



2015 Local Food Marketing Practices Survey Methodology and Quality Measures

Released December 20, 2016, by the National Agricultural Statistics Service (NASS), Agricultural Statistics Board, United States Department of Agriculture (USDA).

Scope and Purpose: The 2015 Local Food Marketing Practices Survey was designed to collect data related to the marketing of foods directly from farm producers to consumers, institutions, retailers who then sell directly to consumers, and intermediate markets who sell locally or regionally branded products. The primary purpose of the Local Food Marketing Practices Survey was to produce benchmark statistics on the number of operations that sell using direct marketing channels, the value of these foods sales, and marketing practices. The survey's scope excluded abnormal farms such as grazing associations; Indian reservations; government operated units; such as hospitals and prisons; research farms; university and other school farms; and church farms. The survey was administered in all 50 states.

Survey Timeline: Data collection began in April 2016 and concluded in August 2016 with further analysis and review continuing until the results were published on December 20, 2016.

Sampling: The survey sampling frame was comprised of two independent frames, to enable a measure of coverage. The NASS List Frame included all *farms* on NASS's List Frame, and *entities* on NASS's List Frame that have been identified as potentially being in the target population.

The second frame was produced by the Multi-Agency Collaboration Environment (MACE). The MACE Local Food Marketing Practices Survey sampling frame comprised – potential local food operations derived from publically available web-based information. The MACE list was used to measure NASS's List Frame under coverage via a capture-recapture estimation technique.

Stratification:

Farms were stratified into one of the following groups:

- A. Farms in the target population that had a local food marketing practice sales measure of size.
- B. Farms in the target population that did not have a local food marketing practice sales measure of size.
- C. Entities in the target population that did not have a local food marketing practice sales measure of size (not part of groups A or B above).
- D. All other farms (not part of groups A, B or C).

Records in group A were stratified by state and local food marketing practice sales and records in group D were stratified by state and the likelihood to engage in local foods marketing practices. Groups B and C and MACE records were stratified by state.

Sample Size Determination:

A Mark-Recapture Sampling Design was used to derive sample sizes from the NASS and MACE sampling frames, however, the NASS and MACE samples were selected independently. The 2015 Local Food Marketing Practices Survey U.S. sample size after adjusting for an expected 70 percent response rate was 44,272.

Data Collection: For consistency across modes, the paper questionnaire version was considered the master questionnaire and the web and telephone interviewing instruments were built to model the paper instrument. The USDA Economic Research Service, Rural Development, Agricultural Marketing Service, as well as representatives from the Know Your Farmer, Know Your Food Task Force played a significant role in the development of the questionnaire. Questionnaire content and format were evaluated by NASS through a specifications process, where requests for changes were evaluated and approved or disapproved. A NASS Survey Methodologist also conducted cognitive interviews before finalization of the questionnaire. All data collection instruments were tested prior to the start of data collection

All federal data collections require approval by the Office of Management and Budget (OMB). NASS must document the public need for the data, show the design applies sound statistical practice, ensure the data do not already exist elsewhere, and show that the public is not excessively burdened. The 2015 Local Food Marketing Practices Survey questionnaire displayed an active OMB number that gave NASS the authority to conduct the survey, as well as a statement of the purpose of the survey and the use of the data being collected. The questionnaire included a response burden statement that gave an estimate of the time required to complete the form as well as a confidentiality statement that the respondent's information was protected from disclosure.

In addition to asking marketing practice questions, all survey instruments collected information to verify the sampled unit, determine any changes in the name or address, and verify the operation still qualified for the target population.

Respondents received a pre-survey postcard in March 2016. The questionnaire, along with a cover letter and instructions for web reporting were mailed in April 2016. Mail, web, telephone and face-to-face interview modes of data collection were utilized for the survey. Respondents who did not return their survey by the end of May 2016 were sent a follow-up mailing at that time. In June 2016, NASS began face to face and telephone enumeration for remaining non-respondents. Data collection concluded in August 2016.

Survey Edit: As survey data were collected and captured, they were edited for consistency and reasonableness using automated systems. Reported data were edited as a batch of data when first captured. The edit logic ensured administrative coding followed the methodological rules associated with the survey design. Relationships between data items on the survey were verified. The edit determined the status of each record as either "dirty" or "clean." Dirty records were either updated or certified by an analyst as accurate. Corrected data were then reedited interactively.

