# INCENTIVES IN SURVEYS WITH FARMERS

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**Key Words**: Incentives**;** nonresponse; response rate; refusal conversion

## 1. INTRODUCTION

The Agricultural Resource Management Survey (ARMS) is an annual survey conducted by the United States Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS) and co-sponsored by USDA's Economic Research Service (ERS). The ARMS consists of three phases. Phase I is used for screening potential operations for Phases II and III; Phase II collects data on cropping practices and agricultural chemical usage; and Phase III collects detailed economic information about the agricultural operation as well as the operator's household.

ARMS Phase III has been problematic because, compared with other NASS surveys, its response rates are low, and its data collection costs are high. The Phase III survey utilizes multiple questionnaire versions. The "complete" questionnaire, which typically consists of between 30 and 40 pages, is administered in face-to-face interviews. A self-administered "Core" questionnaire is used for part of the sample for mail-out/mail-back data collection. The Core questionnaire is approximately half the number of pages as the complete version and collects the most critical ARMS Phase III information. For those receiving the Core questionnaire, face-to-face nonresponse follow-up interviews are conducted for all mail non-respondents.

Offering potential respondents incentives is a proven technique to increase response rates on a variety of surveys conducted by several agencies and companies (Church, 1993; James and Bolstein, 1992; James and Bolstein, 1990; Singer, 2002). This paper reports on two incentive experiments conducted on the ARMS Phase III. The first experiment was implemented with the 2004 ARMS Phase III Core to test whether monetary incentives would be effective at increasing response rates for this survey while being cost effective. The second experiment was implemented on the 2005 ARMS Phase III complete questionnaire, which utilized only face-to-face data collection.

## 2. METHODS

The 2004 ARMS Phase III Core sample size was 15,900 farm/ranch operations across 15 states. The 15 states were those with the highest agricultural value of sales and included Arkansas, California, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Carolina, Texas, Washington, and Wisconsin. The sample was stratified by state, farm value of sales (as maintained on the sampling frame), and type of operation (also as maintained on the sampling frame); then, five sub-samples, each of approximately 2,000, were systematically selected. The sub-samples were drawn such that each was equally represented across strata.

The standard mail-out/mail-back data collection methodology for the 2004 ARMS Phase III Core sample consisted of: (1) a cover letter and questionnaire mailed on December 28, 2004, (2) a post-card reminder and "thank you" sent to the entire sample on January 13, 2005, (3) a cover letter and second questionnaire mailed to all non-respondents on January 31, 2005, and, finally, (4) starting February 21, 2005, face-to-face interviews attempted for all remaining mail non-respondents.

In addition to the standard data collection methodology, prepaid and promised indirect cash incentives – in the form of $20 automated teller machine (ATM) cards – and priority mail were used as stimuli. Combinations of these stimuli were administered to four of the five sub-samples mentioned above; a fifth sub-sample received no stimuli and served as the control for this project. Collectively, these five sub-samples formed the five treatment groups used for the 2004 project. Table 1 contains descriptions of the treatment groups.

The sub-samples in the pre-paid incentive treatment groups all received cover letters that: (1) explained the incentive was a "thank you", (2) described the uniqueness of the ARMS, and (3) justified the use of the incentive by its overall cost savings to the government. The actual ATM cards were delivered to recipients in the same packet as the first questionnaire.

Priority mail was also used as a stimulus because evidence from survey literature has shown the use of priority mail increases overall response rates, especially when used in combination with monetary incentives

(Moore and An, 2001).

The 2005 ARMS Phase III complete questionnaire sample size was 11,625 farm/ranch operations across all states except Hawaii and Alaska. The sample was stratified by state, farm value of sales (as maintained on the sampling frame), and type of operation (also as maintained on the sampling frame); then, five sub-samples, each of approximately 2,000, were systematically selected. The sub-samples were drawn such that each was equally represented by the strata.

Each of the five treatment groups was mailed a pre-survey letter. In addition, treatment groups received incentive stimuli with their pre-survey letters in the form of $20 ATM cards, a non-monetary incentive in the form of a NASS logo wall clock, and the promise of a Farm Profile for their operation. The Farm Profile was a report that displayed the percentile within which the operation's data fell compared to an overall group estimate for each of 16 expense categories. Generic profiles without individual operation data were generated for non-respondents. The Farm Profiles were sent to operations in September 2006, after the ARMS data were summarized.

