

RESPONSE PATTERNS TO A MAIL SURVEY OF

NEW ZEALAND FARMERS

by

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CHAPTER 1

INTRODUCTION

A major problem in agricultural economics research is the collection of information from farmers. On occasions a large quantity of information is required while almost invariably the researcher is faced by a budgetary constraint. Farmers, as a group, are characterised by being geographically widely dispersed in relatively small independent units, each of which must be approached individually to obtain information. Farmers are also notoriously difficult to contact at home without time consuming prior arrangement.

Mail surveys are an obvious solution to this problem. They do not provide a universal answer to all data collection needs, but they are a powerful device for rapidly collecting a large quantity of information from a large number of farmers at a low cost. In spite of this observation having been made before in the agricultural economics literature [11, 18, 38, 48,] mail surveys are still treated with suspicion by many N.Z. agricultural economists, indeed by N.Z. economics researchers generally.

In part the existing suspicion of mail surveys arises from poor response rates experienced in New Zealand in the past; and in part it arises from the questioning of the reliability of responses. A substantial volume of overseas literature indicates that these grounds for suspicion are without substance when adequate attention is paid to the method used in application of the mail survey. Certainly overseas experience indicates that using mail surveys should be given serious consideration before costly personal visit surveys are undertaken.

This report reviews the literature on mail surveys. It then summarises recent experience by the Agricultural Economics Research Unit of Lincoln College in using mail

surveys. In particular, it reports the findings of experiments in mail survey technique conducted in the context of surveys of New Zealand farmers. The primary source of the experimental findings reported was a mail survey of over 3,000 South Island sheep farmers initiated in November 1975. This survey, in a lengthy questionnaire, sought a variety of factual and attitude data relating to farm transport. The sample was split into ten experimental groups so that the effects of selected mail survey application techniques could be tested. The survey was preceded by a pilot survey [1].

The primary aim of this report is to provide a guide to mail surveys so that the technique can be realistically evaluated by potential users. It also highlights aspects of mail survey technique that require refinement. It is hoped that future users of this survey method will undertake experiments that will contribute towards further knowledge that will improve the effectiveness and public acceptability of subsequent mail surveys.

CHAPTER 2.

REVIEW OF MAIL SURVEY LITERATURE

2.1 Response Rates

Almost invariably a mail survey will generate a response rate of less than 100 percent. It is on this point that most criticism of mail surveys centres. But response rates of over 90 percent have been reported in a number of overseas studies for example [13, 25, 39, 46]; and even 100 percent response rates have been reported [4, 31]. Australian farm surveys have obtained response rates of 39 to 73 percent [11, 18]. In contrast the expected response to New Zealand mail surveys appears to lie in the range 20 to 30 percent [58]. For instance, O'Donnell [38] reported a 36 percent response to a survey of 1,123 farmers in 1969, and this response was considered high.

Recently the author [1] obtained a net valid response rate of 53 percent to a pilot survey for the main survey discussed in this report. The main survey itself resulted in a net valid response rate of 59 percent. Pryde [40], using techniques proved in the pilot survey, obtained a net valid response rate of 68 percent. These response rates are more in line with reported overseas experience. Accordingly it can be concluded that past New Zealand experience with mail surveys may have led to response rate expectations being unduly low, because of inadequate attention to technique.

2.2 Response Bias

Low response rates are not a serious problem in themselves. It is easy enough to increase sample sizes at a low marginal cost to ensure a satisfactory number of replies. The difficulty arises when a correlation between answers and the propensity to respond introduces a bias variously referred to as response or non-response bias [18, 27, 46], or mail back bias [29]. Response bias can be investigated by a number of methods

including a comparison of early and late replies [30], a follow up personal visit or telephone survey [18, 32, 24], or a comparison of certain statistics obtained from the responding sample with known population parameters [46]. Weighting systems can be developed out of such investigations to offset bias.

Response bias should not be over-estimated in importance, especially when dealing with economic data from a uniform occupational group such as farmers rather than with matters more directly influenced by sociological and personality differences. The most clearly proved cause of response bias is the positive correlation between formal education and propensity to respond reviewed by Scott [46] and Kanuk and Berenson [27]. Kivlin [29], in a study of 487 American farmers, found that non-respondents adopted fewer recommended farming practices, performed less well, were older and were less likely to participate in organisations. He also found that they had less formal education, a factor which correlates with the aforementioned factors. Freebairn [18] found some evidence of lower performance among Australian farmers who were non-respondents; but concluded that the impact on his survey's conclusions was insignificant due to his 73 percent response rate. O'Donnell [38] found no difference between New Zealand farmer respondents and non-respondents in respect of farm size, farm government, experience in decision making on the farm, measures of farm production, age, attention to mass media, use of advisory officers, willingness to borrow and attitudes to stocking rates. He did find that respondents were more likely to enjoy better health and to know their farm's government valuation.

To qualify, Kivlin's sample had to be farming in 1952, Freebairn's survey was conducted in 1966 and O'Donnell's in 1968. Increasing minimum education levels could explain the differences in the findings. With a generally adequate education level to cope with

mail surveys among New Zealand farmers response bias need not be serious in respect of factual economic questions on this evidence. As the evidence stands, some care must still be exercised in case of response bias where answers could be influenced by the level of education and by associated attitudes. Even if response bias can be shown to be present, its influence on the answers to questions on certain topics may be insignificant [15, 32]; and it may not disturb relationships between answers although absolute values may be affected [29, 51].

Non-respondents are likely to have reasons for not co-operating which are unrelated to their personality or sociological characteristics. Freebairn [18] found that reasons for not replying were dominated (32 percent) by having overlooked the questionnaire or having been too busy; 26 percent thought the questionnaire did not apply to them, 21 percent did not have the data at hand and 11 percent found the questionnaire too difficult. In the author's pilot survey [1] the second reminder included a minor questionnaire asking why no response had been forthcoming. Of initial non-respondents 30 percent indicated by this means that they were too busy or had inadequate records to answer the main questionnaire. Comments on the returned questionnaire of the major transport survey indicated that these reasons were likely to be dominant reasons for non-response due to the busy time of the year and the lodgement of records with accountants at the close of the financial year. Lack of time and records are factors unlikely to lead to distorted findings due to response bias.

It should not be assumed that response bias is unique to mail surveys: it also applies to personal interview surveys [14, 24]. Because response statistics are usually reported for mail surveys, but not for personal interview surveys, the possibility that response

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bias may be present is not obvious in reports of personal interview surveys. In one of the few fully reported cases, Gorman [20] reported that out of 349 randomly chosen dwellings visited up to three times for a personal interview survey only 73.3 percent of questionnaires were completed, 16.9 percent could not be contacted and 10.5 percent refused to co-operate. Johnson [26] reported being able to contact only 91 percent of his sample of North Canterbury farmers.

Nor should it be assumed that all mail surveys will suffer from response bias. Whether or not response bias is present depends heavily on the subject matter.