Analysis Tool: Data were processed through an interactive analysis tool that displayed data for all reports by questionnaire item. The tool provided various scatter plots, tables, charts, and special tabulations that allowed the analyst to compare an individual record to other similar records within the appropriate state and region. These tools made outliers and unusual data relationships evident and NASS Regional Field Office and Headquarters staff reviewed them to determine if they were correct. Suspect data found to be in error were corrected, while data found correct were kept.

Nonsampling Errors: Nonsampling errors are present in any survey process. These errors include reporting, recording, editing, and imputation errors. Steps were taken to minimize the impact of these errors, such as questionnaire testing, comprehensive interviewer training, validation and verification of processing systems, detailed computer edits, and the analysis tool.

Weighting Methodology: The survey utilized nonresponse weighting, coverage weights, and misclassification weights. These weights were then combined with the sample weight and went through a calibration process to determine the final weight for each record.

Nonresponse Weights: When conducting a sampled survey not all the operations selected in the sample will provide the requested information. Bias is introduced if these records are not taken into consideration for the final results. To compensate for this situation, a nonresponse weight is calculated. A nonresponse weight adjustment will increase the weights of the responding operations inversely proportioned to those records that didn't respond.

To calculate the nonresponse weight adjustment, the data were first classified as records that were identified on the NASS List Frame only and records identified on both the NASS List Frame and the MACE frame. The records were then grouped into the sampling region. The counts of the operations that responded to the survey were used to calculate the adjustment for each group. The methodology assumes that the nonresponse is random.

Non Response Adjustment = Total number sampled / Total number responded

Coverage Weight: While NASS makes every effort to keep a complete and up to date list of all the farms in the United States, there are always farms coming in and out of business. Due to the fluid nature of the agriculture

industry it is difficult to create a frame that is complete. To account for the under coverage of the sampling frame the survey used a capture-recapture methodology similar to that used in the 2012 Census of Agriculture. The capture-recapture procedure utilized two independent lists to assess under coverage of the NASS List Frame. These two lists were the NASS list frame and a list of potential local foods operations built by MACE. Records from these lists were linked based on operation name, address, phone number, or other details of the operations.

Coverage probabilities were estimated using logistic regression to determine the probability that an in scope record was on the NASS List Frame. To do this the in scope sampled records from the MACE frame were used to fit a logistic regression model. The model used included the marketing channel, total value of sales sold locally, the farm type, and the interaction between farm type and marketing channel. Once a model was fit, coverage probabilities were predicted for all sampled in scope records on the NASS List Frame. These probabilities represented the probability the record was contained by the NASS List Frame.

Misclassification Weight: When collecting data, it was possible that the respondent inadvertently reported data in error. At the conclusion of the data collection, a quality control check on a subset of respondents to the survey was conducted to determine if the presence of local food sales data collected was consistent. A record was considered to have a misclassification if the presence of local food sales from the original reported data did not match the quality control check. Misclassification was adjusted for operations that indicated that they had local food sales as well as operations that indicated no local foods sales. Using the data collected, a misclassification weight was calculated, representing the proportion of records that had a change in data reported. The misclassification weight was applied to all the respondents in the survey.

Final Weights and Calibration: The final weights for the in scope farms on the NASS List Frame were calculated as:

Final Weight = Sample Weight x Nonresponse Adjustment x Coverage Adjustment x Misclassification Adjustment

However, once the final weights were calculated it was found that because some of the sample probabilities were small in some sampling categories, several of the final weights were largely inflated. To reduce the effects of these records on the estimators, calibration was used to redistribute these weights and reduce standard errors of the resulting estimates. Target numbers were established for categories of interest. The targets used for calibration were:

- Total number of local foods operations
- Total value of sales from local foods products
- Total number of operations with sales directly to consumers
- Total value of direct to consumer sales
- Total number of operations with direct to consumer with local sales in between \$1 - \$9,999
- Total number of operations with direct to consumer with local sales in between \$10,000 - \$100,000
- Total number of operations with direct to consumer with local sales > \$100,000
- Total number of operations in all other marketing channels with local sales in between \$1 - \$9,999
- Total number of operations in all other marketing channels with local sales in between \$10,000 - \$100,000
- Total number of operations in all other marketing channels with local sales > \$100,000

An algorithm was used to redistribute final weights while providing a maximum weight that records could obtain. The algorithm adjusted the weights such that the sum of the calibrated weights met the target values within some error. To obtain the optimal maximum weights, the procedure was repeated for a sequence of maximum weight values. The value that minimized the sum of the absolute error between the sum of the calibrated weights and the target values was used as the maximum possible weight. The maximum possible weight that records were allowed to take was 550. ‘Must’ records (records with a sample probability of 1) had a maximum weight of 10. Once the

records were calibrated, the values of interest were estimated by summing the weights for records belonging to the category of interest.

