

Final Project of Traffic Announcements (Istanbul-UYM)

Group A.K.A - R

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Contents

Traffic Announcements of Istanbul (2018 - 2020)	1
Key Takeaways	1
Analysis 1	2
Analysis 2	3
Analysis 3	5
Analysis 4	6
References	7

Traffic Announcements of Istanbul (2018 - 2020)

The group analyzed, traffic announcements entered into the system from January 2018 to October 2020 by the transportation management center of İstanbul Municipality. In dataset there are 12 variables such as; Announcement Type, Starting and ending time of the event, Location, etc. and 58,422 records. The aim of the group was to conduct various analyzes using these 12 variables either individually or together.

[Click here for the Project Data](#)

[Click here for the Project Proposal](#)

[Click here for the Project EDA PDF](#)

Key Takeaways

At the end of the study, the group A.K.A - R observed the following takeaways;

- We searched the most problematic announcement types in our dataset with Problem Index variable which is calculated from the multiplication of the duration and effected lanes. We saw that within the range of minimum and maximum problem index values, infrastructure work had the largest share.
- We observed the five accomplished projects in the last three years, with the highest problem index (indicator created by the group) and affected locations. S.Yolu Z.Burnu-Bakırköy had the highest problem index. This project took approximately six months.

- We investigated the relationship between municipality election and the number of running projects/constructions and so forth. At the end of the study we observed, strong relationship between these two factors. Such as; a sharp decrease in the number of projects carried out during the election, and a sharp increase in numbers at the post-election period.
- We checked the effect of the pandemic on the accident notifications and seen that there was a strong effect of the pandemic due to the lockdowns between March and April in 2020.
- We showed the distribution of announcement types during holiday terms and commented on the reasons behind these announcements. It can be said that precautions should be prepared for ‘accident announcement’ and ‘vehicle breakdown’ during the holidays, and also, the municipality concentrates on maintenance work.

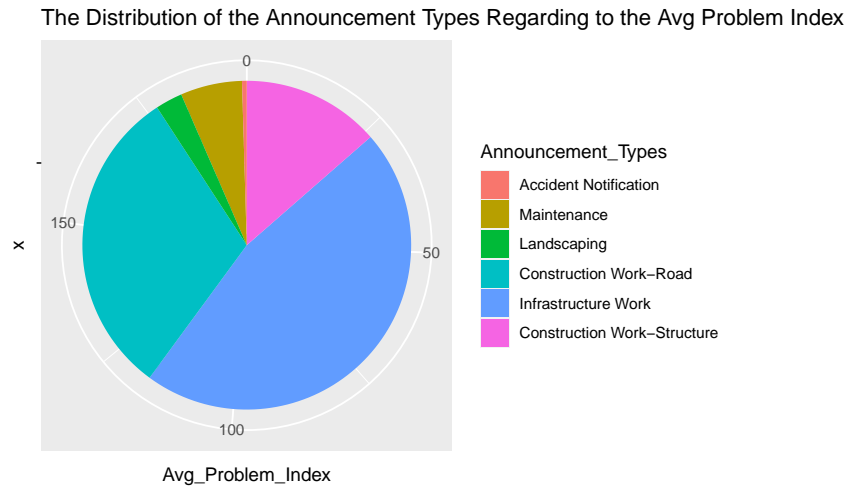
Analysis 1

- The traffic is assumed to be caused by two variables in our data set. These are, number of lanes affected from the incident and the duration of it. So “Problem Index” is created from multiplication of these variables.
- The outliers were detected with statistical methods. Records that were 3 standard deviations away from the mean is excluded from the data set. Approximately %99 confidence interval is created. Data is grouped by announcement type. Summarized and sorted according to the problem index.

Date-related recording errors are filtered out from the subset because of the calculations.

##	Announcement_Types	Avg_Problem_Index	CountAnnouncement	SumIndex
## 5	Infrastructure Work	90.6383582	67	6072.77
## 4	Construction Work-Road	59.9131707	41	2456.44
## 6	Construction Work-Structure	26.4447059	17	449.56
## 2	Maintenance	11.8293100	5290	62577.05
## 3	Landscaping	5.1812475	505	2616.53
## 1	Accident Notification	0.9064472	26250	23794.24

