

Technical Report- 2020 Health, Work and Retirement (HWR) survey

Version 1.0

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Report Prepared by

Hannah Phillips

Health & Ageing Research Team

Massey University

Background: The 2020 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, data linkage with national health and mortality records, and data linkage to ACC 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 approximately 97.6% of eligible voters aged over 55 years are enrolled¹. In 2006, 2016, 2018, and 2020 the population samples have included an over-sampling of persons listed on the electoral roll as being of Māori descent, to adequately represent this important section of the older New Zealand community.

The 2020 HWR postal survey, which is the focus of this report, represents the 14-year follow up of the original cohort recruited in 2006, the 11-year follow-up of cohorts recruited in 2009, the six-year follow-up of the cohort recruited in 2014, the four-year follow-up of the cohort recruited in 2016, and the two-year follow-up of the cohort recruited in 2018. Follow-up of the cohort recruited in 2010 was concluded in 2012. The 2020 protocol continues the 'refresh' recruitment of new cohorts of persons aged 55-65 to the HWR study.

Funded by the Ministry of Business, Innovation and Employment, the 2020 HWR survey has a focus on employment, workability and workplace discrimination among the older New Zealand population. Additionally, the 2020 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.

Additionally, in 2020 all existing and refresh participants were approached for consent to link their data to ACC health-related records.

Investigators

Professor Christine Stephens, Professor Fiona Alpass, Dr Sally Keeling (Otago University), Dr Mary Breheny, Mr Brendan Stevenson, Dr Andy Towers, Dr Joanne Allen, Dr Siautu Alefaio-Tugia, Dr Jason Mika, Mr Geoff Pearman, and Dr Judith Davey.

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.

Other project team members

Ms Vicki Beagley and Ms Hannah Phillips.

Ethics and funding

HEC: Southern A Application – 20/07; Health, Work and Retirement Study 2020

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Method

The 2020 Health, Work and Retirement survey comprised a 36-page postal survey to persons who had participated previously in the survey between 2006-2018 ('existing' cohort), as well as a new sample invited to participate in the study for the first time (2020 'refresh' cohort). All materials sent to participants are provided in Appendix 1.

Existing and Refresh participants were sent:

- an **initial approach** comprised of an introductory letter, information sheet, pen, survey booklet, consent form and reply-paid return envelope (11th June, 2020);
- 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 (7th July, 2020), 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, consent form and a reply-paid return envelope (17th September, 2020).

Differences in approach to new and existing participants

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 both health data and ACC data linkage components, and they were also sent a consent form requesting signed consent to access these health records. Existing participants had been previously approached for consent to health data linkage and were not approached again (see Allen, 2016³, and Phillips, 2018⁴), but they were approached for consent to ACC data linkage separately. Existing participants' information sheet contained information about the ACC data linkage component, and they were sent a consent form requesting written consent to link to ACC records.

To facilitate future follow-up of both refresh and existing participants, the last page of their survey booklet included a form on which participants were given the option to provide their phone number and email address, and to update their postal address if necessary.

Participant sample

Existing participants

Inclusion criteria

Persons who were from cohorts recruited in 2006, 2009, 2014, 2016 and 2018 were surveyed in 2020 if they were not excluded (deceased, relocated overseas, withdrawn from the study, had not responded since 2014 or earlier) 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 2020 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.

⁴ Phillips, H. (2019). *Health, Work and Retirement (HWR) National Health Data Linkage Project '18: approach protocol and response*. Technical report for the Health, Work and Retirement Study. Palmerston North: Massey University.

