

# The Effect of Reminder Intervals on the Response Rate of Web Surveys

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## Introduction

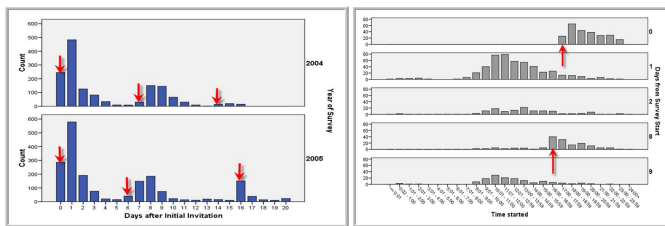
The number and frequency of web based surveys to staff and students increases with every year, some are for research purposes while others are to audit the facilities and services of the University.

The University guidelines on the timings of surveys dictate that no surveys can run concurrently, they must also avoid exam periods, vacations, the start and the end of term. This means only 22 weeks are available per year for surveys.

Term	Weeks
Winter	11
Spring	8
Summer	3
<b>Total</b>	<b>22</b>

The view for web based surveys on reminders had always been the same as for paper ones; namely that there should be at least a week between each of the two reminders and that the survey closure should be another week after that. This would mean that only 7 surveys could be run per year.

Examination of the pattern of responses to a number of web based surveys run in previous years indicated that the majority of responses are within 36 hours of the initial invitation, or a reminder, which indicates that people will respond immediately or not at all.



NB. The arrow indicates when the invitations, or reminders, were sent out .

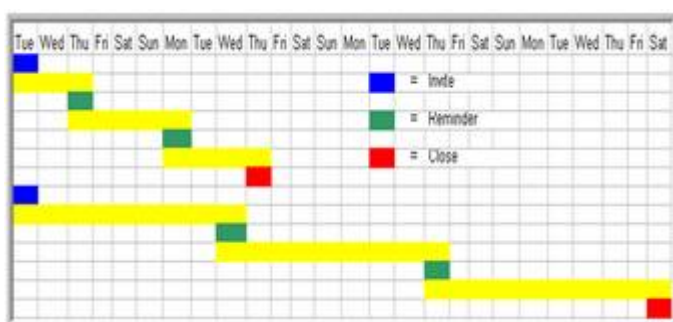
The duration of individual surveys needed to be reduced either by cutting the number of reminders or the time interval between reminders. The evidence from previous years indicated that reducing the time intervals might be the best approach as even the second reminder increased the number of responses.

## Invitation and Reminder Pattern

In order to test whether a shorter interval between reminders has no effect on response rate a number of surveys would have to be run using the original 1 week intervals and a shorter interval time period. The pattern of invitations and reminders that was finally decided on attempted to take account of a number of factors that might affect the willingness of respondents to participate. Among these were:

- Avoiding Mondays when mailboxes are full of weekend 'rubbish'
- Avoiding weekends

This is the final pattern of invitations, reminders and closures that was used .



## Experimental Process

Two identical copies of each of the five surveys in the experiment were created and mounted on the same web server, one copy was designated the 'fast' group and the other the 'slow' group. The surveys were all run with at least a two week interval between them; the smallest had 500 respondents in each group and the largest 1200. The server was set up to issue E-mail invitations and reminders, according to the pattern of intervals, between 0001 and 0100 and to close the surveys at 2359. Only respondents who had not completed the survey received reminders.

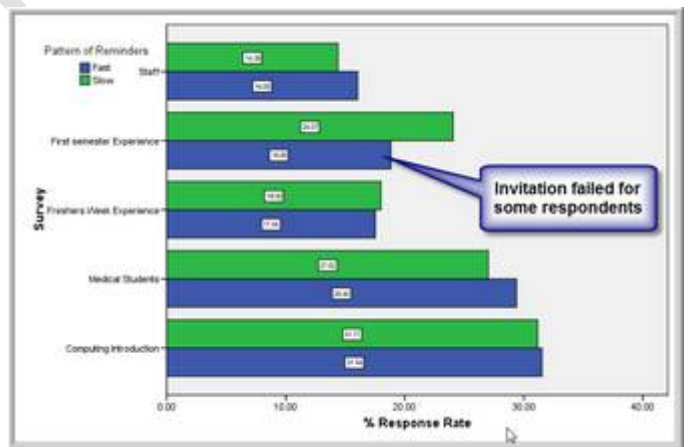
Allocation to the fast or slow group was achieved by sorting the E-mail addresses alphabetically and then assigning odd numbered rows to the fast group and even numbered rows to the slow group. If there was additional information available such as year of study or gender the E-mail address file was sorted on these first and then the address to attempt to remove any bias.