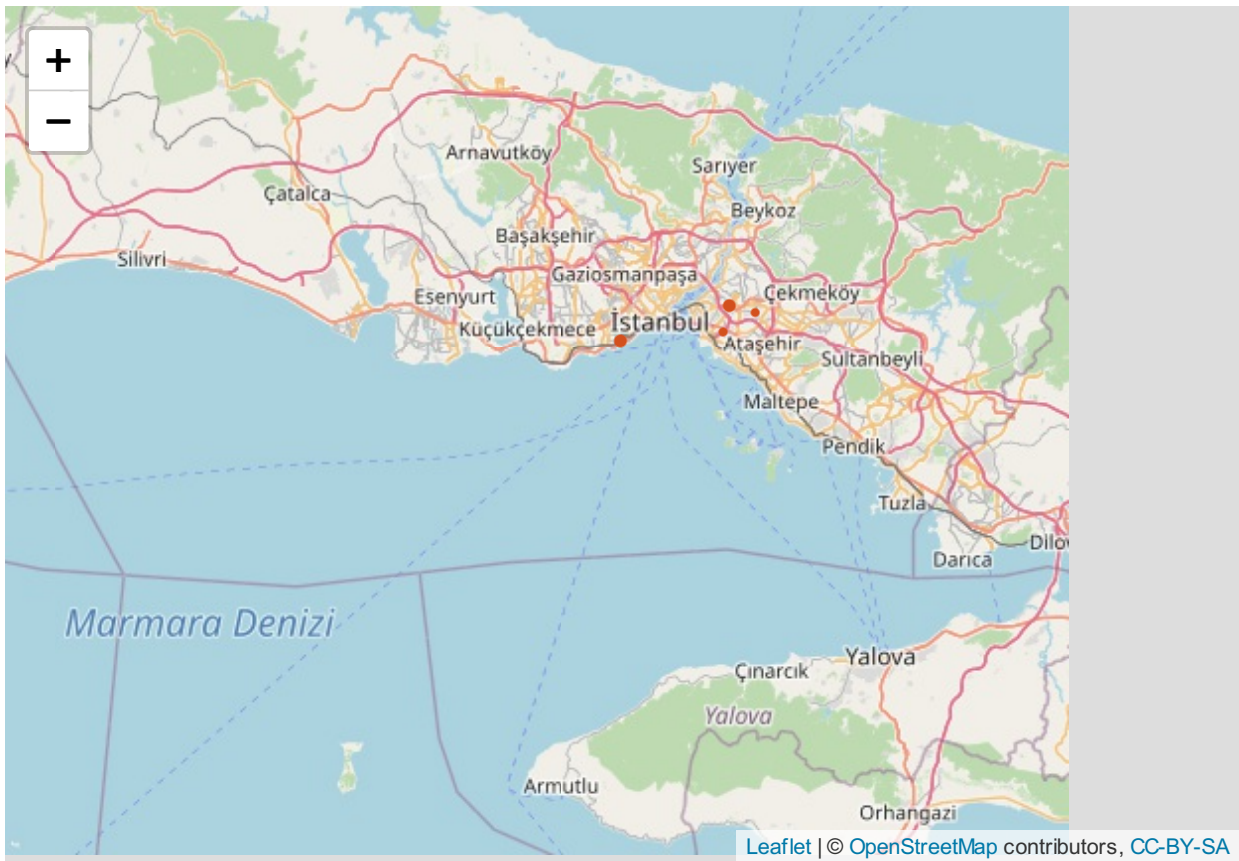
The distribution of the announcement types regarding to the average problem index, are shown on the pie chart.



- It is shown that infrastructural or road constructional incidences were the worst traffic makers on average. However, car accidents and maintenance works occurred more frequently. Therefore, when it was summed up, these were the main traffic generators in total.

TOP 5 locations regarding problem index:

##	Location	Problem_Index
## 11553	S.Yolu Z.Burnu-Bakırköy yönü	23801.00
## 1347	Tünel Vecdi Diker Altunizade - Ümraniye yönü	18630.00
## 5030	D100 Kınalı-Silivri Yönü	13202.00
## 6734	D100 Kadıköy-Çamlıca D100 Çamlıca-Kadıköy Yönü	13069.77
## 3687	Şile Yolu Tepeüstü-Ümraniye Kavşak Yönü	10921.15