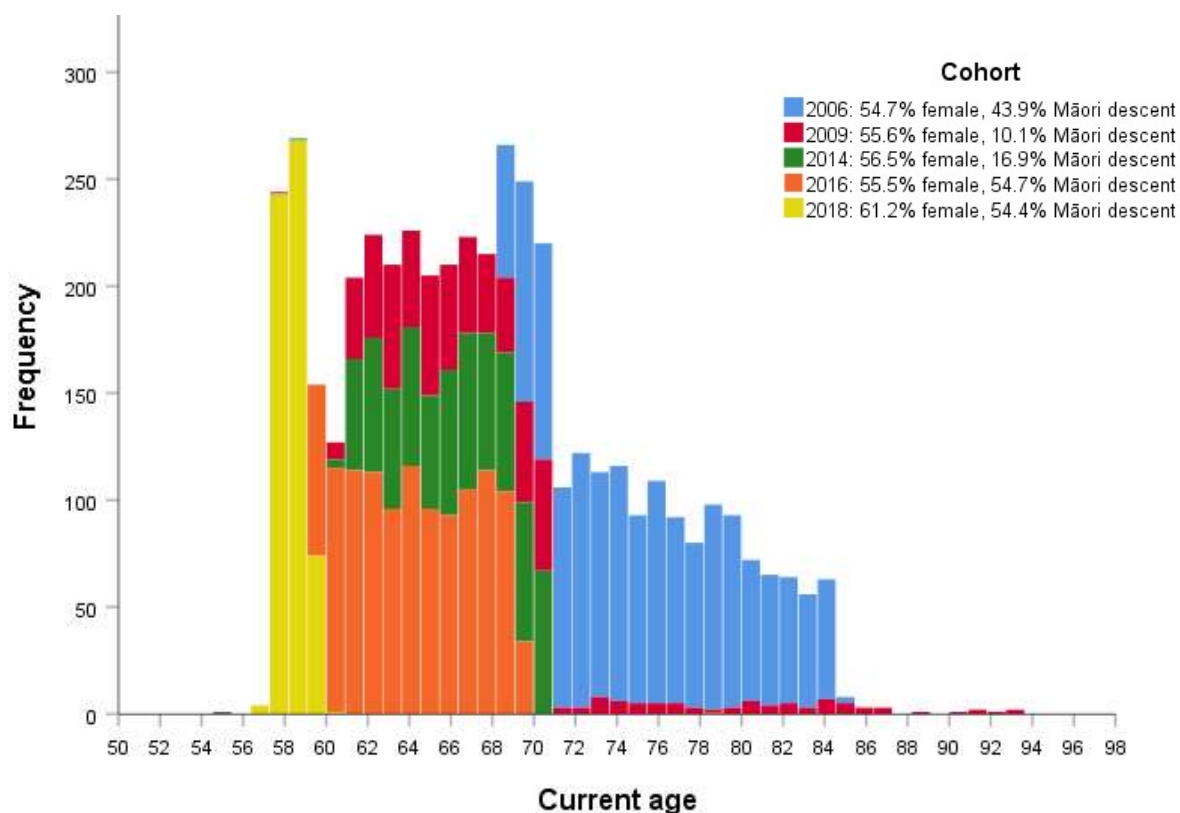


Figure 1. Frequency of age by cohort.

New 2020 refresh cohort

The 2020 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 2020. As such, the study aimed to recruit a new representative sample of persons aged 55-65 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 2018 and 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 29th October, 2019) was undertaken to provide adequate observations for the purposes of analysis. All persons on the electoral roll who were born between 30/10/1954 and 29/10/1965 (aged 55-65 in 2020) were assessed for inclusion in the study. Those who resided outside New Zealand ($n = 9742$, 1.55%) and those who had responded to a previous Health, Work and Retirement survey '06-'18 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 2020 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 $n = 533$ participants and a Māori sample of $n = 533$ 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 2020 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 recruitment⁵ and projected response rate for the 2020 sample.

Table 1. Response rate at the conclusion of the 2016 survey recruitment and projected response rate for the 2020 sample.

	Māori over-sample response rate	General sample response rate	Overall
2016	655/2428 (27%)	617/1870 (33%)	1272/4289 (30%)
2020 target	533/2011 (27%)	533/1541 (33%)	1066/3552 (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 2020 approach to new 2020 refresh cohort. Using these projections, an initial Māori descent sample of $n = 2011$ persons and a general sample of $n = 1541$ persons were approached to achieve the target sample size.

⁵ 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 2020 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 2020 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 ($n = 627558$): 12.9% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
30/10/1954	29/10/1955	(65-66)	8.1
30/10/1955	29/10/1956	(64-65)	8.3
30/10/1956	29/10/1957	(63-64)	8.6
30/10/1957	29/10/1958	(62-63)	8.7
30/10/1958	29/10/1959	(61-62)	9.0
30/10/1959	29/10/1960	(60-61)	9.4
30/10/1960	29/10/1961	(59-60)	9.6
30/10/1961	29/10/1962	(58-59)	9.8
30/10/1962	29/10/1963	(57-58)	9.8
30/10/1963	29/10/1964	(56-57)	9.5
30/10/1964	29/10/1965	(55-56)	9.2
Total			100.0