Combinations of these stimuli were administered to four of the five 2005 sub-samples mentioned above; a fifth sub-sample received no stimuli (except the standard pre-survey letter) and served as the control group for this project. Collectively, these five sub-samples formed the five treatment groups used for the 2005 project. Table 1 contains descriptions of the treatment groups.

All treatment groups received standard pre-survey letters containing uses of the ARMS survey data, and, if applicable, a reference to the type of incentive the operation received ($20 ATM card, NASS logo clock, Farm Profile) as an advanced thank you for participation.

The sub-samples in the incentive treatment groups all received pre-survey letters that: (1) explained the incentive was a "thank you", and; (2) described the uniqueness of the ARMS.

The actual ATM cards were delivered with the pre-survey letter via first-class US mail. The wall clocks, with a pre-survey letter, were delivered via Federal Express.

For both the 2004 and 2005 experiments, the ATM cards were supplied by JPMorgan Chase bank and were usable in nationwide ATMs that displayed the NYCE®, Pulse®, Maestro®, or Cirrus® logos. The cards were also usable at point-of-sale (POS) (i.e., retail) establishments that allow the use of debit cards as payment; however, recipients were not explicitly told this. In addition to the $20 incentive, the ATM cards were loaded with an extra $4 to cover any transaction charges. The cards were pre-activated and were immediately usable when the recipients received them. The personal identification number (PIN) needed to use the card was embossed on the front of each card after the words "THANK YOU". The front of each card also included the embossed message, "FOR HELP 1-888-424-7828"; this toll-free telephone number was answered by NASS staff. Finally, all ATM cards expired approximately six months after recipients received them. There was no provision for extending the expiration date.

**Table 1**: Treatment Groups

| 2004 Experiment | | 2005 Experiment | |
|---|---|---|---|
| Treatment Group | Description | Treatment Group | Description |
| 1 | Control, First Class Mail, cover letter | 1 | Control, First Class Mail, pre-survey letter |
| 2 | First Class Mail, cover letter, prepaid $20 ATM card | 2 | First Class Mail, pre-survey letter, prepaid $20 ATM card |
| 3 | Priority Mail, cover letter | 3 | First Class Mail, pre-survey letter, promised Farm Profile |
| 4 | Priority Mail, cover letter, prepaid $20 ATM card | 4 | FedEx, pre-survey letter, prepaid NASS clock |
| 5 | First Class Mail, cover letter, promised $20 ATM card | 5 | First Class Mail, pre-survey letter, prepaid $20 ATM card, promised Farm Profile |

For both the 2004 and 2005 experiments, interviewers were instructed to follow standard data collection protocol, regardless of whether or not operations received incentives. Interviewers were informed which samples received incentives. However, other Federal Agencies who have used monetary incentives have found that when interviewers mention the incentives, potential respondents often report they did not receive

them and ask for a replacement to be provided (see McGrath, 2006). This significantly increases costs and NASS did not have sufficient additional ATM cards to meet substantial numbers of replacement requests. For this reason, interviewers were specifically instructed not to mention the incentives.

## 3. 2004 EXPERIMENT RESULTS

### 3.1 Response Rates

Similar to previous incentive research conducted on various populations, the results of the 2004 experiment involving the ARMS Phase III Core questionnaire showed that incentives increased response rates. Table 2 shows the response rates by treatment group. Response rates are also broken out by the different mailing and contacts employed as part of the data collection methodology.

As shown in Table 2, all treatment groups that received an incentive had higher response rates than the control group (Treatment Group 1). The prepaid $20 ATM incentive sent by priority mail (Treatment Group 4) had the highest mail and overall response rates, at 43.9 percent and 72.4 percent, respectively. The second highest mail and overall response rates were achieved with the prepaid incentive sent by first class mail (Treatment Group 2) with a mail response rate of 40.8 percent and an overall response rate of 70.4 percent. The promised $20 ATM incentive response rates, at 37.2 percent for mail and 68.4 percent overall, surpassed the treatment groups that received no incentives, but lagged those that provided prepaid incentives. Priority mail alone was ineffective at increasing response rates.

The mail and overall response rates were compared for statistical significance using *t*-tests across all treatment group combinations. All tests were done at an overall $\alpha$=0.05 level of significance (with a Bonferroni adjustment for the ten comparisons). Details of all comparisons are given in Tables 3 and 4. All three treatment groups that received ATM card incentives had significantly higher mail and overall response rates than the control group, with the two prepaid treatment groups outperforming the promised incentive.

