# MixBABA Documentation

***Release alpha***

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CHAPTER 1

# Usage

To call this tool you can make use of the following options:

```
usage: mixbaba [-h] -f FUNNELS -k KEY [-v] [-o {terminal,csv,both}]
               [-of {long,short}] [-x]
```

## 1.1 Named Arguments

| | |
|---|---|
| **-f, --funnels** | The JSON file with the details about the funnels to be analyzed |
| **-k, --key** | The key to authenticate within Mixpanel |
| **-v, --verbosity** | increase output verbosity (max: -v) |
| | Default: 0 |
| **-o, --output** | Possible choices: terminal, csv, both |
| | The form in which you want to get the output |
| | Default: “terminal” |
| **-of, --output_format** | Possible choices: long, short |
| | The format in which the output will be visualized/recorded |
| | Default: “short” |
| **-x, --crossed_filters** | Whether or not run with filters combinations |
| | Default: False |

# CHAPTER 2

## Content of the JSON file

In this section we will discuss the fields (both mandatory and optional) that MixBABA expects to see in the JSON file.

Let's start with a simple example. The following JSON contains the data needed to run through a single funnel:

```
[
    {"ID": 5397671,
        "From Date": "2018-01-28",
        "To Date": "2018-12-28",
        "Impression field name": "AB-AB025-IMPRESSION",
        "Conversion field name": "Payment",
        "By": "properties.assignment"
    }
]
```

But if you want you can specify more than one funnels.

The mandatory fields are:

- **ID** : this is the number associated to the funnel we are going to analyze (see Figure 1)
- **From/To Date** : the time range where you want to analyze the funnel
- **Impressions/Conversions field name** : the two fields are needed to point out the right data
- **by** : the name of the field in which the cohorts (e.g. *control*, *test*) are divided

```
imgs/funnel_id.png
```

Fig. 1: **Figure 1:** Where find the number of the funnel

By feeding MixBABA with this JSON, which we will call *simple.json*:

```
mixbaba -k <your key> -f simple.json
```

you will get a result similar to this:

```
------------------------------------------------------
Results for the funnel 5397671 -- AB025 Lower therm price (payment analysis)
Control group is: control, test group is test
Group      Control Impressions    Control Conversions    test Impressions    test␣
↪Conversions    test CR improvement    test Probability
-------  --------------------  --------------------  ------------------  -----------
↪-------  --------------------  ------------------
All.All                  34164                   253               31105
↪    284               0.232387            0.992551                                ␣
```

In particular, you can read:

- The funnel name (*AB030 Old signup flow* in this example). This name is extracted from Mixpanel;
- the name of the control and test group ("control" and "test"). The names are automatically extracted from the data gathered from Mixpanel. If a second control group is present, it will be automatically analyzed and taken in account

Note that the names of the groups are automatically found because they follow this simple naming convention:

- the control group is called *control*; an eventual second control group can be present with the name *control2*
- the test group= are called *testX*, where *X* can be just void (*test*) or a one digit integer (ex. *test2*, *test5*)

In the table you can see the absolute numbers of impressions and conversions for the two group, the improvement which the test option have with respect to the control one, and the probability for this last affirmation to be true.

The very first column (Group = All.All) tells us that the data has not been further filtered.

If you specified more than one funnel in the JSON file, you will get one table for each funnel.

If instead you want to get the results as a CSV file (or many CSV files, in case you specified several funnels in the JSON), you have to specify this in the command:

```
mixbaba -k <your key> -f simple.json -o csv
```

In this case you will get a file with *funnelID-funnelname* as name (ex. 5397671-AB025 Lower therm price (payment analysis).csv).

Note that you can also have bot the console visualization and the CSV file, by specifying *-o both*.

## 2.1 Filters

To add a filter on which divide the data, we just have to add a field to the JSON file:

```
[ {"ID": 5397671,
      "From Date": "2018-01-28",
      "To Date": "2018-12-28",
      "Impression field name": "AB-AB025-IMPRESSION",
      "Conversion field name": "Payment",
      "By": "properties.assignment",
      "filters":
                {"user.goal": ["PREVENT", "PLAN"],
                "user.$country_code": ["US", 'SE']}}
]
```

The "filter" field accept a list of the filters to be used, together with a list of the values on which we are interested.

The command to be launched is exactly the same, but in this case we will get as output also the results filtered:

```
------------------------------------------------------
Results for the funnel 5397671 -- AB025 Lower therm price (payment analysis)
Control group is: control, test group is test
Group               Control Impressions    Control Conversions    test Impressions
↪test Conversions    test CR improvement    test Probability
----------------  ---------------------  ---------------------  ------------------  --
↪----------------  ---------------------  ------------------
All.All                           34164                    253                31105
↪             284               0.232387            0.992551
goal.PREVENT                       6175                     25                 6016
↪              37               0.500153            0.947624
goal.PLAN                          1561                      5                 1411
↪               5               0.106157            0.568093
$country_code.US                  16630                    224                15436
↪             242               0.163529            0.950558
$country_code.SE                   8027                     23                 7277
↪              35               0.654554            0.974197
```

### 2.1.1 Cross filtering

You may be interested in cross-filtering the results. In such case, you only have to add a *-x* option to the command:

```
mixbaba -k <your key> -f filename.json -x
```

The result will be something like:

```
------------------------------------------------------
Results for the funnel 5397671 -- AB025 Lower therm price (payment analysis)
Control group is: control, test group is test
Group                            Control Impressions    Control Conversions    test
↪Impressions    test Conversions    test CR improvement    test Probability
-----------------------------  ---------------------  ---------------------  ---------
↪---------  ------------------  ---------------------  ------------------
All.All                                       34164                    253
↪    31105                 284               0.232387            0.992551
goal.PREVENT                                   6175                     25
↪     6016                  37               0.500153            0.947624
goal.PLAN                                      1561                      5
↪     1411                   5               0.106157            0.568093
$country_code.US                              16630                    224
↪    15436                 242               0.163529            0.950558
$country_code.SE                               8027                     23
↪     7277                  35               0.654554            0.974197
goal.PREVENT+$country_code.US                  5690                     25
↪     5528                  37               0.504354            0.948845
goal.PREVENT+$country_code.SE                   295                      0
↪      298                   0                    nan                 nan
goal.PLAN+$country_code.US                     1390                      5
↪     1228                   3              -0.245528            0.318043
goal.PLAN+$country_code.SE                      134                      0
↪      139                   0                    nan                 nan
```

As you see, the more you filter the less data you have, and so you can end up with zeros and undefined values.

### 2.1.2 Optional fields

For ad-hoc analyses, other fields can be specified:

- Names for the groups; this can be useful in case the groups specified in the funnel do not follow the naming convention, or if you are maybe not interested in all the test groups' results In this case you can specify them manually:

```
"AB Groups": {"Control":"controllo", "Control2":"secondo_controllo", "Test": "test
↪"}
```

- a further brakedown of the data

Mixpanel Bayesian AB Test Analysis tool (MixBABA) is a command line tool intended to speed up the analysis of the AB test which events are recorded in Mixpanel.

This tool is intended to consume a JSON file containing details about a Mixpanel funnel and output the results of the analysis made within a Bayesian framework.

You can find details about how the data is processed In this blog post.

For a quick guide check the homepage on GitHub

CHAPTER 3

# Indices and tables

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