Appendix C.
Statistical Methodology

THE CENSUS MAIL LIST AND SCREENER PHASE

The National Agricultural Statistics Service (NASS) maintains a list of farmers and ranchers from which the census mail list (CML) is compiled. The goal is to build as complete a list as possible of agricultural places that produce and sell, or would normally sell, $1,000 or more of agricultural products per year. This is the same list used to define sampling populations for NASS surveys conducted for the agricultural estimates program. Each record on the list includes name, address, and telephone number plus additional information used to efficiently sample and administer the NASS census of agriculture and its agricultural estimates programs.

NASS builds and improves the list on an ongoing basis by obtaining outside source lists. Sources include state and federal government lists, producer association lists, seed grower lists, pesticide applicator lists, veterinarian lists, marketing association lists, and a variety of other agriculture-related lists. NASS occasionally obtains special commodity lists to address specific list deficiencies. In 2000, NASS began an intensive push to increase list coverage in preparation for the census.

Most names on a newly acquired list are already on the list sampling frame. Those found on the list are set aside. Those not found are treated as potential farms until NASS can confirm their existence as a qualifying farm. Field offices routinely contact these potential farms to determine their status, however, the increased pre-census list building activity generated much more followup work.

Beginning in April 2002, NASS conducted the 2002 Farm Identification Survey to screen 591,288 potential farms before placing them on the CML. These records were mailed a one-page report form and a nonresponse followup mailing was made in May 2002. A second mailing to a group of 568,692 additional potential farm records was conducted in mid-July 2002. There was no followup mailing. The entire screener phase confirmed 349,664 qualifying farms that were added to the CML. A total of 282,901 names were confirmed as out of scope and were dropped from the list. Names returned as undeliverable-as-addressed totaled 92,203 and they were excluded from further census mailings. The remaining 435,212 names did not respond and were mailed census forms although they were not added to the CML as active farms.

During the spring and summer of 2002, measures were taken to improve name and address quality. Checks were made to detect and remove duplication both within states and across states. List addresses were processed through the National Change of Address registry and the Locatable Address Conversion System to ensure they were correct and complete. Records on the mail list with missing or invalid phone numbers were matched against a nationally available telephone database to obtain as many phone numbers as possible.

Records requiring special handling for census data collection or for analysis and summarization were identified. These were mostly farms considered unique because of their size or because they produced specialty commodities.

The official CML was established on September 1, 2002. The list contained 2,841,788 records. There were 1,839,533 records that were thought to meet the NASS farm definition and 1,002,255 potential farm records.

CENSUS SAMPLE DESIGN

All name and address records on the final CML received a 2002 Census of Agriculture report form. Two different types of census report forms, sample and

nonsample, were used to collect data. Sections 1 through 16 and 22 through 25 of the sample form were identical to sections on the nonsample census form. Sections 17 through 21 of the sample form contained additional questions on usage of fertilizers and chemicals, farm production expenditures, value of machinery and equipment, value of land and buildings, and hired workers. There were 12 regional versions of the nonsample form and 13 regional versions of the sample form with listings of crops varying by region.

The sample form was mailed to all mail list records in Alaska and Rhode Island and to a sample of records in other states. Mail list records were selected into the sample with certainty if they (1) were expected to have large total value of agricultural products sold or large acreage, (2) were in a county with less than 100 farms in 1997, or (3) had other special characteristics (e.g., abnormal farms such as institutional farms, experimental and research farms, Indian reservations, etc.). Mail list records in counties containing 100 to 199 farms in 1997 were systematically sampled at a rate of 1 in 2; counties containing 200 to 299 farms in 1997 were systematically sampled at a rate of 1 in 4; counties containing 300 to 399 farms in 1997 were systematically sampled at a rate of 1 in 6; and counties containing 400 or more farms in 1997 were systematically sampled at a rate of 1 in 8. The mail list records not chosen to receive the sample form received the nonsample form. This differential sampling scheme was used to provide reliable data for the sample sections of the report form for all counties.

The regional report form versions and the sampling scheme were used to provide reliable data for a large number of items/commodities at the county level, while reducing response burden.

EDITING DATA AND IMPUTING FOR ITEM NONRESPONSE

The mailing label on all forms returned to the National Processing Center (NPC) were scanned using bar code readers to capture identifiers and for check-in purposes. Forms determined to represent qualifying, in-scope farms were submitted for imaging. A snapshot was taken of each page of every report form and optical mark recognition (OMR) and intelligent character recognition (ICR) techniques were used to capture reported data from the images. The ICR engine determined a confidence level for every cell read. Any cell with a confidence level below a prescribed value was referred to analysts to review and correct from the image, when necessary. The images and the captured data were transferred to NASS on a flow basis. Data collected by telephone were captured using computer-assisted telephone interview software.

Captured data were processed through a format program. This program verified that record identifiers were valid and checked the basic integrity of the data fields. Rejected records were referred to analysts for correction. Accepted records were posted to the database.

All 2002 census data were passed through a complex computer edit. Data were batched by state for submission to the computer edit. The edit determined whether a reporting operation met the minimum criteria to be counted as a farm in the census. Operations failing to meet the minimum criteria were referred to analysts for verification. The edit examined each report for reasonableness and completeness and determined whether to accept, delete, impute (supply), or alter the reported value for each data record item.

Whenever possible, imputations, deletions, and changes made by the editing system were based on related data on the respondent's report form. For some items, such as operator characteristics, available data for that farm from the previous census were used. Values reported on previous NASS surveys were used, where applicable.

When these and similar methods were not available and values had to be supplied, the imputation process used information reported for another farm operation in the same state or in a neighboring state with characteristics similar to those of the farm operation with incomplete data. For example, a farm operation that reported acres of corn harvested, but did not report bushels of corn harvested, was assigned the same bushels of corn per acre harvested as that of another farm from that region having similar characteristics and reporting an acceptable yield. Assigned values for one operation could come from more than one respondent because imputation for missing items in each section of the report form was conducted separately.

Each execution of the computer edit consisted of records from only one state. Successfully edited records were made available as potential "donors," to supply values needed in subsequent imputations. These records were accumulated into pools of donors according to geographic location, so that each pool might be used during the computer edit of any reports from appropriate states. When imputation was required, a report's collective imputation needs for a section were used to identify a group of matching variables for the report which contained acceptable data relating to the missing items. For example, acres of corn harvested would be a matching variable for bushels of corn harvested, in consideration of the high correlation between the two items.