In terms of mail response, all three treatment groups that received ATM card incentives had significantly higher response than the control group. Specifically:

- Treatment Group 2 had a significantly greater mail response rate than Treatment Groups 1 and 3.
- Treatment Group 4 had a significantly greater mail response rate than Treatment Groups 1, 3, and 5.
- Treatment Group 5 had a significantly greater mail response rate than Treatment Groups 1 and 3.

In terms of overall response, all three treatment groups that received ATM card incentives had significantly higher response than the control group. Specifically:

- Treatment Group 2 had a significantly greater overall response rate than Treatment Groups 1 and 3.
- Treatment Group 4 had a significantly greater overall response rate than Treatment Groups 1 and 3.
- Treatment Group 5 had a significantly greater overall response rate than Treatment Group 1.

### 3.2. ATM Card Use

It was unclear what to expect when mailing ATM cards to potential survey respondents. Other government agencies have used ATM cards on a large scale and found that a sizable percentage of card recipients do not cash their cards (Kay, et al., 2001).

#### 3.2.1. ATM Card Use: How many recipients cash them?

For the 2004 ARMS Core, most recipients of ATM cards did not use them. Table 5 shows the percentages of recipients who used their ATM cards for monetary withdrawal by treatment group. Just over a third (38.6 percent) of all card recipients cashed their ATM cards. This rate differed greatly by incentive treatment group and response. The most striking difference is that between respondents and non-respondents.

Respondents cashed their cards at an average rate of 47.6 percent, while non-respondents cashed them less than five percent of the time. It could be that non-respondents never saw the card because they threw the packet in the trash without opening it. Also, non-respondents may have felt that they did not deserve the money because they did not complete the questionnaire.

Also noteworthy is that mail respondents cashed their cards at a higher rate than face-to-face interviewed respondents. The cover letter emphasized that the ATM card was provided with the purpose of passing on some of the savings of mail data collection, instead of requiring a face-to-face interview. Assuming they read the cover letter, those respondents who completed the survey with a face-to-face interview may have felt that they were not entitled to the money or that the card was not valid unless the questionnaire was mailed back.

**Table 2:** 2004 Experiment Response Rates by Treatment Group

| Treatment Group | N [1/] | 1st Mailing Returns | | Postcard | | 2nd Mailing Returns | | Overall Mail Returns [2/] | | Face-to-Face Follow-Up Completes | | Overall Returns & Completes | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Count | Response Rate | Count | Resp. Rate Increase | Count | Resp. Rate Increase | Count | Response Rate | Count | Response Rate | Count | Response Rate |
| 1 (Control) | 1,948 | 137 | 7.0% | 117 | 6.0% | 225 | 11.6% | 586 | 30.1% | 649 | 33.3% | 1,235 | 63.4% |
| 2 | 1,941 | 223 | 11.5% | 214 | 11.0% | 240 | 12.4% | 791 | 40.8% | 575 | 29.6% | 1,366 | 70.4% |
| 3 | 1,935 | 146 | 7.6% | 135 | 7.0% | 241 | 12.5% | 635 | 32.9% | 616 | 31.8% | 1,251 | 64.7% |
| 4 | 1,952 | 197 | 10.1% | 226 | 11.6% | 307 | 15.7% | 856 | 43.9% | 557 | 28.5% | 1,413 | 72.4% |
| 5 | 1,946 | 193 | 9.9% | 156 | 8.0% | 276 | 14.2% | 724 | 37.2% | 608 | 31.2% | 1,332 | 68.4% |

1/ Initially, all treatment groups contained 2,000 records, but NASS Field Offices removed operations with whom they had previous data collection agreements.
2/ Overall Mail Returns includes all returns from the 1st and 2nd mailings and postcard in addition to all mail returns received after face-to-face follow-up started.

