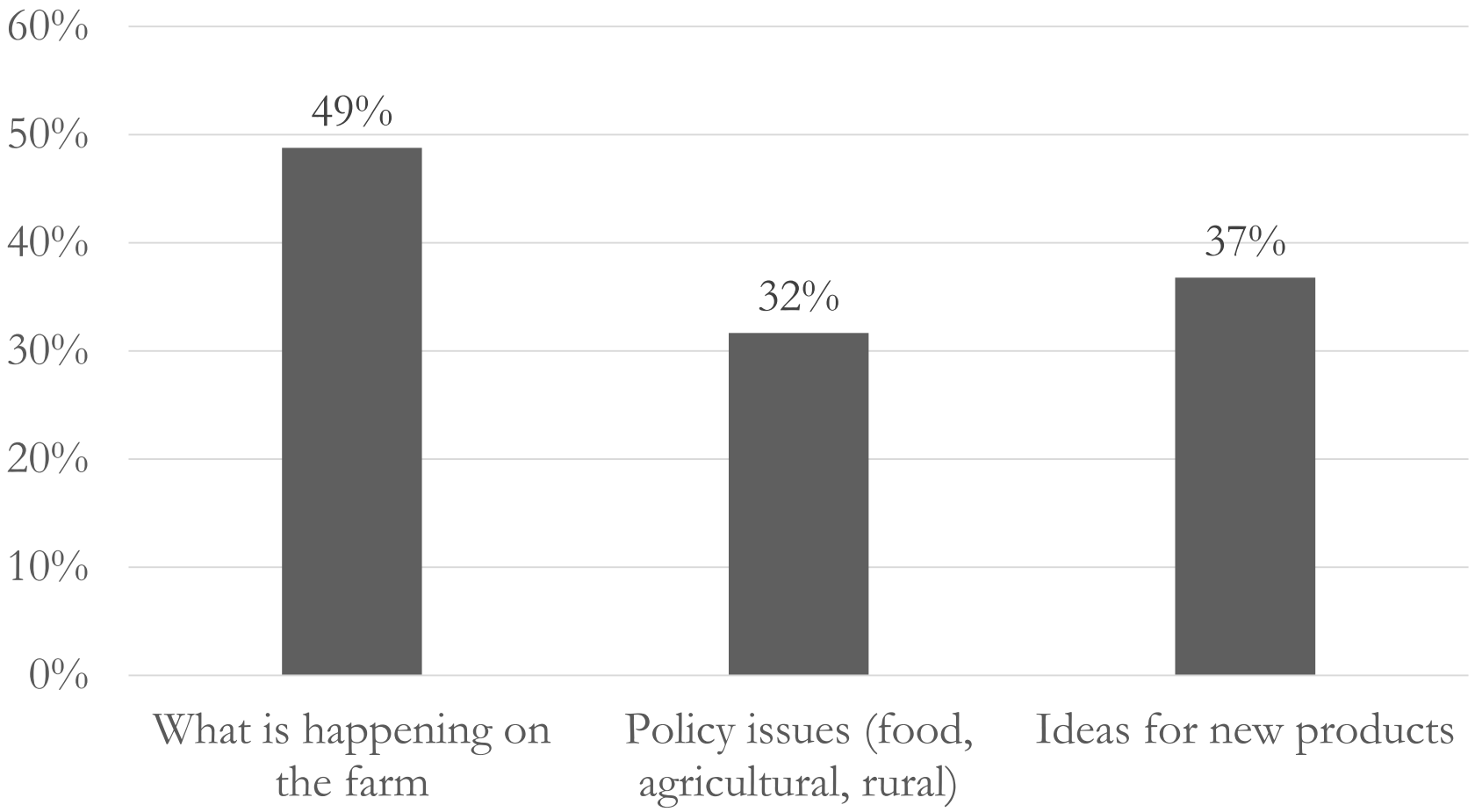
- 45% of farms made these changes to product sold in both rural and urban markets.

- 82% reported that they shared ideas (or intend to) that they got through Greenmarkets with farmers in their home communities.

Intellectual Capital

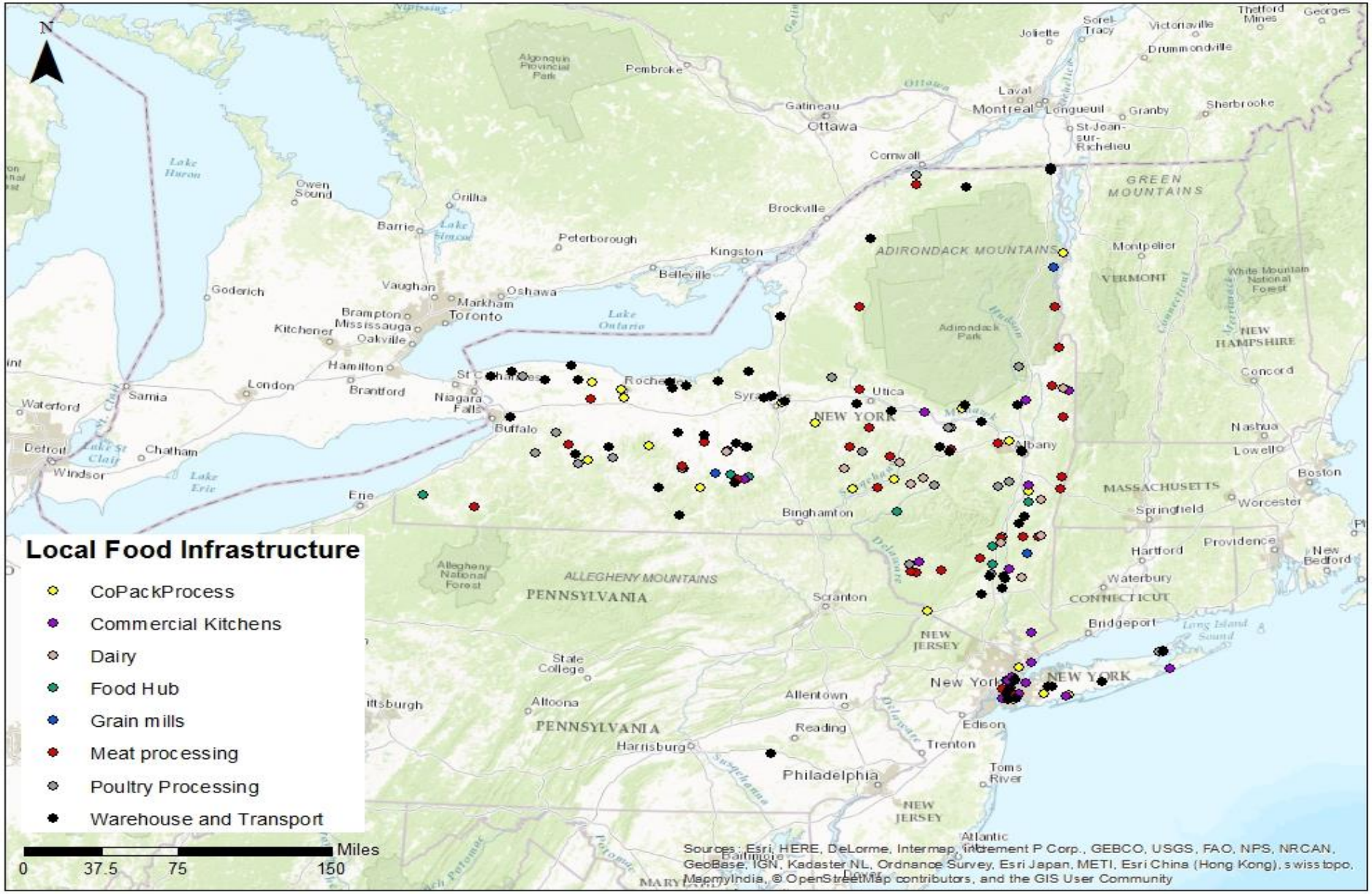
- Greenmarket customer questions – focused on knowledge exchange:
  - When shopping at a Greenmarket, I talk to farmers about:
    - What is happening on the farm?
    - Policy issues (food, agricultural, rural)?
    - Ideas for new products?

Intellectual Capital

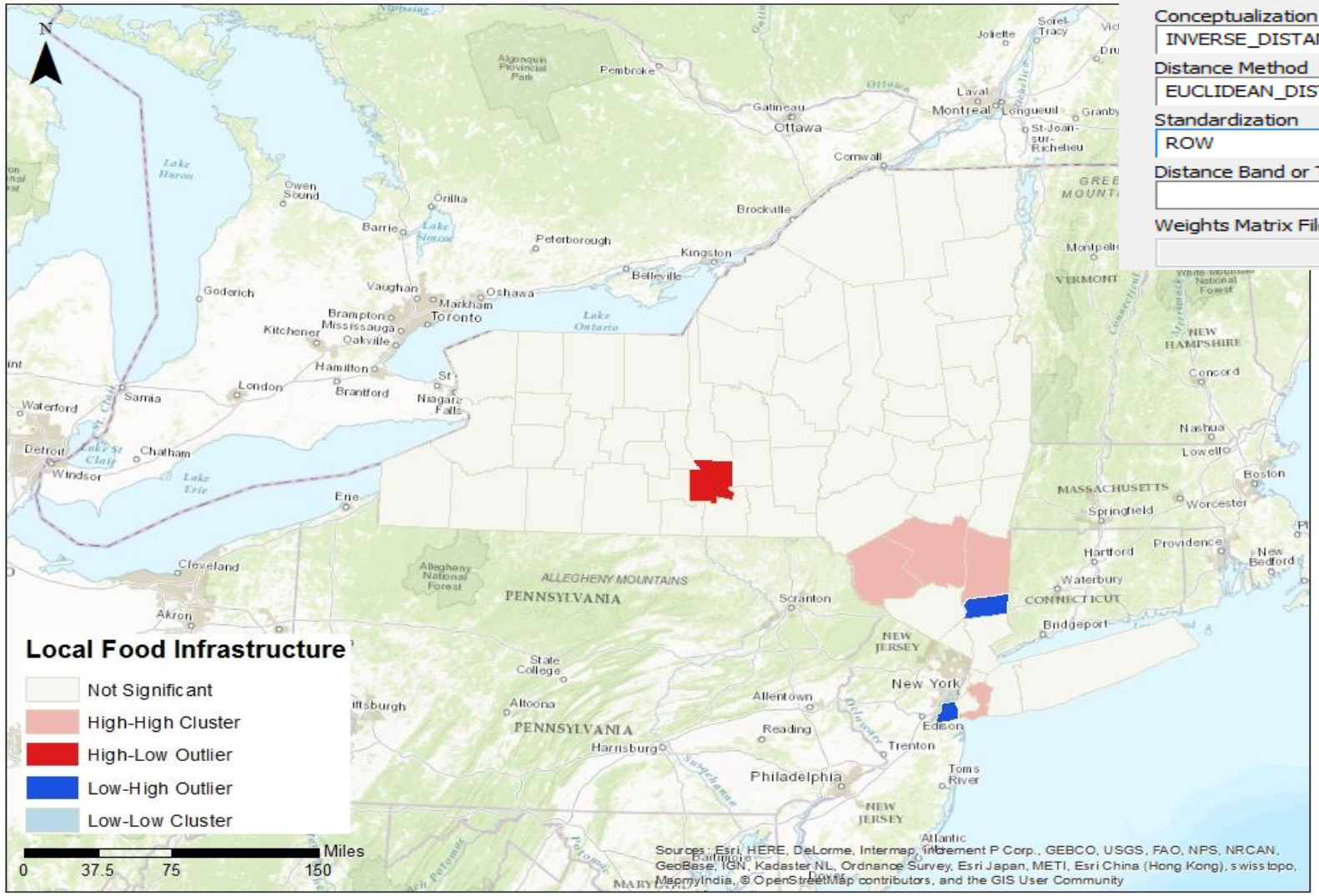


Summary results of Greenmarket customer responses (yes/no) to "When shopping at a Greenmarket, I talk to farmers about…" Three options given, customers checked all that applied (N = 824)

Local Food Infrastructure Map (Built Capital)



Spatial Autocorrelation (Local Moran's I)



Cluster and Outlier Analysis (Anselin Local Morans I)

Input Feature Class
county_infrasturcture

Input Field
Count_

Output Feature Class
\\share.aap.cornell.edu\AAP\plan\faculty\jm2359\AFRI_GROW

Conceptualization of Spatial Relationships
INVERSE_DISTANCE

Distance Method
EUCLIDEAN_DISTANCE

Standardization
ROW

Distance Band or Threshold Distance (optional)

Weights Matrix File (optional)

Our roadmap…

- Farm Profitability (MCAT)
  - Differences in marketing channel performance GMs
- Multi-Regional Economic Impact Assessment (MRSAM)
  - Expenditure and sales patterns of GM producers
  - Different technologies? Different input and output spatial flows?
- Rural Wealth Creation (RWC)
  - Community capital stocks and flows, correlations
  - Specific to local foods in urban setting
- MCATMRSAMRWC
  - GM participation and financial returns
  - Develop capital relationships in a MRSAM sense
  - Link with rest of regional economic sectors

Farm Profitability (MCAT)

- Practical Application for Informing Marketing Decisions
  - Considering a marketing change, what should it be?
  - Reduce (increase) participation in weakest (best) performing channel.
  - Strategic channel combination to maximize sales and reduce risks.

Source: Matt LeRoux, CCE-Tompkins County

Marketing Channel Assessment (MCAT)

- Identify goals and lifestyle preferences.
- Keep marketing cost & returns records, if only for "snapshot" periods.
- Value your own time to present a more accurate picture of marketing costs.
- Consider risk and lifestyle preferences
- Rank & compare opportunities to maximize profits.
- Combine channels to max sales & reduce risks.

Source: Matt LeRoux, CCE-Tompkins County

MCAT Labor Logs

FARM NAME:	WORKER NAME:	DATE:
TIME SPENT (to nearest 15 min):	**PRODUCT(S):**	

ACTIVITY: (Each log sheet should cover one activity at a time)			
○ **Harvest** e.g., create pick list, organize staff for harvest, harvest	○ **Process/Pack** e.g., cull, grade, sort, wash, bunch, bag, package	○ **Travel/Delivery** e.g., load/unload truck, travel to/from market, deliveries	○ **Sales/Bookkeeping** e.g., bookkeeping, billing, sales calls, sales time, set up/take down
○ **Other (please describe):**			

PRODUCT DESTINATION: (Check all that apply)			
○ ***Channel 1***	○ ***Channel 2***	○ ***Channel 3***	○ ***Channel 4***
○ ***Channel 5***	○ ***Channel 6***	○ ***Channel 7***	○ ***Channel 8***
○ ***Channel 9***	○ ***Channel 10***	○ ***Channel 11***	○ ***Channel 12***

CLARIFYING NOTES (Optional):

Risk & Lifestyle

Channel	Farm Mkt.	CSA	Restaurant	
Risk	2	1	2	

Channel	Farm Mkt.	CSA	Restaurant	
Lifestyle	1	1	1	

G. Please assign a "weight" to the importance that you feel each factor used to evaluate a marketing channel deserves. For example, if you don't care about profit and are very concerned about how much labor a channel takes, you would assign a low weight to "profit", and a high weight to "labor required."

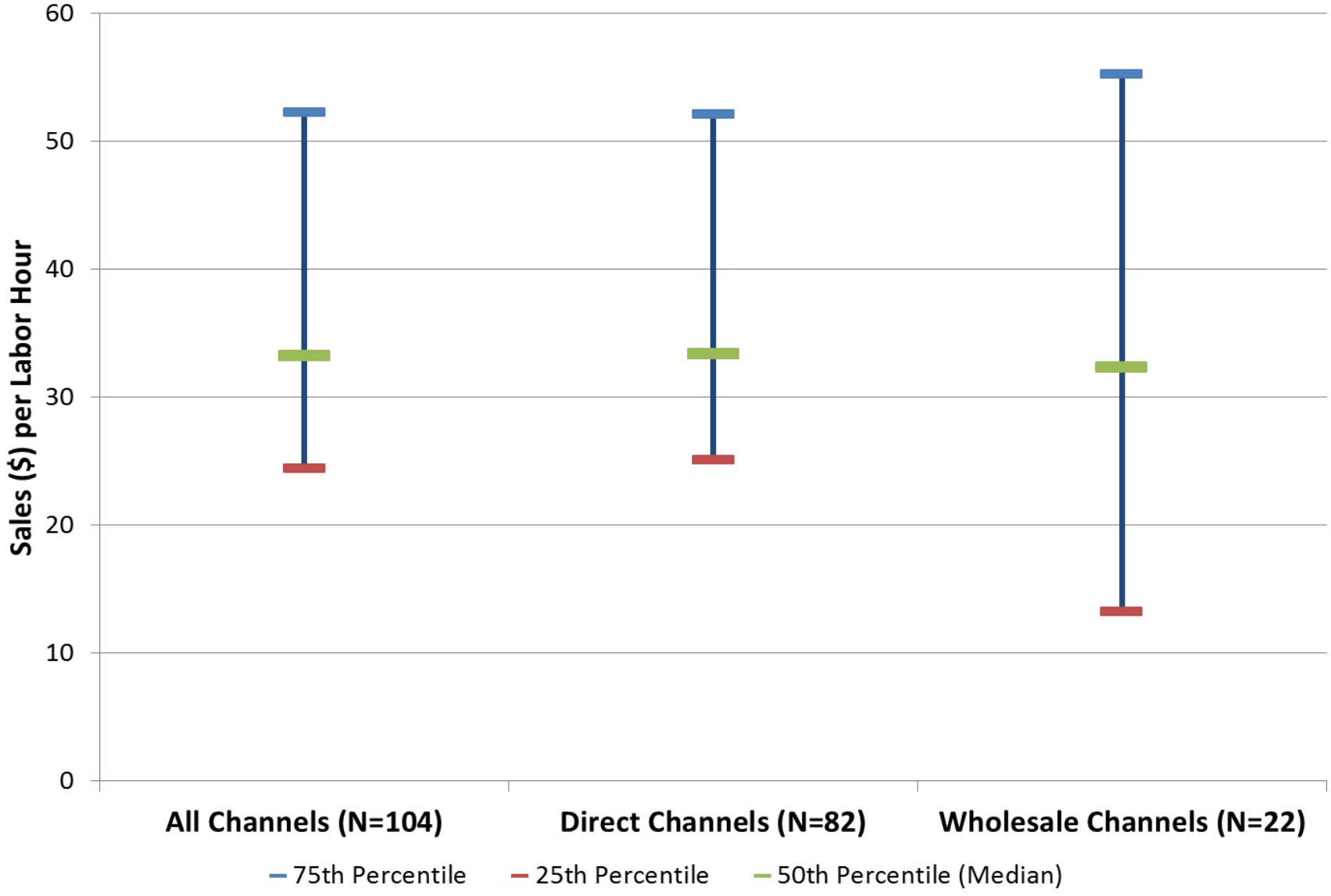
	Profit	Labor Required	Business Risk	Lifestyle	Volume	
Weight	0.3	0.2	0.1	0.3	0.1	= 1

Rank & Compare Opportunities for Performance Factors

	Sales Volume Rank	Labor Hours Rank	Profit Margin Rank	Financial Risk Rank	Lifestyle Rank	Final Scores	
						Unweighted	Weighted
IFM Tuesday	4.9	5.4	3.9	2.0	1.0	**3.4**	**3.2**
IFM Saturday	5.4	4.0	4.1	2.0	1.0	**3.3**	**3.1**
Corning FM	4.3	6.0	3.4	2.0	1.0	**3.4**	**3.2**
Watkins FM	6.0	3.1	6.0	2.0	1.0	**3.6**	**3.5**
CSA	1.0	4.2	1.0	1.0	1.0	**1.6**	**1.6**
Restaurant	6.0	1.0	2.4	2.0	1.0	**2.5**	**2.0**

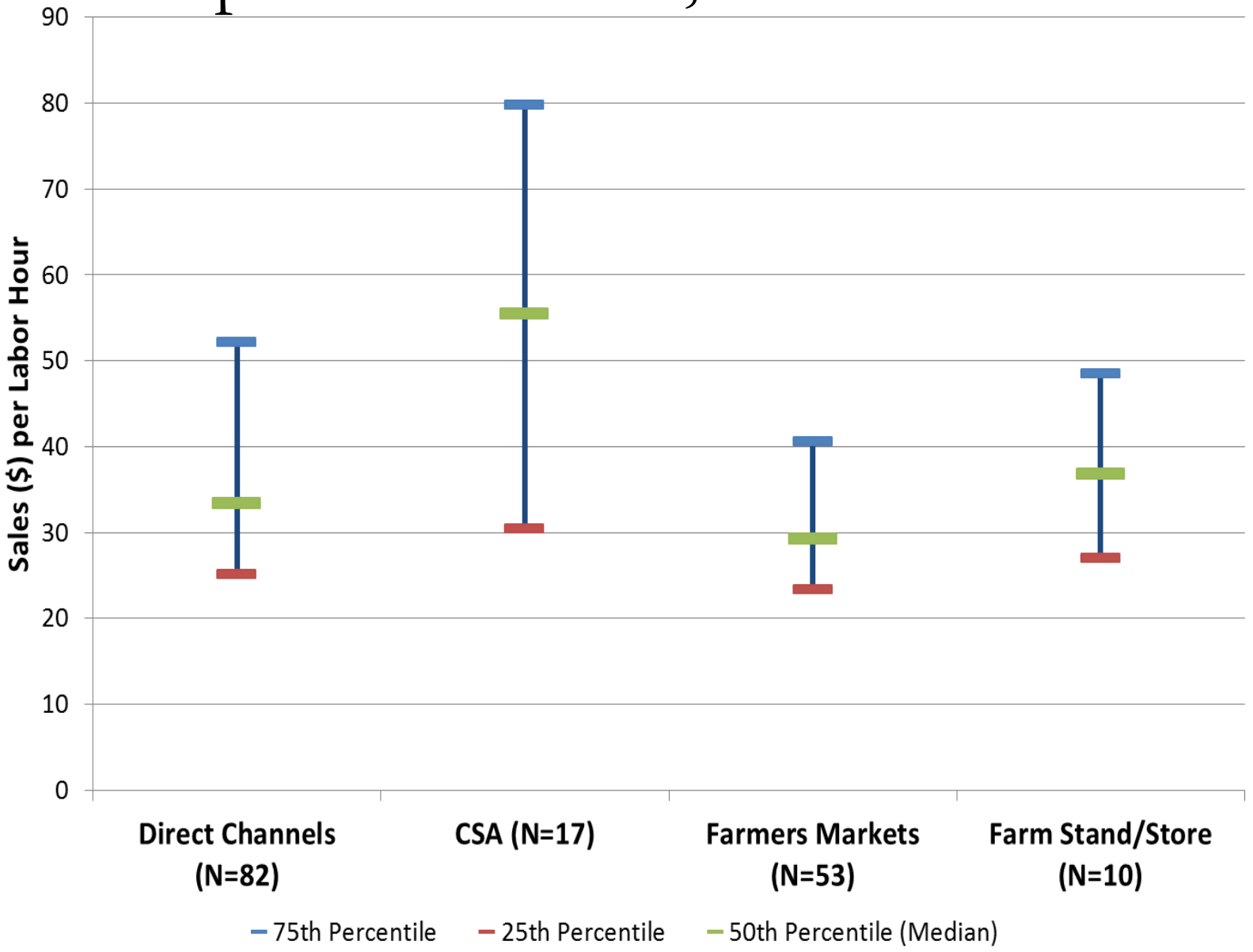
Based on 5 factors and farmer chosen weights.

Sales per Labor Hour, Aggregated Marketing Channels



Source: Schmit and LeRoux, 2014

Sales per Labor Hour, Direct Channels



How do GM Farmers Markets compare?

On their own AND

Relative to other channels for GM vendors!

Source: Schmit and LeRoux, 2014

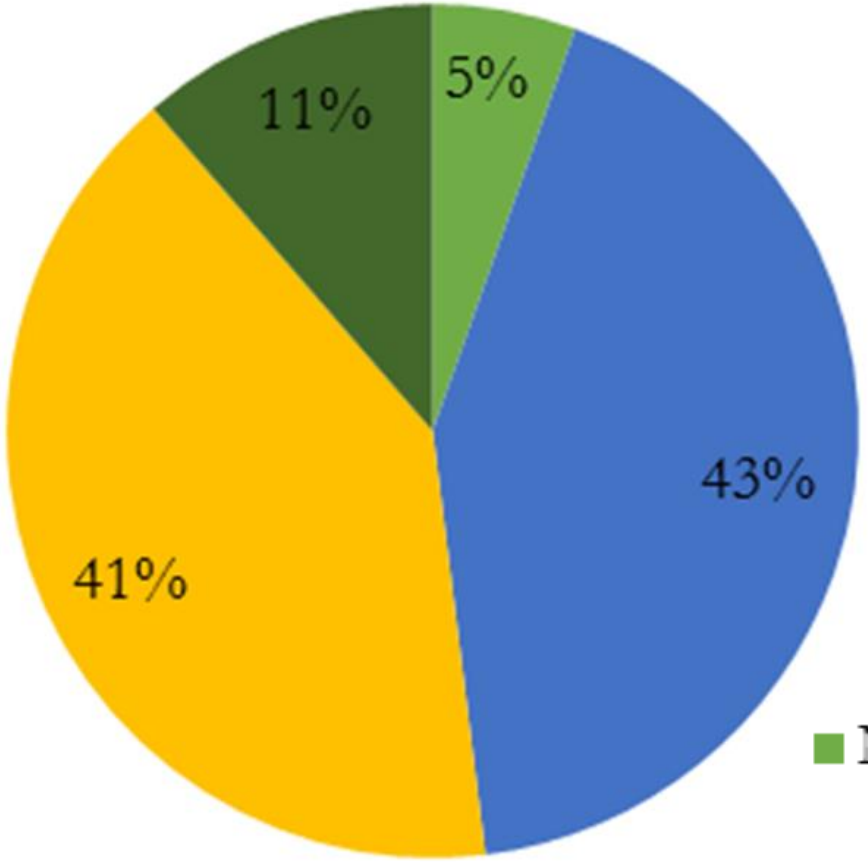
MRSAM Economic Impact Assessment:
Regional Delineations (GM farmer survey)

1. **Greenmarkets Region (GM)**
   - NY Counties: Bronx, Kings, New York, Queens, Richmond
2. **Urban Adjacent Region (UA):** NYC CSA excl GM
   - 8 'downstate' NY Counties
   - 5 PA Counties, 14 NJ Counties, 3 CT Counties
3. **NYS Upstate Region (UP)**
   - Remaining NYS counties
4. **Rest of World Region (ROW)**
   - Remaining domestic, international

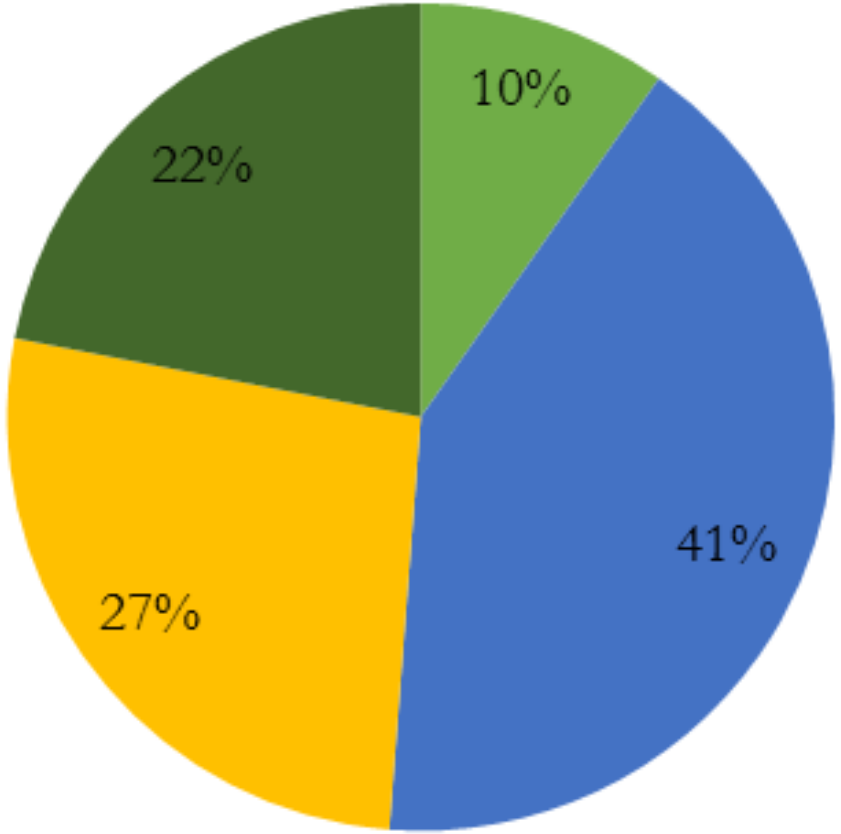
Implications for modeling flows:

- 4 intra-regional
- 12 inter-regional
- **Large data requirements!**
- **Where are the GM vendors from?**

ALL GM PRODUCERS (n=202)



SURVEY PRODUCERS (n=41)



- NYC
- Urban-Adjacent
- New York State, outside of CSA
- Outside of state and CSA

MRSAM Economic Impact Assessment:
Regional Delineations (initial modeling focus)

1. **Greenmarkets Region (GM)**
   - NY Counties: Bronx, Kings, New York, Queens, Richmond
   - The "urban region"
2. **Rest of NYS region (RNYS):**
   - Rest of NY Counties outside of GM
   - The "rural region"
3. **Rest of World Region (ROW)**
   - Remaining domestic, international

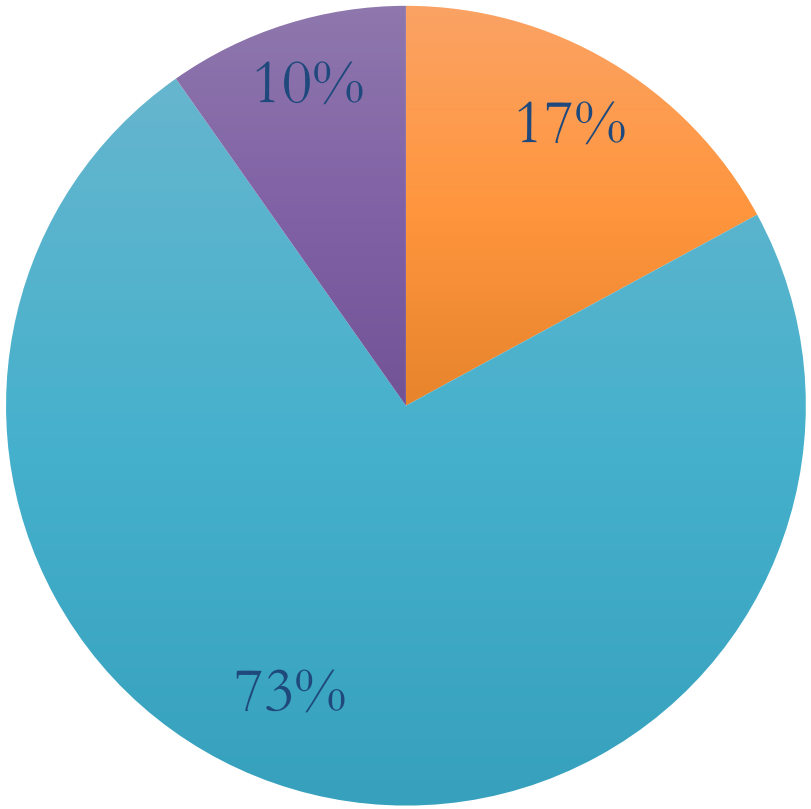
Implications for modeling flows:

- 3 intra-regional
- 6 inter-regional
- ***Less Large*** **data requirements!**

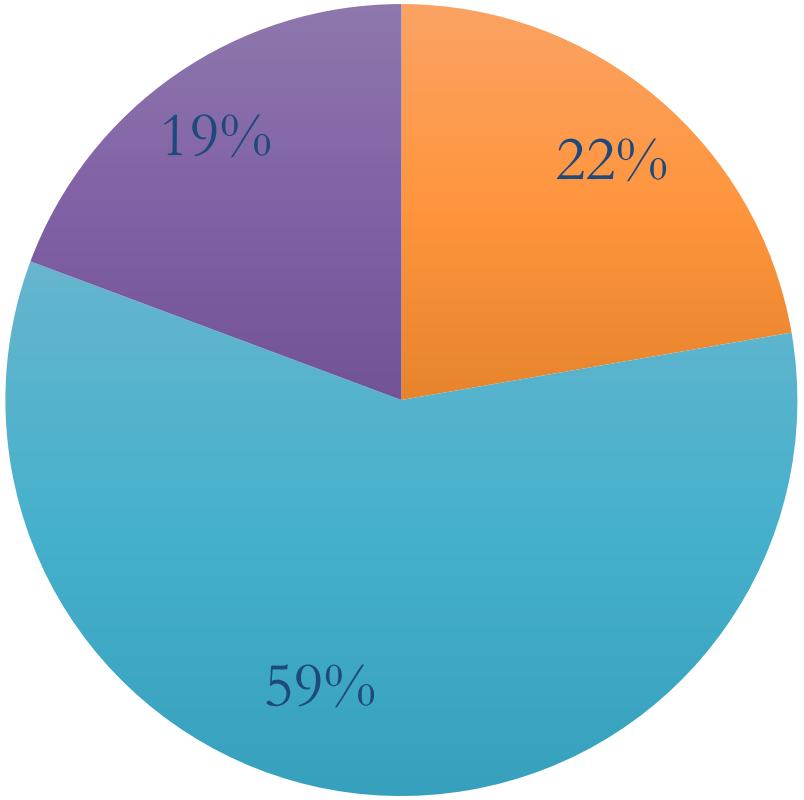
MRSAM Economic Impact Assessment

- **Expenditure and Sales Patterns of GM producers**
  - Relative spending on what, per unit of output (technology, production functions)
  - Location of spending on what (intermediate inputs, VA)
  - Location of and to whom sales occur (GM, who/where else?)
- **Assessing impacts**
  - Urban demand (GM) growth, implications of GM channel to farm changes and rural (relative to what?)
  - Getting the flows right (new/disaggregated sectors?)
  - Feedback effects to rural from urban linkage
  - Opportunity costs, countervailing effects

Survey respondents by crop type (n=41)



All Greenmarket producers by crop type (n=202)

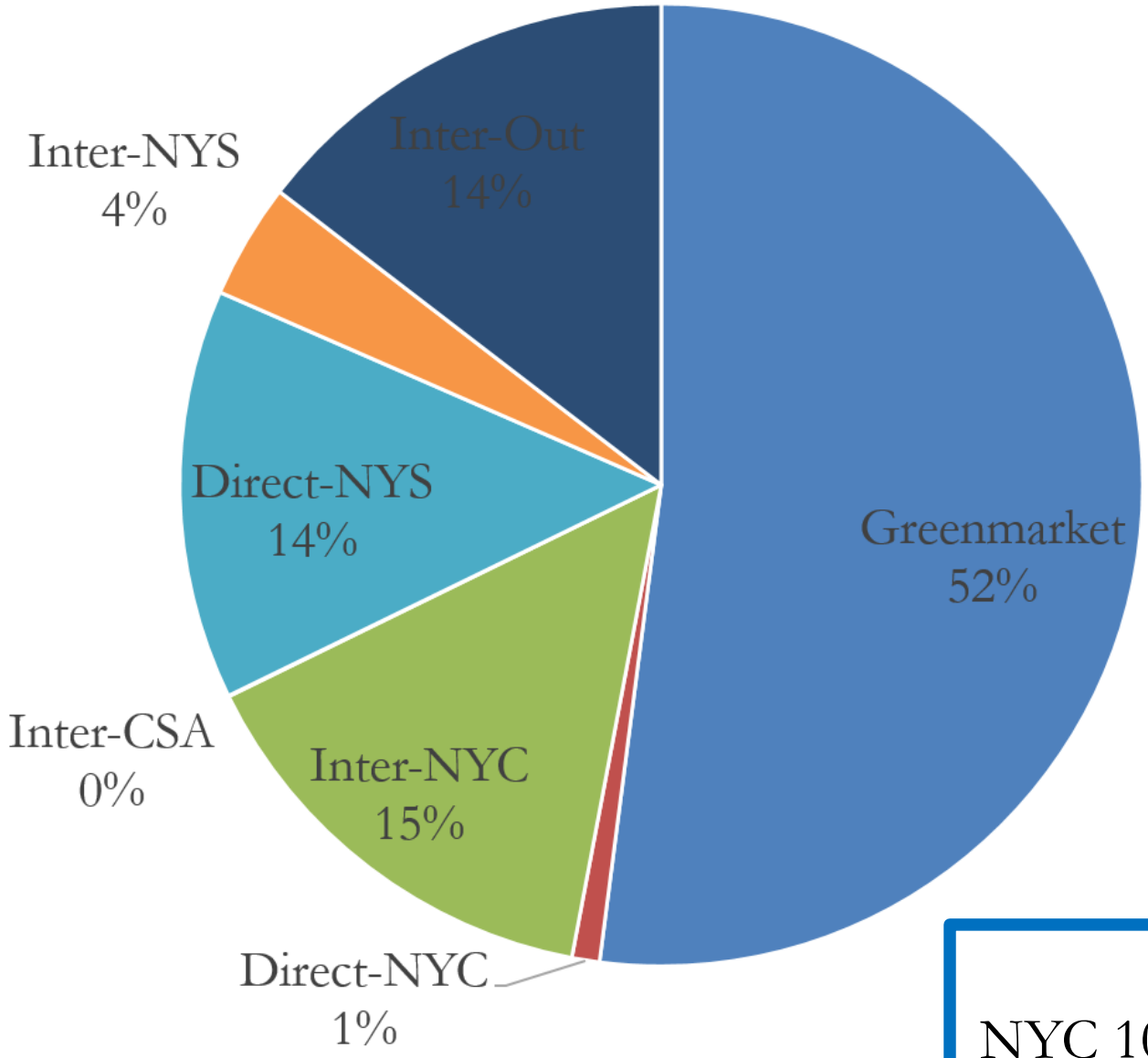


Animal related producers

Plant-related producers

Other producers (processed products)

Livestock and Dairy Sales



GM 52%

NYC DIR 1%
NYC INT 15%

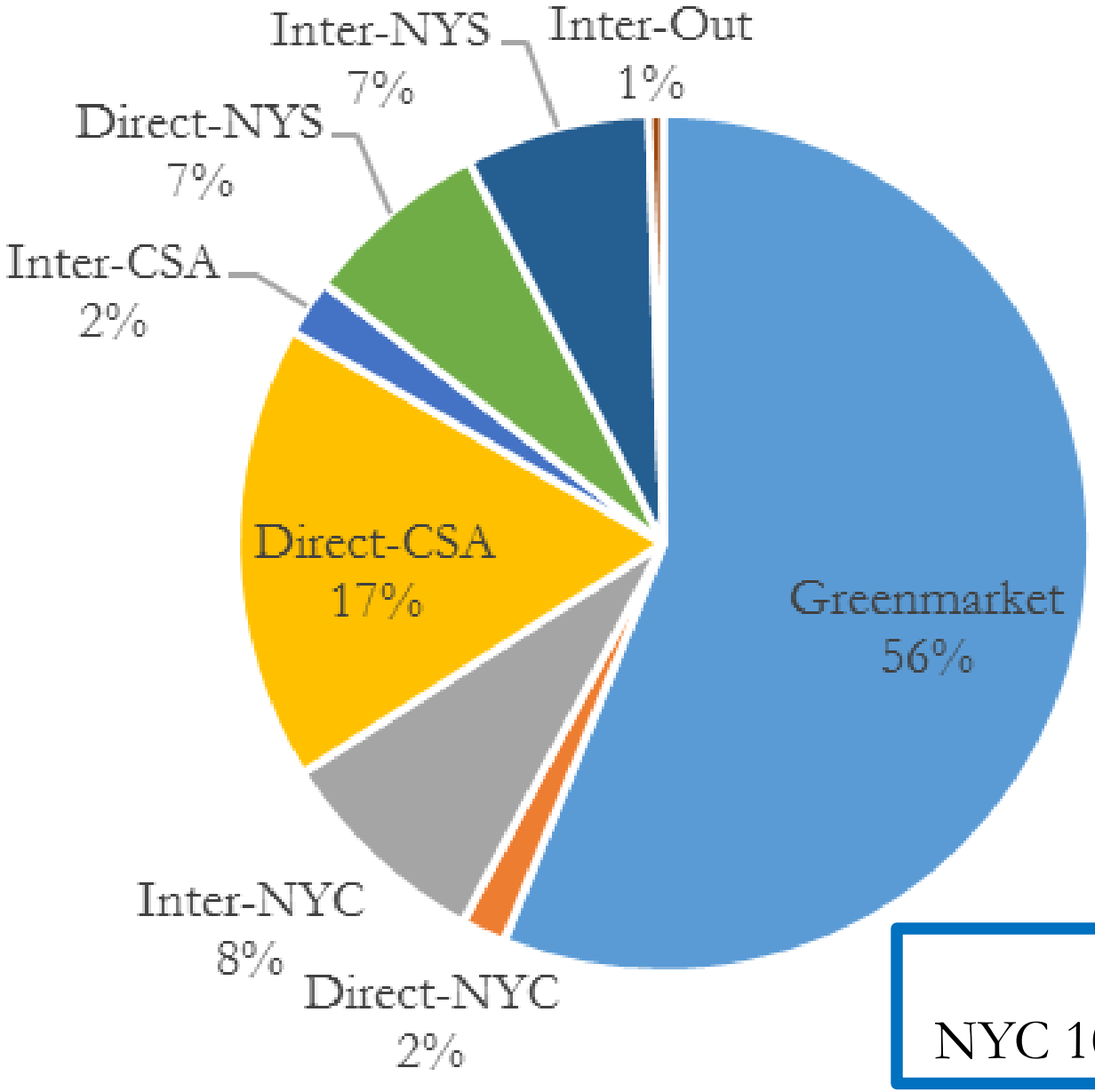
CSA DIR 0%
CSA INT 0%

NYS DIR 14%
NYS INT 4%

OOS DIR 0%
OOS INT 14%

ALL PRODUCERS
NYC 10%, CSA 41%, NYS 27%, OOS 22%

Plant Sales



GM 56%

NYC DIR 2%
NYC INT 8%

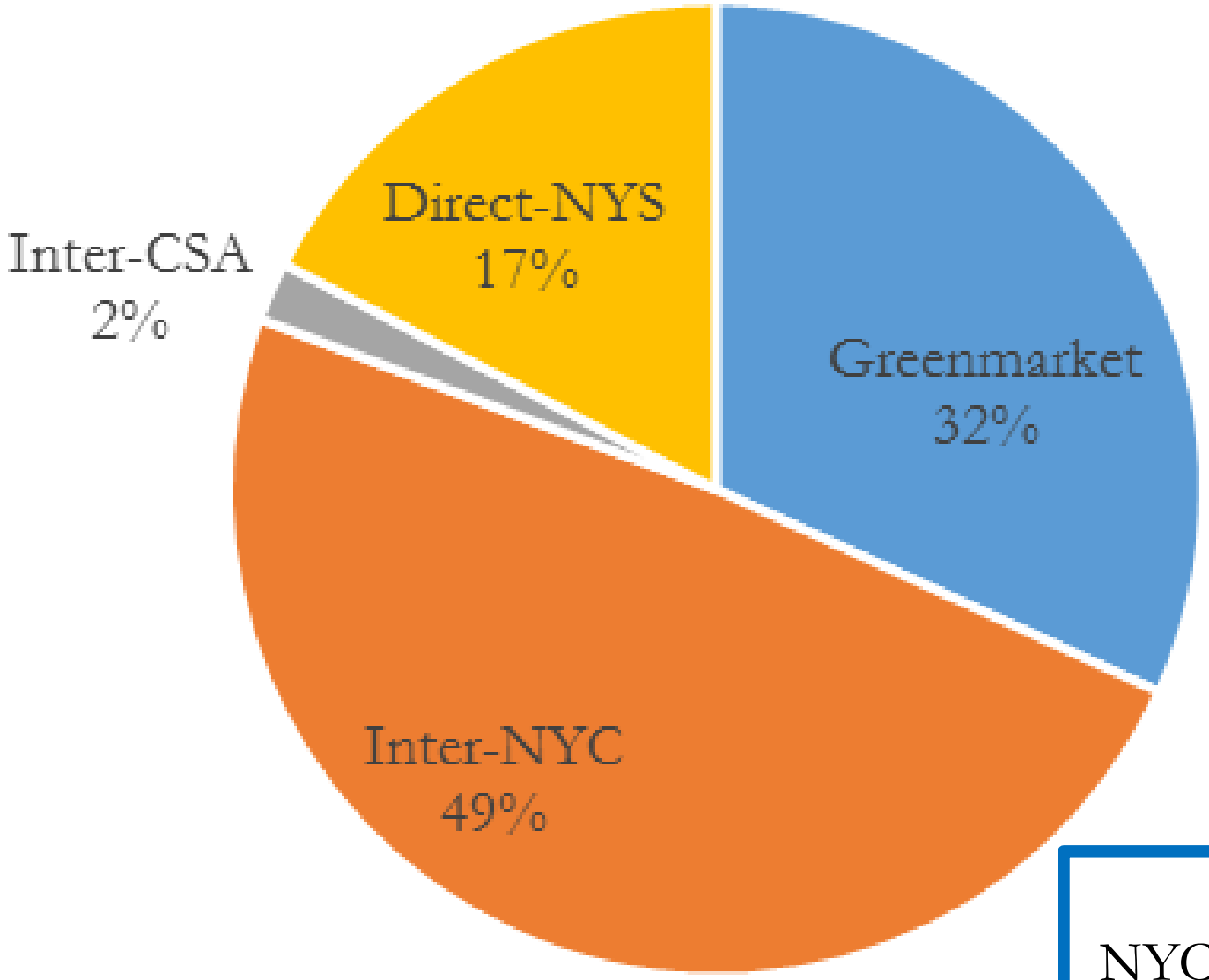
CSA DIR 17%
CSA INT 2%

NYS DIR 7%
NYS INT 7%

OOS DIR 0%
OOS INT 1%

ALL PRODUCERS
NYC 10%, CSA 41%, NYS 27%, OOS 22%

Other Processed Product Sales



GM 32%

NYC DIR 0%
NYC INT 49%

CSA DIR 0%
CSA INT 2%

NYS DIR 17%
NYS INT 0%

OOS DIR 0%
OOS INT 0%

ALL PRODUCERS
NYC 10%, CSA 41%, NYS 27%, OOS 22%

How did starting at GM effect your farm business?

(check all that apply) – percent of farms, not weighted by scale

	All	**Animal**	**Plant**	**Other**
Incr production	61%	43%	70%	25%
Incr sales to other NYC mkts	27%	0%	33%	25%
Incr sales to other near-community mkts	24%	14%	30%	0%
Decr sales to other NYC mkts	15%	29%	13%	0%
Decr sales to other near-community mkts	15%	29%	10%	25%
Started at GM, new farm, w/o pre-existing markets	37%	43%	37%	25%

RWC

- Proposed approach: Conceptual Extended SAM (Johnson, Raines, and Pender 2015)
  - Distinguishing stocks versus flows
  - Linkages between different capitals
  - Modeling changes in stocks: data-informed, by assumption, a combination of both
  - My recommendation is to **KISS**
    - Start with one capital

MCATMRSAMRWC

- Putting it all together
  - Requires more data than our budget or timeframe allows
  - Connecting MRSAM and RWC will require assumptions
    - Sensitivity analysis will be important
    - Upper and lower bounds will be helpful
  - The process will establish a recommended methodological approach applicable beyond our case study
  - It will be improved with peer-review
  - And refined with more data…

Thank you!

Farm Credit
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