How many times have users turned off the notifications?

05/06/2019

Step 1: Data selection

The selected file analyzes 210 users for 329 days, from the beginning of the experimental phase (06.09.2017) until the end (11.01.2018).

Step 2: Pre-processing

```
##   Day       Date                                                Action UID01
## 1  31 2017-09-06 [Admin] The following UIDs have been unregistered    64
## 2  32 2017-09-07 [Admin] The following UIDs have been unregistered     2
## 3  36 2017-09-08 [Admin] The following UIDs have been unregistered    64
## 4  40 2017-09-09 [Admin] The following UIDs have been unregistered    76
## 5  44 2017-09-10 [Admin] The following UIDs have been unregistered    99
## 6  63 2017-09-12 [Admin] The following UIDs have been unregistered    99
##   UID02 UID03 UID04 UID05 UID06 UID07 UID08 UID09 UID10 UID11 UID12
## 1    76    79   108   143   162   222   237    NA    NA    NA    NA
## 2    64    76    79   136   162   222   237    NA    NA    NA    NA
## 3    76   237    NA    NA    NA    NA    NA    NA    NA    NA    NA
## 4    NA    NA    NA    NA    NA    NA    NA    NA    NA    NA    NA
## 5    NA    NA    NA    NA    NA    NA    NA    NA    NA    NA    NA
## 6    NA    NA    NA    NA    NA    NA    NA    NA    NA    NA    NA
```

Data has already been pre-processed and only data in the selected period and only notifications stating "The following UIDs have been unregistered" are shown.

Step 3: Transformation

For each day, the list of users is extracted.

```
##         Date                                                Action Column UID
## 1 2017-09-06 [Admin] The following UIDs have been unregistered  UID01  64
## 2 2017-09-06 [Admin] The following UIDs have been unregistered  UID02  76
## 3 2017-09-06 [Admin] The following UIDs have been unregistered  UID03  79
## 4 2017-09-06 [Admin] The following UIDs have been unregistered  UID04 108
## 5 2017-09-06 [Admin] The following UIDs have been unregistered  UID05 143
## 6 2017-09-06 [Admin] The following UIDs have been unregistered  UID06 162
```

Each user appears once at the most every day.
We check that by counting how many times a UID appears every day.

```
## # A tibble: 6 x 3
## # Groups:   Date [1]
##   Date         UID     n
##   <date>     <dbl> <int>
## 1 2017-09-06    64     1
## 2 2017-09-06    76     1
```

```
## 3 2017-09-06    79     1
## 4 2017-09-06   108     1
## 5 2017-09-06   143     1
## 6 2017-09-06   162     1
```

Then, we filter only those that appear more than once. The resulting table is empty.

```
## # A tibble: 0 x 3
## # Groups:   Date [0]
## # ... with 3 variables: Date <date>, UID <dbl>, n <int>
```

Some user in the list appears to be assigned to UID that are not in the user liste (UID= 64, 79, 108, 143, 162, 222, 237). They shall be removed from the next table, which contains only active users.

```
## # A tibble: 6 x 4
## # Groups:   Date [6]
##   Date         UID Type  Active
##   <date>     <dbl> <fct> <fct>
## 1 2017-09-06    76 CON   Active
## 2 2017-09-07    76 CON   Active
## 3 2017-09-08    76 CON   Active
## 4 2017-09-09    76 CON   Active
## 5 2017-09-10    99 CON   Active
## 6 2017-09-12    99 CON   Active
```

Step 4: Data mining

The resulting table presents the sum of how many times participants have turned the system off, divided by type of intervention.

```
## # A tibble: 4 x 2
## # Groups:   Type [4]
##   Type      n
##   <fct> <int>
## 1 CON      70
## 2 FIX      56
## 3 LOT      48
## 4 POW      83
```

An in-depth analysis allows observing some interesting trends concerning how many times each user has turned the system off.

The amount of times each participant has turned the system off varies greatly among particiapants.

```
## # A tibble: 19 x 3
## # Groups:   Type [4]
##    Type    UID     n
##    <fct> <dbl> <int>
##  1 CON      56     9
##  2 CON      57    14
##  3 CON      76     8
##  4 CON      99     2
```

```
##  5 CON     112    13
##  6 CON     415    24
##  7 FIX     229    15
##  8 FIX     233     1
##  9 FIX     235    11
## 10 FIX     265     5
## 11 FIX     273    20
## 12 FIX     278     4
## 13 LOT     192     7
## 14 LOT     207    31
## 15 LOT     218    10
## 16 POW     115    21
## 17 POW     118     5
## 18 POW     147    27
## 19 POW     306    30
```

By gathering the information about the participant, it is possible to count how many participants are listed in each type.

```
## # A tibble: 4 x 2
## # Groups:   Type [4]
##   Type      n
##   <fct> <int>
## 1 CON       6
## 2 FIX       6
## 3 LOT       3
## 4 POW       4
```

Consequently, it is possible to obtain the average of how many times each user has turned the system off.

```
## # A tibble: 4 x 2
## # Groups:   Type [4]
##   Type      n
##   <fct> <dbl>
## 1 CON   11.7
## 2 FIX    9.33
## 3 LOT   16
## 4 POW   20.8
```

In the end, it apperars that the average of CON (11.67) is smaller than the average of LOT (16).

Step 5: Evaluation

As requested, the current analysis allows stating that:

- In CON condition users turned off the notifications 70 amount of times.
- In FIX condition users turned off the notifications 56 amount of times.
- In LOT condition users turned off the notifications 48 amount of times.
- In POW condition users turned off the notifications 83 amount of times.