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Local and Regional Food Systems in Florida: Values and Economic Impacts

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A survey of 1599 randomly selected Florida households was conducted in 2012 to evaluate the consumer characteristics and economic impacts of local food purchases through retail stores, restaurants, and direct-to-consumer market channels. The total annual value of local food purchases averaged $1114 per household and represented 20.1% of food purchased for at-home consumption. The total economic impacts of local food purchases in Florida were estimated at 183,625 jobs and $10.47 billion in value-added, including regional multiplier effects for agricultural production and wholesale and retail distribution. These values are significantly higher than found in previous studies in other states.

Key Words: input–output models, local food, survey research

JEL Classifications: Q13, Q18, R11, R15

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Demand for locally produced food is rapidly growing in the United States as a result of concerns about sustainability, nutrition, food safety and security, farmland retention, and economic development (Martinez et al., 2010). Local food systems consist of a variety of direct-to-consumer market channels, including farmers' markets, roadside stands, self-harvesting or "U-pick" operations, and Community Supported Agriculture (CSA) buying clubs as well as traditional intermediated market channels such as regional food wholesalers, retail grocery stores, consumer-owned cooperatives, restaurants, and institutional food services. Based on the U.S. Department of Agriculture (USDA) Agricultural Resource Management Survey, from one-half to two-thirds of local foods were sold through these intermediated market channels in 2008 (Low and Vogel, 2011).

Reported benefits of directly and/or locally marketed foods include superior freshness, flavor, nutrition, shelf life, and safety relative to nonlocal foods (Martinez et al., 2010). In

addition, perceived social, environmental, and economic benefits of local and direct foods include greater sustainability, support for local communities and economies, and developing relationships with local producers (Ahearn and Sterns, 2013; Conner et al., 2010; Maples et al., 2013; Martinez et al., 2010; Thilmany, Bond, and Bond, 2008). Although there is no standard definition, the most commonly accepted definition associated with "local" food is that it is consumed within 100 miles of where it was produced (Martinez et al., 2010). However, researchers are realizing that there is much more to consumers' concept of "local" than geography (Adams and Adams, 2011; Hand and Martinez, 2010).

Results from the 2008 USDA Agricultural Resource Management Survey indicated there were 107,200 farms in the United States engaged in marketing foods through direct-to-consumer or intermediated market channels with sales of $4.8 billion (Low and Vogel, 2011). The number of farmer's markets in the United States grew from less than 2000 in 1994 to over 7800 in 2012 (USDA, Agricultural Marketing Service, Marketing Services Division, 2012), and the number of farm-to-school food programs in the United States increased from only three in 1996 to over 3800 in 2013 (Feenstra and Ohmart, 2012; USDA, Food and Nutrition Service, 2013). The web site www.Localharvest.org listed 5763 CSA operations in the United States in March of 2013, up from 3229 in early 2010. However, results from the 2007 Census of Agriculture indicated that direct-to-consumer food sales represented only 0.21% of total at-home food consumption in the United States (Martinez et al., 2010).

In the United States, local food systems are generally more well developed in New England, North Carolina, the upper Midwest, Mountain Southwest, and Pacific Coast regions but are less developed in the southern United States despite favorable climatic conditions for year-round food production (Low and Vogel, 2011). Direct-to-consumer sales in Florida in 2007 were estimated at $19.36 million, or approximately $1.06 per person per year, compared with a national average of $4.02 per person (USDA, National Agricultural Statistics Service, 2013). Nationally, the largest food commodities marketed directly to consumers were fruits and nuts ($344 million), vegetables and melons ($335 million), beef ($141 million), and other animal products ($236 million).

A review of the literature on consumer participation and expenditures for local foods found that there have been numerous intercept surveys of consumers at farmers' markets but relatively few that randomly sampled the general population and even fewer that included multiple market outlets for local foods. In the largest study of this nature, Smith and Sharp (2008) mailed questionnaires to 3500 randomly selected Ohio residents with a response rate of 48% about their attitudes and behaviors on a variety of food, farming, and environmental issues, including purchases of locally produced foods directly from farmers. Among respondents, 96% had purchased locally grown foods during 2007, with 79% doing so either occasionally or frequently, and the median annual expenditure on local foods was $68 per household. The study also found regional differences in local food spending within the state.

