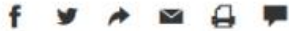


The Influence of Economic Growth on Direct Marketing Agricultural Sales

Jeffrey K. O'Hara

April 21, 2015

Preliminary Findings



Has the farmers market movement peaked?

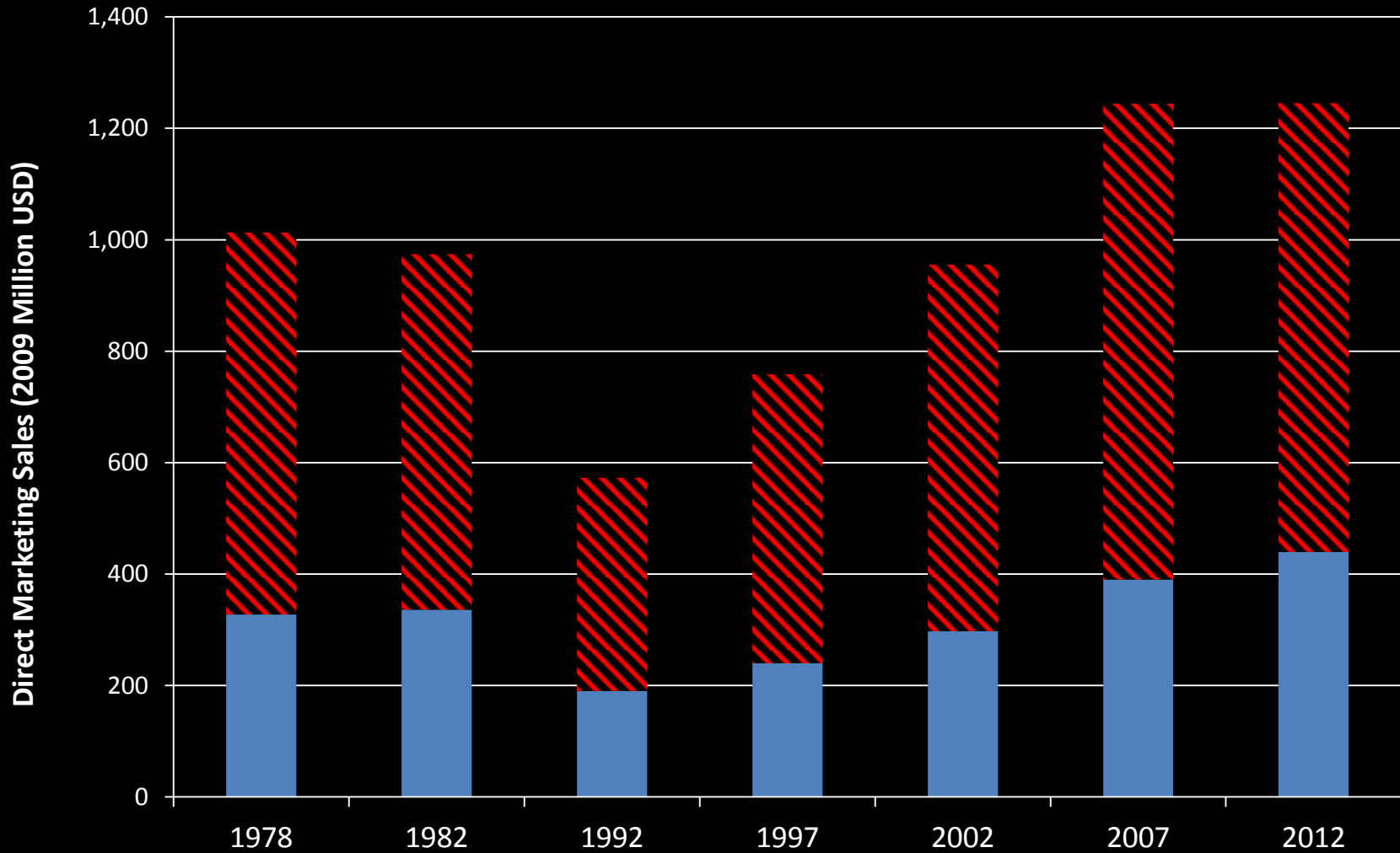


Shoppers at the Baldwin Hills/Crenshaw farmers market. (Irfan Khan / Los Angeles Times)

By **RUSS PARSONS**
contact the reporter

SHARELINES

Direct Marketing Sales (2009 USD)



Sources: Various USDA Census of Agriculture, BEA.