Similarity to the report being edited was evaluated for the matching variables for all farms in the appropriate donor pool. Values were imputed from the donor report considered most similar, referred to in this context as the "nearest neighbor" to the report being edited. Similarity between the edited record and a donor was calculated as the Euclidean distance between their selected matching variables. As part of the distance computation, the values of the matching variables were normalized to have the same variance within each donor pool. Latitude and longitude were consistently included in all imputation requests as matching variables, so that geographic proximity played a role in all donor selections.

Imputation conformed to logic provided by the complex edit. When appropriate, only donors able to contribute a nonzero imputed value were considered. For a farm reporting harvested corn acreage, for example, imputed bushels of corn harvested would be taken only from farms with harvested corn. In addition, imputed values were often adjusted. In some cases, acceptable data in another field of the edited report were used to establish a ratio between the edited report and the donor report. This proportion was applied to the imputed value as a scale factor. In the corn example, total bushels of corn from the donor would be scaled by the ratio of the acres of corn in the edited report to those in the donor report.

To maintain consistency with the complex edit, the imputed values in most sections of the report were tested to ensure they satisfied critical relationships among items within the section. If any of these constraints were not met, alternative donors were considered in order of their similarity to the edited report, until all the constraints for the module were satisfied.

In some cases, nearest-neighbor imputation was not possible. The requirement of a positive imputed value might rule out all available donors, resulting in an imputation failure. However, if some members of the donor pool were found to satisfy this requirement, then as many as 25 nearest neighbors were given further consideration. But if none of the candidate donors could provide qualifying data, the result was also noted as an imputation failure. Processing of records that encountered these imputation failures was suspended at the section where the failure occurred. These records were made available for analyst review and later reconsidered by the automated edit as a followup to corrective actions taken by the analyst.

The donor pool for each region was frequently updated with records from its area which had completed the editing process. As records were added to the donor pool, the records became available to donate values to incomplete reports subsequently edited for that region. Prior to editing, all donor pools were empty and no donors were available. Initial donor pools were created by giving special treatment to the first batches of data received from each state. Similar to the way that imputation failures were resolved through analyst review of the reports, early reports from initial batches were reviewed and adjusted manually by teams of analysts. This process was employed until each donor pool became self-sufficient in consistently providing imputed values for its region through the automated nearest-neighbor selection process.

To streamline editing once they had reached a mature stage in their growth, donor pools for some regions were not expanded in size beyond a chosen plateau. This provided assurance that computer edits would not exceed a reasonable processing time for nearest-neighbor searches. Although their size was limited, these donor pools did not become static. They were regularly recreated with representative samples of all records available from their regions. Within a given region, all successfully edited sample form records were included in the appropriate donor pool. Successfully edited nonsample form records were ordered by farm size and sales volume for a given

region, and then systematically sampled. Every "ith" record from the nonsample form list was joined to the complete list of sample forms for its region to form a refreshed donor pool. The steady renewal of donor pools for regions with large numbers of records assured a more diverse selection of donors over time.

All records with data changes were resubmitted to the edit to verify that acceptable corrections were made. Records with imputation failures were referred to an analyst for resolution. Corrected data were posted and the record was re-edited.

The complex edit ensured the full internal consistency of the record. Analysts were provided an additional set of tools to review record-level data across farms. These examinations detected extreme outliers or unique data distribution patterns that were possibly a result of reporting, recording, or handling errors. Potential problems were researched and, when necessary, corrections were made and the record re-edited.

NONRESPONSE AND SAMPLE ESTIMATION

Statistical estimation procedures were used to account for whole farm nonresponse and sample data collection. The procedures for nonresponse were necessary because some farm operators did not respond to the census despite numerous attempts to contact them. Statistical estimates for sample-form-only data items had to be calculated since, by design, the data were not collected from every farm. Nonresponse and sample estimation procedures were not applied in Alaska and Rhode Island because all farms received the sample form and data were collected from all farms.

Treatment of Farms Selected for the Screener Phase

The screener phase and followup strategies resulted in several possible outcomes depending on whether the screener name responded and was in or out of scope. Each of these outcomes was handled differently to adjust for nonresponse.

Names responding to the screener as out of scope (nonfarms) were excluded from the CML. If the respondent answered the screener as in scope, the respondent was added to the CML and received a census form. If this in-scope screener respondent answered the census form, the operation's report was eligible to be used to help account for nonrespondents to the census. If the in-scope screener respondent failed to respond to the census form, that operation's data were accounted for by census respondents.

Records for operations that did not respond to any of the three screener mailings were not considered to be part of the CML, but they were sent a census form. Screener nonrespondents that responded as in-scope operations on the census were assigned a fixed nonresponse weight of 1 for census tabulations. Screener nonrespondents that failed to respond to the census form were treated in summarization as if they never existed on a mail list.

Whole Farm Nonresponse Estimation

Whole farm nonresponse to the census occurred when no data were received from an operation on the CML. Records deemed to represent either a large farm, as defined by the total value of production or acreage, or a unique farm operation received intensive telephone or personal followup during census processing to obtain a response. If these attempts failed, data were imputed for the record. These large and/or unique records were designated as "Must" records and were assigned a fixed nonresponse weight of 1, meaning their data were not used for nonresponse adjustment. Screener respondents with reported sales above a certain level automatically became Must records.

During mail list development, the field offices, in an effort to reduce respondent burden, identified operations that participated in multiple NASS surveys, and those that had special reporting relationships with an enumerator. The records for these operations were "Tagged." The field offices assumed full responsibility for the data collection for any Tagged operations, including imputing data for them if a response was not obtained. Tagged records became Must records. They had a nonresponse weight of 1 and the reports were not used for nonresponse adjustments.

Whole farm nonresponse that occurred within the remaining universe of records, called non-Musts, was

accounted for by a statistical weighting procedure. All responding non-Musts in a state were put into mutually exclusive weighting groups based on their size and county as recorded on the CML database. Statistical models were used to estimate the number of nonresponse farms that were in scope for each weighting group. The weights of the responding farms in each weighting group were increased to account for nonresponding farms in that group.

Throughout the data collection period, changes and additions were made to the CML. Records added after the initial CML was created on September 1, 2002 were designated as new adds, treated like screener nonrespondents, and given a nonresponse weight of 1. New adds responding as in-scope records to the census were subsequently subtracted from the measurement of undercoverage. New adds linked to operations originally on the CML were not considered new adds. New adds occurred any time after the CML creation and before final weighting in February, 2004.

Some operators were sent more than one census form. These operators were required to fill out a separate form for each operation. Also, an operator may have had an operation for which a census form was not received, but the existence of which was noted on the form of the known operation. That operator was sent a new census form or enumerated by telephone to obtain data for that previously unknown operation. If a response was obtained for the previously unknown operation, the nonresponse weight for the new record was set equal to the nonresponse weight for the original operation reporting its existence. If no response was obtained for the previously unknown operation, it was treated as out of scope.