Unfortunately one survey suffered a problem where the invitation was corrupted for the 'fast' group. Although this was corrected immediately and the invitation re-issued the numbers never recovered.

## Results

The response rates from the five surveys are shown below and apart from the markedly different response rate for the groups in the survey which had problems, there appears to be no significant difference between the fast and slow reminder rates.

Interestingly for three of the surveys the response rate for the fast group is higher than the slow group.



## Conclusions

From the limited information available it appears that the shorter time interval between E-mail reminders for web based surveys has little effect on the overall response rate, in fact it shows a slight improvement for some surveys. This improvement may be due to the fact that the initial purpose behind the survey is still fresh in the mind of the respondent. These results mean more surveys can be conducted within a given time period.

However, it is unlikely that the experiment can be repeated at the University of Aberdeen as most people have now adopted the faster reminder pattern. It will also be written into the protocols that are being developed for conducting web surveys .

## References

Crawford, S. C, Couper, M. P., Lamias, M. J. 2001. Web Surveys: perceptions of Burden. *Social Science Computer Review* , 19 146-162

# The Effect of Reminder Intervals on Response Rates for Web Surveys

John S. Lemon

## Abstract

The University of Aberdeen has used questionnaire design software for a number of years to produce both paper and web based surveys. The number and frequency of web based surveys to staff and students increases with every year, some are for research purposes while others are to audit the facilities and services of the University.

The view for web based surveys on reminders has always been the same as for paper ones; namely that there should be at least a week between each of the two reminders and that the survey closure should be another week after that. Examination of the pattern of responses to a number of web based surveys indicated that the majority of responses are within 36 hours of the initial invitation, or a reminder, which indicates that people will respond immediately or not at all.

The latest release of the software used provides the opportunity to automate invitations and reminders, with reminders only sent to those who had not finished the survey. It was decided to test whether shorter reminder intervals would enable surveys to be conducted over shorter periods of time without affecting response rates.

## Keywords

Web surveys, response rates, reminder intervals

## 1. Introduction

The University of Aberdeen, like many other education establishments uses many surveys. These may be carried out by the University administration, staff, or students and the survey population may be staff, students or external. The surveys normally fall into one of four main areas:

- Course evaluation – this is almost entirely paper based and is carried out towards the end of every course, or module. It is paper based to ensure high return rates as the forms are handed out at a lecture towards the end of the teaching period and collected in before the students leave the lecture room. This ensures response rates remain high. The completed forms are scanned to reduce staff workload as at least 50,000 course evaluation forms are processed each year.
- Audit of service provision – the move from paper to web based has been largely driven by the increase in the number of surveys required by the University administration to ensure we

provide a consistent and increasing level of service to the students in the customer orientated environment. Provision of support services to staff are also assessed in this way.

- Undergraduate elective and dissertation projects – the move has been from paper based to web based for students conducting their project in Aberdeen, while those who go overseas to conduct their research still tend to use paper based forms.
- Staff and postgraduate research – in the past this has been largely paper based but increasing costs and lower response rates have forced a move towards web based surveys.

The move to the web has not always resulted in a new approach to the way in which the surveys are handled, especially those auditing service provisions. In many cases the staff administering the survey transferred the procedures that had worked with paper based projects over to web based ones with little thought as to how the new technology could be improved. One example of this was to use samples of the student population for an audit of one of the services provided by the University administration. When asked why a web based survey was being sent out to only 10% of the potential respondents the answer was that it had always been done this way to “reduce costs”. When it was explained what the actual costs of processing a web based survey were as compared to a postal one then they reluctantly agreed to survey the entire student body. As this approach produced the largest number of responses for many years the decision was made to survey the entire student population in future.

