

- Technical Report -
2018 Health, Work and Retirement (HWR) survey

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Background: The 2018 Health, Work and Retirement survey

The New Zealand Health, Work & Retirement (HWR) study is an initiative of Massey University's Health & Ageing Research Team (HART). The HWR study aims to track and describe factors associated with health, retirement and 'ageing well' in the older New Zealand population. Since commencing in 2006, study methods have included a biennial longitudinal postal survey, face to face qualitative and cognitive interviews, an online survey pilot, and data linkage with national health and mortality records. Participant cohorts in the HWR have been drawn from random samples of persons aged over 55 years who are listed on the New Zealand electoral roll, on which around 97.6% of eligible voters aged over 55 years are enrolled¹. In 2006, 2016 and 2018, the population samples have included an over-sampling of persons listed on the electoral roll as being of Māori descent, so as to adequately represent this important section of the older New Zealand community.

The 2018 HWR postal survey, which is the focus of this report, represents the 12 year follow up of the original cohort recruited in 2006, the nine year follow-up of cohorts recruited in 2009, the four-year follow-up of the cohort recruited in 2014, and the two-year follow-up of the cohort recruited in 2016. Follow-up of the cohort recruited in 2010 was concluded in 2012. The 2018 protocol continues the 'refresh' recruitment of new cohorts of persons aged 55-57 to the HWR study.

Funded by the Ministry of Business, Innovation and Employment, the 2018 HWR survey has a focus on employment, workability and workplace discrimination among the older New Zealand population. Additionally, the 2018 survey continues combining the recruitment of new participants to the study with a concurrent approach for consent to participation in the HART health data linkage project. Details of approaches to existing longitudinal HWR participants for consent to participate in the HART health data linkage project are detailed elsewhere².

Investigators

Professor Christine Stephens, Professor Fiona Alpass, Dr Sally Keeling (Otago University), Dr Mary Breheny, Mr Brendan Stevenson, Dr Andy Towers and Dr Joanne Allen.

Other project team members

Dr Agnes Szabo, Ms Vicki Beagley, Ms Hannah Phillips.

¹ Accessed from the New Zealand Electoral Commission, 18th January, 2017: <http://www.elections.org.nz/research-statistics/enrolment-statistics-electorate>. Calculations based on estimated population statistics as at 30 June 2016 (Provisional) using 2013 census data and enrolment statistics as at 31 December 2016

² Allen, J. (2016). *Health, Work and Retirement (HWR) National Health Data Linkage Project '14-'15: approach protocol and response*. Technical report for the Health, Work and Retirement Study. Palmerston North: Massey University.

Ethics and funding

HEC: Southern A Application – 18/34; Health, Work and Retirement Study 2018

Funding: Ministry of Business, Innovation and Employment (MAUX1705)

Method

The 2018 Health, Work and Retirement survey comprised a 32-page postal survey to persons who had participated previously in the survey between 2006-2016 ('existing' cohort), as well as a new sample invited to participate in the study for the first time (2018 'refresh' cohort). All materials sent to participants are provided in Appendix 1.

Existing participants were sent:

- an **initial approach** comprised of an introductory letter, information sheet, survey booklet and reply paid return envelope (1st August, 2018);
- a **first reminder** sent 3 weeks later, comprised of a postcard thanking persons who had returned the survey and asking those who had not to do so (24th August, 2018), and;
- a **second reminder** to those who had not returned the survey (or otherwise notified as being lost to contact, deceased or withdrawn) after 12 weeks from the initial contact, comprised of a final reminder letter, information sheet, survey booklet and a reply paid return envelope (1st November, 2018).

Refresh participants were sent:

- an **initial approach** comprised of an introductory letter containing an invitation to complete the survey online, information sheet, consent form and reply paid return envelope (1st August, 2018);
- a **first reminder** sent 12 weeks later to those who had not returned the survey comprised of a survey booklet, reminder letter, consent form and reply paid return envelope (1st November, 2018);
- a **second reminder** sent to all participants who were not considered lost to contact, deceased or withdrawn 15 weeks after the initial approach, comprised of a postcard thanking persons who had returned the survey and asking those who had not to do so (23rd November, 2018).

