

Overview

The use of this maintenance data will allow us to make decisions and establish a report. In the database there are eight tables. We have to answer three questions following this analysis.

We note that we have 117 elevators and among these elevators 105 have experienced a breakdown. In addition, each elevator makes technical visits. We will focus on three table.

The elevators table therefore provides information about the elevators, from which we can see the name of the elevator, its id and other information.

The breakdowns table provides information on elevator breakdowns using the id of elevator (elevator_id in breakdowns table) as a foreign key.

The visits table contains information about the technical visits made by the elevators using elevator_id as a foreign key.

Question 1 : what are the 3 elevators with the most breakdowns

To answer this question we counted the number of intervention_costs for each elevator and made a join between the elevators and breakdowns tables by elevator_id for breakdowns table and id for elevators table to get the name of each elevator and then grouped the data by this name.

	name	number_breakdowns
0	UP-00007	7
1	UP-000034	5
2	UP-000012	5

Tableau 1 : number of breakdowns by elevators

We note that the elevator with the most breakdowns is UP-00007 with 7 breakdowns. Then come eight elevators that all had 5 breakdowns, but we present elevators UP-000034 and UP-000012. Note that several elevators have the same response whether it is for those who have had 4 breakdowns or 3. This graph below shows what we are talking about.

Top 10 Elevators with most breakdowns

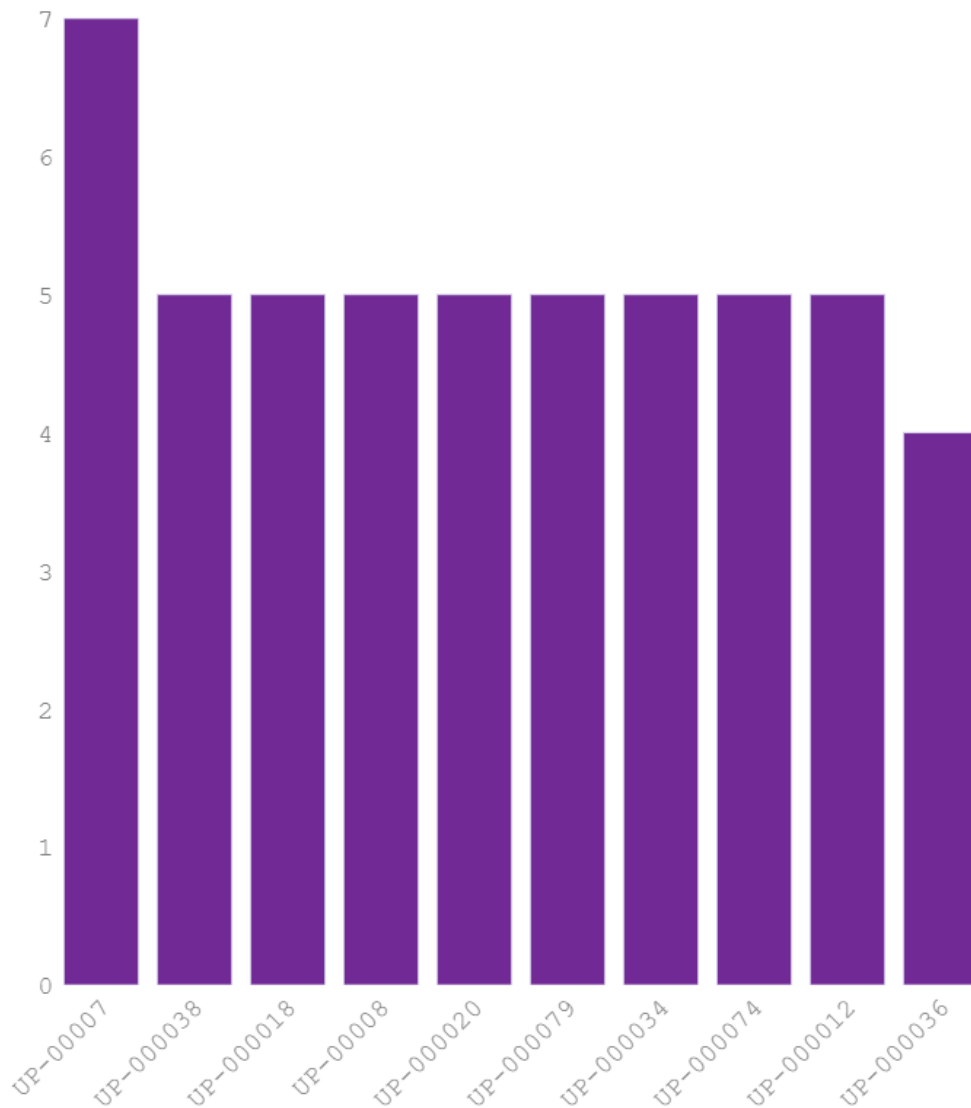


Figure 1: Top 10 of elevators with most breakdowns

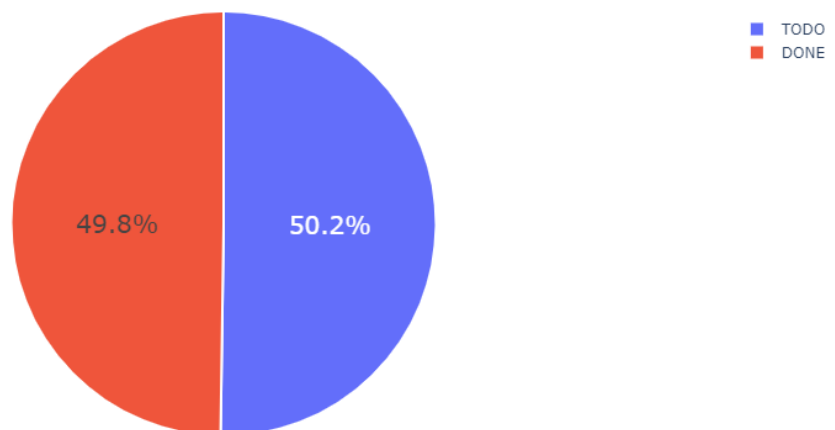
Question 2 -- : for each elevator, when was the last visit done?

