



Counting on us

How start dates affect Census participation

January 2023

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Research team

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The trial was pre-registered on the BETA website and the American Economic Association registry:

<https://behaviouraleconomics.pmc.gov.au/projects/encouraging-australians-engage-census>
<https://www.socialscienceregistry.org/trials/4984>

Who?

Who are we?

We are the Behavioural Economics Team of the Australian Government, or BETA. We are the Australian Government's first central unit applying behavioural economics to improve public policy, programs and processes.

We use behavioural economics, science and psychology to improve policy outcomes. Our mission is to advance the wellbeing of Australians through the application and rigorous evaluation of behavioural insights to public policy and administration.

What is behavioural economics?

Economics has traditionally assumed people always make decisions in their best interests. Behavioural economics challenges this view by providing a more realistic model of human behaviour. It recognises we are systematically biased (for example, we tend to satisfy our present self rather than planning for the future) and can make decisions that conflict with our own interests.

What are behavioural insights and how are they useful for policy design?

Behavioural insights apply behavioural economics concepts to the real world by drawing on empirically-tested results. These new tools can inform the design of government interventions to improve the welfare of citizens.

Rather than expect citizens to be optimal decision makers, drawing on behavioural insights ensures policy makers will design policies that go with the grain of human behaviour. For example, citizens may struggle to make choices in their own best interests, such as saving more money. Policy makers can apply behavioural insights that preserve freedom, but encourage a different choice – by helping citizens to set a plan to save regularly.

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Executive summary

The Census of Population and Housing (the Census) is the most comprehensive data collection exercise in Australia, involving around 10 million households and over 25 million people. Conducted every five years by the Australian Bureau of Statistics (ABS), the Census provides valuable information on the social, economic and cultural characteristics of all Australians.

Historically, the ABS directed people to complete the Census on a specific evening known as ‘Census night’. To make it easier for people to engage with the 2021 Census, ABS advised people they now have a number of days – or a ‘response window’ – to complete the Census.

Prior to making this change, ABS partnered with BETA to redesign the Census letter and test two ways of presenting the response window to the public. The first version of the letter included a response window of one week (“*complete between 11 and 17 October*”). The second version had an immediate response window (“*complete between now and 17 October*”).

The ABS runs a number of *Census Tests* to refine processes ahead of the actual Census. We used one of these Census Tests to run a randomised controlled trial to measure the impact of the two response windows. This Census Test took place in Wagga Wagga (NSW) and Logan (QLD) in October 2019. More than 26,000 households were randomly selected to receive a letter with a ‘*complete now*’ or a ‘*complete between*’ response window.

The proportion of households *commencing* and *completing* the Census Test was similar regardless of which response window they saw. There was, however, a difference in *when* households commenced and completed their survey. Those who received the ‘*complete now*’ letter were more likely to commence the Census Test sooner. Those who received the ‘*complete between*’ window were more likely to respond on, or just after, the Census Test night. The ‘*complete now*’ variation effectively spread responses out over a longer period, reducing the administrative burden associated with collecting many responses on a single day. In particular, there were 26% fewer lodgements on Census Test night compared to the ‘*complete between*’ group.

This research provides evidence that subtle wording changes to letters can impact the dynamics of survey commencement and completion by recipients. These findings contributed to ABS’ decision to adopt the ‘*complete now*’ framing in the 2021 Census.

In the 2021 Census, more people chose to complete the form earlier. Almost two thirds (63%) of households completed their form on or before Census day, compared to 45% in 2016. The overall response rate of the 2021 Census improved from 95.1% in 2016 to 96.1% in 2021. However, because ABS introduced a host of other public engagement initiatives ahead of the 2021 Census, we cannot attribute a single measure as the cause of the improved completion rate.

Why?

The Census informs important decision-making across many domains, and relies on a high response rate to ensure accuracy

The Census is held every five years and counts every person and household in Australia. The insights it generates help state and federal governments, local councils, not-for-profit organisations, researchers and businesses allocate resources and make informed decisions.

It is important for everyone in Australia to participate in the Census. A response rate over 95% ensures data quality (i.e. the data collected in the Census is accurate and useful). This benchmark was achieved in the 2016 Census with 95.1% participation rate, a slight decline from the 96.5% response rate in the 2011 Census.