2.3 Structured Interviews

Further disadvantages of mail surveys which attract criticism include the impossibility of structured interviews, such as questions answered in a particular order, and the impossibility of interviewer judgement being used. Structured interviews are less likely to be relevant in economics research than in psychological or sociological research. Interviewer judgement can be a disadvantage, indeed a source of bias, as much as an advantage. The presence of an interviewer gains favour among agricultural economists out of preoccupation with what may be called the 'muddy boots' tradition, or getting into the field to see what is happening at first hand [4]. While a desirable practice for those engaged in research, farm visits are not necessarily the most efficient way to collect all types of data. Interviewer bias and inconsistency between interviewers are serious survey problems [14, 35], which can be avoided by using mail surveys.

2.4 Accuracy of Replies

A further criticism of mail surveys is that the answers given are less likely to be correct than if an interviewer is present. Quite the opposite case has been found in a number of studies [14, 17, 24, 33, 37]. Erdos [14] rated the better chance of a truthful reply and the better chance of a thoughtful reply as two major advantages of the mail survey technique over other techniques. Greater accuracy from mail surveys applies especially to replies which may be embarrassing to admit to a stranger, the interviewer. Exaggeration in such matters as income and education in personal interviews has long been recognised [17]. Greater accuracy also results where time is given for respondents to consult records or other persons at their leisure when factual data is requested [24]. A personal or telephone interview situation can, as Johnston [26] found, lead to hasty approximate replies. On the other hand some complex questions may need the presence of an interviewer to clarify exactly what information is required. A personal visit with a questionnaire covering some of the information required being left for later mailing in has been found as a method for combining the best features of personal visit and mail surveys [33].

2.5 Public Relations

There is concern among some researchers that farmers, in particular, are hostile to mail surveys. The ultimate relevance of this point can only be assessed from overall response rates. Some more specific indication of the extent of hostility is that only 0.2 percent of 3,156 (i.e. five) farmers replied in a hostile manner to the AERU's major transport mail survey. Comments on replies did indicate, however, a widespread antipathy towards

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surveys in general although offsetting encouraging comments were received on a similar proportion of replies. These results suggest that hostility where present among farmers is towards all types of surveys rather than just towards mail surveys. The question remains open for further analysis.

2.6 Mail Survey Technique

The technique used in a mail survey can have two impacts: on the final response rate obtained and on the speed of response. The former impact will always be beneficial. The advantage of the latter will depend upon the needs of the particular research. The cost-effectiveness of each variation in technique is the key criterion to use. A small increase in the response rate, for example, may not justify the additional expense. On the other hand, an earlier response may save in the expense of later reminder mailings and make the use of the results more effective, such as when they relate to policy decisions. The value of the measures discussed in the following pages must be assessed for the circumstances of each individual case.

Preliminary contact. A preliminary contact by mail or telephone has been used successfully to both increase response rates and the speed of response to a subsequently mailed questionnaire [27, 49, 50]. However, it has also been shown that follow-up reminder mailings are more cost effective than preliminary contacts [28]. A preliminary contact must be made with 100 percent of the sample, while a follow-up need only be made to non-respondents some time after the questionnaire is mailed. Both additional contacts have a similar beneficial effect on response. Accordingly, preliminary contact methods are not an important part of mail survey technique.

Introductory letter. Considerable care is necessary in composing the introductory letter to a mail survey. As Scott [46, p.173] concluded:
" . . . the content of the letter is very much more important than its trappings."

Important aspects to include in the letter, as advocated by Erdos [14, p.102] are: a personal communication; a request for help; a stress on the importance of the research; the recipient and the return of the completed questionnaire; the benefits to the recipient; advice on the action required of the recipient; an air of urgency; and a note of appreciation.

Brevity is also important in the letter, particularly to permit questions to follow immediately after the letter as advocated by Scott [46].

A letterhead to indicate the sponsorship of the survey by a respected organisation is advocated [6]; and a title should accompany the signature [43].

Personalisation. Personalised salutations or individual signatures on introductory letters to mail surveys can be very costly. Evidence in the literature does not point to any offsetting advantages for this cost [2, 7, 46, 47]. Accordingly efforts to personalise a mail survey should be restricted to a handwritten but printed signature, and possibly to a personalised stick-on computer-printed address label over an impersonal salutation. (Refer to the recommended use of window envelopes in conjunction with such address labels in Section 2.6).

Length of questionnaire. Contrary to popular belief, there is strong evidence that questionnaire length has little if any bearing on response rates. Scott [46] and Kanuk and Berenson [27] reviewed this issue in depth and found no evidence to suggest that long questionnaires discourage response. There was some evidence found that very short questionnaires have lower response rates, perhaps because they are seen to be trivial. From these reviews it is evident that of greater importance to respondents than length is the ease with which questions can be answered.

Outward mail. Limited experimentation on the outward mailing of surveys has been conducted. O'Donnell [38] found that brown manilla envelopes have no different impact on response from that of white envelopes. His experiment was conducted in a New Zealand context.

Special delivery, the equivalent of the New Zealand Post Office's registered mail, has been shown to significantly increase response rates in the United States [7, 22, 28]. This advantage is usually offset by the much higher cost involved and the use of registered mail will therefore rarely be justified.

Reply envelope. Tradition is strongly in favour of enclosing a reply paid and addressed return envelope in a mail survey [46]. Good public relations to preserve co-operation for later researchers is a reason for not experimenting with not enclosing a reply envelope.

A printed return address clearly has cost advantages, and Erdos [14] advocates that the address be personalised. At the same time the

title of the researcher and the sponsoring body are also desirable features to be included as was discussed in relation to the introductory letter.

The general mail survey literature on reply envelopes shows no consistent pattern. Stamped reply envelopes have been recommended in some cases [18, 42, 46]. On the other hand Clausen and Ford [7] did not agree with this conclusion in their study. Airmail reply envelopes increased the response rate in a study by Wallace [52] but adequately controlled experiments in the use of airmail envelopes are rare [27]. Brown versus white envelopes does not appear to be an issue studied overseas, possibly because the potential cost savings are small.

Colour of stationery. The use of coloured stationery has been advocated by Freebairn [18] to help the questionnaire stand out among a farmer's correspondence. Research into the use of coloured stationery does not indicate any significant gains in either response rate or speed of response over plain white stationery [2].

Anonymity. Overseas research suggests that anonymity is of minor importance to respondents [34, 45, 46]. In view of this low priority, a simple assurance that individual information will not be published is likely to be sufficient to satisfy respondents. With increasing familiarity with surveys, even this assurance could become implicit.

There is certainly no need in most economics research for resort to covert identification techniques in order to keep track of replies while appearing to preserve anonymity, examples being

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given in [27]. There could be a major loss of goodwill for all researchers should the use of such techniques be detected.

Follow-up reminders. There is a large body of evidence supporting the use of reminder mailings to increase the response rate to a mail survey as summarised in reviews by Scott [46], Kanuk and Berenson [27]. The evidence is so strong that the use of a follow up must be regarded as an indispensable part of mail survey procedure to obtain a satisfactory response rate. The real question is not whether to use a follow-up, but how to.

A postcard reminder has been sent as early as three days after the initial mailing [36]. It is argued that its effect is to influence the decision whether or not to answer before a final decision has been made [50].

Multi-wave mailings reported in the literature frequently extend to two reminders but the large impact on overall response usually obtained from the first reminder [18] will not usually be as significant for later mailings. The additional costs have to be compared with the relatively fewer additional replies that will be obtained.

