wi_sem_team_14_plotting

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Short summary of the raw dataset

```
summary(data_event_log)
```

```
##    CASE_ID            ACTIVITY          TIMESTAMP
##  Length:178078      Length:178078      Min.   :2013-05-22 10:39:39
##  Class :character   Class :character   1st Qu.:2018-06-11 09:41:52
##  Mode  :character   Mode  :character   Median :2018-10-31 10:17:36
##                                        Mean   :2018-10-16 14:14:51
##                                        3rd Qu.:2019-02-23 10:12:57
##                                        Max.   :2019-06-28 08:39:30
##  REPAIR_IN_TIME_5D  DEVICETYPE        SERVICEPOINT
##  Min.   :0.000     Length:178078      Length:178078
##  1st Qu.:0.000     Class :character   Class :character
##  Median :0.000     Mode  :character   Mode  :character
##  Mean   :0.326
##  3rd Qu.:1.000
##  Max.   :1.000
```

```
head(data_event_log)
```

```
## # A tibble: 6 x 6
##   CASE_ID ACTIVITY  TIMESTAMP           REPAIR_IN_TIME_~ DEVICETYPE SERVICEPOINT
##   <chr>   <chr>     <dttm>                         <dbl> <chr>      <chr>
## 1 Case10  Creation  2018-01-02 13:39:47                0 AB52       E
## 2 Case10  Letter    2018-01-05 00:00:00                0 AB52       E
## 3 Case10  DeviceRe~ 2018-01-05 16:45:34                0 AB52       E
## 4 Case10  StockEnt~ 2018-01-17 00:00:00                0 AB52       E
## 5 Case10  InDelive~ 2018-01-17 00:00:00                0 AB52       E
## 6 Case10  NoteWork~ 2018-01-17 07:37:19                0 AB52       E
```

Wertebereich für interessante Spalten ausgeben

```
unique(data_event_log$ACTIVITY)
```

```
##  [1] "Creation"       "Letter"         "DeviceReceived" "StockEntry"
##  [5] "InDelivery"     "NoteWorkshop"   "Completed"      "NoteHotline"
##  [9] "StatusRequest"  "Transmission"   "Approved"       "FreeticketCust"
## [13] "FreeticketComp"
```

```
unique(data_event_log$DEVICETYPE)
```

```
##  [1] "AB52" "AB41" "AB47" "AB22" "AB49" "AB62" "AB29" "AB63" "AB20" "AB53"
## [11] "AB50" "AB44" "AB45" "AB36" "AB61" "AB16" "AB34" "AB25" "AB40" "AB8"
## [21] "AC68" "AB38" "AB65" "AB60" "AB31" "AB27" "AB10" "AB19" "AB59" "AB21"
## [31] "AB56" "AB26" "AB55" "AB9"  "AB58" "AB39" "AB14" "AB43" "AB24" "AO7"
```

```
## [41] "AB57" "AB23" "AB28" "AB64" "AB32" "AB15" "AB30" "AF3"  "AB33" "AG5"
## [51] "AB12" "AB51" "AB54" "AB18" "AB17" "AB35" "AB46" "AB37" "AB48" NA
## [61] "AB42" "AG4"  "AB66" "AB67" "AB13"
```

```
unique(data_event_log$SERVICEPOINT)
```

```
##  [1] "E" "G" "J" "L" NA  "C" "H" "I" "K" "D" "B" "A"
```

```
unique(data_event_log$REPAIR_IN_TIME_5D)
```

```
## [1] 0 1
```

Data cleaning

Some data exploration

```
## [1] "Number of datapoint in the clean dataset:"
```

```
## [1] 161553
```

```
## [1] "Number of unique case IDs:"
```

```
## [1] 21931
```