ABS partnered with BETA to support Census participation

The Census asks households about people staying at their residence on a specific night, the “Census night”. Historically, the ABS highlighted the Census night as the most appropriate time to complete the Census.

In practice, people always had a number of days either side of the Census night to complete the Census. This is known as the response window. We worked with the ABS to design and test a new Census letter that advised people of the broader response window. The benefits of introducing a broader response window include reducing the administrative and logistical burden associated with receiving the majority of Census responses on a single night, and making it easier and more convenient for people to complete the Census.

The ABS has conducted previous research on response windows

In 2018, the ABS commissioned a study into response windows. In this study, researchers ran a randomised controlled trial (RCT), in which online participants (N = 7,846) were asked to complete a Census-style questionnaire that focused on modes of transport (Stenner and Fischle 2018). The authors tested how various response windows impacted commencement and completion rates.

Of the eight response windows tested, two performed best: a week-long response window; and a “do it now” call-to-action response window. A shorter response window (four days) did not do as well as the longer window. The shortest response window – which mimicked the Census’ past focus on a single Census night – was the worst-performing response window. Other research (e.g. Knowles, Servátka and Sullivan 2016; Taubinsky 2014; Tversky and Shafir 1992) has found the opposite – that shorter response windows result in higher completion rates – however, this research was not conducted in a Census context.

What we did

We ran an RCT to test variations in response window framing

To prepare for the Census, the ABS runs a number of small scale ‘Census Tests’. These tests provide ABS with valuable information on how Census delivery and data collection processes work in practice, how well the Census form captures people’s responses, and how people respond to Census materials such as letters and reminders. In partnership with the ABS, we used a Census Test held in Wagga Wagga, NSW, and Logan, QLD in October 2019 to evaluate the impact of changing the response window.

Jointly with the ABS, we ran a randomised controlled trial with 26,329 households.¹ The trial tested the best-performing framing conditions in Stenner and Fischle (2018). The aim of the trial was to evaluate whether changing the response window wording of the Census Test letters impacted if, and when, people completed the Census Test. The wording variations were:

1. Complete between: *“Please complete between 11 and 17 October.”*
2. Complete now: *“Please complete between now and 17 October.”*

Both response windows had the same end date (17 October). The start dates were within a few days of each other – the “complete between” wording specified a start date of 11 October (although recipients could technically start before this date), while those who received the “complete now” wording could start whenever they received the invitation letter (which we estimated was around 9 October for most people). In consultation with the ABS, we chose the length of the stated response window (11 to 17 October) to accommodate the operational considerations of Australia Post delivering Census letters and the ABS’ follow-up visit schedule².

Box 1: What is an RCT?

RCT is a form of scientific experiment that can evaluate the impact of a policy or program.

RCTs randomly assign individuals into different groups – usually, a ‘treatment’ group that is exposed to a new intervention and a ‘control’ group that is not. We then compare outcomes across the groups to determine the causal impact of the intervention.

For this project, people were randomised to see either the “complete between” or the “complete now” response window. We then compared key outcomes between groups.

¹ The ABS managed the randomisation, letter printing and distribution, data capture, data cleaning and data sharing. BETA managed trial design, intervention design, pre-registration, ethics, data analysis and evaluation.