**Table 3:** 2004 Experiment Comparisons of Overall ***Mail*** Response Rates

| Comparison | Response Rate Difference [1/] | *t*-test Statistic [2/] | *p*-value [3/] |
|---|---|---|---|
| Treatment Group 2 versus Treatment Group 1 | 10.67 | 6.9997 | 0.0000* |
| Treatment Group 3 versus Treatment Group 1 | 2.73 | 1.8356 | 0.3333 |
| Treatment Group 4 versus Treatment Group 1 | 13.77 | 8.9999 | 0.0000* |
| Treatment Group 5 versus Treatment Group 1 | 7.12 | 4.7166 | 0.0000* |
| Treatment Group 3 versus Treatment Group 2 | -7.94 | -5.1403 | 0.0000* |
| Treatment Group 4 versus Treatment Group 2 | 3.10 | 1.9587 | 0.5032 |
| Treatment Group 5 versus Treatment Group 2 | -3.55 | -2.2691 | 0.2340 |
| Treatment Group 4 versus Treatment Group 3 | 11.04 | 7.1225 | 0.0000* |
| Treatment Group 5 versus Treatment Group 3 | 4.39 | 2.8686 | 0.0419* |
| Treatment Group 5 versus Treatment Group 4 | -6.65 | -4.2369 | 0.0002* |

1/ In percentage points.
2/ Comparisons involving Treatment Group 1 (the control) are based on a one-sided *t*-test with a Bonferroni adjustment for the 10 comparisons; comparisons not involving Treatment Group 1 (the control) are based on a two-sided *t*-test with a Bonferroni adjustment for the 10 comparisons.
3/ *P*-values incorporate a Bonferroni adjustment for 10 comparisons.
* = Statistically significant at the $\alpha = 0.05$ level.

**Table 4:** 2004 Experiment Comparisons of Overall Response Rates

| Comparison | Response Rate Difference [1/] | *t*-test Statistic [2/] | *p*-value [3/] |
|---|---|---|---|
| Treatment Group 2 versus Treatment Group 1 | 6.98 | 4.6361 | 0.0000* |
| Treatment Group 3 versus Treatment Group 1 | 1.25 | 0.8134 | 1.0000 |
| Treatment Group 4 versus Treatment Group 1 | 8.99 | 6.0395 | 0.0000* |
| Treatment Group 5 versus Treatment Group 1 | 5.05 | 3.3290 | 0.0044* |
| Treatment Group 3 versus Treatment Group 2 | -5.72 | -3.8123 | 0.0014* |
| Treatment Group 4 versus Treatment Group 2 | 2.01 | 1.3885 | 1.0000 |
| Treatment Group 5 versus Treatment Group 2 | -1.93 | -1.3046 | 1.0000 |
| Treatment Group 4 versus Treatment Group 3 | 7.74 | 5.2097 | 0.0000* |
| Treatment Group 5 versus Treatment Group 3 | 3.80 | 2.5086 | 0.1218 |
| Treatment Group 5 versus Treatment Group 4 | -3.94 | -2.6967 | 0.0705 |

1/ In percentage points.
2/ Comparisons involving Treatment Group 1 (the control) are based on a one-sided *t*-test with a Bonferroni adjustment for the 10 comparisons; comparisons not involving Treatment Group 1 (the control) are based on a two-sided *t*-test with a Bonferroni adjustment for the 10 comparisons.
3/ *P*-values incorporate a Bonferroni adjustment for 10 comparisons.
* = Statistically significant at the $\alpha = 0.05$ level.

**Table 5:** 2004 Experiment ATM Card Usage by Treatment Group [1/]

| Treatment Group | Card Use by Mail Respondents | | | Card Use by Overall Respondents [2/] | | | Card Use by Overall Non-Respondents | | | Card Use by All Card Recipients [3/] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of Mail Respondents | Cards Used For $ Withdrawal | Percent of Cards Cashed | Number of Overall Respondents | Cards Used For $ Withdrawal | Percent of Cards Cashed | Number of Non-Respondents | Cards Used For $ Withdrawal | Percent of Cards Cashed | Number of Card Recipients | Cards Used For $ Withdrawal | Percent of Cards Cashed |
| 2 | 791 | 478 | 60.4 | 1,366 | 561 | 41.1 | 575 | 27 | 4.7 | 1,941 | 588 | 30.3 |
| 4 | 856 | 504 | 58.9 | 1,413 | 576 | 40.8 | 539 | 29 | 5.4 | 1,952 | 605 | 31.0 |
| 5 | 724 | 517 | 71.4 | 1,332 | 818 | 61.4 | 614 | 19 [4/] | 3.1 [4/] | 1,365 | 837 | 61.3 |
| Total (Trts. 2,4,5) | 2,371 | 1,499 | 63.2 | 4,111 | 1,955 | 47.6 | 1,728 | 75 | 4.3 | 5,258 | 2,030 | 38.6 |

1/ Counts include distinct operators who withdrew money using ATM cards.
2/ Includes mail and face-to-face respondents.
3/ Includes respondents and non-respondents.
4/ Operators in Treatment Group 5 should not have received an ATM card unless they responded to the survey. However, some returned partially completed forms that were determined to be inadequately completed after the card had been mailed out.