To answer this question we looked at the `closed_at` variable in the `visits` table and then took the maximum value of this variable because several visits had been made for each elevator. Finally, given that some visits had not yet been made, we looked at the status of the visit and asked to return only those for which the status was "DONE". We have the following results for each elevator.

	name	last_visit
0	UP-000053	2019-01-07
1	UP-000036	2019-04-19
2	UP-000062	2019-05-12
3	UP-000010	2019-04-28
4	UP-000045	2019-04-20
5	UP-000086	2018-05-26
6	UP-000055	2019-06-01
7	UP-000040	2019-05-09
8	UP-000041	2018-12-03
9	UP-000058	2019-03-01

Tableau 2 : last visit by elevator

To better understand this issue, we wanted to make a repartition of the data by status. This gives us the following pie chart.



We can see that half of our data concerns visits that have already been made.

Question 3 : What is the elevator with the most "relapses"?

- a "relapse" is a breakdown occurring on an elevator
- that is 90 days away from the previous one at most

To answer this question we first looked at the start_date variable which we believe indicates that an elevator has just breakdown and ordered it in an ascending order. Then we did a window function by taking the absolute value of the difference of this variable by its previous and partitioned them by elevator_id by retrieving this data from the ordered values of start_date which allowed us to have the variable date_lags. Finally we made a join between this table and the elevator table and counted the number of elements for those whose date_lags is lower than 90. Here are the results we get.

	name	elevator_id	relapses
0	UP-000040	40	2
1	UP-000029	29	2
2	UP-000011	11	2
3	UP-000075	75	2
4	UP-000072	72	2

Tableau 3: elevators with most relapses

The number of relapses elevators is 31. i.e. those for which there is at least one breakdown within 90 days of the previous one. Among them, we have 6 for whom this has happened twice.