Table 3. Refresh sample overall ($n = 3552$): 62.5% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
30/10/1954	29/10/1955	(65-66)	6.8
30/10/1955	29/10/1956	(64-65)	8.0
30/10/1956	29/10/1957	(63-64)	7.9
30/10/1957	29/10/1958	(62-63)	7.8
30/10/1958	29/10/1959	(61-62)	9.3
30/10/1959	29/10/1960	(60-61)	10.2
30/10/1960	29/10/1961	(59-60)	9.7
30/10/1961	29/10/1962	(58-59)	10.2
30/10/1962	29/10/1963	(57-58)	10.0
30/10/1963	29/10/1964	(56-57)	10.1
30/10/1964	29/10/1965	(55-56)	10.0
Total			100.0

Table 4. General refresh sample ($n = 1541$): 13.6% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
30/10/1954	29/10/1955	(65-66)	6.0
30/10/1955	29/10/1956	(64-65)	7.7
30/10/1956	29/10/1957	(63-64)	9.0
30/10/1957	29/10/1958	(62-63)	7.7
30/10/1958	29/10/1959	(61-62)	10.8
30/10/1959	29/10/1960	(60-61)	10.5
30/10/1960	29/10/1961	(59-60)	9.2
30/10/1961	29/10/1962	(58-59)	9.6
30/10/1962	29/10/1963	(57-58)	10.5
30/10/1963	29/10/1964	(56-57)	9.1
30/10/1964	29/10/1965	(55-56)	9.9
Total			100.0

Table 5. Māori descent sample ($n = 2011$): 100% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
30/10/1954	29/10/1955	(65-66)	7.4
30/10/1955	29/10/1956	(64-65)	8.2
30/10/1956	29/10/1957	(63-64)	7.1
30/10/1957	29/10/1958	(62-63)	7.9
30/10/1958	29/10/1959	(61-62)	8.1
30/10/1959	29/10/1960	(60-61)	10.0
30/10/1960	29/10/1961	(59-60)	10.0
30/10/1961	29/10/1962	(58-59)	10.6
30/10/1962	29/10/1963	(57-58)	9.6
30/10/1963	29/10/1964	(56-57)	10.9
30/10/1964	29/10/1965	(55-56)	10.1
Total			100.0

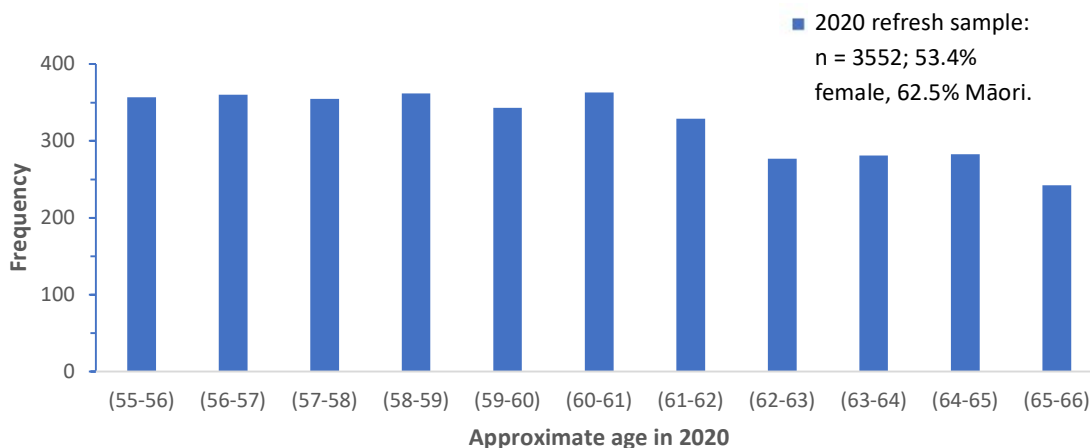


Figure 2. Demographic profile of 2020 refresh sample approached in the 2020 survey.

2020 survey response

A total of 4361 responses to the 2020 survey were received. N = 10 were excluded due to mismatch between previously recorded and reported demographic (date of birth, gender) data. As such, n = 4351 survey respondents were included in the 2020 dataset.

Response cleaning

The gender and date of birth reported by responders to the 2020 survey were assessed for consistency against those previously reported (gender, date of birth) and information from the electoral roll (gender, year of birth range). A 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 could 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 = 10 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 = 47 participants (37 = existing, 10 = 2020 refresh cohort) reported neither their date of birth or gender in the 2020 survey and were considered matches by default. Gender and approximate age values for these participants were obtained from electoral roll details and input into the dataset.

