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ARMS PANEL PLUS PILOT STUDY:

Results from the 1999–2000 ARMS Panel Plus Pilot Study

Kathleen E. Ott

ARMS PANEL PLUS PILOT STUDY: Results from the 1999-2000 ARMS Panel Plus Pilot Study. By Kathleen E. Ott, Data Quality Research Section, Research and Development Division, National Agricultural Statistics Service, U.S. Department of Agriculture, Fairfax, Virginia 22030. December 2000. Staff Report Number RDD-00-06.

ABSTRACT

The Agricultural Resource Management Study (ARMS) Phase III collects specific information from farm operators regarding their rates of production, expenses, returns, and profits. An ARMS panel plus pilot study was started in survey year 1998 and continued in survey year 1999 to assess operator cooperation rates over a three year period. First year results can be found in RD-99-05. During the second year, a new sample was added and operators from the first year were re-contacted to complete another ARMS questionnaire.

For the pilot study, we increased the public relations and promotion activities for a small group of operators and enumerators in order to retain operator cooperation over a period of three years. In general, even with an intensive promotion effort up front, we obtained a slightly lower response rate on the ARMS panel than on the regular ARMS survey.

KEY WORDS

Agricultural Resource Management Study (ARMS); Longitudinal Surveys; Public Relations (PR); Promotion.

ACKNOWLEDGMENTS

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SUMMARY

Phase III of the Agricultural Resource Management Study (ARMS) is currently conducted annually with a new sample of farm operators selected each year. A new longitudinal panel survey methodology is under discussion. The proposed "Panel Plus" design would collect detailed economic information from a small panel of operators over a period of three years, while general economic information would be collected for a larger "plus" sample of operators that changes every year.

One of the components necessary for this design is long term farm operator cooperation for the panel sample. To assess the feasibility of a three year participation commitment from operators, a panel plus pilot study was initiated in survey year 1998 (data collection in February 1999) in Virginia and Missouri. A variety of new promotional ideas was used to obtain and retain cooperation over the long term.

Response rates on the panel plus pilot sample were lower than on the regular ARMS sample completed by the same enumerators, indicating that the three year aspect of the study may have led to a decrease in response rates in the initial year. In general, nonpanel response rates for the enumerators working on the pilot were higher in the initial pilot year than rates for the past survey year. This could be attributed to the overall increased public relations and promotion that was directed towards enumerators.

Even with additional public relations and promotion efforts, response rates declined further in the second year, but we achieved a retention rate of about 88 percent in both states.

INTRODUCTION

Annually, the National Agricultural Statistics Service (NASS) and the Economic Research Service (ERS) conduct the Agricultural Resource Management Study (ARMS), a survey collecting financial information and farming practices from farm operations across the United States. The average interview length is 90 minutes, and many data items are perceived by NASS as sensitive and/or difficult for farm operators to answer.

Approximately 17,000 farm operations across the country are selected for the ARMS data collection process each year. In recent years, overall national response rates for this study have been about 60 percent.

In an attempt to decrease overall respondent burden and increase response rates, NASS and ERS are developing and evaluating a proposal that involves obtaining detailed information from a relatively small panel of producers across several consecutive years, while collecting limited information from a larger group of producers.

This "panel plus" data collection methodology would involve selection of two ARMS samples for data collection. The first sample would be called the "panel" and would include approximately 3,500 operators who would annually provide detailed economic and management information for their operations over three consecutive years. The second sample would be called the "plus" and would include approximately 10,000 operations who would provide limited economic data needed for regional and national level estimation. The two samples would be linked using appropriate modeling techniques to produce estimates which would support NASS and ERS data needs.

METHODOLOGY

Before implementing the panel plus methodology for the ARMS, a small panel plus pilot study was started in two states to look at ways to increase current response rates, track response and retention rates, investigate farm operator reaction to a three year study, and to examine alternative data collection options that may make reporting easier and less time consuming in the future.

This report only covers the public relations and promotion aspect of the pilot study. Development of a shorter questionnaire and the panel plus sampling and modeling will be addressed elsewhere.

Data collection for the pilot study started in February 1999, collecting data for the 1998 calendar year, and continued with the second year data collection starting in February 2000 for the 1999 survey year. For the rest of this report, year references will be to the survey year, not when the collection occurred. So, 1997 refers to survey year 1997, 1998 refers to survey year 1998, and 1999 refers to survey year 1999.

The first cohort of operations in the panel plus pilot study was initially interviewed for the panel in 1998 and re-interviewed in 1999. The first cohort involved a sample of 96 total farm operations in two states, Missouri (MO) and Virginia (VA). In addition, a second cohort of 59 farm operations was added in survey year 1999.

First, enumerators were selected to work on the project based on their past performance. For the 1998 survey year, enumerators with traditionally the highest response rates were selected. In general, for

the 1999 survey year, enumerators with more average response rates were selected. This non-randomized selection was used because during the first year of the study, we wanted to be sure that the new procedures would work for the best enumerators before expanding to enumerators with lower response rates. Also, we were not as concerned with statistical reliability as we were with the feasibility of doing a larger scale study using these procedures. Basically, if we discovered that our response rates suffered dramatically with these enumerators, we would not spend the money for a large scale study using all enumerators.

Secondly, operations that were in the active ARMS sample in the counties where these enumerators worked were identified as ARMS panel plus pilot sample. Therefore, all operations in the panel plus pilot study were originally part of the ARMS sample and would have been interviewed for ARMS regardless of the pilot study (for the first year).

Four enumerators worked on the original Virginia cohort of 47 pilot operations. Six enumerators worked on the original Missouri cohort of 49 pilot operations. (These 10 enumerators will be referred to as the first group of enumerators.) During the second year of the pilot study, all 1998 operations, regardless of their 1998 status, were contacted again. During this second year contact, enumerators verified out-of-business status, returned to interview operations who either completed the interview or were inaccessible, or attempted to convert refusals.

For the 1999 survey year, we added enumerators and samples in both states. A total of 30 operations were added in VA (17 were attempted by 3 new enumerators, while 13 were attempted by two of the panel enumerators from 1998). Four new enumerators contacted 29 operations in MO (These 7 enumerators will be referred to as the second group of enumerators).

The Census of Agriculture was conducted in January - May 1998, so no pilot study data were collected during the same year as the Census.

Because we did not randomly select enumerators and since we have such a small sample, the results are not necessarily representative of those we would see in other states or with other enumerators. This small, relatively inexpensive pilot study was done, in part, to determine the feasibility of doing a larger, more comprehensive test of a longitudinal design.

PUBLIC RELATIONS AND PROMOTION

In order to gain cooperation for three years, one of the main objectives of the study was to build rapport between enumerators, NASS personnel, and respondents. For details on the specific methodology, refer to research report RD-99-05 entitled "ARMS Panel plus Pilot Study: Results from the 1998-1999 ARMS Panel Plus Pilot Study" (Ott, 1999). Research report RD-99-05 gives detailed methodology, findings and results from the first year of the pilot study. This report (RDD-00-06) gives an overview of the methodology and results from the second year.

The basic survey implemention methodology included the following: pilot operations were sent an additional pre-survey letter from the state department of agriculture, and were given incentives when the enumerators set up the interviews or during the interviews.

In addition, a two person team

consisting of the enumerator and a headquarter's or state office person visited the operation for the interview. Pilot enumerators were given incentives and attended special training sessions. Depending on the year, the enumerator incentives included hand bags, t-shirts, or polo shirts. All of these procedures were used for both years of the pilot study during the first year the operation was contacted.

There were post interview contacts with both cohorts of pilot farm operations as well. A thank you card was immediately sent by the state office or the enumerator to each respondent and a refusal letter sent to each refusing operation. The refusal letter acknowledged the operation's refusal to participate in the ARMS and gave some information about how the data are used.

Between interview contacts, the enumerator made a special visit to each operation. They delivered an Individualized Farm Analysis (for cooperators only) comparing their operation to others in their region, along with a tin of cookies to each respondent and most refusals in the fall. They did not collect any data during this contact and reiterated the offer of state office assistance with other USDA or farm related issues first offered during the earlier interview contact.

During the second year of data collection for the first cohort of operations, panel operators were sent a presurvey letter and were contacted by the same enumerator. The interview was done by the enumerator alone, as there was no two-person team used for the second interviews.

RESULTS

First year cohort

Even though we asked respondents to be in the study for three consecutive years, we hoped to see first year response rates on the pilot study that were equal or higher than response rates on the rest of the operational ARMS sample due to the increased personal attention we gave farm operators. We also hoped to see overall response rates for 1998 increase compared to 1997 because we had increased the amount of attention and importance placed on the survey, and relayed that to enumerators. In addition, because of the increased focus on data uses and the enumerator visits in the fall (delivering the farm analysis and/or cookie tin), we hoped to achieve a high retention rate for the 1999 panel.

Table 1 shows the 1997, 1998, and 1999 response and refusal rates obtained by just the first group of enumerators (enumerators who worked on both years of the pilot study in each state). These rates and the corresponding numbers of total cases are also shown graphically in Appendix B. The first year, there was a total of 15 panel refusals, 8 in Missouri and 7 in Virginia. The second year, there was a total of 20 panel refusals, 10 in each state.

Rates are divided into five categories based on the year they were interviewed and whether they were included in the panel portion of the survey. In Table 1, "1997 Nonpanel", "1998 Nonpanel", and "1999 Nonpanel" include the cases that were not included in the panel, but were interviewed by the panel enumerators. Keep in mind that all interviews were the traditional ARMS interview (90 minute average interview time), since we were not yet testing the short

"plus" questionnaire. The categories "1998 Panel" and "1999 Panel" include only the panel cases for each year interviewed by the panel enumerators. The rates were calculated using the following formulas.

Response Rate =

$$\frac{\text{Completes}}{\text{Completes} + \text{Refusals} + \text{Inaccessibles}}$$

Refusal Rate =

$$\frac{\text{Refusals}}{\text{Completes} + \text{Refusals} + \text{Inaccessibles}}$$

Table 1: First Year Panel Enumerators

	1997	1998	1999
Response Rates*		---percent---	
Virginia			
Panel	-	83	75
Nonpanel	91	95	88
Missouri			
Panel	-	73	67
Nonpanel	77	86	68
Refusal Rates*		---percent---	
Virginia			
Panel	-	15	22
Nonpanel	6	5	8
Missouri			
Panel	-	17	23
Nonpanel	19	14	25

* Total N's are included in Appendix B and C. All differences are insignificant due to sample size.

There is one difference in the way response and refusal rates are calculated from the original pilot study research report (RD-99-05). In this new research report (RDD-00-06), out-of-business operations (2 in 1998, 6 additional in 1999) are excluded from the denominator for these rates. Out-of-business reports were included in the denominators in research report RD-99-05. Partial interviews are unusable for ARMS and are therefore considered refusals in both reports.

As illustrated in Table 1 above, 1998 panel response rates were lower than nonpanel rates each year, possibly showing that respondents and/or enumerators reacted negatively to the three year aspect of the study, even though we tried to emphasize the positive uses of the data and promote our Agency. The 1998 nonpanel response rates in both states were higher than the 1997 nonpanel response rates. Possibly, this is because of our PR and publicity efforts directed at enumerators. These motivational aspects of the PR and publicity focused on the general ARMS survey as much as the pilot study, so they could have affected enumerators in all of their interviewing, not just on the panel.

In 1999, both the nonpanel and the panel response rates dropped in both states to levels below the 1998 and 1997 rates. We expected some decrease in the panel response rates due to the longitudinal nature of the study. However, we did not expect such large decreases in the nonpanel response rates. Of course, our number of cases is small and we cannot, therefore, place too much significance on the decrease. Also, there could be any number of explanations for a decrease including factors outside of our control. These factors may include changing agricultural economics,

public opinion, or weather conditions, all of which could affect response rates. However, it could be that our extensive public relations and promotion campaign used during the 1998 survey year "wore off" by the 1999 survey year. Indeed, we did less promotion with these enumerators during the 1999 survey year.

Refusal rates for the panel compared with the nonpanel cases differ by state. In Missouri, the panel refusal rates were fairly close to the refusal rates for the nonpanel cases within the same year. However, the panel refusal rates were much higher than nonpanel refusal rates in Virginia. It is unclear why this would be the case, except there were more inaccessible cases (operations that cannot be reached during the enumeration period) in Missouri. It's possible that these hard to reach farm operators would refuse more often than those that are easier to reach.

It is promising that the response rate did not decrease significantly for the panel given the three year aspect of the study. It is difficult to assess how much of the response rate was related to the added burden of participation for three years and how much was related to the added public relations, promotion work, and special attention we gave to panel enumerators and respondents. Again, for many reasons, including the non-random selection of enumerators and the small sample sizes, we cannot generalize these results to our full population.

To compare the 1998 and 1999 outcomes for the farm operation interviews involved in the longitudinal panel, Table 2 shows the number of complete, refusal, inaccessible, and out-of-business (OOB) cases for both years of data collection.

Table 2: Status of Panel Cases

Status	1998 Panel	1999 Panel
Complete	73	63*
Refusal	15	20
Inaccessible (noncontact)	6	6
Out-of-Business	2	6
Total	96	95*

*one 1998 complete panel case was removed from the panel for subsequent years

There were 19 cases that changed status between the two years. Table 3 shows these changes.

Table 3: Changes in Status

Status Change	Number
Complete to Refusal	9
Complete to Inaccessible	2
Complete to OOB	1
Refusal to Complete	2
Refusal to Inaccessible	1
Refusal to OOB	1
Inaccessible to Complete	1
Inaccessible to OOB	2

The second year retention rate was high in both states. Missouri's retention rate was 89 percent, with 31 of the 35 complete reports from 1998 participating in 1999, and Virginia's retention rate was 86 percent with 32 of the 37 participating in 1999 (one

operation was removed from the panel because of the large size of the operation and its potential impact on the floriculture survey).

In summary, although our results cannot be generalized to all enumerators or respondents, we do see lower response rates on the panel portion of the ARMS survey than on the regular ARMS survey. Nonpanel rates increased during the year that we increased the PR and promotion activities with enumerators and respondents, and decreased the following year. The promotional activities geared towards enumerators and respondents may be effective in the short term, but may wear off over the year.

Second year cohort

As stated earlier, a second group of enumerators interviewed a new cohort of operations that were added for the second year. The same public relations and promotional activities were used for these enumerators and respondents. Response and refusal rates for the operations interviewed by the second group of enumerators are shown in Table 4. They are also shown graphically with the total number of cases in each cell in Appendix C. In Virginia, two of the first year enumerators were used to complete some of these interviews. Their response rates are not included in Table 4. Presentation and discussion of their response rates for the second year cohort are in Appendix A. The numbers for Virginia in Table 4 are for just the second group of enumerators.

Table 4: Second Year Panel Enumerators

	1997	1998	1999
Response Rates		---percent---	
Virginia			
Panel	-	-	59
Nonpanel	-	70	81
Missouri			
Panel	-	-	52
Nonpanel	-	75	43
Refusal Rates		---percent---	
Virginia			
Panel	-	-	41
Nonpanel	-	23	20
Missouri			
Panel	-	-	38
Nonpanel	-	15	50

Similar to the first year enumerator trend, the second group of Virginia enumerators obtained lower response rates on the panel, but higher nonpanel response rates for the 1999 ARMS than the 1998 ARMS. This is not the case for the second group of Missouri enumerators. In fact, the nonpanel response rate was much lower in 1999 than in 1998. Also, the panel response rate for these enumerators was higher than the nonpanel response rate. However, according to the state office, the counties selected for 1999 have been traditionally low response rates counties. In addition, in some cases, the enumerators were interviewing in areas that were not in their regular work

area. This makes it difficult to determine exactly why response rates for these enumerators was so low for the 1999 survey year.

CONCLUSION

A longitudinal panel approach to the ARMS may be feasible from a respondent cooperation point of view. During the two years of this study in two states, we were able to maintain a retention rate of about 88 percent, and did not experience much negative feedback. However, even with increased public relations and promotion, we should expect some decrease in response rates each year, as well as lower response rates on the panel than on the regular ARMS sample.

In addition, the promotional work we do with enumerators may wear off after an initial increase in motivation and increased response rates. This is seen with the increased response rates in the year that we increased the promotional work and the decrease during the following year.

There are two critical questions that still need to be answered regarding whether a Panel Plus approach is feasible for the ARMS. First, can a short questionnaire be developed for use with the Plus sample and will response rates on it indeed be higher than for the longer version of the questionnaire currently used? Secondly, can the Panel and the Plus be combined to satisfy data needs and provide data that are reasonably equivalent to what are produced now? Until these questions are answered, we cannot accurately assess the feasibility of using a panel sample and data collection methodology for the ARMS.

In general, the idea of a three year study did not drastically decrease response rates and did not receive a high level of negative respondent reaction in Virginia or Missouri. Therefore, it may be feasible to obtain cooperation for a three year period for this survey. However, a larger study may need to be done to assess exactly what impact a longitudinal design will have on response rates and data quality.

RECOMMENDATIONS

1. Ongoing public relations and promotion of NASS and the ARMS should be increased with both respondents and enumerators in an attempt to positively impact response rates over the long term. PR seems to at least temporarily increase response rates, so an ongoing PR program geared towards respondents as well as enumerators may be effective over a long period of time.

2. When a short questionnaire has been developed and formal consideration has been given to the panel plus sampling, modeling, and analysis, this portion of the ARMS pilot study could be continued. Until then, this public relations and promotion aspect of the pilot study should be discontinued. In the meantime, panel operations should be contacted and told the study will not continue, since many were told they would be interviewed for three consecutive years. The state office or interviewers should thank them for their help in past years and inform them that the study will not resume in February 2001.

3. To seriously consider using a panel data collection methodology, resources need to be devoted to developing a short questionnaire, a panel plus sample design and estimation methodology. Only when all

of these components are looked at together can the feasibility of using a panel be assessed.

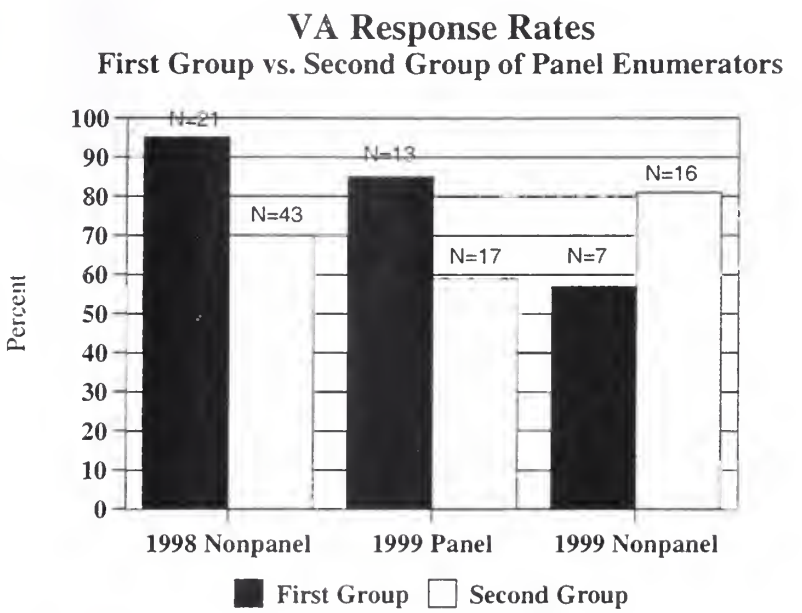
REFERENCES

Ott, Kathleen (1999). ARMS Panel Plus Pilot Study: Results from the 1998-1999 ARMS Panel Plus Pilot Study. USDA/NASS Research Report, RD-99-05.

Further Discussion of Second Year Response Rates

As stated earlier, in Virginia, two of the first cohort enumerators were used to complete some of second cohort interviews. Their response rates were not included in the graphs shown in the body of this report. These enumerators were used because it was difficult for the Virginia SSO to always match counties with pilot enumerators.

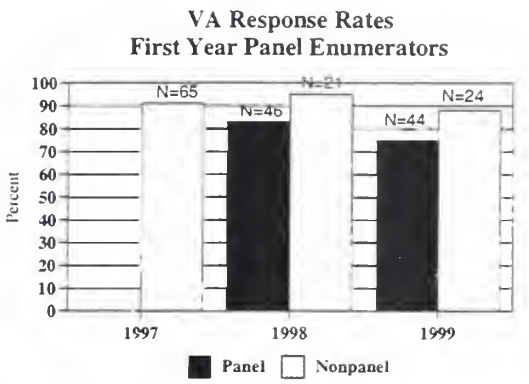
For informational purposes, the response rates for the first group of Virginia enumerators (two enumerators that interviewed first year operations during both the first and second years of the study) are compared to the second group of Virginia enumerators (three enumerators who only interviewed during the second year) below.

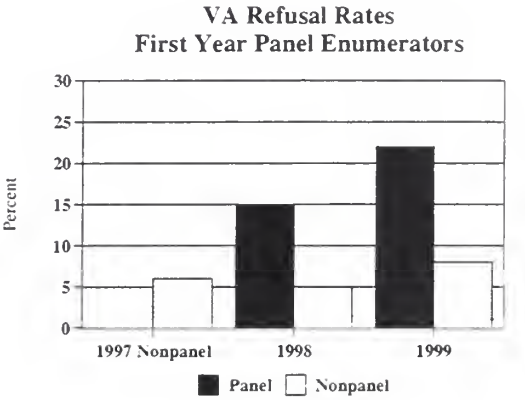


As can be seen in the above graph, the first group of enumerators have higher response rates for their 1998 nonpanel cases and their 1999 panel cases. However, the second group of enumerators have higher response rates for the 1999 nonpanel cases (however, there were only 7 nonpanel cases for the first group of enumerators for this category because of all the returning and new panel cases they were interviewing that year). Because of the large differences between the response rates for the first and second groups of enumerators, only the rates for the second group of enumerators were presented in this paper.

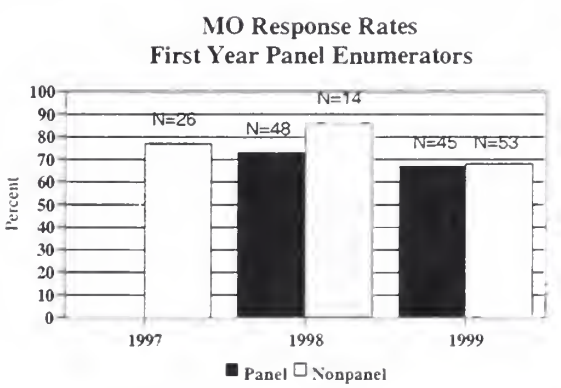
Response and Refusal Rate Graphs for First Year Enumerators

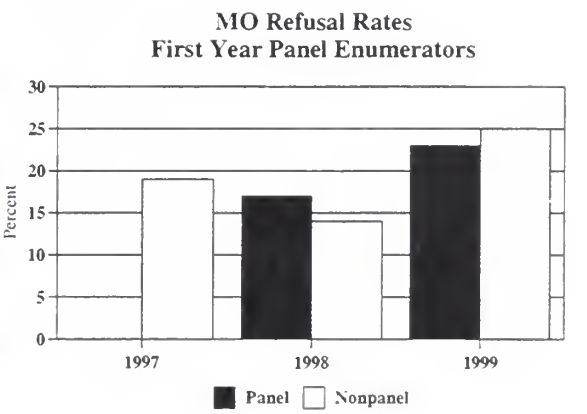
VIRGINIA





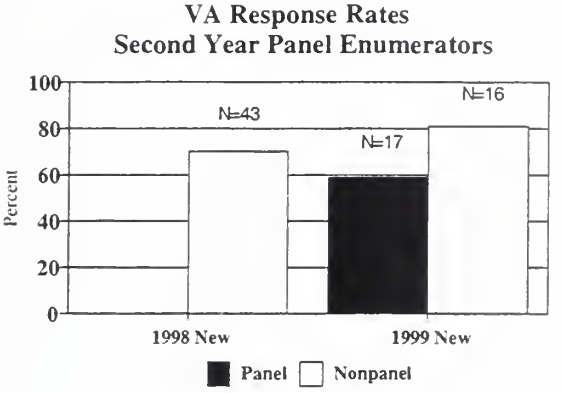
MISSOURI

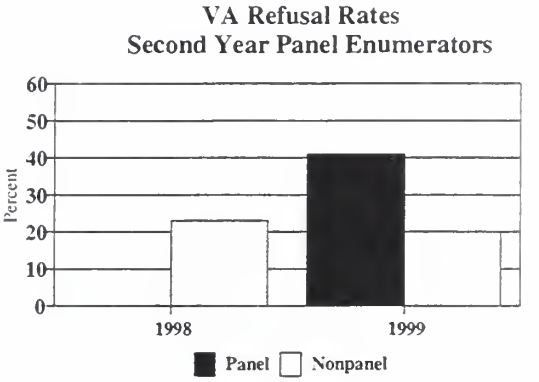




Response and Refusal Rate Graphs for Second Year Enumerators

VIRGINIA





MISSOURI