The biggest resistance to change in procedure was the timing of reminders but even though it was pointed out that people respond to E-mails quickly, or not at all, there was a marked reluctance to change the frequency and speed of reminders from that which had worked for paper surveys over the years. The reluctance to change was due to the fact that “we must give people time to respond”. Explaining that that the delays in the response to paper surveys were largely due to the postal service had little effect. In order to effect changes either published or research evidence was required.

A search of the web and published literature produced only one paper or article on response rates and optimal reminder intervals (Crawford et al., 2001). There were many articles on the effect on response rates of other aspects of web surveys; for example salutation (Heerwegh, 2005; Pearson & Levine, 2003), click boxes or drop-downs (Healey, 2007), progress bars (Conrad et al., 2003) or incentives (Cobanoglu & Conanoglu, 2003) but only this one paper on reminder intervals or patterns. In this paper reminder intervals had been examined as one of four aspects in a major study on response rates but in this case the overall length of the survey had been the same for the two study groups with one group receiving an extra reminder shortly after the initial invitation. We wanted to reduce the overall time taken for a survey so needed research data to prove the hypothesis.

There is an unwritten policy within the University administration that “all students” surveys should not be run concurrently, they should not be started within a week of any previous survey and as far as possible should avoid revision and exam periods. It is also recognised that despite the fact many students have access to the web and therefore E-mail during vacations it is not worthwhile conducting any surveys outside term time.

The computing service conducts an annual survey of all students to assess their views on the facilities provided; this is normally carried out during the latter part of the Spring term (mid-late March). In 2006 due to a change in staff and re-organisation of the department the preparations for the survey were delayed and two other service departments within the University started their own surveys. This meant that the computing services survey would have to be delayed until after the Easter vacation and

couldn't start until the second week of the summer term. If the reminder intervals were then adhered to the survey would impact on the revision / exam period and therefore could not be run. The alternative proposition to delay it to after the summer vacation was not really be practical as it would conflict with all the "start of academic year" surveys and could not be run until late in the Winter term.

This was not acceptable in terms of getting an accurate picture of student opinions and how they might have changed from previous years. The patterns of responses for previous years were examined to see whether the reminder intervals and the duration of the survey process could be shortened. For the previous two years the computing services survey had been conducted solely on the web using snap and included a number of items of what the developers of snap ([www.snapsurveys.com](http://www.snapsurveys.com)) call "paradata", the two that were relevant to this study were the date and time the respondent started the survey. The file required a little cleaning to remove the extreme values from the data as the version of snap used for these previous surveys had collected the date and time data from the users' machine instead of from a server side script. Almost 2% of the cases had dates set outside the survey dates, some by a number of years.

The paradata had not been available for the earlier years (pre-2004) despite using snap but the results of the analysis of the data for 2004 were interesting as they showed that the majority of responses came within 36-48 hours of the initial invite or a reminder (Fig. 1)<sup>1</sup>. Only the relevant days have been shown in the chart as for all the other days of the survey (days 3-7 and 10-24) there were only one or two responses for each time period. For various logistical reasons the E-mailing of invites and reminders was not undertaken using the facilities within snap and were therefore sent out late in the afternoon of the relevant day.

