

# Pre-analysis plan: AFSA online bankruptcy form

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## Key dates

Pre-registration on the AEA RCT registry:	22 December 2020
Trial launch (AFSA online bankruptcy form):	1 October 2020
Trial closed (see details below):	22 January 2021
Data received from AFSA:	8 February 2021

## Policy problem, trial aims and research question

### Background

The Australian Financial Securities Authority (AFSA) is responsible for administering personal bankruptcy laws in Australia. AFSA is currently digitising its services and from 1 October has offered an **entirely online bankruptcy form**.

To ensure people understand the consequences of bankruptcy, the application process highlights these consequences a number of times:

- A 'consequence tool' that an applicant completes before starting the application process,
- 'Prescribed information' that appears at the start of the bankruptcy form, and
- Conditional and static prompts/warnings that appear when the applicant enters a certain value into the application form, or when it is most relevant to the applicant.<sup>1</sup>

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<sup>1</sup> More information about warnings (and their specific wording) can be found in Appendix A.

## Research Aim

The aim of this trial is to understand how the applicant responds to select conditional and static warnings.

Specifically, we are looking to understand whether and how:

1. Applicants reconsider the need to apply for bankruptcy as a result of the conditional and static warnings.
2. Applicants' disclosure and reporting practices are influenced by a set of five prompts (some of which are static and some conditional)

## Primary outcome measures

To understand how people respond to warnings relating to their income and assets, we will track:

1. whether people complete the form or drop out. Drop-out is defined as a form that has been started, but not edited for least 14 days when the trial ends. Submitted forms are classified as completed forms (see further details about classification below). We will interpret higher dropout rates as evidence of "reconsidering the need to apply for bankruptcy".
2. the number of assets reported in the bankruptcy form
  - a. real estate assets coded as a binary variable, none (0) versus any (1)
  - b. vehicle assets coded a count variable (0-10; values > 10 truncated to 10)
3. the average monetary value (in \$) per asset (real estate and vehicle assets separately) reported in the bankruptcy form, and
4. total self-reported income (in \$) for the current and upcoming year.

## Interventions

In total, the bankruptcy form contains 19 conditional and static prompts. For the trial, however, **only five prompts** will be evaluated. The remaining 14 prompts will be the same for all applicants.

The trial will be a two-arm randomised control field trial. Applicants in the treatment group (TG) will complete a form that contains the five prompts outlined in Appendix A. Applicants in the control group (CG) will complete a form that does not have these five prompts.

## Hypotheses

**H1:** We expect the completion rates to be lower in the treatment group than the control group.  $TC < CG$  (completion rate).

We will use one-tailed  $p$ -values to evaluate this hypothesis.

**H2:** The **number of assets** reported by the treatment group will be different to the number of assets reported by the control group.  $TG \neq CG$  (count of assets).

**H3:** The mean **value per asset** reported by the treatment group will be different to the value of assets reported by the control group.  $TG \neq CG$  (value of assets).

Analyses for H2 and H3 will be conducted separately for real estate assets (H2a/H3a) and vehicle assets (H2b/H3b).

**H4:** The **amount of income** reported (for current year, H4a; for next year, H4b) by the treatment group will be different to the amount of income reported by the control group  $TG \neq CG$  (income declared).

We will use two-tailed  $p$ -values to evaluate the evidence for hypotheses H2-H4.

## Sample selection and randomisation

Trial participants will be bankruptcy applicants going through the bankruptcy process starting from 1 October 2020. AFSA will randomise participants into the control or the treatment arm when they begin the application form. Randomisation will be done by AFSA's internal systems, with each person who begins the application form having an equal chance of being allocated to the control or the treatment arms.

We will stop the trial once we have at least 700 completed (submitted) forms in each arm of the trial. At the point of stopping the trial, our total sample will consist of at least 1400 **completed** forms, and some number of **incomplete** forms (not yet submitted).

On the same day as we stop the trial, a 14-day waiting period will start. Any forms *started* during this 14-day waiting period will *not* be included in the trial. Any previously incomplete forms that are submitted during the 14-day waiting period become classified as **completed**. Any previously incomplete forms that are abandoned (left inactive for at least 14 days) become classified as **drop-outs**. Any incomplete forms that at the end of the 14-day waiting period are neither completed nor abandoned (i.e., the applicant has edited the form in the past 14 days), remain classified as **incomplete**.

At the end of the 14-day waiting period we will count all completed, dropout, and incomplete forms in our total sample. The final possible type of form is a form which has been started online, but completed offline: That is, the applicant stops using the online form and instead submits a pdf version to AFSA. AFSA can link these pdf submissions to an applicant's online form if they have used the same email address (BETA will not receive email address information). At the end of the 14-day waiting period, any forms that have been started online and submitted offline will receive a separate classification, "**completed offline**". We are not expecting many of these forms ( $n < 50$ ), but they will also be included in our total N.

Which type of form we include in which analysis is specified in more detail below.

### Sample size and power calculations

We will use conventional thresholds for the significance level ( $\alpha = 0.05$ ) and desired power (80%).

There are six key comparisons, and five of them are likely to be highly correlated, thus we will not correct for multiple comparisons. Given this, we will be cautious in interpreting the results of the statistical tests.

We plan to leave the trial in the field until we have at least 700 completed applications in the treatment group, and 700 completed applications in the control group, this will allow us to detect a small effect (Cohen's  $d = 0.15$ ) on the continuous outcome measures for H2b and H4, and a small effect (Cohen's  $h = 0.15$ ) on the binary outcome measure for H1 and H2a.

The power (or minimum detectable effect size) will be lower for H3, because we are only analysing the value of real-estate assets and vehicle assets for people who report at least 1 asset. That is, we will exclude from these analyses anyone who responds that they have 0 real-estate or vehicle assets (for H3a and H3b respectively), which means our effective sample size will be smaller.

For each of the outcome measures related to H1, H2, and H4, we used baseline descriptive data for to estimate what a standardized "small effect" ( $d = 0.15$ ) translates to in real terms, summarized in Table 1. These estimates will be imperfect, because of outliers in the past data, and because the current bankruptcy applicants (included in the trial) may differ from past bankruptcy applicants.

Table 1: Summary of estimated small effect size (Cohen's  $d/h = 0.15$ ) translated for each hypothesis and outcome measure, on the basis of baseline data.

	<b>Outcome measure</b>	<b>Baseline descriptive data</b>	<b>Effect size in real terms (i.e., difference between treatment and control)</b>
H1	Completion rates	NA	5.0-7.5 percentage points change in completion rates
H2a	Count of real estate assets	2018: M = 0.22 2019: M = 0.23 Mode = 0	6.5 percentage points change in those reporting <i>any</i> asset (vs 0)
H2b	Count of vehicle assets	Since 2007: M = 0.82, SD = 0.80 (Mode & Median = 1)	0.12 vehicles
H4a	Income in past year	M ~ \$47,000 SD* = \$20,000	\$3,000
H4b	Income next year	M ~ \$44,000 SD* = \$20,000	\$3,000

\*These standard deviations were not calculated directly; instead they are estimates based on assumptions about cut-offs (see above) and histograms of baseline data

## Method of analysis

### Treatment of outliers

AFSA will group/bin outliers in order to mask the identity of respondents. When providing the data to BETA, AFSA will also provide a record of how this process was conducted, and how many respondents it concerns.

If we discover extreme outliers in our data (e.g., +/- 3 SD), we may exclude those cases from the relevant analyses. We will make any decisions about excluding outliers before we analyse the effect of the treatment, and we will clearly describe these decisions as ad hoc in the final report.

## Method of analysis

We will use ordinary least squares (OLS) regression to estimate the effects of our intervention.

For all hypotheses (H1-H4), effect estimates, confidence intervals, and  $p$ -values will be derived from the following model:

$$1. Y = \alpha + \beta T + \varepsilon$$

Where  $Y$  is one of: rate of completion (H1); the number of reported assets (real estate assets and vehicle assets separately, H2); the mean value of assets (H3); or reported income (current and next year separately, H4).  $T$  indicates whether the respondent was allocated to treatment or control, and  $\varepsilon$  is the error term.

For H1 we will fit this model to the full data set, coding complete forms as 1, and other forms (dropout, incomplete, or completed offline) as 0. However, we will exclude participants who were court ordered to apply for bankruptcy (see further details about this cohort below).

For H2-H4 we will fit this model only to completed forms (excluding incomplete, dropout, or completed offline forms). For H3 (value of assets), we will exclude respondents who reported 0 vehicle (H3a) or 0 real estate (H3b) assets.

## Secondary analysis for H1

Our primary analysis for H1 compares complete forms to all others (dropouts, incompletes, and completed offline). As a secondary analysis, we will use the model above, with  $Y$  being rate of dropout (coding dropouts as 1 and all others as 0). This will allow us to comment on whether the treatment is causing people to drop out entirely, or merely take longer to complete the form.

## Missing data

There are three sources of missing data in the present trial: Dropout forms, incomplete forms, and missing fields.

**Dropout forms:** One of the outcomes for this trial is the number of completes versus dropouts (see above for definition). We expect this to differ by treatment arm, specifically, we expect those in the intervention group will have a higher (lower) number of dropouts (completes) than those in the control group. As the rate of

completions (dropout) is the outcome of interest for H1, this test will not be affected. However, the dropout could lead to differences in missing data between intervention and control for H2, H3 and H4. (Because data from dropout forms will be ‘missing’ in the analyses for H2-H4.)

This missingness will be Missing Not At Random (MNAR) as it is conditional both on treatment and (possibly) on factors that we do not have in our dataset, and therefore we cannot use standard missing data methods. Another way to consider missingness is to consider whether it is missing independent of potential outcomes (MIPO). In this case, we expect that drop-outs may be driven by a realisation of the consequences of bankruptcy (e.g., assets at risk of seizure, income being garnished), which may be more likely to impact applicants with greater value assets or income – in other words, missing data would *not* be independent of drop-out/missingness. If we encounter this potential problem, we will interpret results with caution and provide appropriate caveats.

**Incomplete and offline forms:** Another form of missing data is from forms classified as “incomplete” or “completed offline” (see above). We are not planning to analyse these forms in our primary analyses (except for in H1), and we do not know whether the number or type of incomplete/offline forms will differ between intervention and control. We will take this into account when we analyse results (for H2-H4), and provide appropriate caveats if necessary.

**Missing fields:** For the outcome measures for H2-H4, we are analysing only complete forms (i.e., not dropouts or incomplete forms). Outliers (described above) will also be “missing”. If there is a substantial amount of outliers, we will provide appropriate caveats around our confidence in the results for that outcome measure.

### **Interpretation of results**

The main question of interest is how and whether the prompts in the online form influence reporting behaviour (including completion). We will consider *p*-values together with effect size, robustness checks and design limitations to assess the strength of a finding.

As our main question is about differences between the two versions of the form, if we *do not* see a significant effect of treatment (compared to control), we will conduct an equivalence test to assess our confidence in this null result. For this equivalence

test, our smallest effect size of interest (SESOI) will be set to Cohen's  $h/d = 0.15$ . Refer to the power analysis above to see what this effect size translates to in real terms (e.g., in \$ amounts, number of assets) for each outcome measure.

### **Threats to the trial**

**Re-randomization:** If a bankruptcy applicant deletes their online form and re-starts the process of applying for bankruptcy, they will be re-randomized (as if they were a new participant). In that case, we will use the applicants' *first* condition assignment, and their *final* data (intention-to-treat approach). This occurs very rarely, estimated  $n < 5$ . We will record each case and report the total number.

**Filing jointly:** It is possible to apply for bankruptcy with another person (for example, as a couple). Both individuals must complete separate application forms, and are therefore separately randomly assigned to a condition (which may be the same, or different). Once both individuals have submitted their forms, their data is combined into a joint case for AFSA's administration purposes. We will use each applicant's individual condition assignment, and, where possible, their individual data. For cases where the data has already been combined, we will use each applicant's individual condition assignment, but each individual will have the same (combined) data.

### **Sub-group and exploratory analysis**

We may also conduct a series of exploratory analyses:

- Subgroup analysis of those who have been court-ordered to apply for bankruptcy (see further detail in Appendix A).
- Subgroup analysis by age and gender.
- Analysis of the meta-data, including the number of attempts and time taken to complete the form, to understand how prompts impact user experience
- Analysis of forms that have not been completed but also have not been abandoned (i.e., they are still being edited). We may analyse forms which were started online but completed offline, but we are expecting only a very small number of these and will therefore not be able to draw any strong conclusions
- Discontinuity tests around various thresholds at which conditional prompts trigger.