In a telephone survey in Vermont, 412 primary shoppers out of 1030 randomly selected households in Chittenden County were interviewed about their food purchasing habits during the fall of 2007 (DeSisto, Schmidt, and Kolodinsky, 2009). It was found that 59% of respondents had purchased local foods within the last seven days. Over 60% of these respondents made these purchases at grocery stores compared with 6% at farmers' markets. This was likely a result of the survey being conducted in November. Respondents spent an average of $16 on local foods during the previous week, equivalent to $768 annually.

In a 2008 random telephone survey of primary shoppers in 953 households in Michigan, 61% had visited farmers' markets in the last year with average expenditures of $14.75 during the most recent month and 75% had purchased locally grown food in the last year (Conner et al., 2010; Ross et al., 2010). In a 2011 telephone survey of 703 primary household shoppers in western North Carolina, 60% of consumers reported purchasing locally grown

food weekly when in season, and 23% bought local food monthly, including purchases made through retail outlets. Local food expenditures averaged $53.81 monthly or $646 annually (TJH Research and Strategy, 2011).

Regional differences in local food consumption have also been documented. In 2012, interviews were conducted with 200 primary household shoppers in each of five major southeastern cities about their direct food purchases (Maples et al., 2013). The percentage of respondents that purchased local foods in the five cities ranged from 23.9% to 49.5% with significant differences in the probability of direct food purchases found between three of the five cities. Across these locations, gender, education, knowledge of agriculture, health-related issues, and travel were found to significantly affect the probability of direct food purchases.

The economic impacts of local food systems have been assessed in few studies. Local food production and marketing is generally more labor-intensive than conventional large-scale production and wholesale marketing. Fruit and vegetable farms with local food sales employed significantly more workers than farms without local food sales: 13 versus three full-time-equivalent persons per million dollars sales, respectively (O'Hara, 2011). Direct sales of local food can also be viewed as a substitute for international and domestic imports, thereby reducing economic leakages from the state or region. A study of 152 farmers' markets in Iowa showed that these markets generated increased employment of 576 jobs and $17.8 million in personal income (Otto, 2010). A study of farmers' markets in West Virginia found that they generated an increase of $1.1 million in gross output and 82 jobs, net of reductions in volume for traditional food retailers (Hughes et al., 2008). In a study of the potential impact of locally sourced fruit and vegetable production on farms within 150 miles of large metropolitan areas in six Midwestern states, it was estimated that there would be a net increase of 4802 jobs and $710 million in gross output (Swenson, 2010).

Market research has demonstrated that consumers are willing to pay a price premium for local foods, similar to the premium for certified organic food. Martinez et al. (2010) reviewed nine studies carried out between 1987 and 2009 that found respondents were willing to pay premiums ranging from 9% to 50% for local foods. A conjoint analysis of farmers' market and grocery store shoppers in Ohio found that consumers paid a premium for locally grown, noncorporate, or guaranteed fresh strawberries (Darby et al., 2008). Adams and Adams (2011) found that farmers' market shoppers in Florida were willing to pay a 76% premium for local foods. In a more recent econometric analysis of actual retail prices at various food markets, it was found that premiums for selected local foods ranged from 8.7% to 20.8% (Park and Gómez, 2012).

A number of behavioral, institutional, and economic constraints have been identified in the development of local food systems and direct food marketing, including seasonality and limited selection of foods, higher costs, inconvenient market outlet times and locations, uncertainty of origin of food, lack of knowledge for preparation of raw foods, lack of storage capacity for large-quantity purchases, food safety regulations, and greater time requirements for direct-to-consumer marketing.

Against this background, a random survey of primary household shoppers in Florida was conducted to document the consumption patterns and economic values of locally produced food marketed through all types of outlets in the state. This broad survey was intended to better understand the current status of local foods and help inform public policy to support greater development of local food systems.

Data and Methods

Survey Data Collection and Analysis

The survey was designed to collect information on the value and characteristics of all consumer food purchases as well as local foods from retail grocery stores, farmers' markets, roadside stands, U-pick operations, CSA groups, other special arrangements, and restaurants or other food service establishments. The content of the survey questionnaire was developed in consultation with university faculty colleagues and

a local food advisory panel. Information was sought on the value of purchases for 13 food groups: fruits, vegetables, nuts, beef, poultry, fish, pork/lamb/other meats, eggs, dairy, honey, beverages, prepared foods, and miscellaneous other foods specified. To better understand the factors influencing local food purchasing behavior, data were collected on the geographic area understood by the term "local food," perceived barriers to local food systems, and respondent demographic information as well as general comments about local food.

