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ELECTRICITY AUTHORITY
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Using behavioural insights to increase ‘search and switch’ behaviour: Piloting two letters to consumers

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Executive summary

The New Zealand Electricity Authority partnered with Kantar Public to conduct a project which aimed to encourage more consumers to optimise their electricity plan. This builds on previous work by the Electricity Authority to increase competition in the electricity market and aligns with our statutory functions to promote to consumers the benefits of comparing and switching retailers. Where this differs from the Electricity Authority's previous work and approach is in the explicit use of behavioural insights and a randomised control trial to determine what works. This project also builds on the Electricity Price Review (EPR) recommendation to establish a pilot scheme to help non-switching consumers find better deals.

The decision-making process behind a consumer switching retailer can be complex; consumers are influenced by a range of triggers, behaviours and personal factors. There are a number of ways to prompt consumers to consider their electricity plan. Letters provide a low-cost option for reaching consumers, especially consumers who are not IT savvy or who are digitally excluded.

We first conducted fieldwork to understand the barriers to switching electricity plans from the perspective of consumers (including their use of the Powerswitch comparison website). This identified several structural barriers and a number of information and psychological barriers which could potentially be addressed through behaviourally-informed communication.

Based on successful trials by the UK energy regulator, Ofgem, the Authority wanted to see if letters could prompt consumers to get the best deal for their circumstances. We designed two letters, both of which:

- Explained the benefits of the Powerswitch website, to increase awareness of this service;
- Highlighted the likely savings from switching electricity retailers, to reduce ambiguity aversion; and
- Provided reassurance that electricity supply would continue during switching and retailers are regulated, to reduce zero-risk bias.

The main differences in the two letters were:

- *Letter A* increased the perceived urgency of checking electricity deals before higher winter consumption, to address inertia
- *Letter B* increased the perceived (and, to a degree, the actual) ease of checking electricity deals, to address effort avoidance.

After refining the letters through prototyping, we evaluated their impact by conducting a randomised controlled trial with 60,000 households. We compared households that were randomly assigned to Letter A, Letter B, or no letter (Control group) on two outcomes, measured 30 days after the letters were posted: (1) visits to the Powerswitch website; and (2) electricity retailer switches. We could not measure switches between plans or tariffs with the same retailer due to data limitations.

Both letters increased visits to Powerswitch by about 40% (from around 10% of households in the Control group to around 14% of households sent a letter). In raw numbers, of the 59,554 households included in the analysis, Powerswitch visits were recorded for 2,138 in the Control group, 3,001 sent Letter A, and 3,056 sent Letter B. Only 270 households in the Control group (around 1%) switched retailer and neither letter achieved a statistically significant increase.

When we looked at consumers who hadn't switched for five years or more, we found that the letters had twice as big an impact on search behaviour compared to consumers who switched less than five years ago. However, because baseline visits to Powerswitch for non-switching consumers was so low, the uplift was not enough to close the engagement gap. The letters were also effective for increasing visits to Powerswitch among vulnerable consumers which we defined as living in areas with high deprivation and low population density, but this was also from a lower baseline.

Overall, even though our intervention was not personalised or targeted due to data and privacy limitations, the trial has shown the potential for a letter intervention to engage consumers in their electricity deal. The

findings from this trial will inform the Authority's future efforts to overcome barriers and enable consumers to have trust and confidence in their decision making.

Contents

1. Acknowledgements

The Authority thanks the Consumer NZ Powerswitch team for their collaboration and input into this pilot.

2. Background to the project

The Electricity Authority (the Authority) is an independent Crown entity responsible for overseeing and regulating the New Zealand electricity market. It regulates the electricity market by developing and setting the market rules, enforcing and administering them, and monitoring the market's performance.

The Authority has a statutory objective to promote competition in, the reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.

The Authority also has statutory functions, one of these being to promote to consumers the benefits of comparing and switching retailers. In fulfilling this function, between 2011 and 2019, the Authority delivered a campaign to New Zealand consumers called 'What's My Number'. The What's My Number campaign was designed to motivate consumers to check whether they were on the best power deal to meet their needs.

In 2019, in response to a recommendation made by the EPR[1], the Authority and Consumer NZ merged their respective price comparison websites to form the current Powerswitch site. What's My Number had provided consumers with a high-level potential savings estimate which could be made if a consumer switched plans or retailer, while Powerswitch provides consumers with more advanced comparison information and lists plan options available from different retailers.

During 2021, the Powerswitch brand underwent a refresh and Consumer NZ delivered a winter marketing campaign utilising television, social media, radio and bus back mediums.

Given the learnings available from past What's My Number campaigns, and the efficiencies gained from aligning the pilot with the timing of Consumer NZ's 2021 brand refresh, the Authority pursued a different approach for this project than previously used advertising channels. Advice was taken which suggested value in testing advertising channels often overlooked in the digital age, especially where those channels can be targeted, and responses measured at a granular level.

This project also builds on a recommendation made by the EPR. The EPR Final Report recommended that the Authority should establish a pilot scheme to help non-switching consumers find better deals. It also went on to say that it should help those consumers who find it hardest to shop around, especially those who are vulnerable.

The Authority was also inspired by successful trials conducted in the UK by the energy regulator Ofgem. These trials found that sending letters directly to consumers increased 'search and switch' behaviours. Due to differences in culture, regulations and market forces, the Authority wanted to develop and test letters that specifically addressed the barriers preventing New Zealand consumers from considering their electricity deal. Furthermore, the Authority was particularly interested in understanding whether the letter approach is a cost-effective way of engaging vulnerable consumers who may be less able or less confident to check they are getting the best electricity deal for their circumstance.

As a first step, the Authority was interested in demand-side remedies – which increase consumer engagement in the electricity market – because the EPR found that consumer engagement was generally low among low-income households. While specifically engaging non-switching consumers in finding a better deal benefits individuals directly, higher engagement across the entire population promotes price competition

[1] https://www.mbie.govt.nz/assets/electricity-price-review-final-report.pdf

between retailers which drives down prices for all consumers. This particularly benefits vulnerable consumers who find it hardest to shop around. The Authority partnered with Kantar Public to conduct a project which aimed to encourage more consumers to optimise their electricity plan by searching for, and switching to, the best deal for their circumstances, and measure the behavioural response from particular audience types.

3. Behavioural challenge

Target behaviours

Our broad objective for this project was to increase the number of consumers that optimise their electricity plan. For some consumers, this means switching from their existing deal; for others, it means simply checking that the deal they are currently on is the right one for them by searching for alternatives.

The Authority partially funds a consumer facing tool to facilitate search and switch behaviours: the Powerswitch website, run by ConsumerNZ.[2] The website allows consumers to input their electricity consumption details in order to see the deals, and potential savings, available to them.

Therefore, our specific target behaviours were:

1. For consumers to use Powerswitch to compare electricity deals for their household.
2. For consumers to switch to a better deal if one is available.

Target population

Like most behaviours, people's motivation and ability to check whether they could get a better electricity deal for their circumstance is likely to follow a normal distribution or bell curve, i.e., some people are highly engaged in the electricity market, some people will never engage, and the majority sit somewhere in the middle where they will engage if it's easy, they understand the benefits, and they are given a timely prompt.

The Authority was particularly interested in shifting the behaviour of the least engaged electricity consumers, particularly those lower-income households. However, the Authority also recognised that encouraging all consumers to consider their electricity deal drives general market competition which improves affordability for everyone, particularly vulnerable consumers who find it hardest to shop around.

Therefore, whilst we focused on shifting the behaviour of all New Zealand electricity consumers, we designed a trial which enabled separate analyses of those whose areas are vulnerable (defined as living in areas of higher deprivation or lower population density) as well as those who are less engaged in the market to see if they responded to our intervention differently.

[2] https://www.powerswitch.org.nz/

4. Fieldwork and background research

We reviewed the insights from previous What's My Number campaigns where these tested different messages and channels to target hard to reach audiences. We also conducted fieldwork to understand the barriers to using the Powerswitch website and switching electricity plans from the perspective of consumers. As letters were the defined channel for prompting consumers to consider their electricity deal for this project, we then narrowed down to the barriers that could be addressed by a letter.

A full account of the research approach and findings can be found in the annex.

Learnings from past campaigns

A series of What's My Number mini campaigns from 2019 captured some learnings relevant to this project. These campaigns applied a 'test and learn' approach to what messages and channels work in targeting harder to reach audiences, including a low-income consumer segment. Research preceding those campaigns identified the low-income audience often didn't engage with regular What's My Number messages due to life pressures, generic non-personalised nature of the messaging or the traditional marketing channel used.

Interviews

From 10 – 14 May 2021, we conducted interviews with eight electricity consumers who had successfully and unsuccessfully switched plans in order to understand their experience. We investigated the steps they took, barriers they experienced, and points of drop-out. We used these findings to create a customer journey map and overlayed insights from the behavioural science literature (Annex 1).