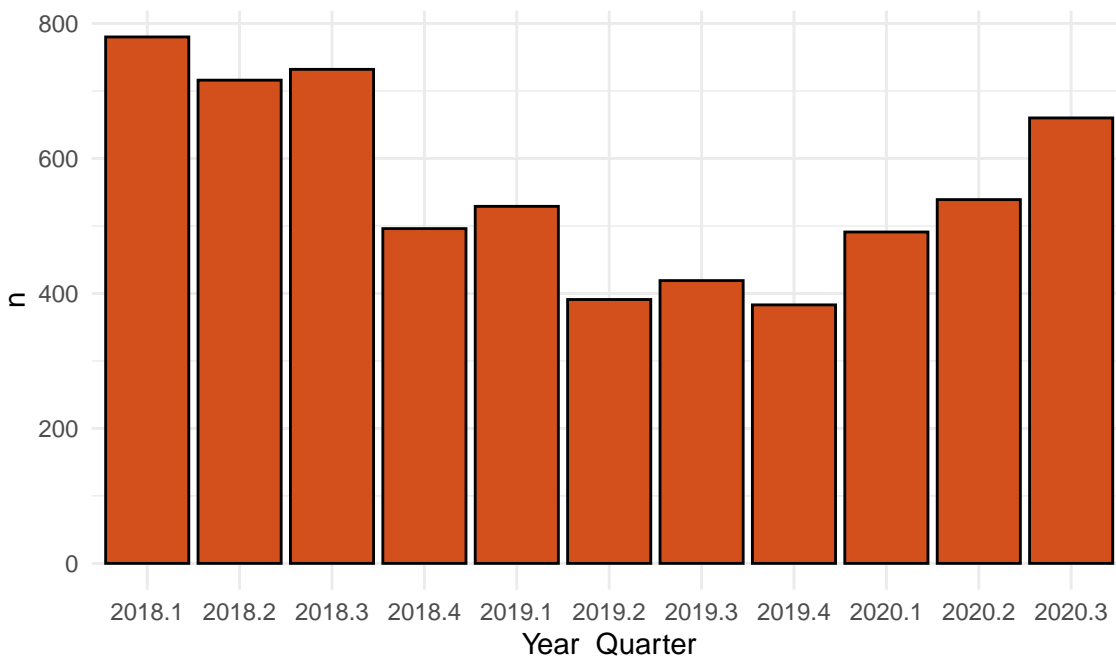


Analysis 2

- It is examined whether there is a relationship between the municipality elections and the number of running projects/constructions etc.

The Number of Running Projects on a Quarterly Basis

From 2018 to 2020



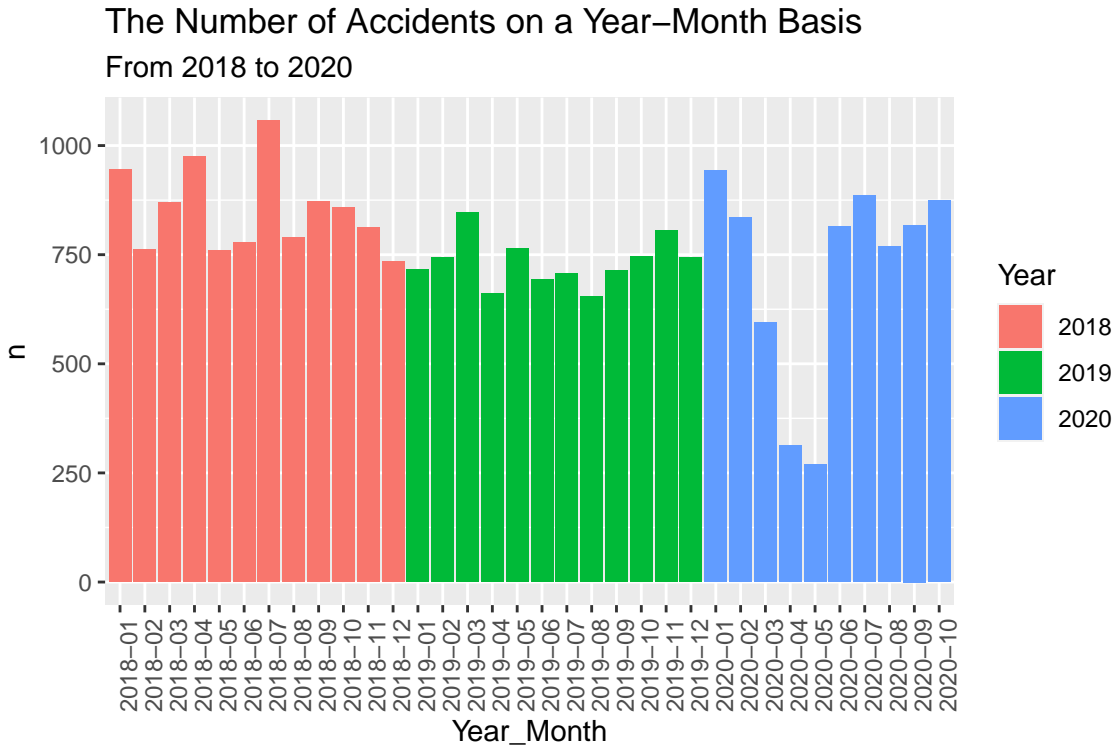
Since the November of 2020 is not completed yet, is not included in the study and date-related recording errors are kept on the subset.

