



# Cattle on Feed Methodology and Quality Measures

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**Scope and Purpose:** The Cattle on Feed surveys are conducted monthly in 16 States for all known feedlots with capacity of 1,000 or more head. The monthly States include Arizona, California, Colorado, Idaho, Illinois, Iowa, Kansas, Minnesota, Nebraska, New Mexico, Oklahoma, Oregon, South Dakota, Texas, Washington, and Wyoming. The surveys collect data for total cattle on feed inventory, placements, marketings, other disappearance, and placements by weight groups. During quarterly months (January, April, July, and October) surveys collect data inventory by class for steers and heifers.

**Survey Timeline:** The reference dates for the monthly surveys are the first of each month with data collection periods of approximately 15 days, surrounding the reference date. Regional Field Offices may begin data collection one day prior to the reference date. Data collection continues until a scheduled ending date and Regional Field Offices have one to two business days to complete editing and analysis, execute the summary, and interpret the survey results. The Agricultural Statistics Board (ASB) must perform the national review, reconcile State estimates to the national estimates on a monthly basis, and prepare the official estimates for release in two to three business days. The estimates are released to the public on the third or fourth Friday of every month.

**Sampling:** The Cattle on Feed surveys are conducted monthly in 16 states for all known feedlots in the United States with capacity of 1,000 or more head. The target population includes all agricultural establishments with at least 1,000 head feedlot capacity on the total land operated. This survey is a complete census of the records on the National Agricultural Statistics Service (NASS) List Frame. The List Frame is a current list of agricultural operations, and all feedlot operations are assumed to be on the list. If a new feedlot is found at any time, the operation is added to the List Frame, and the operation can be added to the survey sample in any month. Since this is a census of 1,000+ feedlot operations, no sample weights exist. Each respondent operation accounts only for itself.

**Data Collection and Editing:** For consistency across modes, the paper version is considered the master questionnaire and the Computer Assisted Self Interview (CASI), Mobile Computer Assisted Personal Interview (mCAPI), and Computer Assisted Telephone Interview (CATI) instruments are built to model the paper instrument. Questionnaire content and format are evaluated annually through a specifications process where requests for changes are evaluated and approved or disapproved. Input may vary from question wording or formatting to a program change involving the deletion or modification of current questions or addition of new ones. If there are significant changes to either the content or format proposed, a NASS survey methodologist will pre-test the changes for usability. Prior to the start of data collection, all modes of instruments are reviewed and the CASI, mCAPI, and CATI instruments are thoroughly tested.

All federal data collections require approval by the Office of Management and Budget (OMB). NASS must document the public need for the data, apply sound statistical practice, prove the data does not already exist elsewhere, and ensure the public is not excessively burdened. The questionnaire must display an active OMB number that gives NASS the authority to conduct the survey, a statement of the purpose of the survey and the use of the data being collected, a response burden statement that gives an estimate of the time required to complete the form, a confidentiality statement that the respondent's information will only be used for statistical purposes in combination with other producers, and a statement saying that response to the survey is voluntary and not required by law.

In addition to asking the specific cattle on feed items, all instruments collect information to verify the sampled unit, determine any changes in the name or address and verify the farm still qualifies for the target population.

Sampled farms and ranches receive a presurvey letter explaining the survey and that they will be contacted for survey purposes only. The letter provides the questions to be asked to allow respondents to prepare in advance and also provides a pass code they can use to complete the survey on the internet. All modes of data collection are utilized for Cattle on Feed surveys. Regional Field Offices are given the option of conducting a mail out/mail back phase. While mail is the least costly mode of collection, the short data collection period and the uncertainty of postal delivery times limit its effectiveness. Most of the data are collected on paper by phone and face-to-face. A program is run to determine if any sampled cattle feedlots are in multiple on-going surveys, so data collection can be coordinated.

**Survey Edit:** As survey data are collected and captured, they are edited for consistency and reasonableness using automated systems. The edit logic ensures the coding of administrative data follows the methodological rules associated with the survey design. Relationships between data items on the current survey are verified and in certain situations those items may be compared to data from earlier surveys to make sure certain relationships are logical. The edit will determine the status of each record to be either “dirty” or “clean”. Dirty records must be updated and reedited or certified by an analyst to be clean. If updates are needed, they are reedited interactively. Only clean records are eligible for analysis and summary.

**Analysis Tools:** Edited data are processed through an interactive analysis tool which displays data for all reports by item. The tool provides scatter plots, tables, charts, and special tabulations that allow the analyst to compare an individual record to other similar records within their State. Outliers and unusual data relationships become evident and Regional Field Office staff will review them to determine if they are correct. The tool also allows comparison to previously reported data to detect data trends and/or large changes in the feedlot operation inventory items. Suspect data found to be in error are corrected, while data found to be correct are kept.

**Nonsampling Errors:** Nonsampling errors are present in any survey process. These errors include reporting, recording, editing, and imputation errors. Steps are 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.

**Estimators:** The Cattle on Feed surveys are a complete enumeration of all known feedlot operations with at least 1,000 head capacity. Feedlot operations are selected from the list of all agricultural operations, and new operations are added to the sample when discovered. No coverage adjustment is made. Response to the Cattle on Feed surveys are voluntary. Producers may refuse to participate in the survey, may not be located during the data collection period, or may submit incomplete reports. All non-response is handled via manual and machine imputations. Cattle on feed inventory and feedlot capacity are manually estimated for all non-respondents. The item level non response requiring machine imputation for placements, marketings, other disappearance, placements by weight groups, and inventory classes of steers and heifers in the quarterly months, are handled by a computer algorithm. Data are post stratified based on inventory levels, and ratios (using only data from completed reports) are generated and applied to the cattle on feed inventory items to impute for missing data. The measurement of error due to sampling in the current survey period is irrelevant for a fully enumerated census. Moreover, standard errors and coefficients of variation (CVs) are zero for all current data items collected.

