NZAVS Sample Projections

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Available at: http://www.psych.auckland.ac.nz/uoa/NZAVS

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Overview

This technical report describes a model we have developed to estimate projections about the number of participants who will complete the NZAVS in subsequent waves. The model is currently based on very limited data, and has a number of shortcomings. We will continue to refine this model as we collect more waves of data over the coming years. The obvious shortcomings of our current model include:

- Estimation based on only 5 time points and 4 wave-to-wave retention cycles.

- Inconsistency in procedures prompting sample retention at Time 2, effectively meaning that the model is based on only 3 wave-to-wave cycles.

- Lack of a parameter representing long term commitment or identification as a participant in the NZAVS (this will be included when we have more data).

Data (wave-to-wave retention rates)

This section summarizes the wave-to-wave retention rates used to estimate the model used to generate retention projections.

In 2009, at Wave I, the NZAVS randomly sampled a total of 6,518 registered voters from the New Zealand electoral roll.

In 2010, the NZAVS sampled 4,423 people retained from Wave I (retention rate from Wave I = 68%).

In 2011, the NZAVS sampled 6,884 New Zealanders, with 3,916 people retained from Wave I and a booster sample of 2,961 new participants (retention rate from Wave I = 60%, wave-to-wave retention from previous year = 80%).

In 2012, the NZAVS sampled 12,182 New Zealanders, with 4,054 people retained from Wave I and a booster sample of 5,377 new participants (retention rate from Wave I = 62%, wave-to-wave retention from previous year = 84%).

In 2013, the NZAVS sampled 18,211 New Zealanders, with 3,941 people retained from Wave I and a booster sample of 7,639 new participants (retention rate from Wave I = 61%, wave-to-wave retention from previous year = 81%).

Summary of Data

Current wave-to-wave retention looks to be between 80-84%. These estimates are remarkably consistent given the number of minor difference across years in terms of booster sampling, and the introduction of a Season's greetings card and Pamphlet following Time 3, and minor changes in the protocol for phoning non-respondents.

The Model

Assumption 1: We take a conservative estimate for our model, and use the estimated wave-to-wave retention at the lower end of the range, i.e., 80% retention from year-to-year, or from wave-to-wave.

Assumption 2: Because of boosting sampling in Waves 3, 4 and 5. We 'start' the model at Wave 4, with a model constant representing the predicted sample size at Time 4 had there been a steady level of wave-to-wave retention of 80% before that point in time.

Given these assumptions, projected retention rates for the NZAVS may be expressed as follows:

$$y_w = 22764e^{-0.223w}$$

This simple model summarizes a rate of decay in the number of people sampled holding constant a wave-by-wave retention rate of 80%, where: y = the predicted number of people retained in the NZAVS at a given wave (w). For simplicity, Wave 1 in this model represents Time 5 as this was the current wave of the sample from which this model was derived. So setting w = 2 estimates the projected number of people who should complete Wave 6 (or the 2014 phase), w = 3 estimates the projected number of people who should complete Wave 7 (or the 2015 phase), and so forth.

Once again, as we collected more data we will be able to add more parameters to this model, where appropriate, to more reliably estimate projected response frequencies. One obvious parameter that our model is currently missing is a loyalty or commitment function, where presumably, once someone has stayed in the study for a certain number of years, they may become more committed to the study, and hence more likely to continue in the long-term.

Sample Projections

Projections based on our model suggest that approximately n = 14,500 people will complete Wave 6 of the NZAVS. This should drop to roughly n = 11,500 at Wave 7, and n = 9,500 at Wave 8. By the time the NZAVS reaches a decade at Wave 10 (year 2019), the projected number of people retained in the study should be about 6000. Note that these projections are extremely conservative, and we expect to do better than this. Nevertheless, based on these projections we will likely conduct a large booster sample in 2019.

NZAVS Sample Projections

$y = 2E+199e^{-0.223x}$
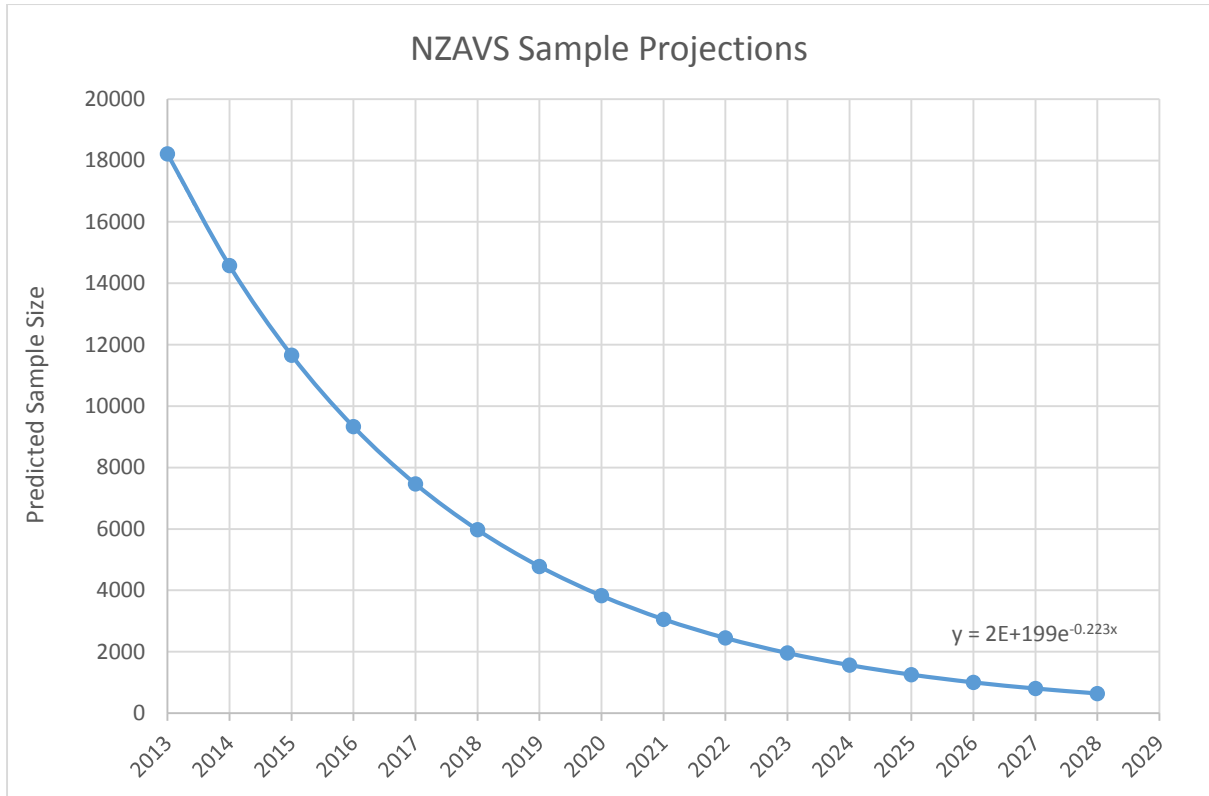
wave	year	w	sample projection
Wave 5	2013	1	18214
Wave 6	2014	2	14573
Wave 7	2015	3	11660
Wave 8	2016	4	9329
Wave 9	2017	5	7465
Wave 10	2018	6	5973
Wave 11	2019	7	4779
Wave 12	2020	8	3824
Wave 13	2021	9	3059
Wave 14	2022	10	2448
Wave 15	2023	11	1959
Wave 16	2024	12	1567
Wave 17	2025	13	1254
Wave 18	2026	14	1003
Wave 19	2027	15	803
Wave 20	2028	16	642