Quick Stats Labeling and Data Definitions:

Quick Stats Label	Alternative Plain English Label	Definition
DIRECTLY MARKETED	Direct Marketing Practices	A sale made or an operation making a sale using one of the marketing channels that has only one or two stages between the site of production and the end consumer is considered <u>directly marketed</u> . Though these practices can be part of a local food marketing strategy, not all the sales captured in this report occurred near the point of production nor were all sales made in close proximity to production included in this report. Only sales made through one of the direct marketing channels and operations making those sales were included.
HUMAN CONSUMPTION	Food	The product sold must be considered food in its current state to qualify for the label <u>human consumption</u> . This project focused only on operations which use Direct Marketing Practices to sell Food.
COMMODITY TOTALS : HUMAN CONSUMPTION	All Food Sales made using Direct Marketing Practices; Value of Sales	<u>Value of sales</u> include the edible agricultural sales an operation produced and sold through the appropriate direct marketing channel. Sales were reported before the deduction of expenses, marketing fees, or taxes. Sales also include the estimate of the value of any crop or livestock bartered directly to consumers for services or other goods.
COMMODITY TOTALS : (EXCL PROCESSED OR VALUE-ADDED)	Raw Food Commodity Sales	<u>Commodity sales</u> include the combined sales of raw crop and livestock products. For this project, those products were exclusively food for human consumption in the raw state.
		<u>Crop sales</u> include the value of the crops sold as food for human consumption in 2015 regardless of the year crops were harvested. Some examples include: apples, wild rice, potatoes, tomatoes, etc.
		<u>Livestock and poultry sales</u> include the value of livestock, poultry, and their products produced and sold by an operation for human consumption. These sales only include food items sold in their unprocessed state, such as farmed clams, oysters, soft-shelled crabs, and bulk sales of honey or milk. Sales of meat, eggs in small cartons, and other processed products are reported as value added sales, not raw commodity sales.
COMMODITY TOTALS : PROCESSED OR VALUE-ADDED	Value Added Sales	<u>Value of sales of processed or value added food</u> include the total value of sales for value added or processed products. Examples of value added products are processed meat, bottled milk or cheese, wine and jam.
CONSUMER	Direct to Consumer Marketing Practices	<u>Direct to consumer sales</u> include the value of agricultural products sold directly to individuals from farmers markets, on-farm stores or stands, roadside stands or stores, community supported agriculture (CSA), online marketplace, and other direct – to – consumer markets (pick your own, mobile market, etc.). Non edible products are excluded from the scope of this release, as indicated by the inclusion of 'human consumption' on all data items.
RETAIL	Direct to Retail Marketing Practices	<u>Direct sales to a retail market</u> include sales to supermarkets or supercenters, restaurants or caterers, other direct to retail markets. Non edible products are excluded from the scope of this release, as indicated by the inclusion of 'human consumption' on all data items.
INSTITUTIONS and INTERMEDIATE	Direct to Institutions and Intermediate Marketing Practices	<u>Direct sales to an institution</u> include K-12 schools, colleges and universities, hospitals, and other direct to institution markets. It excludes non edible products.
		<u>An intermediate market</u> is a business or organization in the middle of the supply chain marketing locally-and/or regionally branded products. These markets includes distributors, food hubs, brokers, auction houses, wholesale and terminal markets, and food processors. An operation would have to intend to use these intermediates to market their product as locally or regional grown and in return the intermediate would have to brand that product as locally or regionally grown to be considered as selling to an intermediate market. Intermediate markets that labels the product with the place of production with no intent for that place name to imply that the product was produced near where it will be sold were excluded.

FARMERS MARKET	Farmers Market	
ONSITE	On Farm Stand or Store	
OFFSITE	Off Farm Stand or Store	
COMMUNITY SUPPORTED AG	CSA	
ONLINE MARKETPLACE	Online Marketplace	
OTHER MARKETS	Other Direct to Consumer Marketing Practices	
DIRECTLY MARKETED - OPERATIONS WITH SALES	Farm Count	
MEASURED IN \$	Value of Sales	

Purpose and Definitions: Under the guidance of the Statistical Policy Office of the Office of Management and Budget (OMB), the U.S. Department of Agriculture’s National Agricultural Statistics Service (NASS) provides data users with quality metrics for its published data series. The metrics tables below describe the performance data for the survey contributing to the publication. The accuracy of data products may be evaluated through sampling and non-sampling error. The measurement of error due to sampling in the current period is evaluated by the coefficient of variation (CV) for each estimated item. Non-sampling error is evaluated by response rates and the percent of the estimate from respondents.