Some studies have been conducted into the use of telephoned reminder messages and have found this form of follow-up to be effective. The advantage depends on the specific population and the cost [44]. Where toll calls would be involved, as in a mail survey of New Zealand farmers, cost would be a major consideration.

Valuable incentives. There are studies that support the use of an enclosed token incentive, usually a coin, accompanying mailed questionnaires [14, 54, 55]. There are practical problems in the use of such incentives, not the least being the need to register letters

containing coins in New Zealand. Stamps could be used instead, or perhaps even a dollar note.

Promised payments for replies have been shown to have little effect on response rates [55]. An alternative may be to make a reply eligible to win a significant lottery prize.

There is clearly room for further experimentation with valuable incentives in New Zealand mail surveys. At the same time, the concept is expensive and may not be as cost effective in improving response rates as repeated reminder mailings [7].

2.7 Summary

The major advantage of mail surveys is the short time and low cost involved in obtaining answers from large, geographically dispersed and difficult to contact samples of populations such as farmers without the possible bias of time lags. It is evident from this discussion that mail surveys do not offer a universal answer to the data collection problems faced by economic researchers. The usefulness of the technique depends upon the nature of the information sought, the characteristics of the population being sampled, the size and geographical spread of the sample, the speed with which the data must be obtained and the resources available to the researcher. It is also evident that, from the point of view of cost effectiveness, a mail survey should receive serious consideration alongside other techniques when surveys are being planned.

Careful attention to mail survey technique is clearly required, with follow-up reminders being the single most important means to increase response rate. There remains room to experiment with the techniques for applying mail surveys in the New Zealand context with the aim of developing the most cost effective procedure. Chapter 3 reports a step in this direction.

CHAPTER 3

EXPERIMENTATION

3.1 Experimental Design

With a sample size of over 3,000 in the AERU's mail survey on farm transport, it was possible to conduct several experiments into mail survey technique by separating the sample into a control group and a number of experimental groups. Each experimental group was distinguished from the control group by a variation in mail survey technique.

The control group received a 12 page questionnaire on white A4 size paper printed on both sides. An explanatory letter was printed on the first page with questions commencing immediately underneath. The name and address of the recipient was printed by computer on a label which was stuck on to the questionnaire above the salutation. This address appeared through the window of the white franked envelope used. A white, stamped and return-addressed envelope was also enclosed. Reminder letters were mailed to non-respondents 21 and 54 days later. A copy of the questionnaire is reproduced in Appendix 1.

Experimental groups were varied from the control group as in Table 1.

TABLE 1 : EXPERIMENTAL GROUPS

Group	Sample Size
Control group	500
Additional reminder day 7 (postcard)	500
Brown outward envelope	500
White franked reply envelope	250
Brown stamped reply envelope	250
Brown franked reply envelope	250
Airmail stamped reply envelope	250
Airmail franked reply envelope	250
Handwritten prompt on day 21 reminder	226
No day 21 reminder sent	180
	<hr/>
TOTAL SAMPLE	3,156
	<hr/>

The division of the sample into experimental groups was accomplished by taking 25 consecutive addresses from each of the 19 regions' randomly chosen samples, or the residual addresses remaining unallocated, until each experimental group's quota was filled. The grouping of the addresses simplified the clerical task involved and made for more accurate manual record keeping.

The variations selected for experimentation were considered to be the aspects of mail survey technique that were most in need of clarification. The number of variations was limited by the need to choose sample sizes that would enable differences in percentage response rates of the order of 5-10 percent between treatments to be declared

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statistically significant at the 95 percent confidence level. Calculations showed that sample sizes of 250-500 for each treatment would be suitable in this regard.

3.2 Reminder Mailing Variations

Variations from the control group were included in three experimental groups:

1. For 500 mailings a postcard was mailed to non-respondents seven days after the initial mailing. The control group's reminder letters, mailed on days 21 and 54 to non-respondents, were also mailed to this group. Those not replying therefore received three reminders.

2. For 180 mailings the day 21 reminder letter used in the control group was omitted. Those not replying therefore received only one reminder. Because this was expected to result in a lower response rate the size of this experimental group was reduced to minimise the effect on the overall response to the questionnaire.

3. For 226 mailings the reminder letter to non-respondents on day 21 included a handwritten exhortation to reply promptly. This group's size was reduced partly to reduce the additional clerical work required and partly because the primary impact of the variation to the control group was expected to be on the timing rather than the rate of response.

The wording of the postcard reminder sent to the first of these groups was as follows:

A few days ago we sent you a questionnaire regarding your use of transport. If you have already returned the questionnaire please consider this a special "thankyou" for your promptness. If, as we often do ourselves, you have put the questionnaire aside to finish later, why not complete it and return it today? There will probably never be a more convenient time. Thank you for your help.

The wording of the handwritten exhortation included on the reminder letter sent to the last of these groups was as follows:

"P.S. Your reply by Christmas could save us weeks in getting out results."

Table 2 summarises the response timings and response rates for groups receiving three (post-card group), two (control group) and one (omitted first reminder letter group) reminder(s). The corrected sample size adjusts for address list errors revealed in the course of the survey. The net valid response rate adjusts for the corrected sample size and for invalid replies i.e. where the questionnaire was returned unanswered.

