

UK ROAD ACCIDENT

DASHBOARD REPORT

Using Tableau and R

INTRODUCTION

The following dataset comprises of more than 10,00,000 entries about road accidents in the United Kingdom from year 2005 to 2010. The dataset consists of 34 columns which has every detail about the accident. First of all, I preprocessed the dataset using R programming and cleaned the dataset and made various queries that would help in analysing the road accident dataset in Tableau.

Importing dataset in R:

```
#DS_PROJECT
install.packages("tidyverse")
library(tidyverse)

#READING THE CSV DATASET
data <- read.csv("accident_data.csv")
print(data)
colnames(data)
```

Output:

```
print(data)
```

Accident_Index	X1st_Road_Class	X1st_Road_Number	X2nd_Road_Class	X2nd_Road_Number	Accident_Severity
200501BS00001	A	3218		0	Serious
200501BS00002	B	450	C	0	Slight
200501BS00003	C	0		0	Slight
200501BS00004	A	3220		0	Slight
200501BS00005		0		0	Slight
200501BS00006		0		0	Slight
200501BS00007	C	0	Unclassified	0	Slight
200501BS00009	A	315		0	Slight
200501BS00010	A	3212	B	304	Slight
200501BS00011	B	450	C	0	Slight
200501BS00012	A	4	B	325	Slight
200501BS00014	A	3220	A	308	Slight
200501BS00015		0	A	3220	Slight
200501BS00016	A	3217	A	3216	Slight
200501BS00017	A	4		0	Slight
200501BS00018	A	3217	Unclassified	0	Slight
200501BS00019		0	Unclassified	0	Serious
200501BS00020	A	3218	A	4	Slight
200501BS00021	B	302		0	Slight
200501BS00022	A	4	Unclassified	0	Serious
200501BS00023		0		0	Slight
200501BS00024	B	415	C	0	Slight
200501BS00025	A	3220	A	3220	Slight
200501BS00028	C	0	Unclassified	0	Slight
200501BS00029	A	4	B	319	Slight
200501BS00031	C	0	Unclassified	0	Slight
200501BS00032	B	450		0	Slight
200501BS00033	A	3220	A	3218	Slight
200501BS70001	A	4	C	0	Slight

Carriageway_Hazards	Date	Day_of_Week	Did_Police_Officer_Attend_Scene_of_Accident
None	04/01/2005	Tuesday	1
None	05/01/2005	Wednesday	1
None	06/01/2005	Thursday	1
None	07/01/2005	Friday	1
None	10/01/2005	Monday	1
None	11/01/2005	Tuesday	1
None	13/01/2005	Thursday	1
None	14/01/2005	Friday	1
None	15/01/2005	Saturday	1
None	15/01/2005	Saturday	1
None	16/01/2005	Sunday	1
None	25/01/2005	Tuesday	1
None	11/01/2005	Tuesday	1
None	18/01/2005	Tuesday	1
None	18/01/2005	Tuesday	1
None	18/01/2005	Tuesday	1
None	20/01/2005	Thursday	1
None	21/01/2005	Friday	1

```
> colnames(data)
```

[1] "Accident_Index"	"X1st_Road_Class"
[3] "X1st_Road_Number"	"X2nd_Road_Class"
[5] "X2nd_Road_Number"	"Accident_Severity"
[7] "Carriageway_Hazards"	"Date"
[9] "Day_of_Week"	"Did_Police_Officer_Attend_Scene_of_Accident"
[11] "Junction_Control"	"Junction_Detail"
[13] "Latitude"	"Light_Conditions"
[15] "Local_Authority_.District."	"Local_Authority_.Highway."
[17] "Location_Easting_OSGR"	"Location_Northing_OSGR"
[19] "Longitude"	"LSOA_of_Accident_Location"
[21] "Number_of_Casualties"	"Number_of_Vehicles"
[23] "Pedestrian_Crossing_Human_Control"	"Pedestrian_Crossing_Physical_Facilities"
[25] "Police_Force"	"Road_Surface_Conditions"
[27] "Road_Type"	"Special_Conditions_at_Site"
[29] "Speed_limit"	"Time"
[31] "Urban_or_Rural_Area"	"Weather_Conditions"
[33] "Year"	"InScotland"

Removing the unnecessary columns

```
#REMOVING UNNECESSARY COLUMNS i.e
#COLUMNS NOT CONTRIBUTING TOWARDS TABLEAU DASHBOARD
df1 <- data[,-c(2,3,4,5,7,8,10,11,15,16,17,18,20,23,24,25,28,29,31,34)]
colnames(df1)
nrow(df1)
```

Output

```
> #REMOVING UNNECESSARY COLUMNS 1.e
> #COLUMNS NOT CONTRIBUTING TOWARDS TABLEAU DASHBOARD
> df1 <- data[, -c(2,3,4,5,7,8,10,11,15,16,17,18,20,23,24,25,28,29,31,34)]
> colnames(df1)
[1] "Accident_Index"      "Accident_Severity"    "Day_of_Week"          "Junction_Detail"      "Latitude"             "Light_Conditions"
[7] "Longitude"           "Number_of_Casualties" "Number_of_Vehicles"   "Road_Surface_Conditions" "Road_Type"            "Time"
[13] "Weather_Conditions"  "Year"
> |
```

Data pre-processing and cleaning

In these upcoming processes I removed some of the entries that had missing information in some of the columns and also normalised the data with unknown values for some entries in some columns.