A random sample of 7500 household mailing addresses throughout Florida was obtained from Marketing Systems Group, Inc. (Horsham, PA). The survey was carried out in keeping with best practices for survey research (Dillman, 2007) to maximize the response rate: respondents received an introductory postcard, then two complete mailings of the questionnaire with a postage-paid return envelope in June and July of 2012 followed by reminder postcards. Correspondence was addressed to the "resident," and the survey instructions asked for the survey to be completed by "the person in the household most responsible for purchasing food" who is an adult (at least 18 years old). Survey questionnaires were encoded to enable identification of respondents by location and for quality control. The research protocol was approved by the University of Florida Institutional Review Board for compliance with federal standards for ethical conduct of research with human subjects. A total of 1599 valid responses was received for the survey, after excluding duplicate responses, giving an overall survey response rate of 21.4%. The number of observations, sampled households, and response rates for nine regions of Florida are summarized in Table 1. Response rates ranged from 16% to 27% across regions.

The value of food purchased from different sources, either on a periodic basis or annually, was reported in ranges of values, and the midpoint of the range was assigned as a point estimate of the value for purposes of quantitative analysis. Excessively large outlier values for the estimated value of purchases were excluded from the data analysis. The aggregate annual value of local foods purchased was estimated for 7.46 million households in Florida in 2011 (University of Florida, Bureau of Economic and Business Research, 2012) based on values reported in the survey together with demographic weighting factors and geographic expansion factors that represent the ratio of the total household population to the number of sampled households.

Demographic characteristics of the survey sample are summarized in Table 2. Over 72% of respondents were female, and 73% were between the ages of 45 and 84 years. Approximately 45% of respondents had an annual household income level less than $50,000,

Table 1. Local Food Survey Sample Numbers and Response Rates in Florida Regions

Economic Region	Number of Observations	Percent of Observations	Number Sampled	Response Rate	Number of Households (2010)[a]
Gainesville	279	17.4%	1044	26.7%	186,432
Jacksonville	194	12.1%	925	21.1%	555,511
Miami–Ft. Lauderdale	276	17.3%	1691	16.4%	2,405,954
Orlando	477	29.8%	2071	23.1%	1,808,177
Panama City	15	0.9%	75	20.5%	112,875
Pensacola	40	2.5%	211	19.0%	269,648
Sarasota–Bradenton	119	7.4%	546	21.8%	795,575
Tallahassee	27	1.7%	128	21.1%	171,039
Tampa–St. Petersburg	167	10.4%	809	20.7%	1,156,758
Total/all regions	1599	100%	7500	21.4%	7,461,969

[a] Source: Smith, S.K and S. Cody, Florida Population Studies, Vol. 45, Bulletin 161, University of Florida, Bureau of Economic and Business Research (University of Florida, Bureau of Economic and Business Research, 2012). Total includes five observations not identifiable by region.

Table 2. Demographic Characteristics of Survey Respondents Compared with the Florida Population and Sample Weighting Factors

Characteristic	Survey Sample Number and Percentage		Florida Population[a] (2011)	Sample Weighting Factor
Gender				
Male	396	25.0%	48.9%	
Female	1145	72.4%	51.1%	
No answer	40	2.5%		
Age (years)				
18–24	53	3.4%	6.7%	1.9618
25–44	305	19.3%	24.9%	1.2584
45–64	669	42.3%	27.1%	0.6262
65–84	484	30.6%	15.2%	0.4851
85 or older	33	2.1%	2.4%	1.1328
No answer	37	2.3%		1.0000
Household income last year				
Less than $25,000	367	23.2%	27.7%	1.0576
$25,000–49,999	344	21.7%	27.4%	1.1135
$50,000–74,999	320	20.2%	18.1%	0.7904
$75,000–99,000	160	10.1%	10.5%	0.9194
$100,000–149,000	122	7.7%	9.7%	1.1141
$150,000 or more	87	5.5%	6.6%	1.0674
Do not know	52	3.3%		1.0000
No answer	131	8.3%		1.0000
Educational attainment				
Primary school (through 9th grade)	44	2.8%	14.1%	4.8960
High school diploma or GED	289	18.4%	30.4%	1.6093
Some college, no degree	397	25.3%	20.8%	0.8021
College degree (Associate or Bachelor's)	514	32.7%	25.4%	0.7554
Graduate/professional degree	286	18.2%	9.3%	0.4994
No answer	42	2.7%		1.0000

[a] Source: U.S. Department of Commerce, Census Bureau, American Community Survey.

whereas the incomes of another 30% fell between $50,000 and $99,999. The overall weighted average household size was 2.41 persons. Survey respondents, on average, had more years of schooling than the state's population as a whole with over 76% having at least some college education. Some 42% of respondents lived in medium- or large-sized cities (over 100,000 population), whereas 37% lived in small cities or towns, and 13% resided in rural or unincorporated areas. Nearly 82% of respondents lived in single-family dwellings, and 17% lived in multifamily dwellings. In general, the survey sample was broadly representative of the population; however, demographic weighting factors were applied to correct for differences in age, income, education, and county (Table 2).