We concluded that there are three types of barriers preventing New Zealand consumers from considering their electricity deal: **structural barriers** (barriers which operate at the system level), **information barriers**, and **psychological barriers** (barriers which are connected to a customer's thinking).[3]

Structural barriers include:

- *Being locked into the current supplier* due to fixed term contract exit penalties, pre-paid meter, contracts 'rolling over'.
- *Disincentives to exit current supply arrangements* due to gifts for staying with the current retailer and discounts on other services (e.g., broadband) which were described as a 'rigmarole to switch' by interviewees.
- *Retailers don't present costs in a comparable format* which makes it difficult for consumers to identify the best deal. It also limits the functionality of comparison sites to compare savings from electricity

[3] A good capture of some of the biases can be found here: https://theconversation.com/inducing-choice-paralysis-how-retailers-bury-customers-in-an-avalanche-of-options-116078

deals which include other services (e.g., electricity bundled with broadband) and non-financial incentives (e.g., white goods), described by interviewees as comparing 'apples and oranges'.[4]

Information barriers include:

- *No/low awareness* that electricity choices or switching services (such as comparison sites) exist. For example, our research found that one group who may be particularly unaware of electricity choices or switching services are recent immigrants to New Zealand.
- *Lack of necessary details* (e.g., electricity consumption, heating type) to compare electricity deals due to moving to a new property, not having access to a recent bill, or not being able to interpret bill information

Psychological barriers include:

- *Inertia:*[5] Absence of a trigger or lack of urgency to instigate the process of checking electricity deals. Our interviews found that few respondents had instigated checking their electricity plan without having a trigger created by external circumstances (such as having a baby, moving house, or losing a job). Bill shock can also be a trigger, but overall, checking electricity plans is simply not top of mind for many. This reflects research for the Australian Energy Market Commission which found that consumers' interest in energy is sporadic and typically triggered by events.[6]
- *Effort avoidance:*[7] Perceived hassle of comparing electricity deals and switching. Respondents in our interviews talked of 'putting it off for years' as they were expecting the process to be hard. This mirrors a large body of research around the world showing that the mere mental hassle of understanding the complexities of a program is a major barrier to program uptake.[8]
- *Ambiguity (uncertainty) aversion:*[9] Uncertainty about savings from switching plans because comparison sites don't include the financial implications of switching from a bundled contract (e.g., electricity and broadband combined). Ofgem's trials focused on providing personalised and precise savings to householders which has proven to be successful.[10] Providing individuals with personalised cost information has also been found to increase other types of switching.[11]
- *Zero-risk bias:*[12] Lack of confidence in exiting current supplier due to fear of electricity disruption or unknown retailer brands. Zero-risk bias involves opting for the complete elimination of risk, sometimes over an alternative that has a small amount of risk but a greater expected value. It can be

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[4] For example, one respondent was on an electricity plan that included an exercise program and offered bonuses for steps completed. Another was on a plan that included whiteware, making it challenging for the respondent to evaluate the overall costs.

[5] https://www.behavioraleconomics.com/resources/mini-encyclopedia-of-be/inertia/

[6] Oxera. (2016). Behavioural insights into Australian retail energy markets, Prepared for Australian Energy Market Commission.

[7] Kool, W., McGuire, J. T., Rosen, Z. B., & Botvinick, M. M. (2010). Decision making and the avoidance of cognitive demand. Journal of experimental psychology: general, 139(4), 665.

[8] For example, the U.S. Government's largest cash transfer program was neglected by approximately 25% of the eligible population (~6.7 million people each year) due to mental hassle even though individuals could receive up to $6,044 per year. https://www.ideas42.org/blog/misbehaving-blog-dont-people-take-free-cash/

[9] https://www.behavioraleconomics.com/resources/mini-encyclopedia-of-be/ambiguity-uncertainty-aversion/

[10] See www.ofgem.gov.uk/sites/default/files/docs/2019/09/collective_switch_slides_for_publication.pdf

[11] For example, sending U.S. Medicare patients a letter with personalised cost information on prescription drug insurance plans (which was already freely available online) led to a 28% increase in insurance plan switching, and caused an average decline in predicted consumer cost of approximately $100 per year per consumer. See Kling, J. R., Mullainathan, S., Shafir, E., Vermeulen, L. C., & Wrobel, M. V. (2012). Comparison friction: Experimental evidence from medicare drug plans. *Quarterly Journal of Economics, 127*(1), 199–235. https://doi.org/10.1093/qje/qjr055

[12] Raue, M., & Schneider, E. (2019). Psychological Perspectives on Perceived Safety: Zero-Risk Bias, Feelings and Learned Carelessness. In Perceived Safety (pp. 61-81). Springer, Cham.

counteracted by reframing risks and providing simple and clear information about options and processes from trustworthy sources.

Prototyping

Overcoming the structural barriers to search and switch behaviours requires policy or regulatory interventions. Therefore, we focused on developing letters that could overcome the information and psychological barriers to search and switch behaviours, although these interact with structural barriers.

Before finalising the design of the letters, we created a number of prototypes and showed these to eight people who had not switched in the last three years. Half of these respondents had low household incomes. We used the prototypes to collect feedback on messaging, branding (Powerswitch, the Authority and ConsumerNZ), format (letter vs postcard), and how we should address the householder.

Overall, respondents preferred the letter compared to postcard format as the postcard format was too reminiscent of ‘junk mail’. They said the branding could be from the Electricity Authority or ConsumerNZ – the Electricity Authority is unknown but has a formality that makes it seem important; ConsumerNZ is known and trusted and perceived as potentially useful.

Detailed feedback on each concept that we tested can be found in Annex 1.

5. Intervention design

Following our fieldwork and background research, we refined our letter interventions. In addition to explaining the benefits of the Powerswitch website (which increases awareness), we highlighted the average likely savings available from switching (which reduces ambiguity aversion) and provided reassurance about supply and unknown brands (to reduce zero-risk bias) because we identified these as major barriers to search and switch behaviours in New Zealand.

We were unsure about the extent to which other key psychological barriers we identified could be overcome by a letter, so we decided to compare the impact of two different letters which varied as follows:

- ***Letter A:*** Overcomes inertia by increasing the perceived urgency of checking electricity deals due to higher winter consumption
- ***Letter B:*** Decreases effort avoidance by increasing the perceived (and, to a degree, the actual) ease of checking electricity deals

The barriers that each letter addresses are detailed in Table 1. See Annex 2 for copies of the actual letters.

Table 1: Letter design features

Barriers addressed	**Letter A –** overcomes *inertia* by increasing urgency	**Letter B –** Decreases *effort avoidance* by increasing ease of process
Inertia – Absence of a trigger or lack of urgency to instigate the process of checking electricity deals	Urgency due to increased winter electricity usage.	
Effort avoidance – Perceived hassle of comparing energy deals and switching		Set aside 5 minutes. Description of easy four-step process.
Lack of necessary details – Hassle from having to visit a comparison site twice if didn't have a recent bill to hand the first time to input details		Note that having a recent electricity bill with you is useful, but not essential.
No/low awareness that energy choices or switching services exist	Description of the Powerswitch website and its benefits.	
Ambiguity (uncertainty) aversion – Uncertainty about savings from switching energy plans	Specifies $388 average savings based on ConsumerNZ research.	
Zero-risk bias – Preference for completely eliminating risk of supply disruption or unknown retailer brands	Reassurance that supply will continue, and retailers are regulated. Mention that switching is the social norm to reduce perceived risk, i.e., if others are switching it must be safe.	

Limitations

In the UK, regulations that require retailers to participate in consumer engagement trials enabled Ofgem to target specific consumers with personalised letters. For example, Ofgem targeted customers who had been on a default energy tariff (generally the most expensive) for three years or more. They tested letters that either signposted three cheaper deals available from across the market or offered consumers access to a cheaper tariff Ofgem had negotiated which was not available on the open market. This reduced the hassle and uncertainty for consumers to find the best deal.

However, in New Zealand, the Authority has no such regulation available to enable personalisation of letters using retailer information. Hence, the intervention letters used generic messages with an average savings amount. This still leaves consumers with uncertainty about their individual savings from switching.

6. Trial design

To evaluate the impact of the letters, we conducted a randomised control trial (RCT) with three arms. Consumers were randomly assigned to one of the following conditions:

1. Letter A (overcoming inertia by increasing urgency)
2. Letter B (decreases effort avoidance by increasing ease of process)
3. No letter (business as usual; Control group)

Outcome measures

We estimated the impact of the letters on two outcomes of interest:

Primary outcome: visiting the powerswitch.co.nz website up to 30 days after letters were posted, defined as an identified address being entered into the website.[13]

Secondary outcome: switching electricity suppliers up to 30 days after letters were posted, defined as a change in retailer logged in the Electricity Registry (the Registry).[14] This could either be a 'trader switch' (switched without changing address) or a 'move in' switch (switched and changed address).[15]

Limitations

We did not make switching our primary outcome measure because if a consumer switches to a different plan or tariff with the same retailer group, this would not be recorded as a switch in the Registry. This is a major limitation of the trial, and we expect switching behaviour will be under-detected in the analyses.

Sample selection

Participant Pool

Ideally, we would have defined our sample as consumers who are eligible to switch, have not recently switched, and would be financially better off if they did. However, Registry data could not be used to target letters to these types of consumers because of privacy restrictions and lack of information about the plans consumers are on (this information is only held by retailers). Therefore, we developed a sampling approach that minimised the risk of sending letters to consumers who are ineligible to respond as best we could with the information we had available.

Sample of SA1s

[13] powerswitch.co.nz uses an API to make a query to the ICP database

[14] The Electricity Registry holds information on around two million installation control points (ICPs) in New Zealand and supports the consumer switching process

[15] A trader switch is where the customer has an existing contract with the losing trader. A move in switch is where the customer at the connection does not have a contract with losing trader. Both could be impacted by a letter prompt to shop around.

We targeted small geographic areas (StatsNZ Statistical Area Ones or SA1s) where the switching rate was lower than average, but not much lower than average.[16] Very low switching rates suggest market structures may be preventing consumers from switching and therefore a letter would not be the right solution. For example, some regions may have a high proportion of consumers on pre-paid connections which reduces switching eligibility.

On average, approximately 50% of all New Zealand consumers have made a trader switch in the past 10 years. We therefore defined our SA1 sample as those where 50 to 64% of consumers have not made a trader switch in the past 10 years. There are 10,000 such SA1s. A map of where these areas are located is available in Annex 3.

Sample of consumers within the sampled SA1s

We randomly sampled addresses from within our sample of SA1s using New Zealand Post's publicly available list of addresses. However, to be able to evaluate the impact of the letters at the conclusion of the trial, we would need to be able to check whether these addresses recorded a switch in the Registry.

Only about 85% of addresses match between the ICP Registry and the New Zealand Post Geographic Postal Address File (GeoPAF). This is because addresses recorded in the Registry refer to where the electricity connection meets the street. For example, a house on a corner may connect on one street but have its postal address on the other street.

