

Technical Report- 2022 Health, Work and Retirement (HWR) survey

Version 1.0

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Report Prepared by

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Background: The 2022 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, 2020 and 2022 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 2022 HWR postal survey, which is the focus of this report, represents the 16-year follow up of the original cohort recruited in 2006, the 13-year follow-up of cohorts recruited in 2009, the eight-year follow-up of the cohort recruited in 2014, the six-year follow-up of the cohort recruited in 2016, the four-year follow-up of the cohort recruited in 2018, and the two-year follow-up of the cohort recruited in 2020. Follow-up of the cohort recruited in 2010 was concluded in 2012. The 2022 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 2022 HWR survey has a focus on employment, workability and workplace discrimination among the older New Zealand population. The 2022 survey also contained an additional section with items from the WHO SAGE survey.

Additionally, the 2022 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 elsewhere^{2,3}.

All existing and refresh participants were approached for consent to link their data to ACC health-related records in 2020. In 2022, only Refresh participants were approached for consent to link to ACC data in combination with consent to participate in the health data linkage project. Existing participants were not reapproached for consent.

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.

³ Phillips, H. (2021). *Health, Work and Retirement (HWR) National Health Data Linkage Project '20: approach protocol and response*. Technical report for the Health, Work and Retirement Study. Palmerston North: Massey University.

Investigators

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Other project team members

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Ethics and funding

HEC: Southern A Application – 22/23; Health, Work and Retirement Study 2022

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Method

The 2022 Health, Work and Retirement survey comprised a 32-page postal survey to persons who had participated previously in the survey between 2006-2021 ('existing' cohort), as well as a new sample invited to participate in the study for the first time (2022 '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 (EP: 12th September 2022, RP: 16th September 2022);
- 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 (EP: 3rd October 2022, RP: 7th October 2022), 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 (EP: 24th November 2022, RP: 30th November 2022).

Differences in approach to new and existing participants

New participants were approached for their written consent to participate in the health data and ACC data linkage components 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 and ACC data linkage and were not approached (see Allen, 2016⁴, and Phillips, 2018⁵).

To facilitate future follow-up of both refresh and existing participants, the last page of the 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, 2018 and 2020 were surveyed in 2022 if they were not excluded (deceased, relocated overseas, withdrawn from the study, had not responded since 2018 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 2022 by recruitment year are presented in Figure 1.

⁴ 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.

⁵ Phillips, H. (2021). *Health, Work and Retirement (HWR) National Health Data Linkage Project '20: approach protocol and response*. Technical report for the Health, Work and Retirement Study. Palmerston North: Massey University.

