

# Measuring Economic Impacts – Some IMPLAN Examples from the Field

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# Impact Assessments

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## Types of Income Generation

- Selling to persons/firms outside the region (exports). Money that comes into the region sustains a level of employment that would not otherwise exist were it not for the exports.
- Intra-regional engagement in local exchanges where money changes hands, but stays in the region; i.e., buying and selling that is transacted locally.

## Forms of Economic Impact

- **Export Enhancement** – creates more & higher-paying spinoff jobs. Increase local production activity for export.
- **Import substitution** – Increase local production to reduce imported goods. Level of benefit depends on the kind of commodity or service.
- **Price enhancement** – possible price premiums for certain local goods.

## Consider Offsets

- Existing industry activity (how much is new?)
- Reductions in other activities (e.g., shifts in acres)
- Reductions in other sectors (e.g., shift in wholesaling between sectors)

# Context is Important!

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- **Sector(s):**
  - Sector production... dairy, vegetables, livestock
  - Food systems... production, service, manufacturing, wholesale/retail
  - Local food systems... localize food systems
  - Types of firms/farms... differences in spending patterns, production
- **Study Area:**
  - Choice of study area will influence economic multipliers, and the relative importance of various industries.
  - Gains in one area may be a loss in another (adjacent) area.
- **Objectives:**
  - **Total impacts** of industry sectors... output, jobs, & value added.
  - **Sector comparison** ... priorities on development, differential impacts
  - **Industry expansion** ... consequences of new policies/strategies
  - **Structure of the economy/sectors**... buying/selling between sectors, imports into and exports out of a region

Articulating these upfront is essential in defining approaches & data needs.

# IMPLAN approaches – shifting production

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## Shifts in Agricultural Production Towards Targeted Sector

- **Topical Example**
  - Increase (locally produced) fruit and vegetable consumption
    - Improve health and food access
    - Increase acres of F&Vs grown, offset with decrease in corn & soybeans
    - What are total economy effects on output, jobs, labor income?
- **Data Requirements:**
  - IMPLAN default data (production, regional purchase coefficients)
  - Secondary data to develop feasible scenarios (ERS, NASS, Econ. Census, Ag. Census, Popn. Census, state data)
    - Feasible production + seasonality, per capita consumption (existing & desired)
  - More applicable at state level
- **Examples:**
  - *Cantrell, et al. (2006)*: Increase in jobs and personal income in Michigan of shift from processed F&V prodn./consump. to fresh wholesale & direct market prodn.
  - *Swenson (2006)*: Increase in total output and jobs by substituting increased consumption (to public health standards) of locally grown produce.
  - *Conner, et al. (2008)*: Increase current consumption of F&V to recommended levels with more locally grown products (to extent feasible) leads to increase in total jobs and labor income.

# IMPLAN approaches – further customization

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## Impacts with Specialized Production Sector(s)

### □ Topical Example

- Impact to Regional Economy of Farm to School Program in SD (Gunter 2011)
  - Supply chain development with respect to F2S program (specific sector focus)
  - F2S producers distinctly different in **production technology** and **regional purchasing patterns**

### □ Data Requirements:

- IMPLAN default data (adjusted with primary and secondary data)
  - Create new sectors (e.g., F2S F&V production); reduce production from general F&V sectors
  - Adjust study area data, production functions, regional purchase coefficients
- Secondary data to help develop feasible scenarios (with primary data)
- Primary data of specialized sectors, survey representative population(s)
  - Farmers selling to wholesale buyers (for local distn.); detailed sales by type & volumes.
  - Institutional (K-12) buyers willing to purch. locally (if avail.); detailed purchases by type & volumes

### □ Scenarios:

- Regional Impact assuming ALL NEW DEMAND
  - Gross Impact - No money taken from other sectors in the region
  - OK if all distributors that now work with SDs are outside the
- Regional Impact assuming demand SHIFTS from wholesale to F&V producers
  - Net Impact: + to farming sector, - to wholesale sector
- Regional Impact assuming demand SHIFTS from wholesalers to F2S F&V producers
  - Net Impact: + to F2S farming sector, - to wholesale sector
  - Most complete and likely more accurate
  - Show output multipliers for region higher with F2S F&V producers than default F&V producers.

# IMPLAN approaches – further customization

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## Economic Impact of Small Producers in CD of NYS

### □ **Typical Example**

- Identify impact that small producers contribute to Capital District economy
  - Broader look at sales and purchases, rather than a specific sector (**a work in progress!**)
  - Is there a differential impact to the economy between small & large producers?

### □ **Data Requirements:**

- IMPLAN default data (adjusted with primary and secondary data)
  - Create new sectors (e.g., small producers); reduce production from other sectors
  - Adjust study area data, production functions, regional purchase coefficients
- Secondary data to help develop feasible scenarios (with primary data)
- Primary data of specialized sectors, survey representative population(s)
  - Farmers selling a portion to local wholesale & retail markets; detailed sales & expenses by types & volumes.
  - Differentiate by size and product types (given sufficient data)

### □ **Expected Scenarios:**

- Compare default production functions & regional purchase coefficients with those derived from sales & expenditure data
- Assess demand shock to system between farmer sectors
  - Look at differences in VA Income, Output, & Employment Impacts
- Sensitivity Analysis: How do regional changes affect VA (or other) impacts?

# IMPLAN approaches – data collection

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## Economic Impact of Small Producers in CD of NYS

### Relevant Data & Issues:

- **Delineation of study region**
- **Location of respondents (e.g., county location of farmers)**
- **Size of operation**
  - **Total Sales, Operating Expenses**
  - **Number of Employees (paid, volunteer, family, management)**
  - **Acres farmed (owned, rented)**
  - **Number of livestock**
- **Location of:**
  - **Sales - ideally destination or place of use**
  - **Purchases - ideally inputs produced and services provided)**
- **Ensure confidentiality**
  - **Farm specific financial data**
  - **Human Subjects Review Protocol**
- **Contact information for follow up?**

# IMPLAN approaches – data collection, sales by marketing channel

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Marketing channel	% of TOTAL sales	% of individual row sales by location*				
		Within Region	+	Outside Region	=	TOTAL
<b>RETAIL SALES</b>						
R1 – Farmers’ market			+		=	100%
R2 – Own site (farm stand, store)			+		=	100%
R3 – Pick your own (u-pick)			+		=	100%
R4 – Community Supported Agric.			+		=	100%
R5 – Internet/mail order			+		=	100%
R6 – Other:			+		=	100%
<b>WHOLESALE SALES</b>						
W1 – Restaurant			+		=	100%
W2 – Packer or Distributor			+		=	100%
W3 – Grocery, Specialty Store			+		=	100%
W4 – Food processor			+		=	100%
W5 – For resale to vendors			+		=	100%
W6 – Other:			+		=	100%
<b>COMMODITY SALES</b>						
C1 – Grain mill/elevator			+		=	100%
C2 – Livestock/produce auction			+		=	100%
C3 – Cooperative/Marketing Assoc.			+		=	100%
C3 – Other:			+		=	100%
TOTAL (column) SALES =	100%					



# IMPLAN approaches – data collection, sales by sector

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Product Category	% of TOTAL sales	% of individual row sales by location *				
		Within Region	+	Outside Region	=	TOTAL
Fresh Fruit			+		=	100%
Fresh Vegetables			+		=	100%
Grains and oilseeds			+		=	100%
Plants and Nursery			+		=	100%
Live animals			+		=	100%
Meat products			+		=	100%
Animal products (e.g., hides, wool)			+		=	100%
Eggs			+		=	100%
Processed fruit products			+		=	100%
Processed vegetable products			+		=	100%
Breads, crackers, bakery			+		=	100%
Milk – fresh			+		=	100%
Milk – processed dairy products			+		=	100%
Honey			+		=	100%
Maple Syrup			+		=	100%
Hay, Forages			+		=	100%
Other:			+		=	100%
TOTAL (column) SALES =	100%					

# IMPLAN approaches – data collection, expenses by sector

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Expense Category	% of TOTAL expenses	% of individual row purchases by location *				
		Within Region	+	Outside Region	=	TOTAL
Hired labor			+		=	100%
Fuel, oil, grease			+		=	100%
Machinery, building repairs			+		=	100%
Machinery hire, trucking			+		=	100%
Professional services			+		=	100%
Real estate rental/lease			+		=	100%
Taxes			+		=	100%
Insurance			+		=	100%
Utilities			+		=	100%
Interest Expense			+		=	100%
Livestock grain & concentrate			+		=	100%
Livestock forage and bedding			+		=	100%
Replacement livestock			+		=	100%
Veterinary, medicine, breeding			+		=	100%
Fertilizer, lime, chemicals			+		=	100%
Seeds & plants			+		=	100%
Supplies and Other expenses			+		=	100%
Total (column) Expenses =	100%					

# IMPLAN approaches – data comparison

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## Economic Impact of Small Producers in CD of NYS

Comparing IMPLAN defaults vs. farm data averages (all farms, N = 95)

Primary Data			IMPLAN Default		
Category	GA	RPC	GA	RPC	Industry Classification
Professional Services	0.015	0.929	Veg 0.012 Cattle 0.022	0.695	Ag & Forestry Support Services
Feed Purchases	0.051	0.969	Veg 0.0002 Cattle 0.053	0.126	Grains
Replacement Livestock	0.002	0.304	Veg ---- Cattle 0.053	0.414	Cattle Ranching & Farming
Vet, Medicine, Breeding	0.013	0.973	Veg ---- Cattle 0.00003	0.999	Veterinary Services
Chemicals	0.041	0.796	Veg 0.078 Cattle 0.007	0.036	Pesticides & Ag Chemicals
Total Commodity Demand	0.630		0.468 0.543 0.850 0.827 0.569 0.783		Fruit Vegetables and Melons Cattle Poultry & Eggs Other Animals Dairy

# Data Considerations

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## Survey Administration, Data Collection, and Analysis

### □ Mail-in Survey

- ~ \$2/survey @ 1.5 mailings
- Survey administration time and costs
- Data entering, cleaning, formatting time and costs
- Detailed financial data --- realistic?
- Analysis costs

### □ Online Survey

- Individual surveying cost minimal
- Web-based programming time and expertise
- Confidentiality
- Data entering, cleaning, formatting time and costs
- Detailed financial data --- realistic?
- Analysis costs

### □ Interview/In-person survey

- Survey time and costs - Our summer intern \$4,000 stipend (10 weeks), plus mileage, per diem
- Surveyor training costs
- Data entering, cleaning, formatting time and costs
- Analysis costs
- Necessary for detailed financial data collection

# Team Players, Time Availability, & Costs?

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- ❑ **Academic Faculty & Staff**
- ❑ **Extension Educators**
- ❑ **Ag Service Providers**
- ❑ **County Economic Development Agencies**
- ❑ **Agricultural Trade/Industry Associations**
- ❑ **State Departments of Agriculture**
- ❑ **USDA**
- ❑ **Northeast Regional Center for Rural Development!!**

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Thank You!