**Table 6:** 2004 Experiment Overall Costs by Treatment Group

| Treatment Group | N | Costs (In Dollars) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Postage | Printing | NPC [1/] Extra Admin | ATM Card Charges | ATM Card Admin | Face-to-Face Follow-up Costs | Total | Average Per Sample | Average Per Complete |
| 1 (Control) | 1,948 | 4,882 | 6,638 | --NA-- | --NA-- | --NA-- | 176,291 | 187,811 | 96.41 | 152.07 |
| 2 | 1,941 | 4,833 | 6,295 | 2,000 | 13,195 | 1,650 | 154,154 | 182,127 | 93.83 | 133.33 |
| 3 | 1,935 | 15,207 | 6,515 | --NA-- | --NA-- | --NA-- | 170,951 | 192,673 | 99.57 | 154.02 |
| 4 | 1,952 | 14,953 | 6,297 | 2,000 | 13,683 | 1,659 | 148,356 | 186,948 | 95.77 | 132.31 |
| 5 | 1,946 | 5,284 | 6,655 | 2,000 | 18,832 | 1,654 | 160,475 | 194,900 | 100.15 | 146.32 |

1/ The U.S. Census Bureau's National Processing Center (NPC) provided printing, mailing, and processing services.

Respondents in the two prepaid incentive treatment groups (Treatment Groups 2 and 4) cashed their cards at a rate of about 41 percent while respondents in the promised treatment group (Treatment Group 5) cashed their cards at a rate of over 60 percent. This could be because the respondents who were promised the incentive felt as if they deserved the card because they fulfilled their side of an economic agreement. By making receipt of the card contingent on filling out the questionnaire, NASS may have made these respondents more likely to feel that they had earned the money. The prepaid respondents, on the other hand, may have seen the ATM card as a gesture of goodwill, and not felt as if they necessarily deserved it.

### 3.3. Overall Costs

Overall cost must be considered when deciding whether or not to use incentives. Data collection costs for mail and face-to-face interviewing need to be combined with incentive costs to create an overall picture of the dollar value of using incentives.

As shown in Table 6, overall costs and the average costs per sample and completed record were lowest for the two prepaid incentive groups (Treatment Groups 2 and 4). This is due to two important factors in the data collection methodology and incentive use. First, only a little over one-third of card recipients (considering all treatment groups that received cards) cashed their ATM card. Second, face-to-face interviews are much more costly than mail self-administered questionnaires, even when combined with the incentive. Because the prepaid incentive treatment groups achieved such large increases in mail response over the other treatment groups, overall data collection costs for those two groups were lower.

## 4. 2005 EXPERIMENT RESULTS

### 4.1 Response Rates

Unlike previous incentive research conducted with the 2004 ARMS Core questionnaire, the results of the 2005 experiment showed that the incentives for the complete questionnaire sample did not significantly increase response rates. Table 7 shows the response rates by treatment group (treatment group descriptions are given in Table 1).

As shown in Table 7, although all treatment groups that received an incentive had slightly higher response rates than the control group (Treatment Group 1), none were significantly different.

### 4.2 ATM Card Usage

As shown in Table 8, less than 30 percent of ATM cards were cashed by the treatment groups receiving them. This is similar to findings of other government agencies (Kay et al., 2001). However, unlike the 2004 experiment, the proportion of operations that received the complete questionnaire and cashed the cards is similar for respondents and non-respondents.

This seemingly curious result may have occurred because the ATM cards were not described as resulting in cost savings for the complete questionnaire sample. For the Core questionnaire, ATM card recipients who did not respond may have felt they were not entitled to the money or perhaps that their cards would not be activated without the return of their form.