Other Regions

Northeast

Overview

- Estimate influence of economic activity in urban areas on direct marketing sales from 1992-2012 in Northeast using gravity model
- Preliminary results:
 - “local” subst. effect > “at-home” subst. effect
 - DM sales may not have “peaked” in NE – perhaps to the contrary
 - Size of MSA more important than proximity to MSA

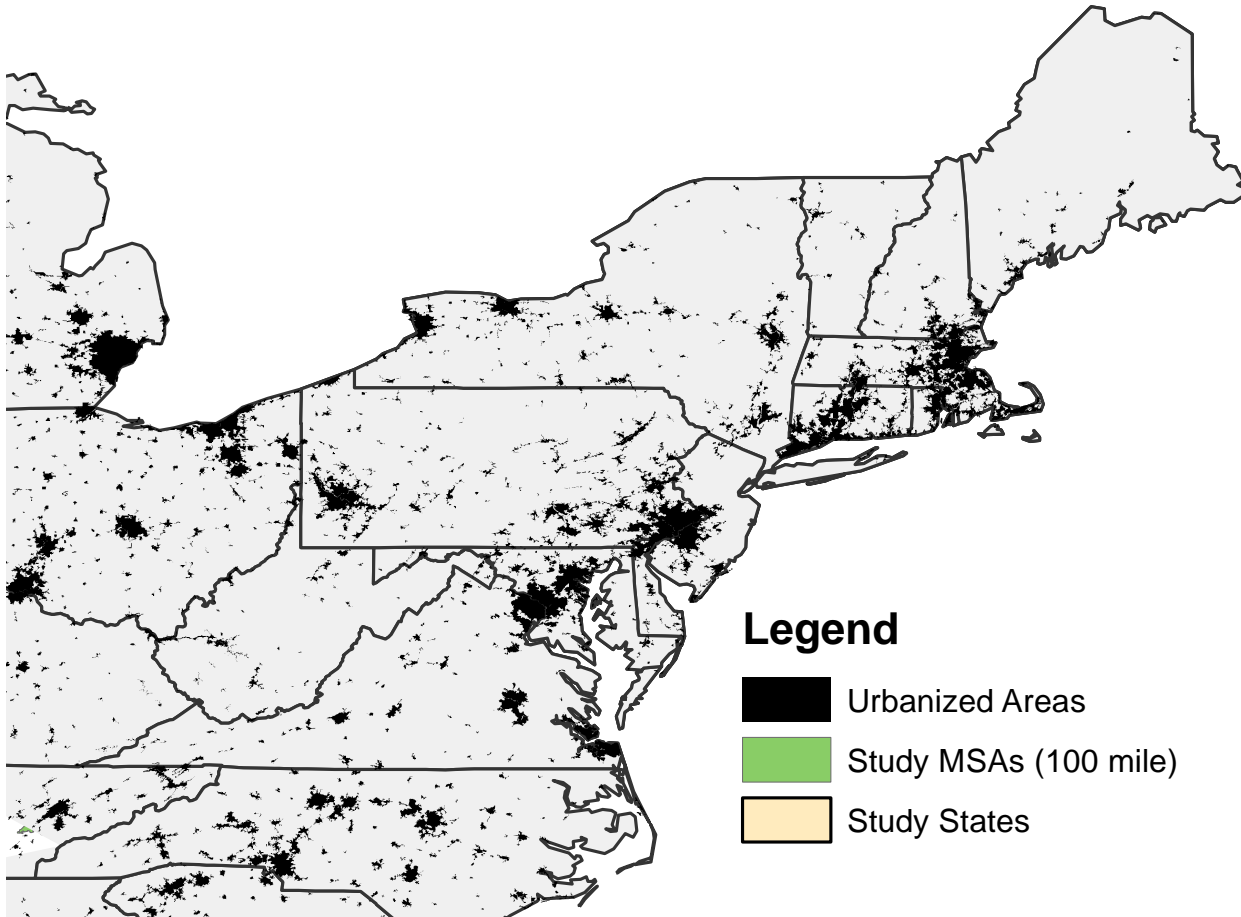
Previous Local Foods Literature

- High regional variability in characteristics of local food supply chains (Low & Vogel 2011)