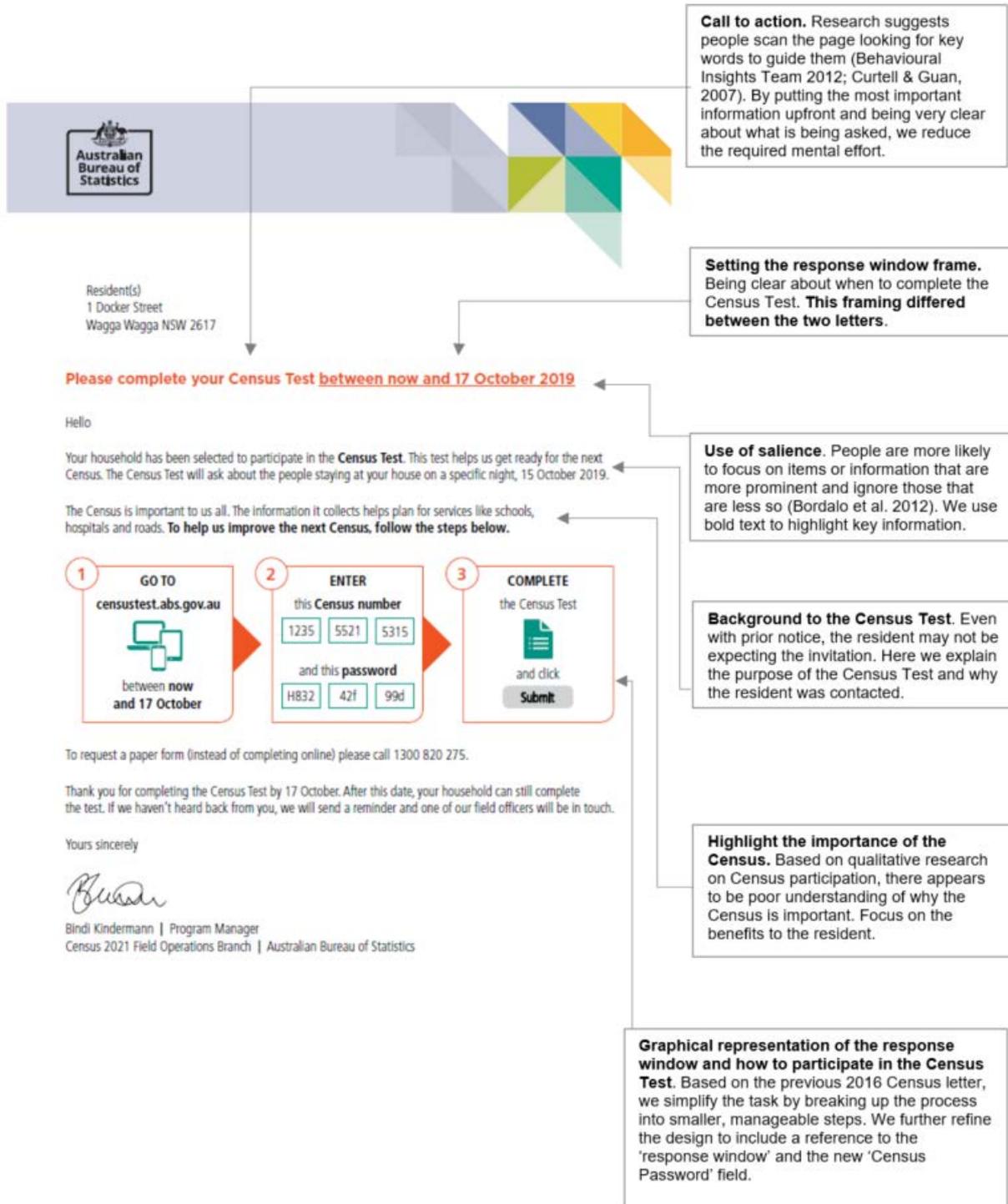
² We chose not to include a control group in the trial. The ABS had committed to introducing the response window in the 2021 Census, therefore including the historical Census night wording would not have been relevant to ABS’ decision making. See Technical Appendix for further details.

We drew on behavioural science principles to design the letters

In designing the new Census Test letter, we built on the 2016 Census letter, applying behavioural insights to a number of elements (see Figure 1). We also provided additional context to advise people of the nature of the Census Test and why it is important they participate, focusing on the benefits to participants. The two versions of the letters were identical except for the framing of the response window.

ABS undertook further work on the design of the letters after BETA's 2019 October Census Test evaluation. The final call to action was further informed by the 2020 Census Tests and cognitive testing done by the ABS's respondent methodology team. Ultimately, the 2021 Census letters used the 'It's time to complete your Census – online form open now' call to action.