Therefore, we only included consumers in the trial that had the same address in both the Registry and the New Zealand Post GeoPAF file.

Limitations

Our selection of SA1s for the trial aimed to reduce the risk of sending letters to consumers who were ineligible to respond, but it did not eliminate the risk. By randomly sampling addresses within these SA1s, there was a reasonable chance we would send letters to consumers who were locked into a fixed term contract which made them unable to switch even if they wanted to. To partly address this limitation of our sampling approach, we controlled for last switch date in our analyses.

Randomisation

We randomly allocated letters at the household-level rather than at the SA1-level to maximise statistical power. From each of the 10,000 SA1s included in the trial, we randomly sampled six households (two per trial arm).[17] This resulted in a sample size of 60,000 households – 20,000 per trial arm.

Statistical power

The final sample, outlined in the consort diagram on the following page (Exhibit 1), was powered to detect a minimum effect size of a 40% increase in switching (from 1% of households switching each month to 1.4%). This estimate of achievable effect size was based on research conducted in the UK, as well as New Zealand's baseline residential switching rate of approximately 1% a month.

While the best performing Ofgem trial achieved an increase from 1% to 3.4% of customers switching each month, this was aided by conditions that cannot be matched by the Authority including:

- Ofgem could send very personalised messages to targeted customers about actual savings they were missing out on whereas the Authority letters were not only generic but some people receiving a letter might already be on the best deal or locked into a contract which makes them unable to switch.

[16] SA1 is a small geographic area with 1 to 200 residents that StatsNZ has developed to report census data.

[17] Randomisation was conducted using the 'randomizr' package in R Statistical Software.

- Unlike Ofgem, the Authority can only measure switching to a new retailer, not switching to a different plan or tariff with the same retailer, which under-reports switching behaviour.

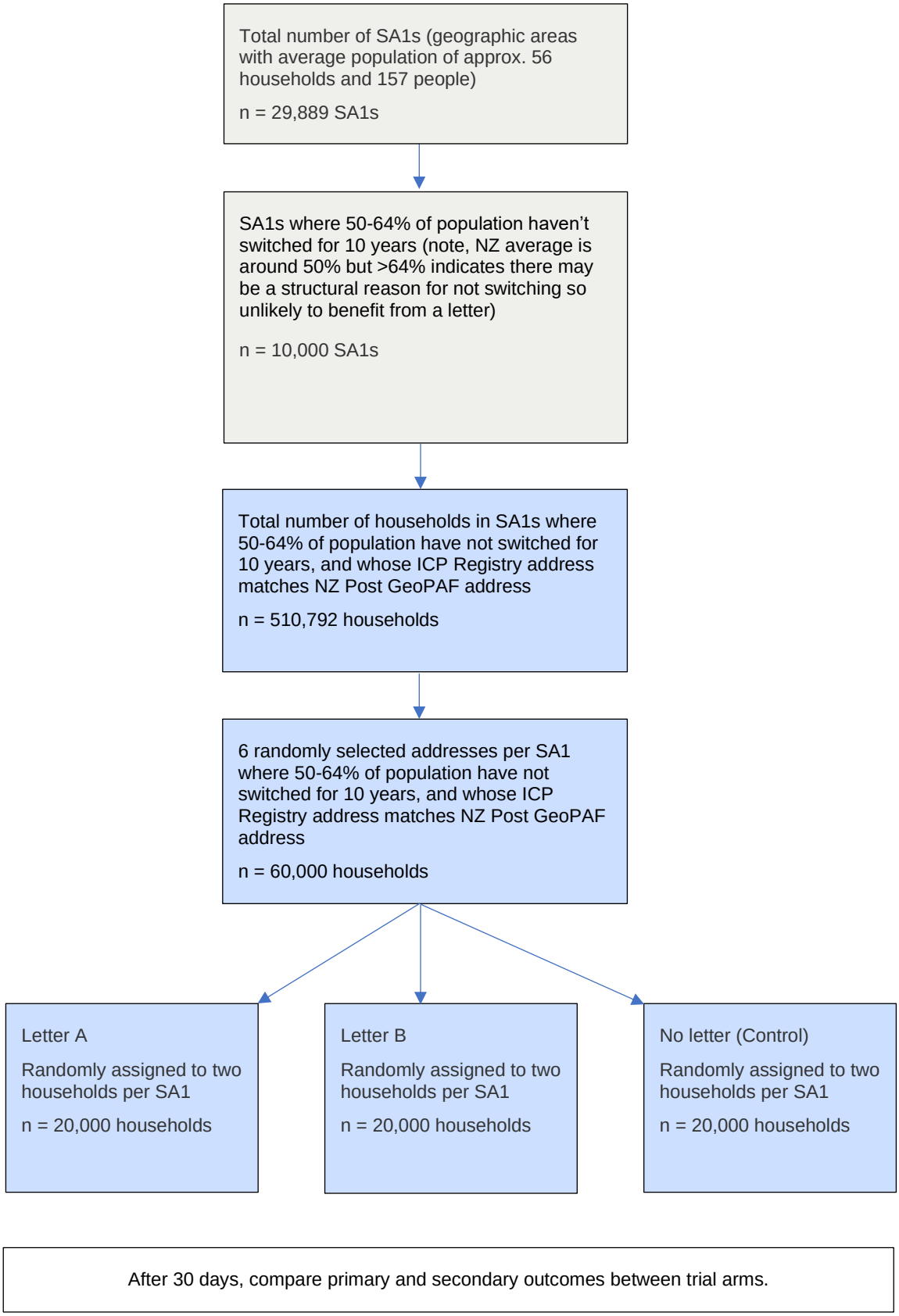
Ethics

We designed the trial following strict privacy controls, which included not using the Registry file to target specific addresses.

Before sending the letters, we collected feedback from two small groups of research participants from a range of socio-economic backgrounds. This was done to maximise the likelihood of our letters eliciting action and to determine if there were any elements in the letters that could cause offence.

There was a very small chance of prompting consumers to switch to a more expensive plan. Powerswitch has been designed to identify and present the best deals for consumers so the risk of this was very low.

Exhibit 1: Consort Diagram



7. Analytical strategy

Research questions

We aimed to answer the following research questions:

- **Primary**: Do switching letters increase the likelihood of a household visiting powerswitch.co.nz within 30 days?
- **Secondary**: Do switching letters increase the likelihood of a household switching electricity retailer group within 30 days?

  If so, which of the two letters is more effective at encouraging consumers to take action?

Main analyses

We used logistic regression[18] to estimate the impact of being sent letter A, letter B, or no letter on our two outcomes of interest:

1. Visiting the Powerswitch website
2. Switching retailer

We considered other factors that could impact a consumer's propensity to take action besides receiving a letter. Based on the data available in the Registry, we included the following covariates in the regression model in order to hold their effect constant:

- **Incumbent retailer:** Some retailers may have increased their marketing activities during the trial period or told consumers that the Authority was conducting a trial as this was mentioned on the Authority's website without specifying the details.[19]

- **Number of years between last switch and letter sent:** Many consumers are on fixed term electricity contracts so a recent switch could make them ineligible to switch during the trial period. Conversely, some consumers are frequent switchers and may have switched during the trial period regardless of receiving a letter.[20]

[18] We checked the results from both simple logistic regression and hierarchical logistic regression with SA1 as the random effect. This is because when we sampled households, they were nested within SA1s. While SA1 intraclass correlation coefficients (ICCs) were small and the estimates did not substantively change for the main analyses, we did see an impact of clustering on the estimates for some categories of the sub-group analyses. Therefore, two-level mixed-effects logistic regressions with random intercepts by SA1 are reported for all analyses.

[19] Coded as a categorical variable where 1 = the most frequently used retailer group, 2 = second-most frequently used retailer group, etc for the first 10 retailer groups, with all remaining coded as 11.

[20] Coded as a categorical variable with 11 categories where 1 = last switched occurred within the 365 days prior to 9 August 2021, 2 = last switch occurred between 1 to 2 years ago, etc., 11 = last switch occurred over 10 years ago. This information is missing for 18,828 observations which were re-coded to be 11 under the assumption that they switched more than 10 years ago.

Electricity consumption over the past year in kWh: Financial savings from switching are larger when consumption is higher which increases motivation to act.[21]

Sub-group analyses

In response to the Electricity Price Review, we conducted three sub-group analyses to determine the impact of the letters specifically on non-switching consumers as well as those who are more likely to be vulnerable.

Non-switching consumers

Although past behaviour is usually one of the strongest predictors of future behaviour, the Authority was interested in whether a letter intervention would be a cost-effective way to reach disengaged consumers.

We defined non-switching consumers as those who hadn't switched retailer group in the past five years.[22] This was measured at the household-level using Registry data. A limitation of our definition of non-switching consumers is that it is likely to include people who switched to a new plan or tariff within the same retailer (this information is only held by retailers).

Vulnerable consumers

Due to limitations in the Registry data, we could not measure vulnerability at the household-level. Therefore, we defined vulnerable consumers as those who live in SA1s with higher socio-economic deprivation or lower population density.

Although there is a reasonable chance that households in our sample who live in vulnerable areas are not themselves vulnerable, defining vulnerability geographically is nevertheless meaningful. This is because high deprivation and low population density areas are likely to experience greater market concentration, with less incentive for retailers to offer competitive pricing or to innovate. This reduces opportunities for consumers to engage in the electricity market which could make a letter more impactful compared to areas where consumers are already highly engaged. However, if these factors also create structural barriers to engaging in the electricity market, a letter could be less impactful in these geographic areas compared to others.

We defined the level of socio-economic deprivation for each SA1 using the NZ Deprivation Index.[23] The Index is developed from nine census variables including income, internet access, qualifications, living alone and unemployment.

We defined the population density of each SA1 as population per square km according to census data.[24]

Final sample

There were 59,802 observations in the outcome data prior to analysis. Of these, 233 had missing electricity consumption values and 15 had negative electricity consumption values. Negative values were re-coded as missing and all 248 missing values were excluded from the analysis. These missing observations were evenly distributed across the three trial arms (Control = 82, Letter A = 77, Letter B = 89). The final sample was 59,554 households.

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[21] Most recent 12 months consumption for the ICP in kWh (continuous variable).

[22] Coded as a categorical variable where 1 = Last switched retailer group >=5 years ago, 0 = Last switched retailer group <5 years ago

[23] The 10 deciles were coded as a categorical variable where Deciles 1-3 = Low deprivation, Deciles 4-7 = Medium deprivation, Deciles 8-10 = High deprivation. This information was missing for 18 observations, evenly distributed across the three trial arms. https://www.otago.ac.nz/wellington/departments/publichealth/research/hirp/otago020194.html

[24] Coded as a categorical variable where 1 = high population density (households at or above the mean population density), 0 = low population density (households below the mean population density).

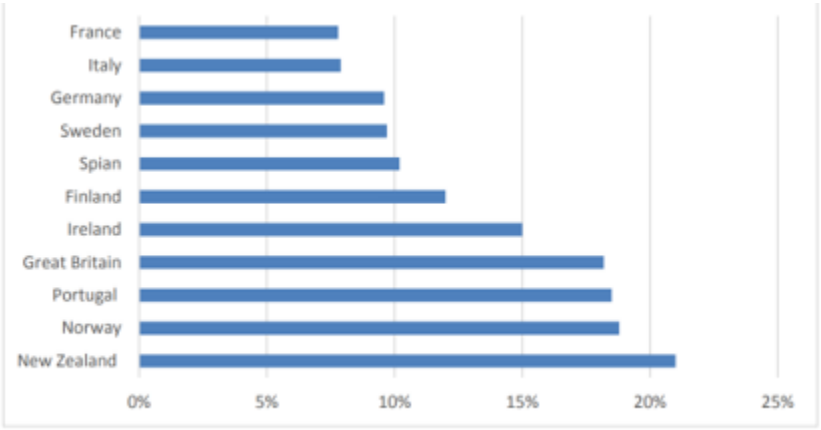
8. Trial results

Top line summary

Letters are effective for increasing consumer engagement in the electricity market. Both letters led to a 40% increase in search behaviour, from around 10% to 14% of households visiting Powerswitch. There was no statistically significant difference in the effectiveness of Letter A versus Letter B.

The letters had no statistically significant impact on switching behaviour. Only around 1% of households switched retailer group during the 30-day trial period regardless of treatment, although other types of switching (between plans or tariffs with the same retailer group) may have occurred which is not captured in the Registry data. We note that switching rates in New Zealand are comparatively high when viewed against other jurisdictions (see Figure 1), and this may have been a contributor to why the letters did not have a statistically significant impact on switching.

Figure 1: Switching rate of domestic electricity consumers in different jurisdictions[25]



Source of data: compiled from Electricity Authority (2019) and CEER (2018)

The impact of the letters on search and switch behaviour was relatively larger for non-switching consumers compared to those who recently switched, but this was from a much lower baseline. The letters had a similar sized impact on vulnerable versus non-vulnerable consumers, but vulnerable consumers had a lower baseline. This suggests that although letters can boost engagement among all consumers, addressing structural barriers may be required to equalise outcomes for non-switching and vulnerable consumers.

The extent to which the letters will have a longer-term impact on consumer engagement has not been tested. Evidence from other domains suggests that on the one hand, those that have a good initial experience of a new behaviour are likely to continue without further prompting. However, on the other hand, when a behaviour is not top of mind, reminders are often necessary to convert intentions into action.

[25] https://www.oxfordenergy.org/wpcms/wp-content/uploads/2019/12/Liberalized-retail-electricity-markets-EL-38.pdf

Main analyses

Visiting the Powerswitch website

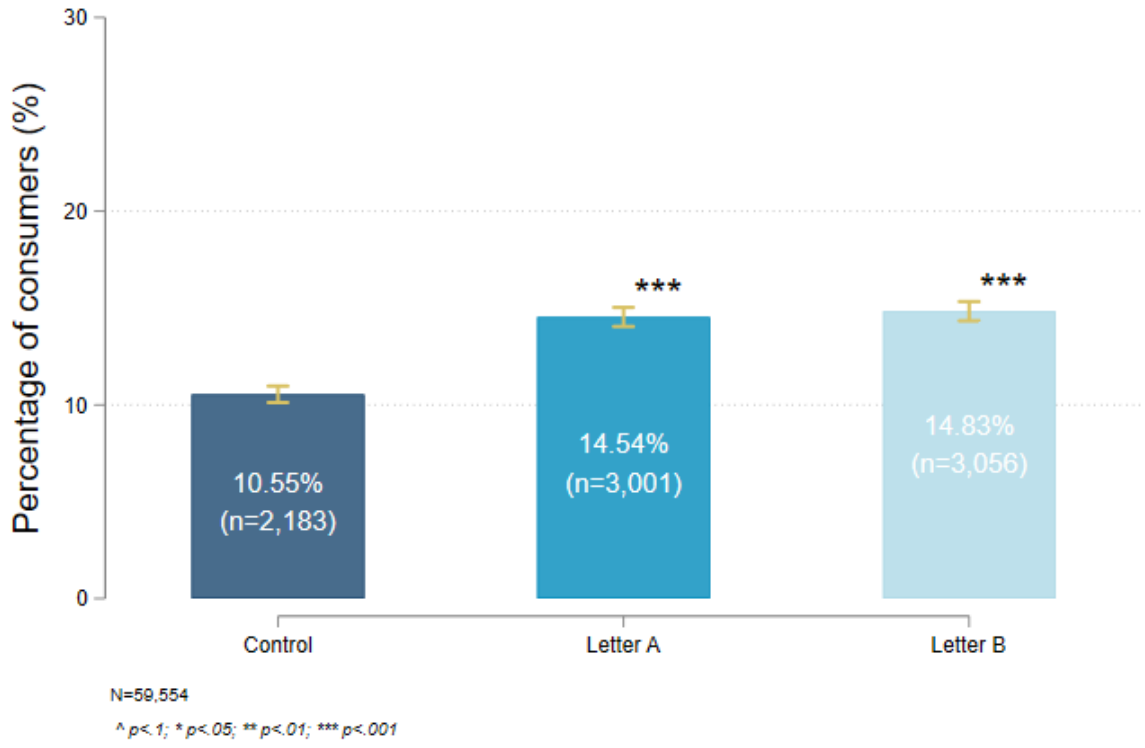
> *Do switching letters increase the likelihood of a household visiting powerswitch.co.nz within 30 days? If so, which of the two letters is more effective at encouraging consumers to take action?*

Of the 59,554 households included in the analysis, Powerswitch visits were recorded for 2,138 in the Control group, 3,001 sent Letter A, and 3,056 sent Letter B.

The regression estimates show that both letters increased visits to Powerswitch by around 40% compared to the Control group. In the Control group, 10.55% of households visited Powerswitch during the trial period compared to 14.54% sent Letter A and 14.83% sent Letter B. The small difference in impact between Letter A and Letter B was not statistically significant.

It is unlikely that letters in general, regardless of messaging, increase search behaviour because a large number of behavioural science experiments have shown that small communication details can have a disproportionate impact on behaviour. This leads us to two possible conclusions: (1) the different barriers to searching that the two letters addressed were equally important to consumers; or (2) despite the two letters containing different messages, they generated the same cognitive response among consumers.

Figure 2. Percentage of households that visited Powerswitch



Switching retailer group

> *Do switching letters increase the likelihood of a household switching electricity retailer group within 30 days? If so, which of the two letters is more effective at encouraging consumers to take action?*

Of the 59,554 households included in the analysis, retailer switches were recorded for 270 in the Control group, 277 sent Letter A, and 285 sent Letter B.

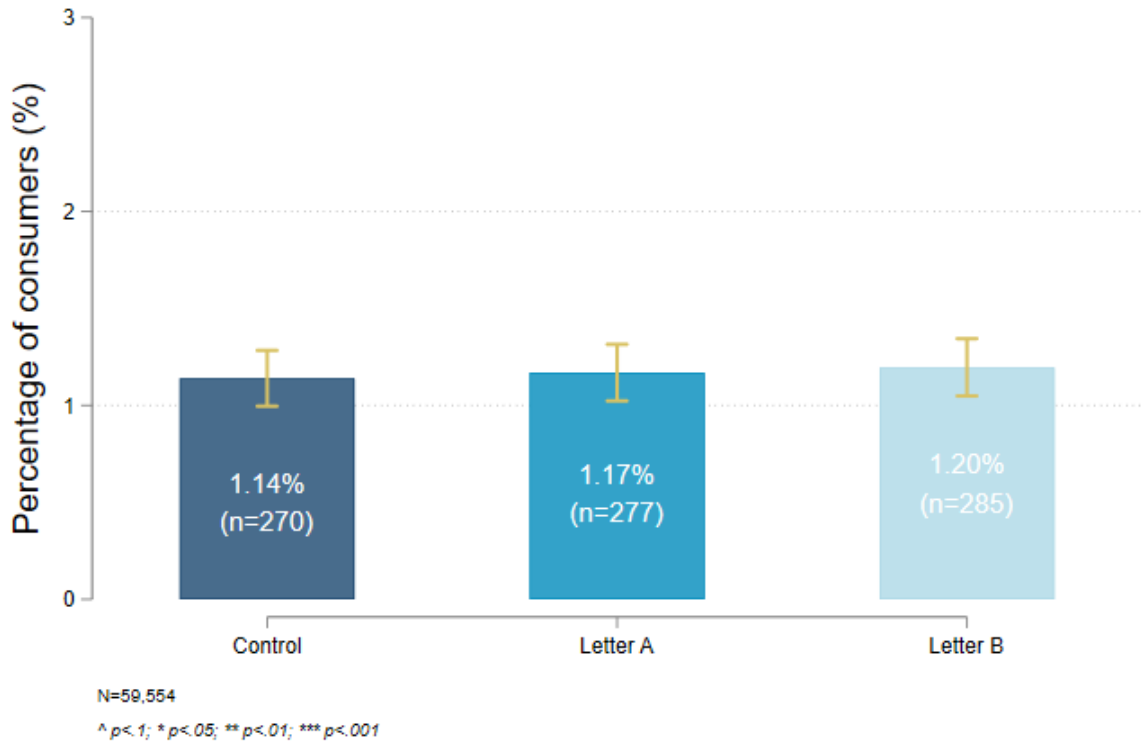
The regression estimates show that neither letter increased switching compared to the Control group. In the Control group, 1.14% of households switched retailer during the trial period compared to 1.17% sent Letter A and 1.20% sent Letter B. The small difference in impact between Letter A and Letter B was not statistically significant but could be because our sample size was not powered to detect such a small effect.

A major limitation of the Registry data is that it does not capture switches between plans or tariffs with the same retailer. Therefore, it is likely that switching behaviour is under-detected in our analysis.

Ofgem found that letters encouraged both internal switching (to a different tariff with the same supplier) and external switching (to another supplier). If we apply Ofgem's findings to our results, we can assume that the switching rate was 35% higher than what was recorded in the Registry. However, these extra internal switches are likely to be evenly distributed between trial arms and would therefore not necessarily change the overall finding that households sent a letter did not switch more than households in the Control group.

This leads us to conclude that there are barriers to switching which our letters did not address.

Figure 3. Percentage of households that switched retailer group



Robustness check

Although we only sampled consumers whose postal address matched their ICP address, there were 999 duplicated addresses in the outcome datafile. These were fairly evenly distributed across the three trial arms (Control = 325, Letter A = 324, Letter B = 350), and could potentially be explained by a number of rural properties having multiple dwellings on them.

Each duplicate address had a unique ICP but to ensure these consumers were not skewing the results, we dropped them from the dataset and repeated the main analyses. This did not change the results.

Sub-group analyses

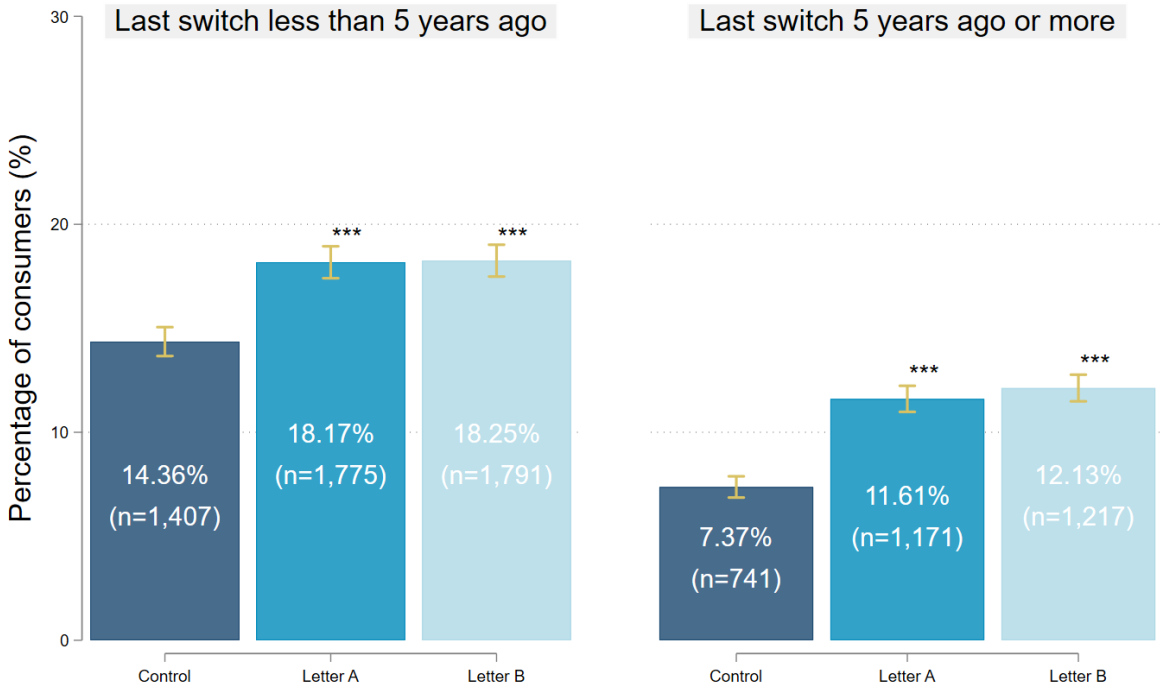
We divided households into sub-groups and repeated the main analyses to determine if the results were different for non-switching consumers and vulnerable consumers.

Non-switching consumers

We grouped households according to whether their last switch was five years ago or more (non-switching consumers) or less than five years ago (switching consumers). Regardless of past switch date, both letters increased search behaviour and had no statistically significant impact on switch behaviour.

The relative impact of the letters on visiting Powerswitch (compared to the Control group) was twice as large for non-switching consumers versus switching consumers. For example, Letter B increased visits to Powerswitch by 64.6% for non-switching consumers but only by 27% for switching consumers. However, switching consumers had a much higher baseline rate of visiting Powerswitch, as well as more than double the baseline rate of switching. We conclude that while the letters benefited all households, and particularly benefited non-switching households, they could not completely close the gap in search and switch behaviour between engaged and disengaged consumers.

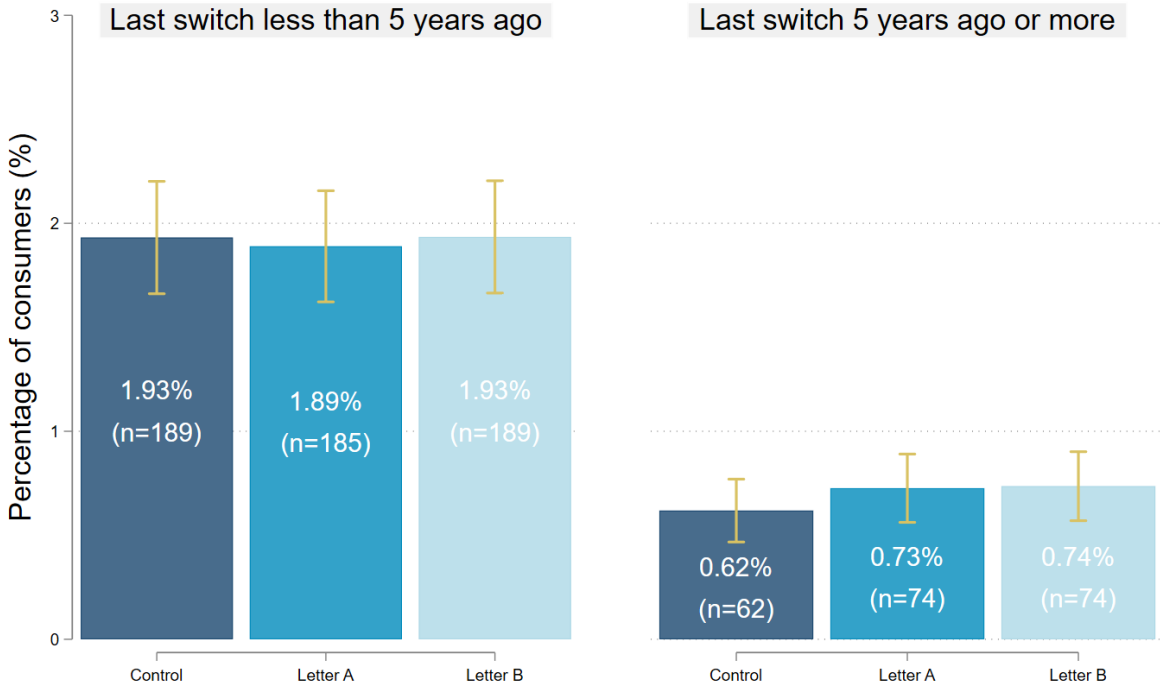
Figure 4. Percentage of households that visited Powerswitch by last switch date



N = 29,377 last switch less than 5 years ago, N = 30,177 last switch 5 years ago or more

*^ p<.1; * p<.05; ** p<.01; *** p<.001*

Figure 5. Percentage of households that switched electricity retailer group by last switch date



N = 29,377 last switch less than 5 years ago, N = 30,177 last switch 5 years ago or more

*^ p<.1; * p<.05; ** p<.01; *** p<.001*

Vulnerable consumers

We defined vulnerable consumers according to the level of socio-economic deprivation or population density for their SA1. We recognise that the circumstances of individual households may not reflect the circumstances of their SA1. However, household-level vulnerability measures were not available, and it is likely that geographic vulnerability influences household vulnerability.

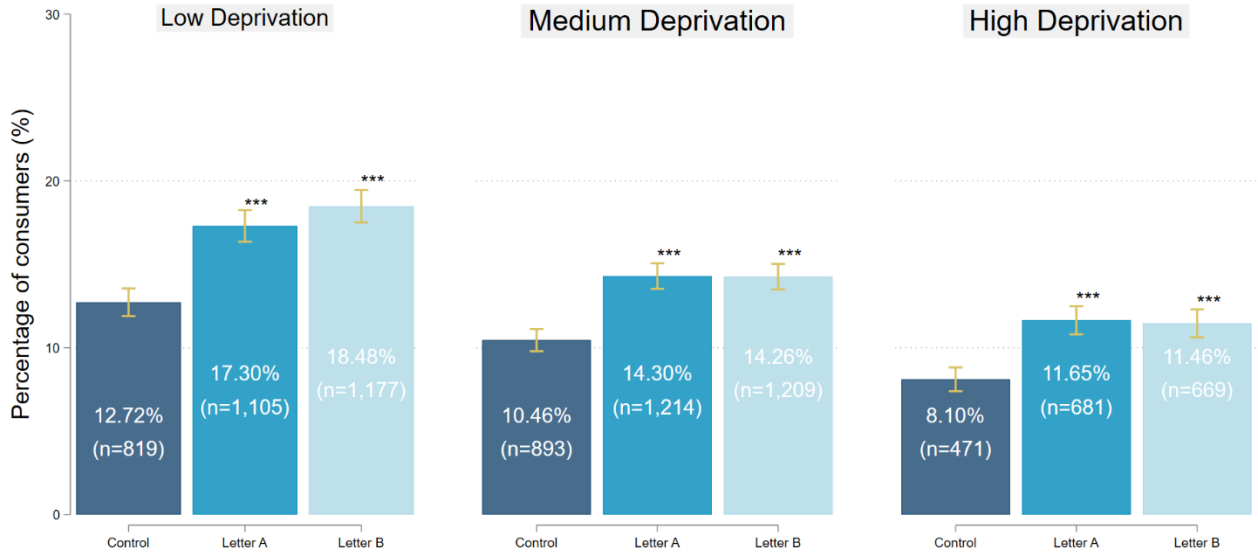
One unknown influence on the size of the estimates is the nationwide Level 4 lockdown which was in place during the latter part of the trial period due to the COVID-19 pandemic. It is possible that the lockdown changed the way people living in vulnerable areas reacted to the letters, e.g., by reducing their capacity to investigate better deals or increasing their sensitivity to electricity prices.

Socio-economic deprivation

We grouped households according to whether their SA1 had a low, medium, or high deprivation score – where lower scores represent the least deprived areas, and higher scores represent the most deprived areas. Across all levels of SA1 deprivation, both letters increased search behaviour and had no statistically significant impact on switch behaviour. The only exception was Letter A which achieved a 34% increase in switching (compared to the Control group) among households in medium deprivation SA1s. However, this result should be interpreted with caution due to the high false positive rate associated with multiple comparisons.

The relative impact of the letters on visiting Powerswitch (compared to the Control group) was roughly the same across all levels of SA1 deprivation, although areas with less deprivation achieved slightly larger impacts. These areas also had higher baseline visits to Powerswitch. We conclude that while the letters benefited all households, they probably reinforced existing disparities in search and switch behaviour associated with geographic vulnerability defined as socio-economic deprivation.

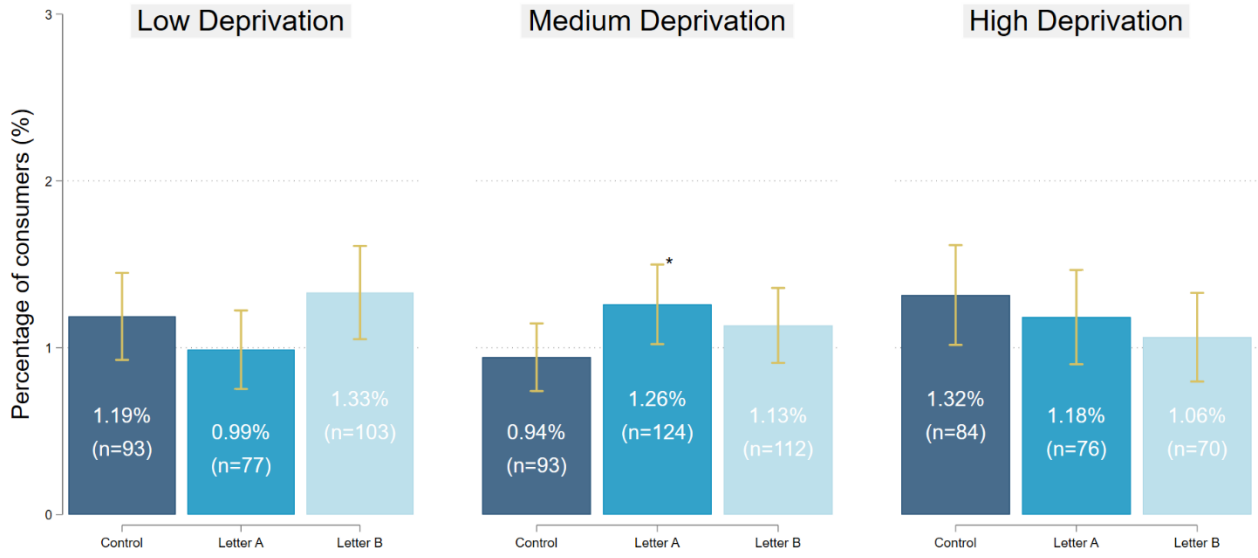
Figure 6. Percentage of households that visited Powerswitch by deprivation index



N = 18,616 low deprivation, N = 24,243 medium deprivation, N = 16,678 high deprivation

^ *p<.1; * p<.05; ** p<.01; *** p<.001*

Figure 7. Percentage of households that switched electricity retailer group by deprivation index



N = 18,616 low deprivation, N = 24,243 medium deprivation, N = 16,678 high deprivation

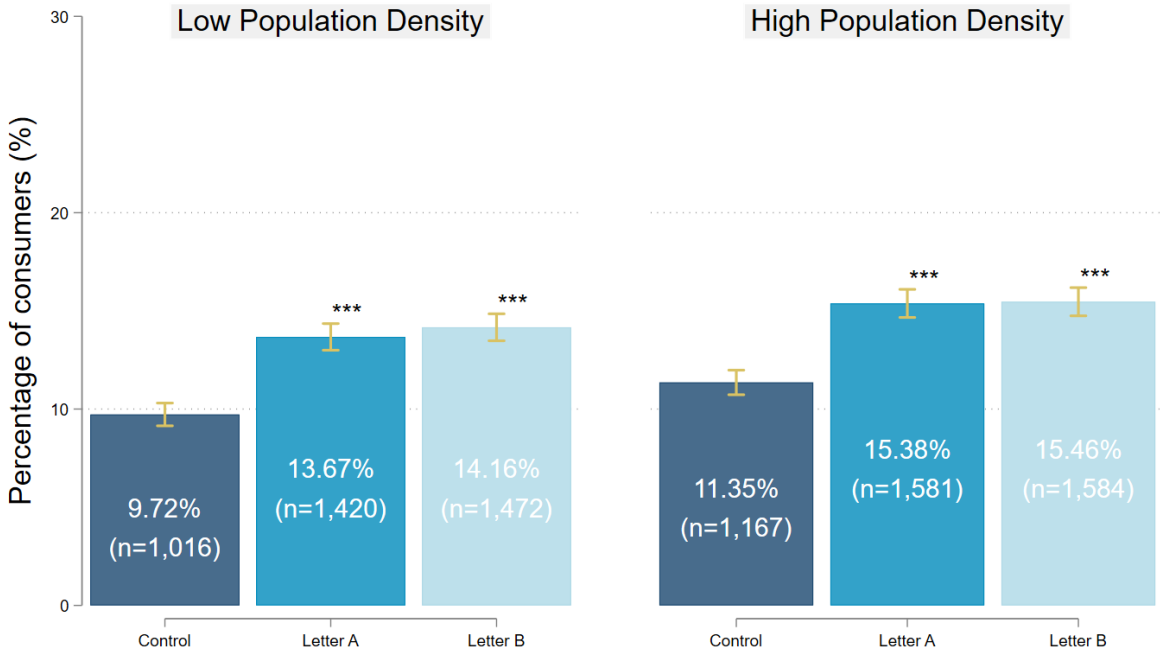
^ *p<.1; * p<.05; ** p<.01; *** p<.001*

Population density

We grouped households according to whether their SA1 had low or high population density – where low density was below the mean (2,388 people per km^2) and high density was at or above the mean. Regardless of SA1 population density, both letters increased search behaviour and had no statistically significant impact on switch behaviour.

The relative impact of the letters on visiting Powerswitch (compared to the Control group) was roughly the same regardless of SA1 population density, although areas with higher density achieved slightly larger impacts. These areas also had higher baseline visits to Powerswitch. We conclude that while the letters benefited all households, they may have reinforced existing disparities in search and switch behaviour associated with geographic vulnerability defined as below average population density.

Figure 8. Percentage of households that visited Powerswitch by population density

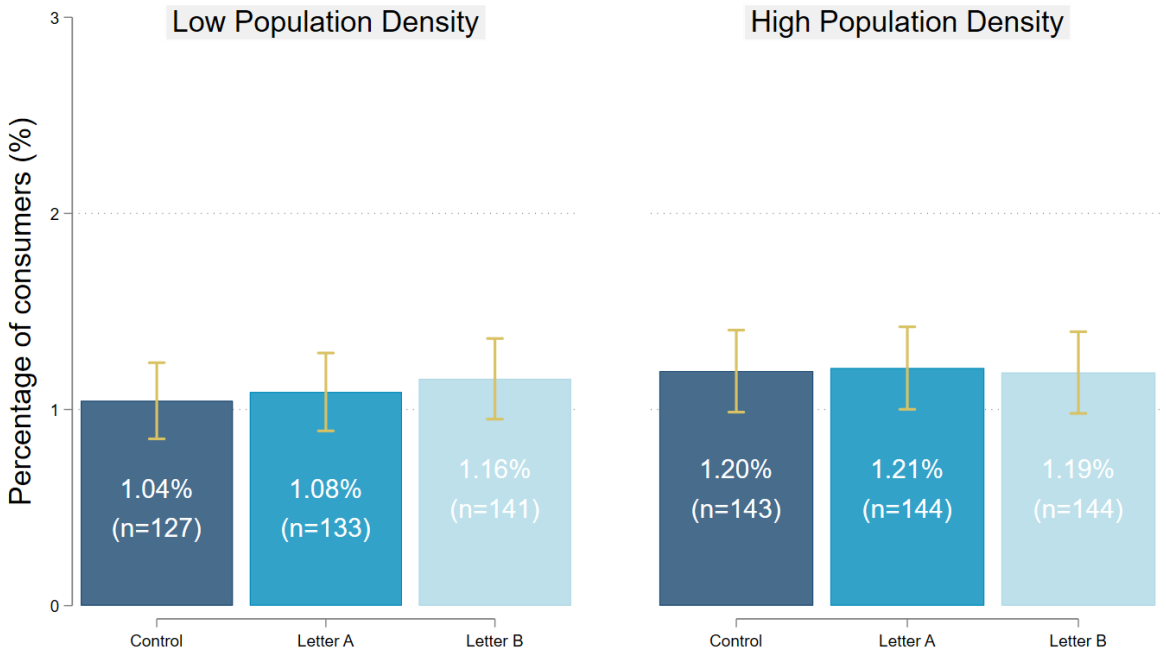


High population density = 2388 people per km2 or more. Low population density = less than 2388 people per km2

N = 29,892 low population density, N = 29,662 high population density

*^ p<.1; * p<.05; ** p<.01; *** p<.001*

Figure 9. Percentage of households that switched electricity retailer group by population density



High population density = 2388 people per km2 or more. Low population density = less than 2388 people per km2

N = 29,892 low population density, N = 29,662 high population density

*^ p<.1; * p<.05; ** p<.01; *** p<.001*

Return on investment from increased visits to Powerswitch

The letters led to a meaningful increase in visits to Powerswitch but it is unclear whether this type of intervention is cost-effective. Because the letters did not increase switching behaviour, we attempt to calculate the return on investment from search behaviour only.

We reviewed the published literature and could not find robust estimates of the impact of search behaviour on market competition and, ultimately, electricity prices. However, by extrapolating our findings and using conservative assumptions, we have attempted to estimate the return on investment of our intervention if scaled to the whole of New Zealand.

Our analysis suggests that if either letter was sent to all households in New Zealand (which StatsNZ estimate to be 1,874,100[26]), there would be approximately 74,964 additional visits to Powerswitch (and no additional switching). If a letter costs $1.40 to print and post (equivalent to $2,623,740 to reach all households), this represents a cost of $35 for each additional visit to Powerswitch.

Assuming that the total additional visits to Powerswitch would sufficiently motivate retailers to proactively reduce prices by an average of 0.1% across the entire market[27], with the average annual electricity bill in New Zealand valued at around $2,113[28], each letter represents a saving of approximately $2 per household

[26] https://www.stats.govt.nz/information-releases/dwelling-and-household-estimates-june-2021-quarter

[27] Esplin, R., Davis, B., Rai, A., & Nelson, T. (2020). The impacts of price regulation on price dispersion in Australia's retail electricity markets. Energy Policy, 147, 111829.

[28] Ministry of Business, Innovation and Employment

per year (equivalent to $3,748,200 for all households). The return on investment for this intervention at scale would therefore be 43% (i.e., $3,748,200 return on $2,623,740 investment). If consumer search behaviour stuck (i.e., consumers were more likely to engage in the electricity market in the future without further letters) and this continued to put downward pressure on prices, the return on investment would be even higher.

However, it is important to note that some models in the published literature[29] suggest that because electricity is an essential service, the structure of the market is fundamentally different from that of other 'normal' markets. Therefore, search behaviour alone is unlikely to have an impact on overall electricity prices.

Given that we found no impact of the letters on switching behaviour, the most plausible conclusion is that our intervention does not generate a return on investment.

[29] Ben-David, R. (2018). The unfortunate paradox of retail energy prices. Essential Services Commission. Prepared for: Australian Energy Week. *Melbourne (11 May 2018)*. https://www.esc.vic.gov.au/sites/default/files/documents/The-unfortunate-paradox-of-retail-energy-prices-20180625.pdf

9. Conclusions

The results of this trial demonstrate that letters can be a simple and effective intervention for encouraging New Zealand consumers to check their electricity deal, especially non-switching consumers. However, notwithstanding data limitations, the letters we developed were not an effective solution for increasing switching rates. This could be because our intervention (including the Powerswitch website) could not fully address two key barriers to switching which our fieldwork identified:

1. Ambiguity aversion – we could not specify exact savings that could be achieved from switching, only average savings
2. Effort avoidance – the switching process can be complex and time-consuming, especially for consumers on bundled deals

High ambiguity about savings and high effort to switch means many consumers are probably making the rational choice not to bother. It is worth reflecting that even Ofgem's trials, which sent personalised letters to consumers about guaranteed savings, only achieved a maximum switching rate of 3.4% from a similar baseline to that in New Zealand of around 1% per month. Therefore, we conclude that letters are probably not the panacea to improving overall market functioning, especially as their longer-term impact on consumer engagement has not been tested.

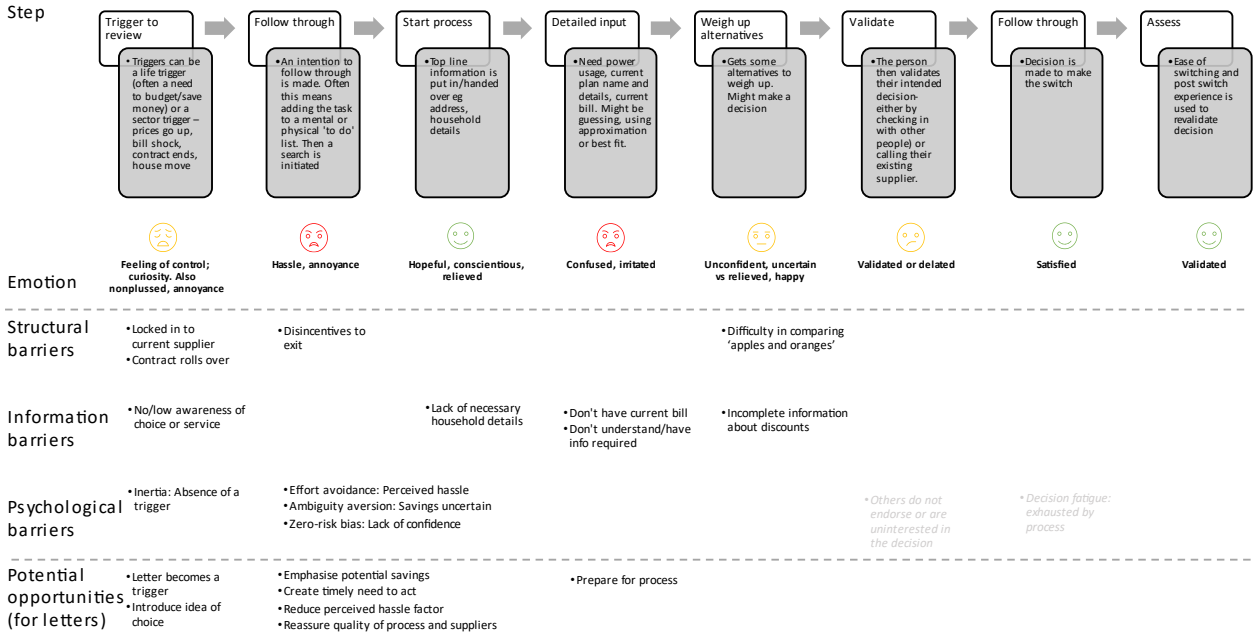
Our trial also showed that while non-switching and vulnerable consumers were positively impacted by the letters, this was from a much lower baseline compared to other consumers. Therefore, other, more substantial, policy and regulatory interventions should be tested to equalise outcomes for these groups.[30]

Finally, this trial demonstrated that the Electricity Authority can successfully apply experimental evaluation approaches to testing market remedies and there is now greater capability and confidence to use this methodology in the future. Requiring retailers to share consumer-level data on brands, plans and tariffs with the Authority would not only enable new solutions to be more easily identified; it would also enable them to be more precisely evaluated. Given that addressing consumer disengagement with energy plans is a problem that regulators face in many comparable countries, such as the UK and Australia, and to date none of the demand-side remedies (e.g., consumer letters) or supply-side remedies (e.g., price caps) that have been trialled have been transformative, enabling more rigorous evaluation of solutions will be critical to delivering on the Authority's mandate to regulate the electricity market for the long-term benefit of consumers.

[30] https://www.smf.co.uk/wp-content/uploads/2015/10/Social-Market-Foundation-Social-Market-Foundation-Publication-Should-switch-dont-switch-Overcoming-consumer-interia-WEB-011015.pdf

Annex 1 – Fieldwork findings

9.1 Customer Journey map



9.2 Prototyping feedback

1. Goal: To prompt the initial intention to go to the Powerswitch website					
	Overall Concept	**Barrier/s addressed**	**Key Message /technique**	**Rationale**	**Research results**
A	Make the benefits tangible	*Ambiguity (uncertainty) aversion around potential savings*	Imagine what you could do with an extra $388 in your pocket. Would you save it, spend it or give it to a good cause?	Highlighting the tangible benefits of switching for a different category of spending (one which makes people feel good about themselves) could increase interest in savings available.	**Partly successful:** Communication of savings available is a key motivation but the techniques used were perceived to be too gimmicky to be impactful. A simpler introduction to the savings (as used in some other prototypes) suffices.
			Visualisation of savings	Making savings more visual could increase interest in savings available.	
B	Overcome inertia through urgency	*Inertia: Absence of a trigger or lack of urgency*	Act today: are you paying too much. Keep in mind, winter is coming – most households will see sharp increases to their power bills over the next few months as they use more power	People know that their bills are higher in the winter months so prompting this seasonality could create a reason to check now.	**Successful**: Provides justification and impetus to look into it now.
C	Use emotional appeal to drive action	*Inertia: Absence of a trigger or lack of urgency*	Many power companies don't give their customers the fairest price for their power.	"Fair play" is a Kiwi cultural norm and could create a reason to check now.	**Not successful:** Overlooked by most respondents.
D	Use emotional appeal to drive action (postcard format)	*Inertia: Absence of a trigger or lack of urgency*	Fair play - 'I'd rather pay an extra $388 for my electricity than spend 10 minutes switching to a cheaper company,' said NO ONE EVER.	"Fair play" is a Kiwi cultural norm and could create a reason to check now. Added in a touch of humour to increase identification.	**Not successful:** Overlooked by most respondents. Postcard format and humour makes it feel like junk mail.
			Don't miss out on savings other Kiwis are getting from checking Powerswitch.	Social endorsement – if other people do it then it might work for me too.	**Partly successful:** Works well to reassure but is not a lead message.
E	Overcome inertia through planning (postcard format)	*Inertia: Absence of a trigger or lack of urgency*	Fill out this reminder and stick it on your fridge	People tend to procrastinate but once they make a plan, their brain no longer needs to allocate resources to that task which increases the chance of action.[31]	**Not successful:** People don't like being told what to do – they want to be "led to water, not forced to drink

[31] https://behaviouraleconomics.pmc.gov.au/sites/default/files/resources/best-laid-plans.pdf

	Make the benefits tangible	*Ambiguity (uncertainty) aversion around potential savings*	Would you say 'no' to a few hundred dollars?	Making savings seem like a 'no brainer' could increase interest in savings available.	**Partly successful:** Tone worked for some but not others.
F	Overcome inertia through planning	*Inertia: Absence of a trigger or lack of urgency*	Have you been putting off checking if you can get a better electricity deal? Mark a date on your calendar to do it.	People tend to procrastinate but once they make a plan, their brain no longer needs to allocate resources to that task which increases the chance of action.[32]	**Not successful:** People don't like being told what to do – they want to be "led to water, not forced to drink
	Overcome inertia through urgency		Now is the time to take action. Winter is well on the way – plenty of households will see sharp increases to their power bills as usage goes up	People know that their bills are higher in the winter months so prompting this seasonality could create a reason to check now.	**Successful**: Provides justification and impetus to look into it now.

Goal 2: To reduce drop-out at comparison and validation steps					
G	Reduce the perceived effort of switching	*Effort avoidance[33]: Perceived hassle of comparing energy deals.*	It only takes 10 min and 4 simple steps	By creating the perception that most of the work to switch is done, consumers may be more likely to complete the steps.[34].	**Successful**: it makes switching sound easy, gives confidence in savings, and provides the steps
	Overcome hassle by preparing for what will be required	*Lack of necessary details (informational barrier)*	Have a recent electricity bill with you. Enter your current electricity usage in units – on your bill this could be written as kWh. **1** kWh (kilo watt hour) and **1** Unit are same.	The uncertainty from knowing how to interpret bills and which plan you are on creates drop-out mid process.	**Not clearly successful**: overlooked as part of the steps
	Reduce uncertainty around unknown brands	*Zero-risk bias: lack of confidence in exiting*	All of the electricity suppliers on Powerswitch are genuine companies that are regulated by the NZ Government. Don't let familiarity hold you back from getting a better deal.	Mention of regulation/endorsement may overcome people's hesitation around less well known suppliers.	**Successful:** Brings confidence in the choice and the independence of Powerswitch
	Reduce uncertainty about savings if on a bundled deal		If you are currently on a power, gas and broadband bundle, the average discount is around $200 per year so check if you can save more.	Acknowledging their context whilst still encouraging them to see if they can save.	**Not clearly successful**: respondents recognised that comparisons are very opaque and aren't convinced that the website can help overcome this.

[32] https://behaviouraleconomics.pmc.gov.au/sites/default/files/resources/best-laid-plans.pdf

[33] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2970648/

[34] https://home.uchicago.edu/ourminsky/Goal-Gradient_Illusionary_Goal_Progress.pdf

H	Overcome validation step in customer journey through planning		We think you should have the conversation about switching power plans!	Many people wanted to 'validate' their choice with other members of their household. This prompts them to move through that process faster.	**Not successful:** People don't like being told what to do – they want to be "led to water, not forced to drink"
	Reduce assumptions around bundling being cheaper		Don't fall into the trap of assuming that if you combine gas or broadband with your electricity, it means you're getting the cheapest deal.	Acknowledging their context whilst still encouraging them to see if they can save.	**Not clearly successful**: respondents recognised that comparisons are very opaque and aren't convinced that the website can help overcome this.

Annex 2 – Intervention letters

Letter A

POWERSWITCH by consumer.

Powerswitch is supported by ELECTRICITY AUTHORITY TE MANA HIKO

The bill payer
20 South Road
Anytown
New Zealand

Kia ora,

Many households use more electricity in winter and may see a resulting increase to their bills. Now is a good time to check your power deal.

The electricity industry regulator – the Electricity Authority – recommends checking your electricity pricing plan to find out whether you could be getting a better deal. Research by Consumer NZ found that users of its Powerswitch website can find a plan that is on average $388 cheaper per year than their current deal.

www.powerswitch.org.nz

Powerswitch is a free and easy to use independent website run by Consumer NZ. It helps you compare different power companies and pricing plans to work out which might be suitable for you.

If you decide to switch power companies or pricing plan, Powerswitch can either help start the switch for you, or you can contact your chosen retailer.

All the electricity retailers listed on Powerswitch are regulated by the Electricity Authority. Electricity supply will continue as normal while the switch takes place.

Consumer NZ has been working for more than 60 years to help New Zealanders get a fairer deal. Join the thousands of other Kiwis who use Powerswitch to compare power companies and pricing plans each year.

Jon Duffy
Chief Executive
Consumer NZ

James Stevenson-Wallace
Chief Executive
Electricity Authority

Letter B

POWERSWITCH
by consumer.

Powerswitch is supported by
ELECTRICITY AUTHORITY
TE MANA HIKO

The bill payer
20 South Road
Anytown
New Zealand

Kia ora,

Searching for savings is easy. Set aside 5 minutes today to check whether you could get a better deal for your power.

The electricity industry regulator – the Electricity Authority – recommends checking your electricity pricing plan to find out whether you could be getting a better deal. Research by Consumer NZ found that users of its Powerswitch website can find a plan that is on average $388 cheaper per year than their current deal.

www.powerswitch.org.nz

Powerswitch is a free and easy to use independent website run by Consumer NZ. It helps you compare different power companies and pricing plans to work out which might be suitable for you.

It only takes 5 minutes and 3 simple steps:

1. Go to www.powerswitch.org.nz
2. Answer a few easy questions about your home. Having a recent electricity bill with you is useful, but not essential.
3. Based on your answers, you'll be shown information about plans available to you.

If you decide to switch power companies or pricing plan, Powerswitch can either help start the switch for you, or you can contact your chosen retailer.

All the electricity retailers listed on Powerswitch are regulated by the Electricity Authority. Electricity supply will continue as normal while the switch takes place.

Consumer NZ has been working for more than 60 years to help New Zealanders get a fairer deal. Join the thousands of other Kiwis who use Powerswitch to compare power companies and pricing plans each year.

Jon Duffy
Chief Executive
Consumer

James Stevenson-Wallace
Chief Executive
Electricity Authority

Annex 3 – Locations of SA1s

Annex 4 – Data sources and descriptions

Table 1: Data Sources

setup data **Source**	 **Data**
ICP Registry	Baseline proportion of switching households in each SA1
ICP Registry	Full addresses
NZPost geoPAF	Postal address and SA1
outcome data **Source**	 **Data**
ICP Registry	Address and longitudinal retailer data
Powerswitch.co.nz API queries	Full addresses of queried households
control and sub-group data **Source**	 **Data**
Census data	Population density
Deprivation Index	Index by SA1
ICP Registry	Last switch
ICP Registry	Consumption data

Table 2: Variable descriptions

Variable	Description
Visited Powerswitch Site	Whether household entered their address or ICP # on Powerswitch website Yes=1, No=0
Switched during trial period	TR switch or MI switch between 9 August and 9 September 2021
Trader switch during trial period	Date of last trader switch for the ICP during the trial period
Move-in switch during trial period	Date of last move in switch for the ICP during the trial period
Treatment	1 = No letter (Control), 2 = Letter A, 3 = Letter B
Incumbent retailer group	Trader servicing ICP at trial start date
Last 12-months consumption (kWh)	Most recent 12 months consumption for the ICP in kWh
Number of years since the last switch prior to 9 August 2021	Categorical variable. 1 = switched in the last year, 2 = last switch was between 1 to 2 years ago, etc., 11 = switched over 10 years ago
Non-switching/Switching consumers	Categorical variable. 1 = Last switched retailer group >=5 years ago, 0 = Last switched retailer group <5 years ago
Area: High/Low population density	Categorical variable. 1 = high population density (households at or above the mean population density), 0 = low population density (households below the mean population density)
Area: Low/Medium/High deprivation index[35]	Whether households are in a low/medium/high deprived area. Low = deprivation indexes 1-3, Medium = deprivation indexes 4-7, High deprivation indexes = 8-10

[35] This information is missing for 18 observations, evenly distributed in three trial arms.

Table 3: Descriptive statistics

Variable	Number
Visited Powerswitch during trial period	8,240 (13.8%)
Switched during trial period	832 (11.4%)
Retailer groups in Registry: CTCT, GENE, MEEN, TRUS, MERI, PSNZ, GEOL, PUNZ, TODD, ELKI, SWCH, FLCK, GBUG, ECOT, HNET, WISE, OURP, PRME, SIMP, FOGY, PION, GIVE, ECOS, EDGE, NGAG, OCTO, PLUS, SOHZ, SPEL, YESP	30
Average consumption in last 12-months (thousand kWh)	8.978
Households in SA1 with Low population density	30,072 (50.3%)
Households in SA1 with High population density	29,730 (49.7%)
Households in SA1 with Low deprivation index	18,660 (31.2%)
Households in SA1 with Medium deprivation index	24,354 (40.7%)
Households in SA1 with High deprivation index	16,770 (28%)
Last switched >=5 years ago	30,331 (50.7%)
Last switched <5 years ago	29,471 (49.3%)
Duplicate addresses	999 (1.7%)
Total sample	59,802 (100%)

All enquiries regarding this publication should be sent to: info@ea.govt.nz