Some large farms operating in more than one county were treated as distinct county-specific operations to more accurately allocate data to counties. Similarly, large farms operating in more than one state were treated as distinct state-specific operations. Split add records were created for these operations and they were assigned the same nonresponse weight as the original CML operation. Controls ensured the calculated and nonresponse weights never exceeded 2. The nonresponse weights were systematically rounded to integers and an integerized weight of either 1 or 2 was assigned to each record. The integerization process eliminated any impact rounding would have had on census farm counts and totals in each county and in cross tabulations.

Tables A and C quantify the effect of the nonresponse estimation procedures on selected census data items. These tables contain percentages of the census aggregates that were contributed by nonresponse adjustments. As noted earlier, names included in the screener sample that never responded were treated as if they never existed on a mail list. Any in-scope farm in this group was missed and, consequently, "attributed" to the coverage adjustment. This is shown in Table C. For selected items, estimates of what was attributed were reallocated to nonresponse to obtain "corrected" values, which appear in Table A. This was possible at the state level only. The differences between state-level nonresponse adjustment numbers in the first line of Table C and their counterparts in Table A represent the amount reallocated.

There was no such reallocation in Hawaii because records in that state were not adjusted to account for coverage errors. No tables appear for Alaska because records were not adjusted for nonresponse or coverage.

The estimates provided in Tables A and C do not reflect the effect of item nonresponse on individual census data items. The effect of this item nonresponse is discussed in the ''Nonmeasurable Census Error'' section.

Sample Estimation

All Must records were preselected to receive the census sample form. Non-Must records were sampled to determine which would receive the sample form and which the nonsample form. All records in some small counties automatically received the census sample form but these records were not necessarily Must records. Nonresponse adjustment was allowed for the non-Musts.

Weights applied to the sample items appearing on the sample form only (Sections 17 through 21) were calculated by multiplying the farm's coverage-adjusted weight, which is described later, by the sample factor (e.g, 6 for a farm sampled with a 1-in-6 rate, 1 for a Must). An adjustment was made that ensured the number of farms operating in a county as estimated from the sample matched the number estimated from

the full census. Before computing published tabulations based on the sample, each record's sample weight was integerized to eliminate the impact rounding would have had on census farm counts and totals.

Operators with more than one operation were sampled as one record and received the same census form for each operation. Operations added after sampling were treated differently depending on whether or not the record was linked to a record on the original CML. Added operations that linked to a record on the original CML were mailed the same census form as the original CML operation. Added operations that were **not** linked to a record on the original CML were mailed the sample form.

MEASURABLE CENSUS ERROR

The root mean squared error of an estimated data item from the census provides a measure of the error a field office associated with completing a census. It measures the variation in the value of that estimated data item based on all possible outcomes of the census collection, including variants as to who was on the census list, who returned a census form and who was selected to fill out the sample form.

Data items were classified as either complete count items or sample count items. Sample count items were collected only on the sample version of the census report form. Complete count items were collected from all respondents. Variability in the estimates of complete count items was due only to the nonresponse and coverage estimation adjustment procedures. Variability in the estimates of sample count items was due to both the adjustment procedures and the census sample selection and estimation procedure. Therefore, variability in the sample count item estimates tends to be larger than the variability in the complete count item estimates.

Table B presents the fully adjusted total with the root mean squared error for selected items. The relative root mean squared error is obtained by dividing the root mean squared error by the value of the estimate and then multiplying by 100. The table also includes the percent contribution to the mean squared error (the square of the root mean squared error) from nonresponse adjustment and sampling and from coverage adjustment. Mean squared errors for Hawaii are entirely due to nonresponse adjustment.

Nonsampling error due to mail list incompleteness and duplication as well as misclassification of records on the mail list is called coverage error. The section titled "Classification Error Study" addresses attempts to assess, at least qualitatively, the impact of classification error on the census results.

NONMEASURABLE CENSUS ERROR

The accuracy of the census counts is affected jointly by the measurable errors described in the previous section and by nonmeasurable errors (nonmeasurable in the sense of not being included in root mean squared error estimates). Extensive efforts were made to compile a complete and accurate mail list for the census, to design an understandable report form with instructions, and to minimize processing errors through the use of quality control measures. Despite these efforts, nonmeasurable errors are inevitable and arise from many sources, including respondent or enumerator error, incorrect data capture, editing, and imputing for missing data. These errors are discussed in this section.

Respondent and Enumerator Error

Incorrect or incomplete responses to the census report form or to the questions posed by an enumerator can introduce error into the census data. To reduce reporting error, detailed instructions for completing the report form were provided to each respondent. Questions were phrased as clearly as possible based on previous tests of the report form. Computer-assisted telephone interviewing software included immediate integrity checks of recorded responses so suspect data could be verified or corrected. In addition, each respondent's answers were checked for completeness and consistency by the complex edit and imputation system.

Item Nonresponse

As information flowed from data collection to tabulation, various types of item nonresponses were identified on the census report forms. Nonresponse to particular questions on the form that logically should have been present created a type of nonsampling error

in both complete count and sample count data. In this case, information from a similar farm was used to impute for these missing data items. The resulting data may have been biased if the characteristics of the nonreporting farms were different from those of reporting farms for those items. The section titled "Editing Data and Imputing for Item Nonresponse" provides a detailed explanation of item imputation procedures.

Processing Error

All phases of processing for each census report form were potential sources of nonsampling error. An automated check-in procedure recorded that the report had been returned and excluded it from further followup mailings. Approximately one-third of the mail returns were reviewed to resolve questions dealing with multiple reports, respondent remarks, or no reported data. The remaining mail returns (about two-thirds), along with some of the reviewed cases containing farm data, were batched and sent directly to imaging and data capture. Data were transmitted, formatted, and run through the complex edit and imputation system to ensure within record consistency. About one-fifth of all forms edited were clerically reviewed for inconsistencies, omissions, or questionable values. While reviewing these forms, staff determined if the action taken by the computer edit and imputation system was correct. Additional analysis tools were used to examine data across records for distributional irregularities and extreme values. Edited records were tabulated to the county level. Each county was reviewed and, when necessary, individual records were corrected prior to publication.

Developing accurate processing methods is complicated by the complex structure of agriculture. Among the complexities are the many places to be included, the variety of arrangements under which farms are operated, the continuing changes in the relationship of operators to the farm operated, the expiration of leases and the initiation or renewal of leases, the problem of obtaining a complete list of agriculture operations, the difficulty of contacting and identifying some types of contractor/contractee relationships, the operator's absence from the farm during the data collection period, and the operator's opinion that part or all of the operation does not qualify and should not be included in the census. During data collection and processing of the census, all operations underwent a number of quality control checks to ensure results were as accurate as possible.