1.

```
#REMOVING THE ROWS WITH NO DATA INFORMATION ABOUT JUNCTION_DETAIL
df1<-df1[!(df1$Junction_Detail == "Data missing or out of range"),]
df1
nrow(df1)
```

Output

```
> #REMOVING UNNECESSARY COLUMNS 1.e
> #COLUMNS NOT CONTRIBUTING TOWARDS TABLEAU DASHBOARD
> df1 <- data[, -c(2,3,4,5,7,8,10,11,15,16,17,18,20,23,24,25,28,29,31,34)]
> colnames(df1)
[1] "Accident_Index"      "Accident_Severity"    "Day_of_Week"          "Junction_Detail"      "Latitude"             "Light_Conditions"
[7] "Longitude"           "Number_of_Casualties" "Number_of_Vehicles"   "Road_Surface_Conditions" "Road_Type"            "Time"
[13] "Weather_Conditions"  "Year"
> nrow(df1)
[1] 1048575
> |
```

2.

```
#REMOVING THE ROWS WITH NO DATA INFORMATION ABOUT LIGHT_CONDITIONS
df1 <- df1[!(df1$Light_Conditions==""), ]
df1
nrow(df1)|
```

Output

```
df1 <- df1[!(df1$Light_Conditions==""), ]
df1
Accident_Index Accident_Severity Day_of_Week Junction_Detail Latitude Light_Conditions Longitude Number_of_Casualties Number_of_Vehicles
1 2005018500002 Slight Wednesday Crossroads 51.52007 Darkness - lights lit -0.211708 1 1
2 2005018500003 Slight Thursday Not at junction or within 20 metres 51.52530 Darkness - lights lit -0.206458 1 2
3 2005018500005 Slight Monday Not at junction or within 20 metres 51.49575 Darkness - lighting unknown -0.156618 1 1
4 2005018500007 Slight Thursday T or staggered junction 51.51270 Darkness - lights lit -0.211277 1 2
5 2005018500010 Slight Saturday Crossroads 51.48342 Darkness - lights lit -0.167342 2 2
6 2005018500012 Slight Sunday Crossroads 51.49490 Darkness - lights lit -0.182872 1 1
7 2005018500014 Slight Tuesday Crossroads 51.48404 Darkness - lights lit -0.184312 1 2
8 2005018500016 Slight Tuesday T or staggered junction 51.49262 Darkness - lights lit -0.157753 1 2
9 2005018500019 Serious Thursday T or staggered junction 51.50019 Darkness - lights lit -0.205139 1 2
0 2005018500021 Slight Friday Not at junction or within 20 metres 51.48655 Darkness - lights lit -0.160590 1 2
1 2005018500022 Serious Saturday T or staggered junction 51.49550 Darkness - lights lit -0.174925 1 1
2 2005018500023 Slight Monday Not at junction or within 20 metres 51.49299 Darkness - lights lit -0.187270 1 1
3 2005018500024 Slight Monday T or staggered junction 51.51304 Darkness - lights lit -0.204346 1 2
4 2005018500025 Slight Monday Crossroads 51.48208 Darkness - lights lit -0.173445 1 2
5 2005018500028 Slight Tuesday Crossroads 51.49296 Darkness - lights lit -0.167824 1 2
6 2005018500031 Slight Wednesday T or staggered junction 51.50827 Darkness - lights lit -0.215629 1 1
7 2005018500032 Slight Sunday Not at junction or within 20 metres 51.51399 Darkness - lights lit -0.207623 1 2
8 2005018570001 Slight Tuesday Crossroads 51.49490 Darkness - lights lit -0.182872 1 2
9 2005018570002 Slight Wednesday T or staggered junction 51.49689 Darkness - lights lit -0.160606 1 2
0 2005018570003 Slight Tuesday Mini-roundabout 51.51780 Darkness - lights lit -0.215545 2 2
1 2005018570008 Slight Thursday Crossroads 51.51495 Darkness - lights lit -0.217674 2 2
2 2005018570009 Slight Thursday Not at junction or within 20 metres 51.47810 Darkness - lights lit -0.189301 1 2
3 2005018570011 Slight Saturday Crossroads 51.49265 Darkness - lights lit -0.200249 1 2
4 2005018570013 Slight Friday Crossroads 51.50938 Darkness - lights lit -0.194258 1 1
5 2005018570017 Slight Tuesday T or staggered junction 51.48878 Darkness - lights lit -0.176346 1 2
6 2005018570020 Slight Thursday T or staggered junction 51.49581 Darkness - lights lit -0.171599 1 2
7 2005018570023 Slight Sunday Crossroads 51.48551 Darkness - lights lit -0.186415 2 2
8 2005018570025 Slight Tuesday Crossroads 51.49251 Darkness - lights lit -0.168130 1 2
9 2005018570027 Slight Thursday other junction 51.50952 Darkness - lights lit -0.197423 2 2
0 2005018570029 Serious Tuesday Not at junction or within 20 metres 51.52171 Darkness - lights lit -0.212653 1 1
1 2005018570031 Slight Friday Crossroads 51.51666 Darkness - lights lit -0.205645 1 1
2 2005018570039 Slight Monday T or staggered junction 51.49164 Darkness - lights lit -0.198704 2 2
3 2005018570042 Slight Saturday Not at junction or within 20 metres 51.49415 Darkness - lights lit -0.168929 2 2
4 2005018570043 Slight Monday Crossroads 51.49127 Darkness - lights lit -0.186618 1 1
5 2005018570045 Slight Tuesday T or staggered junction 51.48721 Darkness - lights lit -0.174248 1 1
```