Differences in approach to new and existing participants

New participants were initially invited to take part in the survey online, and were only sent a physical booklet if requested or in the second reminder. Additionally, new participants were approached for their written consent to participate in the health data-linkage component of the study. Their information sheet included information related to the health data-linkage component and they were also sent a consent form. Existing participants had been previously approached for consent to data linkage and were not approached again (see Allen, 2016³).

To facilitate future follow up of both refresh and existing participants, the last page of their survey booklet (and the final page of the online survey) also included a form on which they were given the option provide their phone and email contact details.

Participant sample

Existing participants

Inclusion criteria

Persons who were from cohorts recruited in 2006, 2009, 2014 and 2016 were surveyed in 2018 if they were not excluded (deceased, relocated overseas, withdrawn from the study) or lost to contact (that is, there was evidence that persons no longer lived at the address and forwarding details were not available, including: mail RTS and no forwarding details available AND phone disconnected OR phone contact indicated the person was no longer at the premises and no forwarding address was available).

Demographic profile

The age, gender and Māori descent profile of existing participants approached for participation in 2018 by recruitment year are presented in Figure 1.

³ Allen, J. (2016). *Health, Work and Retirement (HWR) National Health Data Linkage Project '14-'15: approach protocol and response*. Technical report for the Health, Work and Retirement Study. Palmerston North: Massey University.

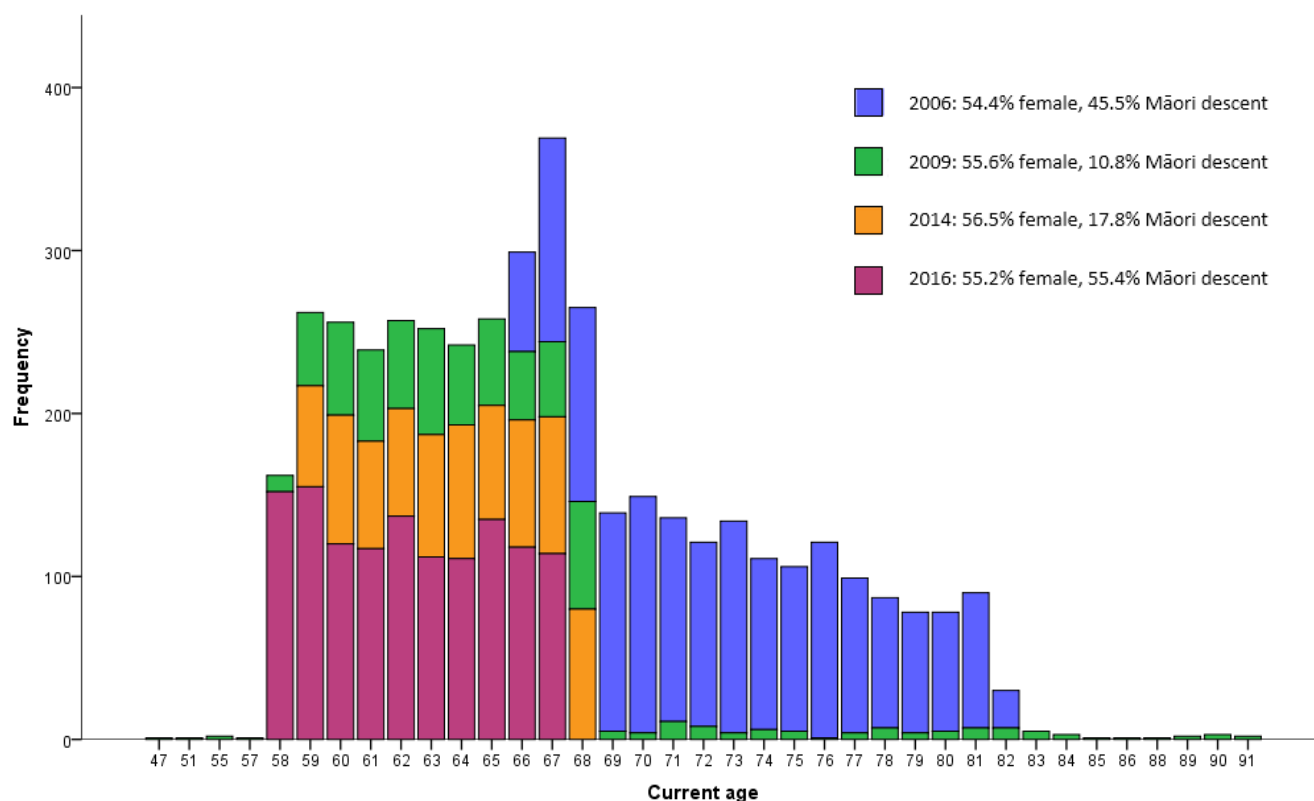


Figure 1. Demographic profile by recruitment year of existing survey participants approached in the 2018 survey.