Response rate by cohort

Overall, $n = 4351$ (53.3%) survey responses to the 2020 survey were received. Table 6 presents data on response rate by cohort for the cohort's original year of recruitment and 2020 survey response.

Table 6. Approach size and response rate by cohort at original approach and 2020 survey.

Year cohort recruited	Approach and response at original recruitment			Approach and response at 2020 survey			2020 response rate as % of original approach sample
	Sample size	<i>N</i> response	% response	Sample size	<i>N</i> response in 2020	2020 response rate	
2006	13045	6661	51.5%	1543	1295	83.9%	9.9%
<i>GS/GM</i>	5264	3103	58.9%	907	795	87.7%	15.1%
<i>MS</i>	7781	3558	45.7%	636	500	78.6%	6.4%
2009	4502	1000	22.2%	604	502	83.1%	11.1%
<i>RP</i>	3002	555	18.5%	451	371	82.3%	12.4%
<i>NZP</i>	1500	445	29.7%	153	131	85.6%	8.7%
2014	2900	774	26.7%	697	523	75.0%	18.0%
<i>M</i>	583	147	25.2%	118	66	55.9%	11.3%
<i>NM</i>	2317	627	27.1%	579	457	78.9%	19.7%
2016	4298	1272	29.6%	1180	754	63.9%	17.5%
<i>MY</i>	2428	655	27.0%	598	348	58.2%	14.3%
<i>GY</i>	1870	617	33.0%	582	406	69.8%	21.7%
2018	3596	598	16.6%	590	406	68.8%	11.3%
<i>GZ</i>	1638	307	18.7%	301	218	72.4%	13.3%
<i>MZ</i>	1958	291	14.9%	289	188	65.1%	9.6%
2020	3552	871	24.5%	3552	871	24.5%	24.5%
<i>GA</i>	1541	468	30.4%	1541	468	30.4%	30.4%
<i>MA</i>	2011	403	20.0%	2011	403	20.0%	20.0%
Total	31,893	11,176	35.0%	8,166	4,351	53.3%	13.6%

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; MA: 2020 Māori over-sample; GA: 2020 general sample.

Existing cohort

Of the existing (recruited prior to 2020) longitudinal participants surveyed in 2020 ($n = 4614$), $n = 3480$ (75.4%) returned a completed survey. The response rate for persons not indicated as being of Māori descent ($n = 2251$, 80.8%) was higher than the response rate for persons indicated as being of Māori descent ($n = 1224$, 67.1%). There was little difference in the response rate for men ($n = 1510$, 74.8%) and women ($n = 1968$, 76.0%).

Of the 1134 existing participants who did not return a completed survey, 9 returned a blank survey, 43 were notified to the study as being recently deceased, 60 contacted the study to withdraw, 74 were considered lost to contact (returned to sender/gone no address postal sticker on returned mail), and 948 did not respond.

New 2020 refresh cohort

Of the new 2020 refresh cohort sample ($n = 3552$), $n = 871$ (24.5%) returned a survey. The response rate for the general sample ($n = 468/1541$, 30.4%) was 10.4% higher than that for the Māori descent oversample ($n = 403/2011$, 20.0%). Overall $n = 422/1332$ (31.7%) persons of non-Māori descent and $n = 449/2220$ (20.2%) persons of Māori descent responded. The response rate for men ($n = 371$, 22.7%) was lower than that for women ($n = 500$, 26.3%).

Of the 2681 persons who did not return a completed survey, 28 returned a blank survey, 17 were notified to the study as being deceased, 47 contacted the study to say they did not want to participate, 166 were lost to contact (returned to sender/gone no address), and 2423 did not respond.

Response rate by mail out phase

Response rates by cohort and mail out phase were broken down (Table 6, Figure 3) 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.