3.

```
#CHANGING THE ROWS WITH NO DATA INFORMATION ABOUT WEATHER_CONDITIONS TO UNKNOWN
df1$Weather_Conditions[df1$Weather_Conditions==""] <- "0"
df1$Weather_Conditions[df1$Weather_Conditions=="Other"] <- "0"
m <- "Unknown Conditions"
df1
df1$Weather_Conditions[df1$Weather_Conditions=="0" ] <- m
df1
nrow(df1)
df1$Weather_Conditions
```

Output

```
60 20050185/0153 Slight Wednesday Crossroads 51.492/5 Darkness - lights lit -0.200533
Road_Surface_Conditions Road_Type Time Weather_Conditions Year
      Dry Dual carriageway 17:36 Fine no high winds 2005
      Dry Single carriageway 00:15 Fine no high winds 2005
Wet or damp Single carriageway 21:13 Fine no high winds 2005
      Dry Single carriageway 20:40 Fine no high winds 2005
      Dry Single carriageway 22:43 Fine no high winds 2005
1      Dry Single carriageway 00:42 Fine no high winds 2005
2      Wet or damp Single carriageway 20:48 Fine no high winds 2005
4      Wet or damp One way street 05:01 Raining no high winds 2005
7      Dry Single carriageway 00:15 Fine no high winds 2005
9      Dry Single carriageway 21:16 Fine no high winds 2005
0      Dry Single carriageway 03:00 Fine no high winds 2005
1      Dry Single carriageway 21:45 Fine no high winds 2005
2      Dry Single carriageway 17:05 Fine no high winds 2005
3      Frost or ice Dual carriageway 21:30 Fine no high winds 2005
4      Dry Single carriageway 17:25 Fine no high winds 2005
6      Wet or damp Single carriageway 16:35 Raining no high winds 2005
7      Dry Single carriageway 20:00 Fine no high winds 2005
9      Wet or damp Dual carriageway 18:20 Raining no high winds 2005
0      Dry Single carriageway 07:25 Fine no high winds 2005
1      Wet or damp One way street 17:30 Raining no high winds 2005
```

4.

```
#REMOVING THE ROWS WITH NO DATA INFORMATION ABOUT ROAD_SURFACE_CONDITION
df1 <- df1[!(df1$Road_Surface_Conditions==""), ]
df1
nrow(df1)
```

Output

```
104      Dry Single carriageway 20:00 Fine no high winds 2005
111      Dry Dual carriageway 20:55 Fine no high winds 2005
112      Dry Single carriageway 23:30 Fine no high winds 2005
113      Dry Single carriageway 20:45 Fine no high winds 2005
114      Dry Single carriageway 20:20 Fine no high winds 2005
118      Dry One way street 18:03 Fine no high winds 2005
122      Dry Single carriageway 23:17 Fine no high winds 2005
123      Dry Single carriageway 19:20 Fine no high winds 2005
125      Dry Single carriageway 23:39 Fine no high winds 2005
131      Dry Single carriageway 18:36 Fine no high winds 2005
134      Dry One way street 03:00 Fine no high winds 2005
141      Wet or damp Dual carriageway 21:25 Fine no high winds 2005
142      Dry Single carriageway 00:32 Fine no high winds 2005
147      Dry One way street 23:40 Fine no high winds 2005
153      Dry Single carriageway 19:25 Fine no high winds 2005
159      Dry Single carriageway 20:05 Fine no high winds 2005
160      Wet or damp Dual carriageway 22:50 Fine no high winds 2005
[ reached 'max' / getOption("max.print") -- omitted 1045231 rows ]
> nrow(df1)
[1] 1045302
```

5.

```
#REMOVING THE ROWS WITH NO DATA INFORMATION ABOUT ROAD_TYPE
df1 <- df1[!(df1$Road_Type==""), ]
df1
nrow(df1)
```


