ASSOCIATING A REPORTING UNIT WITH A LIST FRAME SAMPLING UNIT IN MULTIPLE FRAME SAMPLING - OHIO AND WISCONSIN

Sample Survey Research Branch
Research Division
Statistical Reporting Service
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The appendices B, C, and D are not included within the covers of this report due to the large volume of material. However, they are available upon request from the Sampling Studies Section, Sample Survey Research Branch, Research Division, Statistical Reporting Service, USDA.

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ACKNOWLEDGEMENTS

The strong support and enthusiasm of the enumerators and SSO personnel in Ohio and Wisconsin made this project a reality. A special thanks goes to each of them for their hard work and dedication for a job well done. A corresponding note of appreciation is extended to each one in the Sampling Studies Section.

ASSOCIATING A REPORTING UNIT WITH A LIST FRAME SAMPLING UNIT IN MULTIPLE FRAME SAMPLING

INTRODUCTION

Multiple frame sampling methodology involves the joint use of two or more sampling frames. In SRS, two frames are used -- a list frame and an area frame.

The sampling unit from the list frame is a name. This name may be that of an individual, a combination of individuals or a business. The reporting unit is all land operated under the name selected.

In contrast, the sampling unit from the area frame is a segment of land. Within the segment boundaries each unit of land under one operation is a reporting unit. The operation name for each unit of land is obtained as survey data are collected for the reporting unit.

The distinction between the sampling unit and the reporting unit for each frame is an intricate part of multiple frame sampling because it is necessary to determine the overlap between sampling frames. In order to compute a multiple frame estimate, we must know which reporting units (land operated) from the area frame could also have been obtained from the list frame. This match of reporting units is done by matching names.

If overlap between the two frames is to be performed accurately, we must accurately

1. define the land operated for each name selected from the list frame,
2. identify the name associated with each unit of land selected from the area frame, and
3. determine which names found in the area frame are also in the list frame.

This analysis is directed toward the first of these three conditions. We wish to determine how well the questions on the current Multiple Frame Hog Survey Questionnaire guide respondents in providing data for the correct reporting unit and at the same time evaluate a test questionnaire that uses a slightly different approach.

If the name of an individual is selected from the list and that individual has only individually operated land, then defining the land operated for the name selected usually is no problem. The individual usually understands the land for which he is to report.

If an individual operates some or all his land in partnership with others, his understanding of what land he is to report for may not be clear. The current partial nonoverlap procedure requires the respondent to report both land operated in partnership with others and land, if any, he operates as

an individual.[1/] Furthermore, he must identify which land is operated in partnership and which land is operated individually. Therefore, one sampling unit may be associated with two reporting units.

If a combination of individual names is the selected sample unit, the reporting unit is the land operated jointly by this combination of individuals. Any land operated individually by any one partner is excluded.

If a business or farm name is the selected sample unit, the reporting unit is the land operated under the business or farm name selected. Any land not directly associated with the name selected is excluded.

Once a reporting unit has been established, the respondent is asked to report all livestock on that land, regardless of who owns the livestock. These assumptions are spelled out in greater detail in the next section.

LIST FRAME ASSUMPTIONS

The current partial nonoverlap procedure requires the following list frame assumptions by type of name selected from the list:

Individual name selected

1. Each individual will report the number of acres he operates as an individual.

2. Each individual will report the number of acres he operates in partnership with others.

3. If an individual operates some or all of this acreage in partnership with others, he will report the names of the partners involved.

4. Each individual will report the number of livestock located on land he operates individually and the number located on land he operates in partnership with others, regardless of who owns the livestock.

5. If an individual reports a land partnership, all partners will report the same land and associated livestock if contacted through the list or area frame.

6. If a person no longer operates land, he will so report. If the person whose name was selected is deceased, someone (e.g., wife, new operator, postmaster, etc.) will report this information.

7. Each individual will make all necessary corrections to the spelling of his name on the questionnaire and make address corrections.

8. Each individual will report any other names e.g., farm name that his individually operated or jointly operated land is known by.

1/ See Section 8, Multiple Frame Livestock Surveys Supervising and Editing Manual.

Combination of individual names selected

1. The number of acres operated in partnership, by the individuals whose names have been selected in combination, will be reported.

2. Any land operated individually or in partnership with others by one of the individuals in the combination will not be included.

3. All livestock, regardless of ownership, located on land operated by this combination of individuals will be reported.

4. Livestock located on land operated individually or in partnership with others by one of the individuals in the combination will not be included.

5. If one or more of the individuals in this combination is no longer involved with the operation or if a new person is now involved, it will be so reported.

6. All necessary corrections in name spelling and all address changes will be reported.

7. If the land operated by this combination of individuals is known by another name (e.g., farm name), it will be reported.

Farm name selected

1. The number of acres operated under the farm name selected will be reported.

2. Any land operated by the one or more individuals connected with the farm name selected, but that is not operated under the farm name will not be included.

3. All livestock, regardless of ownership, located on land operated under the farm name selected will be reported.

4. Livestock located on land not operated under the farm name selected will not be reported.

5. All necessary corrections in the farm name spelling and all address changes will be reported.

6. If the land operated under the farm name selected is also known by another name, it will be reported.

Regardless of the type of name selected, it is assumed the name, address, and telephone number are adequate to insure the correct person is surveyed, either by mail, phone or personal interview. Furthermore, it is assumed that after all this information has been collected, it will be edited correctly, including the following:

1. Partnership data reported by an individual will be prorated correctly.

2. If no land is currently operated under the name selected, all reported livestock will be edited to zero.

3. If a major name change is reported, all reported livestock will be edited to zero.

4. All reported "other names" will be checked against the list for possible duplication.

Each time any one of these assumptions is violated, a nonsampling error has occurred. It is the purpose of this study to obtain an indication how severe these nonsampling errors are and how they might be reduced through questionnaire design.

SUMMARY

Background

This study was directed toward identifying problems in the application of current list frame survey concepts. The approach centered around the use of two well known tools: (1) a test questionnaire and (2) a follow-up or reinterview questionnaire. Specifically we wanted to know how well the questions on the current Multiple Frame Hog Survey Questionnaire guide respondents in providing data for the correct reporting unit.

Two independent samples were surveyed, one with the operational questionnaire and the second sample using a test questionnaire. This approach provided information about the effect of the questionnaire on survey results. To determine the severity of violations of list frame assumptions the "truth" must be known. In other words, one must know exactly what should have been reported for each list frame sample unit. By comparing "truth" with data actually reported, one can measure the nonsampling error attributable to errors in reporting. For reported data, the June 1976 Multiple Frame Hog Survey (MFHS) data were used in Ohio and Wisconsin. In an attempt to arrive at truth, subsamples of the original and test samples were reinterviewed.

The test and reinterview questionnaires were pretested during the March 1, 1976 MFHS. As a result, major changes were made prior to the June 1 MFHS. An attempt was made on the test questionnaire to give less emphasis to the acreage questions. The test version called the operation "THIS PLACE" and asked for the number of acres in "this place" without asking for acres owned, rented from others, managed for others and rented to or managed by others. Wording on the mail questionnaire guided the respondent to include and exclude certain types of acreage to arrive at the number of acres in "this place":

Land owned, rented or leased from others	minus	Land rented or leased to others	is	Number of acres 900 in "this place"

The first livestock question was a check question: "Are there now any hogs and pigs REGARDLESS OF OWNERSHIP on THIS PLACE?" This allowed the respondent to skip questions if he answered no. Other livestock questions were identical to the current operational version.

The operation description section was the most dramatic change between the two questionnaires. The operational version asks "Do you operate any agricultural land in a business arrangement with another person? Exclude landlord-tenant arrangements." A further question asks "Who are the persons in this business arrangement with you?" After giving the name, address, and telephone number, boxes are provided to check partner, corporate member, manager or other. The partnership or corporation name is also to be supplied if appropriate. The test version had three possible types of arrangements to check: (1) individual or family -- do not include partnership or corporation, (2) partnership or corporation -- include partnerships involving land and family partnerships, do not include partnerships involving only livestock or machinery of landlord-tenant-renter only arrangements (the partnership name and partner's names were also asked), and (3) other arrangements. Other test version questions about the business arrangements for land and hogs were comparable to the operational version [with the aid of a skip question]. The changes in the operation description were made to help the respondent categorize or describe his particular arrangement and to aid enumerators during the interview to determine if a partnership really did exist or not.

The two independent list samples were taken from the positive hog strata excluding the largest E.O. stratum. The sample in Ohio using the operational questionnaire had previously been surveyed in December 1975 and March 1976. In Wisconsin the operational sample was surveyed for the first time in June. The test and operational samples for Ohio were of similar size (622 and 624 respectively). For Wisconsin the test and operational samples where 800 and 1,059 respectively.

After the June 1 survey period, all list questionnaires were re-edited to be certain the edited data conformed to all survey definitions and concepts. The data from this second edit is called second look data. Thus any differences found between the second look data and reinterview data would correctly reflect the violations of list frame assumptions. Editing errors were thus prevented from being a confounding factor.

The subsamples for reinterview were drawn after the operational survey period. Target subsample sizes were 200 for Ohio and 250 for Wisconsin. Training of enumerators was accomplished in a four hour span and the interviews were completed during the two week period June 14-25.

Expanded Number of Hogs

The two questionnaire versions were designed to measure the same population characteristic (hog and pig inventory for June 1, 1976). The sample selection, office handling, enumerator telephoning and interviewing, time periods and editing were controlled to eliminate their effects on the sample results. A test was performed for a significant difference between the operatonal and test version expansions.

Operational Data vs. Test Data

State and Version	Population Size 1/	Sample Size	Useable Returns	Direct Expansion	Standard Error	C.V.
				(000)	(000)	(%)
Ohio						
Operational	6,114	624	512	681.9	42.4	6.2
Test	6,114	622	491	814.7	46.0	5.6
Wisconsin						
Operational	13,842	1,059	925	970.2	59.1	6.1
2/			(924)	(916.4)	(26.6)	(2.9)
Test	13,842	800	582	932.2	37.1	4.0

1/ Only the positive hog strata were used in this study for testing purposes.

2/ Operational version results with the removal of one outlier report from the smallest positive hog stratum.

In Ohio, the two independent samples produced significantly different results. The survey indication from the operational questionnaire was 681,900 head of hogs while the test version indicated 814,700 head. The Wisconsin direct expansions were not significantly different for the two samples. The operational indication was 970,200 head in Wisconsin while the test expanded to 932,200 head. Since only one state showed a significant difference between the questionnaire versions, one must ask if there were other factors different between the two states which might have influenced the outcome.

One factor was a difference in the incompleteness between the test and operational samples. Response rates were very close for the two questionnaire versions in Ohio but the completion rate for the test version in Wisconsin was only 70 percent compared to 90 percent for the operational questionnaire. Twenty-four percent of the test sample was inaccessible in Wisconsin which restricts the comparison of results between the two questionnaires (Tables 7 and 8, Appendix A). The incompleteness was particularly large in the smallest positive hog stratum (1-99 head) where 69 percent of those with positive control data are classified. In addition, one report in the operational sample for this stratum (1-99 hogs) contained over 2100 head which by itself increased the stratum total by 23 percent, the positive hog strata total by 6 percent and the State indication by 4 percent. It also increased the CV for the stratum from 7.3 percent to 19.3 percent. Removal of this report reduces the operational indication for Wisconsin below the test result. Though not significantly below the test, the relationship between the two independent samples is then consistent in both states, i.e. more hogs were indicated by the test questionnaire.

Another factor which may have contributed to the different results between these States was that respondents receiving the operational version in Ohio had been contacted twice previously while those receiving the test version in Ohio and both versions in Wisconsin were being contacted for the first time. Thus it may have been a "conditioning effect" or office procedure for those previously contacted which had a greater effect on the Ohio results than did questionnaire version. The possibility of a conditioning effect in repeated surveys should be investigated further.1/

Mail Response Rates

The number of mail returns were calculated as a percent of the corresponding stratum sample sizes. Hopefully the test version would improve the response rate. In Wisconsin, the response rate was better for the test questionniare with four out of five strata showing a higher mail response than the operational version (significant at the 20 percent level). However, in Ohio the opposite occurred with the mail response rate to the test questionnaire slightly below that of the operational version. Thus the test version could not be expected to improve mail response if used for all states.