Sample size is the number of observations selected from the population to represent a characteristic of the population.

Response rate is the proportion of the sample that completed the survey. This calculation follows Guideline 3.2.2 of the Office of Management and Budget Standards and Guidelines for Statistical Surveys (Sept 2006).

Coefficient of variation is a measure of the relative amount of error associated with a sample estimate. Specifically, it is the standard error of a point estimate divided by that estimate, generally multiplied times 100 so that it can be reported as a percentage. This relative measure allows the reliability of a range of estimates to be compared. For example, the standard error is often larger for large population estimates than for small population estimates, but the large population estimates may have a smaller CV, indicating a more reliable estimate. Every estimate for the Local Food Marketing Practices Survey project has a corresponding CV published with it. NASS has identified the following index to use when evaluating coefficient of variation for the Local Food Marketing Practices Survey.



High Reliability Estimate. Coefficient of Variation (CV) less than 15 percent.



Medium Reliability Estimate. Coefficient of Variation (CV) between 15 percent and 29.9 percent



Low Reliability Estimate. Coefficient of Variation (CV) 30 percent or higher. Caution should be used when using this estimate in any form. Please consult NASS for more information or guidance.

2015 Local Food Marketing Practices Survey Sample Size and Response Rates – Region, State, and United States ¹:

Region and State	Sample Size ²		Response Rate	
	NASS List	MACE List	NASS List	Mace List
Region 1	3,334	3,427	54.3	47.7
California	1,377	2,208	53.4	45.3
Colorado	492	432	49.2	50.6
Hawaii	455	200	63.6	52.9
Utah	374	170	60.1	70.0
Region 2	6,352	5,143	58.1	52.5
Connecticut	607	221	51.2	48.1
Maine	479	818	55.8	51.7
Maryland	632	200	64.2	58.9
Massachusetts	724	559	54.5	50.7
New Hampshire	698	236	54.2	46.3
New Jersey	855	262	61.0	56.5
New York	702	1,291	62.8	55.3
Pennsylvania	607	955	66.5	51.2
Vermont	497	408	61.7	54.1
Region 3	1,829	1,577	59.7	52.6
Oregon	520	439	59.8	55.5
Washington	581	477	53.2	44.8
Region 4	3,009	1,863	55.1	48.7
Iowa	815	485	58.3	54.8
Minnesota	680	502	59.8	47.9
Missouri	732	286	53.7	42.3
Region 5	2,164	1,587	61.1	55.1
Texas	1,208	579	63.2	51.1
Region 6	4,966	2,806	59.3	47.9
Florida	478	459	56.6	42.9
Kentucky	608	251	61.0	51.4
North Carolina	667	424	65.9	52.3
South Carolina	1,313	287	52.4	48.2
Tennessee	599	293	64.1	49.1
Virginia	699	535	62.8	46.3
Region 7	3,253	2,962	57.6	55.7
Illinois	767	476	56.4	61.2
Indiana	542	372	59.3	57.9
Michigan	642	476	58.6	54.3
Ohio	670	493	54.9	49.2
Wisconsin	632	1,145	59.3	55.2
United States	24,907	19,365	57.7	51.7

1/ Unpublished states are included in the regional and national totals. State sample sizes will not sum to regional or national totals. Unpublished states by region: **Region 1** - Arizona, Nevada, New Mexico; **Region 2** - Delaware, Rhode Island; **Region 3** - Alaska, Idaho, Montana, Wyoming; **Region 4** - Kansas, Nebraska, North Dakota, South Dakota; **Region 5** - Alabama, Arkansas, Louisiana, Mississippi, Oklahoma; **Region 6** - Georgia, West Virginia; **Region 7** - no unpublished states

2/ Samples were drawn independently and overlap in operations is included in both the sample size and the response rate calculations for both frames.

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- All reports are available electronically, at no cost, on the NASS web site: <http://www.nass.usda.gov>
- Both national and state specific reports are available via a free e-mail subscription. To set-up this free subscription, visit <http://www.nass.usda.gov> and in the “Follow NASS” box under “Receive reports by Email,” click on “National” or “State” to select the reports you would like to receive.

For more information on NASS surveys and reports, call the NASS Agricultural Statistics Hotline at (800) 727-9540, 7:30 a.m. to 4:00 p.m. ET, or e-mail: nass@nass.usda.gov.

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