Output

```

92      Wet or damp Single carriageway 16:40 Raining no high winds 2005
93      Dry Dual carriageway 16:55 Fine no high winds 2005
95      Dry Single carriageway 01:05 Fine no high winds 2005
102     Dry Single carriageway 00:15 Fine no high winds 2005
104     Dry Single carriageway 20:00 Fine no high winds 2005
111     Dry Dual carriageway 20:55 Fine no high winds 2005
112     Dry Single carriageway 23:30 Fine no high winds 2005
113     Dry Single carriageway 20:45 Fine no high winds 2005
114     Dry Single carriageway 20:20 Fine no high winds 2005
118     Dry One way street 18:03 Fine no high winds 2005
122     Dry Single carriageway 23:17 Fine no high winds 2005
123     Dry Single carriageway 19:20 Fine no high winds 2005
125     Dry Single carriageway 23:39 Fine no high winds 2005
131     Dry Single carriageway 18:36 Fine no high winds 2005
134     Dry One way street 03:00 Fine no high winds 2005
141     Wet or damp Dual carriageway 21:25 Fine no high winds 2005
142     Dry Single carriageway 00:32 Fine no high winds 2005
147     Dry One way street 23:40 Fine no high winds 2005
153     Dry Single carriageway 19:25 Fine no high winds 2005
159     Dry Single carriageway 20:05 Fine no high winds 2005
160     Wet or damp Dual carriageway 22:50 Fine no high winds 2005
[ reached 'max' / getOption("max.print") -- omitted 1037979 rows ]
> nrow(df1)
[1] 1038050
> |

```

Exporting the final dataframe to a csv file

```

#downloading the output file|
write.csv(df1,"cleaned_accidents.csv")

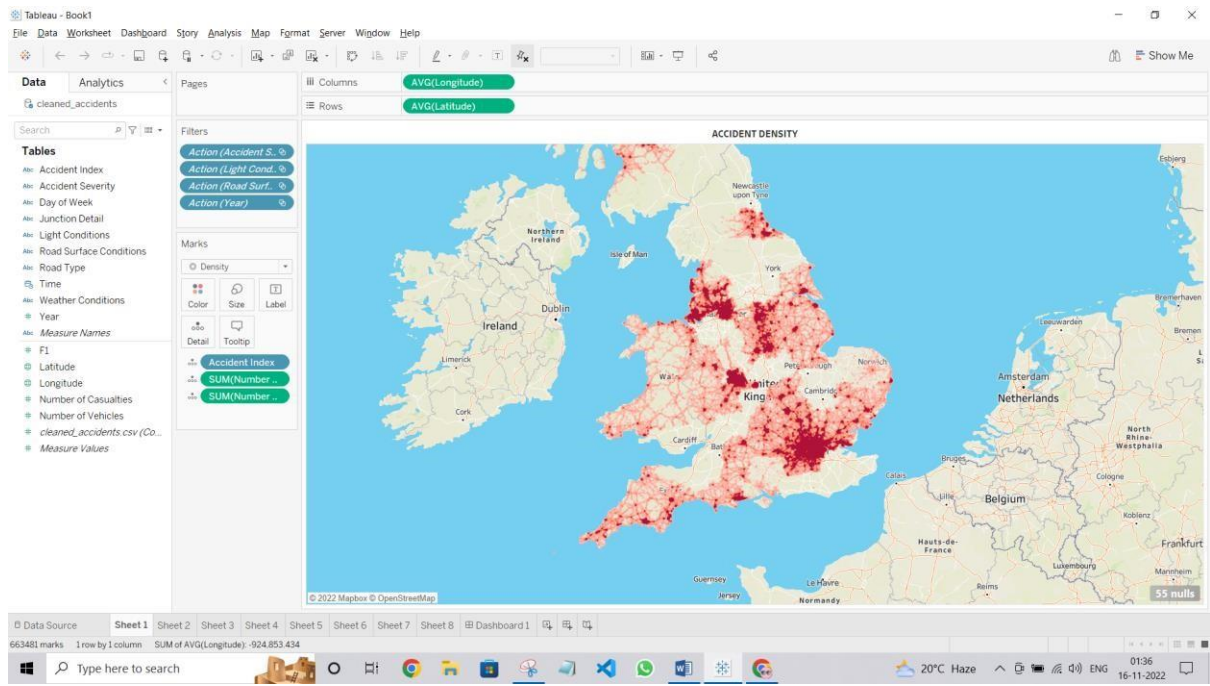
```