COVERAGE ADJUSTMENT

Although much effort was expended making the CML as complete as possible, the coverage of farms was not complete. NASS's goal was to produce agricultural census totals for publication that were fully adjusted for list undercoverage at the county level. Estimates of the undercoverage for a specified set of farm characteristics, called calibration variables, were computed using an area-frame sample. Initial weights were assigned to census respondents to account for nonresponse, and these weights were further adjusted to compensate for estimated state-level undercoverage for each of the calibration variables based on the area frame sample. Each farm with census data was assigned a fully-adjusted weight by this process and county-level totals were generated for every census variable, not just the calibration variables. The section titled "Calibration Algorithm" provides a list of the area frame based calibration variables.

To further improve coverage adjustment, a second set of targets and ranges were added to the calibration effort. These were well established commodity totals for which excellent check data were available for validation. The introduction of these commodity targets strengthened the overall coverage adjustment process by limiting the possible adjustments produced by the area frame based targets to ensure major commodity totals remained within reasonable bounds of established benchmarks.

Most targets were determined at the state level. The one exception was the New England states - Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont - which were combined into one "calibration region." In what follows, "state" refers to the calibration region for New England. Coverage adjustments were not made in Alaska and Hawaii.

Measuring Mail List Undercoverage

Census mail list undercoverage was measured using an independent survey of land segments selected from the NASS area frame. The NASS area frame covers all

land in the U.S. and includes all farms. Each June, NASS conducts a survey that enumerates area frame segments for agricultural activity. The sampled segments are allocated to provide accurate measures of acres planted to widely grown crops and inventories of hogs and cattle.

The 2002 June Agricultural Survey (JAS) was supplemented with the 2002 Agricultural Coverage Evaluation Survey (ACES) to better estimate CML incompleteness. The ACES used a sample of segments allocated in a way that, when pooled with the JAS, ensured accurate measures of number of farms and land utilization could be obtained. Enumerators visited all segments, identified all farms operating land in each segment, and obtained basic data about those farms.

The names and addresses collected in the 2002 JAS and 2002 ACES were matched to the census mail list. Farms that did not match were re-contacted after the census mailout to confirm that they did not receive a census form. Farms that had not received a census form represented the farms not on the mail list (NML). Those who received a census form had been erroneously classified as NML and were removed.

The percentage of farms missed in the census varied considerably by state. In general, farms not on the mail list tended to be small in acreage, production, and sales of agricultural products. Farm operations were missed for various reasons, including the possibility that the operation started after the mail list was developed, the operation was so small as not to appear in any agriculture-related source lists, or the operation was falsely classified as a nonfarm prior to mailout.

Determining Targets to Correct for Undercoverage

The 2002 June Agricultural Survey consisted of 11,075 land segments and the 2002 Agricultural Coverage Evaluation Survey (ACES) added 2,400 segments. Data values a field office associated with NML tracts were used to estimate the state-level undercoverage of the CML for the first set of calibration variables. The state-level totals for these variables were then summed to yield national totals.

The national NML estimate for the number of farms was used directly in determining calibration targets (CML + NML). State-level farm-count estimates based on the NML sometimes had unacceptably high standard errors, as well as apparent systematic biases. These estimates were smoothed across states based on separate NASS surveys and previous analysis.

Other calibration targets were derived from the NML-estimated fractions of farms of certain types (i.e. in a particular sales class or with a principal operator of a particular race). Most of these had unacceptably high state-level standard errors. As a result, more reliable national-level NML estimates were used to smooth state estimates. The smoothed state NML-estimated fraction was computed by taking a weighted average of the actual state estimate and a prediction for the state based on national- and state-level numbers (i.e., the number of NML farms in the state, the fraction of farms with black owners on the state's CML, and the national relative difference between the fraction of black owners on the NML and CML). The weighting factor was chosen to approximately minimize mean squared error under a random effects model. The smoothed NML-estimated fractions were multiplied by the corresponding smoothed NML farm-count estimates described above and added to corresponding CML estimates to obtain coverage-adjusted state-level totals, that served as calibration targets.

Tolerance Ranges

Although full calibration would assure that the weighted total among census respondents equaled its target for each calibration variable in either set, it was not always possible to calibrate to such a large number of target values while keeping all farm weights within a reasonable range (for example, the weight for any farm cannot be less than one). Because of this and because calibration targets are estimates themselves subject to uncertainty, NASS allowed some tolerance in the determination of coverage-adjusted weights. Rather than forcing the total for each calibration variable computed using the coverage-adjusted weights to equal a specific amount, NASS allowed the estimated total to fall within a tolerance range. This tolerance strategy sometimes made it possible for the calibration algorithm to produce a set of satisfactory coverage-adjusted weights that it would not have otherwise.

Ranges for the first set of calibration variables used to adjust for undercoverage were determined differently from the second set used to adjust for measurement error. The number of farms had no tolerance range. The tolerance range for every other variable in the first set was the estimated state total for the variable (CML + NML) plus or minus one-half of one estimated standard error. This choice limited the cumulative deviation from the estimated total for a variable when state-level totals were combined to create a U.S.-level total. These ranges did not have to be symmetric around the target value.

Calibration Algorithm

Coverage adjusted weights were obtained by an algorithm based on the restricted regression algorithm referred to by Singh and Mohl (1996) as the Linear Truncated Method. Coverage adjustments began with the nonresponse weights before integerization. The final coverage-adjusted weights were restricted to the interval [1,6].

The calibration variables were based on the following reported items:

1. Total market value of agricultural products sold and government payments.

$0	$5,000 - $24,999
$1 - $999	$25,000 - $99,999
$1,000 - $2,499	$100,000 - $499,999
$2,500 - $4,999	$500,000 and above

2. Age of principal operator.

   Less than 25 years old
   25 - 34
   35 - 44
   45 - 54
   55 and older

3. Sex of principal operator.

   Female

4. Race of principal operator (selected categories).

   Black, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander

5. Principal operators of Spanish, Hispanic, or Latino origin.

6. Number of farms and land in farms.

7. Number of extreme operations (very large or unusual farms).

8. Selected types of farms by commodity produced.

   All cattle farms
   Dairy farms
   Hog/pig farms
   Horse/Equine farms
   Poultry farms
   Sheep/goat farms

   Fruit/nut/berry farms
   Nursery/horticulture farms
   Tobacco farms
   Vegetable and melon farms

9. Various commodity acreage and production statistics (varies by state).

   Beef cow inventory
   Broiler production
   Cattle on feed inventory
   Layer inventory
   Milk cow inventory
   Total cattle and calves inventory
   Total hog and pig inventory

   Alfalfa acres harvested (South Dakota only)
   Apples acres harvested
   Corn acres harvested
   Cotton bales produced
   Grape acres harvested
   Hay acres harvested
   Lettuce acres harvested
   Potato acres harvested
   Rice acres harvested
   Soybean acres harvested
   Sugarbeet acres harvested
   Sugarcane acres harvested
   Tobacco acres harvested
   Tomatoes acres harvested
   Total orange acres
   Wheat acres harvested
   Durum wheat acres harvested (North Dakota only)

Other spring wheat acres harvested (North Dakota only)

Integerization and Sample Weights

Coverage-adjusted weights were integerized to eliminate the need for rounding estimated counts computed with coverage-adjusted weights. The integerization process minimized county-level impact on the nonresponse and coverage adjustment of number of farms and total land in farms.

Sample weights were computed by multiplying coverage-adjusted weights before integerization with the appropriate sampling factors and adjusting the results to add up to matched census counts as described previously. Sample weights were then integerized.

Measuring the Amount of Coverage Adjustment

Tables A and C display the proportions of selected census data items that are due to nonresponse and coverage adjustments. The section of this appendix on whole farm nonresponse adjustment explained how the nonresponse adjustment values were determined. The coverage adjustment values account for the rest of the differences between the weighted and unweighted totals for these data items. Some estimated coverage adjustments are negative. The use of commodity targets in calibration indirectly exposed some duplication on the census list resulting in negative coverage adjustments.

CLASSIFICATION ERROR STUDY

The 2002 Classification Error Study (CES) was conducted for the conterminous U.S. to study the potential impact of classification error on the census results. The study used data from the 2002 June Agricultural Survey (JAS) and the 2002 Agricultural Coverage Evaluation Survey to examine farms incorrectly classified as nonfarms (undercount), nonfarms incorrectly classified as farms (overcount), and duplication of farms (overcount) in the 2002 Census of Agriculture. The CES was not intended to adjust census farm counts, but rather, to evaluate procedures and to identify potential improvements in list building, data collection, and other activities in preparation for future censuses.

For the evaluation, additional name, address, and telephone information were collected on both the JAS and ACES by adding the following three questions:

1. During the past two years, has the operator received mail for this operation at any address other than the one shown on the face page?

2. Excluding partners and landlords, were any other names associated with this operation in the past two years? (For example, other business names, spouses names, etc).

3. Is any of the land inside the blue tract boundary rented from others? (Include land for which you paid cash rent, land used rent free, or land rented on shares).

The CES consisted of a two phase review process. The initial phase, Review of Possible Matches, used Probabilistic Record Linkage (PRL) to match the additional information collected on the area surveys to the name and addresses on the 2002 Census Mail List (CML) including late adds. PRL is a technique used to identify records that are believed to correspond to a CML record. Records were brought together into link groups, with each link group consisting of all records that possibly represented the same operation. Each link group was classified into one of three distinct types: matches, possible matches and nonmatches. The nonmatches were represented in estimation as part of the undercoverage measure. The CES was primarily concerned with the matches and possible matches. Each field office reviewed the possible matches and determined match or nonmatch status.

Upon completion of the PRL review, the field offices conducted a Farm Classification Resolution review of two additional sets of records. The first of these was comprised of area records matching two or more census records. Reviewing these records helped identify duplication on the CML. The second set consisted of groups of records (area and census) within which the reported acreage differed by more than 25 percent. Analysts reviewed the cases in the second phase. Upon completion of both phases, data were compiled to estimate undercount, overcount and duplication.

The analysis of these data will provide insight into census processes used to accurately determine farm status and identify duplication. Any weaknesses identified in the findings will be addressed for future censuses.

Table A. **Summary of State Nonresponse and Coverage Adjustments: 2002**

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Percent from nonresponse adjustment, corrected	Percent from coverage adjustment, corrected
Farms ..... number	44,081	10.7	27.2
Land in farms ..... acres	10,414,877	5.4	9.1
Farms by size:			
1 to 9 ..... farms	10,267	10.9	36.9
acres	45,809	10.8	37.0
10 to 49 ..... farms	18,360	10.1	32.4
acres	412,934	10.4	30.2
50 to 179 ..... farms	8,776	11.6	17.5
acres	836,606	11.7	16.8
180 to 499 ..... farms	3,684	13.6	9.9
acres	1,077,306	13.6	9.8
500 to 999 ..... farms	1,330	12.9	8.8
acres	915,050	13.0	9.1
1,000 to 1,999 ..... farms	822	7.5	19.7
acres	1,099,567	7.4	18.8
2,000 or more ..... farms	842	1.8	11.3
acres	6,027,605	1.2	4.5
Market value of agricultural products sold $1,000	6,242,272	3.3	2.1
Farms by value of sales:			
Less than $1,000 ..... farms	12,027	8.8	48.4
$1,000	1,564	10.4	39.6
$1,000 to $2,499 ..... farms	7,087	9.0	47.7
$1,000	11,404	9.2	47.2
$2,500 to $4,999 ..... farms	4,544	12.9	23.7
$1,000	16,093	13.1	23.1
$5,000 to $9,999 ..... farms	4,285	14.3	12.1
$1,000	30,120	14.3	11.8
$10,000 to $19,999 ..... farms	3,910	13.0	12.3
$1,000	55,050	12.9	12.2
$20,000 to $24,999 ..... farms	1,330	13.8	8.3
1,000	29,469	13.7	8.3
$25,000 to $39,999 ..... farms	2,227	14.1	9.2
$1,000	70,153	14.1	9.4
$40,000 to $49,999 ..... farms	1,078	13.4	10.9
$1,000	47,857	13.3	11.0
$50,000 to $99,999 ..... farms	2,486	10.9	11.1
$1,000	175,907	10.7	11.7
$100,000 to $249,999 ..... farms	2,092	11.3	-0.5
$1,000	328,219	11.2	-0.7
$250,000 to $499,999 ..... farms	1,147	9.6	1.9
$1,000	395,446	9.4	1.4
$500,000 to $999,999 ..... farms	761	5.9	-3.2
$1,000	529,001	5.6	-3.0
$1,000,000 or more ..... farms	1,107	2.4	2.5
$1,000	4,551,989	1.1	2.0
Farms by type of organization:			
Family or individual ..... farms	37,119	11.0	29.6
acres	5,163,088	8.2	14.0
Partnership ..... farms	2,429	9.9	17.1
acres	1,355,278	4.3	4.5
Corporation:			
Family held ..... farms	3,509	9.4	12.9
acres	2,652,286	2.6	5.4
Other than family held ..... farms	567	7.8	13.8
acres	1,018,953	0.5	1.1
Other - cooperative, estate or trust, institutional, etc ..... farms	457	6.3	12.5
acres	225,272	2.0	5.4
Tenure:			
Full owners ..... farms	36,593	10.5	28.5
acres	6,612,521	5.2	10.3
Tenure - Con.			
Part owners ..... farms	5,510	12.7	19.1
acres	3,181,840	5.8	6.4
Tenants ..... farms	1,978	10.7	26.6
acres	620,516	5.5	10.5
Principal operator characteristics by-			
Sex of operator:			
Male ..... farms	35,965	10.6	26.5
acres	9,598,440	5.2	8.5
Female ..... farms	8,116	11.2	30.5
acres	816,437	8.2	16.2
Primary occupation:			
Farming ..... farms	22,998	10.4	24.5
Other ..... farms	21,083	11.1	30.3
Spanish, Hispanic, or Latino origin (see text) ..... farms	2,588	8.0	55.6
acres	(D)	(D)	(D)
Race:			
White ..... farms	42,063	10.7	26.6
acres	10,246,507	5.3	8.9
Black or African American ..... farms	1,068	11.5	45.0
acres	77,313	14.4	30.8
American Indian or Alaska Native ..... farms	317	10.1	42.0
acres	59,320	2.8	15.7
Native Hawaiian or Other Pacific Islander ..... farms	15	20.0	40.0
acres	433	17.8	15.9
Asian ..... farms	466	12.9	32.8
acres	20,502	11.4	14.8
More than one race reported ..... farms	152	7.2	32.9
acres	10,802	5.0	34.5
Reporting primary occupation as farming by age group:			
Under 25 years ..... farms	116	5.2	66.4
25 to 34 years ..... farms	956	9.0	46.9
35 to 44 years ..... farms	3,242	10.0	34.6
45 to 54 years ..... farms	4,958	9.9	25.8
55 to 64 years ..... farms	5,584	10.9	21.8
65 years and over ..... farms	8,142	10.9	18.2
Reporting primary occupation as other than farming by age group:			
Under 25 years ..... farms	87	6.9	63.2
25 to 34 years ..... farms	704	12.4	47.2
35 to 44 years ..... farms	3,757	10.3	43.6
45 to 54 years ..... farms	5,690	11.1	31.8
55 to 64 years ..... farms	5,547	11.4	27.1
65 years and over ..... farms	5,298	11.2	19.7
All operators by age group [1]:			
Under 25 years ..... farms	850	11.0	39.8
25 to 34 years ..... farms	3,382	10.9	38.0
35 to 44 years ..... farms	11,557	10.6	36.1
45 to 54 years ..... farms	16,224	10.6	29.0
55 to 64 years ..... farms	15,169	11.3	24.9
65 to 74 years ..... farms	9,741	11.4	20.1
75 years and over ..... farms	6,062	10.5	17.7