Some data modification and testing

- creating column DATE (timestamps without the time information)
- creating column WEEKDAY (not sure if we need this as a column in the dataset, can just compute it insitro when needed)

```
case_id_aggregated_information <-
  df_cl_mod %>% group_by(CASE_ID) %>%
  summarise(SERVICEPOINT = first(SERVICEPOINT),
            DEVICETYPE = first(DEVICETYPE),
            ACTIVITY_COUNT = n(),
            START_DATETIME = min(TIMESTAMP),
            END_DATETIME = max(TIMESTAMP),
            RIT = first(REPAIR_IN_TIME_5D),
            THROUGHPUT_TIME_HOURS =
              as.numeric(difftime(END_DATETIME, START_DATETIME, units="hours"))
)
# order dataset based on START_DATETIME
case_id_aggregated_information <- case_id_aggregated_information[order(case_id_aggregated_information$S

rit_cases_too_long <- case_id_aggregated_information[case_id_aggregated_information$RIT == 1 & case_id_a
```

creating a new dataframe containing aggregated information per case_id write out the new datasets to csv

```
# writing the modified df to csv with relative path to the folder "data"
write.csv(df_cl_mod, "../data/modified_logs.csv")
write.csv(case_id_aggregated_information, "../data/case_id_aggreagted_information.csv")
```

Basic univariate plotting

our quantitative variables are :

- NONE ??

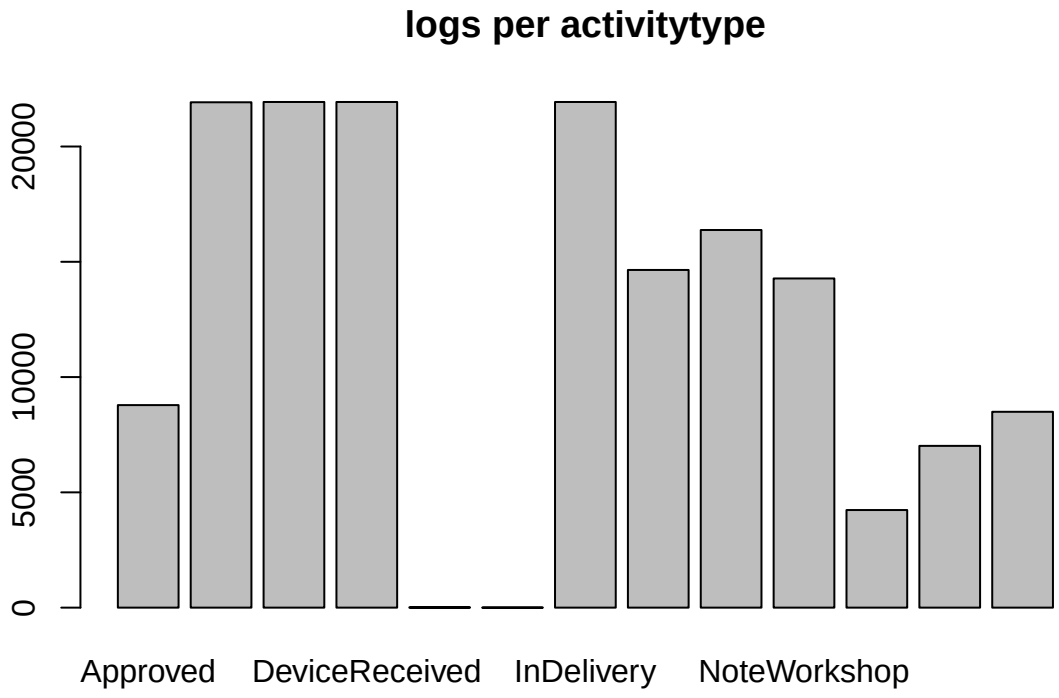
our qualitative variables are:

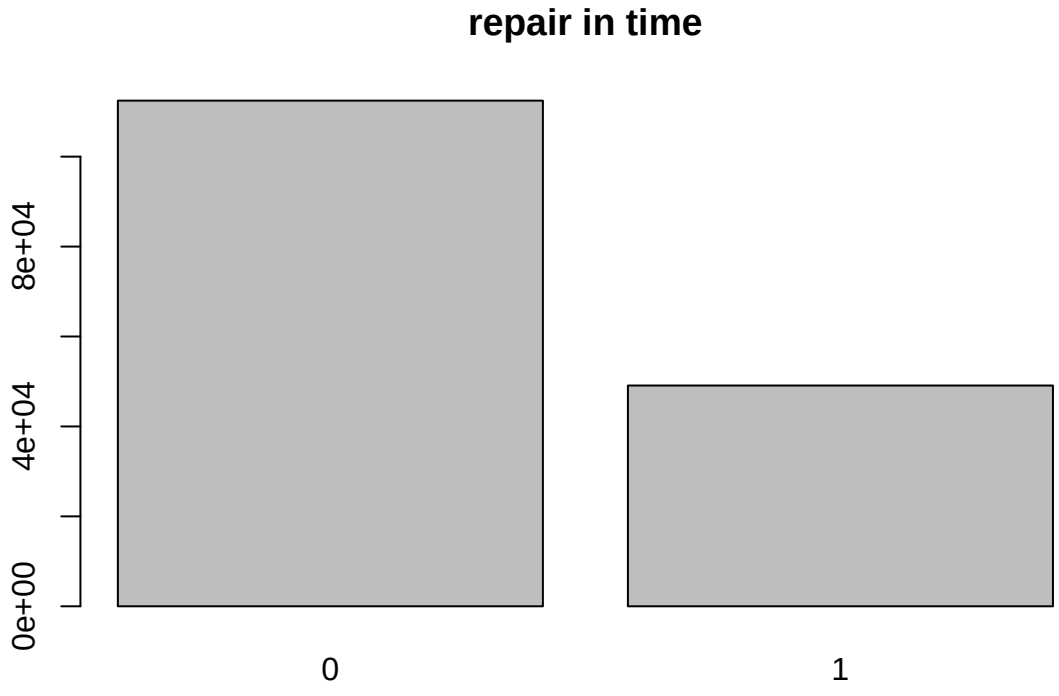
- CASE_ID (not sure tbh, bc this is part of the "primary key" of the dataset entities) {string} <- maybe convert to integer for easier processing
- ACTIVITY {string}
- SERVICEPOINT {char}
- DEVICETYPE {string}
- REPAIR_IN_TIME {double} <- maybe convert to boolean for easier processing

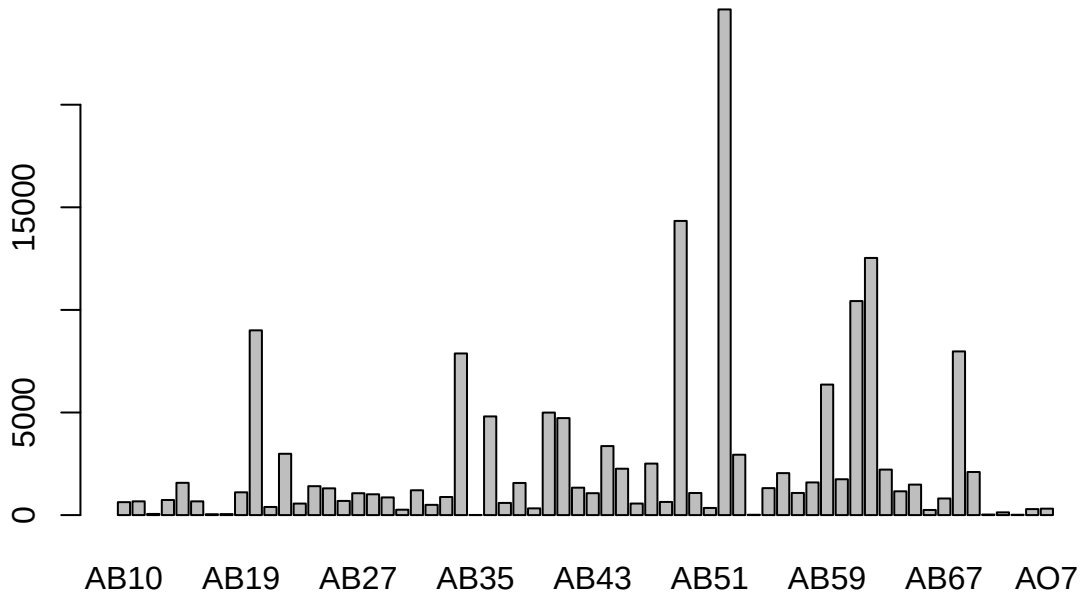
neither?:

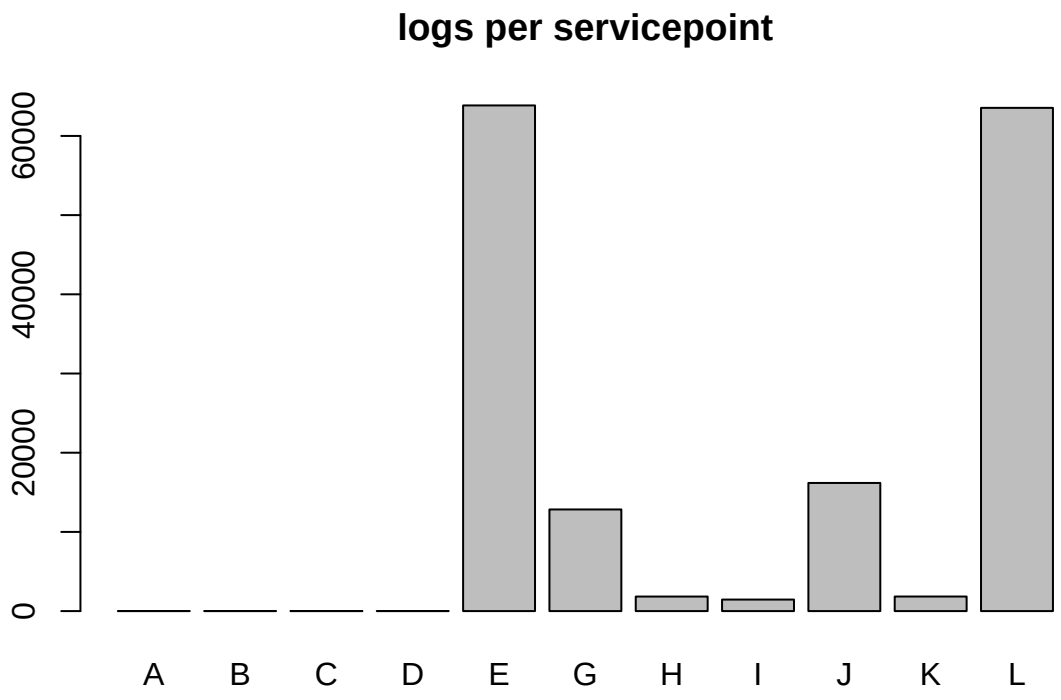
- TIMESTAMP {double - feels more like a string tho}