In addition, for the Core questionnaire sample, the ATM card was delivered in the same package as the questionnaire they were to complete. For the complete questionnaire, incentives were delivered completely separate from the interviewer's request to provide the data (and as mentioned previously, the interviewers were instructed not to mention the incentive.) This may have impacted the response rates and card cashing rates for the 2005 experiment.

### 4.3 Costs of Incentive Use

The use of ATM cards and also non-monetary incentives such as clocks or other tokens of appreciation add additional costs both in dollars and other resources. The cost of ATM cards include the $20 dollars provided to the respondent who uses the card plus an additional $4 to cover any fees that may be charged by the particular machine used. In addition, since the ATM cards could be used at point-of-sale (POS) debit card machines, users could withdraw money at a variety of locations (although recipients were not explicitly told this.)

For non-monetary incentives, the costs of incentives include the incentive itself, and the additional costs of packaging and mailing the incentives. Unlike ATM cards whose full value is only paid if the recipient takes action to cash the card, the entire cost of non-monetary incentives is spent whether the potential respondent uses the incentive or not.

The Farm Profiles were designed and generated by NASS' Statistics Division staff. Operations who responded had profiles with their operation compared to similar operations; for those operations who did not respond, a generic profile was generated

**Table 7:** 2005 Experiment Response Rates by Treatment Group

| Treatment Group | N [1/] | Completes | Response Rate | Change from Control (Percentage Points) | Test versus Control *t*-test Statistic [2/] | *p*-value |
|---|---|---|---|---|---|---|
| 1 (Control) | 1,985 | 1,395 | 70.28 | -- | -- | |
| 2 | 1,958 | 1,414 | 72.22 | 1.94 | 1.94 | 0.0892 |
| 3 | 1,967 | 1,387 | 70.51 | 0.23 | 0.24 | 0.4354 |
| 4 | 1,965 | 1,422 | 72.37 | 2.09 | 2.09 | 0.0733 |
| 5 | 1,955 | 1,420 | 72.63 | 2.35 | 2.36 | 0.0507 |

1/ Initially, all treatment groups contained 2,000 records, but NASS Field Offices removed operations with whom they had previous data collection agreements.
2/ Comparisons are based on a one-sided *t*-test because it was assumed that any effect would be positive.

**Table 8:** 2005 Experiment ATM Card Usage by Treatment Group [1/]

| Treatment Group | Card Use by Respondents | | | Card Use by Nonrespondents | | | Card Use by All Card Recipients | | |
|---|---|---|---|---|---|---|---|---|---|
| | Count | Cards Used For $ Withdrawal | Percent of Cards Cashed | Count | Cards Used For $ Withdrawal | Percent of Cards Cashed | Count | Cards Used For $ Withdrawal | Percent of Cards Cashed |
| 2 | 1,414 | 369 | 26.10 | 544 | 165 | 30.33 | 1,958 | 534 | 27.27 |
| 5 | 1,420 | 371 | 26.13 | 535 | 131 | 24.49 | 1,955 | 502 | 25.68 |
| Total | 14,762 | 4,301 | 29.14 | 5,382 | 511 | 9.49 | 20,144 | 4,812 | 23.89 |

1/ Counts include distinct operators who withdrew money using ATM cards (also includes those who made Point of Sale (POS) purchases).

**Table 9:** 2005 Experiment Overall Costs by Treatment Group

| Treatment Group | N | Costs (In Dollars) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Postage [1/] | Printing [2/] | NPC [7/] Extra Admin [3/] | Incentive Cost [4/] | ATM Card Admin [5/] | Enumeration Costs [6/] | Total | Average Per Sample | Average Per Complete |
| 1 (Control) | 1,985 | 598 | 88 | – | 0 | 0 | 254,080 | 254,766 | 128 | 183 |
| 2 | 1,958 | 597 | 176 | 861 | 12,174 | 0 | 250,624 | 264,432 | 135 | 187 |
| 3 | 1,967 | 600 | 89 | – | 10,984 | 0 | 251,776 | 263,449 | 134 | 190 |
| 4 | 1,965 | 10,198 | 88 | 5,895 | 18,505 | 0 | 251,520 | 286,206 | 146 | 201 |
| 5 | 1,955 | 596 | 176 | 860 | 22,359 | 0 | 250,240 | 274,231 | 140 | 193 |