Output dataset

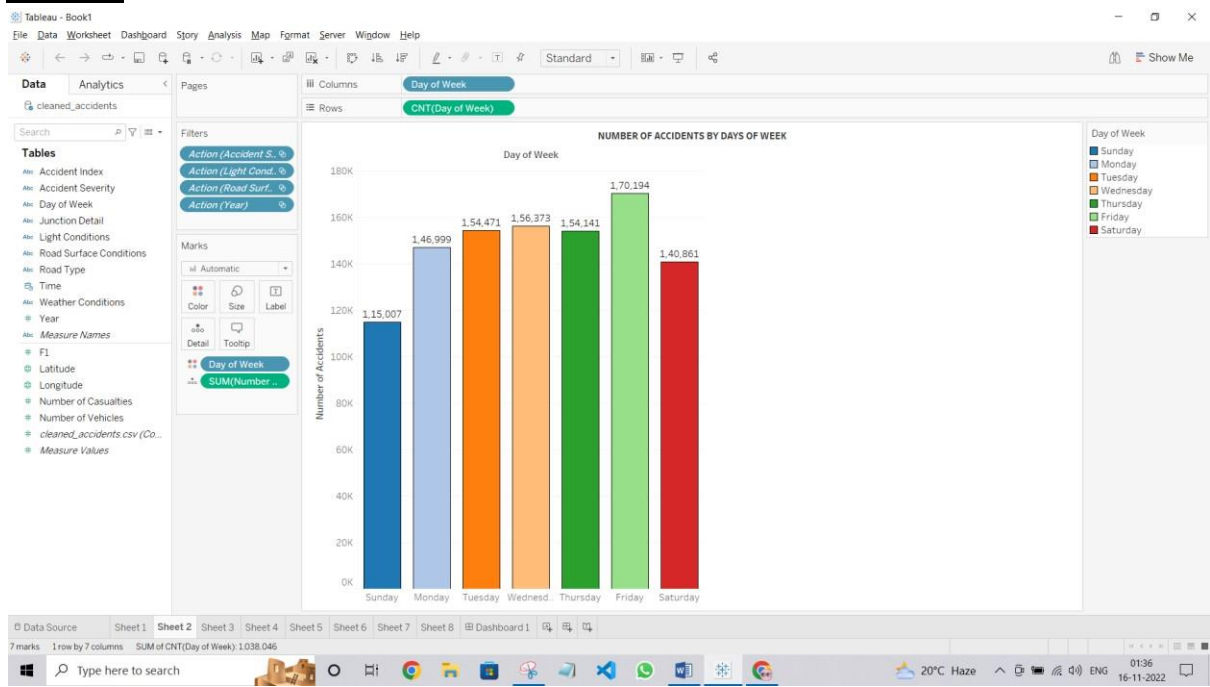
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	Accident_ID	Accident_S	Day_of_W	Junction_C	Latitude	Light_Con	Longitude	Number_c	Number_c	Road_Surf	Road_Typ	Time	Weather_	Year			
2	200501BS	Slight	Wednesday	Crossroad:	51.52008	Darkness -	-0.21171	1	1	Dry	Dual carri	17:36	Fine no hig	2005			
3	200501BS	Slight	Thursday	Not at junc	51.5253	Darkness -	-0.20646	1	2	Dry	Single carr	00:15	Fine no hig	2005			
5	200501BS	Slight	Monday	Not at junc	51.49575	Darkness -	-0.15662	1	1	Wet or dai	Single carr	21:13	Fine no hig	2005			
7	200501BS	Slight	Thursday	T or stage	51.5127	Darkness -	-0.21128	1	2	Dry	Single carr	20:40	Fine no hig	2005			
9	200501BS	Slight	Saturday	Crossroad:	51.48342	Darkness -	-0.16734	2	2	Dry	Single carr	22:43	Fine no hig	2005			
11	200501BS	Slight	Sunday	Crossroad:	51.4949	Darkness -	-0.18287	1	1	Dry	Single carr	00:42	Fine no hig	2005			
12	200501BS	Slight	Tuesday	Crossroad:	51.48404	Darkness -	-0.18431	1	2	Wet or dai	Single carr	20:48	Fine no hig	2005			
14	200501BS	Slight	Tuesday	T or stage	51.49262	Darkness -	-0.15775	1	2	Wet or dai	One way s	05:01	Raining no	2005			
17	200501BS	Serious	Thursday	T or stage	51.50019	Darkness -	-0.20514	1	2	Dry	Single carr	00:15	Fine no hig	2005			
19	200501BS	Slight	Friday	Not at junc	51.48655	Darkness -	-0.16059	1	2	Dry	Single carr	21:16	Fine no hig	2005			
20	200501BS	Serious	Saturday	T or stage	51.4955	Darkness -	-0.17493	1	1	Dry	Single carr	03:00	Fine no hig	2005			
21	200501BS	Slight	Monday	Not at junc	51.49299	Darkness -	-0.18727	1	1	Dry	Single carr	21:45	Fine no hig	2005			
22	200501BS	Slight	Monday	T or stage	51.51304	Darkness -	-0.20435	1	2	Dry	Single carr	17:05	Fine no hig	2005			
23	200501BS	Slight	Monday	Crossroad:	51.48208	Darkness -	-0.17345	1	2	Frost or ice	Dual carri	21:30	Fine no hig	2005			
24	200501BS	Slight	Tuesday	Crossroad:	51.49296	Darkness -	-0.16782	1	2	Dry	Single carr	17:25	Fine no hig	2005			
26	200501BS	Slight	Wednesday	T or stage	51.50827	Darkness -	-0.21563	1	1	Wet or dai	Single carr	16:35	Raining no	2005			
27	200501BS	Slight	Sunday	Not at junc	51.51399	Darkness -	-0.20762	1	2	Dry	Single carr	20:00	Fine no hig	2005			
29	200501BS	Slight	Tuesday	Crossroad:	51.4949	Darkness -	-0.18287	1	2	Wet or dai	Dual carri	18:20	Raining no	2005			
30	200501BS	Slight	Wednesday	T or stage	51.49689	Darkness -	-0.16061	1	2	Dry	Single carr	07:25	Fine no hig	2005			
31	200501BS	Serious	Tuesday	Mini-round	51.5178	Darkness -	-0.21555	2	2	Wet or dai	One way s	17:30	Raining no	2005			
36	200501BS	Slight	Thursday	Crossroad:	51.51495	Darkness -	-0.21767	2	2	Dry	Single carr	22:55	Fine no hig	2005			
37	200501BS	Slight	Thursday	Not at junc	51.4781	Darkness -	-0.1893	1	2	Dry	Single carr	17:30	Fine no hig	2005			
39	200501BS	Slight	Saturday	Crossroad:	51.49265	Darkness -	-0.20025	1	2	Dry	Dual carri	21:25	Fine no hig	2005			
41	200501BS	Slight	Friday	Crossroad:	51.50938	Darkness -	-0.19426	1	1	Dry	Single carr	23:35	Fine no hig	2005			
44	200501BS	Slight	Tuesday	T or stage	51.48878	Darkness -	-0.17635	1	2	Dry	Single carr	20:00	Fine no hig	2005			
47	200501BS	Slight	Thursday	T or stage	51.49581	Darkness -	-0.1716	1	2	Wet or dai	Single carr	18:10	Raining no	2005			
49	200501BS	Slight	Sunday	Crossroad:	51.48552	Darkness -	-0.18642	2	2	Dry	Single carr	20:05	Fine no hig	2005			
50	200501BS	Slight	Tuesday	Crossroad:	51.49252	Darkness -	-0.16813	1	2	Wet or dai	Single carr	16:44	Raining no	2005			
51	200501BS	Slight	Thursday	Other junc	51.50952	Darkness -	-0.19742	1	2	Wet or dai	Single carr	18:00	Raining no	2005			