New 2018 refresh cohort

The 2018 cohort recruitment employed a steady state sampling recruitment design to ensure that the HWR survey continued to represent New Zealand residents of Māori and non-Māori descent aged 55+ in 2018. As such, the study aimed to recruit a new representative sample of persons aged 55-57 to maintain representation of the population aged 55+ as the existing cohort aged while ensuring adequate representation of persons of Māori descent for the purposes of analysis. As in 2016, the study simultaneously asked for consent to participate in health data-linkage study.

Sample frame

As per the 2006 sampling protocol, an oversampling of persons indicated as being of Māori descent in the New Zealand electoral roll (current until 10th May, 2018) was undertaken to provide adequate observations for the purposes of analysis. All persons on the electoral roll who were born between 11/05/1961 and 10/05/1963 (aged 55-57 in 2018) were assessed for inclusion in the study. Those who resided outside New Zealand ($n = 9407$, 1.44%) and those who had responded to a previous Health, Work and Retirement survey '06-'16 were excluded from the sample. A 'Māori descent' sample was selected from within persons identified as being of Māori descent on the electoral roll. A 'general' sample was randomly selected from within all remaining eligible persons enrolled on the electoral roll.

Target sample size

The target sample size for 2018 was based on established guidelines, with reference to the size of the populations of interest as indicated in the 2013 New Zealand census. Briefly, as per the 2006 sampling strategy, the Dillman (2014) sample size calculation for population surveys, employing a finite population correction was used to calculate the target responding sample size. Based on 2013 census data, it was determined that a general population sample of $n = 538$ participants and a Māori sample of $n = 528$ would be required to adequately represent the populations of interest.

BOX 1. Dillman (2014) sample size calculation formulae

General formula:

$$N_s = (Z^2 * p * q) / MoE^2$$

Formula with a *finite population correction (fpc)*, which accounts for the size of the target population in the calculation:

$$N_{s(fpc)} = (N_p * p * q) / \{ (N-1) * (MoE/z)^2 + p * q \}$$

Where

n = completed sample size needed for desired level of precision

p = the proportion being tested

$q = 1 - p$

MoE = the desired margin of sampling error

z = the z-score or critical value for the desired level of confidence

N_p = the size of the target population

Approach sample size

As the approach method for the 2018 survey most closely matched that employed in 2016, response rates for 2016 were used to project response rates and to calculate the initial approach sample size. Response rates were projected to decrease with the online survey administration. Table 1 shows the response rate at the conclusion of the 2016 survey recruitment⁴ and projected response rate for the 2018 sample.

Table 1. Response rate at the conclusion of the 2016 survey recruitment and projected response rate for the 2018 sample.

	Māori over-sample response rate	General sample response rate	Overall
2016	655/2428 (27%)	617/1870 (33%)	1272/4289 (30%)
2018 target	528/1958 (27%)	538/1638 (33%)	1066/3597 (30%)

It was projected that a response rate of 27% could be expected for the Māori descent sample and 33% for the general sample in the 2018 approach to new 2018 refresh cohort. Using these projections, an initial Māori descent sample of $n = 1958$ persons and a general sample of $n = 1638$ persons were approached to achieve the target sample size.

¹ Towers, A. J. (2007). Methodology. In, Health, Work and Retirement Survey: Summary report for the 2006 data wave. Palmerston North: School of Psychology, Massey University

⁴ Allen, J. (2017). 2016 Health, Work and Retirement (HWR) Survey. Technical report for the Health, Work and Retirement Study. Palmerston North: Massey University.

Characteristics of the 2018 refresh cohort sampling frame and approach samples

Tables 2-5 below describe the size, age and Māori descent profile of: 2) the sampling frame (electoral roll); 3) the 2018 refresh sample overall; 4) the general sample, and 5) the Māori descent sample. These may be used for generating survey weights and for initial assessment of bias associated with survey response.

