AB test results

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# Introduction

The general introduction of the specific AB test will be placed here to put the readers into context.

# Technical note

Necessary packages like tidyverse, sandwich, lmtest, and plm are imported. The latter three are used to create the needed statistical tests and regressions. Data was imported from the **latin\_america\_request** sandbox from the **IMS** server. We have **1.297355^{5}** observations of which **1108.5** were treated.

We conducted a **case\_3** type of research, meaning existing members were tested **with randomization**. Based on the data structure, the appropriate statistical processes had been used. The variable of our interest was **crd\_spent** and we analysed its change as a reaction to the test. In all cases, we used robust standard errors to control for the effect of potential influential data points (i.e. whales). In all cases, we used a **5%** significance level in our statistical tests.

Moreover, we corrected for the latent effect of time-invariant features, like salary and age, using a **random effects** transformation on our data.

# Results

The key parameter to observe here is the interaction term “during\_test:AB”. This term represents the causal effect of the treatment over time. To determine if this effect is statistically significant, we look at the p-value associated with this interaction term. If the p-value is lower than the threshold we set at the beginning of the analysis ( 0.05 ), we conclude that the treatment has a significant effect. If the p-value is higher than this threshold, it indicates that the observed effect could be due to chance, and we cannot confidently say that the treatment had an effect.

|  | Estimate | Std. Error | t value | Pr(>|t|) |
| --- | --- | --- | --- | --- |
| (Intercept) | 230.873580 | 4.211223 | 54.8234043 | 0.0000000 |
| during\_test | -4.800715 | 3.551563 | -1.3517188 | 0.1764665 |
| AB | 2342.784918 | 926.924085 | 2.5274831 | 0.0114889 |
| during\_test:AB | -532.808309 | 558.389648 | -0.9541873 | 0.3399897 |

| Condition | Control Group | Treated Group |
| --- | --- | --- |
| Before | 230.8736 | 2573.658 |
| After | 226.0729 | 2036.049 |

**Result**: The analysis indicates no significant interaction effect of the treatment and time on the crd\_spent variable.