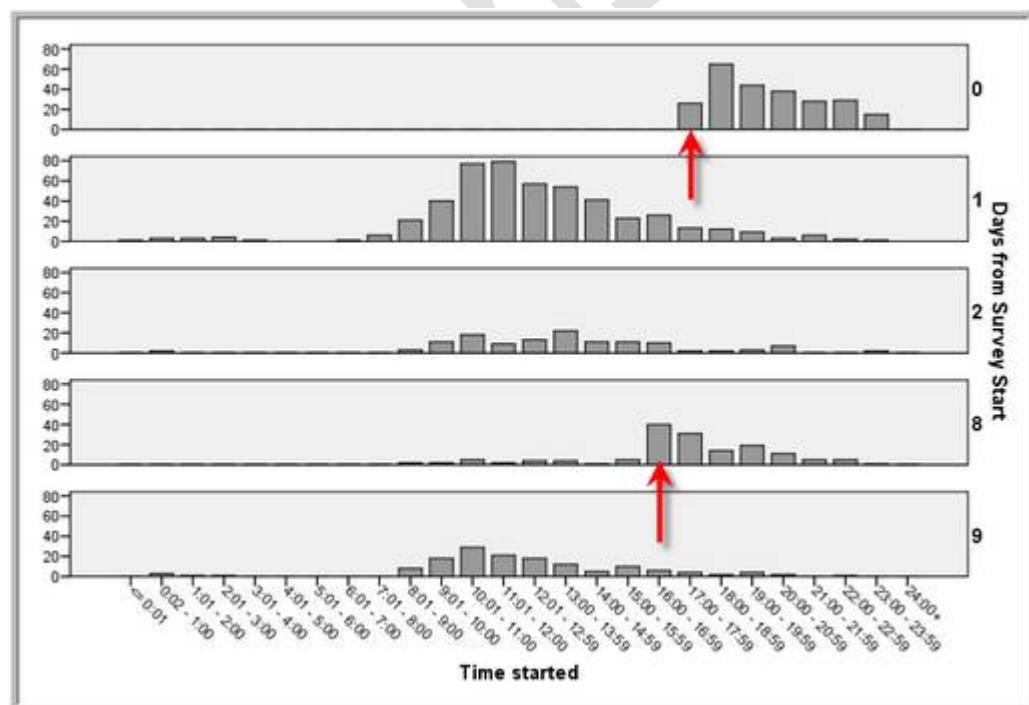


Fig. 1

<sup>1</sup> The arrows indicate when the invite, or reminder, was sent out.

When the data for 2005 was compared with 2004 (Fig. 2) the pattern of responses was similar thus reinforcing the opinion that responding to web surveys is something that people do immediately on receiving the E-mail invitation, or not all.

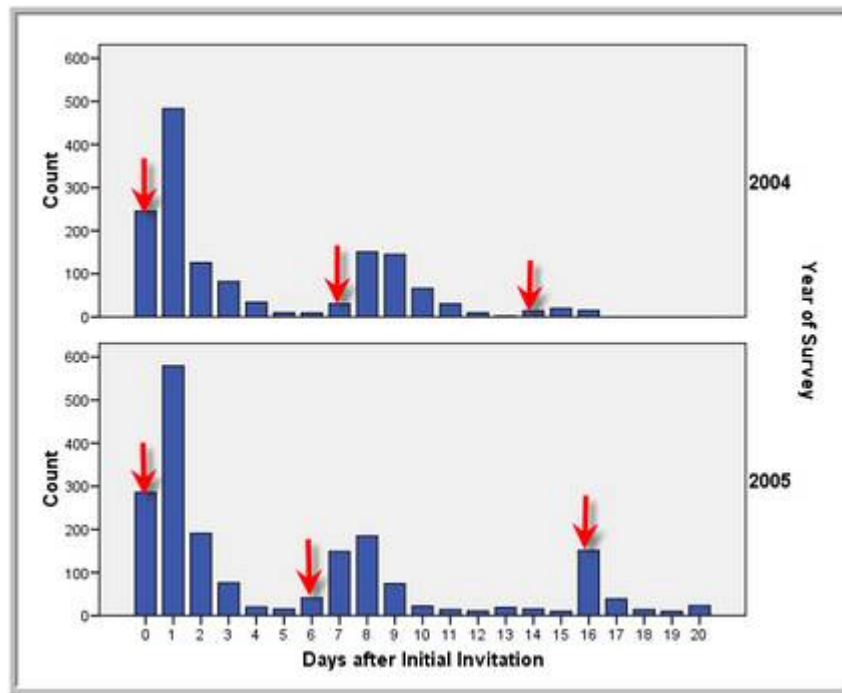


Fig. 2

Based on the observed pattern of responses for 2004 and 2005 it was decided that for 2006 the reminder intervals would be reduced in order to meet the tight time scale imposed on the survey. The pattern adopted was:

- Initial invite early on Tuesday morning
- First reminder two days later on Thursday morning
- Second and final reminder four days later on Monday Morning
- Close the survey 5 days later

The pattern of responses for the 2006 survey is shown in Fig. 3.

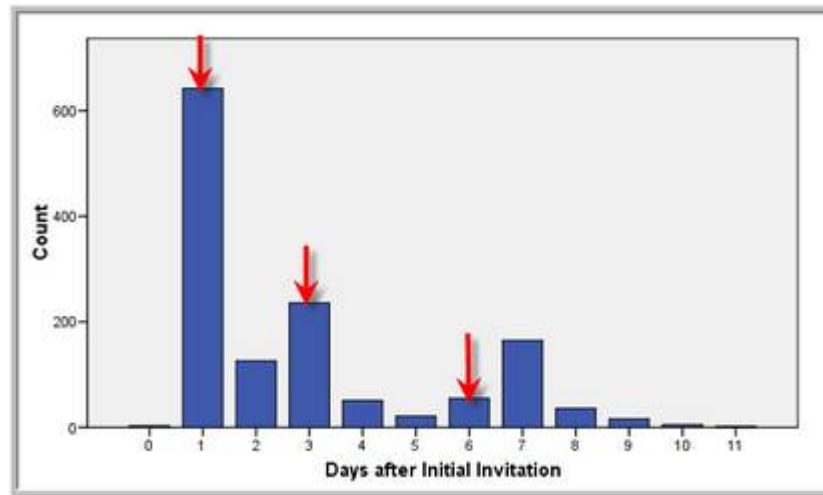


Fig. 3

Unfortunately when the number of responses from 2006 was compared with the two previous years (Table 1) there was a decline in the overall number of responses; the total number of students surveyed (12,000) was almost the same for the three years so something had caused the decline.

Year of Survey	Number responding	Response Rate
2004	1472	12.27
2005	1944	16.20
2006	1358	11.32

Table 1.

The immediate reaction was that the cause of this decline was the speed of reminders, ignoring the facts that the survey timing, after the Easter vacation instead of before, was different and that prior to the Easter vacation there had been two long “all student” surveys with more substantial incentives to complete them.<sup>2</sup> It looked as though all future surveys were going to revert to the slow reminder intervals which would then exacerbate the problem of coordinating the increasing number of surveys to staff and students.

It was decided that it would be necessary to prove that the decline in response rates had been due to other factors than the shortened reminder periods.

## 2. Experimental process

As the frequent reminder rate had been held responsible for the decline in response rate any experiments which made changes to the established, slow, reminder pattern could only be done with surveys that were not deemed to be important to the auditing or administration process of the University. Fortunately a number of such surveys were found and a standard procedure for administering these surveys was established. The experimental process was helped by the fact that the University of Aberdeen was a beta test site for the new version of snap with the snaponline option

<sup>2</sup> Experience at the University of Aberdeen has shown that without an incentive, or prize, awarded randomly to one of the students who complete a survey, the response rates are extremely poor.

which includes the facilities to automate the survey process. This meant that all the surveys used in this experiment to establish whether reminder rates affected response rate would be administered in a similar fashion.

All the surveys in the experiment used the University E-mail address of the student to issue the invites and reminders to ensure consistency. To ensure students were allocated at random to the two experimental populations the list of students was sorted in ascending order on the E-mail addresses and then the even numbered rows were allocated to the 'fast' reminder group and the odd numbered rows to the other, 'slow' group. If the data set which provided the E-mails also contained other information about the student then the data was pre-sorted on these criteria. One study had information on the year of study and the sex of the student so this dataset was sorted initially by year of study, then by gender within year of study and finally on E-mail address before allocating to the study group on the same "odd to slow, even to fast" basis.

The surveys were always set up so that the initial invitation for both groups was sent out early on Tuesday morning. The snaponline software can be set up with specified start, finish and reminder dates; all these actions happen as soon as possible after midnight. The patterns of reminders for the two groups are shown in table 2 below.

	<b>Invite</b>	<b>Interval</b>	<b>Reminder 1</b>	<b>Interval</b>	<b>Reminder 2</b>	<b>Interval</b>	<b>Close</b>	<b>Total (days)</b>
<b>Fast</b>	Tues	+2	Thur	+4	Mon	+2	Thu (2359)	8
<b>Slow</b>	Tues	+8	Wed	+8	Thur	+8	Fri (2359)	24

Table 2.

Analysis of the response rates of the four surveys conducted in this way shows that there is no deterioration between the frequent and infrequent pattern of reminders and in fact in some surveys there is a slight increase in response rates from the frequent groups. The comparative numbers responding are shown in Table 3 and Fig. 4 below.

<b>Survey</b>	<b>Number Surveyed</b>	<b>Speed</b>	<b>Response Rate</b>	<b>Number responding</b>
<b>Computing Introduction</b>	818	Fast	31.54	258
		Slow	31.17	255
<b>Medical Students</b>	966	Fast	29.40	284
		Slow	27.02	261
<b>Freshers Week Experience</b>	2172	Fast	17.54	381
		Slow	18.00	391
<b>First semester Experience</b>	2202	Fast	18.85	415
		Slow	24.07	530

Table 3.

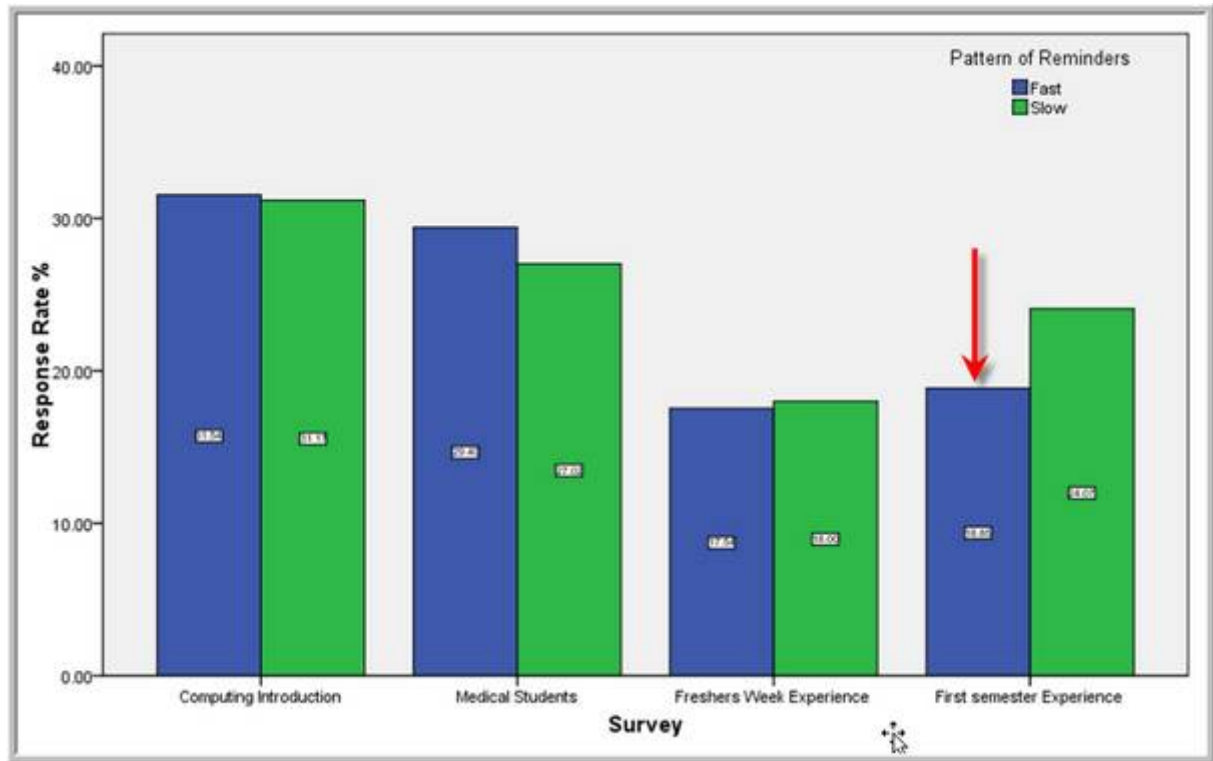


Fig. 4

Although the chart indicates that on the whole there is no difference between the patterns of responses between the two groups there is one survey group, “First Semester Experience”, which does not follow the trend as there is a marked difference between the fast and slow groups. The cause of this difference was most probably due to a reaction on the part of the respondents in the “fast” group to a technical problem with the server, which meant they were unable to start the survey. Although both survey groups had been set up in a similar manner on the same server the fault only affected the survey sent to the “fast” group. Even when the fault was resolved after a short time it appears that resistance to completing the survey had already been established and couldn’t be restored. Modifying the reminder message to explain what had happened may have reduced the impact of the temporary software failure but it still resulted in a lower response rate for the group affected. This problem only serves to highlight how sensitive response rates are to a large number of interacting factors and that it is important to ensure that those that can be controlled are optimised. It is interesting to note that the decline in responses to the “fast” group of the “1<sup>st</sup> Semester experience” study does not appear to be reflected in the numbers responding to the reminders as shown in Fig. 5 and Table 4.

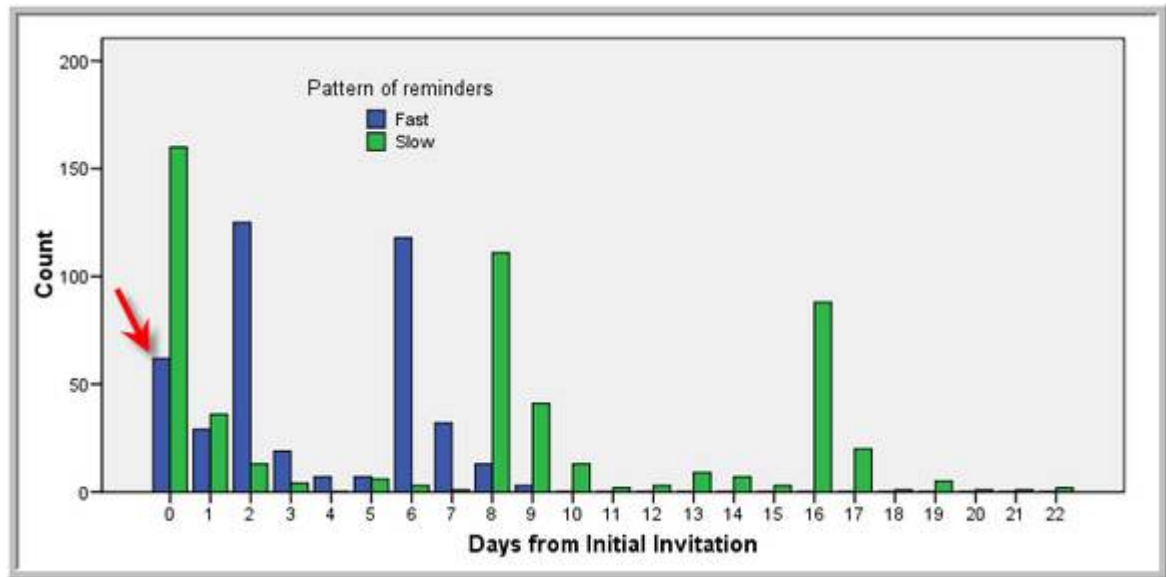


Fig. 5

	Fast		Slow	
	Count	Percentage	Count	Percentage
<b>Before 1<sup>st</sup> Reminder</b>	91	4.13%	223	10.13%
<b>Between 1<sup>st</sup> and 2<sup>nd</sup> Reminder</b>	158	7.18%	189	8.58%
<b>Before 2<sup>nd</sup> Reminder ( Cumulative )</b>	249	11.30%	412	18.71%
<b>Between 2<sup>nd</sup> Reminder and Close</b>	166	7.54%	118	5.36%
<b>Final figures</b>	415	18.85%	530	24.07%

Table 4.