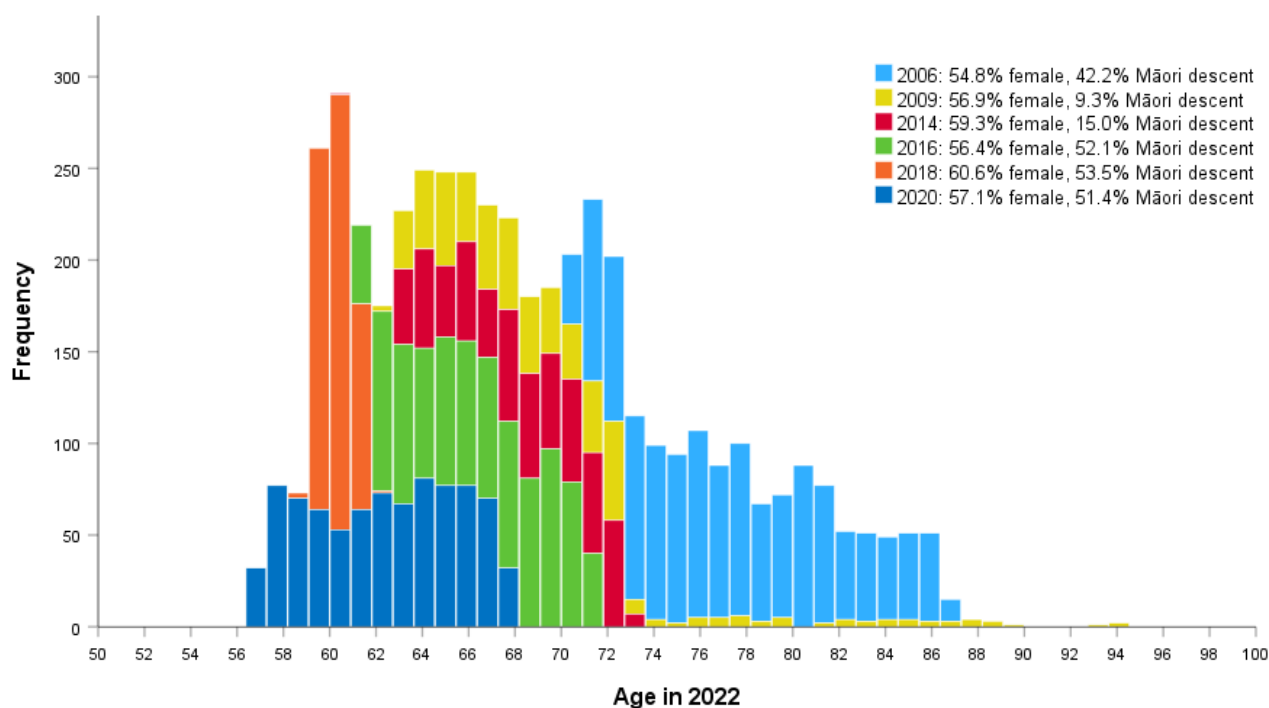


Figure 1. Frequency of age by cohort.

New 2022 refresh cohort

The 2022 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 2022. 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 2016-2020, 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 11th July, 2022) was undertaken to provide adequate observations for the purposes of analysis. All persons on the electoral roll who were born between 12/07/1956 and 11/07/1967 (aged 55-65 in 2022) were assessed for inclusion in the study. Those who resided outside New Zealand ($n = 12448$, 2.02%) and those who had responded to a previous Health, Work and Retirement survey '06 - '20 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 2022 was based on established guidelines, with reference to the size of the populations of interest as indicated in the 2013 New Zealand census and acknowledging the lower response rates among Māori. 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 and 2020 survey response rates, it was determined that a general population sample of $n = 925$ participants and a Māori sample of $n = 1056$ would be required to adequately represent the populations of interest.

BOX 1. Dillman (2014) sample size calculation formulae

General formula:

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

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

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

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

Np = the size of the target population

Approach sample size

As the approach method for the 2022 survey most closely matched that employed in 2020, response rates for 2020 were used to project response rates and to calculate the initial approach sample size. Table 1 shows the response rate at the conclusion of the 2020 survey recruitment⁶ and projected response rate for the 2022 sample.

Table 1. Response rate at the conclusion of the 2020 survey recruitment and projected response rate for the 2022 Refresh sample.

	Māori over-sample response rate	General sample response rate	Overall
2020	403/2011 (20%)	468/1541 (30%)	871/3552 (25%)
2022 target	1056/4576 (20%)	925/3044 (30%)	1981/7620 (25%)

It was projected that a response rate of 20% could be expected for the Māori descent sample and 30% for the general sample in the 2022 approach to the new Refresh cohort. Using these projections, an initial Māori descent sample of $n = 4576$ persons and a general sample of $n = 3044$ persons were approached to achieve the target sample size.

⁶ Phillips, H. (2021). *2020 Health, Work and Retirement (HWR) Survey*. Technical report for the Health, Work and Retirement Study. Palmerston North: Massey University.