Figure 1. October Census Test letter



What we found

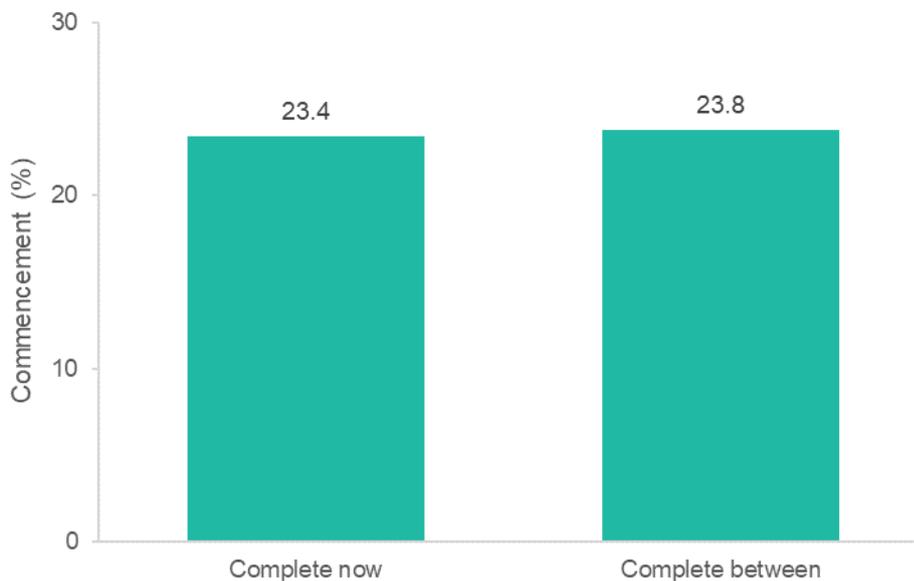
Varying response window wording in approach letters did not meaningfully impact online Census Test commencement rates

Both letters stated that individuals had until 17 October to complete the Census Test, with the variation in letters focused on the way the start date of the response window was presented.

By 18 October (11 days after households began receiving letters), 23.4% of those who were sent the 'complete now' letter, and 23.8% of those who were sent the 'complete between' letter, had commenced the Census Test online (Figure 2).

This difference, while small, could be meaningful if were to scale to the full Census. The result, however, was not statistically significant and thus we do not consider this sufficient evidence to recommend one response window wording over the other.³

Figure 2. Response window wording did not meaningfully impact the proportion of individuals commencing the Census Test by 18 October.



Note: Modelled group proportions from an OLS regression. The difference in commencements (0.4 percentage points) between the two response window groups was not statistically significant.

We looked at commencement rates again at the end of October (around 24 days after households began receiving letters). By this point, 37% of the “complete now” group and 37.4% of the “complete between” group had commenced the Census Test. Again, this difference was not statistically significant.

³ Note: n=26,329. See the 'statistical tables' excel file published alongside this report for detailed statistical tables which include p-values and confidence intervals.

Response window wording did not impact overall Census Test completion

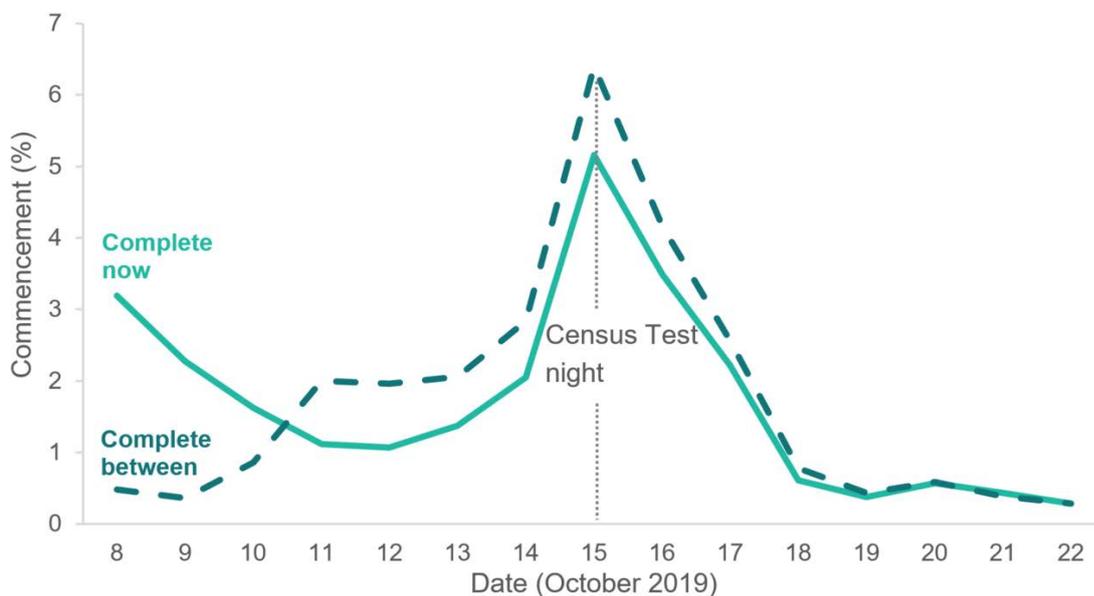
Although variation in response window wording was designed to influence commencement rates, we also measured how many households in each group *completed* the Census Test. For this outcome measure, within each group, we counted households who have completed the Census Test online *and* households who requested and completed a paper Census Test form.⁴