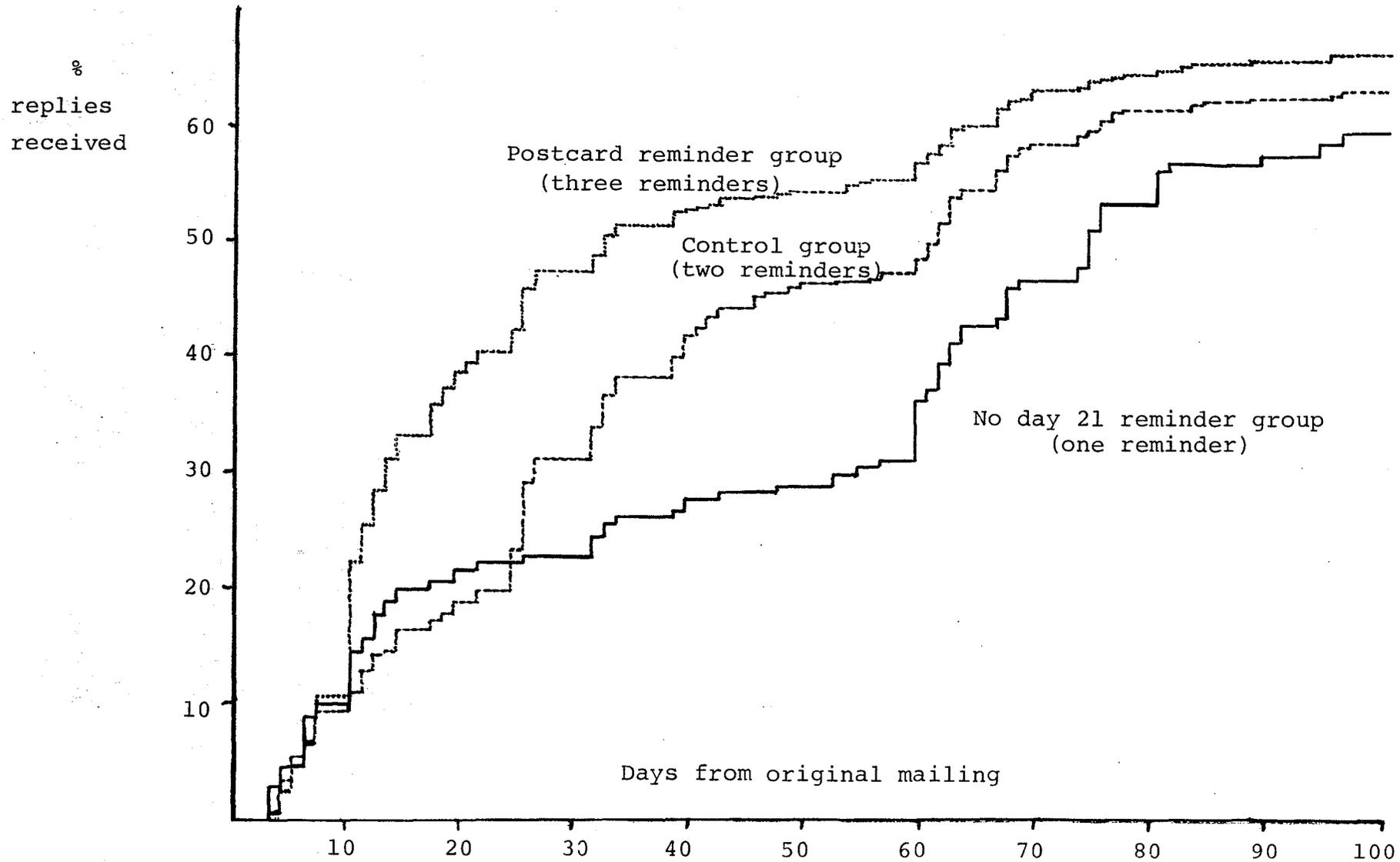
TABLE 2 : COMPARATIVE RESPONSE RATES
FOR VARIATIONS IN THE NUMBER OF REMINDERS

Number of Reminders	Actual Sample Size	Corrected Sample Size	<u>Percent Gross Response</u>			Net Valid Response Rate (%)
			Day 21	Day 54	Day 100	
3	500	448	40.2	55.6	66.2	60.9
2	500	446	18.8	46.4	63.0	58.5
1	180	159	21.6	30.2	59.4	52.2

The first reminder mailing sent clearly had a marked effect on response rates, but the impact of subsequent mailings on the response rate diminished. On day 21, after the postcard mailing but before any reminder mailing for the other groups, the postcard group had double the response rate. By day 100, after all groups had received at least one reminder, the differences in response rate were much reduced.

Figure 1 plots the responses to each of the groups in Table 2 day by day. The scalloped shaping of the response curves in reaction to the reminder mailings is

FIGURE 1 : CUMULATIVE RESPONSE RATES FOR VARIATIONS IN THE NUMBER OF REMINDERS



clearly shown. So, too, is the earlier reply prompted by the earlier reminder mailing.

Clearly the effect of reminder mailings on the overall response rate to be obtained from a mail survey is so significant as to confirm that they are an indispensable part of mail survey procedure. A single reminder can be expected to approximately double the response rate attained.

In addition, reminders should be mailed quickly, at intervals of no greater than one to two weeks, to avoid unproductive periods where response tapers off.

With differences in the net valid response rates for each of the three groups being relatively small, a conclusion as to the number of reminder mailings that should take place is not so clear-cut. The final difference between the postcard and control groups was only an insignificant 2.4 percent. Between the three reminder postcard group and the one reminder group the difference in response rate was 8.7 percent which is significant at the 95 percent confidence level. Not quite so significant was the 6.3 percent difference in response rate between the two reminder control groups and the one reminder group. There are advantages to be had from second and third reminders, but these advantages diminish for each successive reminder. A suitable rule of thumb from the above experimental results would be that each successive reminder increases the response rate by a third of the increase of the preceding reminder. The costs of an additional mailing would have to be offset by the benefits of additional replies in each case.

In the case of the group sent a handwritten exhortation on the reminder letter mailed on day 21, there was no significant impact on the final net valid response rate as compared with that obtained from the control group. As shown in Table 3, the difference was only 0.1 percent between the response rates of the two groups. However, the prompt did induce, as shown in

Table 3 and also in Figure 2, a slightly earlier response.

TABLE 3 : COMPARATIVE RESPONSE RATES
FROM A HANDWRITTEN PROMPT ON REMINDER LETTER

Group	Actual Sample Size	Corrected Sample Size	<u>Percent Gross Response</u>			Net Valid Response Rate (%)
			Day 21	Day 54	Day 100	
Control	500	446	18.8	46.4	63.0	58.5
Prompted	226	209	18.6	49.9	63.1	58.4

Because the difference between response rates as at day 54 is not statistically significant the clerical effort of adding handwritten prompts to reminder letters is not justified.

3.3 Outward Mail

Farmers receive most commercial accounts in brown manilla envelopes and are therefore likely to view such mail with antipathy. Brown envelopes are cheaper and it was accordingly decided to test the impact on response rates of using brown machine franked outward envelopes for an experimental group. All other outward mail was sent in white machine franked envelopes.

The effect of brown outward envelopes on either the final response obtained or on the timing of response showed no statistically significant difference from the effect of white outward envelopes in the control group. The very similar response patterns obtained are shown in Table 4 and in Figure 3.

This finding is consistent with that obtained by O'Donnell [38] who conducted a similar experiment with much smaller samples of New Zealand farmers.