Characteristics of the 2022 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 2022 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 ($n = 653415$): 13.4% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
12/07/1956	11/07/1957	(65-66)	8.2
12/07/1957	11/07/1958	(64-65)	8.4
12/07/1958	11/07/1959	(63-64)	8.8
12/07/1959	11/07/1960	(62-63)	9.0
12/07/1960	11/07/1961	(61-62)	9.3
12/07/1961	11/07/1962	(60-61)	9.6
12/07/1962	11/07/1963	(59-60)	9.7
12/07/1963	11/07/1964	(58-59)	9.5
12/07/1964	11/07/1965	(57-58)	9.2
12/07/1965	11/07/1966	(56-57)	9.1
12/07/1966	11/07/1967	(55-56)	9.2
Total			100.0

Table 4. General refresh sample ($n = 3044$): 0.0% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
12/07/1956	11/07/1957	(65-66)	8.4
12/07/1957	11/07/1958	(64-65)	8.7
12/07/1958	11/07/1959	(63-64)	9.1
12/07/1959	11/07/1960	(62-63)	8.5
12/07/1960	11/07/1961	(61-62)	8.6
12/07/1961	11/07/1962	(60-61)	9.8
12/07/1962	11/07/1963	(59-60)	8.8
12/07/1963	11/07/1964	(58-59)	10.2
12/07/1964	11/07/1965	(57-58)	9.3
12/07/1965	11/07/1966	(56-57)	9.1
12/07/1966	11/07/1967	(55-56)	9.5
Total			100.0

Table 3. Refresh sample overall ($n = 7620$): 60.1% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
12/07/1956	11/07/1957	(65-66)	8.0
12/07/1957	11/07/1958	(64-65)	8.0
12/07/1958	11/07/1959	(63-64)	8.7
12/07/1959	11/07/1960	(62-63)	8.9
12/07/1960	11/07/1961	(61-62)	8.8
12/07/1961	11/07/1962	(60-61)	9.8
12/07/1962	11/07/1963	(59-60)	9.4
12/07/1963	11/07/1964	(58-59)	9.7
12/07/1964	11/07/1965	(57-58)	9.5
12/07/1965	11/07/1966	(56-57)	9.5
12/07/1966	11/07/1967	(55-56)	9.7
Total			100.0

Table 5. Māori descent sample ($n = 4576$): 100% Māori descent

<i>Start_year</i>	<i>End_year</i>	<i>Age</i>	<i>%</i>
12/07/1956	11/07/1957	(65-66)	7.8
12/07/1957	11/07/1958	(64-65)	7.5
12/07/1958	11/07/1959	(63-64)	8.4
12/07/1959	11/07/1960	(62-63)	9.2
12/07/1960	11/07/1961	(61-62)	8.9
12/07/1961	11/07/1962	(60-61)	9.7
12/07/1962	11/07/1963	(59-60)	9.9
12/07/1963	11/07/1964	(58-59)	9.4
12/07/1964	11/07/1965	(57-58)	9.6
12/07/1965	11/07/1966	(56-57)	9.7
12/07/1966	11/07/1967	(55-56)	9.9
Total			100.0