Economic Impact Analysis

Total economic impacts of local food consumption in Florida were estimated using a regional economic model created with IMPLAN software and 2011 data for the state of Florida (IMPLAN Group, LLC, 2012). IMPLAN enables construction of input–output/social accounting matrix models that represent the structure of a regional economy in terms of transactions among 440 industry sectors, households, and governments. The model provides

economic multipliers for each industry sector in the state that represent the input supply purchases (indirect effects) and income respending by households and governments (induced effects) as well as direct changes in output or employment arising from new final demand (Miller and Blair, 2009). Local food purchases directly from producers were treated as new revenues for Florida agriculture by virtue of displacing competitive international and domestic imports, and therefore subject to direct, indirect, and induced multiplier effects (Bellows and Hamm, 2001). In contrast, the retailer and food service sector gross margins were treated as regional economic contributions subject only to direct multiplier effects (Watson et al., 2007). Also, because local food purchases from all market channels (including grocery stores) were sampled, there was no need to estimate net impacts as a result of substitution between outlets (Hughes et al., 2008).

The IMPLAN model for Florida was constructed using the "trade flows" option in the software, which takes advantage of commodity flows information from the 2007 Economic Census and a gravity model to estimate the share of commodities purchased from local sources. The model included all social/institutional accounts for households, local, state, and federal governments and capital investment internally (treated as endogenous). Multipliers used in the analysis are shown in Table 3. The multipliers represent total dollars generated per dollar of final demand (spending) or jobs generated per million dollars. The economic impacts of local food purchases were estimated by applying the multipliers corresponding to the food commodity type. Measures of economic

Table 3. Regional Economic Multipliers for Selected Agricultural and Food Industries in the State of Florida in 2011

Food Commodity or Service Group	IMPLAN Industry Sector Number and Description	Output (dollars per dollar final demand)	Value Added (dollars per dollar final demand)	Employment (jobs per million dollars final demand)
Vegetables	3. Vegetable and melon farming	3.154	1.864	25.328
Fruits	4. Fruit farming	3.175	1.888	27.349
Nuts	5. Tree nut farming	3.180	1.936	33.366
Other foods	10. All other crop farming	2.889	1.416	22.505
Beef	11. Cattle ranching and farming	3.151	1.217	25.913
Dairy	12. Dairy cattle and milk production	2.814	1.371	21.909
Poultry, eggs	13. Poultry and egg production	2.582	0.992	12.814
Other meats (pork, etc.), honey	14. Animal production, except cattle and poultry and eggs	2.795	1.565	43.221
Fish	17. Commercial fishing	2.384	1.229	46.924
Prepared foods	69. All other food manufacturing	2.754	1.261	15.325
Beverages (split 3 ways)	54. Fruit and vegetable canning, pickling, drying	2.892	1.351	18.416
	71. Breweries	2.827	1.566	15.539
	72. Wineries	2.817	1.355	17.592
Wholesale distribution	319. Wholesale trade businesses	3.452	2.283	26.643
Retail grocery sales	324. Retail stores—food and beverage	3.587	2.330	39.975
Transportation	335. Transport by truck	3.050	1.666	26.077
Restaurant sales	413. Food services and drinking places	3.285	1.993	35.772

Note: Total multipliers equal the sum of the direct, indirect, and induced effects multipliers.
Source: IMPLAN (IMPLAN Group, LLC, 2012).

impacts reported here include output or revenue; employment (full-time, part-time, and seasonal positions); labor income (employee and business owner wages and benefits); indirect business taxes paid to local, state, and federal governments; and total value added, which is a broad measure of net economic activity comparable to the Gross Domestic Product.

The value of local foods purchased at retail stores was split among producers, wholesalers, transportation, and retail stores using margins included in the IMPLAN software, as shown in Table 4, whereas restaurant sales of local foods were split among sectors for food services (65%), producers (25%), wholesalers (5%), and truck transportation (5%) based on the IMPLAN industry production function for the food and beverage services.