Accordingly, cheaper brown manilla envelopes

FIGURE 2 : CUMULATIVE RESPONSE RATES FROM HANDWRITTEN PROMPT ON REMINDER

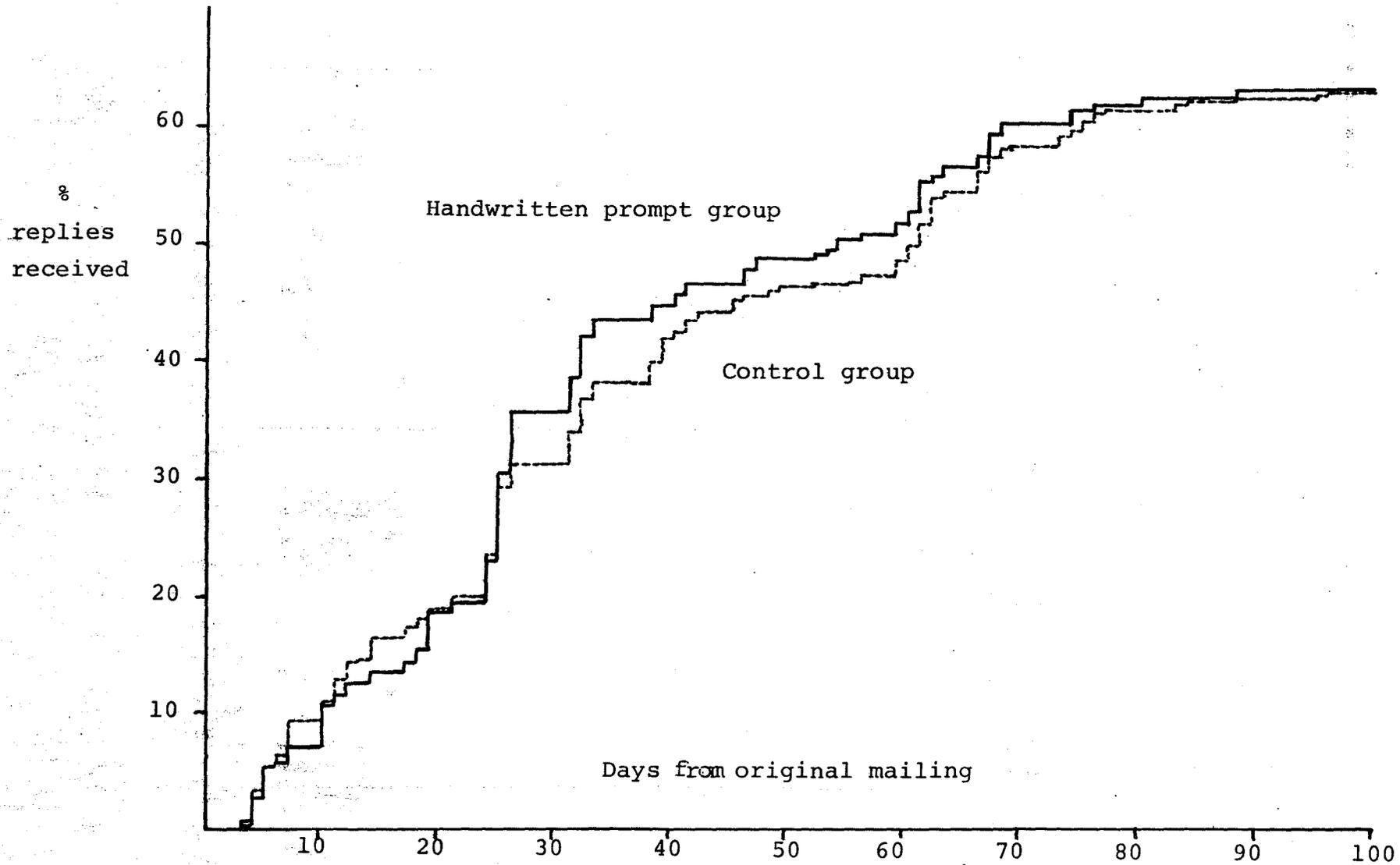
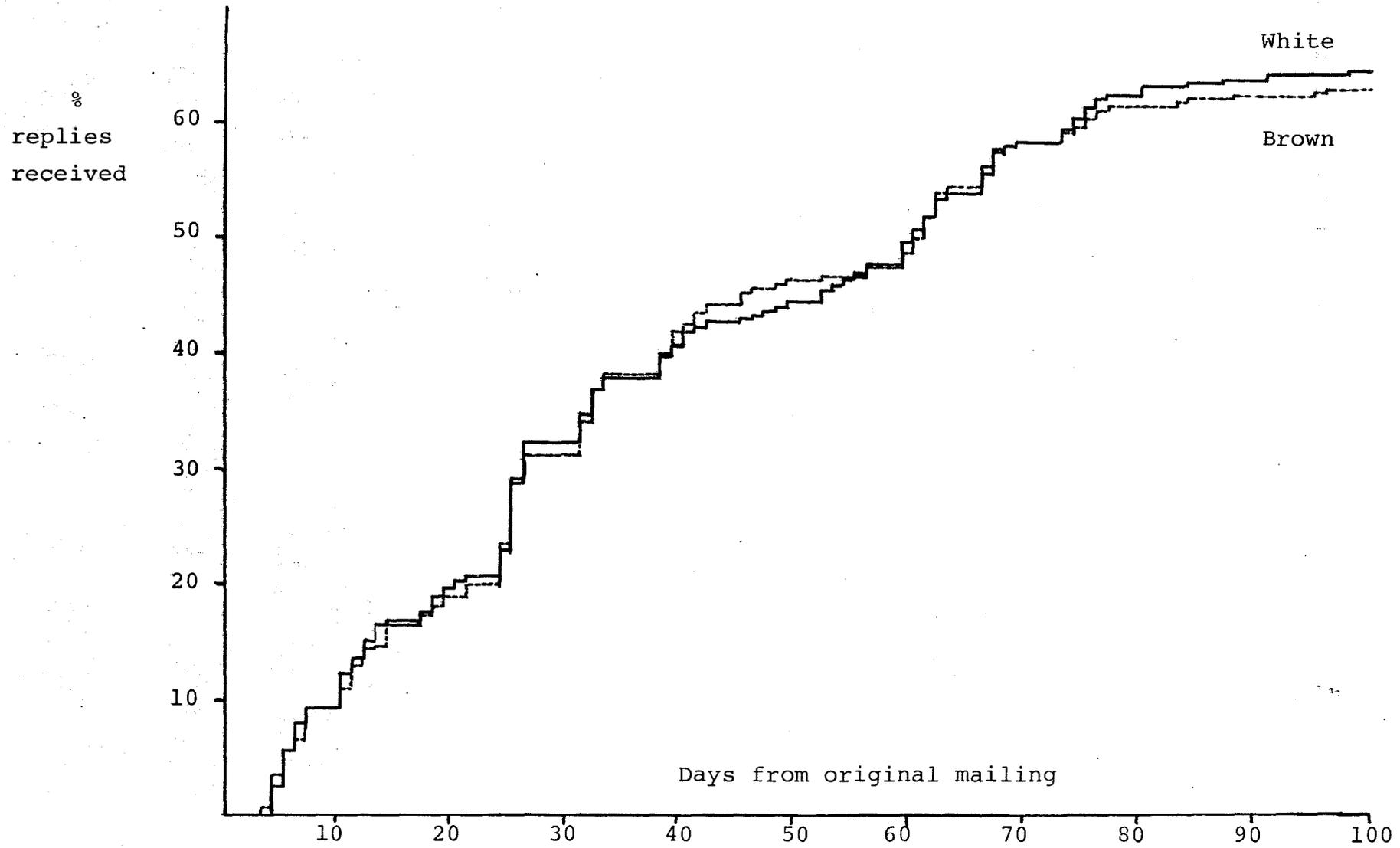


FIGURE 3 : CUMULATIVE RESPONSE RATES FOR BROWN AND WHITE OUTWARD ENVELOPES



are recommended for the outward mailing of mail surveys to farmers since they appear to have no significant impact on the response rates obtained.

TABLE 4 : COMPARATIVE RESPONSE RATES
FOR BROWN AND WHITE OUTWARD ENVELOPES

Outward Envelope	Actual Sample Size	Corrected Sample Size	<u>Percent Gross Response</u>			Net Valid Response Rate %
			Day 21	Day 54	Day 100	
White	500	446	18.1	46.4	63.0	58.5
Brown	500	451	20.6	46.6	64.4	58.1

3.4 Reply Envelope

Six variations in reply envelope were included in the experimental groups: white, brown and airmail return-addressed envelopes, with some envelopes in each category stamped and some machine franked with the postage. Sample sizes of 250 were used for each group except the white stamped reply envelopes used in the larger control group of 500.