- Panel studies of longer-term trends in local food sales rare
- Local food economic impact studies
 - Swenson 2010

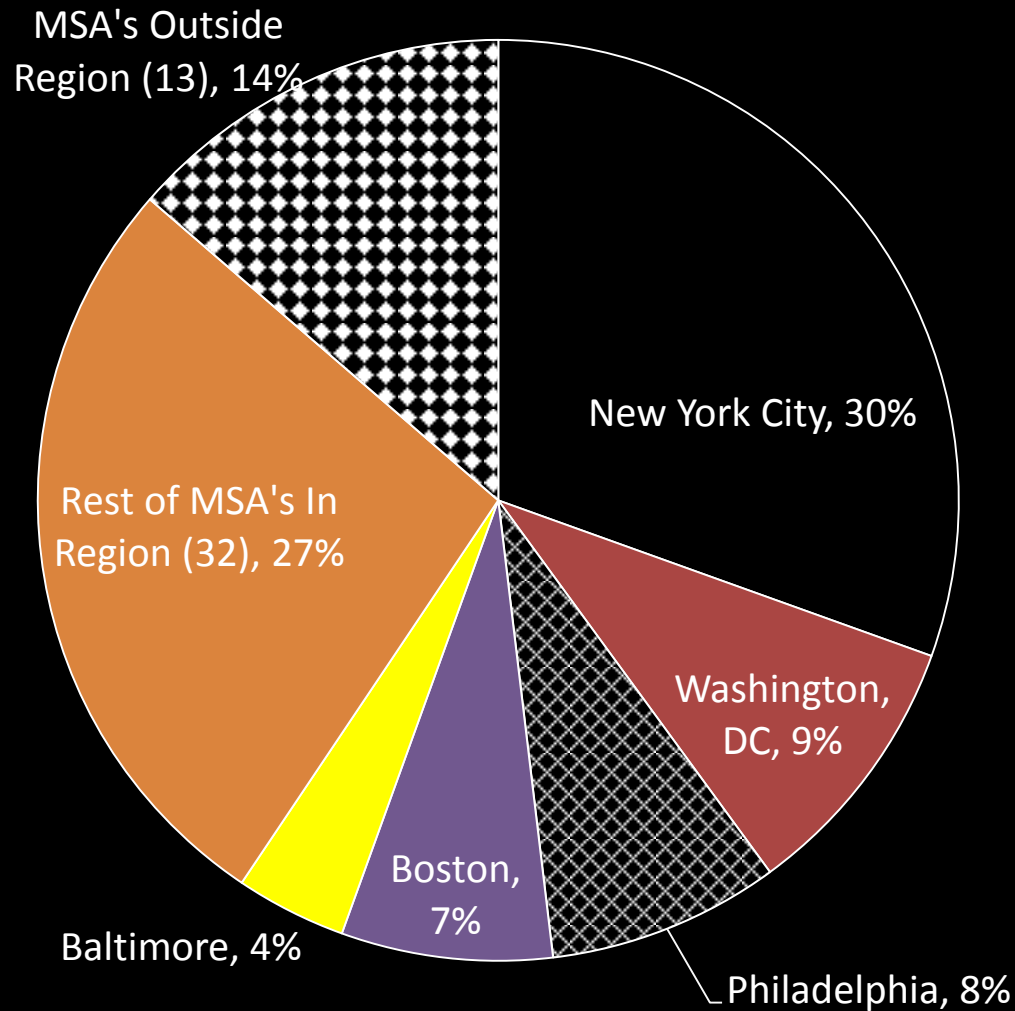
First Difference Model

- Dependent variable: Change in DM Sales (county-level)
 - 96% of DM sales in Northeast
- Independent variables:
 - Personal income in “close” MSA’s $\geq 250,000$
 - Either:
 - Weight personal income by distance² (gravity model)
 - Control for proximity of county to MSA
 - Control for state and time period interval

Study Area



2012 Personal Income in Study Region



Source: BEA

Descriptive Statistics (nominal)

	<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Min.</u>	<u>Max.</u>
Direct Marketing Sales by County (thousand USD)						
	1992	316	395	587	2	4,656
	1997	316	553	739	3	5,589
	2002	316	743	1,036	6	7,644
	2007	316	1,105	1,472	3	10,871
	2012	316	1,313	1,664	3	11,916

More Descriptive Statistics

	<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Min.</u>	<u>Max.</u>
Control Variables by County						
	Maine	316	0.03	0.18	0	1
	New Hampshire	316	0.03	0.18	0	1
	Vermont	316	0.02	0.15	0	1
	Connecticut	316	0.03	0.16	0	1
	Massachusetts	316	0.03	0.18	0	1
	Rhode Island	316	0.02	0.12	0	1
	New York	316	0.16	0.36	0	1
	New Jersey	316	0.05	0.23	0	1
	Maryland	316	0.07	0.25	0	1
	Virginia	316	0.22	0.41	0	1
	West Virginia	316	0.14	0.35	0	1
	Delaware	316	0.01	0.10	0	1
	County in MSA	316	0.43	0.50	0	1
	County Adjacent to MSA	316	0.33	0.47	0	1

Income Results

Dependent Variable: County-Level Change in Direct Marketing Sales (thousand USD)		
2007-2012 Dummy	49.5	<u>108.5</u>
	40.2	40.0
2002-2007 Dummy	<u>148.0</u>	<u>256.2</u>
	36.3	41.4
1997-2002 Dummy	18.8	<u>89.6</u>
	31.9	30.9
Income Change in MSA / Distance Squared (thousand USD / miles squared)		0.0002 0.0001
Income Change in MSA (thousand USD)	<u>0.0000018</u>	
	0.0000006	
Includes County MSA Dummies	Yes	No
Positive State Dummies in Both: ME, NH, VT, CT, MA, NY		
Negative State Dummies in Both: VA, WV		
Other Positive State Dummies		NJ, MD
R Squared	0.25	0.23
F Statistic	<u>15.90</u>	<u>14.80</u>
Observations	1,264	1,264
Interpretation	\$1 million income increase: \$1.80 in DM sales	1 million increase: \$200 in DM sales

GDP Results

Dependent Variable: County-Level Change in Direct Marketing Sales (thousand USD)		
2007-2012 Dummy	-42.9	-41.8
	43.0	47.4
GDP Change in MSA / Distance Squared (million USD / miles squared)		0.1438
		0.1122
GDP Change in MSA (million USD)	<u>0.0018</u>	
	0.0006	
Includes County MSA Dummies	County in MSA Pos.	No
Positive State Dummies in Both: ME, NH, VT, CT, MA, NY		
Other Positive State Dummies		NJ, MD, VA, WV
R Squared	0.25	0.19
F Statistic	<u>10.18</u>	<u>9.14</u>
Observations	660	660
Interpretation	\$1 million GDP increase: \$1.80 in DM sales	

Conclusions

- Changes on DM sales from income / GDP have striking similar parameter estimate
- Lack of evidence of county urbanicity
 - More important is size of MSA
- No support for “peak farmers’ market” theory in the NE – if anything, the opposite holds
- Growth more pronounced in northern NE

Next Steps

- Sensitivity analysis: 150 miles instead of 100 miles
- In progress
 - Nominal vs. real
 - Per capita income + population
 - Instrumental variables:
 - 15 year lag of per capita income
 - Dividends, interest, and rent
 - Fixed effects