Results

Food Purchasing Patterns

Summary findings on participation rates and purchasing frequency by survey respondents from various local food marketing outlets are presented in Table 5. Approximately 53% of respondents reported that they purchased local foods at retail grocery stores, whereas 17% did not, and 30% did not know or did not answer this question. Some 62% of respondents reported that they purchased local foods at farmers' markets, roadside stands, or U-pick operations, and 34% said they did not. The percentage of respondents who reported purchasing food from local producers by special arrangement or who belonged to a CSA group was 4.3% and 1.1%, respectively. Approximately 28% of respondents purchased local food items at restaurants or other food service establishments.

Spending for local foods reported by survey respondents averaged $1114 per household, including $815 at retail stores, $243 at farmers' markets, roadside stands and U-pick operations, $43 at restaurants, $12 by special arrangement with farmers/growers, and $1.5 from CSA organizations (Table 5). By comparison, annual purchases of all foods at retail stores reported by respondents, regardless of origin (local or nonlocal), averaged $5082 per household.

Fruits and vegetables were the most common types of foods purchased at all local food outlets with the exception of restaurants, where

Table 4. Marketing Margins for Local Food Sales by Retail Grocery Stores

IMPLAN Commodity Sector Name	Production	Wholesale Distribution Services	Retail Food and Beverage Stores	Transportation
Vegetables and melons	46.06%	16.64%	27.01%	10.29%
Fruits	49.98%	16.79%	26.94%	6.29%
Tree nuts	62.94%	4.35%	26.93%	5.77%
All other crop farming products	60.82%	3.93%	29.15%	6.11%
Cattle from ranches (Animal slaughter)	66.83%	5.77%	25.50%	1.90%
Dairy cattle (fluid milk production)	67.35%	4.61%	26.90%	1.14%
Poultry and eggs	67.40%	1.59%	26.94%	4.07%
Animal products except cattle and poultry	72.22%	0.19%	25.96%	1.62%
Fish	63.37%	7.43%	26.98%	2.22%
Processed fruits and vegetables	62.47%	8.94%	26.96%	1.62%
Fluid milk	67.33%	4.61%	26.92%	1.14%
Processed animal (except poultry) meat	66.85%	5.77%	25.47%	1.90%
All other manufactured food products	62.77%	9.18%	26.65%	1.41%
Beer, ale, malt liquor, and nonalcoholic beer	50.21%	26.27%	21.67%	1.85%
Wine and brandies	54.29%	23.63%	20.64%	1.45%

Source: IMPLAN (IMPLAN Group, LLC, 2012).

Table 5. Survey Respondent Participation, Average Annual Spending per Household, and Total Annual Spending by All Households on Local Foods in Florida in 2011–2012

Local Food Market Channel	Participation Rate	Average Annual Spending Per Household	Expanded Value for Florida Households[a] (million $)
Local foods at retail	52.8%	$815	$6078.6
Farmers' markets, roadside stands, U-pick	61.7%	$243	$1813.3
Community Supported Agriculture	1.1%	$1.5	$11.4
Special arrangement with farmer/grower	4.3%	$12.2	$91.2
Local food at restaurants	27.9%	$42.8	$319.5
Total		$1114	$8314.0

[a] Results represent weighted percentages of survey respondents using sample weighting factors. The expanded values were based on average per household spending multiplied by 7.46 million households in Florida for 2012 (University of Florida, Bureau of Economic and Business Research, 2012).

meats were more common. Over half of consumers indicated they purchased fruits and vegetables at both retail stores and farmers' markets. The types of foods most commonly received from CSAs were vegetables, fruits, dairy, and eggs with small numbers receiving meats/fish, honey, beverages, or prepared foods. The foods most commonly purchased from producers by special arrangement were fruits and vegetables, pork/lamb/other meats, fish, and dairy. The types of local foods most commonly purchased at restaurants were fruits/vegetables and meats (beef, poultry, fish, pork, lamb, other) in about equal shares followed by prepared foods such as baked goods, jams, jellies, soups and sauces, and beverages such as juice, beer, or wine. Many respondents commented that they patronize restaurants serving foods made with local ingredients or establishments that advertise supporting local farmers.