1/ $0.305 each for first class; $5.19 each for FedEx (used for the clocks)
2/ Pre-survey letter at $0.045 each plus (if appropriate) debit card instruction sheet at 0.045 each.
3/ $0.44 each for hand stuffing the ATM cards; $3.00 each for packaging the clocks.
4/ Includes ATM card costs or the cost of the non-monetary incentives, [Clocks at $18,505 ($16,400 for the clocks, $80 set up fee, $2,025 shipping fee). Individual Financial Profiles at $21,900 (20,000 in estimated staff costs, $1,500 in mailing costs, and $400 in printing/paper costs)]. See Appendix D for more detailed description.
5/ JP Morgan did not charge NASS the standard $0.85 ATM Administrative Fee per card since the delivery of the ATM cards was delayed.
6/ 2005 Agricultural Resource Management Survey (ARMS) Phase 3 Survey Administration Analysis: US average per sample ($128) multiplied by the number in the treatment group.
7/ The U.S. Census Bureau's National Processing Center (NPC) provided printing, mailing, and processing services.

without individual operation data. All profiles were created some time after the survey contacts and were delivered to the NASS Field Offices in September 2006. Once created and printed, the profiles were distributed to NASS Field Offices for final distribution to sampled operations. (Costs associated with this final step of field offices distributing the profiles to the operations were not tracked and are not included in this analysis.)

A token incentive, like a wall clock, is more likely to be noticed due to its large size. However, it costs much more to package and mail these types of incentives.

The costs of each of the incentives used in this study are shown in Table 9.

Because the incentives cost more but did not significantly impact response rates, the control group who received nothing more than the pre-survey letter was the least expensive in both cost per sample and average cost per completed interview. This is in stark contrast to the results of using incentives with a mail-back form where substantial cost savings can be realized by reducing the number of personal interviews, even if overall response rates are not affected.

## 5. CONCLUSION

Indirect monetary incentives in the form of $20 ATM cards proved to be effective at increasing survey response rates for the 2004 ARMS Core questionnaire, which used a combination of mail-out/mail-back and face-to-face data collection methodologies, but not for the 2005 ARMS complete questionnaire, which used only face-to-face data collection methodology. Mail response rates in 2004 for the prepaid incentive groups were significantly higher than the control group, saving a large amount of money on costly face-to-face follow-up interviews. Overall response rates were higher as well, providing NASS with more completed records for analysis.

In addition, for the 2004 experiment, data collection costs were lowest for the prepaid incentive treatment groups because of the low card cashing rate and the lower number of costly face-to-face follow-up interviews required. However, for the 2005 experiment, no data collection costs savings were realized (nor were they expected).

It is not known what effects the continued use of indirect monetary incentives may have on the response rates for ARMS or for NASS' entire survey program (NASS conducts hundreds of agricultural surveys each year targeting the same population as the ARMS Phase III). Therefore, NASS should conduct research to determine if there are any negative wide-ranging effects of their use.

## 6. REFERENCES

Church, A. H. 1993. "Estimating the Effect of Incentives on Mail Survey Response Rates: A Meta-Analysis." Public Opinion Quarterly 57:62-79.

James, J. M., and R. Bolstein. 1992. "Large Monetary Incentives and Their Effect on Mail Survey Response Rates." Public Opinion Quarterly 56:442-453.

James, J. M., and R. Bolstein. 1990. "The Effect of Monetary Incentives and Follow-Up Mailings on the Response Rate and Response Quality in Mail Surveys." Public Opinion Quarterly 54:346-361.

Kay, W. R., S. Boggess, K. Selvavel, and M. F.McMahon. 2001. "The Use of Targeted Incentives to Reluctant Respondents on Response Rate and Data Quality." *Proceedings of the Survey Research Methods Section, American Statistical Association*. Alexandria, VA.

McGrath, D. E. 2006, "An Incentives Experiment in the U.S. Consumer Expenditure Quarterly Survey." Bureau of Labor Statistics, United States Department of Labor. Washington, DC.

Moore, D. and L. An. 2001. "The Effect of Repetitive Token Incentives and Priority Mail On Response to Physician Surveys." *Proceedings of the Government Section on Survey Methods, American Statistical Association*. Alexandria, VA.

Singer, E. 2002. "The Use of Incentives to Reduce Nonresponse in Household Surveys." In Groves, R. M., D. A. Dillman, J. L. Eltinge, R. J. A. Little (Eds.) *Survey Nonresponse* (pp. 163-177). New York: John Wiley & Sons, Inc