Analysing the final dataset and creating a dashboard using tableau

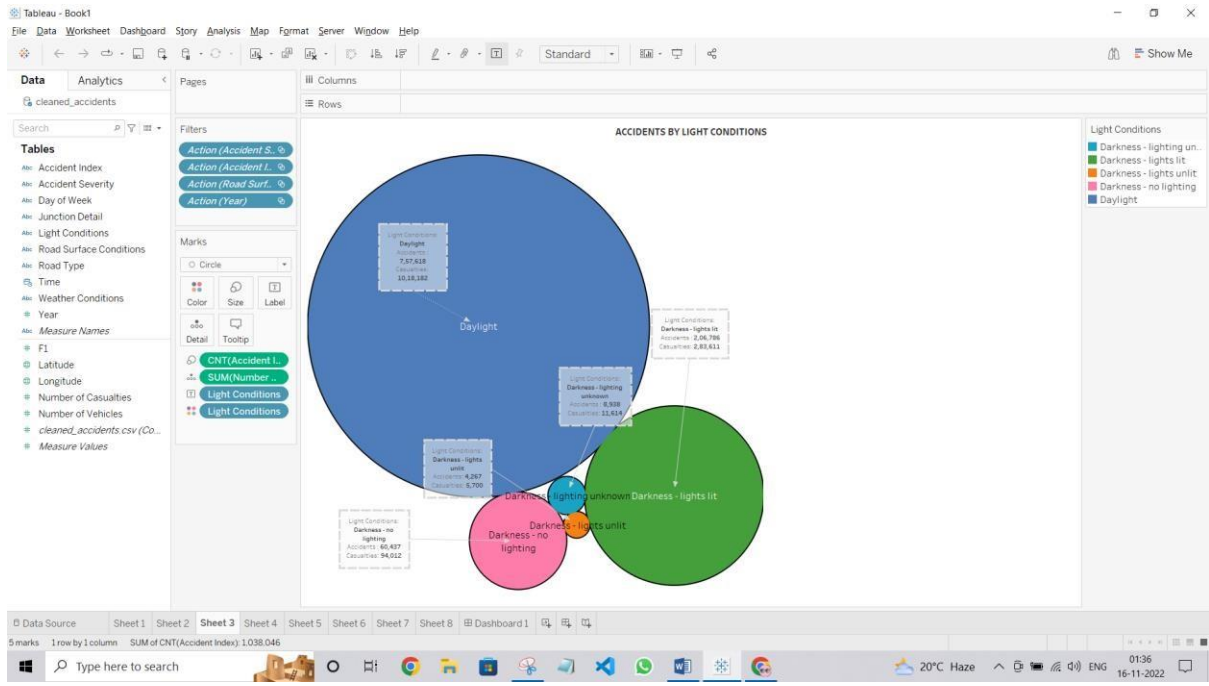
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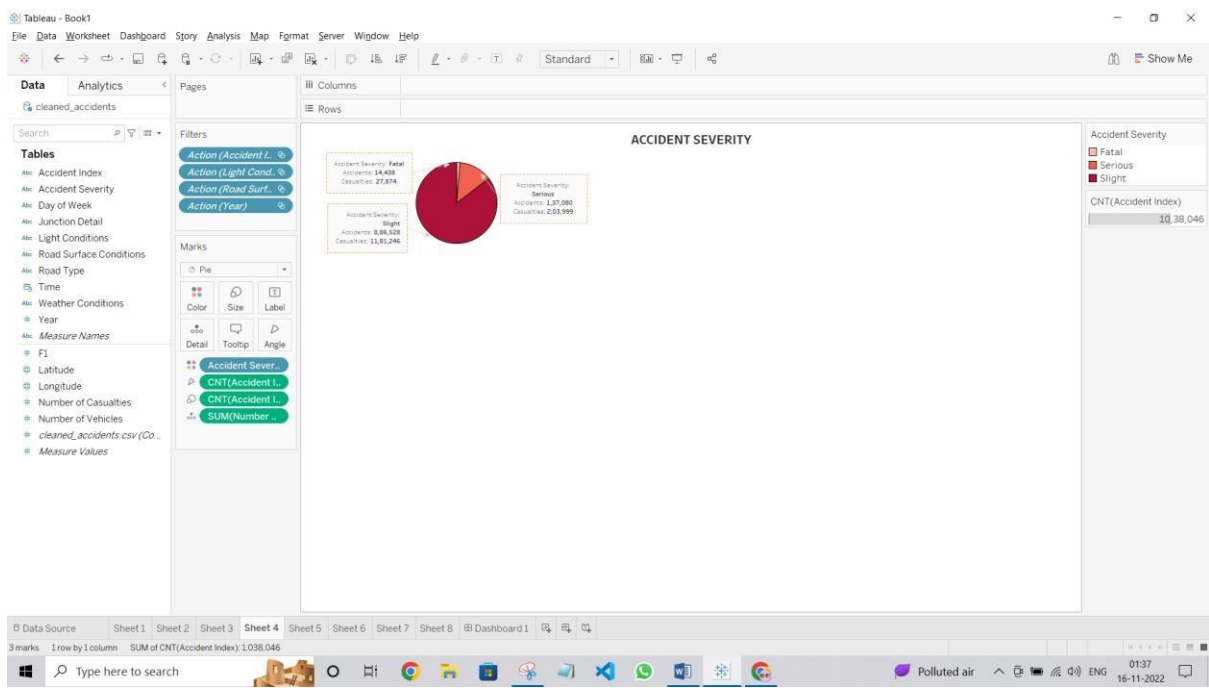
Sheet2:



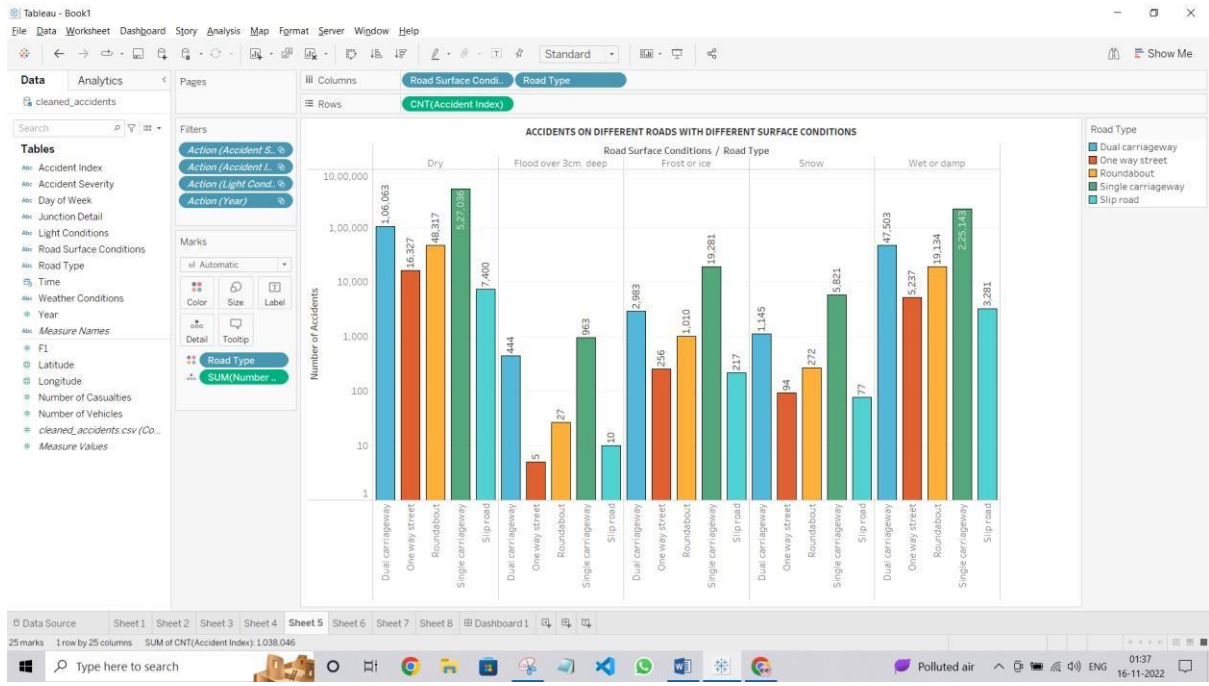
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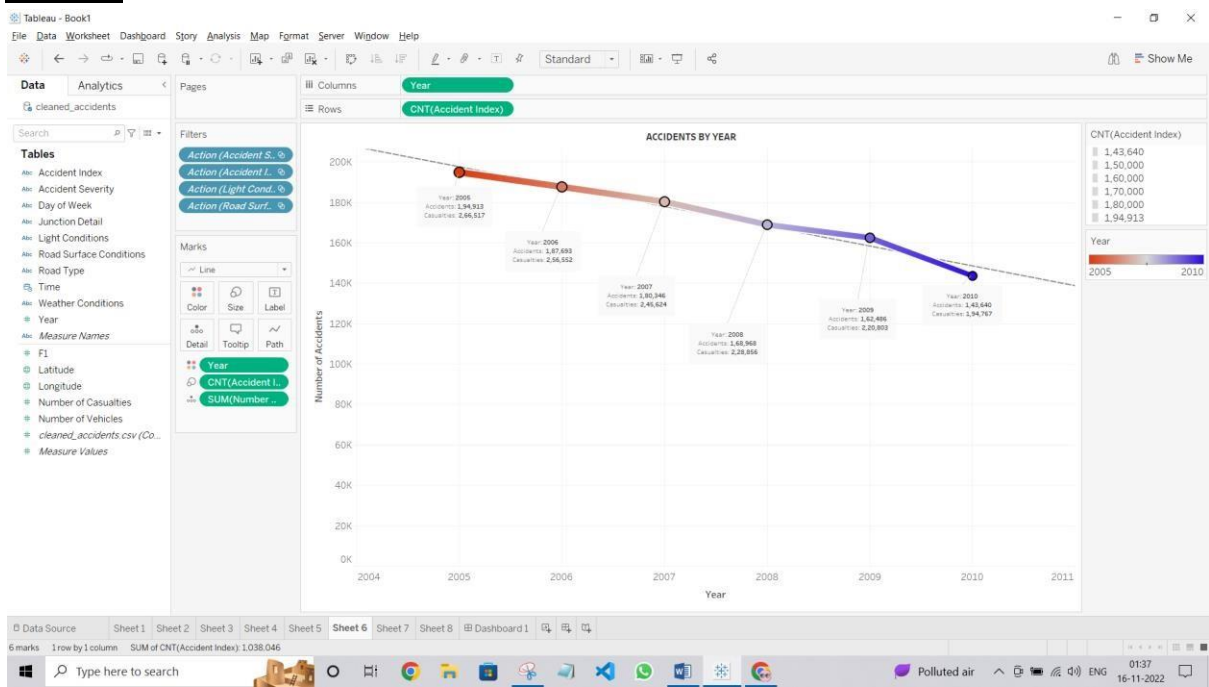
Sheet4:



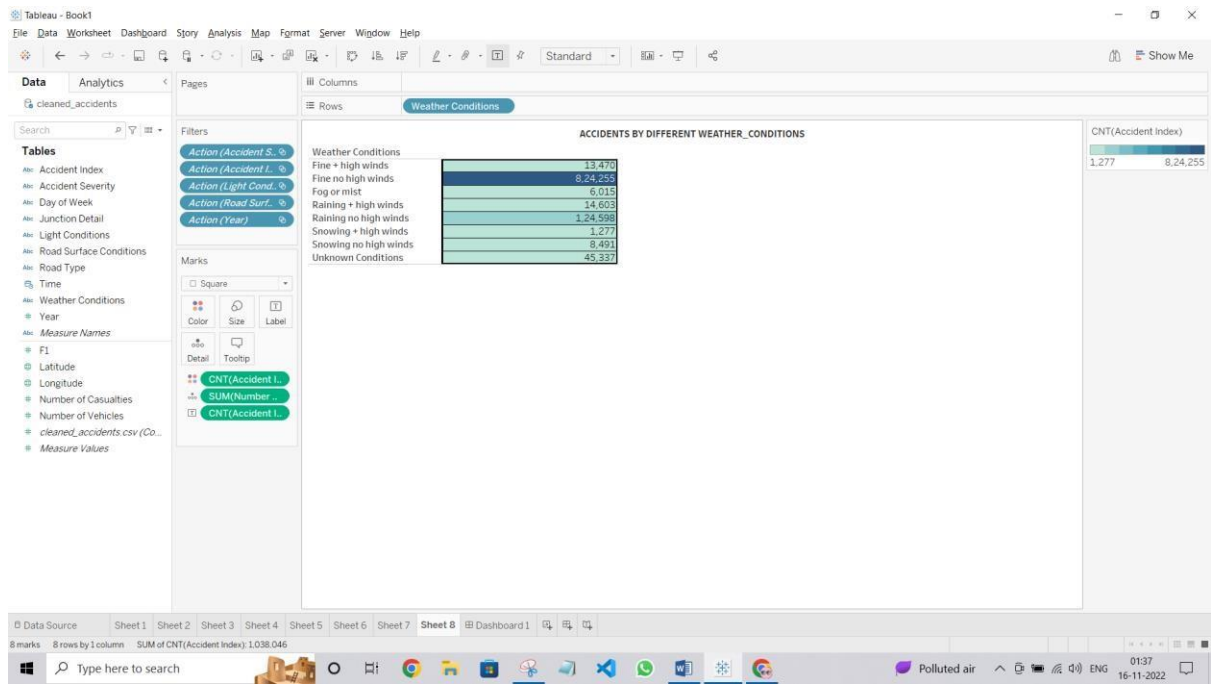
Sheet5:



Sheet6:



Sheet8:



FINAL DASHBOARD:

