Technical Appendix

Code ▾

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Code

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## Loading required package: pacman
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Code

1 Background

Recommendation 3A of the Thwaites Review into the energy sector seeks to standardise retailer practices by requiring all marketing to focus on dollar figures, rather than percentages or unanchored discounts. However, exactly how this is implemented, and the extent to which it will help consumers, is still to be determined.

A key finding from the Thwaites Review was that marketing practices by retailers generated substantial confusion. Notably, the presence of discounts has made it difficult for consumers to easily compare deals and identify the best option.

This trial aims to determine whether a specific format for marketing energy offers helps customers compare and select offers. This includes the way the total amount is presented, the way the amount is presented when compared with a reference price (dollars, percentages) and the use of credits

2 Importing data

For this analysis, we have imported raw data provided by PureProfile in .csv format. This raw data contains:

- Individual participant ID

- Scenario responses:

    - Chosen plan

- Reaction times (per scenario)
- Demographic data for use as covariates
  - Income
  - Employment
  - Education
  - Age
  - Numeracy ability

Code

We then recode a number of the variables, to make it clearer what they refer to and to make further analysis easier, and create the numeracy score.

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3 Cleaning the data

We then clean the data, constructing variables to denote whether each scenario was correct. We then calculate total scores, and scores by type of scenario (i.e., large difference, small difference, counter-intuitive scenarios).
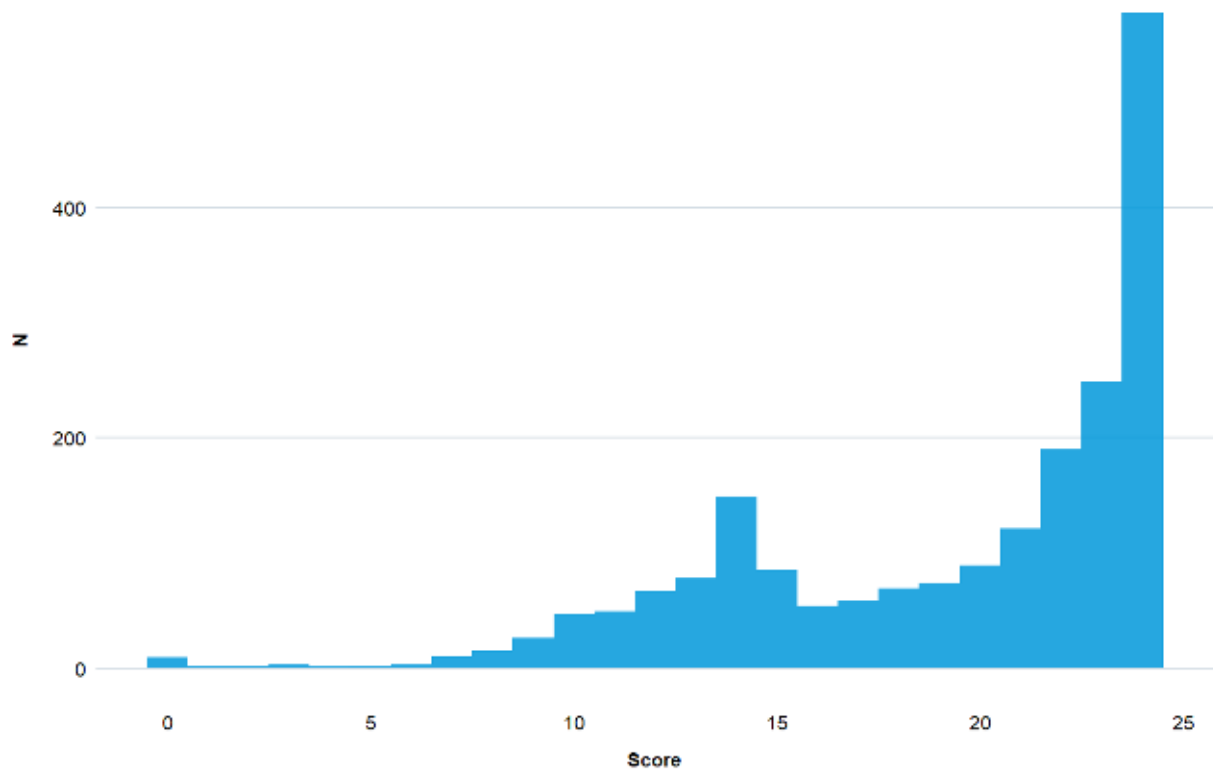
Code

We also create a variable to calculate average response times, winsorised to the 99th percentile.

Code

We then manually inspect the distributions of these variables through histograms (see below). The histograms suggest that a substantial number of respondents got most or all of the questions correct, with the remainder more spread out. Notably, respondents performed worse on the small and counter-intuitive scenarios.
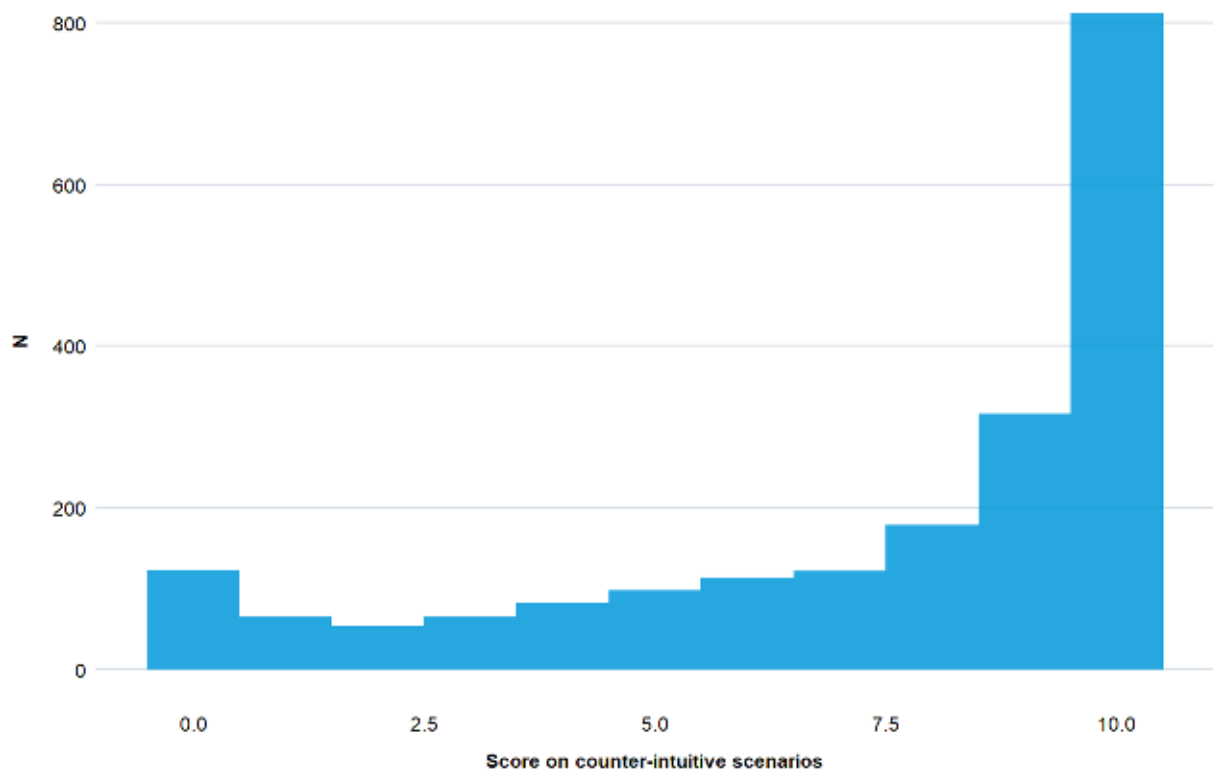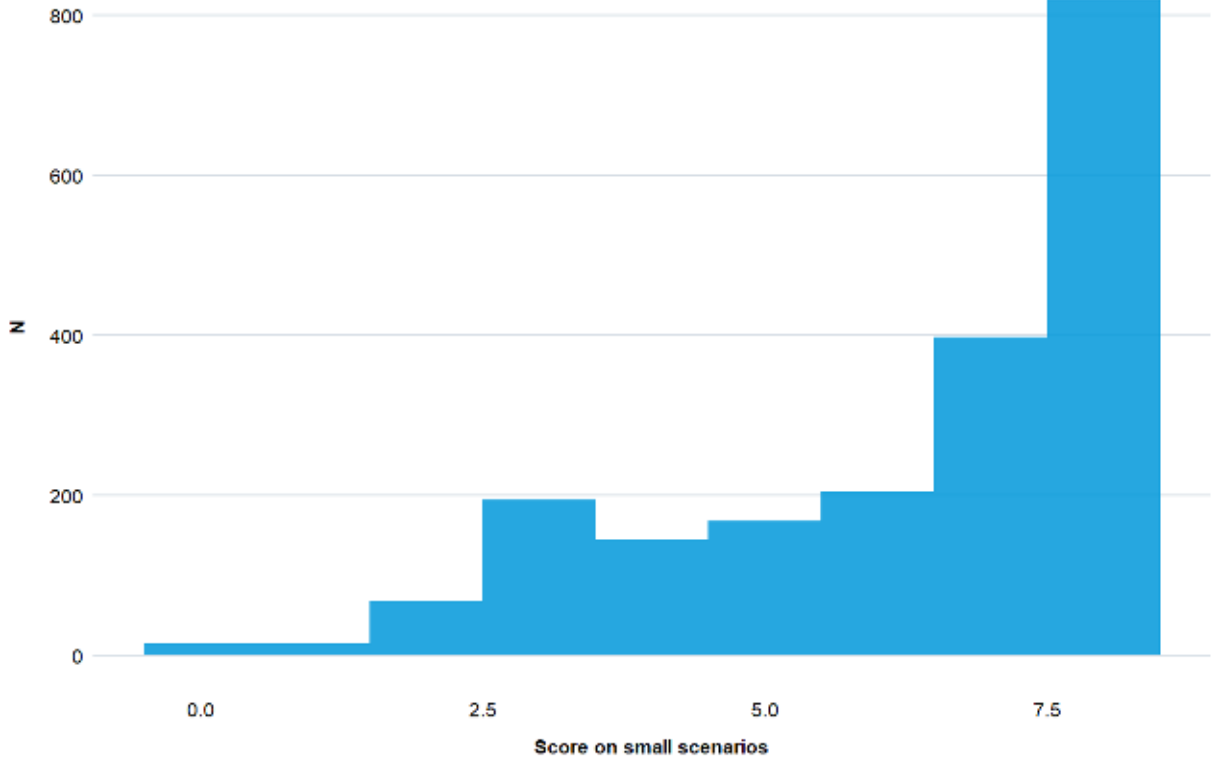
Code

Histogram of scores

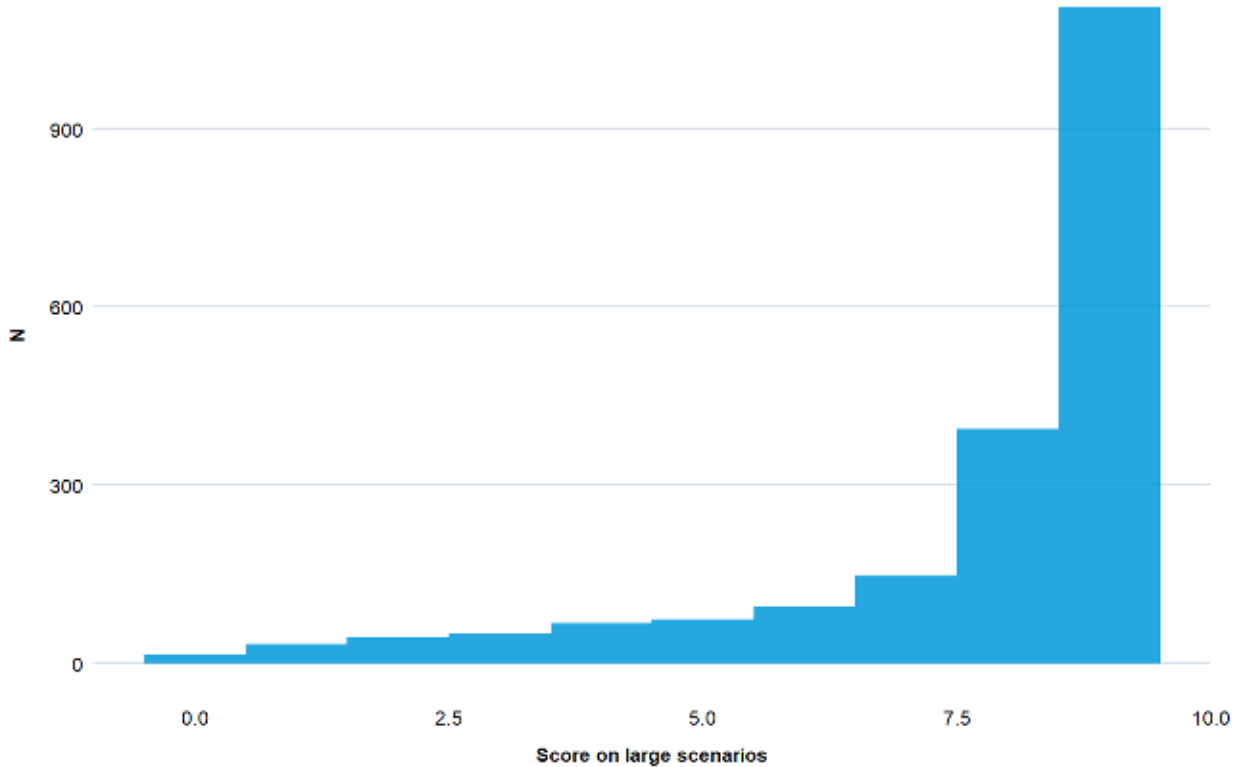Code

Histogram of counter-intuitive scenario scores

Code

Histogram of small scenario scores
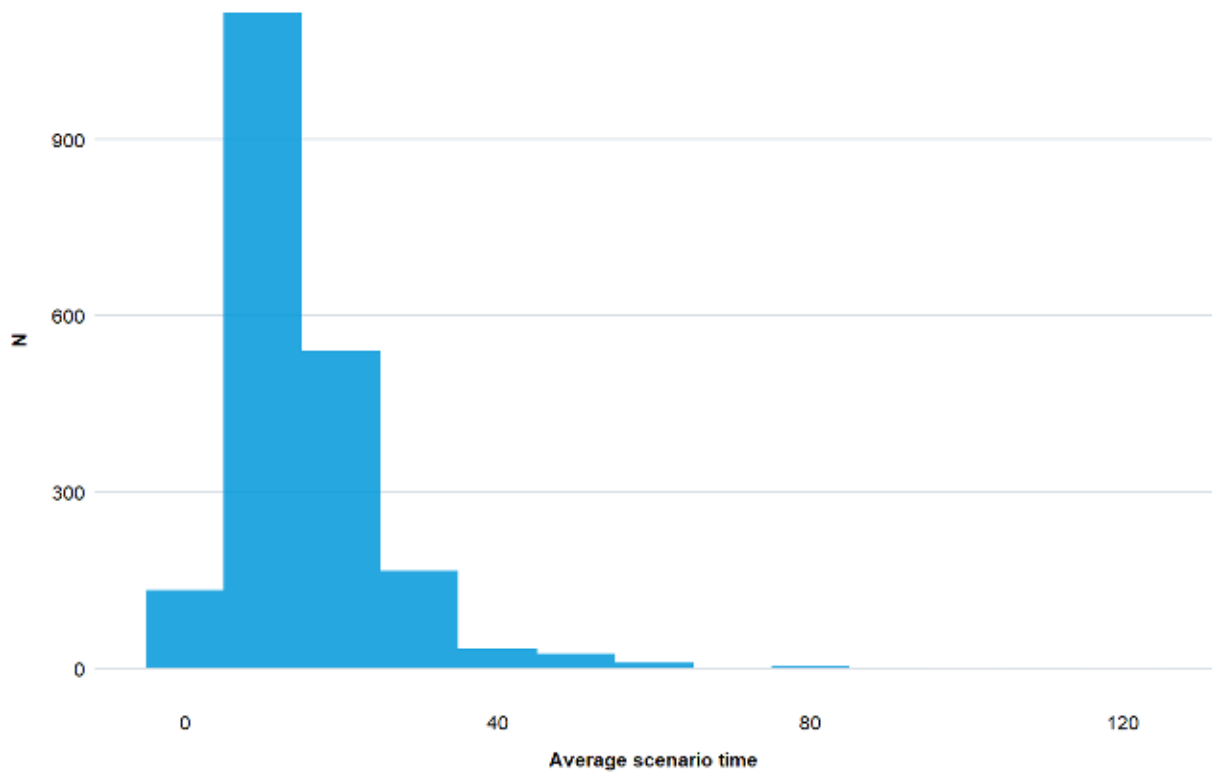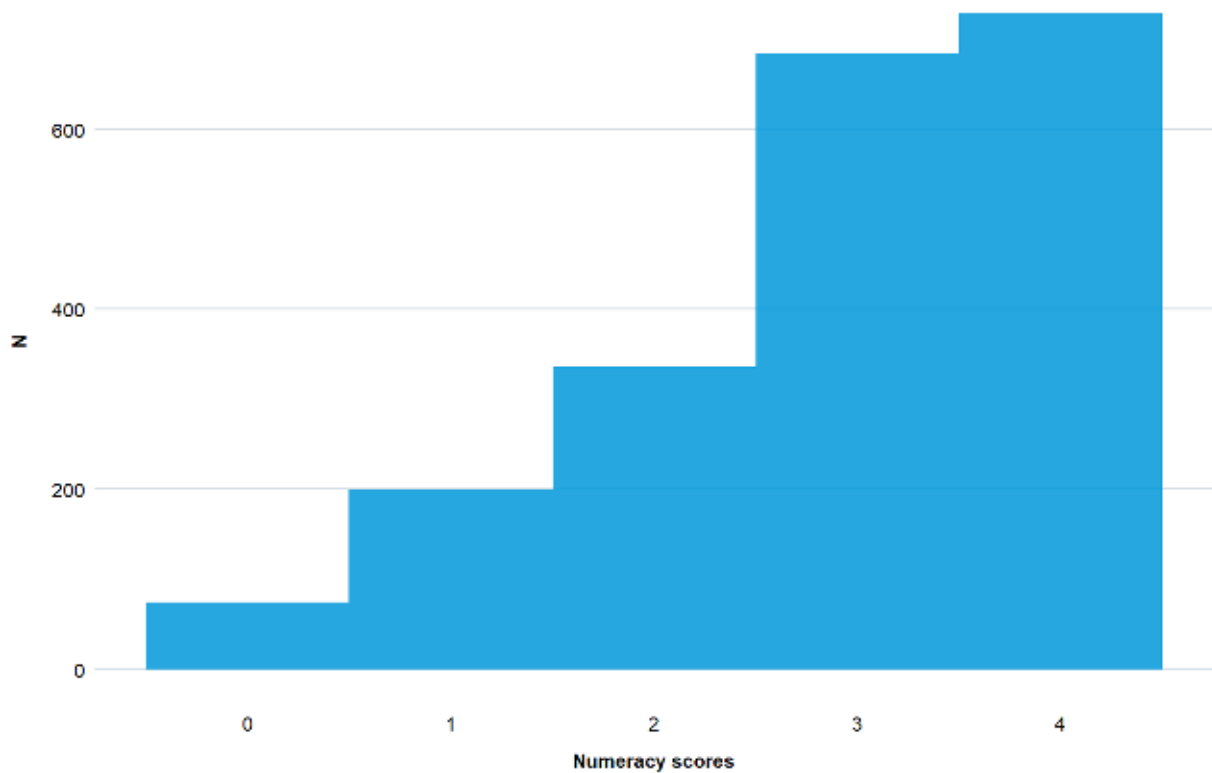

Code

Histogram of large scenario scores

Code

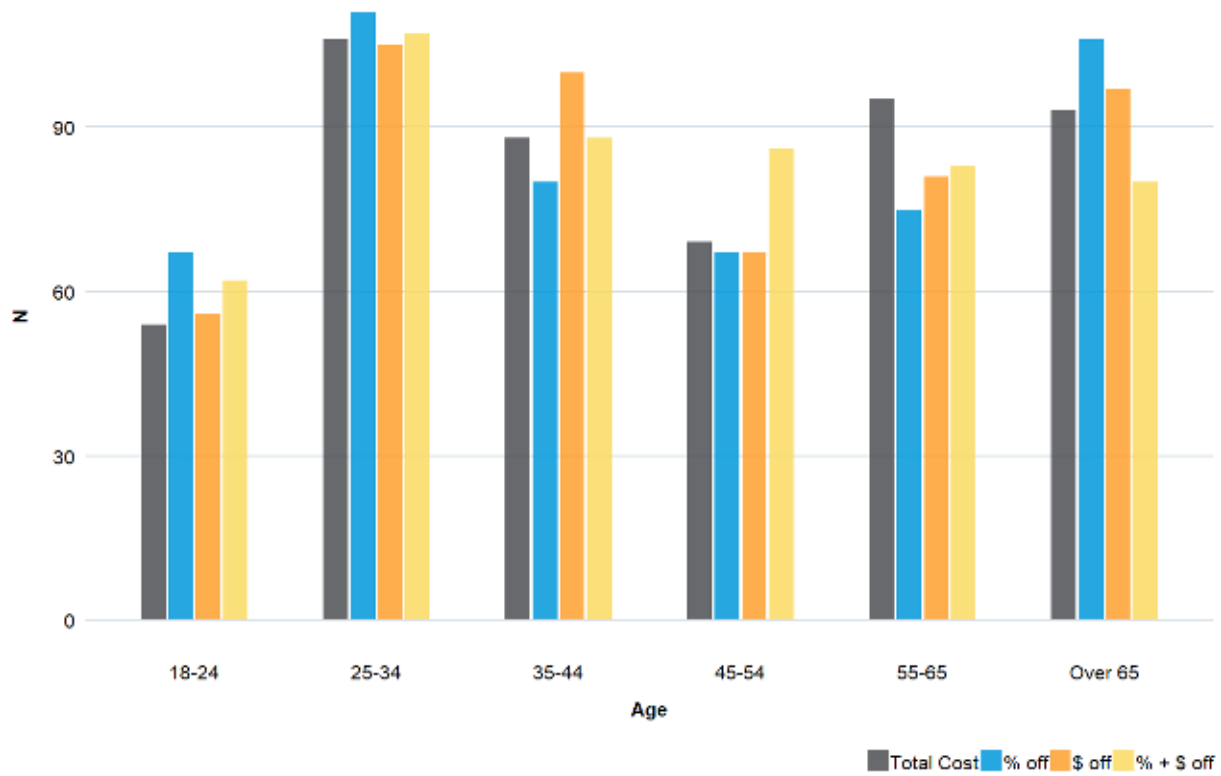**Histogram of average scenario times**

Histogram of numeracy scores

4 Balance Checks

We conduct balance checks on a series of key variables to ensure that they are distributed across the treatments.

Age breakdown by treatment

Financial literacy score breakdown by treatment
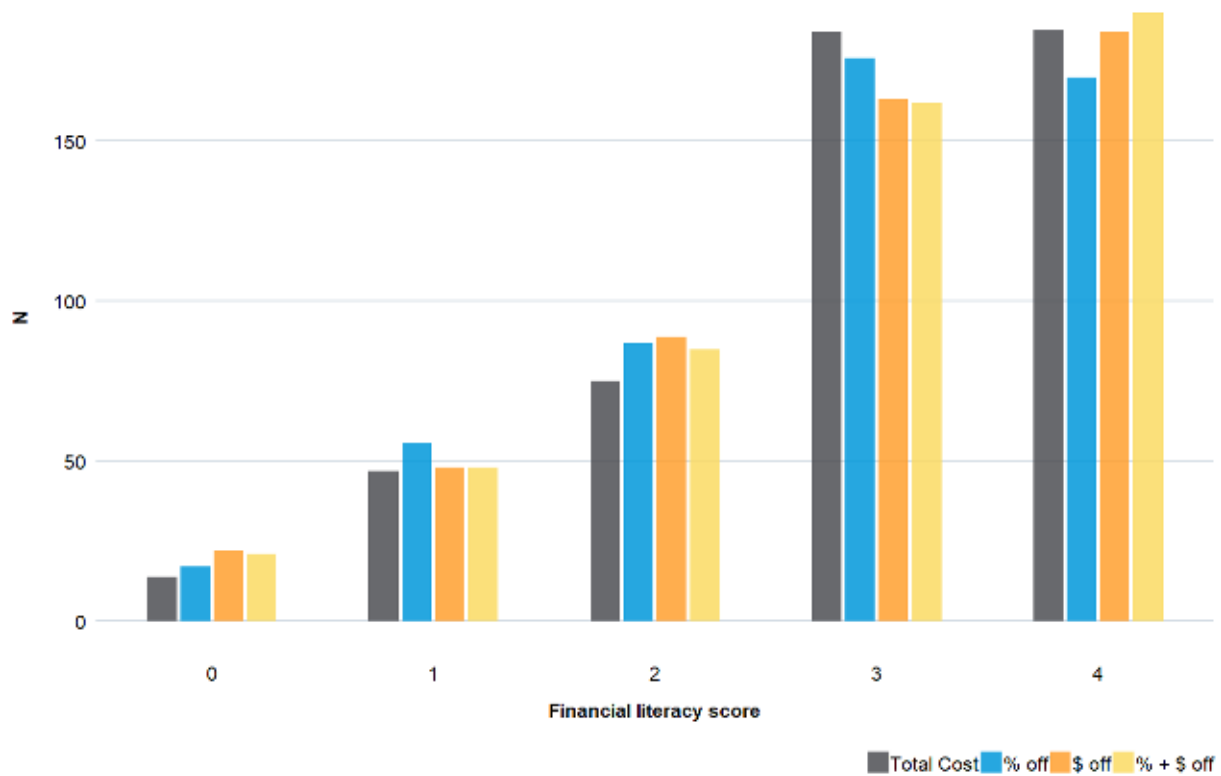
Education breakdown by treatment

Total Cost   % off $ off   % + $ off
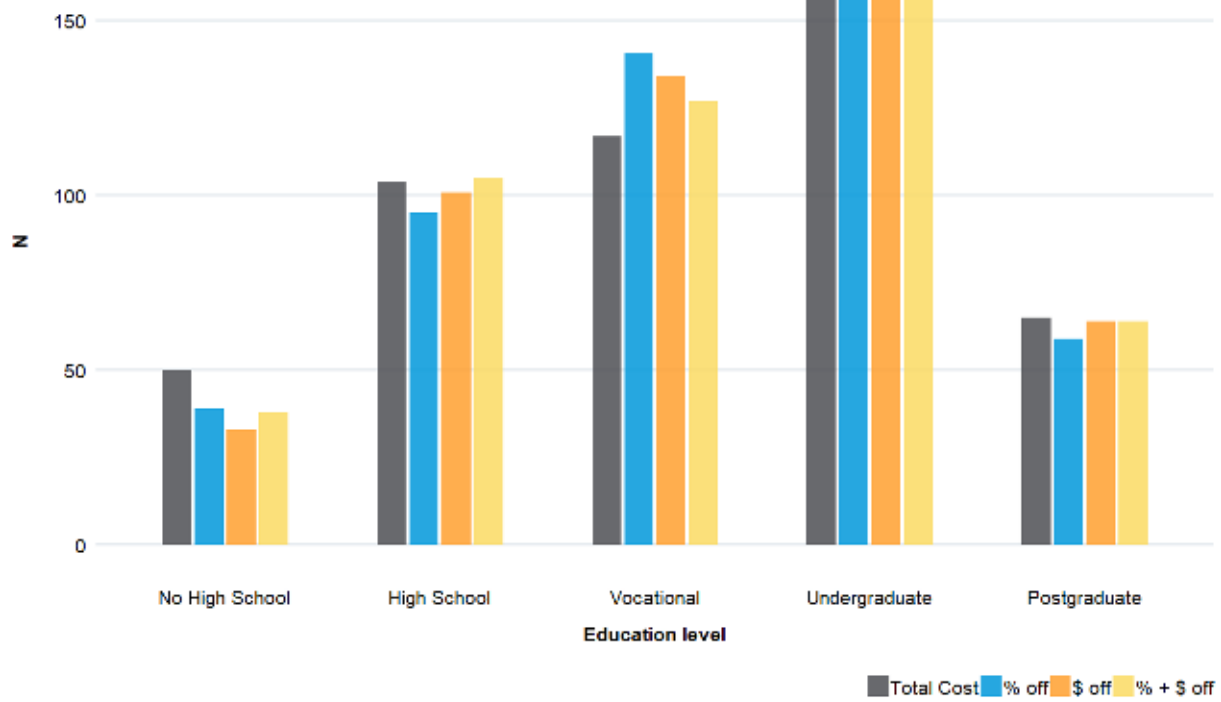
Code

CALD breakdown by treatment

Total Cost   % off $ off   % + $ off
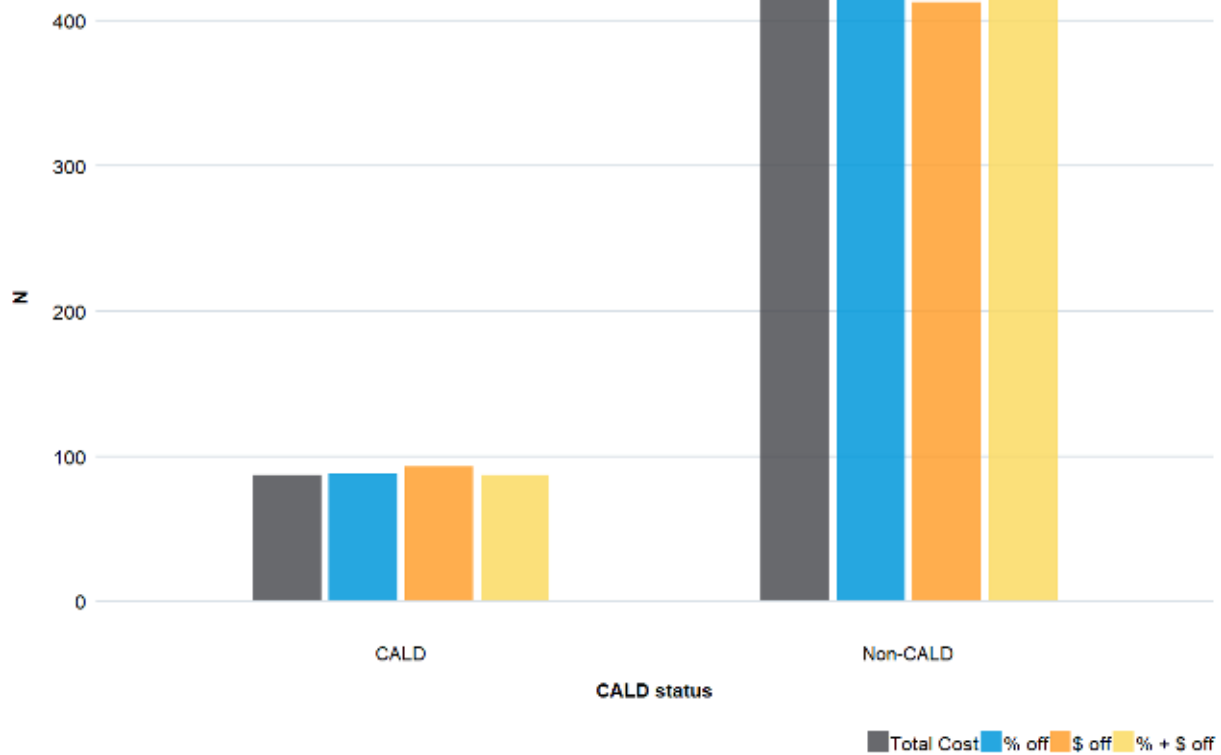
In addition, we conduct a balance check for the four ad templates. We are reviewing to ensure that there are no effects from the design of the templates – i.e., we are checking to see that participants didn't have an underlying preference for one of the templates over the others.

Number of times each ad template was selected

5 Primary Analysis

5.1 What is the impact of a different format of ad on the overall score of participants?

Relative to the Total Cost condition (where the unconditional elements – but no conditional elements – are included in a head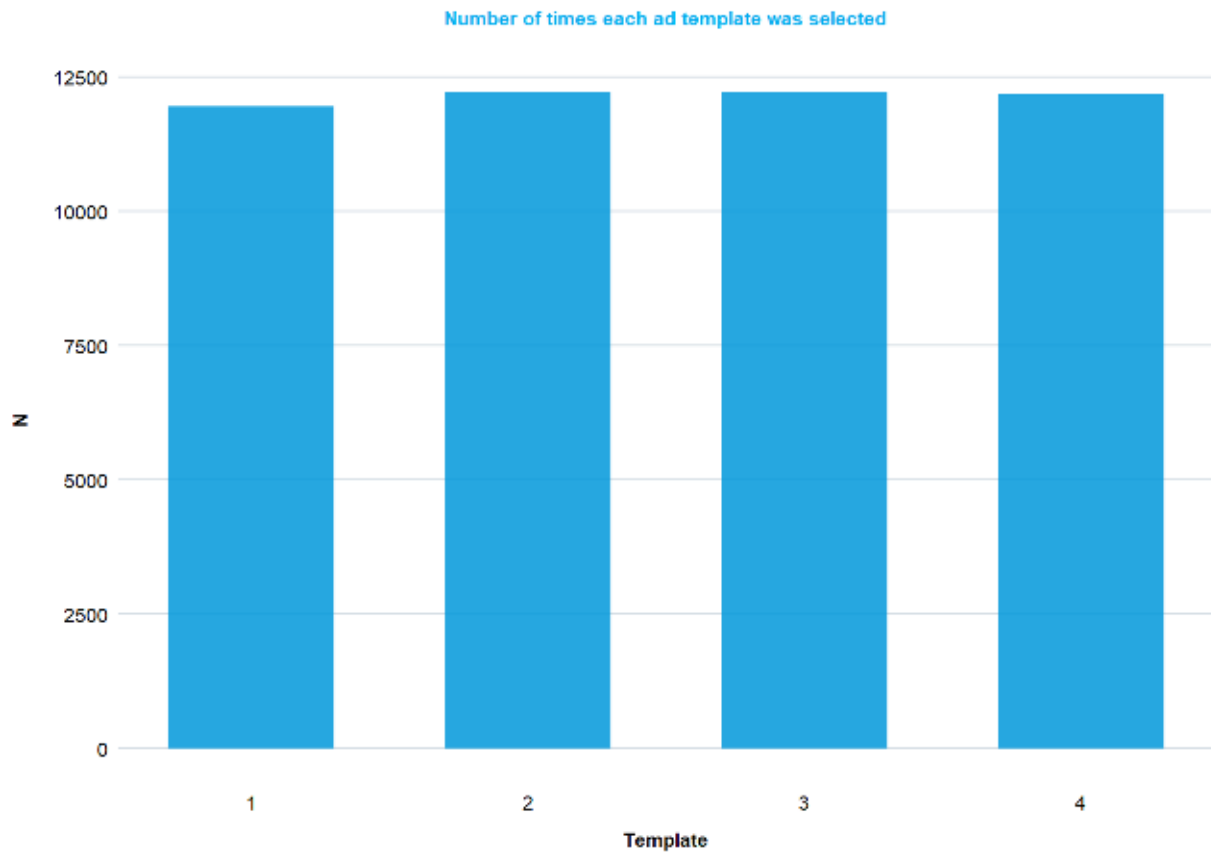line dollar figure), all other conditions appear to result in an increase in scenarios answered correctly. The most effective framing appears to be the '% off' frame, which results in an increase of 1.48 scenarios answered correctly (out of 24).

	OLS	OLS
(Intercept)	18.60 ***	10.66 ***
	(0.21)	(0.57)
% off	1.48 ***	1.69 ***
	(0.29)	(0.27)
$ off	0.85 **	1.00 ***
	(0.31)	(0.28)

% + $ off	0.55 +	0.72 *
	(0.32)	(0.29)
N	2,023	2,023

*** p < 0.001; ** p < 0.01; * p < 0.05; + p < 0.1.

6 Secondary Analysis

6.1 What is the impact of a different format of ad on counter-intuitive scenarios?
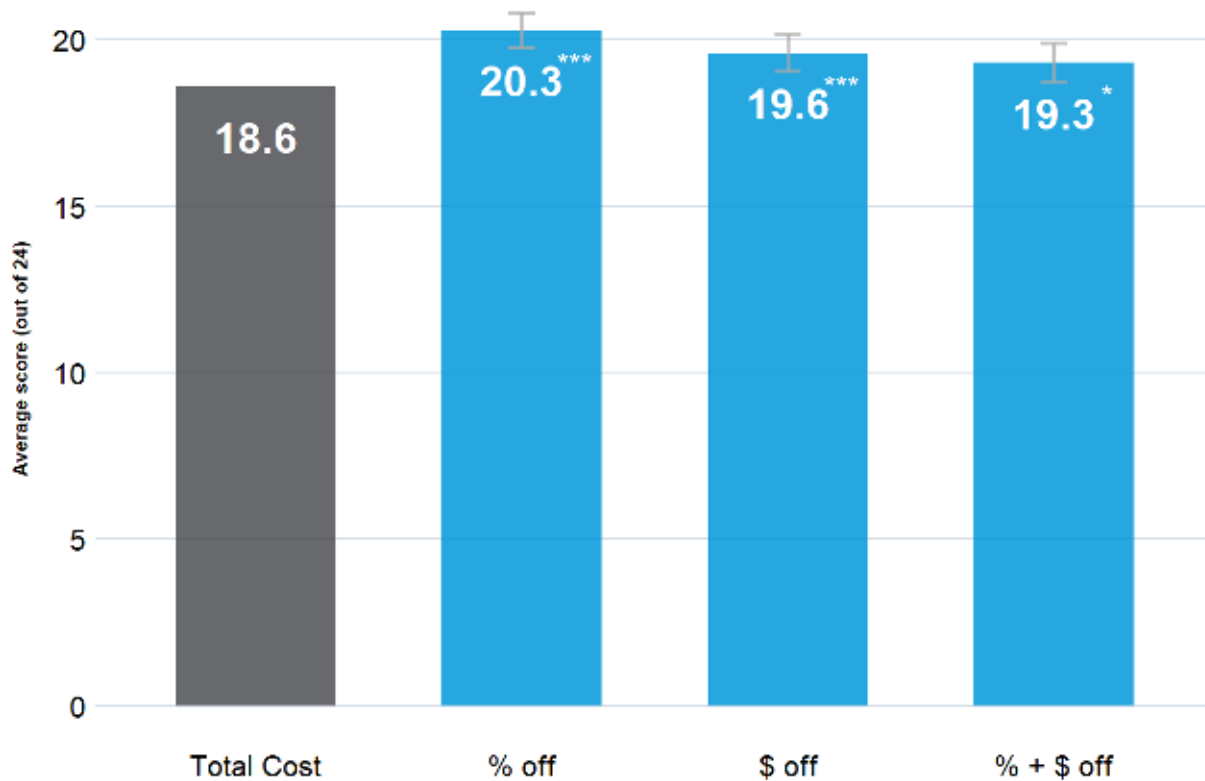
Relative to the Total Cost condition (where the unconditional elements – but no conditional elements – are included in a headline dollar figure), all three treatments perform substantially better for counter-intuitive scenarios. Participants answer between 1.3 and 1.82 more scenarios correctly (out of 10).

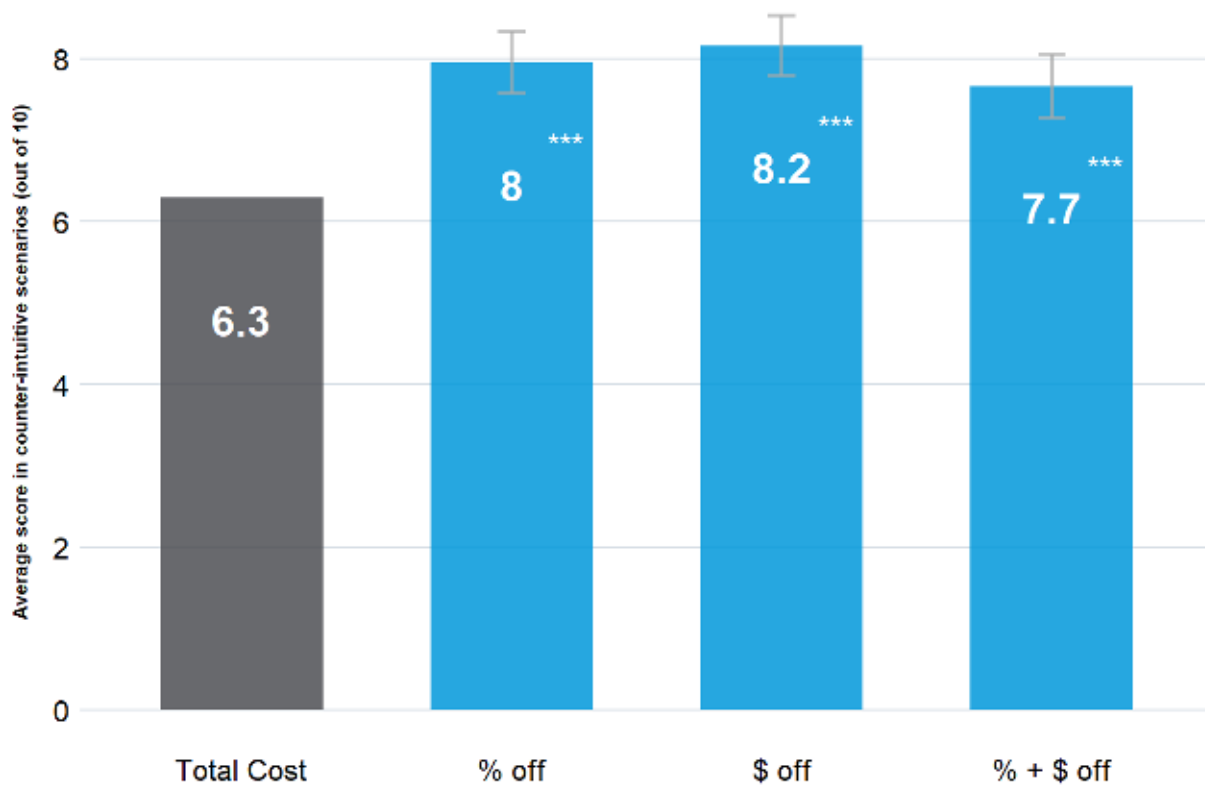We hypothesise that this is due to the way that the total cost headline is presented – as respondents were asked to find the cheapest plan in the first year by total cost (including coonditional discounts), they may simply have seen that the headlines had the 'total cost' and chosen based on this. However, the headline did not include conditional discounts, meaning that many participants likely were misled.

	OLS	OLS
(Intercept)	6.29 ***	2.42 ***
	(0.16)	(0.40)
% off	1.57 ***	1.66 ***
	(0.20)	(0.20)
$ off	1.82 ***	1.88 ***
	(0.20)	(0.19)
% + $ off	1.30 ***	1.38 ***
	(0.21)	(0.20)
N	2,023	2,023

*** p < 0.001; ** p < 0.01; * p < 0.05; + p < 0.1.

Code

6.2 What is the impact of a different format of ad on small scenarios?

Relative to the Total Cost condition (where the unconditional elements – but no conditional elements – are included in a headline dollar figure), all three treatments perform substantially better for small scenarios. Participants answer 0.5 to 0.76 more scenarios correctly (out of 8).
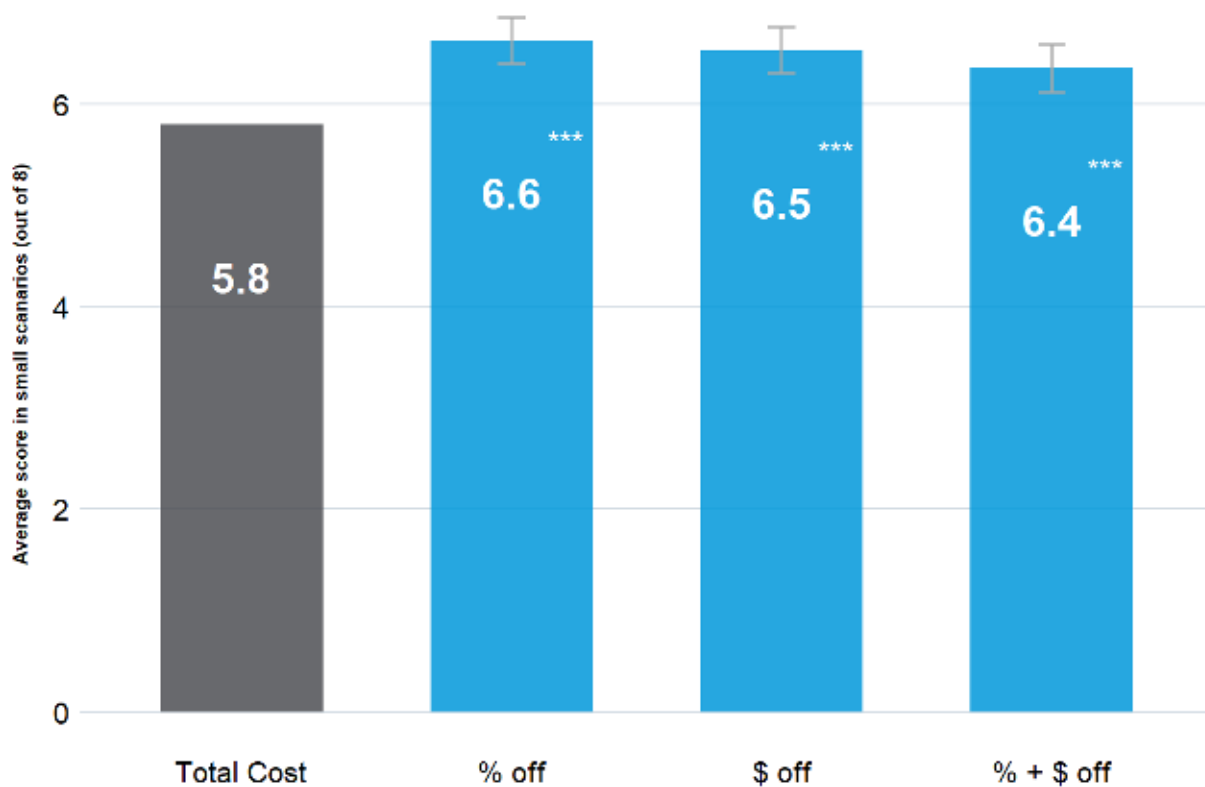
We believe this difference may be driven in part by the fact that many small scenarios were also counter-intuitive scenarios.

	OLS	OLS
(Intercept)	5.80 ***	3.02 ***
	(0.09)	(0.24)
% off	0.76 ***	0.83 ***
	(0.12)	(0.12)
$ off	0.68 ***	0.73 ***
	(0.12)	(0.12)
% + $ off	0.50 ***	0.56 ***
	(0.13)	(0.12)
N	2,023	2,023

*** p < 0.001; ** p < 0.01; * p < 0.05; + p < 0.1.

6.3 What is the impact of a different format of ad on large scenarios?

Relative to the Total Cost condition (where the unconditional elements – but no conditional elements – are included in a headline dollar figure), treatments that include a dollar figure perform worse than the total cost or % off treatments, with participants answering between 0.34 and 0.44 fewer scenarios correctly.

	OLS	OLS
(Intercept)	7.90 ***	5.24 ***
	(0.08)	(0.25)
% off	0.06	0.14
	(0.11)	(0.10)
$ off	-0.43 ***	-0.38 **
	(0.13)	(0.12)
% + $ off	-0.34 **	-0.28 *
	(0.13)	(0.12)
N	2,023	2,023

*** p < 0.001; ** p < 0.01; * p < 0.05; + p < 0.1.

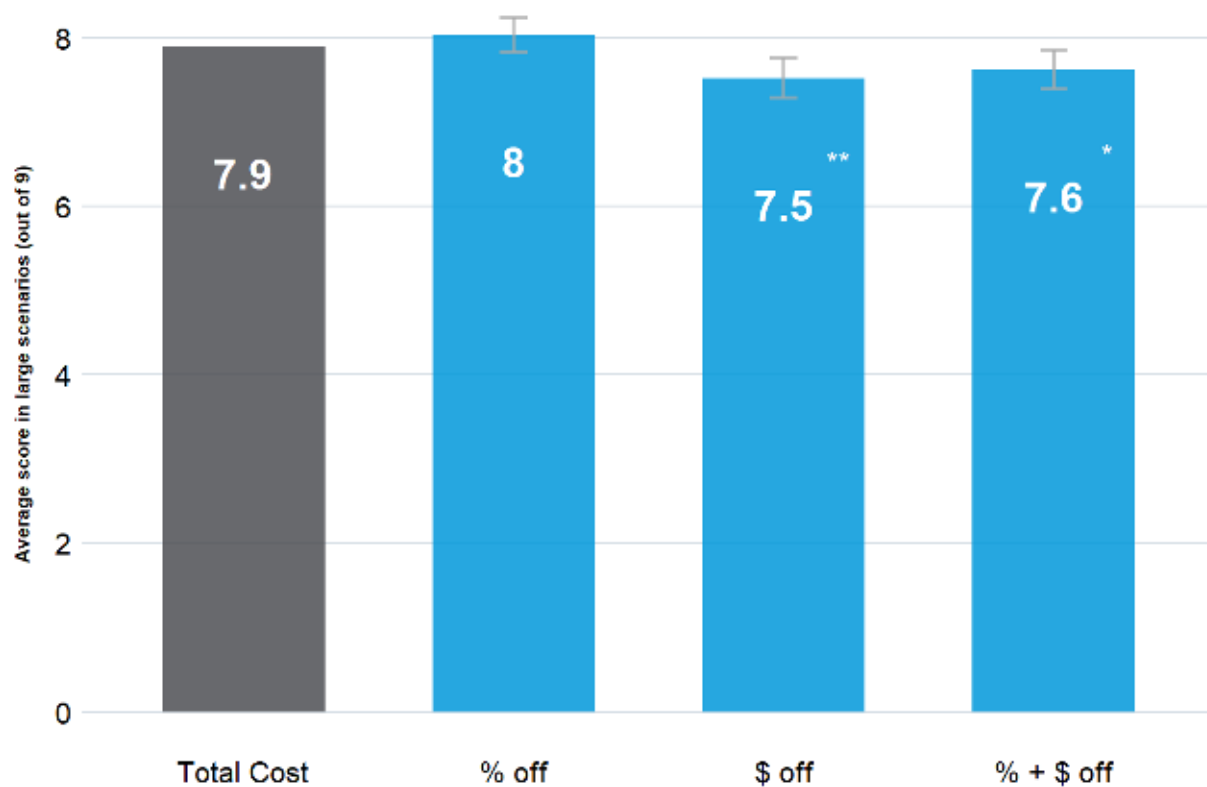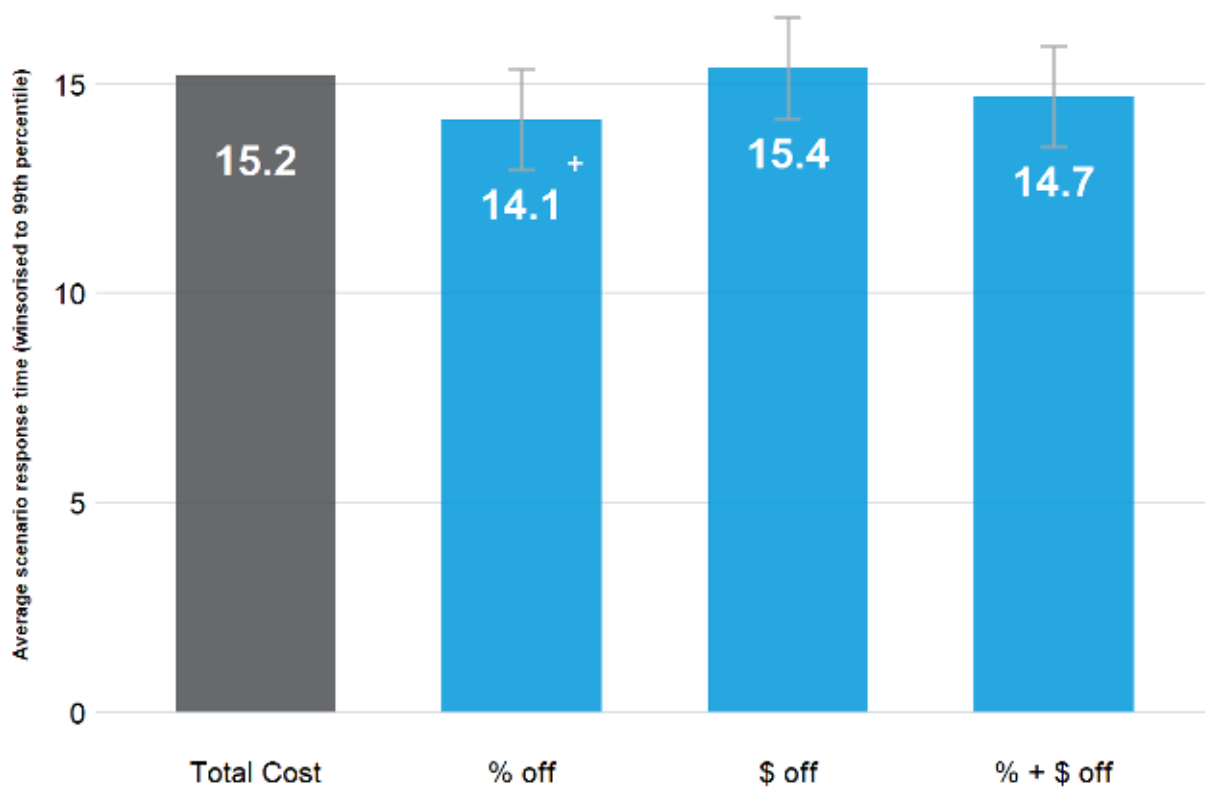## 6.4 What is the impact of a different format of ad on time taken?

Relative to the Total Cost condition (where the unconditional elements – but no conditional elements – are included in a headline dollar figure), we observe minimal differences in the time taken between the different treatments. There is weak evidence that suggests the % off frame led to slightly faster average scenario times.

	OLS	OLS
(Intercept)	15.19 ***	9.28 ***
	(0.38)	(1.10)
% off	−1.05 +	−0.85
	(0.55)	(0.53)
$ off	0.18	0.32
	(0.61)	(0.59)
% + $ off	−0.51	−0.29
	(0.62)	(0.60)
N	2,023	2,023

*** p < 0.001; ** p < 0.01; * p < 0.05; + p < 0.1.

6.5 Does the treatment effect differ by level of financial literacy?

The results suggest that the % off treatment was most effective for those with low financial literacy – however, we note that whilst the results are significant, the sample size is still relatively small.
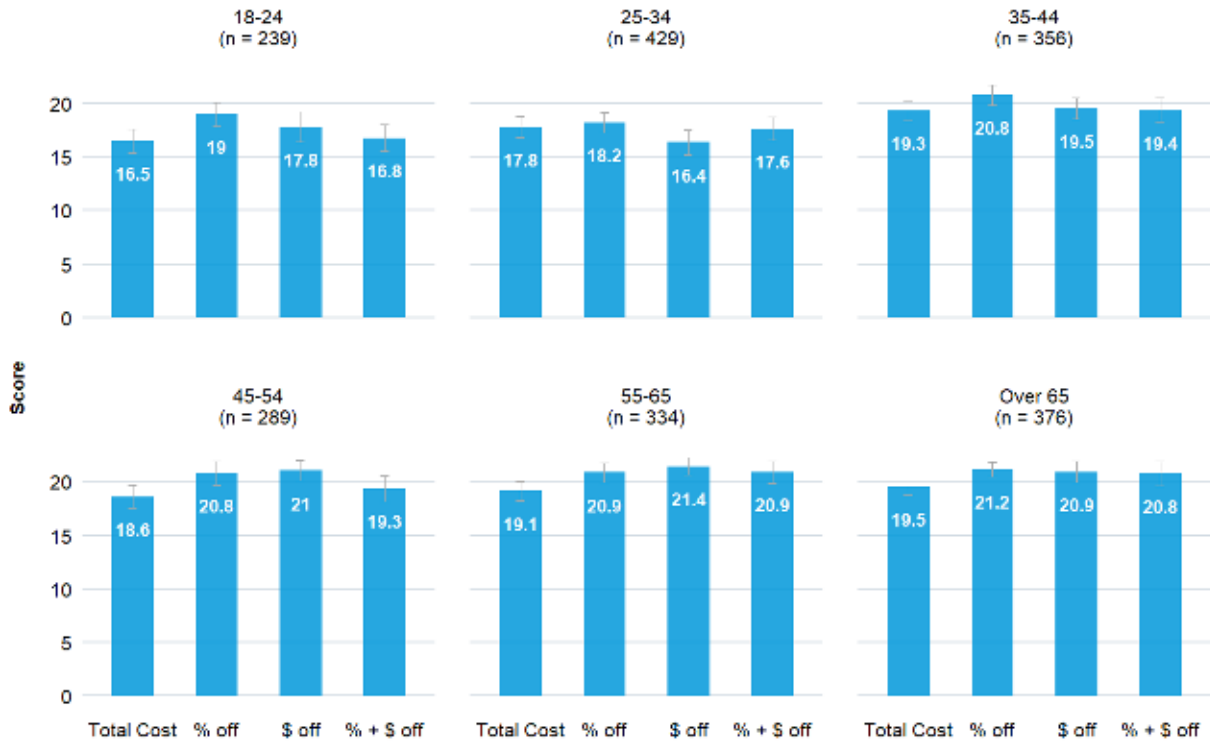
Treatment effects, by score in financial literacy test
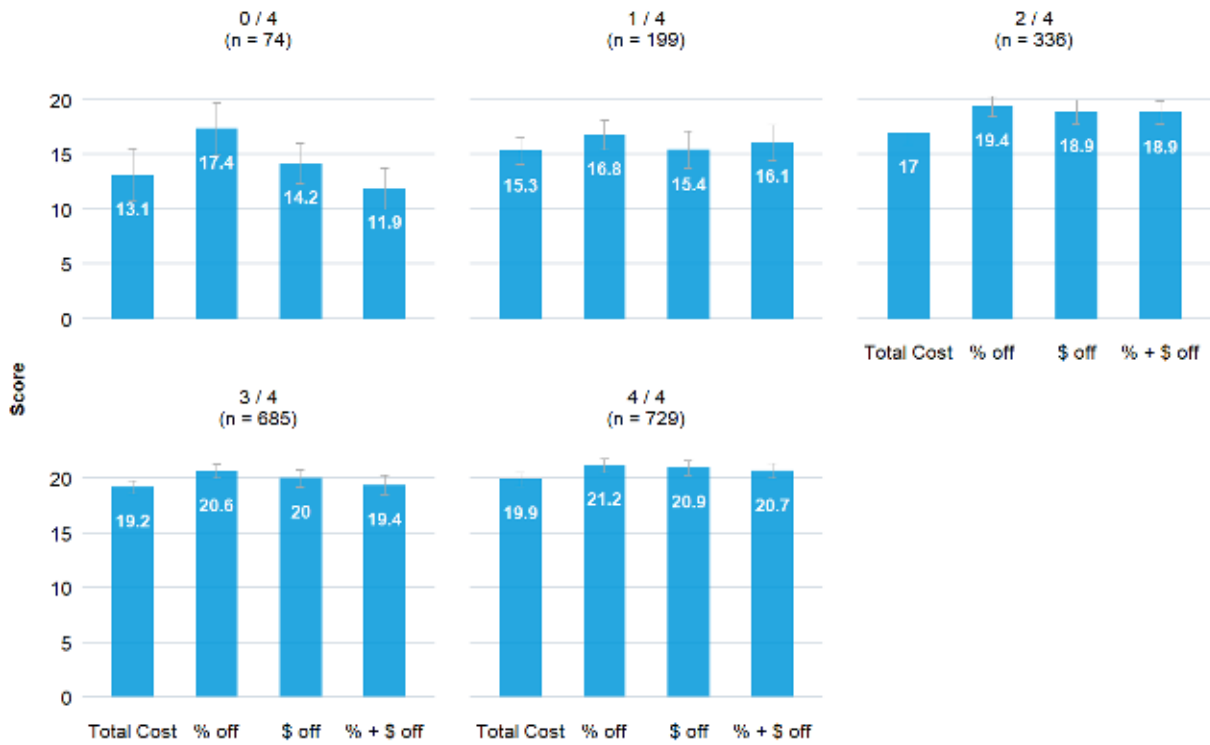
6.6 Does the treatment effect differ by age?

As with the broader results, the % off treatment was more effective across most age groups.

Treatment effects, by age

18-24 (n = 239)
- Total Cost: 16.5
- % off: 19
- $ off: 17.8
- % + $ off: 16.8

25-34 (n = 429)
- Total Cost: 17.8
- % off: 18.2
- $ off: 16.4
- % + $ off: 17.6

35-44 (n = 356)
- Total Cost: 19.3
- % off: 20.8
- $ off: 19.5
- % + $ off: 19.4

45-54 (n = 289)
- Total Cost: 18.6
- % off: 20.8
- $ off: 21
- % + $ off: 19.3

55-65 (n = 334)
- Total Cost: 19.1
- % off: 20.9
- $ off: 21.4
- % + $ off: 20.9

Over 65 (n = 376)
- Total Cost: 19.5
- % off: 21.2
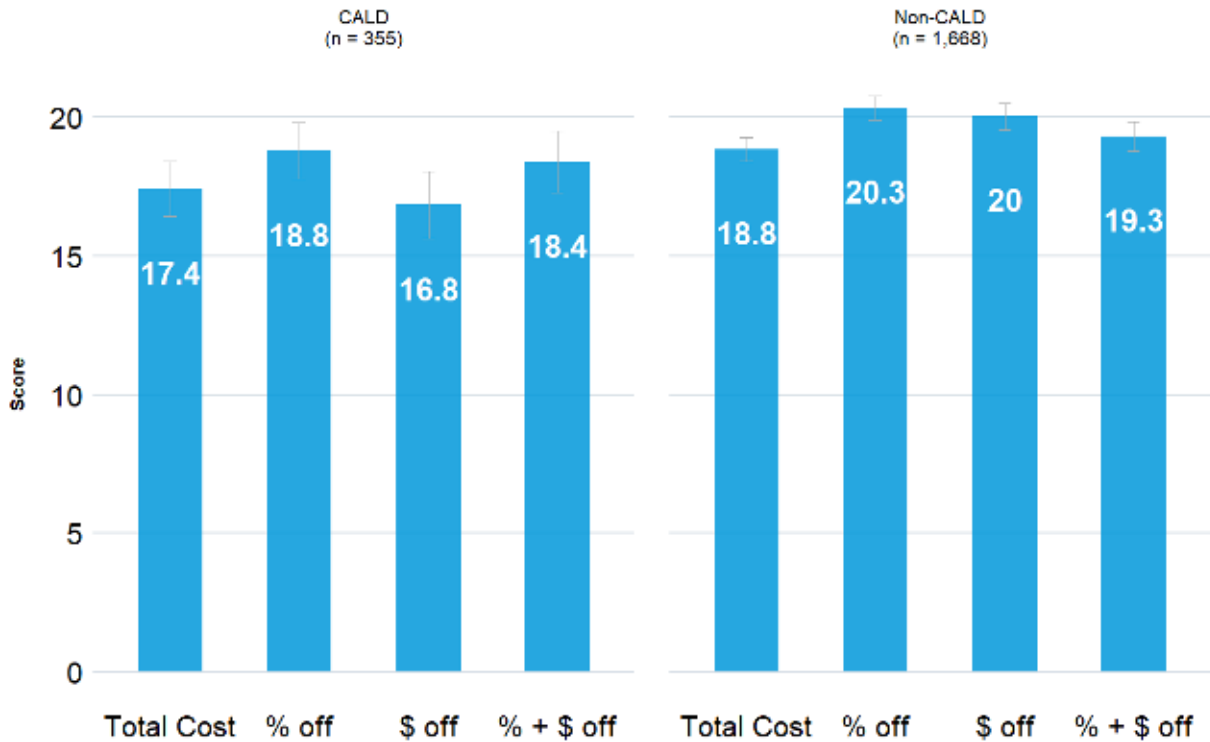- $ off: 20.9
- % + $ off: 20.8

6.7 Does the treatment effect differ by CALD status?

As with the broader results, we see that the % off frame is the most effective for both CALD and non-CALD respondents.

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CALD
(n = 355)

Non-CALD
(n = 1,668)

7 Exploratory questions

In addition to the analysis above, we asked a series of additional questions. The charts below summarise the results of these questons (see 'All questions wording' for full wording of questions and response options).
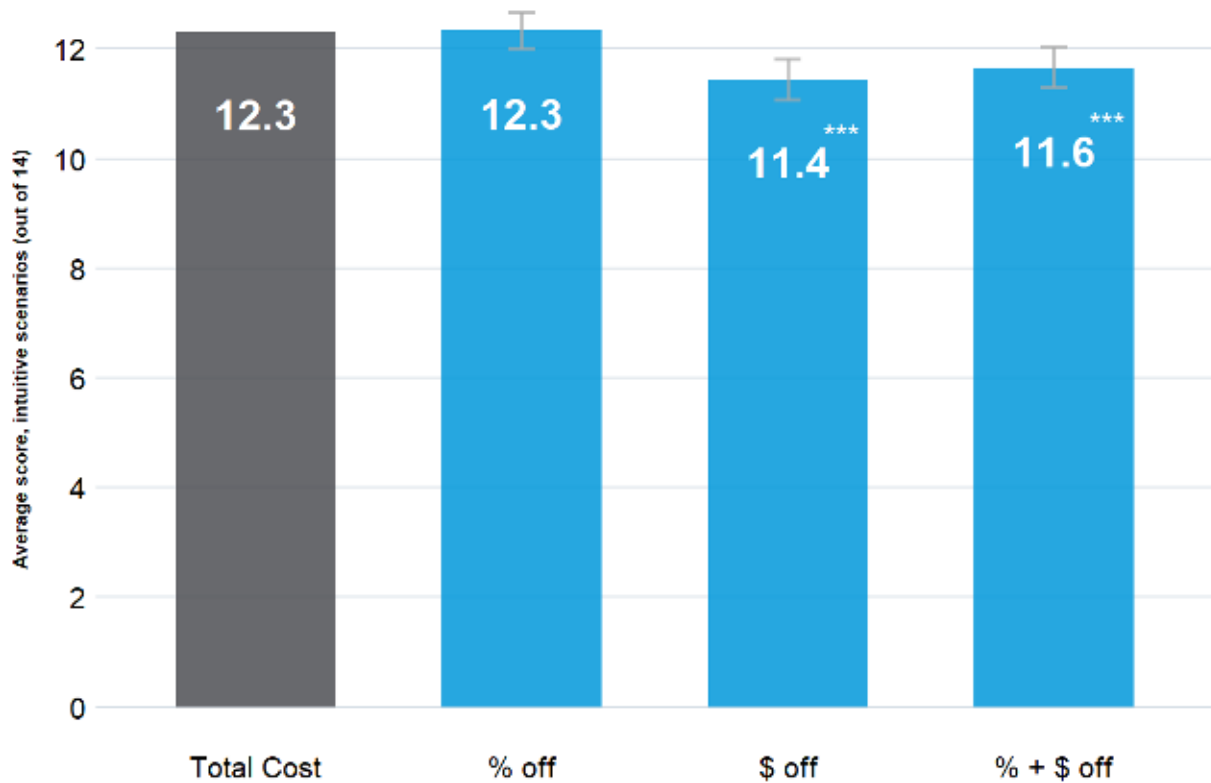
In addition, we provide analysis on the total scores for respondents with counter-intuitive scenarios removed. The table and chart below show these results –

Code

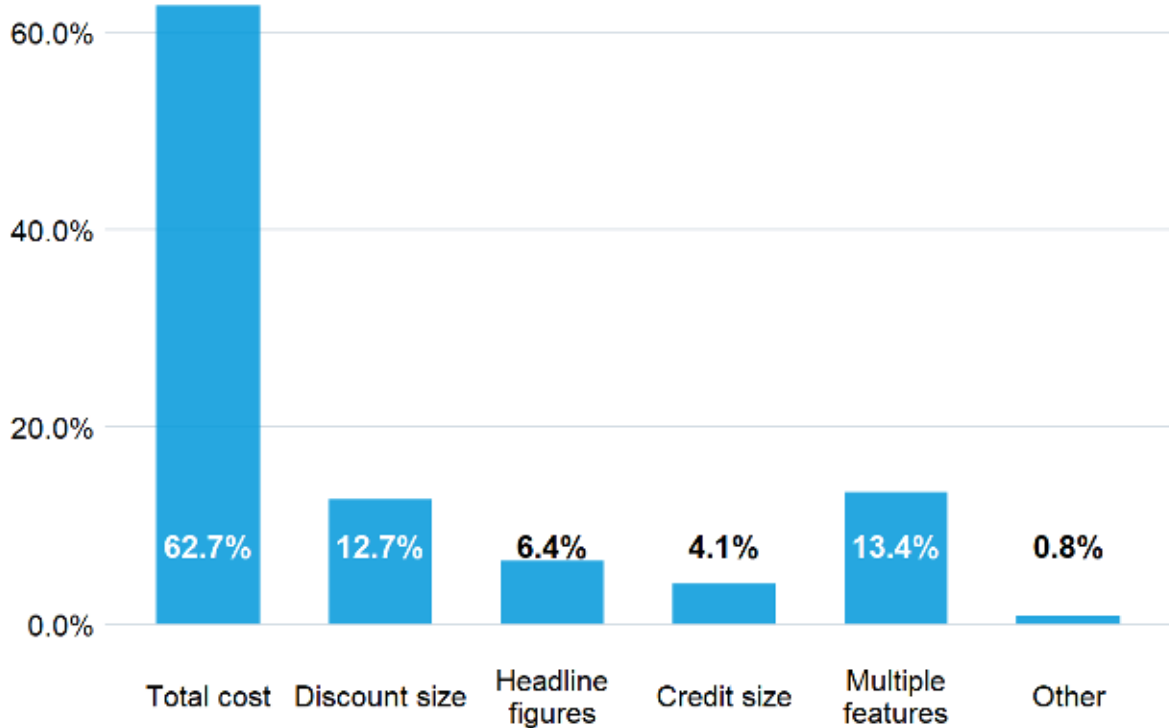|	OLS	OLS
(Intercept)	12.31 ***	8.24 ***
	(0.12)	(0.39)
% off	-0.09	0.03
	(0.17)	(0.17)
$ off	-0.96 ***	-0.87 ***
	(0.20)	(0.19)
% + $ off	-0.75 ***	-0.66 ***
	(0.20)	(0.19)
N	2,023	2,023

*** p < 0.001; ** p < 0.01; * p < 0.05; + p < 0.1.

Code

The first three questions followed on immediately from the scenarios, and related to the information presented in the scenarios.
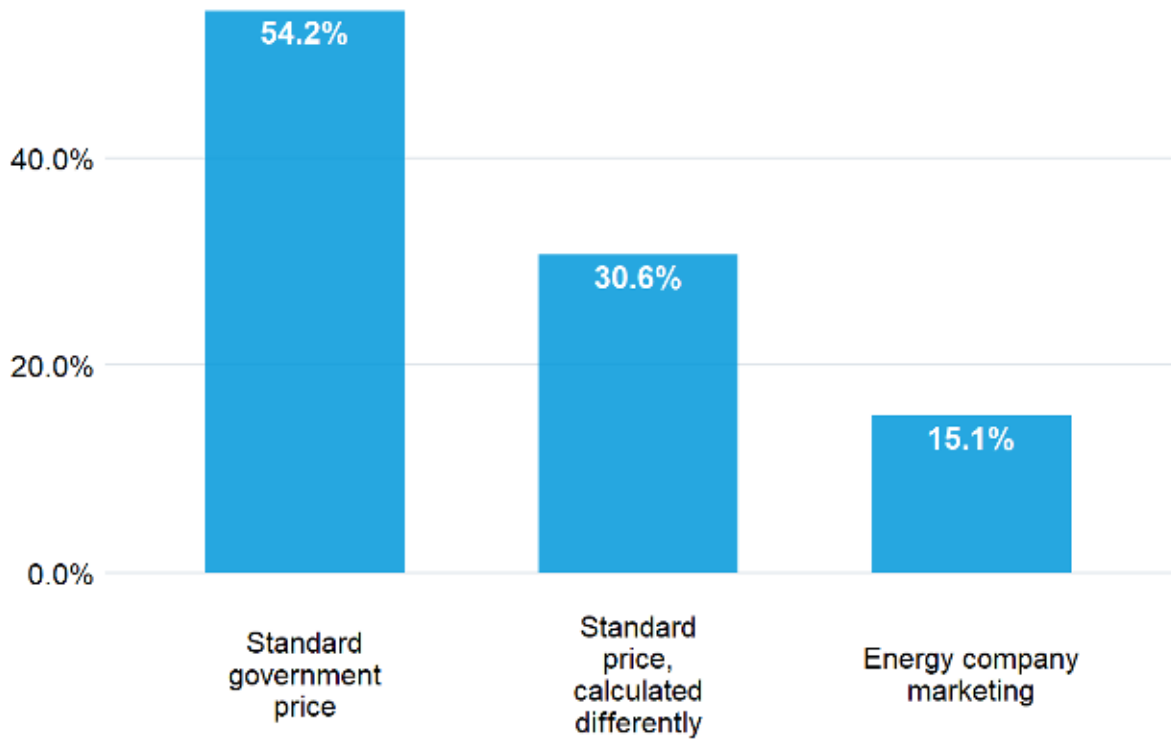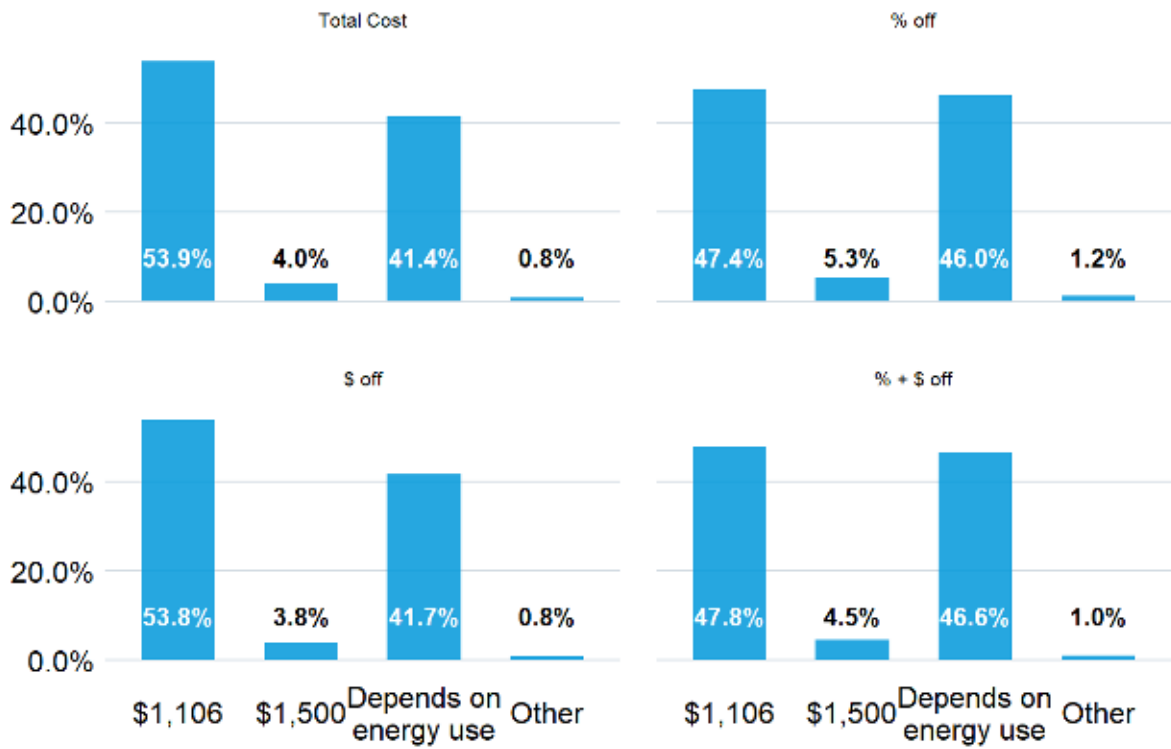
Code