Non-response Rates

The test version would hopefully produce fewer refusals. For Ohio the refusal rates appear to be somewhat less for the test questionnaire (significantly less at the 15 percent level). However, the number of refusals probably have accumulated during the previous two survey quarters for the operational version to the extent their number is on the "high side" when compared to the refusals from the first survey for the test version. In Wisconsin the number of refusals as a percent of the number of contacts was less for the operational questionnaire than the rate for the test version.

Reported Data vs Edited Data

The questionnaires were re-edited after the survey period to double check the survey data against a strict interpretation and application of the current survey concepts described in the Multiple Frame Survey Supervising and Editing Manual. The total number of editing changes necessary to make reported data conform to the survey concepts were from 4 to 6 percent of the usable responses. As expected, nearly all editing deletes hogs through proration or editing out reported data. The number of hogs removed accounted for 5 to 7 percent of the total. The sample data is summarized below by state for each questionnaire version and the two edits performed.

1/ Bailer, Barbara A. "The Effects of Rotation Group Bias on Estimates from Panel Surveys," Journal of the American Statistical Association, Volume 70 No. 349, March 1975, pp. 23-30.

SAMPLE DATA

State and Version	Rptd. Data	Expanded Number of Hogs with Comparisons: First Edit Data: No.	First Edit Data: Pct. of Rptd	Second Edit Data: No.	Second Edit Data: Pct. of Rptd.	Second Edit Data: Pct. of 1st Edit
	(000)	(000)	(%)	(000)	(%)	(%)
Ohio						
Operational	728	682	93.7	680	93.4	99.7
Test	861	815	94.7	806	93.6	98.9
Wisconsin						
Operational	1,010	970	96.0	963	95.3	99.3
Test	985	932	94.6	927	94.1	99.5

Each sample unit that required edit action was given a reason code to identify the reason for the edit. By far the largest portion of those units requiring an edit change were for individual names who reported partnership data. The second most prevalent reason was because the selected name was out of business.

Reinterview Data

A reinterview questionnaire with a personal interview was used, to determine the best available data which conforms to the survey concepts, for a subsample of both the operational and test samples. The difference between the best available data and the reported data was obtained. This calculated difference is the edited reinterview data minus the second look edited data. The expanded difference is negative (reinterview below second edit) for all four samples (two samples for each of the two states). By assuming the second look editing was correct according to our survey concepts and the reinterview data by personal interview was "truth", the initial survey results were biased upward. It may be assumed that information was lacking to edit out enough hogs from the reported data to conform with the survey concepts. The results for the reinterview subsample for each state and questionnaire version are shown below.

SUBSAMPLE DATA

State and Version	Sub-sample Size	Reinterview Data Minus Second Edit Data: Number of Differences: Total	Number of Differences: +	Number of Differences: -	Expd. Difference: Net	Expd. Difference: +	Expd. Difference: -	Expd. No. of Hogs: Rein-view	Expd. No. of Hogs: Second Edit	Reinterview vs Second Edit
					(000)	(000)	(000)	(000)	(000)	(%)
Ohio										
Operational	194	14	5	9	-32	4	-36	661	693	95.4
Test	198	24	9	15	-17	10	-27	770	787	97.8
Wisconsin										
Operational	285	27	13	14	-15	13	-28	809	824	98.2
Test	274	21	11	10	- 8	13	-21	923	931	99.1

The expanded reinterview data was 1.8 percent below the data obtained from the operational questionnaire in Wisconsin and 4.6 percent below the comparable operational data in Ohio. The expanded difference for the Wisconsin test questionnaire was down .9 percent and the Ohio test was down 2.2 percent. The operational survey results for selected strata in these two States therefore produced indications which were roughly 2 to 5 percent higher than they should have been. This compares with sampling error of about 6 percent for these strata. The expanded number of hogs in the strata selected for this study accounted for 41 percent of the June 1 MF expansion (including NOL) in Ohio and 72 percent in Wisconsin.

The net expanded difference for the test questionnaire version for both states is approximately one-half of the expanded difference for the operational version. This appears to give support that the test version obtained data closer to the "true data" than did the operational version. However there is other evidence that suggests one should not arrive at this conclusion too fast based only on the expanded data. For example, differences in the unexpanded data for the two states are not as pronounced as for the expanded data. Also the number of differences by questionnaire version should be considered. From 7 to 12 percent of those reinterviewed changed the data with information supplied during the second visit. The number of differences for the test version in Ohio is almost twice the number from the operational version. This is exactly opposite what we would expect based on the expanded data. This implies the test version resulted in smaller differences per questionnaire while the operational version resulted in fewer but larger differences. The number of differences for Wisconsin were about the same for the two versions. Based on the results obtained in these two states the test version does not reduce the number of differences enough to warrant presentation to the operational program.

There were many reasons for the differences. However two distinct sets of reasons were very apparent: 1) differences due to partnerships and 2) differences related to ownership of livestock. When the number of differences were totaled over both questionnaire versions and both States, sixty percent of the total differences were due to partnership arrangements. The operation had been classified as a partnership on the first contact then identified as individually operated on the reinterview or vice versa. The misclassification was distributed on nearly a 50-50 basis with half individual changing to partnership and half partnership changing to an individual operation. Thirty out of 44 partnership differences were due to father-son operations. These figures alone show that improvements must be made in survey concepts, questionnaire wording and/or enumerator training to obtain better information about father-son arrangements. In most of these cases the father-son partnerships were not small operations involving 4-H or FFA hogs.

Non-partnership differences accounted for 40 percent of the total differences. Of these, 21 percent failed to report hogs owned by someone else on his acres operated. Also 21 percent of these differences were additional hogs owned but not originally reported. The reasons for failing to report these hogs could not be determined. Fifteen percent of the differences were due to reporting hogs on land rented out. The remaining differences are identified in Appendix A.

RECOMMENDATIONS

1. Certain aspects of the test questionnaire warrant further consideration:

   a) The operation description section of the test version concerning partnerships was useful to the respondent as well as interviewer. Even though the number of differences were not less for both states it is recommended that further consideration be given to the test operation description section as an alternative to the current operation description layout. The two different approaches may be seen in Illustrations 1 and 2 on pages 14 and 15.

   b) The land questions on the test version and the use of the term "This Place" do not appear to be more beneficial in determining the correct number of acres operated. This section of the test version is not recommended for further use.

2. More attention must be given in the following areas concerning partnership arrangements:

   a) The conditions which determine a partnership need to be clarified and solidified to be workable within the survey concepts. Father-son arrangements should be emphasized to greater extent. This type of arrangement is presenting more problems than previously suspected.

   b) Enumerators must be better equipped to make the judgement on operations that are borderline partnerships as lengthy questionnaires covering all possible situations is not an alternative.

3. Perhaps the mail questionnaire needs some check questions regarding partnerhip arrangements which could generate a re-contact.

4. There is some evidence the land questions are not being used by the respondent to report the number of hogs on the land reported as operated. The data suggest ownership of the hogs as a major key to the reporting unit for those operations with non-partnership differences. The effect of reporting on an ownership basis should be studied in the near future.

THE STUDY

To determine the severity of violations of list frame assumptions, one must have knowledge of "truth". In other words, one must know exactly what should have been reported for each list frame sample unit. By comparing "truth" with data actually reported, one can measure the nonsampling error attributable to errors in reporting.

For reported data, June 1976 Multiple Frame Hog Survey (MFHS) data were used for two states, Ohio and Wisconsin. In an attempt to arrive at truth, a subsample of the original sample was reinterviewed. These two steps, obtaining survey data and conducting reinterviews, were performed using two independent samples. One sample was surveyed using the operational MFHS questionnaire

and the second sample was surveyed using a test questionnaire. This approach provides information relating to the magnitude of nonsampling errors associated with the current questionnaire and how these errors would be affected using a different questionnaire.

The objective in designing a test questionnaire was to make it more easily understood by the respondent. If the respondent understands a questionnaire better, he probably will provide more accurate information. The extent to which the test questionnaire met this objective is to be determined by analyzing survey results.

Previous experience indicated the questions referring specifically to hogs and pigs have been understood reasonably well by most farmers. Therefore, in designing the test questionnaire major emphasis was given to instructions provided to the farmer that define his reporting unit and to questions that ask about land partnership.

Details of the procedures followed for this study are presented in three sections: Questionnaire Pretest Procedures, Survey Procedures and Reinterview Procedures.

QUESTIONNAIRE PRETEST PROCEDURE

A MFHS test questionnaire (see Appendix C) was mailed to 100 Ohio hog farmers during the March 1, 1976 MFHS. This sample was drawn from the following strata:

Ohio MFHS List Stratum	Hog Control Data
4	1-49
5	50-99
6	100-199
7	200-499

Farmers in the "no livestock" and the extreme operator (E.O.) strata were excluded from the pretest since we wanted to evaluate the reaction of farmers who most likely had hogs, and to minimize the increase in response burden for the E.O.'s. The sample was distributed among these four strata in proportion to the operational sample. The test sample was further restricted to farmers who resided in the west central crop reporting district to reduce the cost and time for reinterview. Of the 100 questionnaires mailed out, 38 were returned to the Ohio office, and 25 of these were reports of 1 or more hogs on hand.

Following the March survey, four members of the Sampling Studies Section (SSS) reinterviewed 22 of the 25 farmers reporting 1 or more hogs using a test reinterview questionnaire (see Appendix C). Also, 13 E.O.'s who received the operational MFHS questionnaire for the March survey were reinterviewed. This was done to provide experience in reinterviewing recipients of both a test questionnaire and the operational questionnaire. Two types of reinterview

questionnaire were used: one type for recipients of the test questionnaire and another for those who received the operational questionnaire. The two types differed only in their specific wording which corresponded with that used in the original questionnaire.

Based on this pretest, the following major changes were made prior to the June survey.

Test Questionnaire:

1. The first question "Is this place known by another name other than printed above" was given a question number to provide emphasis.

2. The question asking for acres in "THIS PLACE" seemed to work well for the mail questionnaire. However, it seemed too long to ask in one sentence by an enumerator. Therefore, on the enumerator version, the land question was split up into four questions.

3. The number of questions relating to partnership operations was increased. The pretest questionnaire did not provide enough information to carry out the present editing procedures. The final version of the operation description section for the test questionnaire is shown as Illustration 1. The current operation description section for list surveys is shown as Illustration 2.

Reinterview Questionnaire

1. It was decided that one set of questions directed toward obtaining the "true" data was better than possible confounding the situation with two sets of questions. Thus only one version of the reinterview questionnaire was used in June.

2. All questions referring to clarity and meaning of previous questions were dropped (e.g., question 2 in the pretest reinterview questionnaire). These questions did not provide much useful information. Instead, the reinterview questionnaire used in June contained more specific questions relating back to previously reported data.

3. Generally, more questions were added to handle different operating arrangements (i.e., individual, partnership, combination of individuals or farm).

The test, operational and reinterview questionnaires used in June are shown in Appendix C.

SURVEY PROCEDURES

Two independent list samples were surveyed for the June 1, 1976 MFHS in Ohio and Wisconsin. One sample, referred to as the operational sample, was surveyed using the operational questionnaire. This was a stratified sample, similar in size and allocation to that used for several years in each of the two states, and included several "no livestock" or "control unknown" strata. In Ohio this same sample (except for the E.O.'s which are rotated each quarter) was surveyed in December, 1975 and March, 1976. In Wisconsin the operational sample was surveyed for the first time in June.

Illustration 1

Test Questionnaire - Operation Description

Additional information is needed about all agricultural land you operate (including "**THIS PLACE**") to assist in detecting duplication in reporting.

11. What best describes how **all** your **agricultural land** (including "**THIS PLACE**") is operated?

a. ☐ INDIVIDUAL or FAMILY
-- do not include partnership or corporation
→ *If this describes your entire operation, skip to question 16, page 4.* →

b. ☐ PARTNERSHIP or CORPORATION

Include	Do Not Include
-- partnerships involving land -- family partnerships	-- partnerships involving only livestock or machinery -- landlord–tenant or landlord–renter only arrangements

If you checked 11b, please complete the following:

Partnership or Corporation name *(if any)*: _____

Partner's or Corporate member's names: _____

c. ☐ OTHER -- *Please specify type* _____
Please enter the operation name and operator's name if not shown on page 1.

Operation Name _____

Operator's Name _____

If you checked b or c in question 11, please continue with question 12, otherwise continue with question 16.