[1] Data were collected for a maximum of three operators per farm.

Table B. **Reliability Estimates of State Totals: 2002**

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Root mean squared error (RMSE)	Relative RMSE (percent)	Nonresponse and sampling contribution to MSE (percent)	Coverage adjustment contribution to MSE (percent)
Farms ..... number	44,081	1,479	3.4	0.1	99.9
Land in farms ..... acres	10,414,877	205,709	2.0	1.7	98.3
Farms by size:					
1 to 9 ..... farms	10,267	387	3.8	1.7	98.3
acres	45,809	1,764	3.9	2.4	97.6
10 to 49 ..... farms	18,360	680	3.7	0.8	99.2
acres	412,934	15,474	3.7	1.0	99.0
50 to 179 ..... farms	8,776	335	3.8	1.7	98.3
acres	836,606	32,082	3.8	2.0	98.0
180 to 499 ..... farms	3,684	147	4.0	3.8	96.2
acres	1,077,306	43,455	4.0	4.1	95.9
500 to 999 ..... farms	1,330	65	4.9	7.2	92.8
acres	915,050	45,195	4.9	7.4	92.6
1,000 to 1,999 ..... farms	822	42	5.1	10.7	89.3
acres	1,099,567	54,727	5.0	10.7	89.3
2,000 or more ..... farms	842	25	2.9	4.7	95.3
acres	6,027,605	79,745	1.3	4.4	95.6
Market value of agricultural products sold $1,000	6,242,272	144,498	2.3	1.0	99.0
Farms by value of sales:					
Less than $1,000 ..... farms	12,027	660	5.5	0.2	99.8
$1,000	1,564	142	9.1	0.8	99.2
$1,000 to $2,499 ..... farms	7,087	452	6.4	0.3	99.7
$1,000	11,404	732	6.4	0.4	99.6
$2,500 to $4,999 ..... farms	4,544	277	6.1	0.7	99.3
$1,000	16,093	978	6.1	0.8	99.2
$5,000 to $9,999 ..... farms	4,285	204	4.8	2.2	97.8
$1,000	30,120	1,420	4.7	2.4	97.6
$10,000 to $19,999 ..... farms	3,910	175	4.5	2.7	97.3
$1,000	55,050	2,495	4.5	2.7	97.3
$20,000 to $24,999 ..... farms	1,330	69	5.2	6.1	93.9
1,000	29,469	1,537	5.2	6.0	94.0
$25,000 to $39,999 ..... farms	2,227	107	4.8	4.2	95.8
$1,000	70,153	3,382	4.8	4.4	95.6
$40,000 to $49,999 ..... farms	1,078	57	5.3	6.9	93.1
$1,000	47,857	2,537	5.3	6.9	93.1
$50,000 to $99,999 ..... farms	2,486	115	4.6	3.5	96.5
$1,000	175,907	8,169	4.6	3.7	96.3
$100,000 to $249,999 ..... farms	2,092	103	4.9	2.4	97.6
$1,000	328,219	16,214	4.9	2.5	97.5
$250,000 to $499,999 ..... farms	1,147	58	5.1	4.3	95.7
$1,000	395,446	19,769	5.0	4.0	96.0
$500,000 to $999,999 ..... farms	761	44	5.8	2.3	97.7
$1,000	529,001	30,274	5.7	2.2	97.8
$1,000,000 or more ..... farms	1,107	45	4.0	1.4	98.6
$1,000	4,551,989	89,942	2.0	2.3	97.7
Farms by type of organization:					
Family or individual ..... farms	37,119	1,259	3.4	0.2	99.8
acres	5,163,088	155,592	3.0	2.5	97.5
Partnership ..... farms	2,429	101	4.2	5.7	94.3
acres	1,355,278	32,691	2.4	7.3	92.7
Corporation:					
Family held ..... farms	3,509	140	4.0	3.6	96.4
acres	2,652,286	47,355	1.8	3.7	96.3
Other than family held ..... farms	567	34	6.0	10.5	89.5
acres	1,018,953	10,017	1.0	11.3	88.7
Other - cooperative, estate or trust, institutional, etc ..... farms	457	26	5.7	12.3	87.7
acres	225,272	10,453	4.6	7.8	92.2
Tenure:					
Full owners ..... farms	36,593	1,250	3.4	0.2	99.8
acres	6,612,521	134,357	2.0	2.3	97.7
Part owners ..... farms	5,510	212	3.9	3.1	96.9
acres	3,181,840	76,564	2.4	5.4	94.6
Tenants ..... farms	1,978	99	5.0	6.5	93.5
acres	620,516	29,626	4.8	8.9	91.1
Principal operator characteristics by-					
Sex of operator:					
Male ..... farms	35,965	1,275	3.5	0.1	99.9
acres	9,598,440	186,005	1.9	1.9	98.1
Female ..... farms	8,116	485	6.0	0.3	99.7
acres	816,437	48,615	6.0	3.2	96.8
Primary occupation:					
Farming ..... farms	22,998	775	3.4	0.6	99.4
Other ..... farms	21,083	742	3.5	0.7	99.3
Spanish, Hispanic, or Latino origin (see text) ..... farms	2,588	337	13.0	0.2	99.8
acres	(D)	(D)	(D)	(D)	(D)
Race:					
White ..... farms	42,063	1,431	3.4	0.1	99.9
acres	10,246,507	202,174	2.0	1.7	98.3
Black or African American ..... farms	1,068	188	17.6	0.3	99.7
acres	77,313	15,440	20.0	6.3	93.7
American Indian or Alaska Native ..... farms	317	49	15.5	3.8	96.2
acres	59,320	5,265	8.9	13.8	86.2
Native Hawaiian or Other Pacific Islander ..... farms	15	7	46.3	21.7	78.3
acres	433	261	60.3	14.9	85.1

See footnote(s) at end of table.

--continued

Table B. **Reliability Estimates of State Totals: 2002** - Con.

[For meaning of abbreviations and symbols, see introductory text]

Item		Total	Root mean squared error (RMSE)	Relative RMSE (percent)	Nonresponse and sampling contribution to MSE (percent)	Coverage adjustment contribution to MSE (percent)
Principal operator characteristics by- Con.						
Race - Con.						
Asian	farms	466	87	18.7	1.4	98.6
	acres	20,502	5,046	24.6	7.5	92.5
More than one race reported	farms	152	31	20.5	4.1	95.9
	acres	10,802	4,626	42.8	13.8	86.2
Reporting primary occupation as farming by age group:						
Under 25 years	farms	116	51	43.6	1.5	98.5
25 to 34 years	farms	956	161	16.8	0.9	99.1
35 to 44 years	farms	3,242	270	8.3	1.0	99.0
45 to 54 years	farms	4,958	286	5.8	1.2	98.8
55 to 64 years	farms	5,584	246	4.4	2.2	97.8
65 years and over	farms	8,142	357	4.4	1.3	98.7
Reporting primary occupation as other than farming by age group:						
Under 25 years	farms	87	44	50.6	1.9	98.1
25 to 34 years	farms	704	122	17.3	1.4	98.6
35 to 44 years	farms	3,757	306	8.1	0.9	99.1
45 to 54 years	farms	5,690	340	6.0	1.0	99.0
55 to 64 years	farms	5,547	253	4.6	2.2	97.8
65 years and over	farms	5,298	253	4.8	1.9	98.1
All operators by age group [1]:						
Under 25 years	farms	850	111	13.1	2.0	98.0
25 to 34 years	farms	3,382	345	10.2	0.7	99.3
35 to 44 years	farms	11,557	719	6.2	0.4	99.6
45 to 54 years	farms	16,224	791	4.9	0.5	99.5
55 to 64 years	farms	15,169	624	4.1	1.0	99.0
65 to 74 years	farms	9,741	418	4.3	1.4	98.6
75 years and over	farms	6,062	276	4.6	1.9	98.1
Net cash farm income of operations (see text) [2]:						
Farms with gains of [3] -						
Less than $1,000	farms	2,370	230	9.7	50.4	49.6
	$1,000	1,001	106	10.6	51.9	48.1
$1,000 to $4,999	farms	4,207	294	7.0	39.1	60.9
	$1,000	10,999	791	7.2	38.9	61.1
$5,000 to $9,999	farms	2,639	210	8.0	41.1	58.9
	$1,000	19,498	1,602	8.2	41.9	58.1
$10,000 to $24,999	farms	3,212	231	7.2	34.9	65.1
	$1,000	52,189	3,809	7.3	36.4	63.6
$25,000 to $49,999	farms	2,023	165	8.1	42.1	57.9
	$1,000	71,994	5,990	8.3	42.9	57.1
$50,000 or more	farms	3,666	186	5.1	25.6	74.4
	$1,000	1,987,651	59,150	3.0	30.2	69.8
Farms with losses of -						
Less than $1,000	farms	3,253	297	9.1	49.9	50.1
	$1,000	1,709	187	10.9	51.4	48.6
$1,000 to $4,999	farms	10,410	569	5.5	31.8	68.2
	$1,000	27,928	1,640	5.9	36.2	63.8
$5,000 to $9,999	farms	5,138	398	7.7	45.6	54.4
	$1,000	36,895	2,906	7.9	45.7	54.3
$10,000 to $24,999	farms	4,121	350	8.5	48.2	51.8
	$1,000	66,247	6,020	9.1	50.5	49.5
$25,000 to $49,999	farms	1,516	204	13.5	55.6	44.4
	$1,000	52,581	7,066	13.4	55.3	44.7
$50,000 or more	farms	1,526	160	10.5	55.7	44.3
	$1,000	305,740	20,585	6.7	68.9	31.1

[1] Data were collected for a maximum of three operators per farm.
[2] Data are based on a sample of farms.
[3] Farms with zero net cash income are included as farms with gains of less than $1,000.

Table C. **Summary of Nonresponse and Coverage Adjustments by County: 2002**

[For meaning of abbreviations and symbols, see introductory text]

Geographic area	All farms			Land in farms			Sales		
	Total (number)	Nonresponse adjustment, attributed (percent)	Coverage adjustment (percent)	Total (acres)	Nonresponse adjustment, attributed (percent)	Coverage adjustment (percent)	Total ($1,000)	Nonresponse adjustment, attributed (percent)	Coverage adjustment (percent)
STATE TOTAL									
Florida	44,081	8.9	29.1	10,414,877	4.6	9.9	6,242,272	3.0	2.4
COUNTIES									
Alachua	1,493	7.8	34.1	222,728	8.5	12.7	58,665	4.2	12.7
Baker	204	7.8	29.4	18,061	7.3	19.5	25,425	0.5	2.8
Bay	116	6.0	41.4	10,863	5.2	7.1	2,157	3.2	2.7
Bradford	378	10.3	26.7	44,819	8.8	18.1	17,913	7.0	-0.2
Brevard	555	7.7	26.5	187,570	1.3	11.8	42,159	2.5	1.1
Broward	494	14.6	32.4	23,741	9.8	29.3	49,625	8.4	-0.6
Calhoun	151	6.6	23.2	49,107	3.5	17.9	14,390	1.2	9.8
Charlotte	284	7.4	32.0	191,529	1.2	10.6	48,302	0.7	2.0
Citrus	432	7.4	39.1	47,209	8.1	8.6	6,606	8.4	1.9
Clay	340	7.9	41.8	78,542	2.4	8.0	37,052	0.5	43.6
Collier	273	7.0	28.6	180,852	2.4	12.4	267,636	0.4	4.2
Columbia	688	12.1	26.3	90,227	14.9	9.5	46,767	4.1	-1.4
Dade	2,244	11.4	32.8	90,373	6.2	17.5	578,000	3.9	0.8
DeSoto	1,153	6.8	26.4	388,177	2.9	16.6	180,096	1.1	12.3
Dixie	215	12.6	30.7	31,249	14.0	20.1	6,542	8.9	-0.2
Duval	382	7.3	34.3	31,241	7.9	13.8	22,452	6.3	-2.5
Escambia	674	5.3	28.2	64,581	5.2	15.7	15,676	5.6	11.5
Flagler	100	13.0	27.0	68,364	4.1	3.2	23,789	4.1	-2.9
Franklin	20	10.0	55.0	(D)	(D)	(D)	385	8.9	50.8
Gadsden	343	10.8	21.9	68,140	9.8	5.1	91,377	0.4	0.2
Gilchrist	408	12.0	22.3	81,489	14.4	0.5	44,558	2.4	0.3
Glades	231	9.1	35.5	407,950	0.8	11.5	72,064	2.0	23.7
Gulf	30	13.3	23.3	4,521	6.9	31.6	489	0.2	16.4
Hamilton	239	17.2	14.2	52,027	25.3	-12.1	12,169	18.4	-12.2
Hardee	1,142	8.7	21.7	346,191	4.4	19.1	166,203	4.2	4.8
Hendry	456	8.8	29.6	552,352	1.2	9.7	375,812	0.8	2.8
Hernando	617	7.3	34.7	65,315	6.4	14.6	21,708	2.7	3.4
Highlands	1,035	5.6	31.5	576,900	1.2	13.3	236,005	0.5	2.8
Hillsborough	2,969	9.5	30.0	284,910	5.2	9.0	392,432	3.4	1.2
Holmes	672	7.4	16.8	90,875	9.3	3.7	30,223	7.2	-1.8
Indian River	480	3.1	23.3	191,333	0.8	6.9	116,913	0.9	0.8
Jackson	920	11.4	11.4	226,890	12.2	0.2	36,470	8.3	-0.2
Jefferson	418	13.6	26.6	132,727	8.2	6.3	21,154	14.1	-10.8
Lafayette	195	12.3	18.5	91,988	5.8	9.7	48,116	5.8	-3.8
Lake	1,798	8.9	27.7	180,245	8.4	6.8	178,076	6.7	-2.1
Lee	643	9.2	35.0	126,484	4.5	27.3	113,406	6.3	15.3
Leon	281	11.7	36.3	74,004	4.5	7.3	6,659	10.6	-1.1
Levy	897	9.9	30.7	180,314	9.2	3.7	83,226	4.9	-1.2
Liberty	67	16.4	25.4	9,900	15.5	3.3	1,497	16.2	30.3
Madison	529	8.9	23.1	156,995	7.4	8.1	24,645	7.8	-3.6
Manatee	852	6.6	31.0	301,231	3.2	15.6	268,480	1.0	3.8
Marion	2,930	7.4	44.3	270,562	6.2	20.0	87,530	5.1	2.5
Martin	418	6.2	33.7	206,198	2.0	17.0	127,655	1.6	4.0
Monroe	18	16.7	11.1	102	6.9	3.9	2,533	7.9	1.1
Nassau	315	6.0	36.2	(D)	(D)	(D)	27,497	3.3	1.1
Okaloosa	465	10.3	25.2	55,119	11.4	6.3	6,540	3.8	2.5
Okeechobee	638	11.0	36.7	392,495	3.7	19.5	144,376	1.9	2.8
Orange	901	9.1	21.8	146,637	2.7	4.3	242,688	1.4	-0.6
Osceola	519	6.9	28.3	652,673	1.0	1.4	64,941	2.2	0.7
Palm Beach	1,110	7.3	36.8	535,965	0.4	5.9	759,867	1.5	2.0
Pasco	1,222	8.5	32.3	168,716	5.8	3.8	84,200	4.8	-2.8
Pinellas	111	9.9	24.3	1,589	5.1	28.1	7,960	3.5	0.5
Polk	3,114	7.6	19.7	626,634	4.1	6.0	284,787	1.8	1.6
Putnam	466	9.9	28.1	92,619	10.2	3.3	46,670	4.6	-1.6
St. Johns	204	7.8	37.3	37,653	3.9	5.2	59,681	1.0	3.1
St. Lucie	477	7.5	22.0	221,537	1.6	6.7	127,907	4.1	-0.8
Santa Rosa	505	12.3	22.4	83,790	13.9	10.2	20,997	17.2	3.0
Sarasota	371	9.4	39.6	121,310	2.0	19.5	17,801	4.7	6.2
Seminole	376	10.4	32.7	27,987	4.3	6.8	19,211	5.8	-1.4
Sumter	902	11.3	27.8	187,373	9.6	2.6	30,644	15.7	-7.9
Suwannee	1,054	9.2	24.1	170,149	7.9	9.9	135,960	3.8	0.3
Taylor	101	12.9	13.9	53,720	6.6	-2.6	13,354	6.2	-4.7
Union	275	11.3	28.4	59,635	8.6	14.4	10,711	3.1	24.6
Volusia	1,114	8.6	29.3	93,842	11.7	2.7	106,297	8.0	-5.8
Wakulla	126	7.9	42.9	10,900	11.7	17.5	1,584	7.2	17.0
Walton	540	8.3	22.6	79,910	9.5	2.7	20,055	15.8	-5.7
Washington	391	10.7	18.7	53,251	12.4	7.8	5,506	15.6	-9.5