T1 What did you use to help you decide?
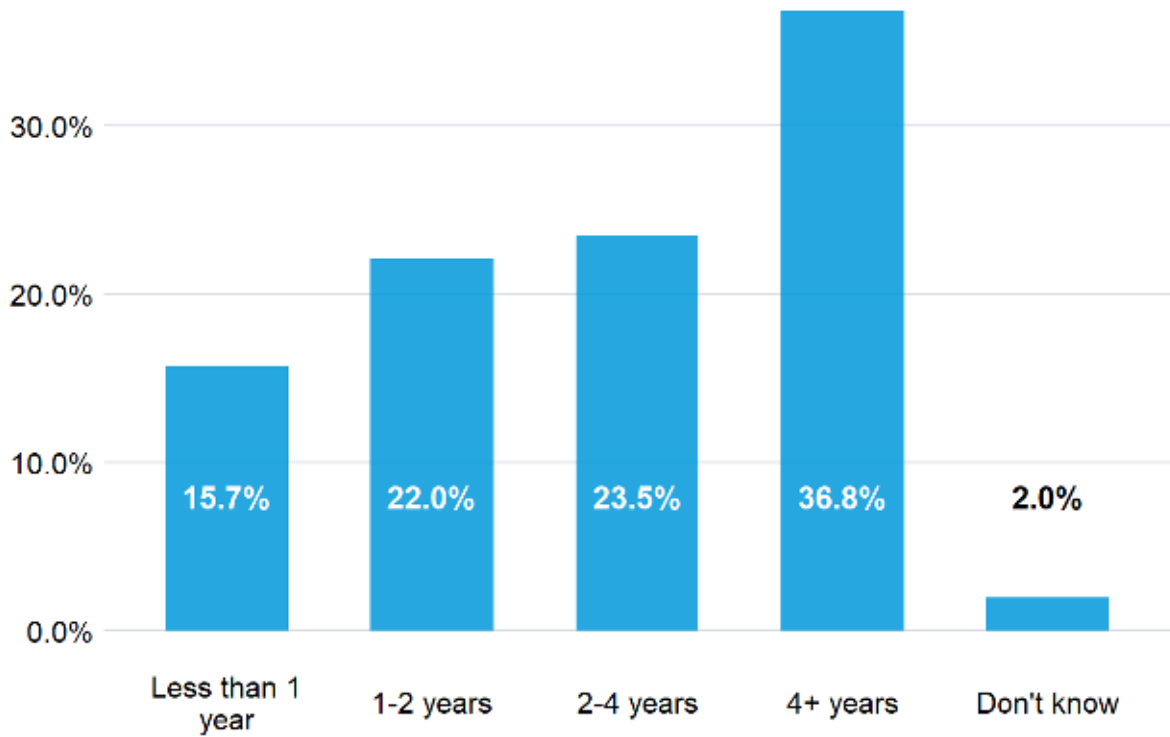

Code

T2 What is the reference price?

Standard government price	54.2%
Standard price, calculated differently	30.6%
Energy company marketing	15.1%

Code

T3 Shown an example ad - what will you need to pay?

Total Cost

$1,106	$1,500	Depends on energy use	Other
53.9%	4.0%	41.4%	0.8%

% off

$1,106	$1,500	Depends on energy use	Other
47.4%	5.3%	46.0%	1.2%

$ off

$1,106	$1,500	Depends on energy use	Other
53.8%	3.8%	41.7%	0.8%

% + $ off

$1,106	$1,500	Depends on energy use	Other
47.8%	4.5%	46.6%	1.0%

Further questions relate to wider energy behaviours.

Code

P1 Tenure with current retailer

Less than 1 year	1-2 years	2-4 years	4+ years	Don't know
15.7%	22.0%	23.5%	36.8%	2.0%

Code

P2 Ever switched whilst with provider

Yes	No	Don't know
27.0%	68.0%	5.0%
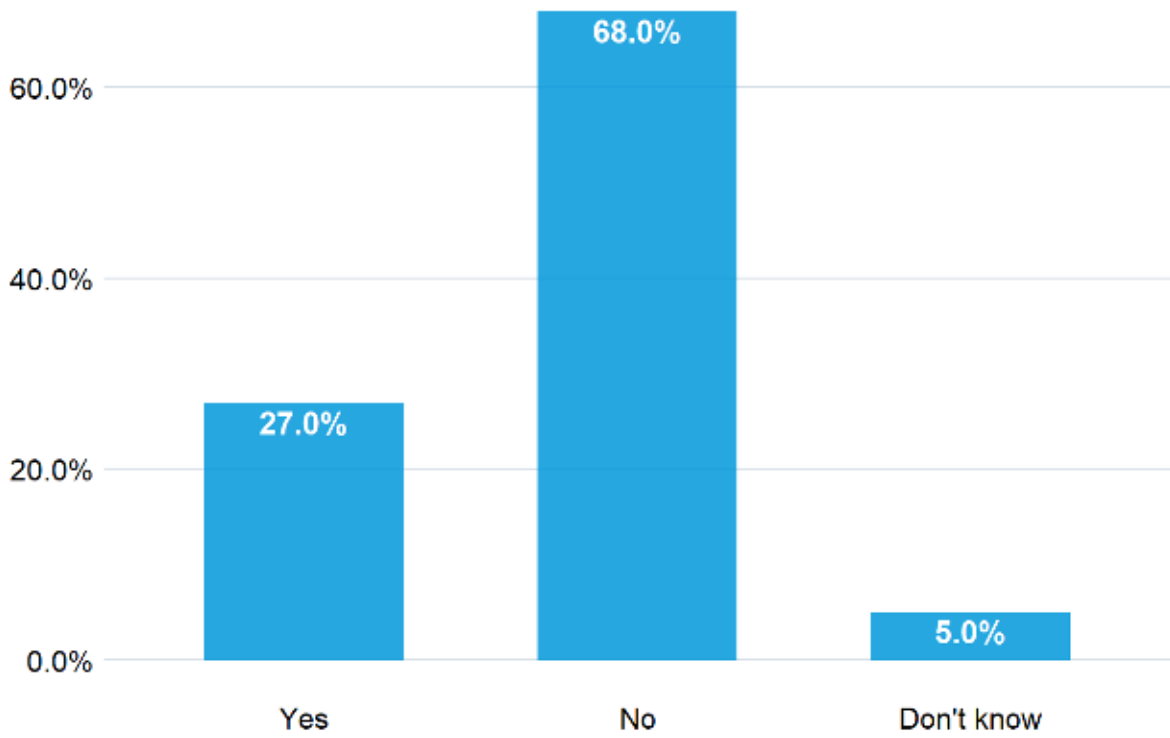
Code

P3 Switched plans or provider in the last 12 months

Yes	No	Don't know
26.7%	70.7%	2.5%
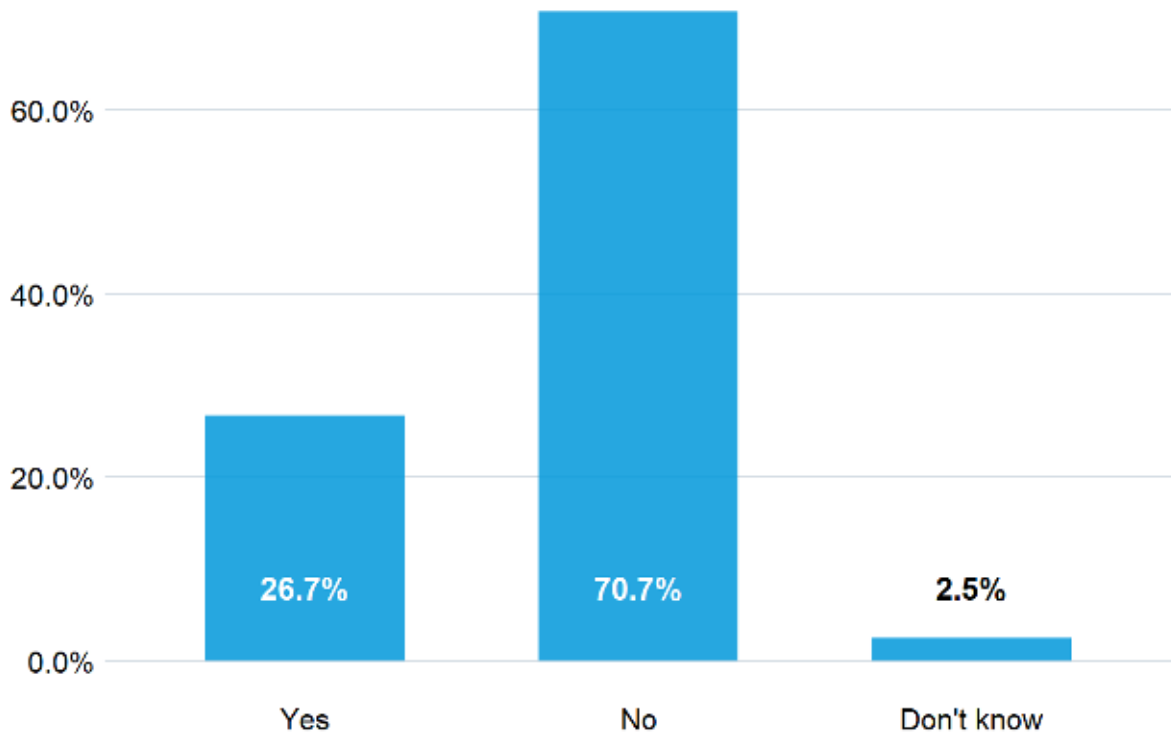
Code

P4 Discount behaviour

Always	Most of the time	Half of the time	Sometimes (less than half)	Never
83.2%	12.4%	2.3%	1.3%	0.7%
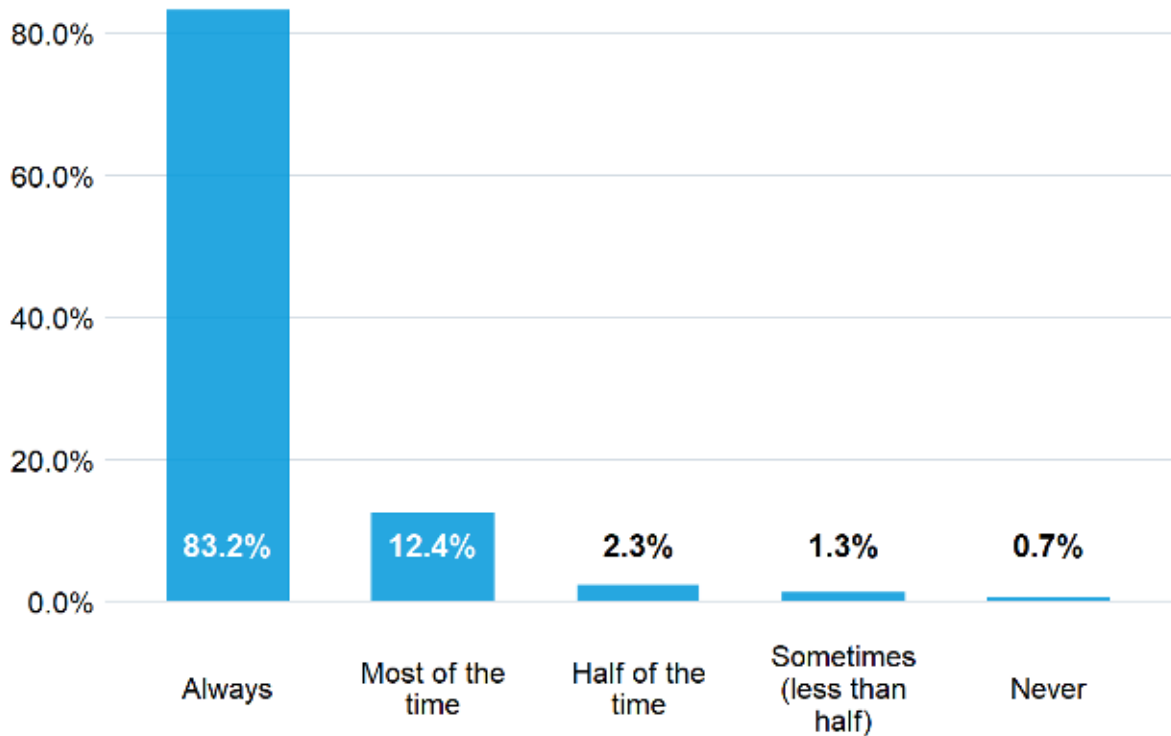
Code

P5 What consumers choose plans on - how often each feature was in the top 3

Discounts	Overall cost	Specific company	Environmental features	Extra features	other
82.6%	89.0%	53.9%	39.3%	32.0%	3.2%
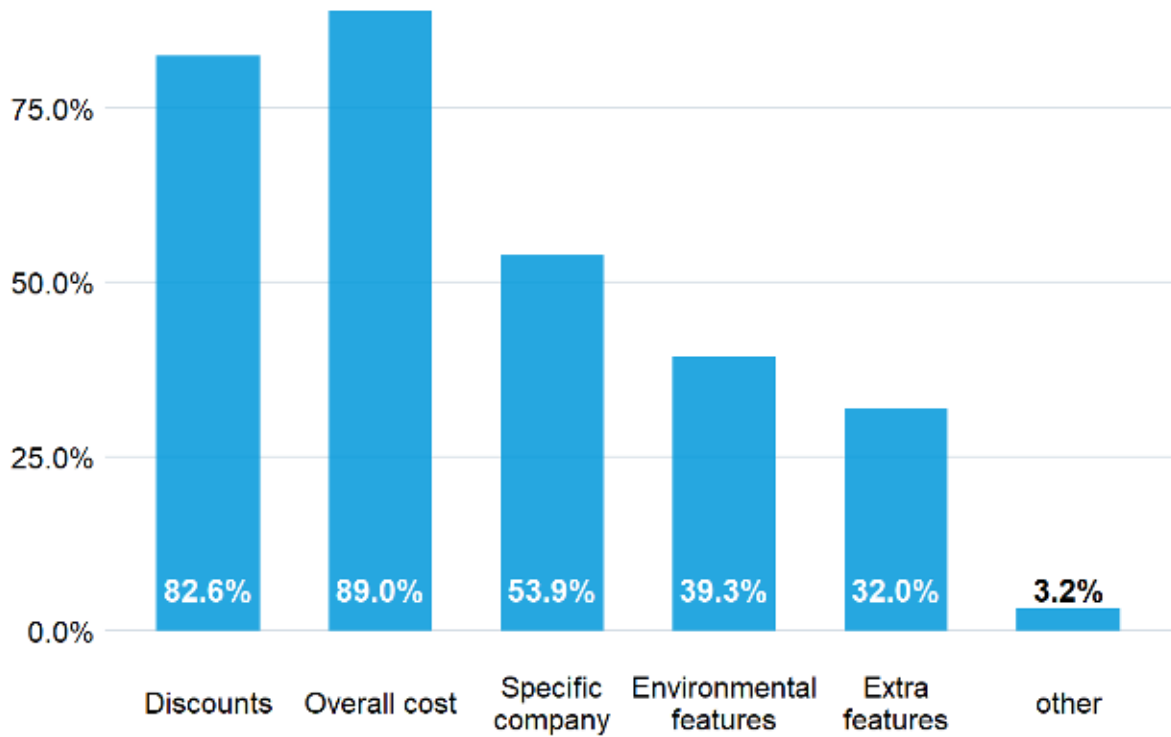
Code

P5 What consumers choose plans on - average ranking (out of 3)

Discounts	Overall cost	Specific company	Environmental features	Extra features	other
1.9	1.6	2.4	2.3	2.5	1.9
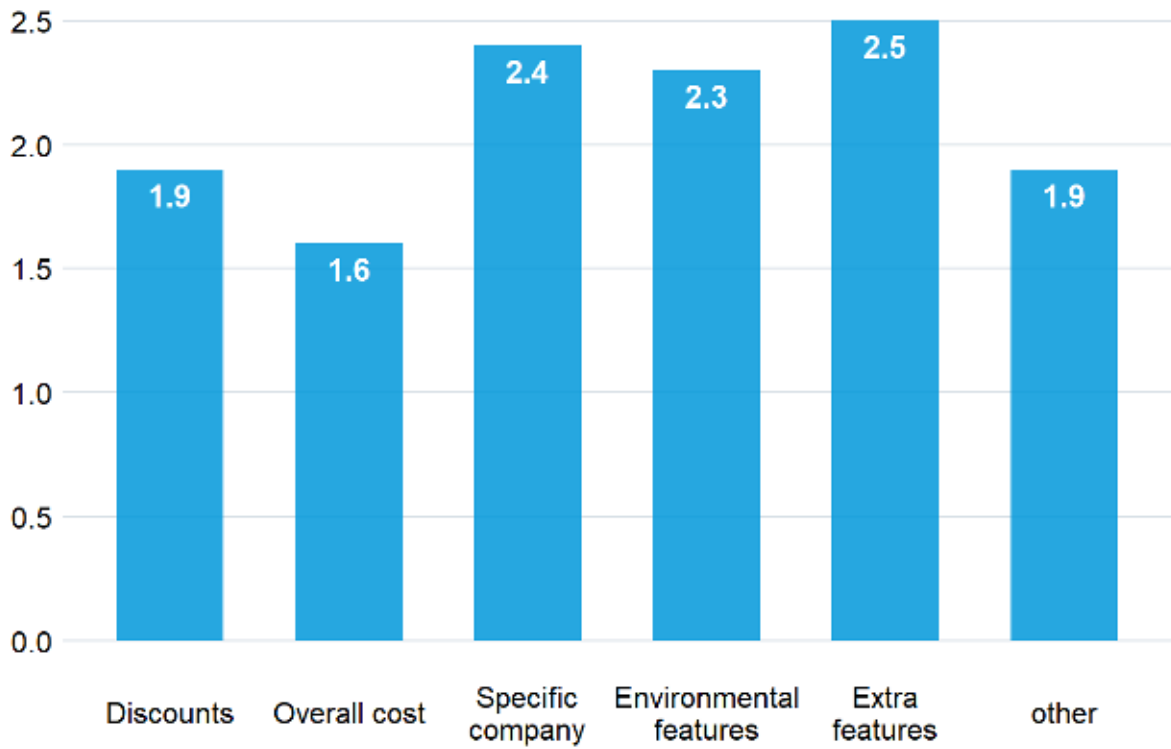
Code

P6 What consumers think happen to prices when they sign a contract

No change if lock-in	42.0%
Could change at any time	33.6%
Definitely no change	24.4%
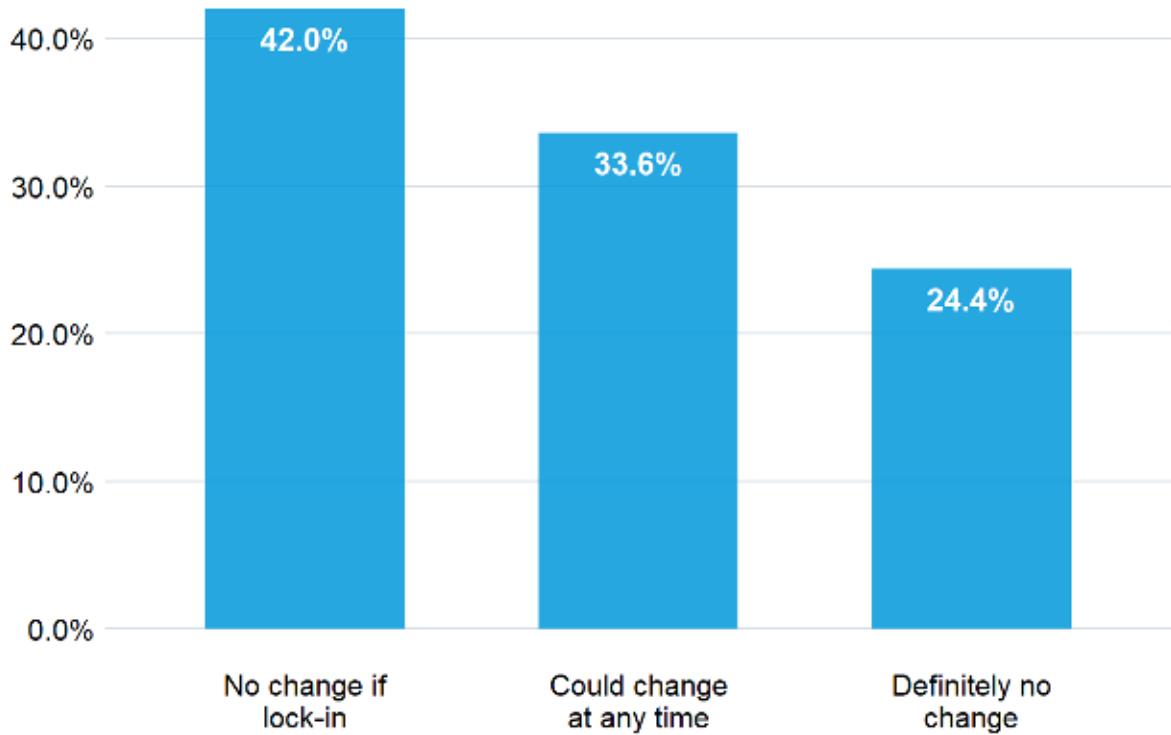
Code

P7 Offered a new deal - what is your response?

I'd take the new deal	17.4%
I'd ask a few questions	41.4%
I'd do some research	33.5%
I wouldn't sign up (inattention)	3.0%
I wouldn't sign up (satisfied)	4.1%
Other	0.6%
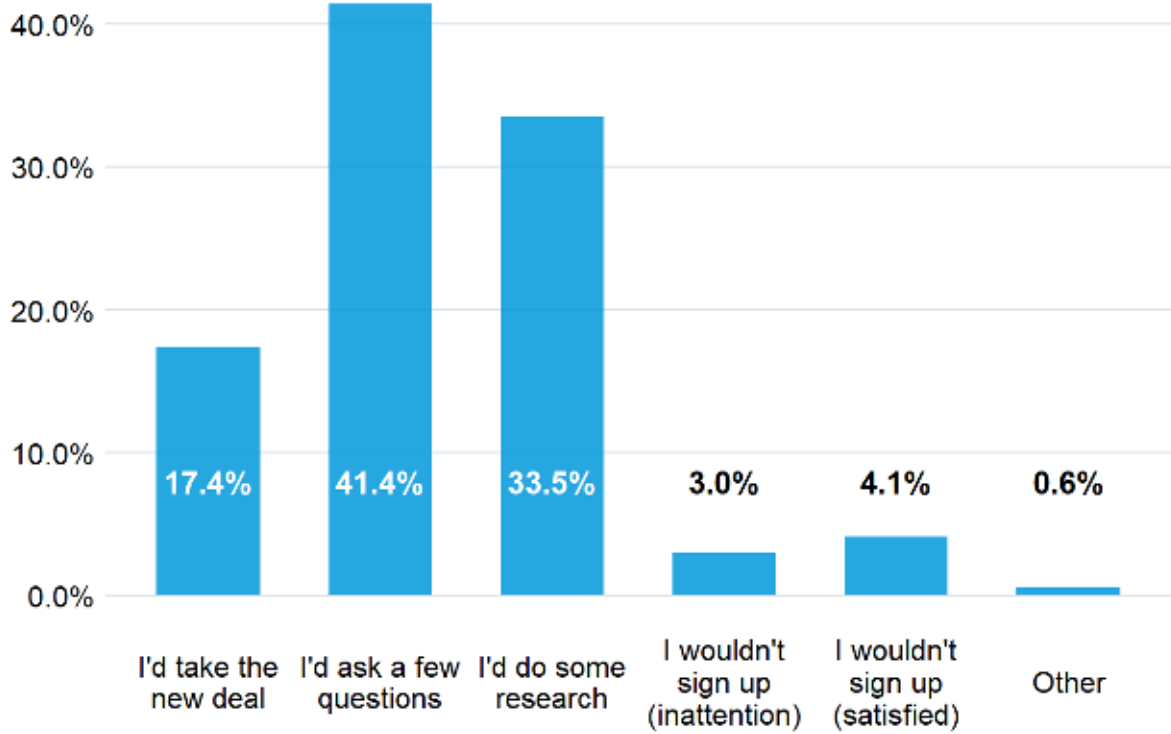
Code

P8 - preferences about price changes