Midpoint Report

Team : Traffiky
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Project Objective:
To observe and analyze the pattern in traffic and any incidents that occur and also find the correlation between various traffic conditions based on speed of the vehicles, number of vehicles, average speed of vehicles on a highway, etc for a period of 7 years in Portland.

Project Approach:
First, we downloaded data from the portal for about 7 years just to experiment with. We may reduce the number of years for convenience and ease of analysis and accuracy. We created a database in postgres in Virtual Machine and uploaded the csv data to the tables. These tables include highway, station, detectors and incident.

```
pnalan@instance-1:~$ sudo -u postgres psql
psql (11.12 (Debian 11.12-0+deb10u1))
Type "help" for help.

postgres=# CREATE DATABASE data_science
postgres-# CREATE DATABASE data_science;
ERROR:  syntax error at or near "CREATE"
LINE 2: CREATE DATABASE data_science;
        ^
postgres=# CREATE DATABASE data_science;
CREATE DATABASE
postgres=# CREATE USER data WITH PASSWORD 'Data@21';
CREATE ROLE
postgres=#
```

For example:

This is a table of station_metadata

CREATE TABLE station_metadata(stationid INTEGER, highwayid INTEGER, milepost NUMERIC, locationtext TEXT,length NUMERIC, numberlanes INTEGER, agencyid VARCHAR, x_coord NUMERIC, y_coord NUMERIC);

COPY
station_metadata(stationid,highwayid,milepost,locationtext,length,numberlanes,agencyid,x_coord,y_coord) FROM '/home/pnalan/station_metadat.csv' CSV HEADER;

stationid	highwayid	milepost	locationtext	length	agencyid	x_coord	y_coord
5208	55	36.15	Salmon CR SB		205es03616:_MS	-122.640267	45.71191
3154	10	0.25	Wilshire (2DS043) @ SB OR 217 MP0.25	0.185	321	-122.78043	45.50622
10522	610	304.4	Alberta HOV (2R003) to NB I-5	0.62	388	-122.67814	45.56172
10285	608	6.7	102nd off-ramp (2DS020) @ EB I-84 MP6.7	31.745	285	-122.55889	45.54448
10358	608	5.82	Halsey off-ramp (2DS019) @ EB I-84 MP5.82	0.94	358	-122.5659	45.53213
1010	1	295.18	Capitol (2R306) to NB I-5	1.26	157	-122.72042	45.45293
1004	1	289.63	WB Nyberg Slip (2R312) to NB I-5	0.57	383	-122.7511	45.38279
1011	1	296.26	Spring Garden (2R305) to NB I-5	0.71	158	-122.69942	45.46213
1008	1	293.18	Haines (2R308) to NB I-5	0.78	155	-122.7431	45.43495
1007	1	292.18	OR 217/Kruse Way (2R317) to NB I-5	0.785	83	-122.74224	45.42213
1009	1	293.74	99W (2R307) to NB I-5	1	156	-122.74179	45.4429
1039	2	290.4	Lower Boones (2R321) to SB I-5	0.935	86	-122.74824	45.39565
1075	10	4.35	Scholls Ferry (2R332) to SB OR 217	0.805	18	-122.7847	45.45004
1078	10	2.55	Allen (2R341) to SB OR 217	0.6	15	-122.78918	45.47556
1122	12	73.71	Clay (2R383) to WB US 26	0.69	144	-122.68813	45.5154
1096	2	299.5	Naito/Harbor (2R391) to SB I-5	0.775	67	-122.67535	45.50592
1065	9	2.16	Allen (2R340) to NB OR 217	0.59	8	-122.78911	45.47688
1080	10	0.76	Walker (2R346) to SB OR 217	0.525	13	-122.79154	45.49757
1064	9	1.34	Canyon (2R344) to NB OR 217	0.42	9	-122.79146	45.49159
1121	6	1.37	Montgomery (2R384) to SB I-405	0.31	62	-122.69015	45.51335
3109	5	1.77	Jefferson (2DS008) @ NB I-405 MP1.77	0.485	98	-122.68787	45.51688
3210	611	0	WB US 26 (2DS045) to SB OR 217 MP69.1	0.1	118	-122.7797	45.50915
3211	611	0	EB US 26 (2DS046) to SB OR 217 MP69.16	0.1	119	-122.77991	45.50865
3165	1	285.58	N. Wilsonville (2DS051) @ NB I-5 MP285.28	1.085	99	-122.76906	45.32328
1130	1	283.93	Wilsonville Rd (2R396) to NB I-5	1.325	113	-122.76951	45.30413
1001	1	286.1	EB Elligsen Loop (2R315) to NB I-5	0.36	103	-122.76774	45.33496
3191	1	287.46	Norwood (2DS052) @ NB I-5 MP287.46	1.55	100	-122.76467	45.35355
1040	2	289.38	Nyberg (2R320) to SB I-5	1.47	85	-122.75325	45.38242
3182	2	283.93	Wilsonville Rd (2R399) to SB I-5	1.175	84	-122.76967	45.29981
1139	609	71.08	WB US 26 Frontage (2R367) at Skyline	1.385	150	-122.73729	45.50892
1108	2	296.26	Spring Garden (2R305) on SB I-5	1.06	176	-122.70014	45.46303
3193	1	298.9	Corbett (2DS056) @ NB I-5 MP298.9	1.05	49	-122.67668	45.48839
1105	2	293.36	99W (2R324) to SB I-5	0.475	174	-122.74223	45.4418
3115	2	294.05	OR 99W (2DS053) @ SB I-5 MP294.05	0.91	270	-122.74062	45.44359
3161	11	72.17	Zoo on-ramp (2DS065) @ EB US26 MP72.17	0.41	129	-122.71918	45.507
1091	11	71.39	Skyline (2R368) to EB US 26	0.635	141	-122.73599	45.50817
1134	6	0.97	5th (2R394) to SB I-405	0.555	60	-122.68338	45.50683
3126	8	0.45	W. Grand (2DS013) @ WB I-84 MP0.45	0.83	294	-122.66042	45.52549

Milestones Completed:

- Traffic data collection
- Setting up virtual machine
- Creation of tables in virtual machine

Milestones needs to be completed:

- Mapping incidents on highways to the generated heatmap.
- Come up with a methodology to generate heat maps and plot incidents for any given highway across any time period
- Analyse the graphs and the important patterns/observations and the correlation between various factors that lead to congestion and incidents.

Update on the progress:

- We believe we are halfway through the project and we plan to maintain the same spirit and pace until the project submission.

Modifications:

If plotting incident data for the specified highway(I-84 WB) will not be feasible, we will simply generate the heatmap for other highways.

Initially we were planning on working with data for a number of years but now we realize it might be too much and hence shorten it to a year or so.

Midpoint Meeting Schedule

Date - 07/22/2021

Time: 10:50AM