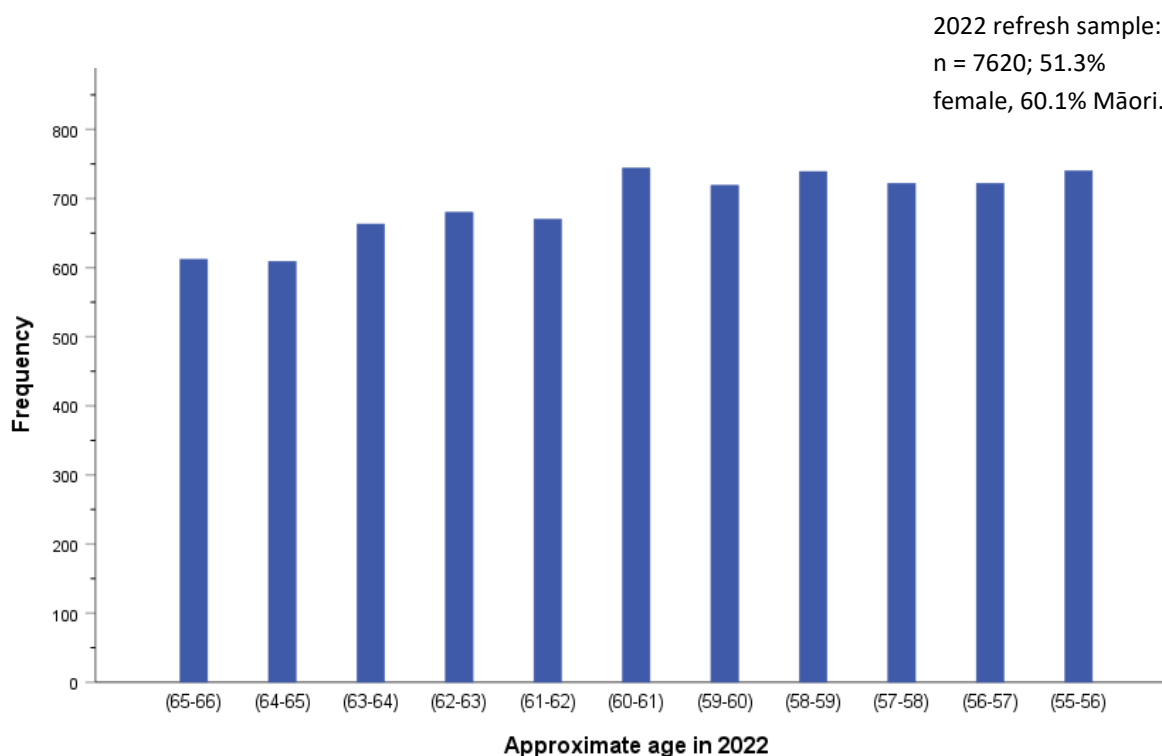


Figure 2. Demographic profile of 2022 refresh sample approached in the 2022 survey.

2022 survey response

A total of $n = 5534$ responses to the 2022 survey were received. $N = 20$ were excluded due to mismatch between previously recorded and reported demographic (date of birth, gender) data. As such, $n = 5514$ survey respondents were included in the 2022 dataset.

Response cleaning

The gender and date of birth reported by responders to the 2022 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).

$N = 20$ 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 = 24 participants (8 = existing, 16 = 2022 Refresh cohort) reported neither their date of birth or gender in the 2022 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, $n = 5514$ (44.60%) survey responses to the 2022 survey were received. Table 6 presents data on response rate by cohort for the cohort's original year of recruitment and 2022 survey response.

Table 6. Approach size and response rate by cohort at original approach and 2022 survey.

Year cohort recruited	Approach and response at original recruitment			Approach and response at 2022 survey			2022 response rate as % of original approach sample
	Sample size	N response	% response	Sample size	N response in 2022	2022 response rate	
2006	13045	6661	51.06%	1335	1157	86.67%	8.87%
<i>GS/GM</i>	5264	3103	58.90%	807	709	87.86%	13.47%
<i>MS</i>	7781	3558	45.70%	528	448	84.84%	5.76%
2009	4502	1000	22.20%	536	469	87.50%	10.42%
<i>RP</i>	3002	555	18.50%	406	354	87.19%	11.79%
<i>NZP</i>	1500	445	29.70%	130	115	88.46%	7.67%
2014	2900	774	26.70%	572	492	86.01%	16.97%
<i>M</i>	583	147	25.20%	86	67	77.91%	11.49%
<i>NM</i>	2317	627	27.10%	486	425	87.45%	18.34%
2016	4298	1272	29.60%	913	689	75.47%	16.03%
<i>MY</i>	2428	655	27.00%	443	313	70.65%	12.89%
<i>GY</i>	1870	617	33.00%	470	376	80.00%	20.11%
2018	3596	598	16.60%	550	345	62.73%	9.59%
<i>GZ</i>	1638	307	18.70%	283	193	68.20%	11.78%
<i>MZ</i>	1958	291	14.90%	267	152	56.93%	7.76%
2020	3552	871	24.50%	837	582	69.53%	16.39%
<i>GA</i>	1541	468	30.40%	452	330	73.01%	21.41%
<i>MA</i>	2011	403	20.00%	385	252	65.45%	12.53%
2022	7620	1773	23.27%	7620	1780	23.36%	23.36%
<i>GB</i>	3044	901	29.60%	3044	904	29.70%	29.70%
<i>MB</i>	4576	872	19.06%	4576	876	19.14%	19.14%
Total	39,513	12,949	32.77%	12,363	5,514	44.60%	13.95%

Note: GS: general sample, non-Māori descent; GM: general sample, Māori descent; MS: Māori over-sample; RP: Retirement Planning study; NZP: New Zealand Longitudinal Study of Ageing pilot sample; M: 2014 sample, Māori descent; NM: 2014 sample, non-Māori descent; MY: 2016 Māori over-sample; GY: 2016 general sample; MZ: 2018 Māori over-sample; GZ: 2018 general sample; MA: 2020 Māori over-sample; GA: 2020 general sample; MB: 2022 Māori over-sample; GB: 2022 general sample.

Existing cohort

Of the existing (recruited prior to 2022) longitudinal participants surveyed in 2022 ($n = 4743$), $n = 3734$ (78.7%) returned a completed survey. The response rate for persons not indicated as being of Māori descent ($n = 2356$, 83.0%) was higher than the response rate for persons indicated as being of Māori descent ($n = 1368$, 72.0%). There was no difference in the response rate for men ($n = 1605$, 78.6%) and women ($n = 2123$, 78.6%).

Of the 1015 existing participants who did not return a completed survey, 8 returned a blank survey, 42 were notified to the study as being recently deceased, 42 contacted the study to withdraw, 69 were considered lost to contact (returned to sender/gone no address postal sticker on returned mail), and 854 did not respond.

New 2022 refresh cohort

Of the new 2022 refresh cohort sample ($n = 7620$), $n = 1790$ (23.5%) returned a survey. The response rate for the general sample ($n = 908/3044$, 29.8%) was 10.5% higher than that for the Māori descent oversample ($n = 882/4576$, 19.3%). The response rate for men ($n = 709$, 21.3%) was lower than that for women ($n = 906$, 25.1%).

Of the 5830 persons who did not return a completed survey, 35 returned a blank survey, 4 were notified to the study as being deceased, 123 contacted the study to say they did not want to participate, 429 were lost to contact (returned to sender/gone no address), and 5239 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.

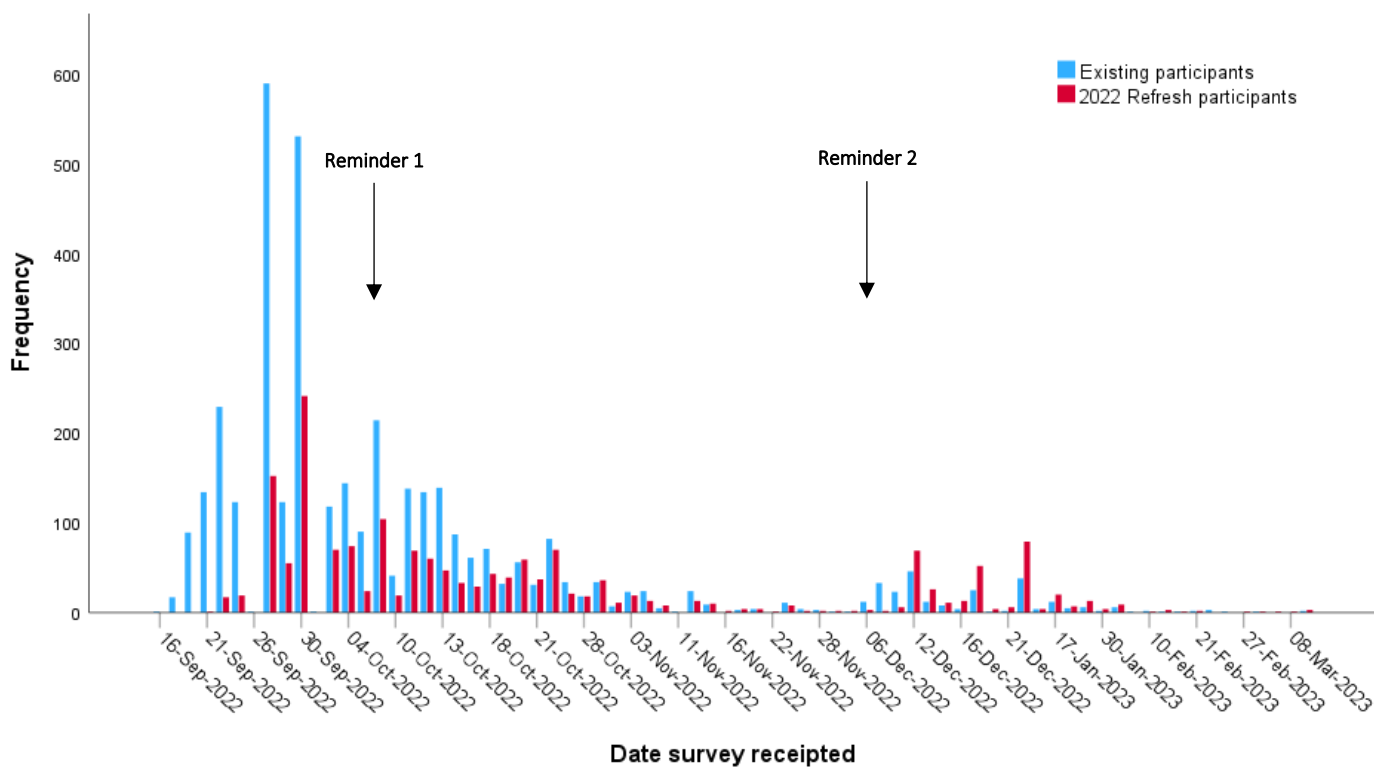


Figure 3. Number of surveys received by date and existing/refresh cohort.

Table 7. Responses by survey protocol phase.

	N responses subsequent to phase	% response rate attributable to phase	% of responses received
Over all cohorts (<i>n</i> = 12363 sent)			
Initial survey mail out (12/09-07/10)	3160	25.6%	57.2%
Reminder 1 (08/10-10/12)	1838	14.9%	33.3%
Reminder 2 (11/12-28/3)	516	4.2%	9.3%
Overall	5514	44.6%	100%
Existing cohorts (<i>n</i> = 4743 sent)			
Initial survey mail out	2403	50.7%	64.4%
Reminder 1	1146	24.2%	30.7%
Reminder 2	185	3.9%	5.0%
Overall	3734	78.7%	100.0%
2022 refresh (<i>n</i> = 7620 sent)			
Initial survey mail out	757	9.9%	42.3%
Reminder 1	692	9.1%	38.7%
Reminder 2	331	4.3%	18.5%
Overall	1780	23.4%	100.0%

Existing cohort

All existing participants who were not considered lost to contact, deceased or withdrawn three weeks after the initial mail out ($n = 4718$), 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 ($n = 1304$) including a second copy of the survey and materials. Of these, $n = 185$ (14.2%) ultimately responded.

2020 refresh cohort

A first reminder to the 2022 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 ($n = 7423$). 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 ($n = 5932$) including a second copy of the survey and materials.

Overall, $n = 331$ (5.6%) 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 - refresh participants

Appendix 2.1: Information sheet - existing participants

Appendix 2.2: Information sheet – refresh participants

Appendix 3: 2022 survey

Appendix 4: consent and contact form (2022 refresh cohort only)

Appendix 5: Post card reminder

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

Appendix 7: Pen incentive