By 18 October, 20.8% of those in the ‘complete now’ group, and 21.8% of those in the ‘complete between’ group had completed the Census Test. This difference of one percentage point was not statistically significant. A similar difference was also present at the end of October, at which point 36.5% of those who were sent the ‘complete now’ letter had completed the Census Test, compared to 37.7% of those who were sent the ‘complete between’ letter. Again, this difference was not statistically significant.

Despite similar overall commencement, response window wording influenced *when* people commenced the Census Test

While the proportion of people commencing the Census Test was similar between the two letter variations at the time points examined, the pattern of commencement differed between groups.

Figure 3. Response window wording impacts the day-to-day proportion of those commencing the Census Test



Note: The data point for 8 October also includes a small number of commencements that occurred on 7 October, these are combined to prevent statistical disclosure issues.

⁴ Because the completion rate captures online and paper lodgements while the commencement rate only captures online attempts, these outcome measures should not be compared to each other.

Figure 3 shows that shortly after letters were received (between 8 October and 10 October), the 'complete now' group commenced the Census Test at a faster rate than the 'complete between' group. Individual statistical tests on each of these days are statistically significant.⁵ This result is consistent with the 'complete now' wording providing recipients with a 'head start' in the response window over the 'complete between' group.

From 11 October, day-to-day commencement rates for the 'complete now' group dropped below the 'complete between' group. This reversal is consistent with the start date given on the 'complete between' letter. Again, these differences are statistically significant. On the Census Test night, 5.1% of those sent the 'complete now' letter, and 6.4% of those sent the 'complete between' letter commenced the Census Test. This was statistically significant.

By 18 October, the 'complete now' group had caught up and commencement rates were similar from this point. The two groups mirror each other from this point onwards. A similar pattern of results was seen for the completion rates.

Response window wording did not impact Census quality or other completion behaviour

We examined whether varying the response window wording influenced other behaviours, such as response quality, whether a paper form was requested, and the time between first login and Census Test completion.

The percentage of people who requested a paper form was 6.6% for those who received the "complete now" version versus 6.9% of people who received the "complete between" letter. The average time between first login and Census Test completion (excluding those who did it in one sitting) was 4 days for the "complete now" and 3.7 days for the "complete between" groups.

We also considered response quality by examining whether people's responses to some questions differed because they received a particular letter. Both letters led to similar declarations of income and the number of residents on Census Test night.

⁵ Differences between groups at 8, 9 and 10 October were statistically significant. This analysis was exploratory and was not pre-registered. These differences, however, are consistent with response window wording, persist across time points and are consistent across both commencement and completion outcomes. Statistical significance remains after adjusting for multiple comparisons.

Discussion

An immediate start date did not change the overall commencement or completion rates but appeared to lead to earlier completion

While the two response window wording variations ultimately achieved similar levels of commencement and completion, they influenced *when* people attempted the Census Test. When presented with an immediate call to action, people completed the Census Test earlier compared to a defined start date.

Response rates only differed *prior* to Census Test night. On and after Census Test night, the cumulative response rate for both windows is similar. We attribute this to the Census letters differing in how the *beginning* of the response window was presented, but not the end. After the response window ended, both groups received reminders and field officer visits from the ABS in exactly the same way, and responded in the same way.

The Census Test was most commonly completed on the Census night, possibly due to habit and familiarity

In both groups, of those who completed the Census Test, the largest number did so on Census Test night. We suspect this may have been the case because people are familiar with the idea of a Census night and completed it on this night out of habit.

People completing the Census Test appeared to be largely compliant with the instructions provided to them. Regardless of which letter they received, they began completing the Census Test when instructed and stopped when the response window closed.

Changes in day-to-day commencement and completion rates due to response window wording can be used strategically

Which of the two response window frames is deemed more effective depends on context and the goal for the ABS. If the overarching goal is to diminish the administrative and logistical burden associated with having peak demand on a particular night, then the “complete now” response window is likely to be more suitable. On the other hand, having people complete the survey on or near a specific date (especially if they have to recall details about that particular date) may make it easier for them to complete the survey, potentially improving data quality – although further research is required to assess the full impact of response windows on data quality.

The 2021 Census saw an increase in the response rate from 2016 Census, with more people completing the Census earlier

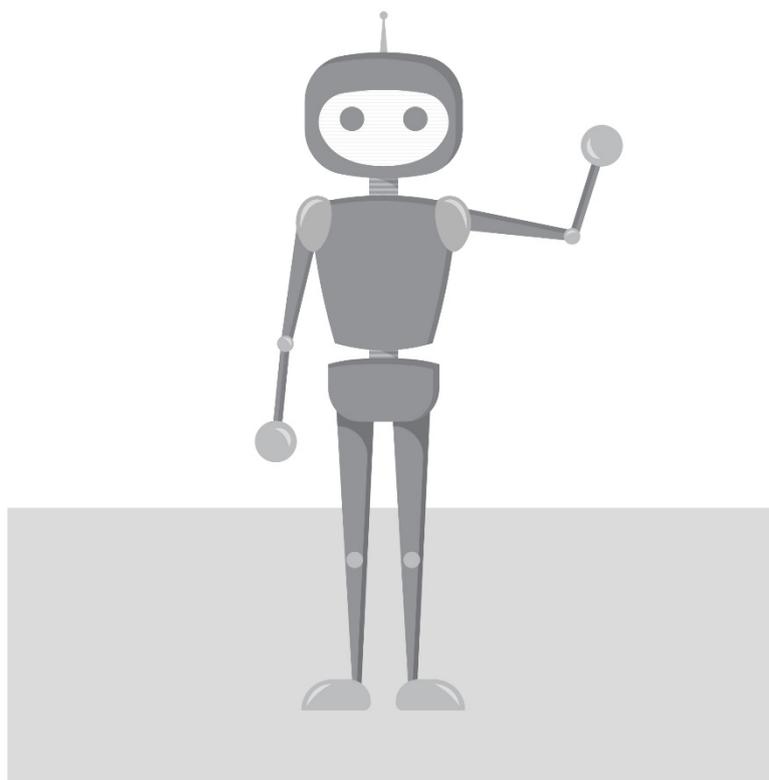
For the 2021 Census, the ABS adopted the “complete now” framing, encouraging people to complete the Census from when they received the invitation letter until 12 August. The ABS also introduced a host of other initiatives to support public’s engagement with the Census, making it difficult to attribute increases in the response rate to the “complete now” framing.

Overall, the household response rate increased from 95.1% in 2016 to 96.1% in 2021. More than a third (34%) of respondents completed their form before Census day, compared to 14% in 2016. Similarly, 63% of respondents completed their form on or before Census day, compared to 45% in 2016, reducing the burden on the Census Digital Service and the Census Contact Centre on Census day.

There are some challenges in recreating the Census experience

The key limitation in this study was the difficulty in replicating the Census experience outside of the actual Census. While the Census Test is likely the closest comparison, it lacks the advertising campaign, media coverage, and mandatory participation element of the actual Census. Compared to the Census, it was also less convenient for respondents to resume the Census Test if they needed to complete it over multiple sessions. Because of these differences, the way people respond in the Census may differ from what we observed in the Census Test. Outside of testing in the actual Census, the Census Test provides the best opportunity to evaluate Census materials.

The Census Test is not compulsory. Around 23% of our sample had commenced the Census Test by the end of the response window, whereas the comparable number for the 2016 Census was about 50%. We therefore suggest caution in extrapolating these results to the entire population.



Technical Appendix

Overview

We designed a randomised controlled trial embedded into the Census Test to evaluate differences in commencement rate due to differences in response windows (the time frame respondents had to complete the test).

Letters were sent on 5 October 2019 and delivered between 8 and 11 October. The “Census night” for both conditions was 15 October. Reminder letters were sent seven days after Census night (22 October) and field officer visits began four days after that (26 October).

Pre-registration and pre-analysis plan

This study was registered on the AEA RCT registry on 4 November 2019 and on the BETA website on 7 November 2019.⁶ This was after the trial launch but before we received any trial data.

We also lodged a pre-analysis plan as part of our registration. We have not made any deviations from that plan and we have reported all pre-specified results, except in the event of a null result, we pre-specified that we would conduct an equivalence test. We did not do this, given the similarity of estimates. We also pre-specified that we would conduct logistic regression as a robustness check. It produced almost identical results and is not reported separately.

We also conducted exploratory analyses, including looking at similar outcomes (commencements and completions) over the full trial period, a longer timeframe than for our primary and secondary outcomes. This supplements the results from our pre-specified outcome variables.

Randomisation

The study was a two-arm cluster randomised trial. For this trial, clusters were mesh blocks, the smallest unit of geography used by the ABS. Mesh blocks were drawn from the Australian statistical areas of Wagga Wagga, New South Wales (NSW) and Logan, Queensland (QLD). Clusters were stratified by:

- the difficulty of enumeration in the 2016 Census
- number of dwellings
- enumeration mode in 2016 Census (drop-off or mail-out)
- mesh block category (residential, primary production etc.).

Mesh blocks were selected from strata in groups of four and randomly allocated by computer algorithm to a treatment group on a one-to-one ratio. Stratification and randomisation were undertaken by the ABS and analysis by BETA.

⁶ The AEA registration is available at: <https://www.socialscienceregistry.org/trials/4984>.

Sample size

The expected sample size was 28,544 households across 892 mesh blocks (approximately 446 per treatment group). The actual sample size was 26,329 households: 13,187 in the closed condition and 13,142 in the immediate condition.

Outcome variables

The pre-specified outcome variables were:

- Primary – proportion of households that commenced the survey (Census Test) prior to 18 October (up to and including 17 October)
- Secondary – proportion of households that completed the survey (Census Test) prior to 18 October (up to and including 17 October).

In addition, we analysed Census Test commencement and completion over a longer period through to October 31.

Method of analysis

Effects for the primary and secondary analysis were estimated using ordinary least squares regression with cluster robust standard errors and mean-centred covariates. We estimated the following model:

$$y_{ij} = \alpha + \tau T_i + \beta x_i + \gamma x_i T_i + v_j + \omega_{ij}$$

Where α is the intercept, T_i is a binary indicator for treatment group membership, x_i is a vector of mean-centred covariates, $x_i T_i$ is an interaction between treatment group indicator and the mean-centred covariates, v represents the error for each cluster j , and ω is an individual error term which picks up any variance not explainable by cluster membership, treatment, or covariates.

We included a number of mesh block level covariates from the 2016 Census. These represented the average value for households in each mesh block included in the trial as follows:

- Age Group (average of all persons in the mesh block)
- Gender (percentage male)
- Household income range (average)
- Household size (average numeric 1-20)

The available data did not include strata dummy variables. We anticipated this and therefore strata dummies were not part of our pre-specified analysis plan.

Trial threats

Blinding: Participants were aware they were part of a Census Test but were not aware of details of what elements of the Census were being tested.

Attrition or missing data: There was no attrition or missing data because anyone who did not commence or complete the Census Test was recorded as a 'zero' in our outcome variables.

Spillovers: We think there was very little risk of contamination (or spillover) between treatment groups based on the framing of the response window. Any such risk was greatly reduced by clustering at the mesh block level. That is, every household in the same mesh block was assigned to the same treatment group so contamination could only occur between households in different mesh blocks.

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