- The number of the running projects such as construction, landscaping are shown on the bar chart on a quarterly basis.
- The number of projects carried out in 2018 decreased except in the third quarter.
- Considering that there will be an election in March 2019, the number of projects carried out compared to the last quarter of the previous year has increased, but it was considerably lower than the same quarter of the previous year.
- After the election repetition decision, the existing administration reduced the number of projects it carried out and most probably allocated resources for the second tour of the election.
- In the second quarter of 2019, the number of projects carried out according to the same content of last year has almost halved. And it was one of the least studied quarters of the 3-year period.
- With the the new administration and the elimination of election uncertainty, the number of projects carried out by the municipality has started to increase regularly since the last quarter of 2019.
- Although, the number of projects carried out in 2020 is above the projects carried out in 2019 – on a quarterly basis -, is below the 2018 values. The reason for this may be pandemic and economic problems.

Analysis 3

- It is investigated whether there is an effect of the pandemic on the number of Accidents.

The number of Accidents are shown on the bar chart on a year-month basis. The bar chart has been colored on an annual basis for a clear view.

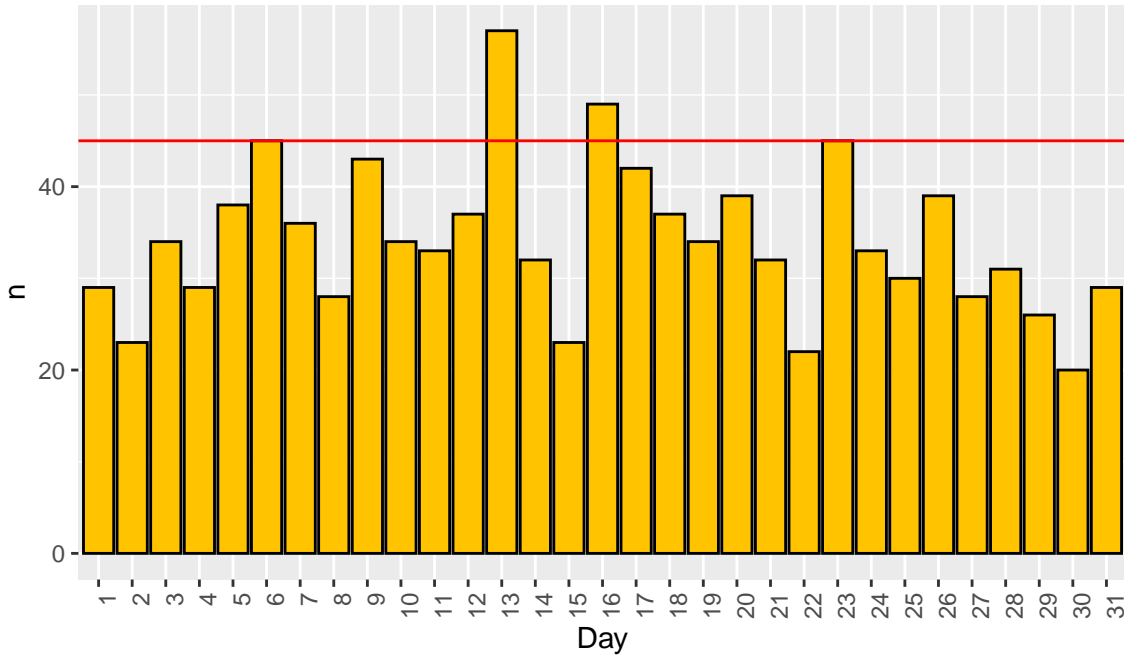


Since the November of 2020 is not completed yet, is not included in the study and date-related recording errors are kept on the subset.

- There is a clear effect of the pandemic that can be seen in 2020. The first pandemic case occurred in March in Turkey. In April and May, there were a lot of lockdowns were applied. The number of Accidents significantly decreased in that period. After rule bendings and starting of the summer period, the numbers increased again.
- Besides, there is a peak on 2018-07 that is seen on the chart. To investigate in more detail, the daily number of the Accidents in 2018-07 is plotted.

