

ASSESSING THE ECONOMIC IMPACTS OF REGIONAL FOOD HUBS

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Research Objectives

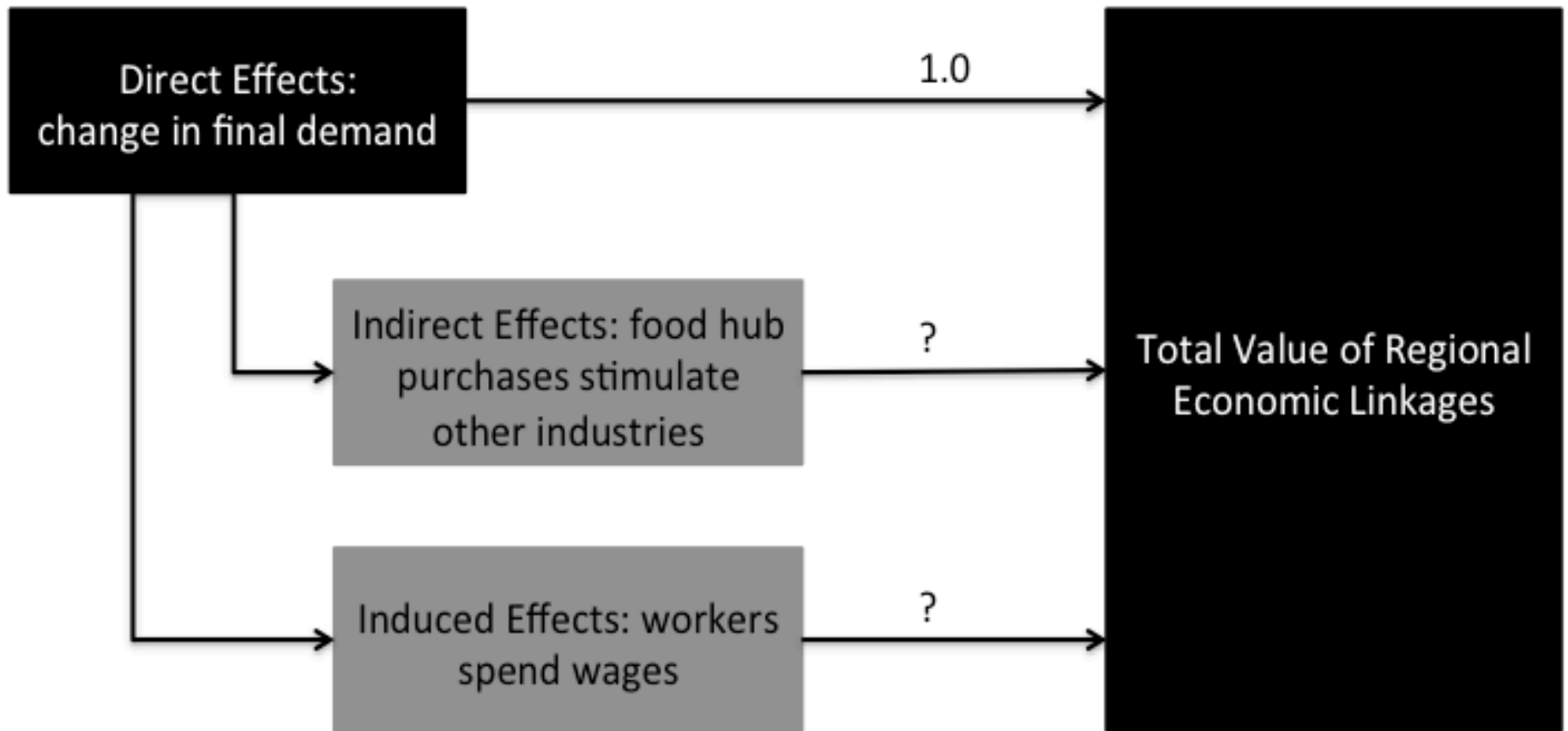
3

1. Promote the utilization of a best-practice methodology to evaluate the economic contributions of food hubs on their local economies and participating farms
 - A. Develop a data-driven, replicable empirical framework applicable to a variety of food hub structures.
 - B. Estimate impact of increase in final demand

2. Better understand the extent to which food hubs affect the overall demand for and consumption of local products
 - A. How do sales to/purchases from food hubs augment other farm sales/food product purchases

Economic Impact Analysis

4





Economic Impact Analysis

- IO/SAM methods
 - ▣ IO models allow researchers to analyze the activities of industries that produce goods (outputs) and consume goods (inputs) from other industries (i.e., inter-industry linkages)
 - ▣ SAM extends IO to more comprehensively capture the distribution of income

- MIG, Inc.'s IMPLAN data and software
 - ▣ Utilizes multiple data sources
 - ▣ Provide complete model of economy (all inter-industry transactions)
 - ▣ Available at national, state, county, and zip code levels
 - ▣ Modifiable, allows users to build unique industry sectors



Data Challenges

- No ‘food hub’ sector in IMPLAN (or other data sources), defining it requires that we determine:
 - ▣ The commodity sectors that provide inputs to a food hub;
 - ▣ The size of a food hub’s direct impact in those sectors; and
 - ▣ The location(s) of the inputs purchased.
- Data on inter-industry linkages available only on aggregate commodity sector scale
 - ▣ Differentiation of sectors backward linked from food hub?
 - ▣ Farmers selling through food hubs *may* have different expenditure patterns than those that do not (Schmit et al 2013)



Methodology: Data requirements

Model 1

- P&L data from food hub
 - ▣ Used with default IMPLAN data to determine share of sectors represented by food hubs

Model 2

- P&L data from food hub
- Vendor surveys
 - ▣ Used to separate farm vendor sectors from ag sectors – modified production functions
 - Are food hub vendors different from the default?



Methodology: Data requirements

Model 1

- P&L data from food hub

- Use IM de sec foc

Look at the impact of a \$1 million increase in final demand for food hub products

Model 2

- P&L data from food hub

- farm n ag
- production functions
- Are food hub vendors different from the default?

Methodology: Case Study

9

- Regional Access LLC, est. in 1989
- Over \$6 million in sales, 32 employees
- Delivery (mostly) throughout NYS
 - ▣ 10 vehicles
- Over 3,400 product listings
 - ▣ Beverages, breads, cereals, flour, meats, produce, prepared foods, grains, fruits & vegetables, etc.
- Purchases from over 100 farmers & 65 specialty processors
- Over 600 customers
 - ▣ Individual households, freight, restaurants, institutions, distributors, buying clubs, retailers, manufacturers, bakery





Regional Access



Farm / Non Farm Vendor Services:

- Aggregation
- Freight
- Warehousing
- Marketing

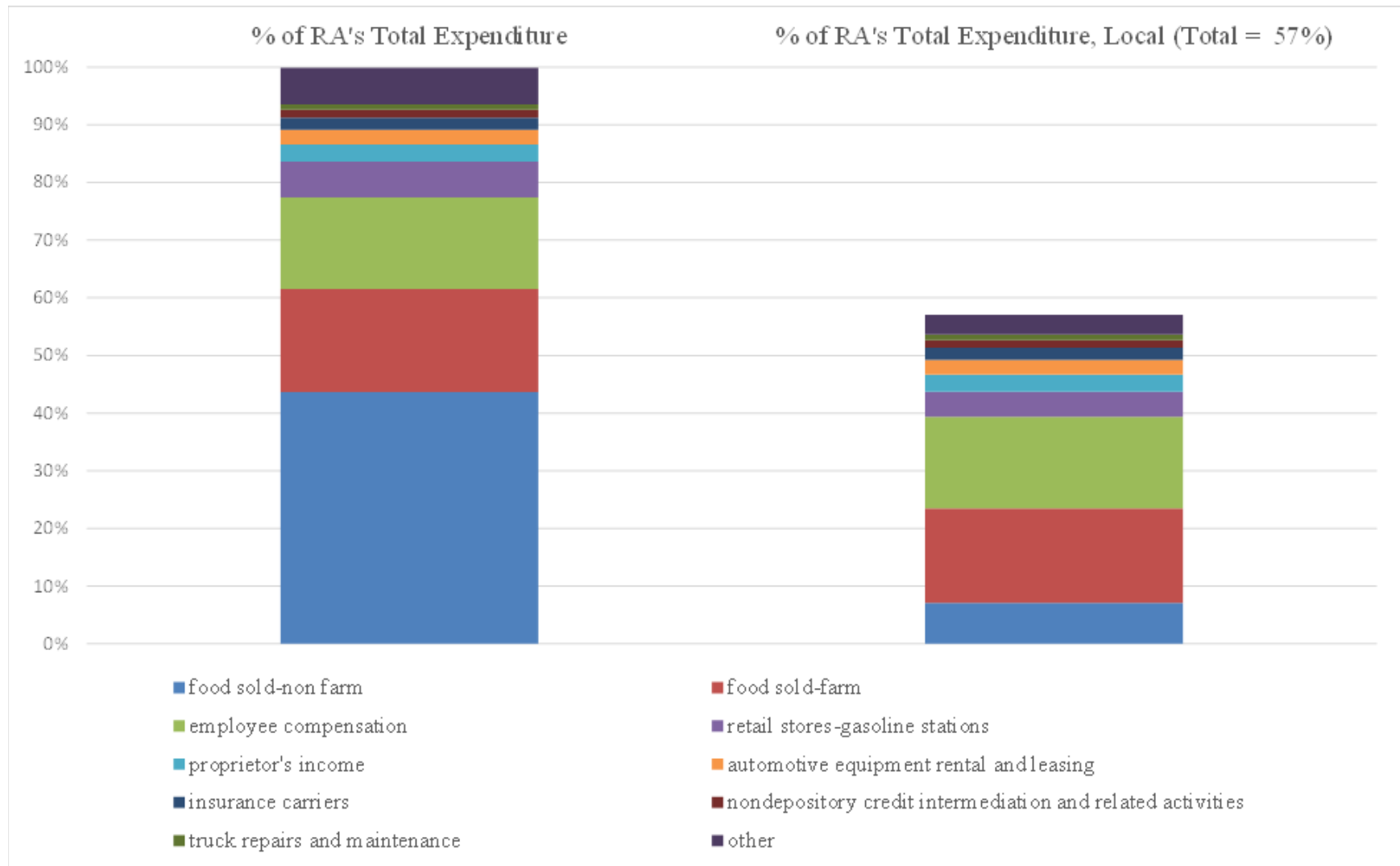
Customer Services:

- Home delivery
- Retail, Wholesale, Institutional delivery
- Backhauling

Community Outreach:

- Food donations
- Foundation - Great Local Foods Network
- community event, special projects (i.e., 'Bake mobile')

RA Expenditure Profile

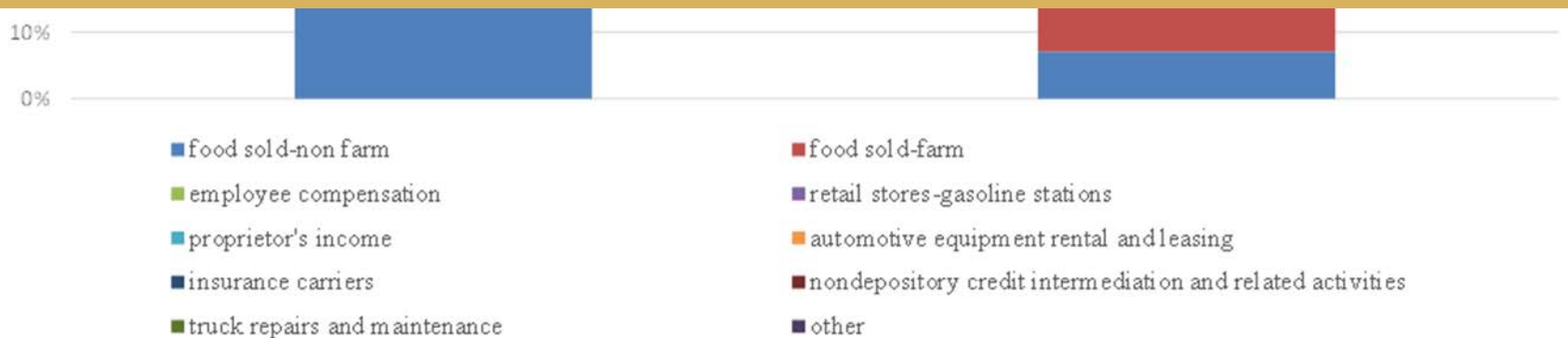


RA Expenditure Profile



Regional Access COGS = 62%
Farm 18%, Nonfarm 44%

MSU (forthcoming) Survey COGS = 61%
Mainstream Distributor COGS ~ 70-75%



RA Expenditure Profile

% of RA's Total Expenditure

% of RA's Total Expenditure, Local (Total = 57%)

100%

Regional Access COGS = 62%
Farm 18% Nonfarm 44%
92% ← Local → 16%

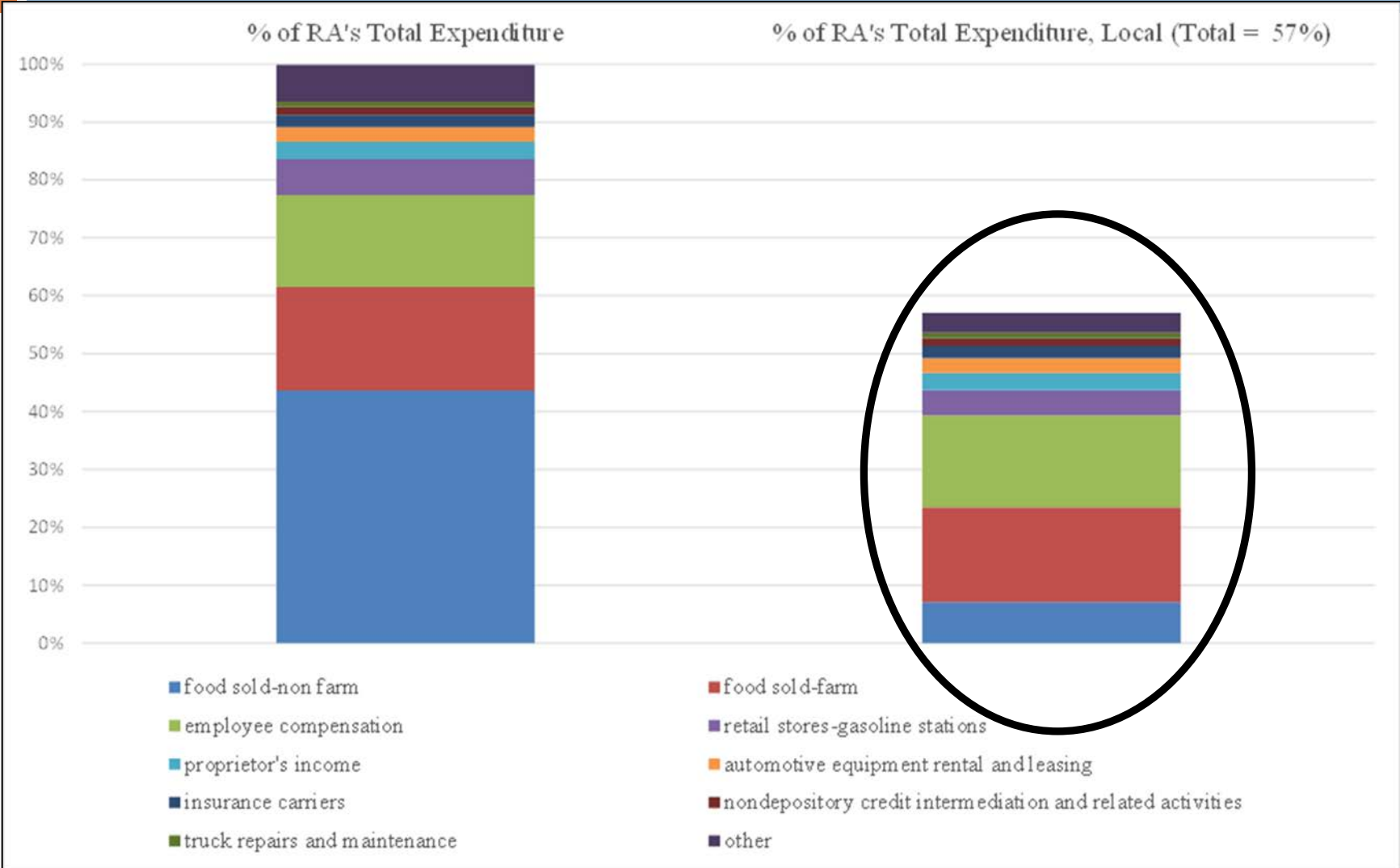
Overall Expenditures Local = 57%

10%

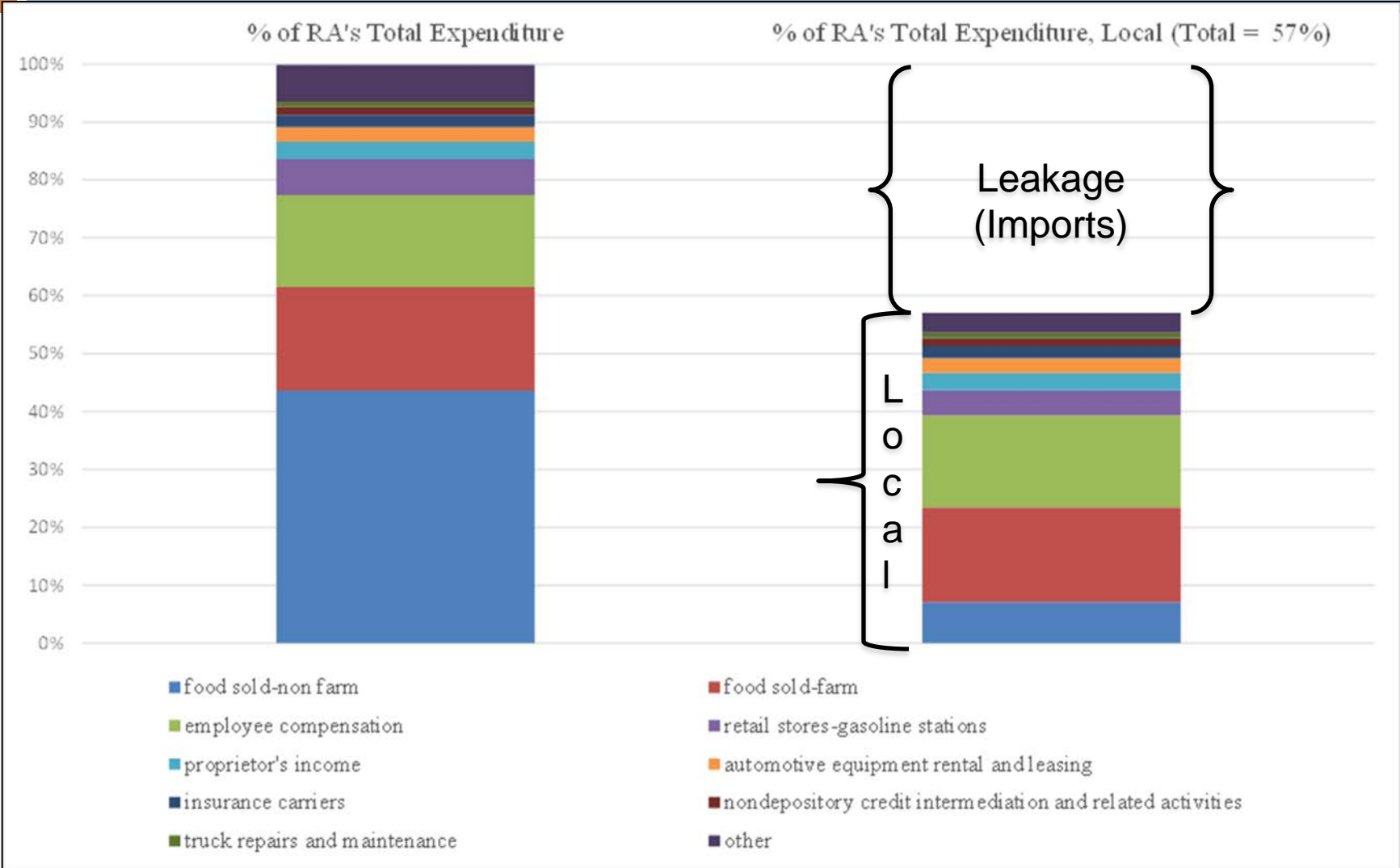
0%

- food sold-non farm
- food sold-farm
- employee compensation
- retail stores-gasoline stations
- proprietor's income
- automotive equipment rental and leasing
- insurance carriers
- nondepository credit intermediation and related activities
- truck repairs and maintenance
- other