It may be that once respondents have been deterred from responding to a survey for any reason they are unlikely to respond at all, even though there have been reminders. This could be the basis for further experimental work on response rate but how this could be measured would be hard.

As mentioned before the only surveys that were available to be used in the experiment were non-critical ones to students. This meant there was a high probability that the results might not be reproducible to staff surveys or external research. Fortunately a survey to staff was offered as part of the study and the same criteria on allocation to the experimental groups was applied, using the staff number instead of the student number and sorting into faculty / department groupings instead of year and course. This survey had the most marked difference between the 'fast' and 'slow' groups in terms of response rates (16.23% vs. 14.55%) – Fig. 6.

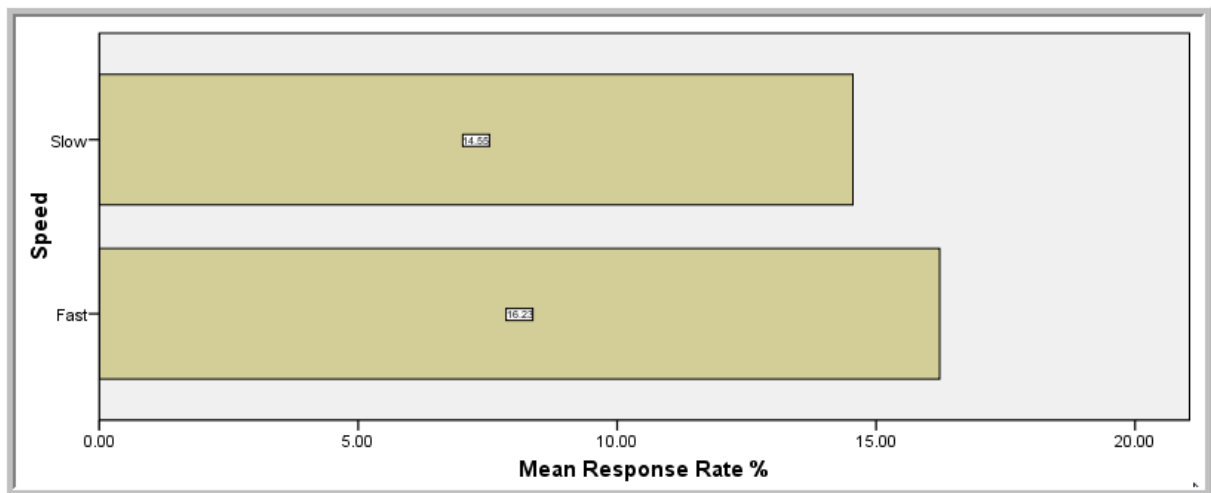


Fig. 6

### 3. Conclusions

From the limited information available it appears that the shorter time interval between E-mail reminders for web based surveys has little effect on the overall response rate, in fact it may show a slight improvement in some surveys. This means more surveys can be conducted within a given time period. However, it is unlikely that the experiment can be repeated at the University of Aberdeen as most people have now adopted the “fast” reminder pattern.

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## About the Author

I have worked as a Senior Computing Adviser at the University of Aberdeen for nearly 30 years supporting staff and students from all disciplines in the collection, storage and manipulation of their data for research. I was one of the people responsible for introducing snap to the University in 1999 and have acted as a beta tester for the software for a number of years. I try to maintain a research interest in trying to improve response rates to surveys but this has to be balanced with increasing demands for assistance on the design and administration of surveys. I would like to thank the brave people who allowed me to experiment with their surveys, the staff at SnapSurveys who helped resolve the problems I encountered, family and friends who gave advice on the paper and the Directorate of Information Technology for their support in conducting this research.

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