The Number of Accidents on a Daily Basis

July,2018



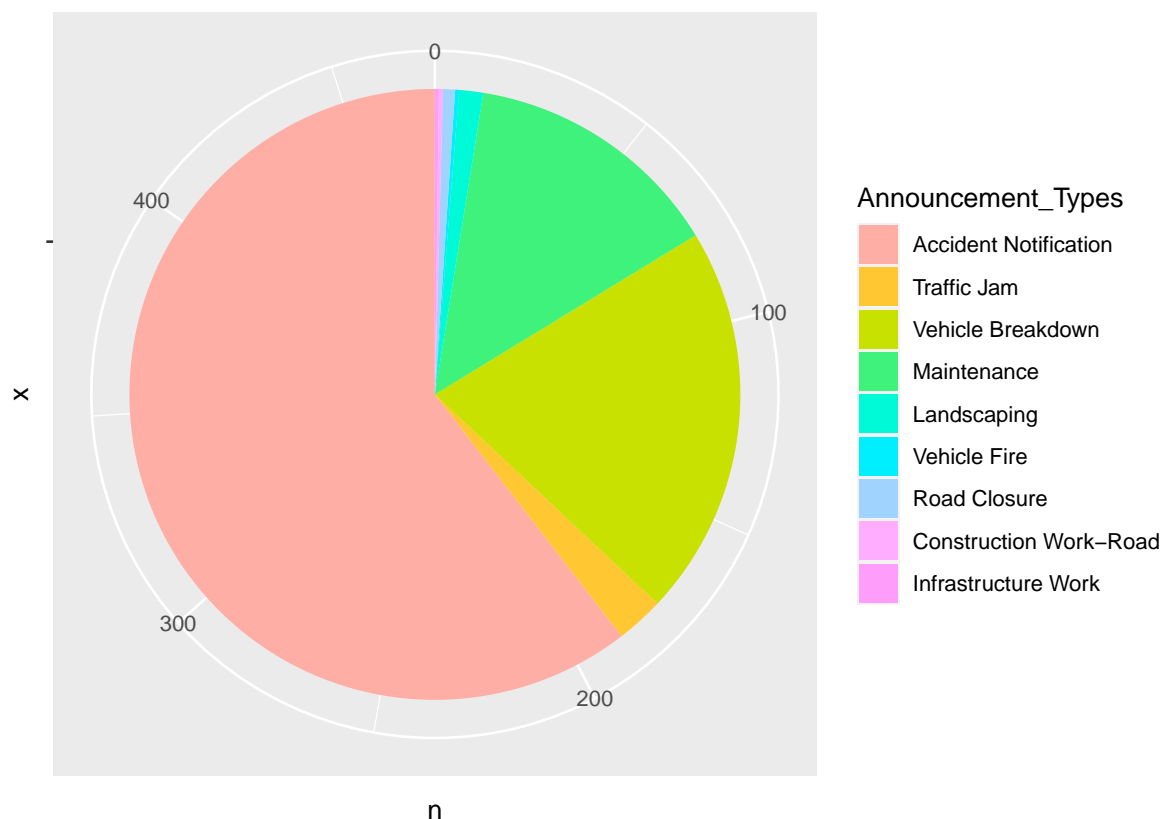
- 13th and 16th of July had the highest number of Accidents. 15'th of July is a national holiday in Turkey. 15'th of July was Sunday so the increase of these days could be because of that people tend to combine holidays and travel more before and after national holidays.

Analysis 4

- Relationship between official holiday and traffic announcements are examined.
- Official holiday events are introduced to the data set in order to define holiday periods in the data. For instance, 'New Year', 'Labor Day', 'Ramadan', 'National Sovereignty and Children's Day' and 'May 19 Commemoration of Atatürk and Youth and Sports Day'.
- In the data set, weeks that are includes any of the holiday event are taken into consideration.
- Announcements that are reported during the holiday week are counted. Then, total number of announcements are shown on the pie chart in order to interpret the most common announcement reasons in the holiday term.

The distribution of Announcement Types during holiday weeks are shown in the below pie chart.

The Distribution of Announcement Types During Holiday Weeks



The external data source is added for holiday events.

Date-related recording errors are kept on the subset.

- In the holiday periods, majority of traffic announcements are occurred by the accident notification records. Presumably, increased intercity travels are caused to accidents during holiday week.
- Similarly, vehicle breakdown is affected by heavy travel demand and has got the second highest percentage among announcement types.
- Remarkable results belong to the number of Maintenance. Municipality may prefer to complete road works when the city is relatively empty because traffic on the road will be less than the regular term. Under this circumstances, working on road maintenance will be more productive.

References

- Data Source - İBB Open Data Portal
- External Data Source - Holiday Events
- Mapping Link

You may click here to reach other items of A.K.A - R Group's Progress Journal.