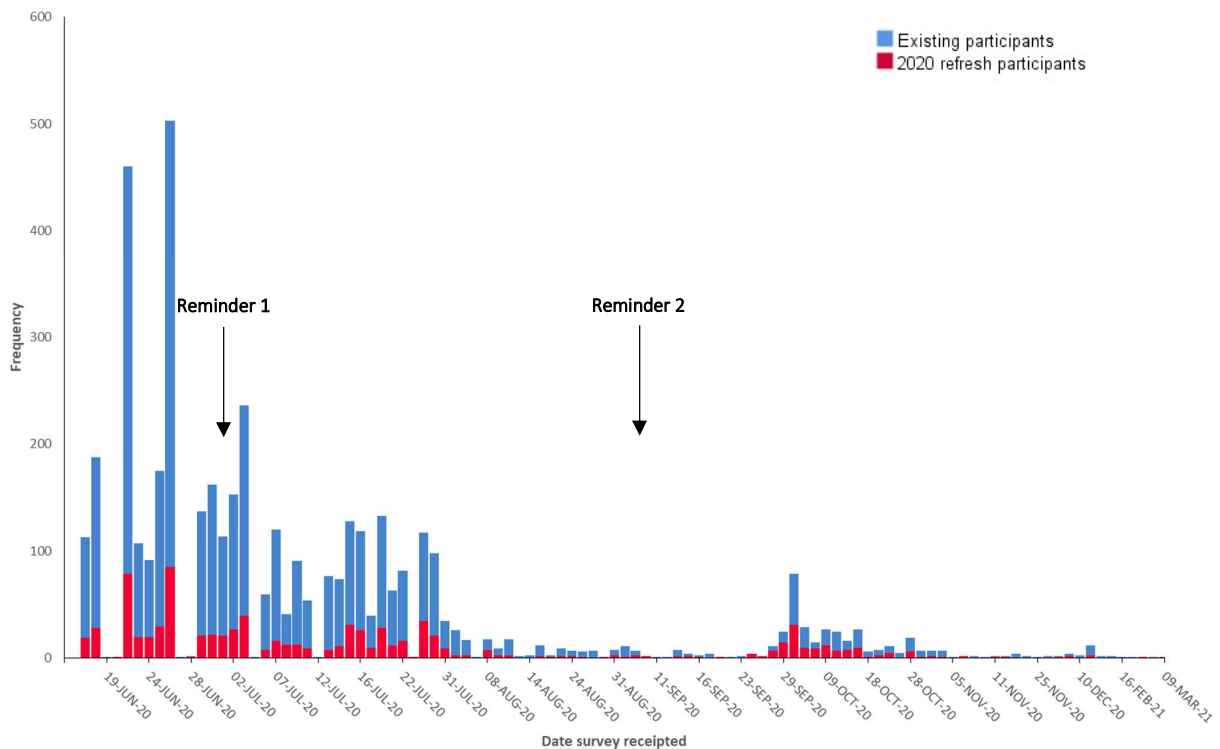


Figure 3. Number of surveys received by date and existing/refresh cohort.

Table 7. Responses by survey protocol phase.

	N responses subsequent to phase	% response rate attributable to phase	% of responses received
Over all cohorts (n = 8166 sent)			
Initial survey mail out (11/06-13/07)	2890	35.4%	66.4%
Reminder 1 (14/07-23/09)	1082	13.3%	24.9%
Reminder 2 (24/09-28/2)	379	4.6%	8.7%
Overall	4351	53.3%	100%
Existing cohorts (n = 4614 sent)			
Initial survey mail out	2409	52.2%	69.2%
Reminder 1	838	18.2%	24.1%
Reminder 2	233	5.0%	6.7%
Overall	3480	75.4%	100.0%
2020 refresh (n = 3552 sent)			
Initial survey mail out	481	13.5%	55.2%
Reminder 1	244	6.9%	28.0%
Reminder 2	146	4.1%	16.8%
Overall	871	24.5%	100.0%

Existing cohort

All existing participants who were not considered lost to contact, deceased or withdrawn three weeks after the initial mail out ($n = 4541$), 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 ($n = 1309$) including a second copy of the survey and materials. Of these, $n = 287$ (21.9%) ultimately responded.

2020 refresh cohort

A first reminder to the 2020 refresh sample was sent by OrangeBox for all refresh participants who were not considered lost to contact, deceased or withdrawn three weeks after the initial mail out ($n = 3463$). 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 ($n = 2693$) including a second copy of the survey and materials.

Overall, $n = 167$ (6.2%) of those approached in the second reminder who had not yet responded eventually returned a survey.

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: 2020 survey

Appendix 4: consent and contact form (existing cohort only)

Appendix 5: consent and contact form (new 2020 cohort only)

Appendix 6: Post card reminder

Appendix 7: Replacement survey reminder (letter sent with replacement survey and information sheet)

Appendix 8: Pen incentive