**Estimation:** When all samples are accounted for, all responses fully edited, and the analysis material is reviewed, each Regional Field Office executes the summary for each State being summarized. When summaries for all 16 States have run, Headquarters executes the national summary. Identical surveys are conducted in each of the 16 States allowing for the samples to be pooled and national survey results computed. The summary results provide multiple point estimates for each data series being estimated. It also provides information used to assess the performance of the current survey and evaluate the quality of the survey estimates, such as response rates and percent of the estimate from reported data. Regional Field Offices are responsible for performing a detailed review of their survey results. Any irregularities revealed by the summary must be investigated and, if necessary, resolved. Using the historical relationship of the survey estimates to the official estimate, Regional Field Offices interpret the survey results and submit a recommended estimate to Headquarters. The data are viewed in tabular and graphical form and a consensus estimate is established. Regional Field Offices see their survey results only and do not have access to State results of other Regional Field Offices.

For the national estimates, NASS assembles a panel of statisticians to serve as the ASB which reviews the national results and establishes the national estimates. Since larger sample sizes yield more precise results, NASS employs the “top-

down” approach by determining the national estimates first and reconciling the State estimates to the national number for cattle on feed inventory and other components of the survey. The ASB has the advantage of being able to examine results across states, compare the state recommendations, and utilize administrative data available only at the United States level. The same estimators used in the State summaries are produced by the national summary. The Board follows the same approach the States do in determining the national estimate. The historical relationship of the survey estimates to the official estimate is evaluated over time to determine accuracy and bias using tables and graphs. Every five years NASS conducts the Census of Agriculture, which is an exhaustive data collection effort for all known farm operations across the U.S. The information gathered from the Census of Agriculture is used to establish bench mark levels by which the survey estimators can be compared and bias determined. Survey based estimators can also be impacted by outliers – individual reports that have excessive influence on the results due to either improper classification or extremely unusual data for a given operation (i.e. operation is not representative of other operations). NASS thoroughly reviews the survey data to identify these situations and consider their impact on the survey results when establishing the official estimates.

External information (administrative data) is also utilized in the process of setting estimates. In order to be considered, these data must be deemed to be reliable and come from unbiased sources. The most common administrative data is commercial slaughter. NASS employs a balance sheet approach whenever possible to ensure that estimates are as accurate as possible. This approach typically is limited to national level estimates. A balance sheet and its components are reviewed when the inventory numbers are established. Commercial slaughter is an important element of the balance sheet at the national level since its high degree of reliability is based on a near-actual count of animals slaughtered. Live U.S. imports from other countries are also considered.

## Quality Metrics for Cattle on Feed

**Purpose and Definitions:** Under the guidance of the Statistical Policy Office of the Office of Management and Budget (OMB), the United States 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 all surveys contributing to the publication. The accuracy of data products may be evaluated through sampling and nonsampling error. The measurement of error due to sampling in the current period is irrelevant for a fully enumerated data series. Non-sampling error is evaluated by response rates and the percent of the estimate from reported data. For the monthly Cattle on Feed survey both state-level and US-level estimates are published.

**Sample size** is the number of observations selected from the population to represent a characteristic of the population. Operations that did not have the item of interest, did not meet the 1,000 head capacity threshold, or were out of business at the time of data collection have been excluded.

**Response rate** is the proportion of the above sample that completed the survey.

**Percent of estimate from reported data** is the percent of the estimate that is from complete reports and not imputed.

**Cattle on Feed Survey Sample Size and Response Rate:** To assist in evaluating the performance of the estimates in the Cattle on Feed report, the average monthly sample size and response rates are displayed.

**Cattle on Feed Survey Sample Size and Response Rate - United States: 2016 and 2017**

	Sample size		Response rate	
	2016 (number)	2017 (number)	2016 (percent)	2017 (percent)
United States .....	1,334	1,320	68.8	67.7

**Quality Metrics for Cattle on Feed by Class – United States: 2016 and 2017**

Class	Percent of estimate from reported data	
	2016 (percent)	2017 (percent)
Inventory .....	83.0	81.4
Placements .....	78.5	75.0
Marketings .....	78.4	75.1

## Information Contacts

Process	Unit	Telephone	Email
Estimation .....	Livestock Branch	(202) 720-3570	HQ_SD_LB@nass.usda.gov
Data Collection .....	Survey Administration Branch	(202) 720-3895	HQ_CSD_SAB@nass.usda.gov
Questionnaires .....	Data Collection Branch	(202) 720-6201	HQ_CSD_DCB@nass.usda.gov
Sampling and Editing .....	Sampling Editing and Imputation Methodology Branch	(202) 720-5805	HQ_CSD_SB@nass.usda.gov
Summary and Estimators .....	Summary Estimation and Disclosure Methodology Branch	(202) 720-4008	HQ_SD_SMB@nass.usda.gov
Dissemination .....	Data Dissemination Office	(202) 720-3869	HQSDOD@nass.usda.gov
Media Contact and Webmaster .	Public Affairs Office	(202) 720-2639	HQOAPAO@nass.usda.gov

## Access to NASS Reports

For your convenience, you may access NASS reports and products the following ways:

- All reports are available electronically, at no cost, on the NASS web site: [www.nass.usda.gov](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 [www.nass.usda.gov](http://www.nass.usda.gov) and click on “National” or “State” in upper right corner above “search” box to create an account and 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](mailto:nass@nass.usda.gov).

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