Table 2. Electoral roll ($n = 124306$): 16.6% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
11/05/1961	10/05/1962	(56-57)	49.9
11/05/1962	10/05/1963	(55-56)	50.1
Total			100.0

Table 4. General refresh sample ($n = 1638$): 13.2% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
11/05/1961	10/05/1962	(56-57)	49.0
11/05/1962	10/05/1963	(55-56)	51.0
Total			100.0

Table 3. Refresh sample overall ($n = 3596$): 60.5% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
11/05/1961	10/05/1962	(56-57)	49.4
11/05/1962	10/05/1963	(55-56)	50.6
Total			100.0

Table 5. Māori descent sample ($n = 1958$): 100% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
11/05/1961	10/05/1962	(56-57)	49.8
11/05/1962	10/05/1963	(55-56)	50.2
Total			100.0

2018 survey response

Response cleaning

The gender and date of birth reported by responders to the 2018 survey were assessed for consistency against those previously reported (gender, date of birth) and information from the electoral role (gender, year of birth range). One digit difference in reported day OR month OR year of birth was allowed as long as reported gender also matched previous records (e.g., reported date of birth and gender 25/05/1958 Female *vs.* existing record of 27/05/1958 Female 1957-1958). Where it was apparent that a mix-up between dd/mm/yyyy and mm/dd/yyyy formats had occurred, a match was also recorded as long as the remaining information matched existing records for the participant (e.g., reported date of birth and gender 11/12/1954 Male *vs.* existing record of 12/11/1954 Male 1954-1955). Similarly reported gender was allowed to vary as long as reported date of birth was consistent with previously reported date of birth, electoral start/end year (i.e., 25-May-1958 Male *vs.* existing record 25-May-1958 Female 1958-1959).

N = 4 responses received reported combinations of gender and/or date of birth that were considered inconsistent with recorded data. These survey responses were excluded from the dataset and noted as not responding to the survey. The participant was considered lost to contact but participant's study participation status remained 'active'. N = 33 participants (29 = existing, 4 = 2018 refresh cohort) reported neither their date of birth of gender in the 2018 survey and were considered matches by default. Gender and approximate age values were obtained from electoral roll details and input into the dataset.

Response rate by cohort

Overall, $n = 3964$ (49.8%) survey responses to the 2018 survey were received. Table 6 presents data on response rate by cohort for the cohort's original year of recruitment and 2018 survey response.

Table 6. Approach size and response rate by cohort at original approach and 2018 survey.

Year cohort recruited	Approach and response at original recruitment			Approach and response at 2018 survey			2018 response rate as % of original approach sample
	Sample size	<i>N</i> response	% response	Sample size	<i>N</i> response in 2018	2018 response rate	
2006	13045	6661	51.5%	1708	1434	84.0%	11.0%
<i>GS/GM</i>	5264	3103	58.9%	979	859	87.7%	16.3%
<i>MS</i>	7781	3558	45.7%	729	575	78.9%	7.4%
2009	4502	1000	22.2%	648	541	83.5%	12.0%
<i>RP</i>	3002	555	18.5%	485	397	81.9%	13.2%
<i>NZP</i>	1500	445	29.7%	163	144	88.3%	9.6%
2014	2900	774	26.7%	742	552	74.4%	19.0%
<i>M</i>	583	147	25.2%	132	81	61.4%	13.9%
<i>NM</i>	2317	627	27.1%	610	471	77.2%	20.3%
2016	4298	1272	29.6%	1271	839	66.0%	19.5%
<i>MY</i>	2428	655	27.0%	655	404	61.7%	16.6%
<i>GY</i>	1870	617	33.0%	616	435	70.6%	23.3%
2018	3596	598	16.6%	3596	598	16.6%	16.6%
<i>GZ</i>	1638	307	18.7%	1638	307	18.7%	18.7%
<i>MZ</i>	1958	291	14.9%	1958	291	15.2%	15.2%
Total	28,341	10,305	36.4%	7,965	3,964	49.8%	14.0%

Note: GS: general sample, non-Maori descent; GM: general sample, Maori descent; MS: Maori over-sample; RP: Retirement Planning study; NZP: New Zealand Longitudinal Study of Ageing pilot sample; M: 2014 sample, Maori descent; NM: 2014 sample, non-Maori descent; MY: 2016 Maori over-sample; GY: 2016 general sample; MZ: 2018 Māori over-sample; GZ: 2018 general sample.