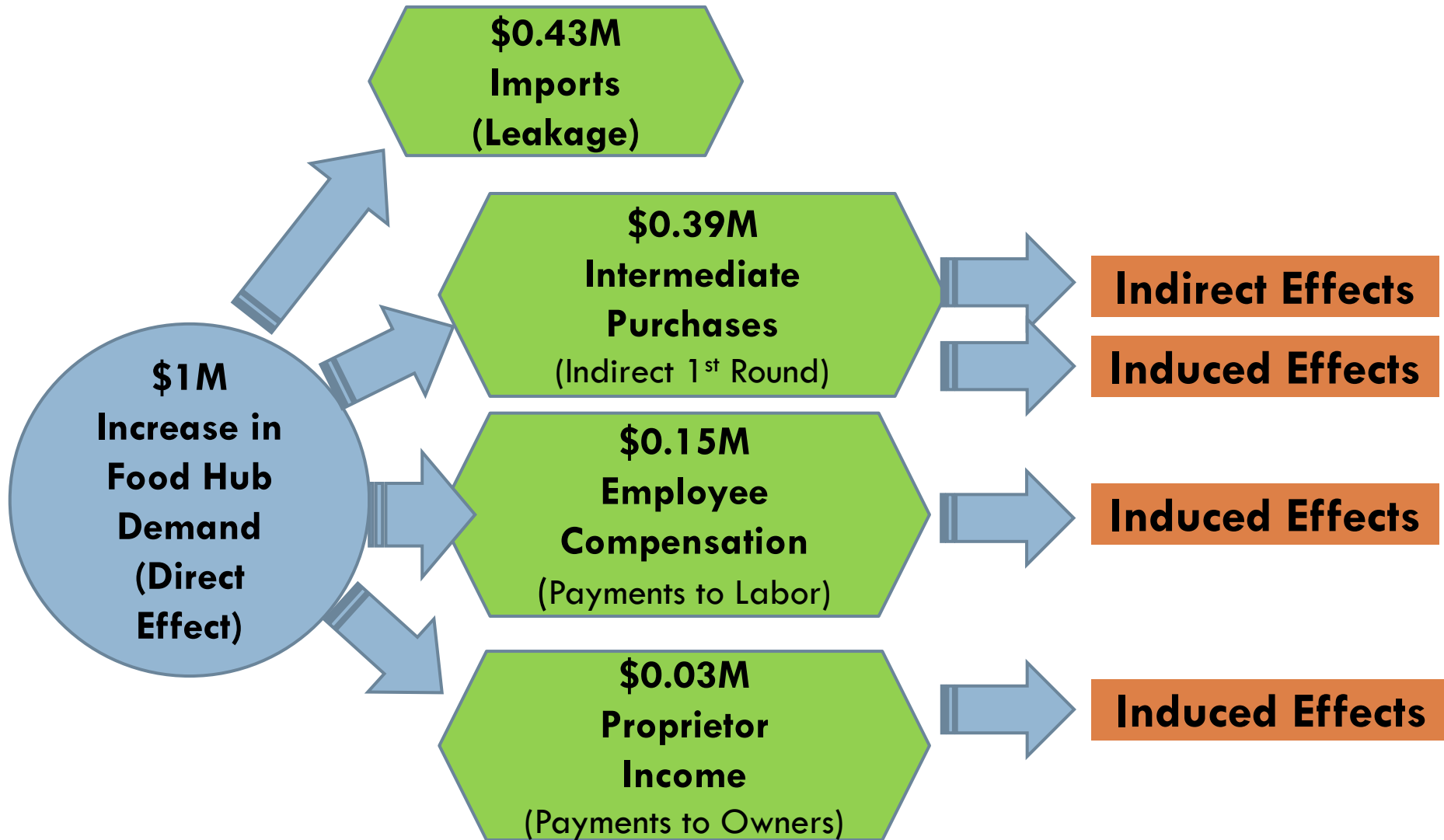
RA Expenditure Profile - Local



RA Expenditure Profile - Local



Estimating Local Impacts



Results Model 1

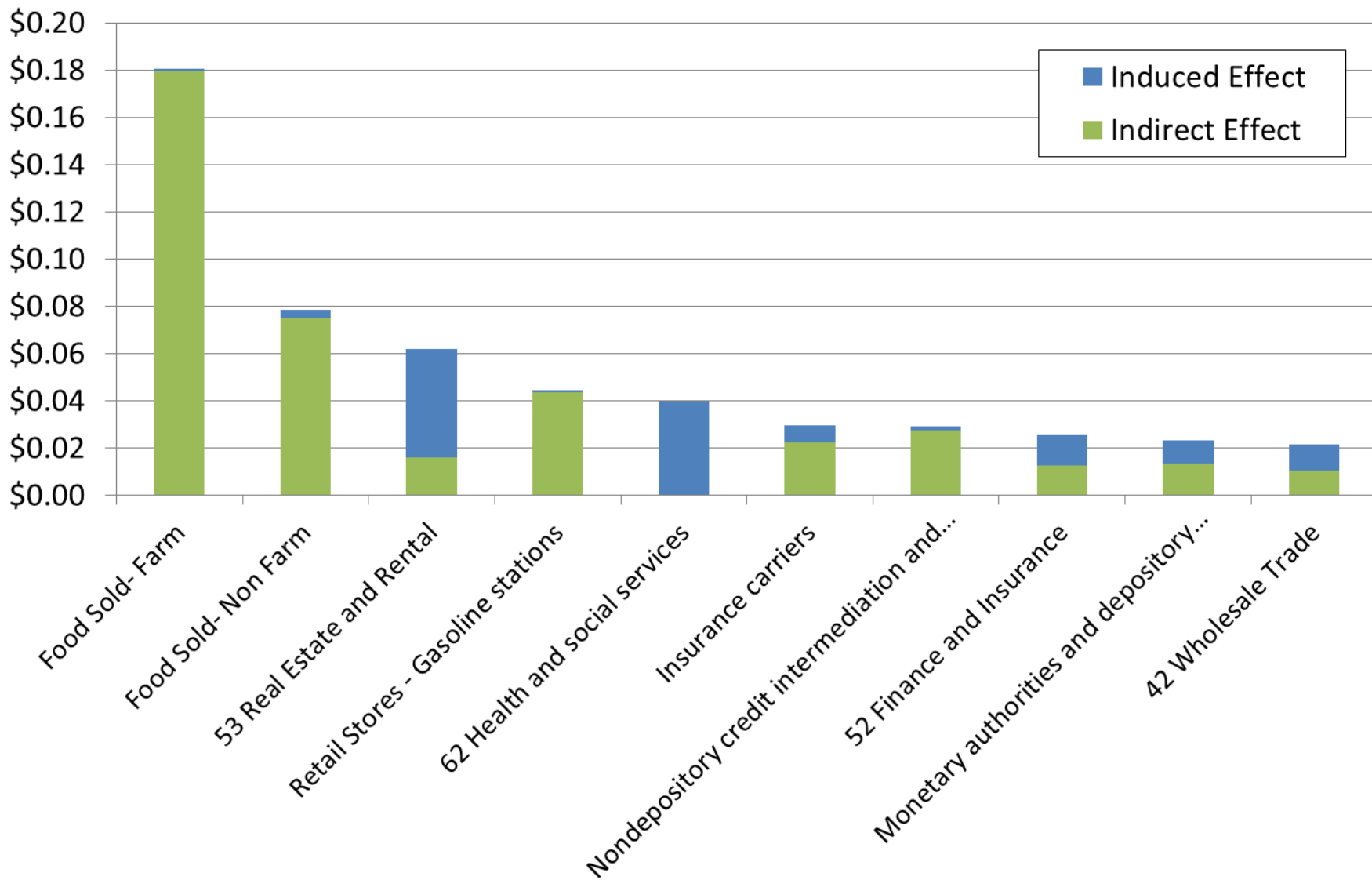
17

Implicit Output Multiplier

- 1.75
 - ▣ For each dollar of food hub products/services delivered to final demand, an additional \$0.75 of output is produced in related industries (indirect+induced effects).

	<u>Output (\$M)</u>	
Direct Effect	\$1.00	
Indirect Effect	\$0.51	$1.75/1.00 = 1.75$
Induced Effect	<u>\$0.24</u>	
Total Effect	\$1.75	

Indirect and Induced Effects per \$1 Increase in Final Demand for Food Hub Products, Top 10 Industries, Model 1





Results Model 1 - Distributional Effects

19

- Industry Sectors with Greatest **Indirect** Impacts:
 - ▣ Food sold farm (35%)
 - ▣ Food sold nonfarm (15%)
 - ▣ Retail stores –gasoline stations (9%)
 - ▣ Nondepository credit intermediation (5%)
 - ▣ Insurance carriers (4%)

- Industry Sectors with Greatest **Induced** Impacts:
 - ▣ Real estate and rental (19%)
 - ▣ Health and social services (16%)
 - ▣ Retail trade (8%)
 - ▣ Meals and entertainment (7%)
 - ▣ Finance and insurance (5%)



Model 2: Farm Interviews

20

- 30 interviews with RA's farmer vendors out of a population of 86 located in NYS (35% response rate).
 - ▣ Provided information on 2011 annual expenditures by item category and the proportion of each expenditure purchased within NYS.
- Commodity (by primary sales):
 - ▣ Meat/Livestock (37%), Fruit and Vegetable (30%), and Value Added Products (including cheese, butter, yogurt, honey, maple syrup, wine and juice) (33%).