Table 5 summarises the net valid response rates obtained for the six groups, the figures in brackets being the sample sizes corrected for known address list errors.

TABLE 5 : COMPARATIVE RESPONSE RATES
FOR REPLY ENVELOPE VARIATIONS (%)

		Reply Envelope Type		
		Airmail	White	Brown
Postage	Stamped	63.5 (222)	58.5 (446)	56.9 (225)
	Franked	56.2 (217)	65.3 (216)	59.6 (218)

The use of franked postage is shown to be preferable to stamped postage on white and brown reply envelopes; but the reverse is shown to be the case for airmail envelopes. This conclusion for white envelopes is significant at a 95 percent confidence level, and significant to just under a 95 percent confidence level for airmail envelopes. For brown envelopes, the difference in response rate is of low statistical significance.

This finding against the use of postage stamps on white and brown envelopes is in contrast to some of the studies reported on the literature, but consistent with others. The differences are relatively small although the clerical effort of attaching stamps is considerable compared with that of machine franking envelopes.

The use of airmail envelopes, and the more expensive postage that this involves, is clearly not justifiable on these results. There is no statistically significant improvement in response rate to offset the additional cost.

It may be concluded that the franking of white reply envelopes is the most cost-effective practice to adopt for mail surveys of New Zealand farmers. The difference in response rates obtained from brown and white franked reply envelopes is statistically significant to just under a 90 percent confidence level. As this consists of a 5.7 percent difference in response rate, it supports the use of slightly more expensive white reply envelopes over the use of brown manilla reply envelopes.

This finding contrasts with that of O'Donnell [38] who found evidence favouring the use of brown manilla reply envelopes. However, O'Donnell's experiment was of a relatively small sample with less precise controls over the influence of other variables.

The use of business reply postage, where there is only a liability for postage if the reply is mailed, requires an experimental test to ascertain whether it is more economic than a machine franked pre-paid postage reply envelope.

3.5 Summary

The experimentation with mail survey technique described in this report has confirmed that a reminder mailing is an indispensable part of the procedure. It should follow within one to two weeks of the original mailing. Further reminders have been shown to improve the response rate obtained, but to have a diminishing impact with successive reminders. The success of the postcard reminder, combined with the lesser clerical work and postage charge that it entails relative to a letter, commends it as a technique.

27.

While having a small beneficial effect on the speed of response, a handwritten prompt on a reminder letter proved to give little gain in return for the clerical effort.

Brown manilla envelopes, being cheaper and having no statistically significant effect on response relative to white envelopes, were proved adequate for the outward mailing.

The use of stamps for pre-paying postage on reply envelopes was proved not to have any advantage to compensate for the clerical work their use entails in this instance. Machine franking proved to be a better technique, in terms of the response rate obtained, when used on white reply envelopes. No advantage was shown for airmail or brown manilla envelopes, stamped or franked, over white franked reply envelopes.

CHAPTER 4

RECOMMENDATIONS

4.1 Procedure

An appropriate procedure for mail surveys can be summarised as follows:

Introductory letter: brief but carefully worded; stick-on computer printed address label above impersonal salutation; printed signature giving capacity of signer; letterhead of sponsor; on first page of questionnaire.

Questionnaire: more attention to ease of reply than to length; white stationery; attention to data processing of replies.

Outward mail: second class brown manilla machine franked window envelope; questionnaire and reply envelope enclosed.

Reply envelope: white; machine franked with pre-paid postage; personalised printed return address.

Reminder mailing: printed postcard within one to two weeks; computer printed stick-on address label, brief but carefully worded; optional use of more than one reminder.

4.2 Experimentation

There is wide scope yet for refining the mail survey procedure. Of particular importance is the need to assess the use of business reply envelopes. A more controlled direct comparison of the use of postcard reminders as opposed to reminder letters in envelopes is also required, as is an assessment of the use of telephoned reminders.

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APPENDIX 1



LINCOLN COLLEGE

UNIVERSITY COLLEGE OF AGRICULTURE

POSTAL ADDRESS
LINCOLN COLLEGE
CANTERBURY
NEW ZEALAND

TELEPHONE
HSL - 8029

Dear Sir,

As a farmer you will be well aware of the high and rapidly increasing costs of transport. We want to help you to find practical ways to reduce, or at least to hold, these costs. Right now we are working on livestock and wool transport costs.

Would you please help us by completing this questionnaire and returning it in the enclosed stamped addressed envelope. Please do not hesitate to pass it on to a partner, manager or lessee if you cannot complete it yourself. Should you have more than one farm, each operated independently or in different counties, it would be simpler if your answers related only to one, preferably the largest.

Your answers are vital. Without them we can do little to help overcome the very real threat to farming of rising livestock and wool transport costs. Be assured that your name was picked at random from a list of farmers and that your personal details will not go beyond Lincoln College research staff.

Why not get down to it right now? Let's face it, there will probably never be a more convenient time and an early reply would save our troubling you with reminders.

Thank you for your help.

Yours sincerely,

Owen McCarthy

Professor Owen McCarthy
Director

Agricultural Economics Research Unit

Firstly we would like to find out some facts about your farm. Please fill in the spaces

Your farm is located in _____ county.

The name of your nearest Post Office is _____.

It is _____ miles by road from your farm.

The name of your nearest railway station is _____.

It is _____ miles by road from your farm.

The area of your farm is _____ acres.

Is your farm in separate blocks so that you have to use a public road to travel between them? Yes No (please tick one)

How would you describe your type of farming? (please tick one)

High country

Intensive fattening

Foothills

Mixed cropping and fattening

Fattening-breeding

Other (please specify)

Continuing with background facts about your farm

Please enter the livestock numbers on your farm in the spaces below:

	At 30 June 1974 head	At 30 June 1975 head
Breeding ewes		
Other sheep, hoggets & lambs		
Cattle under 1 year		
Dairy cattle over 1 year		
Beef cattle over 1 year		
Pigs		
Other (please specify)		

Please enter your shearing and crutching dates for the year ended 30 June 1975 in the spaces below:

Shearing Dates	No Bales	Crutching Dates	No. Bales

What is the predominant breed of sheep shorn on your farm?

Now the questions turn to transport matters on your farm.

Roads are classified according to the permitted maximum axle load. What class is the public road at your farm gate? (Please tick one)

- Class I Class II Class III Don't Know

What livestock loading ramps do you have on your farm?

- (please tick correct answers)
- Sheep loading ramp? Yes No
- Cattle loading ramp? Yes No

If you don't own a farm truck, do you think you need one? Yes No

If you do own one or more farm trucks, please enter the details below:

Make of Truck	Year of Manufacture	Tare Weight (tons)	Year Purchased	Purchase Price Paid (\$)	Approximate Annual Mileage (miles)

Briefly, what are the main uses you have for your farm truck(s)?

The next questions relate to sending your stock to slaughter

How do you sell most of your prime livestock? (Please tick the most correct statement for each of your lambs, ewes and, if any, your cattle).