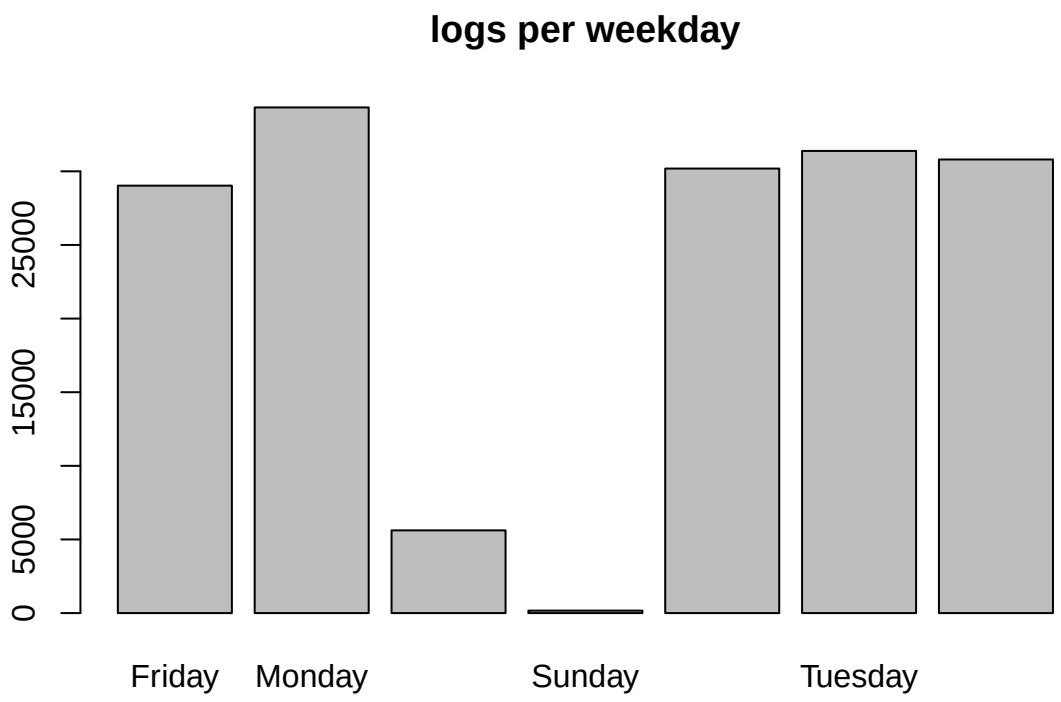
Plotting the frequency of our qualitative variables:

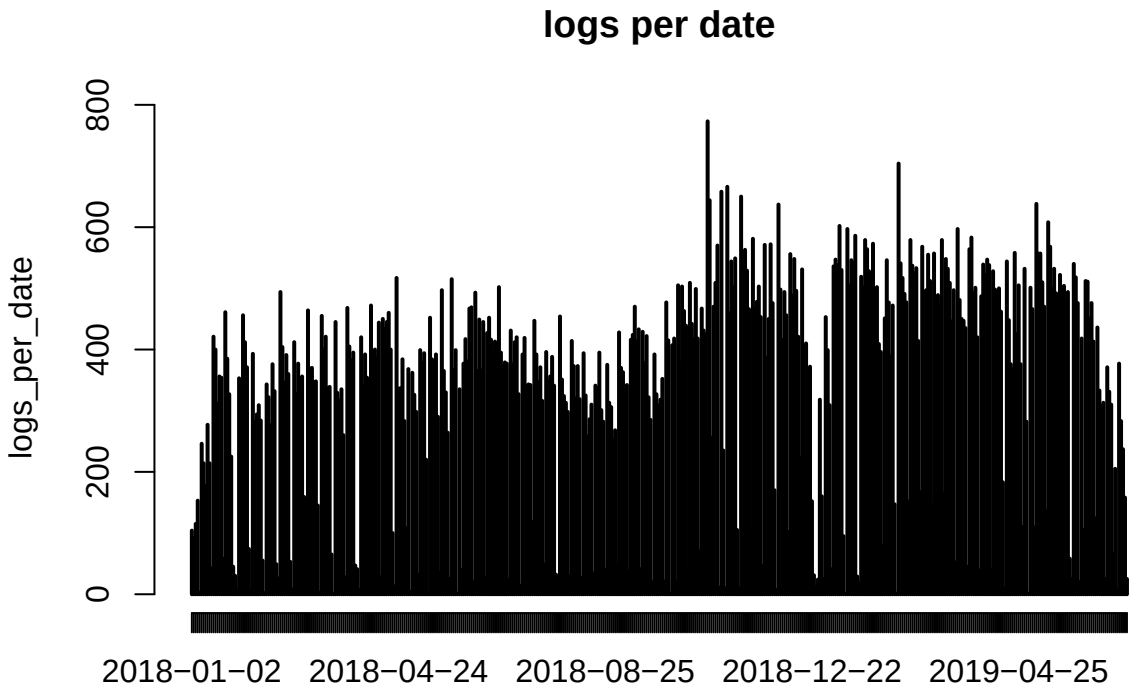




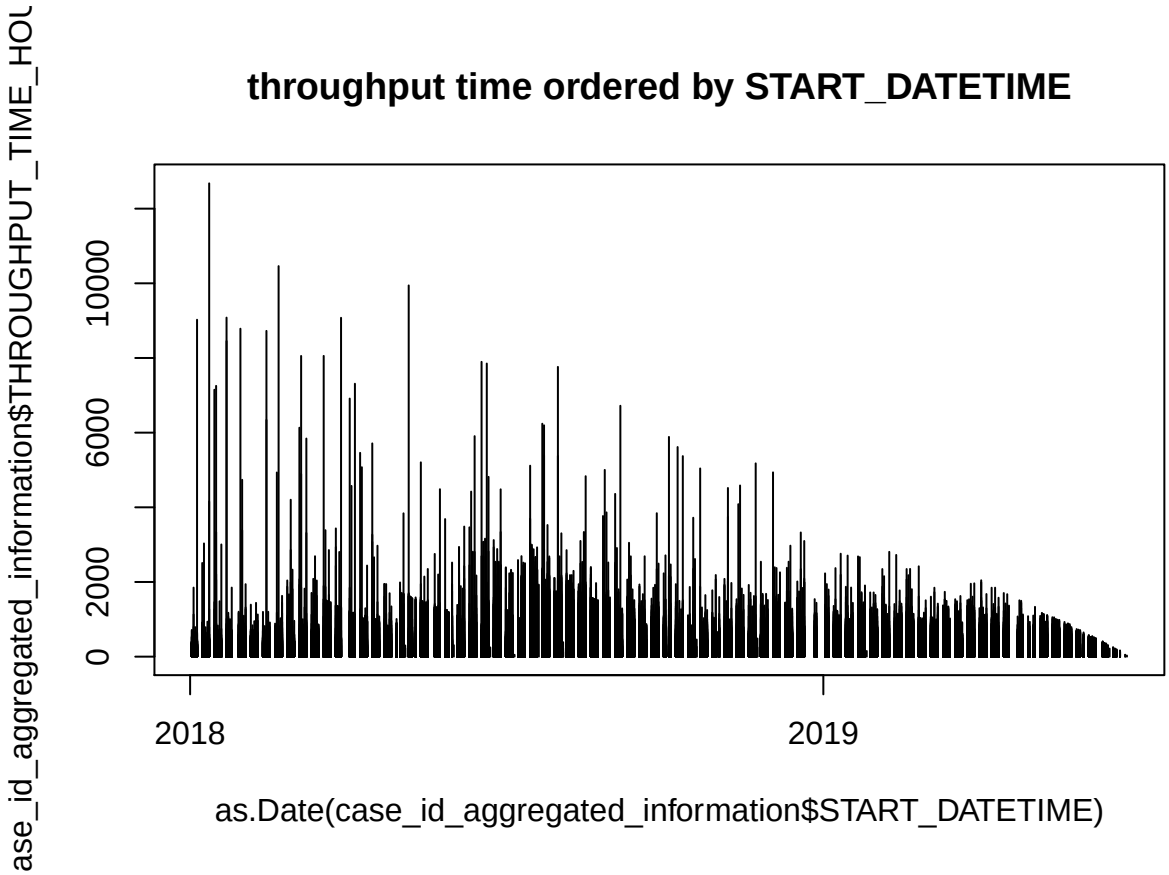

logs per devicetype
0
5000
15000
AB10
AB19
AB27
AB35
AB43
AB51
AB59
AB67
AO7

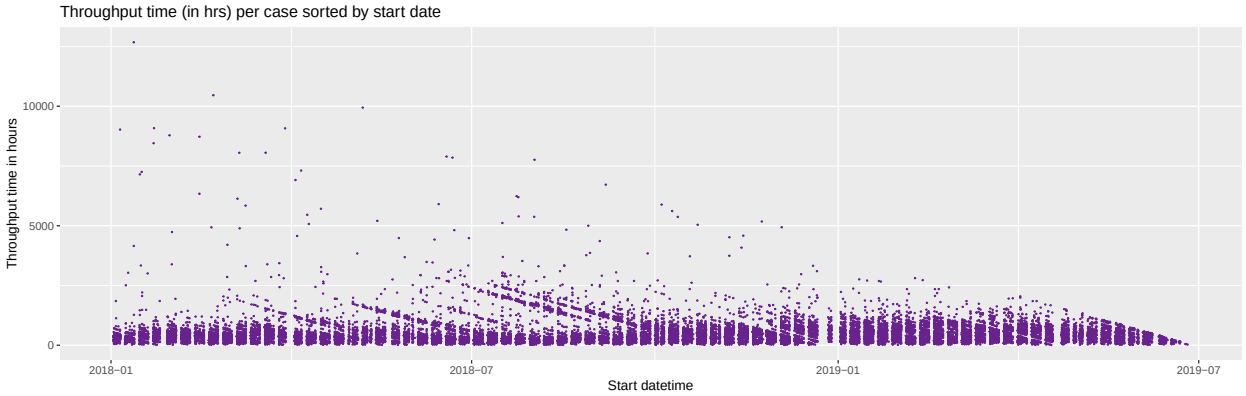

logs per servicepoint
0
20000
40000
60000
A
B
C
D
E
G
H
I
J
K
L

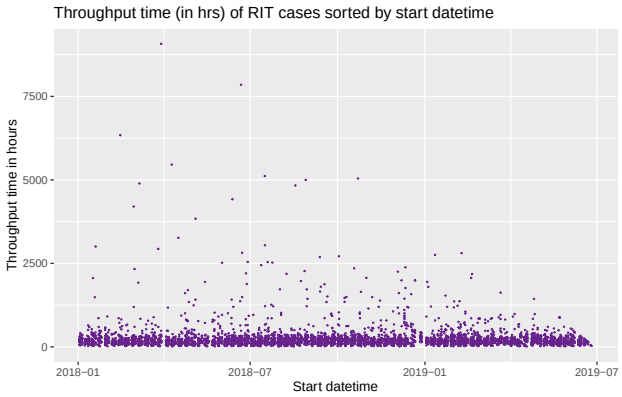

logs per weekday
0
5000
15000
25000
Friday
Monday
Sunday
Tuesday

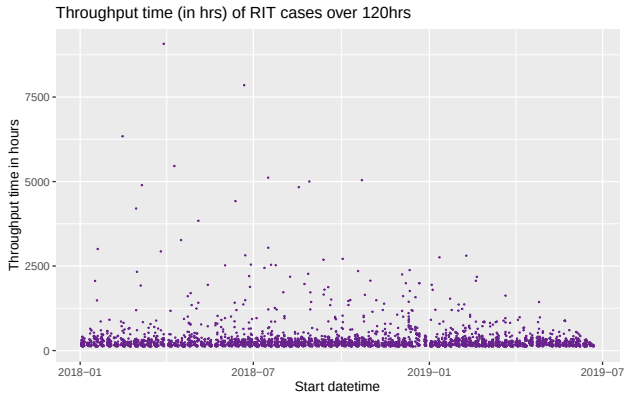