- Operation Size (\$):
 - ▣ Small (50%), Medium (20%) Large (10%), Very Large (10%)



Model 2: Food Hub Farm Expenditure Pattern

Item	% of total expenditure	% of total expenditure local
Ag commodities from other farms	16.3%	14.6%
Ag services	9.6%	8.8%
Utilities	4.4%	4.4%
Repair and maintenance of farm buildings	2.6%	2.6%
On farm processing	9.4%	3.8%
Off farm processing	1.5%	1.1%
Wholesalers	6.1%	3.2%
Tractor/machinery repair	3.0%	2.8%
Items purchased from retail stores	4.1%	3.3%
Transportation	4.3%	3.4%
Warehousing -rented	0.2%	0.2%
Information services	0.7%	0.7%
Insurance	1.6%	1.6%
Rented/leased land	1.3%	1.3%
Rented equipment	0.3%	0.3%
Professional services	0.4%	0.4%
Veterinary services	0.3%	0.3%
Waste disposal	0.2%	0.2%
Education/training programs	0.2%	0.2%
Taxes	5.9%	5.9%
Labor (not contracted)	26.3%	26.3%
Other	1.3%	0.8%
<i>Total Local Expenditure</i>		86.3%

Source: 2012 primary data collection by the authors



Model 2: Food Hub Farm Expenditure Pattern

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On farm processing	9.4%	3.8%
Off farm processing	1.5%	1.1%
<div style="background-color: #d4b871; padding: 10px; border: 1px solid black;"> <p>IMPLAN Farm Sector: 15% Expenses on Labor 70% Local (NYS)</p> </div>		
Rented equipment	0.5%	0.5%
Professional services	0.4%	0.4%
Veterinary services	0.3%	0.3%
Waste disposal	0.2%	0.2%
Education/training programs	0.2%	0.2%
Taxes	5.9%	5.9%
Labor (not contracted)	26.3%	26.3%
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<i>Total Local Expenditure</i>		86.3%