Lambs	Ewes	Cattle	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Accept the freezing company schedule.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. Accept a price at the farm gate offered by the stock buyer
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. Sell on own account
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. Use a freezing company pooling arrangement
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. Use a P.P.C.S. pooling arrangement
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. Sell to the local market through a saleyard
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. Other (please specify)

Some have suggested that transport costs could be reduced if all livestock for slaughter had to go to the nearest works. This would prevent competition between works for your livestock. How important is this competition to you compared with potential transport cost savings? (please tick one)

<input type="checkbox"/>	much more important
<input type="checkbox"/>	more important
<input type="checkbox"/>	less important
<input type="checkbox"/>	much less important
<input type="checkbox"/>	don't know

Below are listed a number of reasons why you might patronise a particular freezing company. Please circle the number under the most appropriate column beside each statement to show whether or not you agree with it for your choice(s) of freezing works last season.

	True	False	Don't Know
The company was offering the best price when your stock were ready	1	2	3
The company owns the nearest works to your farm	1	2	3
Past experience shows that the company has profitable pooling arrangements	1	2	3
The company has lower killing and processing charges	1	2	3
You traditionally use the same company	1	2	3
You are a shareholder in the company	1	2	3
The company had the nearest works with available killing space when your stock were ready	1	2	3
The company's stock buyer approached you first	1	2	3
Your stock buyer recommended the company	1	2	3
The company has the lowest carcase rejection rates	1	2	3
The company has fewer industrial disputes	1	2	3
Other (please specify)	1	2	3
	1	2	3

Now some questions concerning on-farm storage to save transport costs

How many ewes could you safely stand overnight on your farm UNDER COVER ON A GRATED FLOOR head of ewes before sending them to slaughter?

(for example in woolshed pens)

If you have these standing facilities, would you be prepared to use them to reduce your sheep transport costs? Yes No

How many adult cattle could you safely stand overnight UNDER COVER ON A GRATED FLOOR head of adult cattle before sending them to slaughter?

(most woolshed pens are probably inadequate for cattle)

If you have these standing facilities, would you be prepared to use them to reduce your cattle transport costs? Yes No

If a storage increment were paid to you to retain your wool clip on the farm for several months, would you probably (tick one)

1. Sell all your wool promptly to get the cash quickly.
 2. Store all your wool to get the full storage increment.
 3. Store as much wool as your need for cash permits.

If you were to take advantage of this storage increment, how many bales of wool could you store UNDER COVER on your farm after shearing, without unduly disrupting farm operations for:

up to 1 month? 1 to 2 months? 2 to 3 months? over 3 months?
 bales bales bales bales

Next we would like to know how you go about choosing a road carrier from your answers to the following questions

Below are listed a number of reasons why you might patronise a particular road carrier. Please circle the number in the most appropriate column to show whether or not you agree with it for your choice(s) of carrier(s) last season.

	True	False
Mostly use one transport firm that in return gives you good service	1	2
Mostly use one transport firm because it gives you good credit facilities	1	2
Mostly use one transport firm because you are one of its shareholders	1	2
Mostly use one transport firm because there is no choice in your district	1	2
Mostly use the first transport firm able to do the job when you want it done	1	2
Mostly obtain quotes from several firms and choose the cheapest available	1	2
Other (please specify)	1	2
	1	2

When sending livestock to slaughter, do you usually: (Please tick the most correct statement)

1. Choose and contact the carrier yourself when drafting is complete and you know the number of stock to go?
 2. Choose and book the carrier in advance giving an estimate of the number of stock to go?
 3. Leave arrangements for transport to the stock buyer?
 4. Other (please specify)

40.

One further question relating to meat production

There is a body of opinion, both overseas and in New Zealand, insisting in higher meat hygiene standards for New Zealand. Do you, as a farmer, agree that higher meat hygiene standards are required?

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Don't Know

Now, we would like your opinion on livestock transport by RAIL

Have you used rail for livestock transport over the past five years? (Please tick one)

- Often
- Sometimes
- Rarely
- Never

Below we have listed aspects of the livestock transport services provided by New Zealand Railways. Please circle the number under the appropriate column beside each aspect to show how you think railways perform:

	Railways performance is				
	Excellent	Good	Fair	Poor	Don't Know
At letting farmers know what livestock transport services are available	1	2	3	4	5
At providing co-operation and service from railway staff	1	2	3	4	5
At reducing the advance notice required to order wagons for livestock transport	1	2	3	4	5
At keeping stock wagons clean	1	2	3	4	5
At keeping stock wagons modern and in good repair	1	2	3	4	5
At providing good loading facilities	1	2	3	4	5
At providing assistance with loading	1	2	3	4	5
At reducing the time taken to reach destination	1	2	3	4	5
At reducing deaths, bruising and injury en route	1	2	3	4	5
At keeping down freight rates	1	2	3	4	5
At paying out compensation for stock deaths and damage	1	2	3	4	5
At providing credit for farmers	1	2	3	4	5
Other (please specify)	1	2	3	4	5
	1	2	3	4	5

In 1961 all restrictions on the distance over which road could transport livestock in competition with rail were removed. Looking back, do you now agree that this was the correct decision? (please tick one)

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Don't Know

And now for your opinion on livestock transport by ROAD

Below we have listed aspects of the service provided by road livestock carriers. Please circle the number under the appropriate column beside each aspect to show how you think road transport operators perform in each case:

	Road Transport's performance is				
	Excellent	Good	Fair	Poor	Don't Know
At letting farmers know what livestock transport services are available	1	2	3	4	5
At providing co-operation and service from office staff	1	2	3	4	5
At providing co-operation and service from drivers	1	2	3	4	5
At reducing the advance notice required by carriers for transporting livestock	1	2	3	4	5
At keeping stock crates clean	1	2	3	4	5
At keeping equipment modern and in good repair	1	2	3	4	5
At providing drivers skilled in stock handling	1	2	3	4	5
At caring for stock during the journey	1	2	3	4	5
At reducing the time taken to reach the destination	1	2	3	4	5
At reducing deaths, bruising and injury en route	1	2	3	4	5
At keeping down freight rates	1	2	3	4	5
At paying out compensation for stock deaths and damage	1	2	3	4	5
At providing credit to farmers	1	2	3	4	5
Other (please specify)	1	2	3	4	5
	1	2	3	4	5

Next we would like to know more about your use of saleyards

Some reasons why you might patronise a saleyard are listed below. Please estimate about how many times you have used a saleyard for each of these reasons over the past year.

	<u>No. times saleyard used over past year</u>
To buy replacement breeding stock	
To sell culled breeding stock	
To sell prime stock	
To trade in livestock	
To buy store stock for fattening	
To sell store stock you cannot fatten	
Other (please specify)	

	<u>Sheep</u>	<u>Cattle</u>	
For your flock or herd replacements do you mostly	<input type="checkbox"/>	<input type="checkbox"/>	Breed own replacements
(please tick <u>one</u> answer for your sheep and <u>one</u> for your cattle)	<input type="checkbox"/>	<input type="checkbox"/>	Buy directly from breeder
	<input type="checkbox"/>	<input type="checkbox"/>	Buy at local sales
	<input type="checkbox"/>	<input type="checkbox"/>	Buy at sales in other areas
	<input type="checkbox"/>	<input type="checkbox"/>	Other

The next question relates to your management of stock numbers

Throughout the year the amount of feed you have available for stock varies. To get over this problem: (please tick)

	<u>Yes</u>	<u>No</u>
1. Do you limit your stock numbers to a figure that can be carried right through the year <u>without supplementary feed</u> ?	<input type="checkbox"/>	<input type="checkbox"/>
2. Do you give supplementary feed (such as hay)? If you fed hay, did you have to buy in hay from other farms last season?	<input type="checkbox"/>	<input type="checkbox"/>
3. Do you buy and sell store stock as feed surpluses and shortages occur?	<input type="checkbox"/>	<input type="checkbox"/>
4. Do you send breeding stock off the farm to leased grazing at periods of feed shortages?	<input type="checkbox"/>	<input type="checkbox"/>
5. Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>

Next some general comments on rural road carriers

Below we have listed a number of criticisms of rural road transport operators. Please circle the number under the most appropriate column beside each criticism to show whether or not you agree with it.

	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know
Carriers make excessive profits	1	2	3	4	5
Carriers make too little effort to cut their costs	1	2	3	4	5
There is not enough competition between carriers	1	2	3	4	5
Large carrying firms give better service than small firms	1	2	3	4	5
It is usually cheaper for a farmer to own his own truck than to use a carrier	1	2	3	4	5
Co-operation between carriers and farmers is poor	1	2	3	4	5
Licencing of carriers increases transport costs for farmers	1	2	3	4	5
The 40 mile restriction on carriers increases transport costs for farmers	1	2	3	4	5
Carriers should concentrate on short distance traffic leaving long distance traffic to rail	1	2	3	4	5
Fuel prices for carriers should be lower than for farmers' trucks	1	2	3	4	5
Farmers need railway branch line competition to keep down prices charged by road carriers	1	2	3	4	5

Your answers to this question will show how much competition there is between livestock cartage firms

In the space below, please list the livestock cartage firms used by you during the year ended 30 June 1975, together with an estimate of each firm's share of your livestock cartage. (No reference will be made to the firms concerning your dealings with them).

Names of Livestock Cartage Firms Used by You	Share of <u>your</u> livestock cartage done by each
	%
	%
	%
	%
	%
	%
	%
Share done by yourself	%
Total	100%

By now you may have a few comments that you would like to make on ways to reduce transport costs. We would welcome any suggestions that you, as a user of rural transport, may care to make below. We may have the theories but we have to look to you for the experience

By now you may also be wondering when this questionnaire will end. It is a long and demanding questionnaire. However we hope that you will appreciate that a short and simple questionnaire is not going to get down to the real practical issues. We hope that this questionnaire will produce some truly new and useful information to help reduce your transport costs. Please bear with us.

To answer the next four pages you will probably have to refer to your accounts or to your diary. Please be as accurate and as complete as you can with your answers. Your answers, with those of other farmers participating in the survey, will enable us to tell what livestock and wool transport takes place throughout the South Island in some detail. We will then be able to test the effects of various changes, some of which you may have suggested above, on your transport costs. This will prove whether or not the changes would be worthwhile.

Please give details of ALL LIVESTOCK SENT FROM YOUR FARM TO SALEYARDS during the year ended 30 June 1975

Date Transported	Type Livestock*	Number Head	Saleyard Where Sold	Reason for Movement**	Method of Transport Used***	Distance (miles)	Transport Cost Paid

Please give details of ALL LIVESTOCK SENT FROM YOUR FARM DIRECT TO OTHER FARMS during the year ended 30 June 1975

Date Transported	Type Livestock*	Number Head	Nearest Town to Farm That Livestock Sent To	Reason for Movement**	Method of Transport Used***	Distance (miles)	Transport Cost Paid

* Please specify whether lambs, hoggets, ewes, rams, bobby calves, weaners, beef cattle, dairy cattle, pigs or whatever.
 ** Please specify whether store, prime, cast for age, stud, flock or herd replacements, grazing or whatever.
 *** Please specify whether road carrier, farm truck, rail, droving, road carrier and rail, farm truck and rail, droving and rail or whatever.

Please give details of ALL LIVESTOCK BROUGHT TO YOUR FARM FROM SALEYARDS during the year ended 30 June 1975

Date Transported	Type Livestock*	Number Head	Saleyard Where Bought	Reason for Movement**	Method of Transport Used***	Distance (miles)	Transport Cost Paid

Please give details of ALL LIVESTOCK BROUGHT TO YOUR FARM DIRECT FROM OTHER FARMS during the year ended 30 June 1975

Date Transported	Type Livestock*	Number Head	Nearest Town to Farm That Livestock Came From	Reason for Movement**	Method of Transport Used***	Distance (miles)	Transport Cost Paid

- * Please specify whether lambs, hoggets, ewes, rams, bobby calves, weaners, beef cattle, dairy cattle, pigs or whatever.
- ** Please specify whether store, prime, cast for age, stud, flock or herd replacements, grazing or whatever.
- *** Please specify whether road carrier, farm truck, rail, droving, road carrier and rail, farm truck and rail, droving and rail or whatever.

PLEASE TURN OVER

Please give details of ALL OTHER LIVESTOCK TRANSPORTED TO OR FROM YOUR FARM during the year ended 30 June 1975

Date Transported	Type Livestock*	Number Head	To or From Your Farm	Place Where Livestock To or From	Reason for Movement**	Method of Transport Used***	Distance (miles)	Transport Cost Paid

* Please specify whether lambs, hoggets, ewes, rams, bobby calves, weaners, beef cattle, dairy cattle, pigs or whatever.

** Please specify whether store, cast for age, stud, flock or herd replacements, grazing or whatever.

*** Please specify whether road carrier, farm truck, rail, droving, road carrier and rail, farm truck and rail, droving and rail or whatever.

Please give details of ALL WOOL TRANSPORTED FROM YOUR FARM during the year ended 30 June 1975

Date Transported	Number Bales of Wool	Name of Buyer if Wool Sold at Farm Gate	Town of Woolstore Where Wool First Sent From Farm	Method of Transport Used *	Distance (miles)	Transport Cost Paid	Selling Centre Where Wool Eventually Sold

* Please specify whether road carrier, farm truck, road carrier and rail, farm truck and rail or whatever.

RECENT PUBLICATIONS

RESEARCH REPORTS

48. *Proceedings of an N.Z. Seminar on Project Evaluation in Agriculture and Related Fields*, R. C. Jensen (ed.), 1968.
49. *Inter-Industry Structure of the New Zealand Economy, 1961-5*, B. J. Ross and B. P. Philpott, 1968.
50. *Fresh Vegetable Retailing in New Zealand*, G. W. Kitson, 1968.
51. *Livestock Targets in North Canterbury Hill Country: The Impact of Changing Prices*, J. L. Morris, H. J. Plunkett and R. W. M. Johnson, 1968.
52. *Sectoral Capital Formation in New Zealand, 1958-65*, T. W. Francis, 1968.
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54. *Fertiliser Use in Southland*, R. W. M. Johnson, 1968-9.
55. *The Structure of Wool and Wool Textile Production, Trade and Consumption, 1948-68*, B. P. Philpott, G. A. Fletcher and W. G. Scott, 1969.
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