These analyses will depend on the data, and are exploratory rather than confirmatory.

### **Robustness checks**

The outcome measures for H3 and H4 (value of assets, and income) are continuous, but we will conduct logistic regression as robustness checks for H1 and H2.

### **Pre-analysis plan commitments**

No analysis has been undertaken prior to the completion of this pre-analysis plan. The AFSA bankruptcy form went live on 1 October 2020, so data is currently being collected. BETA will not receive the data until the trial is complete and AFSA have conducted initial data cleaning. We will be transparent about, and provide justification for, any deviations (additions or omissions) from this plan.

## Appendix A: Warnings

To ensure people understand the consequences of bankruptcy, the application process contains a number of 'warnings' outlining these consequences. Specifically, a typical applicant will be exposed to three types of warnings:

1. A consequences tool- a seven-question tool designed to provide personalised feedback on the consequences of bankruptcy. For example, the tool asks if the applicant owns a house, and if the answer is affirmative, the tool advises that the house may be sold. Most applicants will need to complete the tool as the first step in applying for bankruptcy.<sup>2</sup>
2. Prescribed information- the Bankruptcy Act prescribes that all potential applicants need to be informed of the consequences of the bankruptcy in the actual application form. The prescribed information contains 14 points, spread across nine screens, about what will happen next and steps the applicant can take before applying. The applicant needs to acknowledge they read and understood information on each one of the nine screens by ticking 'I acknowledge button'.
3. Within the form, conditional on what the applicant enters into a specific field, a warning relating to bankruptcy may pop-up. There are also some static warnings (total of 19). The five prompts that are subject to evaluation in the current trial are outlined below.

**Question 28. This prompt appears if the applicant records their income above \$78,000.** It reads:

*You may be required to contribute some of your income if you are earning above the set income threshold. Use AFSA's income contributions calculator to estimate any annual contributions you may need to make if you are bankrupt.*

**Question 41. This prompt is always visible.** It reads:

*During bankruptcy your trustee may sell your assets, including your vehicle. You can keep a vehicle to be used mainly for transport up to a set amount. Once the value of the vehicle exceeds this amount your trustee may claim and sell it.*

*Please take care listing all your vehicles. You must disclose all vehicles you currently own. You must also let your trustee know if you come into possession of a vehicle during your bankruptcy. Penalties apply for not*

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<sup>2</sup> People who are court ordered to file for bankruptcy do not need to complete the tool

*disclosing information. Your trustee may verify whether the information submitted is complete.*

**Question 44. The prompt is always visible.** It reads:

*When you become bankrupt your trustee becomes the custodian of your share of any house or property that you own. Your trustee will have control over the property and can sell it.*

*Please take care listing all your real estate assets. You must disclose all assets you currently own. You must also let your trustee know if you come into possession of any real estate during bankruptcy. Penalties apply for not disclosing information. Your trustee may verify whether the information submitted is complete.*

**Questions 34. There are two conditional prompts here, one that appears when applicants enters debt that would not be covered by filing for bankruptcy.** It reads:

*This debt may not be covered by bankruptcy and you may still have to continue to make payments to the creditor. We recommend you contact the creditor to determine if the debt will be covered by bankruptcy. Visit the AFSA website for more information or Contact us. If these debts make up the majority of your debts please reconsider bankruptcy and consult a Financial Counsellor on 1800 007 007 or visit the National Debt Helpline website.*

The second prompt appears if the applicant indicates that they owe money because of a motor vehicle accident. The warning reads:

*This debt is not covered by bankruptcy unless the money you owe has been set (for example, by court order or issued letter of demand). Contact us to discuss.*

Some people are completing the bankruptcy form because they were court-ordered to do so. This cohort went through a slightly different process before attempting the application form in that they would have had to go through the court system and did not complete the 'consequence tool'. Because these respondents have to submit the form before their bankruptcy period (3 years and 1 day) can start, AFSA are concerned about their dropout rates. We will therefore examine the rate of form completion on this subgroup separately. We do not expect that they will be a large enough cohort to make confident claims about them as a subgroup. We will identify the respondents who were court-ordered to apply for bankruptcy by checking applicant's answers to question 13 in the form, *Why are you completing this form?* (response option: "Someone else made me bankrupt through a court order").