12. How many acres are in the arrangement checked in question 11b or 11c? ..... **Acres** ☐

13. Are there any **hogs** and **pigs** on the question 12 acres?

☐ NO – *Skip to question 16.*

☐ YES – *Continue with question 14.*

14. How many **hogs** and **pigs** are on the question 12 acres? ..... **Number** ☐

15. How many of the question 14 **hogs** and **pigs** were included in the total for question 6? ..... **Number** ☐

Illustration 2

Operational Questionnaire - Operation Description

OPERATION DESCRIPTION OF LAND

Additional information is needed on your operation to assist in detecting possible duplication in reporting.

18. Do you operate any **agricultural land** in a business arrangement with **another** person? **Exclude landlord-tenant arrangements.** *(Check One)* ☐ YES – *Continue* ☐ NO – *Turn to page 4.*

19. Who are the persons in this business arrangement with you?

a. Name _____ Telephone No. _____
(Last) (First) (Middle)

b. Address _____
(Route or Street) (City) (State) (Zip)

c. Is he a: ☐ Partner ☐ Corporate member ☐ Manager ☐ Other _____

d. Partnership or Corporation Name _____

a. Name _____ Telephone No. _____
(Last) (First) (Middle)

b. Address _____
(Route or Street) (City) (State) (Zip)

c. Is he a: ☐ Partner ☐ Corporate member ☐ Manager ☐ Other _____

d. Partnership or Corporation Name _____

20. How many acres of **land** are in this business arrangement? ..... **Acres** ☐

a. How many of these acres **were** included in Item 6, page 1? ..... **Acres** ☐

21. How many hogs and pigs are now on the Item 20 acres? ..... **Number** ☐

a. How many of these hogs and pigs were included in Item 5, page 2? ..... **Number** ☐

(Please turn to page 4.)

A second list sample, referred to as the test sample was drawn for each state from the "positive hog" strata, excluding the largest E.O. stratum (see Table 1, Appendix B). As with the pretest, we were interested in the reaction of farmers who most likely had hogs, but we also wanted to minimize the response burden for the larger E.O.'s.

The sample sizes for comparable strata (strata from which both an operational sample and a test sample were drawn) in Ohio were 624 in the operational sample and 622 in the test sample. In Wisconsin there were 1,059 in the operational sample and 800 in the test sample. The test sample was scaled down, proportionately, in Wisconsin to keep the increased workload at a reasonable level.

All office handling procedures for the test questionnaire were the same, to the extent possible, as for the operational questionnaire. Both versions were mailed from the two state offices at the same time. In Ohio the E.O.'s were not sent a mail questionnaire. E.O.'s in both the operational and test samples were contacted initially by telephone. In Wisconsin virtually all farmers in both samples received a mail questionnaire. In both states a few known reluctant respondents in both samples were not mailed a questionnaire, but were contacted initially by phone or personal interview. There were a few known zeros in the operational sample in Ohio since the sample had been surveyed twice before.

Follow-up by telephone or personal interview of nonrespondents to the mail questionnaire was essentially the same for both samples. The increased workload caused some difficulty in finishing the nonresponse follow-up during the survey period, even though additional enumerators were used for this survey in both states. Only the operational sample was used for current estimating purposes. Therefore, when time became a constraint, the operational sample was given some preference. This problem did not seem serious enough to affect the results.

Each enumerator was provided with a set of instructions, in addition to the June Enumerative and Multiple Frame Surveys Interviewers Manual, as a guide for their followup work. These instructions are shown in Appendix D. Also, a member of the SSS attended each State training school to explain the project to the enumerators. The main point emphasized to the enumerators was that they were to ask each question exactly as worded otherwise any attempt to evaluate the questionnaires would be invalid.

Office editing of completed questionnaires was essentially the same for both the operational and test versions. Instructions used are shown in Appendix D. Each questionnaire was coded according to it's appropriate sampling unit-reporting unit category:

Sampling Unit	Reporting Unit
Individual name	Individual operation
Individual name	Partnership operation
Combinatin of individual names	-
Farm name	-

If a combination of individual names or a f m name was selected, land operated under that combination of individual names or farm name was all that should be reported.

A supplementary editing sheet (see Appendix D) was used to record reported and edited total hogs each time an edit was performed to meet selected survey definitions. The following is a description of the conditions under which the edit changes were recorded.

Editing for Duplication in the List

Each respondent is asked to report any "other" name the operation is known by. When an "other" name is reported, a check is made to see if it is on the list. If this other name is on the list, an edit action is required. If the other name is in a higher stratum than the sample unit, all data are edited to zero. If the other name is in the same stratum, the data are divided by the number of times the same unit could have been selected from that stratum. If the other name is a farm or operation name, and is on the list and the selected name was that of an individual or a combination of individuals, all data are set to zero.

Editing Partnership Data Reported by an Individual

When an individual name is selected from the list, the individual is asked to report hogs located on land he operates as an individual and hogs located on land he operates in partnership with others. He is also asked to report the farm or operation name, if there is any associated with the land operated in partnership with others. Finally, he is asked to report the names of all other partners involved.

If neither the partnership farm name nor the individual partners' names in combination are on the list, the partnership data are divided by the total number of individual partners. This result is then added to the data pertaining strictly to individually operated land.

If the partnership farm name or the individual partners' names in combination are on the list, all partnership data are edited to zero. Only that data pertaining to individually operated land is left in the questionnaire for summarization.

Editing Individual Data From Partnership or Farm Data

When a combination of individual names (a partnership) or a farm name is the selected sample unit, any hogs located on land not operated by the partnership or on land not operated under the farm name are to be edited from the questionnaire. For instance, one of two partners (the partners were selected from the list in combination) may also operate land as an individual. Any hogs located on this individually operated land are to be excluded.

Editing Reported Data to Zero Because Out of Business

Occasionally, the individual whose name has been selected or one of a combination of individuals that has been selected no longer operates land. Even so,

hogs will sometimes be reported by the new operator. Also, a farm may no longer be operated under the farm name selected, but hogs located on land operated under a new name may be reported. In either case the reported data are edited to zero for a June MFHS.

Editing Reported Data to Zero Becuase of a Major Name Change

Sometimes a respondent will report that his name is spelled incorrectly on the questionnaire or that the address is incorrect. If this is a major name change, the reported data are edited to zero and this sampling unit becomes a known zero for subsequent surveys. A major name change is defined as follows: It is any name or address change such that if the corrected name were that of an area frame sample tract operator, it would not have been matched with the selected list unit.

Editing Reported Data A Second Time - "Second Look"

After the survey period, all list questionnaires in comparable strata were re-edited to be certain the editing to meet survey definitions, had been performed correctly. This "second look" was conducted without the aid of information collected during the reinterview. After the second look, all questionnaires had been edited to the best of our ability with the information available during the original survey period. Then any differences found between edited survey data and reinterview results correctly reflect the violations of list frame assumptions associated with using each of the two questionnaire versions (operational and test). Editing errors were prevented from being a confounding factor.

REINTERVIEW PROCEDURES

Following the operational survey period, steps were taken to draw a subsample for reinterview. Prior to drawing the subsample, the questionnaires representing all the reports (excluding refusals, inaccessibles and reports of zero hogs) from sample units in comparable strata were classified as follows:

1. Questionnaire version
    a. operational
    b. test
2. Response type
    a. mail
    b. telephone
    c. personal interview
3. Sampling unit - reporting unit category
    a. individual name selected, individual operation reported
    b. individual name selected, partnership operation reported

c. combination of individual names selected

d. farm name selected

4. List stratum

The two subsamples (operational and test) were drawn independently for each state and were allocated among the types of response, sampling unit -- reporting unit category and list stratum in proportion to the original sample. The target subsample sizes in Ohio were 200 from each sample and in Wisconsin they were 250. The instructions used for drawing the subsample are shown in Appendix D.

The subsampling was done by hand working with the operational and test questionnaire separately. The questionnaires were identified in the following categories: an individual name selected, individual data reported; individual name selected, partnership data reported; a combination of individual names selected; or a farm name selected. Experience has shown the latter three types of operations cause the most problems in meeting list frame assumptions and thus all were selected for reinterview. This left the category - individual name selected, individual data reported - to be sampled at specified rates. The original sample and subsample sizes for the operational and test samples are shown in Table 2 of Appendix B.

After the subsamples had been drawn, the reinterview questionnaires were prepared. This involved transferring reported data from the original survey questionnaire to the reinterview questionnaire. The objective of the reinterview was to determine if the data had been reported correctly, and if it had been interpreted correctly by the editor. The instructions used for preparing the reinterview questionnaires are shown in Appendix D.

The reinterview questionnaires were completed by personal interview. Each member of the SSS spent at least one day conducting interviews and then provided follow-up training to the enumerators in samll groups over the following two or three day period. The reinterview survey, including enumerator training, was completed during the two week period June 14-25.

The reinterview questionnaires were coded and keypunched in each SSO. This task was completed during the week of June 28. Instructions used for editing and keypunching are shown in Appendix D.

SURVEY EVALUATION

The success of this project is largely attributable to the cooperation and extra effort provided by the Ohio and Wisconsin SSO staff and enumerators. Their willingness to carry the extra workload during what is probably the busiest time of the year is greatly appreciated. Also, we extend our thanks to the members of the Enumerative Survey Section and the Forms Group in the Data Collection Branch for thier help in developing the test and reinterview questionnaires.

The test questionnaire contained a new term "THIS PLACE". It was not surprising that some enumerators expressed an immediate dislike for the term,

since it was a substantial departure from what had been used for several years. All enumerators however, seemed genuinely interested in giving it a fair chance. Without this objectivity and willingness to try something new, a valid evaluation of the test questionnaire would have been impossible.

Most enumerators were generally pleased with those questions in the test questionnaire that asked about partnerships. It seemed to flow well and farmers tended to respond without to much difficulty. However, an objective evaluation of the test questionniare can come only from an analysis of the data which is presented in the section that follows.

Only the regular operational sample was used for estimating purposes in each state. This had two consequences. First, it created extra work for the SSO personnel and enumerators, even though Washington assistance was provided and additional enumerators were employed. Even more effort should be taken to insure the severity of this burden is minimized for future projects.

Secondly, it was difficult to provide the two samples equal treatment. Whenever time became short, the test sample simply had to be given second consideration in following up nonrespondents to the mail questionnaire, in office editing, etc. The number one priority during this period of time was collecting data from which estimates would be derived.

It is unfortunate that a large number of inaccessible reports occurred for the test version in Wisconsin. The operational survey had a completion rate of nearly 90 percent while the test survey was about 70 percent. This immediately restricts the results when comparing the two questionnaires.

Some of these problems could be avoided by drawing a replicated sample, very little if any larger than what each SSO is accustomed to. One or more of the replicates could be randomly assigned to be the test sample, but all replicates would be used in setting estimates. It would be quite easy to measure the questionnaire effect, if any, before estimates are set and, thus, identify the change in level caused by the test questionnaire. This procedure, particularly if it were set up on a continuing basis, would help insure our obtaining valid results and would facilitate testing concepts like different follow-up procedures, enumerator training, etc., as well as questionnaire design.

The subsamples for reinterview were drawn by physically sorting the original survey questionnaires into cells, and selecting an independent systematic sample from the remaining questionnaires within each cell. This was extremely cumbersome and time consuming. Efforts should be taken to automate this procedure for future projects.

The reinterviews went very well. Farmers were generally quite cooperative as reflected by an incompletion rate of only 1 percent in Wisconsin and less than 4 percent in Ohio. Enumerators were receptive to the questionnaire and did a good job filling it out. It was necessary for the enumerators to be very familiar with the meaning of each question because only one version was used for all types of operations. Some questions had slightly different interpretations depending on what type of name (individual, combination of individuals

or farms) had been selected for the original survey. These different situations were covered both in the written and verbal instructions. Probably it would have been better to have all the wording possibly needed printed on the questionnaire. The wording not needed could have been crossed out before the questionnaires were distributed to the enumerators. This would have reduced the burden of interpretation for the enumerators.

Analysis

The analysis of this data is divided into several sections with separate discussion for each state:

1) a comparison of the direct expansions from the operational and test questionnaires,

2) a comparison of response rates for the two questionnaire versions,

3) a comparison of refusal rates for the two versions,

4) a comparison of the number of editing changes required to meet survey concepts,

5) a comparison of the magnitude of the editing changes to meet survey concepts,

6) a comparison of reinterview and second look data

7) and identify reasons for differences between reinterview and second look data,

Since it is important to have some background concerning the level of the expansions for the current program and board estimates for June 1, 1976 the following data is provided. A visual presentation of the same data is shown on the next page.

June 1, 1976 Hog Expansions, Estimates and Sampling Errors

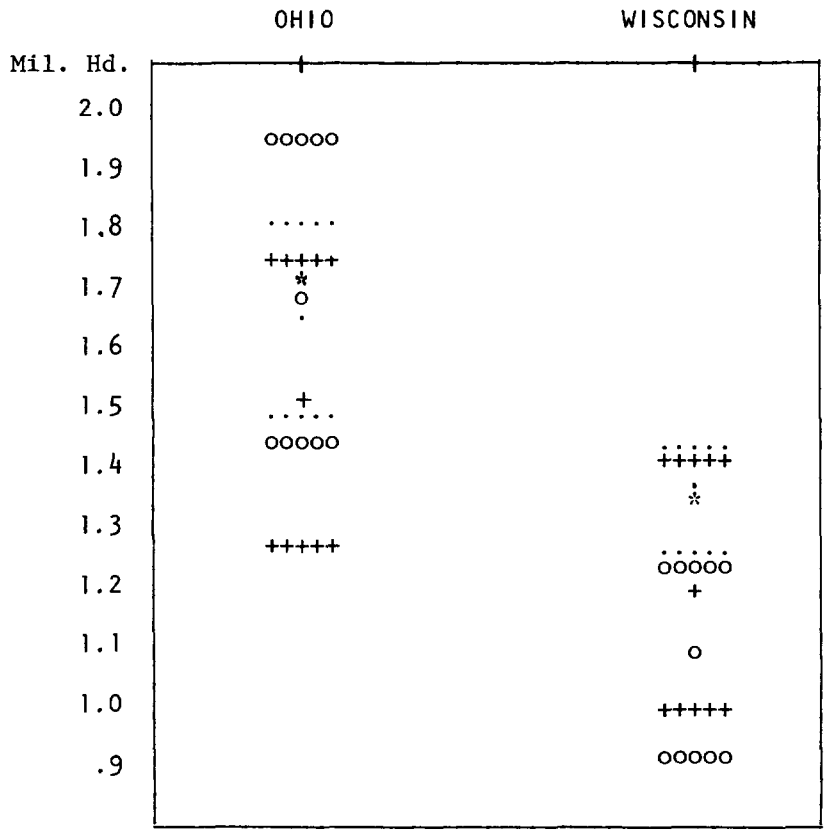
Source	Ohio		Wisconsin	
	(000)	(C.V. - %)	(000)	(C.V. - %)
MF	1,659	10.4	1,342	6.5
JES tract	1,674	15.4	1,075	15.5
JES farm	1,497	17.2	1,190	17.2
Board estimate	1,720	-	1,320	-

Direct Expansion for Total Hogs and Pigs in OHIO

The two questionnaire versions were designed to measure the same population characteristic (total hog and pig inventory June 1, 1976). Therefore, the

Multiple Frame and June Enumerative Survey

Hog Expansions and Board Estimates - June 1, 1976



	Expansion	Expansion plus or minus one standard error
MF	·	·····
JES Tract	o	ooooo
JES Farm	+	+++++
Board	*	*****

null and alternative hypotheses are:

H_o: There is no significant difference in the direct expansions of total hogs for the two questionnaire versions.

H_1: There is a significant difference in the direct expansions of total hogs for the two questionnaire versions.

Table 1, Appendix A, contains the direct expansions, standard errors and coefficients of variation for the two questionnaire versions. Note, the C.V.'s are at approximately the same level. The direct expansion differences and T-values are shown in Table 2, Appendix A by strata. The test statistic for the difference in the direct expansions is -2.125 which is significant at the 3 percent level. This gives strong support for rejecting the null hypothesis and accepting the alternative that there is a difference in the direct expansions for the two questionnaire versions. This means that if 100 samples of this same size were taken, only 3 of the samples would lead us to reject H_o when it is true. The conclusion is as expected since the expansion for the test questionnaire is 19 percent above the expansion for the operational version. This difference is not attributable to any particular strata as five out of the six stratum operational expansions are below the test expansions.

Ohio Response Rates

The response rates by stratum and method of questionnaire completion are shown in Table 3, Appendix A for both the operational and test questionnaires. These rates are the number returned as a percent of the corresponding stratum sample sizes. Since it was hoped that the test questionnaire would improve the response, the following null and alternative hypotheses were tested:

H_o: There is no significant difference in mail response rates between the two questionnaire versions.

H_1: The mail response rate of the test questionnaire is greater than the response rate of the operational questionnaire.

To eliminate any office handling effects or interviewer effects, the first test will compare the weighted mail response rates of the two questionnaire versions. The weighted response rates are:

Operational questionnaire $P_o = .281$

Test questionnaire $P_t = .273$

$P_o - P_t = .008$

Since the difference is positive it is obvious we cannot reject the null hypothesis. The t-statistic is .22 which has a level of significance at about 60 percent. Thus for practical purposes, at the 10 or 20 percent levels, there is no significant difference in the mail response. The response rates are

number or questionnaires returned divided by the sample size. Thus these response rates ignore the effect of known zeroes which essentially reduce the number of questionnaires mailed. The number of known zeroes here is not large enough to change the outcome of the above results.

A similar analysis of the mail returns was attempted thru the use of contingency tables. Each stratum was broken down into the four sampling unit-reporting unit categories. Further analysis was aborted on this table as too many cell expected values were less than 1. The table was then collapsed to stratum totals with a computed Chi-Square of 3.4 which has a 25 percent significance. Thus we cannot reject the hypothesis that the two distributions are the same. Essentially the two questionnaire versions are equally effective which agrees with the results from the t-test.

Any testing of telephone, interview, or total response rates would be inappropriate due to the number of uncontrolled variables which may effect the outcome.

Ohio Non-Response Rates

Table 4, Appendix A contains the refusal rates by stratum for the mail, telephone and interview returns. These rates are calculated from stratum sample sizes. Hopefully, the number of refusals for the test questionniare will be less than for the operational questionnaire. Thus the following null and alternative hypotheses were tested:

H_o: There is no significant difference in refusal rates between the two questionnaire versions.

H_1: The refusal rates of the operational questionnaire is greater than refusal rates of the test questionnaire.

It is noted that the number of interview refusals for the operational questionnaire is almost four times as large as those for the test questionnaire. This is due to the office handling procedures which tends to accumulate interview refusals from quarter to quarter. The operational sample had been used the previous two quarters. The weighted non-response rates for total refusals are:

Operational questionnaire $P_o = .086$

Test questionnaire $P_t = .067$

$P_o - P_t = .019$

The t-statistic is 1.03 which has a 15 percent significance. Thus at any alpha level below 15 there is no significant difference in refusal rates between the two questionnaire versions.

Ohio Summary

The two independent samples produced significantly different results in terms of total hog and pig direct expansions. No reason for the difference can be truly pin-pointed although as many precautions as possible were taken to isolate

the effects of the questionnaire. The sample selection, office handling, enumerator telephoning and interviewing, time periods and editing were controlled to eliminate their effects on the sample results.

The mail response rates for the test questionnaire were less than the mail response rates for the operational questionnaire. The test questionnaire design hopefully would increase response rates therefore the alternative hypothesis was essentially the reverse of the results. It is therefore useless to test for a significant difference since we are only interested in a test questionnaire which can give a significantly higher response rate than the operational questionnaire.

The refusal rates appear to be "slightly" less with the test questionnaire (significantly less at the 15 percent level). But there is no strong evidence of this. The number of refusals probably have accumulated during surveys the previous two quarters for the operational version to the extent their number is on the "high side" when compared to the refusals from one quarters' survey for the test version.

Direct Expansions for Total Hogs and Pigs in WISCONSIN

The direct expansion for the test questionnaire is 932,200 head, 4 percent below the operational direct expansion. As shown in Tables 5 and 6 of Appendix A, only two of the five strata expansions for the test questionnaire were below their respective strata for the operational version. The largest difference is in the second stratum while the absolute differences of the other four strata are "small" and near the same levels. The following null and alternative hypotheses were tested:

H_o: There is no significant difference in the direct expansions of total hogs for the two questionnaire versions.

H_1: There is a significant difference in the direct expansions of total hogs for the two questionnaire versions.

The computed T-value of .474 has a significance at the 60 percent level. Therefore at the usual 10 or 20 percent level there is no significant difference in the direct expansions.

One report in the smallest stratum of the operational sample (1-99 head) contained over 2100 hogs which increased the level of the stratum by 23 percent and the level of the operational survey State indication by 4 percent. Removal of this outlier reduced the CV for the stratum from 19.3 percent to 7.3 percent and the CV for the State total from 6.5 percent to 5.2 percent. Without this report the operational direct expansion for the positive hog strata was about 16,000 head below the test version, again not significantly different.

Wisconsin Response Rates

Since both the operational and test samples were used for the first time in June, variables other than the control variable (questionnaire version) were limited to a greater extent than in the Ohio study. The response rates are

shown in Table 7, Appendix A. Four out of five of the stratum response rates show a higher mail response for the test questionnaire than for the operational version. The hypotheses are:

H_o: There is no significant difference in mail response rates between the two questionnaire versions.

H_1: The mail response rate of the test questionnaire is greater than the response rate of the operational questionnaire.

The weighted mail response rates by questionnaire version are:

Operational questionnaire	$P_o = .336$
Test questionnaire	$P_t = .360$
	$P_o - P_t = -.024$

The t-statistic of -.919 has a significance at the 20 percent level. The test version mail response rate is therefore greater than that of the operational version (at the 20 percent level). A different conclusion would be reached at any level below 20 percent. The telephone, interview and total response rates were not tested due to the uncontrolled nature of these variables from the operational sample to the test sample. These response rates are shown in the table for information purposes only.

Wisconsin Non-Response Rates

The refusal rates for the three methods of data collection, by stratum are shown in Table 8, Appendix A. These rates are the number of refusals as a percent of the sample size. It is speculated the test questionnaire will yield fewer refusals which is consistant with the following hypotheses:

H_o: There is no significant difference in refusal rates between the two questionnaire versions.

H_1: The refusal rates of the operational questionnaire is greater than refusal rates of the test questionnaire.

The weighted refusal rate of the operational questionnaire at 6.6 percent compares with 5.9 percent for the test version. These percentages are calculated from the number of refusals and the respective sample sizes. In this respect the percentages may be misleading because they do not reflect the number of telephone or interview contacts. For example, about 52 percent of the operational sample was collected by telephone while only 33 percent of the test sample was collected in this manner. It is therefore obvious to expect a higher percentage of telephone refusals for the operations sample. The t-statistic of .527 from this procedure has a 30 percent level of significance. At a 10 or 20 percent level we cannot reject the null hypothesis that is no significant difference in refusal rates between the two questionnaire versions. The shortcoming of this t-test is that the refusal rates do not adequately reflect the

true non-response rate since the number of contacts is not proportional from the operational sample to the test sample. This is reflected in the high number of inaccessible units with respect to sample size for the test version. To adjust for this, total refusals were calculated as a percent of sample size less inaccessibles. The resulting weighted non-response rates for total refusals were 7.2% and 7.3% for the operational and test samples respectively. Previously the rates were 6.6% and 5.9% for the operational and test samples as shown in Tables 8, Appendix A. This adjustment indicates, without making a t-test, that the refusal rate for the operational questionnaire is less than not greater than the test version. These results are more consistant with those obtained from the t-test with a 10 or 20 percent level of significance (which did not show the operational refusals to be greater than the test refusals).

Wisconsin Summary

The direct expansions of total hogs and pigs for the two samples were not significantly different. One must remember when accepting these results that almost one-fourth of the test sample size was inaccessible.

The mail response rates for the test version were significantly greater than for the operational version. Interpretation of the refusal rate analysis strongly depends on the exact level of significance. At the 20 percent level of significance there is no difference in the refusal rates.

Making Reported Data Conform to Survey Concepts

As discussed earlier the mail, telephone, and interview questionnaires were reviewed or re-edited to arrive at the correct data based upon strict interpretation and application of the current Multiple Frame Survey Supervising and Editing Manual. This review was done by SSS personel after the operational questionnaires were no longer needed for the June 1 survey. This data, as re-edited, will be called "second look data". The second look data differ very little from the SSO edited data as the second look resulted in few corrections.

An equally important part of this review was to reconstruct the reported data. For example, if the respondent reported 300 head of hogs and the SSO edit action reduced this to 150 head, the reconstructed reported data would be 300 head. If the reported total did not equal the sum of the subclasses the data as edited by the SSO was used as the reported data. Reported data was then obtained for each sample unit. The survey concept effect was calculated as "second look data" minus reported data. The following data reflects the extent of editing changes to conform reported data to meet survey concepts.

Survey	No. of Sampling Units Changed *	Net change Expanded No. of hogs (000)	Original Expansion (000)	Net Change As a % of Orig. Exp.
Ohio				
Operational	26	-48.2	681.9	7.1
Test	26	-55.3	814.7	6.8
Wisconsin				
Operational	34	-47.2	970.2	4.9
Test	36	-58.1	932.2	6.2

* Number of sampling units that had editing changes necessary to conform reported data to survey concepts.

Caution should be exercised in interpreting the net change as a percent of the original expansion as the original expansion is based on SSO edited data not reported data. The percentages are offered only as a rough indication to the extent of the concept effect. The stratum breakdown for each state and questionnaire version are shown in Tables 9-12 Appendix A. A quick glance at these tables will show that the editing changes are almost always in the same direction - down (editing to meet survey concepts almost always reduces the reported number of head).

To learn more about the number of sampling units changed and where they are coming from, the data were summarized by type of response for the mail, telephone, and interview useable returns.

	Number of Useable Responses					
	Ohio		Wisconsin		Total	
	Operational	Test	Operational	Test	Operational	Test
Mail	121	111	355	281	476	392
Telephone	253	258	481	260	734	518
Interview	124	121	87	41	211	162
Total	498	490	923	582	1,421	1,072
	Number of Sampling Units Changed					
Mail	9	4	11	14	20	18
Telephone	15	15	19	20	34	35
Interview	2	7	4	2	6	9
Total	26	26	34	36	60	62
	No. of Changes as % of No. of Responses					
Mail	7.4	3.6	3.1	5.0	4.2	4.6
Telephone	5.9	5.8	4.0	7.7	4.6	6.8
Interview	1.6	5.8	4.6	4.9	2.8	5.6
Total	5.2	5.3	3.7	6.2	4.2	5.8

A visual comparison of the number of changes as a percent of the number of responses shows no consistent difference from one type of response to another. Based on this observation the number of editing changes were not particularly attributable to any one of the three types of responses. For both states the test questionnaire required a higher proportion of editing to meet survey definitions than did the operational version.

The number of sampling units with editing changes were summarized by their respective sampling unit - reporting unit categories. The data is shown on the following page.

Category [1]	Ohio Operational	Ohio Test	Wisconsin Operational	Wisconsin Test	Total Operational	Total Test
Number of Useable Responses						
I - I	418	432	785	493	1,203	925
I - P	24	23	36	26	60	49
C	9	7	34	18	43	25
F	47	28	68	45	115	73
Total	498	490	923	582	1,421	1,072
Number of Sampling Units Changed						
I - I	2	5	13	11	15	16
I - P	23	19	18	22	41	41
C	1	2	2	1	3	3
F	-	-	1	2	1	2
Total	26	26	34	36	60	62
Number of Changes as % of Number of Responses						
I - I	.5	1.2	1.7	2.2	1.2	1.7
I - P	95.8	82.6	50.0	84.6	68.3	83.7
C	11.1	28.6	5.9	5.6	7.0	12.0
F	-	-	1.5	4.4	.9	2.7
Total	5.2	5.3	3.7	6.2	4.2	5.8

1/ I - I = individual name selected and individual data reported; I - P = individual name selected and partnership data reported; C = combination of individual names; F = farm or business name.

It is noteworthy that from 50 to 96 percent of the sampling units requiring an edit change were individual names selected but reported partnership data. The preceeding data illustrates the problem that partnerships create for the survey statistician in determining the editing action necessary to make the report comply with the survey design.

Reasons for Edit Action

It is of primary importance to determine why the reported data had to be edited to meet our survey concepts. Each "second look edit change was given a reason code as outlined in "Editing Instructions -- Survey Proper" of Appendix D. The data are summarized in Tables 13 and 14, Appendix A for Ohio and Wisconsin respectively. A review of these tables shows that by far the largest percentage of changes were due to the proration of partnership data (individual name selected and partnership reported which is not on the list - the reported data

is divided by the number of partners). Earlier sections within this report discusses the editing actions in detail. The Ohio summary (Table 13, Appendix A) shows 93 percent of the editing changes on the operational version and 69 percent on the test version were due to the proration for partnerships. It is interesting to note that 4 out of 5 of the reports edited to zero, because of being out of business, were based on information provided by someone other than the name selected. The Wisconsin data show similar results with the largest percentage of changes due to the proration for partnerships, 53 and 64 percent for the operational and test questionnaires respectively. The second largest reason for the editing changes was to edit data to zero because the selected sample unit was now out of business.

Reinterview Data

Only one reinterview questionnaire was used to obtain the "true data". Figure 1 is given as a brief supplement to the sub-sampling scheme previously discussed in the "Reinterview Procedures" section. Essentially the operational and test samples were separated into two parts: (1) those with hogs and (2) those without hogs. The part with hogs was broken down into 3 groups based on how the original survey data was collected: (1) mail, (2) telephone and (3) interview. Then each of these groups were classified according to their respective sampling unit-reporting category. It is at this stage the sub-sample was taken. The sample counts as well as the sub-sample counts for each breakdown are given in Appendix B, Tables 3-10. These counts become extremely important in obtaining the correct expansion factors to apply to the differences between the reinterview data and the second look data. The second look data are from the original report adjusted by stringent editing to meet our survey concepts. The calculated difference is the reinterview data minus the second look data.

Since sub-sampling is involved, the expansion factors were obtained from each of the two sampling stages. The expanded differences were derived in the following manner within each strata:

1) the strata population size was divided by the number of useable reports (see Appendix A Tables 9-12),

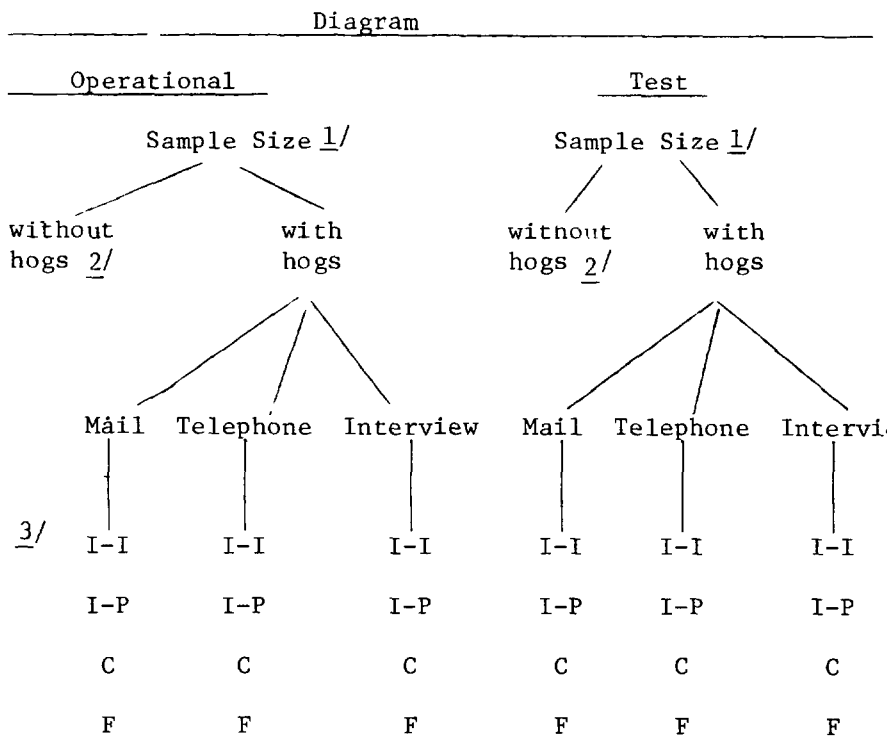
2) the results from 1) above are multiplied by the number of reports with positive hogs divided by the number sub-sampled; these calculations are performed for each reporting unit-sampling unit category within each of the three types of initial responses-mail, telephone, and interview (the sub-sample counts are shown in Tables 7-10, Appendix B),

3) the results from 2) above are multiplied by the differences,

4) these expansions are shown in Appendix A, Tables 15 and 16 by strata and Tables 11 and 13, Appendix B by type of response.

Figure 1

SUB-SAMPLE BREAKDOWN for Reinterview Survey (Within Strata)



Corresponding Tables	
Ohio	Wisconsin
App. B table 2	App. B table 2
App. B table 3	App. B table 5
App. B table 4	App. B table 6
App. B tables 7 & 8	App. B tables 9 & 10

1/ Sample size less non-useable reports.

2/ Includes refusals and inaccessibles.

3/ I-I - individual name selected and individual data reported;

I-P = individual name selected and partnership data reported;

C = combination of individual names;

F = farm or business name

The following data differences summarize the results from Tables 11-14 Appendix B.

Reinterview Data Minus Second Look Data

Survey	Subsample Size	Number of Differences 1/			Net Change	
		Total	Positive	Negative	Unexpanded	Expanded
OHIO						
Operational	194	14	5	9	-2,429	-32,058
Test	198	24	9	15	-1,961	-17,046
WISCONSIN						
Operational	285	27	13	14	-884	-15,203
Test	274	21	11	10	-663	-7,556

1/ Does not include differences equal to zero.

Note, the expanded difference for all four samples is negative. By assuming the second look editing was correct according to our survey concepts and the reinterview data by personal interview was "truth", survey results were biased upward. Information was lacking to edit out enough hogs from the reported data to conform with the survey concepts. The reinterview data (expanded) was 1.8 percent below the data obtained from the operational questionnaire in Wisconsin and 4.6 percent below the comparable operational data in Ohio. The expanded differences for the Wisconsin test questionnaire was down .9 percent and the Ohio test was down 2.2 percent. The operational survey results for selected strata in these two States therefore produced indications which were roughly 2 to 5 percent higher than they should have been. This compares with sampling error of about 6 percent for these strata. The expanded number of hogs in the strata selected for this study accounted for 41 percent of the June 1 MF expansion (including NOL) in Ohio and 72 percent in Wisconsin.

The net expanded difference for the test questionnaire version for both states is approximately one-half of the expanded difference for the operational version. This appears to give support that the test version obtained data closer to the "true data" than did the operational version. However there is other evidence that suggests one should not arrive at this conslusion too fast based only on the expanded data. For example, differences in the unexpanded data for the two states are not as pronounced as for the expanded data. Also the number of differences by questionnaire version should be considered. This consideration shows the number of differences for the test version in Ohio is almost twice the number from the operational version. This is exactly opposite what we would expect based on the expanded data. This implies the test version resulted in a larger number of smaller differences while the operational version resulted in fewer differences but the size of the differences are larger. The number of differences for Wisconsin are about the same, with the test version having the smaller number which is consistent with the expansions.

Reasons for Differences

Consolidation of the differences into groupings of similar reasons is not an easy task. Two distinct groups of reasons were very apparent: 1) differences

due to partnerships and 2) those differences due to other reasons. The most prevalent reason for differences in the partnership category involved family arrangements, namely father-son partnerships. Many differences arose when an individual name was selected and the original questionnaire was filled out for a partnership with no evidence to indicate the report was for a partnership operation. Our reinterview questionnaire asks many questions about the operation in an attempt to obtain "true data" for the "true operation arrangement". In the above case the reinterview data would identify the operation as a partnership with the reported data being divided by the number of partners in the partnership. The opposite situation occurs almost as often: the selected individual reports his operation as a partnership on the original questionnaire and the reported data is divided by the number of partners, while the reinterview data may then identify the operation as an individual operation. As a result the reinterview data is a multiple of the original data (the multiple being based on the number of partners). This kind of situation occurs frequently with father-son arrangements. Therefore a separate reason category was used to identify father-son partnerships.

The operational questionnaire attempts to alleviate this situation by asking the following question "Do you operate any agricultural land in a business arrangement with another person? Exclude landlord-tenant arrangements." If the answer is yes space is provided to identify information for up to two of the other people involved in the arrangement. Also questions are asked for the number of acres and number of hogs involved.

The test questionnaire asks "What best describes how all your agricultural land (including this palce) is operated -- Is it individually or family operated or is it operated in partnership with other?" Boxes are then provided to check the correct answer:

a) individual or family (do not include partnership or corporation)

b) partnership or corporation - include partnerships involving land and family partnerships; do not include partnerships involving only livestock or machinery; do not include landlord - tenant or landlord - renter only arrangement

c) other -- specify type

Space is provided for the name of the partnership or corporation as well as the names of the partners or corporate members. If the "other arrangement" category is indicated space is provided to specify the type of operation, the operation name and operator's name. Further questions ask for the number of hogs and acres involved. These acreage and hog questions are similar to the operational version. The entire questionnaire for these two versions are shown in Appendix C.

The number of differences as a percent of the number sub-sampled range from 7 to 12 percent. The Ohio test questionnaire recorded approximately 5 percentage points more differences than did the operational version. In contrast the Wisconsin test version had about 2 percentage points fewer differences than the operational questionnaire. The wording concerning partnership arrangements on the test version would hopefully produce a smaller percentage of differences than the operational version. In Wisconsin the

number of differences due to partnerships as a percent of the sub-sample size is approximately equal for the operational and test versions. The Ohio operational version shows 2 percentage points fewer changes than the test version. Based on the results obtained in these two states the test version does not reduce the number of total differences nor does it reduce the number of differences due to partnerships enough to warrant presentation to the operational program.

The data below summarize the number of differences due to reasons involving partnerships and non-partnerships. The specific reason for each difference will be identified in Appendix A.

Number of Differences and Percent of Total by Questionnaire Version

	Ohio				Wisconsin				Total			
	Oper.		Test		Oper.		Test		Oper.		Test	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Partnerships	9	64	13	54	15	56	15	71	24	59	28	62
Non-partnerships	5	36	11	46	12	44	6	29	17	41	17	38
Total	14	100	24	100	27	100	21	100	41	100	45	100

Number of Differences as a Percent of Sub-Sample Size

	Ohio		Wisconsin		Total	
	Oper.	Test	Oper.	Test	Oper.	Test
Partnerships	4.6	6.6	5.3	5.5	5.0	5.9
Non-Partnerships	2.6	5.5	4.2	2.2	3.5	3.6
Total	7.2	12.1	9.5	7.7	8.5	9.5
Sub-Sample Size	194	198	285	274	479	472

Over one-half of the differences for each State and questionnaire version are due to partnership arrangements. These percentages range from 54 to 71 percent. The data in Appendix A identifies each of the differences by various reasons within each State, questionnaire version and partnership or non-partnership category. For convenience of having the footnotes on the same page as the data, one page is allowed for each of the two difference categories for each questionnaire version.

The number of differences due to partnerships totaled fifty-two. This is 60 percent of the sum of the differences for both states and both questionnaire versions. The remaining 40 percent (numbering 34) were due to non-partnerships. The summaries of these differences are shown on the next page.

Summary of Differences Due to Partnerships
Regardless of State or Questionnaire Version

Number of Differences	Reason
17	second edit interpretation was individual operation; reinterview interpretation was father-son partnership
13	second edit interpretation was father-son partnership; reinterview interpretation was individual operation
8	second edit interpretation was a partnership other than a father-son partnership; reinterview interpretation was individual operation
5	second edit interpretation was individual operation; reinterview interpretation was a partnership other than a father-son partnership
3	selected combination of individuals do not operate land
2	change in number of partners from 2 to more than 2
4	miscellaneous reasons identified in Appendix A for reason codes 9, 22, 26 and 28
Total = 52	

Summary of Differences Due to Non-Partnerships
Regardless of State or Questionnaire Version

Number of Differences	Reason
7	failed to report hogs owned by someone else on his acres operated
7	additional hogs reported that were owned, reason hogs omitted from original report is unknown
5	included land rented out, hogs were on this land
3	reported breeding hogs but left out feeder pigs
3	reason for difference is unknown
2	some hogs were temporarily on the father's operation but all reported originally
7	miscellaneous reasons identified in Appendix A for reason codes 11, 12, 16, 21, 24, 25 and 27
Total = 34	

For differences involving partnership arrangements, 85 percent or 44 of the 52 differences were due to the wrong classification of the operation (Appendix A reason codes 1 thru 9 - identifying the operation as a partnership on the first contact then identifying the same operation as individually operated on the reinterview or vice versa). Results show the misclassification was distributed on nearly a 50-50 basis (half individual changing to a partnership and half partnership changing to an indivdual operation). Thirty out of these 44 differences were due to father-son partnerships. These figures alone show that improvements must be made in such areas as survey concepts, questionnaire wording and/or enumerator training to obtain the "true data" for father-son arrangements. In most of these cases the father-son partnership was not a small operation involving 4-H or FFA hogs. The 14 remaining non-father-son differences included a few family arrangements such as brothers operating together but generally included non-relatives operating in some sort of partnership arrangement. The remaining 15 percent of differences attributable to partnerships involved special consideration for each report.

Non-partnership differences accounted for 40 percent of the total (34 of 86 differences). Of these 34 differences 21 percent (7 of 34) failed to report hogs owned by someone else on his acres operated. Also 21 percent of these differences were additional hogs owned but not originally reported. The reasons for failing to report these hogs could not be pinpointed. Fifteen percent (5 of 34) of these differences were due to reporting hogs on land rented out. The remaining differences are identified in table form in Appendix A.

In summary, 60 percent of the differences involved partnership arrangements. The major problem in this category was determining if a partnership really did exist or if the operation was individually operated. This was a particular problem for father-son arrangements. Differences involving non-partnerships centered around the "age old problem" of obtaining hogs on "acres operated regardless of ownership".

APPENDIX A

Supporting Analysis Tables

Table 1--EXPANDED NUMBER OF HOGS on Farms June 1, 1976 - OHIO

Stratum	Operational Questionnaire			Test Questionnaire		
	Direct Expansion of total hogs (000)	Standard Error of total hogs (000)	Coefficient of Variation of total hogs (%)	Direct Expansion of total hogs (000)	Standard Error of total hogs (000)	Coefficient of Variation of total hogs (%)
1-49 hogs	80.0	18.1	22.6	125.2	21.9	17.5
50-99 hogs	41.7	12.7	30.5	81.8	16.3	19.9
100-199 hogs	120.2	23.7	19.7	102.4	13.4	13.1
200-499 hogs	168.7	13.7	8.1	186.7	15.1	8.1
500-999 hogs	72.9	9.2	12.6	105.6	17.5	16.5
1,000-4,499 hogs	198.4	21.8	11.0	213.0	25.7	12.1
Total	681.9	42.4	6.2	814.7	46.0	5.6

Table 2.--DIFFERENCES Between Operational and Test Expansions - OHIO

Stratum	Operational direct expansion minus test direct expansion (000)	Standard error of the difference in direct expansions (000)	Computed T - value	Approximate significance level
1-99 hogs	-45.2	28.4	-1.592	.10
50-99 hogs	-40.1	20.5	-1.956	.05
100-199 hogs	17.8	27.5	.647	.50
200-499 hogs	-18.0	20.4	- .882	.40
500-999 hogs	-32.7	19.5	-1.677	.10
1,000-4,499 hogs	-14.6	33.6	- .435	.65
Total	-132.8	62.5	-2.125*	.03*

$|t_{.05}| = 1.960 \quad |t_{.10}| = 1.645$

* Significant at the 5 percent level

Standard Error of Difference = $\sqrt{\frac{S_p^2}{n_1} + \frac{S_p^2}{n_2}}$ where S_p^2 is the pooled variance, n_1 is the number of useable returns for the operational questionnaire and n_2 is the comparable number of useable returns for the test questionnaire.

$$S_p^2 = \frac{(n_1-1)(n_1)S_1^2 + (n_2-1)(n_2)S_2^2}{n_1 + n_2 - 2}$$

Table 3.--RESPONSE RATES for the June 1976 OHIO Multiple Frame Hog Survey [1/]

Stratum	Operational Questionnaire [2/]					Test Questionnaire [2/]				
	Sample Size	Mail	Telephone	Interview	Total	Sample Size	Mail	Telephone	Interview	Total
1-49 hogs	82	28	29	11	68	82	34	23	13	70
	100.0	34.1	35.4	13.4	82.9	100.0	41.4	28.0	15.9	85.4
50-99 hogs	76	17	38	11	66	75	12	33	17	62
	100.0	22.4	50.0	14.5	86.8	100.0	16.0	44.0	22.7	82.7
100-199 hogs	90	22	38	10	70	89	13	48	9	70
	100.0	24.4	42.2	11.1	77.7	100.0	14.6	53.9	10.1	78.7
200-499 hogs	223	53	95	28	176	222	42	103	29	174
	100.0	23.8	42.6	12.6	78.9	100.0	18.9	46.4	13.1	78.4
Total	471	120	200	60	380	468	101	207	68	376
	100.0	25.5	42.5	12.7	80.7	100.0	21.5	44.2	14.5	80.3
Weighted Response Rate [3/]	100.0	28.1	40.7	13.0	81.8	100.0	27.3	39.5	15.4	82.2

1/ Only comparable strata are shown.

2/ Top number is the number of observations. Bottom number is the number of observations as a percent of the sample size.

3/ Weighted response rate = $\frac{1}{N} \sum_{i=1}^{4} N_i P_i$ where N_i = population in stratum i and P_i = response rate in stratum i.

Table 4.--NON-RESPONSE RATES for the June 1976 OHIO Multiple Frame Hog Survey [1/]

Stratum	Operational Questionnaire [2/]					Test Questionnaire [2/]				
	Refusals				Inaccessible	Refusals				Inaccessible
	Mail	Telephone	Interview	Total		Mail	Telephone	Interview	Total	
1-49 hogs		2	3	5	7		2		2	5
		2.4	3.7	6.1	8.5		2.4		2.4	6.1
50-99 hogs		1	3	4	4		4	2	6	3
		1.3	3.9	5.3	5.3		5.3	2.7	8.0	4.0
100-199 hogs		2	9	11	6		8	2	10	5
		2.2	10.0	12.2	6.7		9.0	2.2	11.2	5.6
200-499 hogs	1	2	27	30	11	1	15	7	23	11
	0.4	0.9	12.1	13.5	4.9	0.5	6.8	3.2	10.4	5.0
Total	1	7	42	50	28	1	29	11	41	24
	0.2	1.5	8.9	10.6	5.9	0.2	6.2	2.4	8.8	5.1
Weighted Non-Response Rate [3/]	0.1	1.9	6.6	8.6	6.9	0.1	5.1	1.5	6.7	5.4

1/ Only comparable strata are shown.

2/ Top number is the number of observations. Bottom number is the number of observations as a percent of the sample size.

3/ Weighted non-response rate = $\frac{1}{N} \sum_{i=1}^{4} N_i P_i$ where N_i = population in stratum i and P_i = non-response rate in stratum i.

Table 5--EXPANDED NUMBER OF HOGS on Farms June 1, 1976 - WISCONSIN

Stratum	Operational Questionnaire			Test Questionnaire		
	Direct Expansion of total hogs (000)	Standard Error of total hogs (000)	Coefficient of Variation of total hogs (%)	Direct Expansion of total hogs (000)	Standard Error of total hogs (000)	Coefficient of Variation of total hogs (%)
1-99 hogs	288.1	55.5	19.3	276.6	26.7	9.7
100-249 hogs	311.5	14.5	4.7	266.9	18.3	6.9
250-499 hogs	212.7	11.6	5.5	221.3	15.6	7.0
500-749 hogs	67.1	5.5	8.1	72.1	5.5	7.6
750-1,999 hogs	90.8	6.4	7.1	95.3	7.4	7.8
Total	970.2	59.1	6.1	932.2	37.1	4.0

Table 6.--DIFFERENCES Between Operational and Test Expansions - WISCONSIN

Stratum	Operational direct expansion minus test direct expansion (000)	Standard error of the difference in direct expansions (000)	Computed T - value	Approximate significance level
1-99 hogs	11.5	77.7	.148	.85
100-249 hogs	44.6	23.3	1.914*	.05*
250-499 hogs	-8.6	19.2	-.448	.65
500-749 hogs	-5.0	7.8	-.641	.50
750-1,999 hogs	-4.5	9.9	-.454	.65
Total	38.0	80.1	.474	.60

$|t_{.05}| = 1.960 \quad |t_{.10}| = 1.645$

* Almost significant at the 5 percent level.

Standard Error of Difference = $\sqrt{\frac{S_p^2}{n_1} + \frac{S_p^2}{n_2}}$ where S_p^2 is the pooled variance, n_1 is the number of useable returns for the operational questionnaire and n_2 is the comparable number of useable returns for the test questionnaire.

$$S_p^2 = \frac{(n_1-1)(n_1)S_1^2 + (n_2-1)(n_2)S_2^2}{n_1 + n_2 - 2}$$

Table 7.--RESPONSE RATES for the June 1976 WISCONSIN Multiple Frame Hog Survey [1/]

Stratum	Operational Questionnaire [2/]					Test Questionnaire [2/]				
	Sample Size	Mail	Telephone	Interview	Total	Sample Size	Mail	Telephone	Interview	Total
1-99 hogs	406	135	228	5	368	298	109	92	-	201
	100.0	33.3	56.2	1.2	90.6	100.0	36.6	30.9		67.4
100-249 hogs	360	125	176	13	314	264	94	108	1	203
	100.0	34.7	48.9	3.6	87.2	100.0	35.6	40.9	0.4	76.9
250-499 hogs	202	71	72	26	169	148	47	54	1	102
	100.0	35.1	35.6	12.9	83.7	100.0	31.8	36.5	0.7	68.9
500-749 hogs	58	17	2	27	46	56	18	3	27	48
	100.0	29.3	3.4	46.6	79.3	100.0	32.1	5.4	48.2	85.7
750-1999 hogs	33	7	3	16	26	34	13	3	12	28
	100.0	21.2	9.1	48.5	78.8	100.0	38.2	8.8	35.3	82.4
Total	1059	355	481	87	923	800	281	260	41	582
	100.0	33.5	45.4	8.2	87.2	100.0	35.1	32.5	5.1	72.8
Weighted Response Rate [3/]	100.0	33.6	52.1	3.5	89.1	100.0	36.0	33.0	1.0	69.9

1/ Only comparable strata are shown.

2/ Top number is the number of observations. Bottom number is the number of observations as a percent of the sample size.

3/ Weighted response rate = $\frac{1}{N} \sum_{i=1}^{5} N_i P_i$ where N_i = population in stratum i and P_i = response rate in stratum i.

Table 8.--NON-RESPONSE RATES for the June 1976 WISCONSIN Multiple Frame Hog Survey [1/]

Stratum	Operational Questionnaire [2/]					Test Questionnaire [2/]				
	Refusals				Inaccessible	Refusals				Inaccessible
	Mail	Telephone	Interview	Total		Mail	Telephone	Interview	Total	
1-99 hogs	4	14	1	19	19	-	9	-	9	88
	1.0	3.4	0.2	4.7	4.7	-	3.0	-	3.0	29.5
100-249 hogs	1	28	3	32	13	1	27	-	28	32
	0.3	7.8	0.8	8.9	3.6	0.4	10.2	-	10.6	12.1
250-499 hogs	2	19	9	30	3	2	22	-	24	22
	1.0	9.4	4.5	14.9	1.5	1.4	14.9	-	16.2	14.9
500-749 hogs	-	5	5	10	1	-	5	3	8	-
	-	8.6	8.6	17.2	1.7	-	8.9	5.4	14.3	-
750-1999 hogs	-	3	3	6	1	-	6	-	6	-
	-	9.1	9.1	18.2	3.0	-	17.6	-	17.6	-
Total	7	69	21	97	37	3	69	3	75	142
	0.7	6.5	2.0	9.2	3.5	0.4	8.6	0.4	9.4	17.8
Weighted Non-response Rate [3/]	0.8	4.9	0.8	6.6	4.2	0.2	5.6	0.1	5.9	24.0

1/ Only comparable strata are shown.

2/ Top number is the number of observations. Bottom number is the number of observations as a percent of the sample size.

3/ Weighted non-response rate = $\frac{1}{N} \sum_{i=1}^{5} N_i P_i$ where N_i = population in stratum i and P_i = non-response rate in stratum i.

Table 9.--OHIO "SECOND LOOK DATA" vs. "REPORTED DATA" - Operational Questionnaire [1/]

Stratum	Population Size	Sample Size	Number of Useable Returns [2/]	Expansion Factor	Number of Changes		No. of Hogs Net Change	
					Second look > Rptd. Data	Second Look < Rptd. Data	Unexpanded	Expanded
1-49 hogs	2,378	82	70	33.97	-	4	-242	-8,221
50-99 hogs	949	76	68	13.96	-	3	-155	-2,164
100-199 hogs	1,105	90	73	15.14	-	3	-440	-6,662
200-499 hogs	1,070	223	182	5.88	-	10	-3,362	-19,769
500-999 hogs	327	82	63	5.19	-	4	-793	-4,116
1,000-4,499 hogs	285	71	56	5.09	-	2	-1,428	-7,269
Total	6,114	624	512	11.94	-	26	-6,420	-48,201

1/ Number of hogs after "second look" editing minus the number of hogs reported.

2/ "Useable returns" are defined as the number of mail, telephone, interview, estimated, and known zero questionnaires summarized.

Table 10.-- OHIO "SECOND LOOK DATA" vs. "REPORTED DATA" - Test Questionnaire [1/]

Stratum	Population Size	Sample Size	Number of Useable Returns [2/]	Expansion Factor	Number of Changes		No. of Hogs Net Change	
					Second look > Rptd. Data	Second Look < Rptd. Data	Unexpanded	Expanded
1-49 hogs	2,378	82	70	33.97	-	1	-307	-10,429
50-99 hogs	949	75	63	15.06	-	4	-241	-3,629
100-199 hogs	1,105	89	70	15.79	-	2	-664	-10,485
200-499 hogs	1,070	222	174	6.15	-	10	-1,632	-10,037
500-999 hogs	327	83	60	5.45	-	5	-3,196	-17,418
1,000-4,499 hogs	285	71	54	5.28	1	3	-629	-3,321
Total	6,114	622	491	12.45	1	25	-6,669	-55,319

1/ Number of hogs after "second look" editing minus the number of hogs reported.

2/ "Useable returns" are defiend as the number of mail, telephone, interview, estimated and known zero questionnaires summarized.

Table 11.--WISCONSIN "SECOND LOOK DATA" vs. "REPORTED DATA" - Operational Questionnaire [1/]

Stratum	Population Size	Sample Size	Number of Useable Returns [2/]	Expansion Factor	Number of Changes		No. of Hogs Net Change	
					Second look > Rptd. Data	Second Look < Rptd. Data	Unexpanded	Expanded
1-99 hogs	9,494	406	368	25.80	-	6	-396	-10,217
100-249 hogs	3,066	360	315	9.73	-	18	-2,595	-25,249
250-499 hogs	1,011	202	169	5.98	-	8	-1,706	-10,202
500-749 hogs	170	58	47	3.62	-	2	-421	-1,524
750-1,999 hogs	101	33	26	3.88	-	-	-	-
Total	13,842	1,059	925	14.96	-	34	-5,118	-47,192

1/ Number of hogs after "second look" editing minus the number of hogs reported.

2/ "Useable returns" are defined as the number of mail, telephone, interview, estimated and known zero questionnaires summarized.

Table 12.--WISCONSIN "SECOND LOOK DATA" vs. "REPORTED DATA" - Test Questionnaire [1/]

Stratum	Population Size	Sample Size	Number of Useable Returns [2/]	Expansion Factor	Number of Changes		No. of Hogs Net Change	
					Second look > Rptd. Data	Second Look < Rptd. Data	Unexpanded	Expanded
1-99 hogs	9,494	298	201	47.23	-	12	-412	-19,459
100-249 hogs	3,066	264	203	15.10	2	15	-1,813	-27,376
250-499 hogs	1,011	148	102	9.91	-	4	-834	-8,265
500-749 hogs	170	56	48	3.54	-	3	-846	-2,995
750-1,999 hogs	101	34	28	3.61	-	-	-	-
Total	13,842	800	582	23.78	2	34	-3,905	-58,095

1/ Number of hogs after "second look" editing minus the number of hogs reported.

2/ "Useable returns" are defined as the number of useable mail, telephone, interview, estimated and known zero questionnaires summarized.

Table 13.-- REASONS FOR DIFFERENCES Between Reported Data and Second Look Data - OHIO

Stratum	Operational Questionnaire								Test Questionnaire							
	Number of differences by reason code								Number of differences by reason code							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Total	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Total
1-49 hogs		4						4		1						1
50-99 hogs		3						3		3				1		4
100-199 hogs		3						3		1				1		2
200-499 hogs		9	1					10		9			1			10
500-999 hogs		4						4		2	1			2		5
1,000-4,499 hogs		1	1					2		2		1			1	4
Total		24	2					26		18	1	1	1	4	1	26

Reason Codes:

(1) Proration for duplication in the list

(2) Proration for partnerships

(3) Removing partnership data from individual

(4) Removing individual data from partnership

(5 & 6) Editing data to zero because out of business:

a) indicated by person selected -- (5)

b) indicated by person signing report if not person selected -- (6)

(7) Major name change

Table 14.--REASONS FOR DIFFERENCES Between Reported Data and Second Look Data - WISCONSIN

Stratum	Operational Questionnaire								Test Questionnaire							
	Number of differences by reason code								Number of differences by reason code							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Total	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Total
1-99 hogs		2			1	3		6		8			2	1	1	12
100-249 hogs		13			1	3	1	18		11				3	3	17
250-499 hogs	1	3				1	3	8		2			1	1		4
500-749 hogs						2		2		2				1		3
750-1,999 hogs																
Total	1	18			2	9	4	34		23			3	6	4	36

Reason Codes:

(1) Proration for duplication in the list

(2) Proration for partnerships

(3) Removing partnership data from individual

(4) Removing individual data from partnership

(5 & 6) Editing data to zero because out of business:

a) indicated by person selected -- (5)

b) indicated by person signing report if not person selected -- (6)

(7) Major name change

Table 15.--REINTERVIEW DATA MINUS SECOND LOOK DATA - OHIO

Stratum	Operational Questionnaire					Test Questionnaire				
	n	Reinterview Sample				n	Reinterview Sample			
		n	No. of differences 1/	Net Difference			n	No. of differences 1/	Net Difference	
				Unexpanded	Expanded				Unexpanded	Expanded
1-49 hogs	82	23	-	-	-	82	24	2	-94	-2,729
50-99 hogs	76	21	1	-8	-239	75	23	3	32	602
100-199 hogs	90	24	3	-725	-21,201	89	32	6	60	216
200-499 hogs	223	68	6	-106	-1,462	222	71	8	-264	-3,052
500-999 hogs	82	25	3	-90	-858	83	24	1	-91	-620
1,000-4,499 hogs	71	33	1	-1,500	-8,298	71	24	4	-1,604	-11,463
Total	624	194	14	-2,429	-32,058	622	198	24	-1,961	-17,046

1/ Does not include differences equal to zero.

Table 16.--REINTERVIEW DATA MINUS SECOND LOOK DATA - WISCONSIN

Stratum	Operational Questionnaire					Test Questionnaire				
	n	Reinterview Sample				n	Reinterview Sample			
		n	No. of differences 1/	Net Difference			n	No. of differences 1/	Net Difference	
				Unexpanded	Expanded				Unexpanded	Expanded
1-99 hogs	406	94	10	-213	-8,276	298	76	7	42	-223
100-249 hogs	360	98	11	77	-1,193	264	93	9	-117	-4,456
250-499 hogs	202	51	3	417	2,495	148	48	3	-363	-2,064
500-749 hogs	58	22	1	-50	-181	56	30	1	25	89
750-1,999 hogs	33	20	2	-1,115	-8,048	34	27	1	-250	-902
Total	1,059	285	27	-884	-15,203	800	274	21	-663	-7,556

1/ Does not include differences equal to zero.

Table 17: OHIO Operational Version Data and Reinterview Data Involving Partnerships

Observation Name	Name Selected[3/]	Number of Hogs: Reported	First Edit	Second Edit	Reinterview	Reason Code[2/]	Method of Collection[1/]
1	I	408	408	408	136	1	Telephone
2	I	675	675	675	337	2	Mail
3	I	250	250	250	125	1	Telephone
4	I	230	230	230	155	1 & 14	Telephone
5	I	23	11	11	23	7	Telephone
6	I	33	16	16	33	7	Telephone
7	I	402	198	134	100	10	Telephone
8	I	472	472	472	116	1	Telephone
9	F	3300	3300	3300	1800	28	Interview

1/ Method of collection for original data

2/ Reason codes identify why there is a difference between second edit and reinterview data

1) second edit interpretation was individual operation; reinterview interpretation was father-son partnership

2) second edit interpretation was individual operation; reinterview interpretation was a partnership other than a father-son partnership

7) second edit interpretation was a partnership other than a father-son partnership; reinterview interpretation was individual operation

10) change in the number of partners from 2 to more than 2

14) failed to report hogs owned by someone else on his acres operated

28) hogs out on contract to different farms

3/ I = individual name selected; F = farm name selected.

Comments relating to the above data:

Observation No. 2 - the partnership involved two brothers

4 - had not reported hogs owned in partnership

5 - original report indicated a partnership operation but it is actually a landlord-tenant arrangement

7 - reinterview data shows 4 family members in the partnership

Table 18: OHIO Operational Version Data and Reinterview Data Involving Differences Due to Non-Partnerships

Observation Name	Name Selected 3/	Number of Hogs: Reported	First Edit	Second Edit	Reinterview	Reason Code 2/	Method of Collection 1/
1	I	8	8	8	0	19	Telephone
2	I	115	115	115	0	13	Telephone
3	I	216	216	216	261	14	Mail
4	F	288	288	288	308	14	Mail
5	I	41	41	41	341	17	Telephone

1/ Method of collection for original data.

2/ Reason codes identify why there is a difference between second edit and reinterview data.

13) had included hogs and land, land actually rented out but previously included

14) failed to report hogs owned by someone else on his acres operated

17) additional hogs reported that were owned, reason omitted from original report is unknown.

19) for the reinterview data, respondent denied having any hogs on his operation.

3/ I = individual name selected; F = farm name selected.

Comments relating to the above data:

Observation No. 3 - the hogs not reported were owned by the son who is in college but definitely not a partnership

4 - the hogs not reported were owned by his nephew as a 4-H or FFA project

Table 19: OHIO Test Version Data and Reinterview Data Involving Partnerships

Observation Number 3/	Name Selected	Number of Hogs				Reason Code 2/	Method of Collection 1/
		Reported	First Edit	Second Edit	Reinterview		
1	I	614	307	307	205	10	Telephone
2	I	48	24	24	48	7	Mail
3	I	113	113	113	56	1	Telephone
4	I	207	207	207	104	2	Interview
5	I	20	20	20	10	2	Mail
6	I	633	316	316	633	7	Telephone
7	I	195	195	195	98	1	Interview
8	I	116	116	116	58	1	Telephone
9	I	116	58	58	0	6	Telephone
10	I	103	103	103	38	1 & 17	Telephone
11	I	51	51	51	0	26	Mail
12	I	182	182	182	91	2	Interview
13	I	1500	1500	2283	1283	9	Interview

1/ Method of collection for original data

2/ Reason codes identify why there is a difference between second edit and reinterview data

1) second edit interpretation was individual operation; reinterview interpretation was father-son partnership

2) second edit interpretation was individual operation; reinterview interpretation was a partnership other than a father-son partnership

6) second edit interpretation was father-son partnership; reinterview interpretation was individual operation

7) second edit interpretation was a partnership other than a father-son partnership; reinterview interpretation was individual operation

9) second edit interpretation was a combination of individual land and partnership land; reinterview interpretation was all land in partnership

10) change in the number of partners from 2 to more than 2

17) additional hogs reported that were owned, reason hogs omitted from first report is unknown

26) father reported as individual operator with all hogs, but son is really the operator

Comments relating to the above data:

Observation No. 1 - number of partners included the father and two brothers on the reinterview version

2 - original report indicated a family partnership but reinterview data considers it a landlord-tenant arrangement

4 - the reinterview partnership involved two brothers

5 - reinterview partnership involved family members

6 - original report showed a partnership while the reinterview data showed a landlord-tenant arrangement; name selected was tenant

Table 20: OHIO Test Version Data and Reinterview Data Involving Differences Due to Non-Partnerships

Observation Number	Name Selected 3/	Number of Hogs				Reason Code 2/	Method of Collection 1/
		Reported	First Edit	Second Edit	Reinterview		
1	I	125	125	125	133	17	Interview
2	I	166	166	166	168	14	Interview
3	I	56	56	56	62	14	Telephone
4	I	14	14	14	24	17	Telephone
5	I	247	247	247	317	14	Telephone
6	I	202	202	202	275	14	Mail
7	I	119	119	119	0	23	Telephone
8	I	56	56	56	0	13	Interview
9	I	767	767	767	1100	27	Telephone
10	I	274	137	137	0	13	Interview
11	F	3354	3354	3354	2554	13	Interview

1/ Method of collection for original data

2/ Reason codes identify why there is a difference between second edit and reinterview data

13) had included hogs and land, land actually rented out but previously included

14) failed to report hogs owned by someone else on his acres operated

17) additional hogs reported that were owned, reason hogs omitted from original report is unknown

23) some hogs were on father's place but all reported

27) failed to report hogs on a farm rented from others, hogs were one-half owned.

3/ I = individual name selected; F = farm name selected.

Comments relating to the above data:

Observation No. 2 - respondent had not included two boars he was borrowing from a neighbor

3 - the hogs he failed to report are owned by his son who is in high school

5 - did not report hogs owned by son who no longer lives at home and has his own operation

6 - did not report hogs owned by son

8 - reported as an individual operation and included hogs on a farm that is rented out, the selected name was the landlord for that farm

10 - reported as a partnership but is a landlord-tenant arrangement, the landlord was the name selected

Table 21: WISCONSIN Operational Version Data and Reinterview Data Involving Partnerships

Observation Name	Name Selected 3/	Number of Hogs Reported	First Edit	Second Edit	Reinterview	Reason Code 2/	Method of Collection 1/
1	I	50	50	50	25	1	Mail
2	I	5	5	5	3	1	Telephone
3	C	158	158	158	0	6 & 18	Mail
4	C	19	19	19	0	6 & 18	Mail
5	I	17	8	8	17	7	Telephone
6	C	32	32	32	0	6 & 18	Telephone
7	I	188	94	94	188	6	Mail
8	I	257	0	0	257	6	Interview
9	C	172	172	172	0	18	Mail
10	I	128	128	128	64	1	Telephone
11	C	28	28	28	0	18	Telephone
12	I	60	30	30	60	7	Mail
13	I	511	256	256	525	6 & 17	Mail
14	I	1530	1530	1530	765	1	Interview
15	I	701	701	701	350	1	Mail

1/ Method of collection for original data.

2/ Reason codes identify why there is a difference between second edit and reinterview data

1) second edit interpretation was individual operation; reinterview interpretation was father-son partnership

6) second edit interpretation was father-son partnership; reinterview interpretation was individual operation

7) second edit interpretation was a partnership other than a father-son partnership; reinterview interpretation was individual operation

17) additional hogs reported that were owned, reason omitted from original report is unknown.

18) selected combination of individuals do not operate land

3/ I = individual name selected; C = combination of individual names

Comments relating to the above data:

Observation No. 9 - two individual names in combination were selected but reinterview data shows one of these names does not exist

11 - original operation was reported as a partnership consistent with combination of names selected but reinterview identifies the son as the cash rent operator, renting from the father.

12 - originally operation was reported as a partnership but reinterview considers one of the brothers selected as the operator

Table 22: WISCONSIN Operational Version Data and Reinterview Data Involving Differences Due to Non-Partnerships

Observation Name	Name Selected 3/	Number of Hogs				Reason Code 2/	Method of Collection 1/
		Reported	First Edit	Second Edit	Reinterview		
1	I	60	60	60	70	11	Telephone
2	I	5	5	5	6	12	Mail
3	I	5	5	5	6	17	Telephone
4	I	50	50	50	0	13	Telephone
5	I	4	4	4	6	14	Telephone
6	C	10	10	10	100	15	Telephone
7	I	91	91	91	0	16	Telephone
8	I	161	161	161	175	17	Telephone
9	I	249	249	125	124	21	Mail
10	F	62	62	62	180	15	Telephone
11	I	664	664	664	614	19	Mail
12	I	24	24	12	40	19	Mail

1/ Method of collection for original data

2/ Reason codes identify why there is a difference between second edit and reinterview data.

11) difference in hog numbers could only be attributed to a different respondent

12) failed to report one hog for home butcher

13) included land rented out, hogs were on this land

14) failed to report hogs owned by someone else on his acres operated

15) reported breeding hogs but left out feeder pigs

16) reinterview considered it a major name change

17) additional hogs reported that were owned, reason hogs omitted from original report is unknown

19) reason for difference is unknown

21) computer action resulted in a half of a hog which is rounded here.

3/ I = individual name selected; C = combination of individual names selected; F = farm name selected.

Comments relating to the above data:

Observation No. 1 - difference of 10 hogs can only be attributed to a different respondent (father original report and son on second report)

4 - reported 360 acres operated on original report but rents out (cash rent) 160 acres that the hogs were located on

7 - reinterview data corrects spelling of selected name such that it is considered a major name change

Table 23: WISCONSIN Test Version Data and Reinterview Data Involving Partnerships

Observation Number	Name Selected 3/	Number of Hogs				Reason Code 2/	Method of Collection 1/
		Reported	First Edit	Second Edit	Reinterview		
1	I	66	33	33	66	7	Telephone
2	I	35	18	18	35	7	Telephone
3	I	46	23	23	46	6	Telephone
4	I	155	155	155	77	2	Mail
5	I	33	17	17	33	6	Telephone
6	I	28	0	0	28	22	Mail
7	I	180	90	90	0	6	Mail
8	I	170	85	85	170	6	Telephone
9	I	19	19	19	10	1	Telephone
10	I	101	101	101	51	1	Telephone
11	I	20	20	20	7	1	Mail
12	I	38	38	38	19	1	Mail
13	I	198	198	99	198	6	Mail
14	I	230	79	79	0	6	Telephone
15	C	503	503	503	0	18	Mail

1/ Method of collection for original data

2/ Reason codes identify why there is a difference between second edit and reinterview data

1) second edit interpretation was individual operation; reinterview interpretation was father-son partnership

2) second edit interpretation was individual operation; reinterview interpretation was a partnership other than a father-son partnership

6) second edit interpretation was father-son partnership; reinterview interpretation was individual operation

7) second edit interpretation was a partnership other than a father-son partnership; reinterview interpretation was individual operation

18) selected combination of individuals do not operate land

22) considered operated all by son on first and second edit, reinterview maintains name selected (father) is the operator.

3/ I = individual name selected; C = combination of individual names

Comments relating to the above data:

Observation No. 1 - two brothers were indicated as partners on the original report but the hog land and operation are individually operated by the name selected

2 - originally reported as a partnership but reinterview data shows the landlord was included as a partner, name selected is the tenant operator

15 - the selected combination of individual names (two names) does not operate land as originally reported; three individuals operate the partnership

Table 24: WISCONSIN Test Version Data and Reinterview Data Involving Differences Due to Non-Partnerships

Observation Number	Name Selected[3]	Number of Hogs				Reason Code[2]	Method of Collection[1]
		Reported	First Edit	Second Edit	Reinterview		
1	I	2	2	2	4	17	Mail
2	I	144	144	144	104	23	Mail
3	I	213	213	213	313	17	Telephone
4	I	6	6	6	46	15	Telephone
5	F	196	196	196	221	24	Mail
6	F	1068	1068	1068	818	25	Mail

1/ Method of collection for original data

2/ Reason codes identify why there is a difference between second edit and reinterview data

15) reported breeding hogs but failed to report feeder pigs

17) additional hogs reported that were owned, reason hogs omitted from original report is unknown

23) some hogs were temporarily on the father's operation but all reported originally

24) reported feeder pigs but left out breeding stock

25) some hogs were located on daughter's place but all reported

3/ I = individual name selected; F = farm name selected.

Comments relating to the above data:

Observation No. 2 - some hogs were temporarily moved to the operator's father's place while a barn was being remodeled, all hogs were originally reported as being on the operators land

6 - the hog operation farrows their sows on the daughter's farm which is not considered land operated by the farm name selected, 50 sows and 200 pigs were originally reported on the acres operated

* U. S. GOVERNMENT PRINTING OFFICE 1977—241-436/SRS-156