Survey findings indicate that a majority of respondents held a rather expansive definition of what "local" food means, that it is produced "within a radius of 100 miles of home" (28.9%), "within the state of Florida or bordering states" (27.3%), or even "within the southeast U.S. region" (3.9%), whereas a relatively small share held the more restrictive definitions of "within my own city or town" (11.4%) or "within my own county" (14.6%). Similar differences in consumer opinion regarding the geographic scale of local foods have been found in other studies (Hand and Martinez, 2010)

Annual Value of Food Purchases

The annual values of food purchases by survey respondents were calculated by multiplying reported shopping frequency by the reported amounts spent on a typical trip to retail grocery stores or farmers' markets and other direct outlets, whereas annual values were reported directly by respondents for restaurants, CSAs, and special arrangements with producers. These values were extrapolated to represent all households in Florida using the survey sample expansion factors, as described in the "Methods" section. For 2011–2012, the total value of all local foods purchased in Florida was estimated at $8.314 billion, including $6.079 billion from retail grocery stores; $1.813 billion from farmers' markets, roadside stands, and U-pick operations; $320 million from restaurants and other food service establishments; $91 million by special arrangement with farmers/growers; and $11 million from CSAs (Table 5). Purchases of local foods for at-home consumption (excluding restaurants) amounted to $7.995 billion, and purchases through direct-to-consumer market channels (excluding retail stores and restaurants) were valued at $1.916 billion. The total annual value of all foods purchased for at-home consumption, including both local and nonlocal foods purchased at retail stores, was estimated at $39.840 billion. Thus, local foods represented 20.1% of total food purchases for at-home consumption and 16.1% of food purchases at retail stores for Florida in 2011–2012.

The expanded annual values of purchases through all local food market channels in Florida reported by survey respondents are summarized for 13 food types in Table 6. The largest food category was vegetables, valued at $1.699 billion, and representing 20.4% of the total, followed by fruits ($1.574 billion, 19.0%), fish ($686 million, 8.3%), beef ($641 million, 7.7%), poultry ($569 million, 6.8%), beverages ($541 million, 6.5%), prepared foods ($530 million, 6.5%), dairy products ($489 million, 5.9%), honey ($439 million, 5.3%), pork, lamb, and other meats ($394 million, 4.7%), eggs ($372 million, 4.5%), nuts ($315 million, 3.8%), and other miscellaneous foods ($66 million, 0.8%). For local foods purchased from retail grocery stores, the largest food category was vegetables (17.4%) followed by fruits (16.4%), beef (9.4%), fish (9.2%), poultry (8.1%), and beverages (7.6%). Among foods purchased at farmers' markets and other direct market outlets, the largest food groups were also vegetables (32.3%) and fruits (28.9%) followed distantly by honey (7.9%), prepared foods (5.7%), and fish (5.2%). For restaurants and food service establishments, the largest local food groups were all meats combined (beef, poultry, fish, pork, lamb, other; 25.6%), fruits and vegetables combined (23.2%), prepared foods (19.8%), beverages (13.8%), and dairy (9.4%).

Table 6. Estimated Total Annual Local Food Purchases Reported by Florida Survey Respondents in 2011–2012 by Food Type

Food Type	Value (million $)	Percent
Fruits	$1573.8	18.9
Vegetables	$1698.7	20.4
Nuts	$314.5	3.8
Beef	$641.0	7.7
Poultry	$568.8	6.8
Fish	$686.3	8.3
Pork, lamb, other meats	$393.6	4.7
Eggs	$371.7	4.5
Dairy	$489.1	5.9
Honey	$439.2	5.3
Beverages	$541.3	6.5
Prepared foods	$530.2	6.4
Miscellaneous other foods	$65.7	0.8
Total all food types	$8314.0	100

Note: Estimated values were calculated from survey results and U.S. Census data on Florida household numbers (University of Florida, Bureau of Economic and Business Research, 2012).

Based on in-state regional averages of household survey responses, the largest values of local food purchases within Florida occurred in the major urban areas of Orlando ($2.611 billion), and Miami–Ft. Lauderdale ($2.357 billion) followed by Tampa–St. Petersburg ($1.143 billion), Sarasota–Bradenton ($728 million), Jacksonville ($643 million), Pensacola ($267 million), Gainesville ($265 million), Tallahassee ($258 million), and Panama City ($18 million), as shown in Table 7. On the other hand, the relative importance of local foods, measured in terms of the share of all foods purchased for at-home consumption, was highest in the regions of Tallahassee (36.2%), Gainesville (26.4%), and Orlando (21.8%) and was lowest in Panama City (2.3%).

Economic Impacts of Local Food Production and Marketing

The total economic impacts of local food purchases was calculated from multipliers generated with an IMPLAN regional economic model, as described in the "Methods" section. The values of local food purchases were applied to specific commodity or industry sector multipliers according to the IMPLAN sector scheme. Purchases through direct-to-consumer market channels were assigned to agricultural producer or manufacturing industry sectors according to respondents' spending on specific commodity types. As is standard practice in economic impact analysis, the value of local foods purchased at retail stores was margined (split) among the appropriate commodity production sectors, wholesalers, transportation, and retailers using commodity-specific averages available in IMPLAN, as shown in Table 8 (Miller and Blair, 2009).

The total economic impacts of local food purchases through all market channels was estimated at 183,625 full-time and part-time jobs, $6.46 billion in labor income, $10.47 billion in value-added contribution to Gross State product,

Table 7. Estimated Average Annual Local Food Purchases Reported by Florida Survey Respondent Households, Total Annual Aggregate Purchases, and Share of Food Purchases for At-home Consumption, by Region in 2011–2012

Florida Region	Average Annual Local Purchases per Household	Total Annual Local Food Purchases (million $)	Share of Local Food Purchases for At-home Consumption
Gainesville	$1422	$265.03	26.4%
Jacksonville	$1157	$642.90	16.9%
Miami–Ft. Lauderdale	$986	$2371.40	20.8%
Orlando	$1444	$2611.81	21.8%
Panama City	$162	$18.30	2.3%
Pensacola	$991	$267.12	17.7%
Sarasota–Bradenton	$917	$729.83	18.9%
Tallahassee	$1510	$258.20	36.2%
Tampa–St. Petersburg	$988	$1142.54	18.0%
Total all regions	$1114	$8314.00	20.1%

Note: Estimated values were calculated from survey results and U.S. Census data on Florida household numbers (University of Florida, Bureau of Economic and Business Research, 2012).

$19.20 billion in industry output or revenues, and $851 million in indirect business taxes to local, state, and federal governments, expressed in 2013 dollars (Table 9). These estimates reflect the regional multiplier effects of local food production and marketing to meet consumer demand. The total impacts from agricultural producers and food manufacturers were $8.66 billion in value added and 145,933 jobs, including 55,656 direct jobs plus 23,423 and 66,854 jobs arising through indirect and induced multiplier effects. Induced multiplier effects are commonly larger than direct effects in regional economic models. The direct impacts of retailer margins were 34,045 jobs and $1.67 billion in value added, and the direct impacts of restaurant gross margins was 3648 jobs and $138 million in value added. Among major industry groups defined according to the North American Industry Classification System, total impacts were largest for Agriculture, Forestry and Fisheries with 66,800 jobs and $2.38 billion in value added, representing 36.4% and 22.7% of total employment and value-added impacts, respectively. The Retail Trade industry group also had large impacts with 38,759 jobs and $1.63 billion in value added. The Accommodation and Food Services industry group, which encompasses restaurants, had impacts of 9,126 jobs and $321 million in value added. Wholesale Trade and Transportation–Warehousing sectors had impacts of 38,759 jobs and 5385 jobs, respectively, representing the margined activities for local foods sold through intermediated market channels at grocery stores and restaurants. Other major industry groups with major impacts by virtue of economic linkages captured in the indirect and induced effect regional multipliers included Health and Social Services (9607 jobs), Government (8634 jobs), Professional, Scientific and Technical Services (5488 jobs), Finance/Insurance (5404 jobs), Real Estate and Rentals (5266 jobs), and Administrative and Waste Services (5103 jobs).

Discussion and Conclusions

This study represents the first known attempt to evaluate the purchasing patterns and economic impacts of local food sales at all types of market outlets based on a random statewide survey. The survey sample of 1599 usable responses represented a 21.4% response rate, which is deemed acceptable for a contemporary mail survey. The survey sample was generally representative of the Florida population; however, the data were weighted to adjust for age, education, income, and location to account for differences in sampling intensity. In addition, analysis of the order of survey responses received did not reveal any trends over time, suggesting that potential response bias was minimal.

Table 8. Estimated Value of Annual Local Food Purchases Reported by Florida Survey Respondents in 2011–2012 by Industry Group and Commodity Sector

Industry Market Level	Commodity/Service	Value (million $)
Producers	Vegetables and melons	$1100.89
	Fruits	$1047.87
	Tree nuts	$223.50
	All other crop farming products	$45.78
	Cattle from ranches	$435.59
	Dairy cattle	$338.06
	Poultry and eggs	$657.74
	Animal products except cattle and poultry	$644.44
	Fish	$465.40
	Canned, pickled, and dried fruits and vegetables	$111.90
	All other manufactured food products	$349.10
	Beer, ale, malt liquor, and nonalcoholic beer	$93.13
	Wine and brandies	$99.38
	Total	$5612.79
Retailers	Wholesale trade businesses	$584.99
	Retail stores—food and beverage	$1606.39
	Transport by truck	$270.12
	Total	$2461.51
Food services	Wholesale trade businesses	$15.98
	Transport by truck	$15.98
	Food services and drinking places	$207.68
	Total	$239.63
Total all industries		$8313.93

Note: Estimated values were calculated from survey results and U.S. Census data on Florida household numbers (University of Florida, Bureau of Economic and Business Research, 2012).

The share of respondents who reported purchasing local food in this study was similar to previous studies using a representative sample of households. Approximately half (53%) of respondents purchased local foods at retail stores, and nearly 62% shopped at farmers' markets or other direct-to-consumer outlets. In contrast, relatively few respondents in this study purchased foods by special arrangement (4.3%) or through CSA organizations (1.1%). A significant share of consumers reported purchasing local foods at restaurants (28%), which is a new finding in the literature. Also consistent with previous studies, this research found that

Table 9. Total Economic Impacts of Annual Local Food Purchases in Florida in 2011–2012

Impact Type	Employment (jobs)	Labor Income (million $)	Value Added (million $)	Output (million $)	Indirect Business Taxes (million $)
Producer margin—direct effect	55,656	$1182	$2270	$5511	$14
Indirect effect	23,423	$775	$1213	$2662	$75
Induced effect	66,854	$3213	$5178	$8286	$407
Total effect	145,933	$5170	$8661	$16,459	$496
Retailer margin (direct effect)	34,045	$1189	$1672	$2496	$338
Restaurant margin (direct effect)	3648	$96	$138	$245	$18
Total all industries	183,625	$6455	$10,470	$19,200	$851

Notes: Based on survey results and a 2011 IMPLAN regional economic model of the state of Florida.
Values in millions of 2013 dollars, and employment in full-time and part-time jobs.
Estimates reflect total multiplier effects for producer margin and direct effects only for retailer and restaurant margins.

vegetables and fruits were the most commonly purchased food types through local market channels, together representing approximately 39% of all local food purchases. Animal products, including fish, beef, poultry, pork, lamb, other meats, dairy, honey, and eggs, collectively represented approximately 54% of total local food purchases.

The large share of total reported local food purchases occurring at retail stores (73%) indicates the significant strides that local Florida producers and grocery chains have made in responding to this new consumer demand. However, this could be a significant challenge to the future growth in farmers' markets. The share of local foods among all foods purchased for consumption at home (20.1%) and the average annual value of local food purchases per household ($1114) estimated for Florida in this study were substantially higher than has been previously reported for other regions. For example, studies cited in the literature review indicate that 25–50% of households purchase local foods and that local food purchases may represent $600 to $800 per household annually. It should be kept in mind that because there is no standard definition or label for "local," it is possible that some survey respondents could have erroneously reported purchasing food of local origin as a result of misrepresentation or mislabeling of foods by market vendors or retailers or as a result of social desirability bias.

It was assumed that purchases of local foods represented new additional revenues for Florida agricultural producers and food processors given that they likely replaced foods that would have been imported from outside the state. The very large total economic impacts, including over 183,000 full-time and part-time jobs, and over $10 billion in value added or Gross State Product, confirm that local food systems make an important economic contribution to the state.

Among the implications of this research for policy, the important role of retail grocery store sales for local food sales suggests that regional branding efforts such as the Fresh from Florida campaign by the Florida Department of Agriculture and Consumer Services have been effective in raising consumer awareness about local food. Training on food safety regulation for small- and medium-sized farm producers will further improve access to local foods through this market channel. Stronger regulations on labeling the source of origin, as is required for international imports, would help to address consumers' concerns about truth in advertising of claims for local foods. The fact that local foods are often higher in price than conventional mass market foods was noted as a limiting factor for many lower income consumers, and it remains a challenge to the local food movement to make their products more competitive. More widespread acceptance of SNAP benefits (also known as "food stamps") at farmers' markets would enhance access to local foods by low-income families. Finally, the finding that only a minority of households reported purchasing local foods at restaurants or institutional food service establishments suggests that there may be a significant opportunity for increasing local sourcing of foods through this market channel.

For future research, it is recommended that additional research be conducted on the costs of production for local food to determine how these differ from conventional mass-market producers. This would allow more accurately modeling the economic impacts of local foods. In addition, further surveys or audits of local food retailers and farmers' markets should be conducted to independently confirm the geographic sources of local food.

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