Existing cohort

Of the existing (recruited prior to 2018) longitudinal participants surveyed in 2018 ($n = 4369$), $n = 3366$ (77.0%) returned a completed survey. The response rate for persons not indicated as being of Māori descent ($n = 2186$, 81.4%) was higher than the response rate for persons indicated as being of Māori descent ($n = 1175$, 69.9%). There was little difference in the response rate for men ($n = 1478$, 76.0%) and women ($n = 1886$, 78.0%).

Of the 1004 existing participants who did not return a completed survey, 12 returned a blank survey, 34 were notified to the study as being recently deceased, 63 contacted the study to withdraw, 93 were considered lost to contact (returned to sender/gone no address postal sticker on returned mail), and 802 received no response.

New 2018 refresh cohort

Of the new 2018 refresh cohort sample ($n = 3596$), $n = 598$ (16.6%) returned a survey. The response rate for the general sample ($n = 307/1638$, 18.7%) was 3.9% higher than that for the Māori descent oversample ($n = 291/1958$, 14.9%). Overall $n = 276/1422$ (19.4%) persons of non-Māori descent and $n = 322/2174$ (14.8%) persons of Māori descent responded. The response rate for men (13.8%) was lower than that for women (19.2%).

Of the 3000 persons who did not return a completed survey, 16 returned a blank survey, 2 were notified to the study as being deceased, 78 contacted the study to say they did not want to participate, 116 were lost to contact (returned to sender/gone no address), and 2786 received no response.

Response rate by mail out phase

Response rates by cohort and mail out phase were broken down (Table 6, Figure 2) to examine the relative value associated with each mail out phase. Responses received from approximately a week after each phase's initiation were attributed to that phase.

The majority of responses for the existing cohort were received within the first four weeks of the initial mail out. For the refresh cohort, the majority of responses were received after the first reminder. This may be due to the first mail out being an invitation to complete the survey online, whereas the first reminder contained a physical copy of the questionnaire.