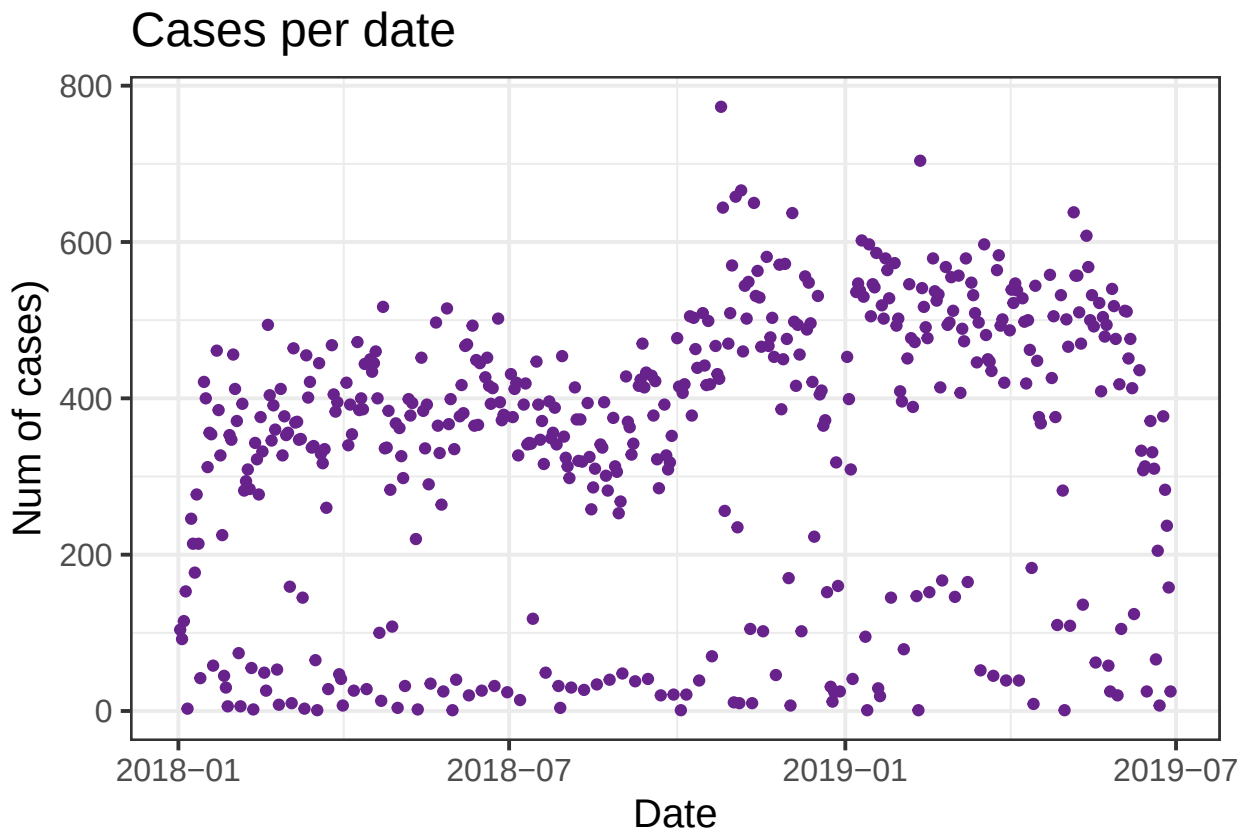

```
plot(main="throughput time ordered by START_DATETIME",as.Date(case_id_aggregated_information$START_DATE
```


throughput time ordered by START_DATETIME
ase_id_aggregated_information$THROUGHPUT_TIME_HOU
0
2000
6000
10000
2018
2019
as.Date(case_id_aggregated_information$START_DATETIME)


Throughput time (in hrs) per case sorted by start date
Throughput time in hours
10000
5000
0
2018−01
2018−07
2019−01
2019−07
Start datetime


Throughput time (in hrs) of RIT cases sorted by start datetime
Throughput time in hours
7500
5000
2500
0
2018−01
2018−07
2019−01
2019−07
Start datetime


Throughput time (in hrs) of RIT cases over 120hrs
Throughput time in hours
7500
5000
2500
0
2018−01
2018−07
2019−01
2019−07
Start datetime


Cases per date
Num of cases)
800
600
400
200
0
2018−01
2018−07
2019−01
2019−07
Date