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Results Model 2

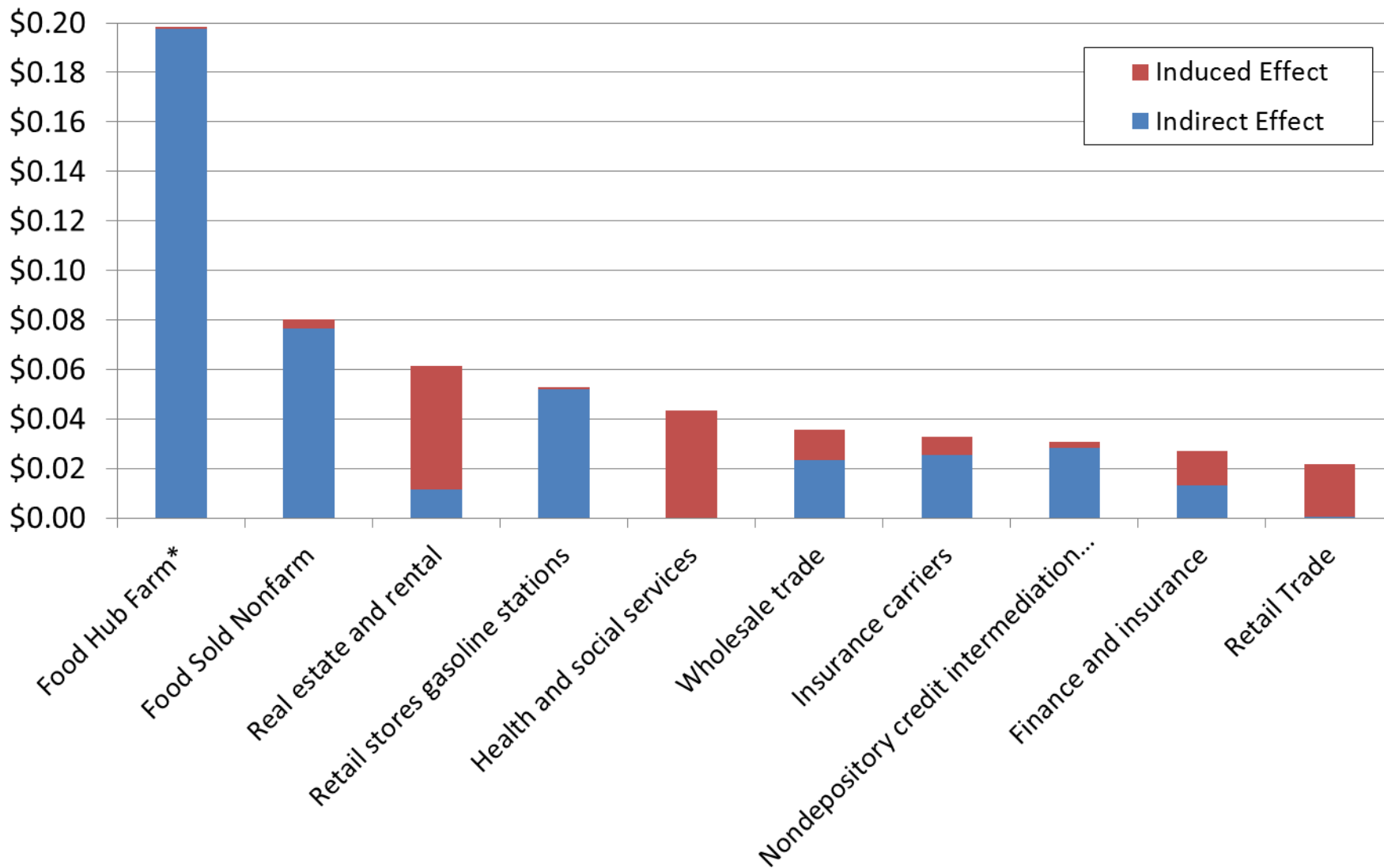
23

Implicit Output Multiplier

- 1.82 (recall multiplier for model 1 = 1.75)
 - ▣ For each dollar of food hub products/services delivered to final demand, an additional \$0.82 of output is produced in related industries (indirect+induced effects).

	<u>Output (\$M)</u>	
Direct Effect	\$1.00	
Indirect Effect	\$0.56	1.82/1.00 = 1.82
Induced Effect	<u>\$0.26</u>	
Total Effect	\$1.82	

Indirect and Induced Effects per \$1 Increase in Final Demand for Food Hub Products, Top 10 Industries, Model 2





Results Model 2- Distributional Effects

25

- Industry Sectors with Greatest **Indirect** Impacts:
 - ▣ Total farm sectors (food hub farm and other farm) (36%)
 - ▣ Food sold nonfarm (14%)
 - ▣ Retail stores gasoline stations (9%)
 - ▣ Nondepository credit intermediation (5%)
 - ▣ Insurance carriers (4%)

- Industry Sectors with Greatest **Induced** Impacts:
 - ▣ Real estate and rental (19%)
 - ▣ Health and social services (16%)
 - ▣ Retail trade (8%)
 - ▣ Meals and entertainment (7%)
 - ▣ Finance and insurance (5%)



Comparison of Distributional Impacts from Models 1 & 2

26

INDIRECT AND INDUCED IMPACTS

Selected INDUSTRY SECTORS	MODEL 1	MODEL 2
TOTAL FARM (FARM + FOOD HUB FARM)	\$180,274	\$198,294
FOOD SOLD NONFARM	\$78,398	\$80,241
WHOLESALE TRADE	\$21,749	\$35,604
SUPPORT ACTIVITIES FOR AGRICULTURE	\$3,264	\$8,540

VALUE ADDED COMPONENT	MODEL 1	MODEL 2
EMPLOYEE COMPENSATION	\$198,991	\$246,620
PROPRIETOR INCOME	\$57,593	\$48,088



Demand Expansion (RO2)

27

- Need to understand the extent to which Regional Access is:
 - ▣ Creating new or increased demand for local farm products versus diverting sales from one market to another – e.g., farm now sells product to RA rather than at a farmers' market
 - ▣ Diverting market share from another local business (i.e., another distributor) – this is the opportunity cost and must be subtracted from total output impact
 - ▣ Scalability of the food hub sector



Farm interview responses

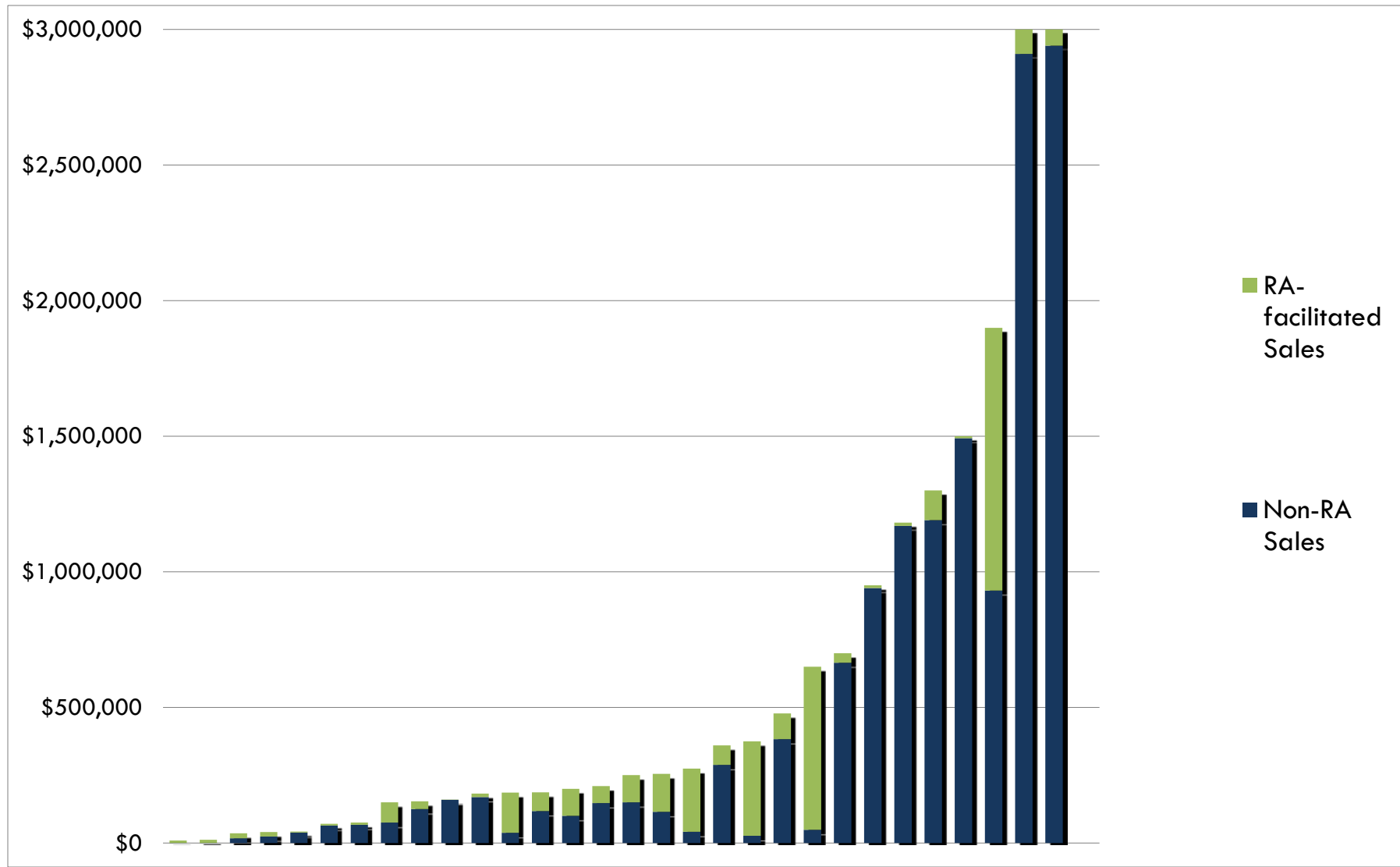
28

Has your relationship with Regional Access enabled your business to expand?

- “Increased market access”
 - ▣ 15% increase in sales in 2011, projecting a 25% increase in 2012
- Increased storage access, which supported more winter/year-round sales
- “Expanded customer reach”
- “Enabled sales in NYC”
- “Steady, but not increasing”
- “If it weren't for Regional, we wouldn't be here”
- “Dependable customer demand has allowed farm to expand with less trepidation”

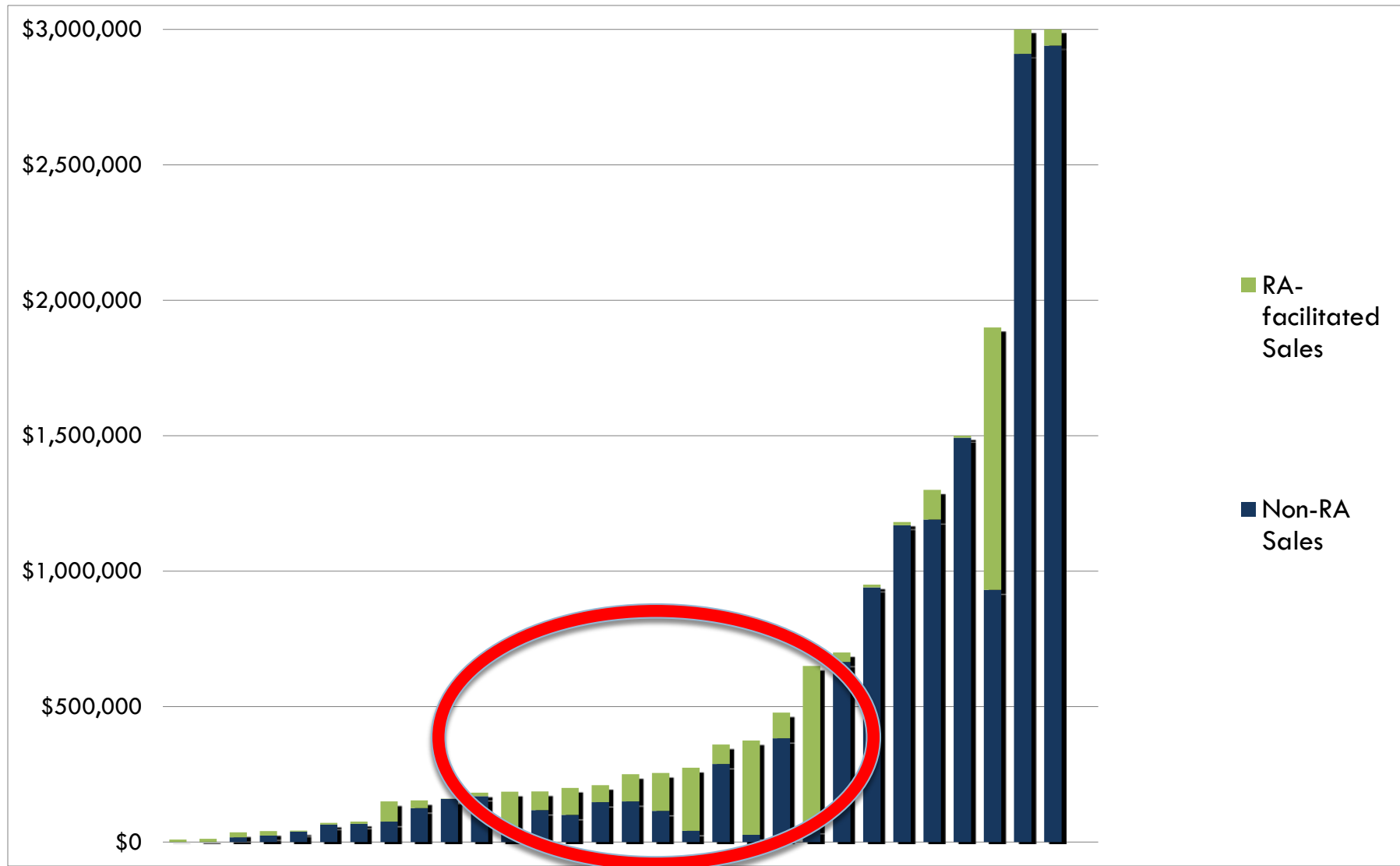


Regional Access facilitated sales as a proportion of total farm sales



Regional Access facilitated sales as a proportion of total farm sales

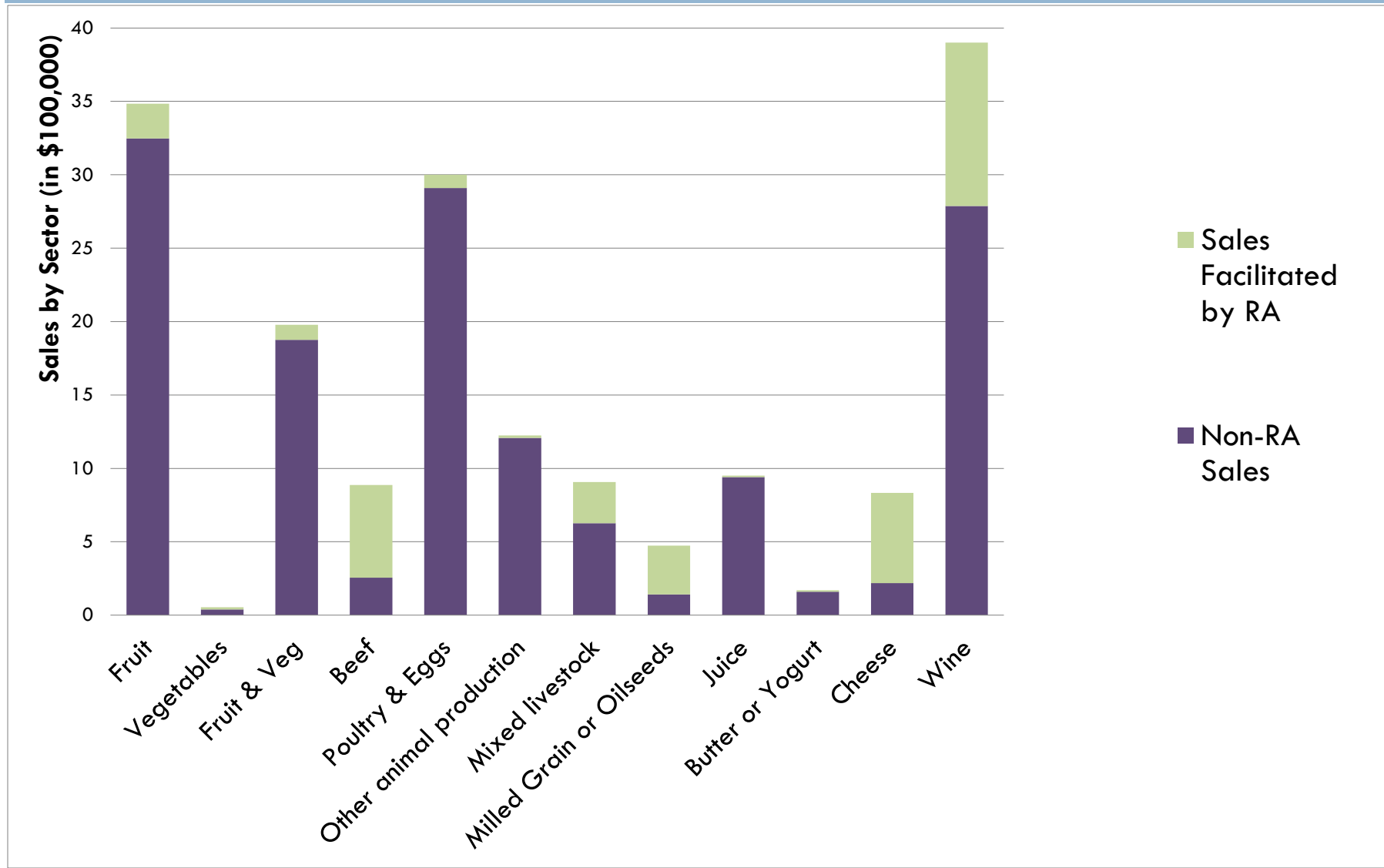
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Regional Access facilitated sales by product sector (as a proportion of total farm sales)

31





Customer Surveys

32

- 305 surveys/interviews with RA customers (46% response rate) - 80% business customers, 20% households customers.
- Business customers:
 - ▣ Average sales = \$5.7 million (median = \$515,000)
 - ▣ Average years in business = 13 (median = 8)
 - range from new to over 130 years
 - ▣ Average FTE = 15 (median = 4)
 - ▣ Primary business function:
 - Retailer (34%), Restaurant (25%), Wholesaler (11%), Processor (9%), Grocery/meal delivery service (3%), Distributor (2%), other (17%)



Consumer responses

33

- 79% of business customers (n=166) reported expanding 'local' product sales due to relationship with Regional Access
 - When asked in response: *“By what percent has your business been able to expand its product offerings because of Regional Access?”*
 - Mean = 17% (n=110)



Customer responses

34

- 49% of RA's business customers reported that they purchased less product from other sources due to their relationship with RA
 - 46% said that they purchased the same amount and 5% said they didn't know (n=164)
 - Of those who reported they purchased less product from other sources, the average reduction in other purchases was 23% (n=69).



Customer responses: scalability

35

- 39% of business customers reported that they could not purchase products offered by Regional Access from another source
 - 42% could find them from other sources, 19% didn't know) (n=166)
- If RA expanded its product availability/delivery routes, etc. 66% of business customers reported they would increase sales
 - 15% would not, 19% didn't know (n=167)

Conclusions

36

- Proper food hub assessments require:
 - Detailed financial data by type and location from hub and farm suppliers.
 - Value of farm-level data will depend on:
 - Differential characteristics of farm suppliers relative to default IO data, and
 - Relative size of hub's costs allocated to local farm product procurement
 - Careful IO/SAM model construction and sector mapping of expenditures
 - Consider additional industry differentiation as appropriate

Conclusions

37

- ▣ Results from the case study suggest:
 - Availability of the food hub increased overall demand for 'local' products
 - Food hub particularly facilitates the distribution of products from mid-scale producers
 - Key component may be the ability to sell largely 'rural' products in urban core
 - Scalability is not pure; i.e., potential to increase number/size of food hubs, but will result in some diverted sales from other businesses
 - Offsets (opportunity costs) can be difficult to measure
 - Important priority for future research.

Thank You!

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