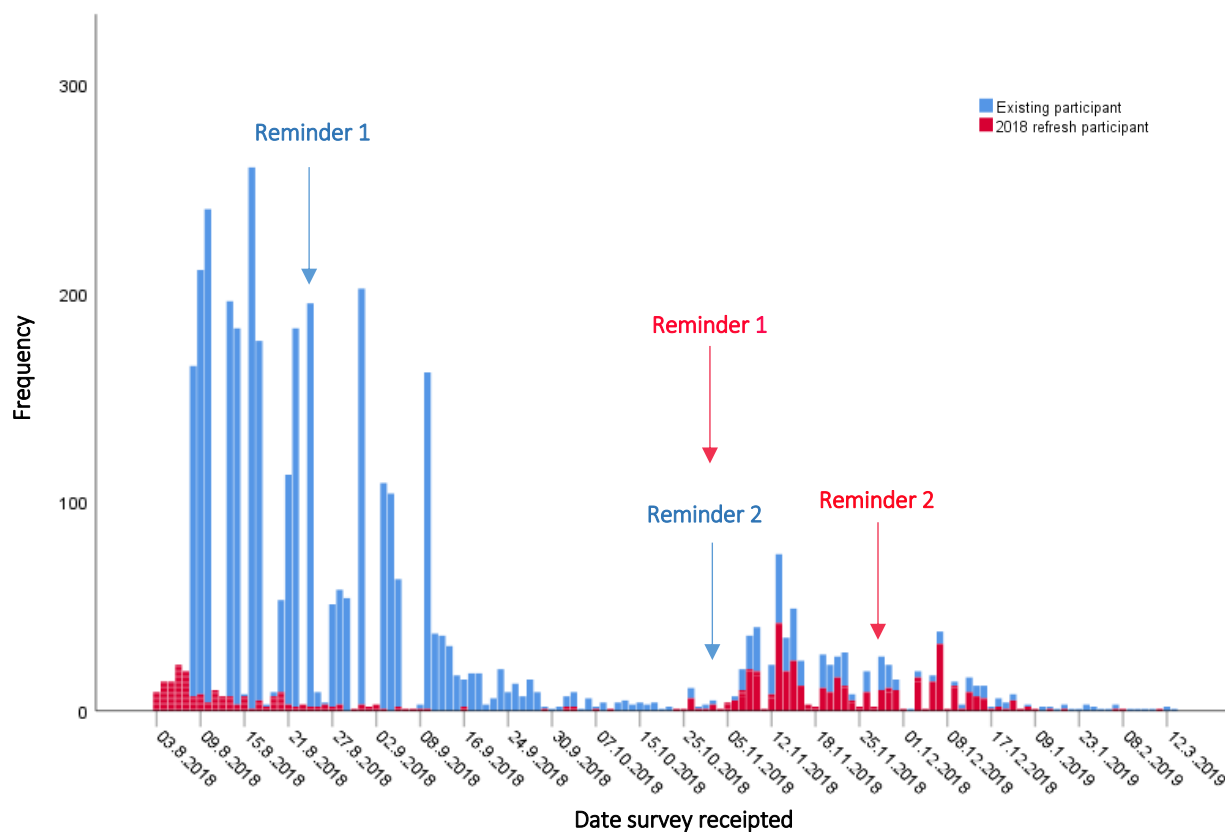


Figure 2. Number of surveys received by date and existing/refresh cohort.

Table 7. Responses by survey protocol phase.

	N responses subsequent to phase	% responses attributable to phase	% of responses received
Existing cohorts (n = 4369 sent)			
Initial survey mail out (01/08-30/08)	2095	48.0%	62.2%
Reminder 1 (31/08-06/11)	910	20.8%	27.0%
Reminder 2 (07/11-31/02)	361	8.3%	10.7%
Overall	3366		100.0%
2018 refresh (n = 3596 sent)			
Initial survey mail out (01/08-04/11)	214	6.0%	35.8%
Reminder 1 (05/11-29/11)	255	7.1%	42.6%
Reminder 2 (30/11-31/02)	129	3.6%	21.6%
Overall	598		100.0%

Existing cohort

All existing participants who were not considered lost to contact, deceased or withdrawn three weeks after the initial mail out ($n = 4300$), were sent the first reminder by OrangeBox, which was the postcard thanking those who had returned a survey, and serving as a reminder for those who had not yet done so. If a response had not been received by 12 weeks after initial mail out, a second reminder was sent by OrangeBox to participants who were not considered lost to contact, deceased or withdrawn ($n = 1239$) consisting of a second copy of the survey. Of these, $n = 361$ (29.1%) ultimately responded. In the absence of existing participants who did not receive the second reminder, it is difficult to quantify the value of the second reminder for existing participants.

2018 refresh cohort

A first reminder to the 2018 refresh sample was sent by OrangeBox for all participants who had not responded to the online invitation and who were not considered lost to contact, deceased or withdrawn 12 weeks after the initial mail out ($n = 3191$).

All refresh participants who were not considered lost to contact, deceased or withdrawn were sent the second reminder by OrangeBox ($n = 3443$).

Table 7 displays the response rate for the 2018 participants who met the criteria for receiving the second reminder. Overall, 4.6% of those approached in the second reminder who had not yet responded eventually returned a survey.

Online surveys

The 2018 refresh cohort were invited to participate in completing the survey online. The first mail out contained instructions and a link to complete the survey online, and the participants were informed that if they did not complete the survey online, they would be sent a hard copy of the survey to complete instead, which was sent as the first reminder 12 weeks after the initial mail out. Some participants contacted the study after receiving the online invitation requesting that a hard copy be sent to them. Initial response rates to the online invitation were poor (196/3596, 5.5% within the first 12 weeks), and the majority of responses from refresh participants were received as hard copies after the first reminder was sent out. Table 8 displays the responses rates following each mail out as a function of method of responses (online vs hard copy).

Table 8. Responses by response method and survey protocol phase for the 2018 Refresh cohort.

	Total approached	N responded online	N responded hard copy	Total responses
Initial mail out	3596	196	14	210
First reminder (hard copy sent)	3191	24	234	258
Second reminder (postcard)	3443	11	119	130
Total		231	367	598

Appendices (see supplementary file)

Appendix 1.1: First letter - existing participants

Appendix 1.2: First letter - new participants

Appendix 2.1: Information sheet - existing participants

Appendix 2.2: Information sheet - new participants

Appendix 3: 2018 survey

Appendix 4: consent and contact form (new 2018 cohort only)

Appendix 5: Post card reminder

Appendix 6: Replacement survey reminder (letter sent with replacement survey and information sheet)

Appendix 7: Magnet incentive