

Historical Trends of Incidents across 20 Major Nashville Roadways

Query #1: Acquiring the 'Top 20' Roadways

```
SELECT xdgrou, COUNT(distinct id_original) as cnt, AVG(congestion) as cong  
FROM "incidents"."showdown_merge" where xdgrou != 0  
GROUP BY xdgrou ORDER BY cnt DESC, cong DESC LIMIT 20;
```

Explanation: Query to identify our 'top 20' roadways (xdgroups) using incident frequencies and congestion averages as the ranking factor

Results stored in: **t20_query1**

Query #2: Incident Frequency by Month (2017-2021)

```
SELECT COUNT(distinct incident_id) as num_incidents, month FROM "incidents"."showdown_merge"  
WHERE xdgrou in (SELECT xdgrou FROM "incidents"."top20" as t20) AND year = XXXX  
GROUP BY month;
```

Explanation: Query to count unique incidents per month in year XXXX, out of the selected top 20 roadways

Note: Some months aren't reported in the results, because they have 0 accidents

Results for 2017 stored in: **t20_query2_2017**
Results for 2018 stored in: **t20_query2_2018**
Results for 2019 stored in: **t20_query2_2019**
Results for 2020 stored in: **t20_query2_2020**
Results for 2021 stored in: **t20_query2_2021**

Query #3: Incident Frequency, Avg Response Time, Avg Speed Comparison by 6hr Window (2019 vs. 2020)

```
SELECT COUNT(distinct incident_id) as num_incidents, AVG(response_time_sec) as avg_response,  
AVG(speed) as avg_speed, window_of_day FROM "incidents"."showdown_merge"  
WHERE xdgrou in (SELECT xdgrou FROM "incidents"."top20" as t20) AND year = XXX  
GROUP BY window_of_day;
```

Explanation: Query to count unique incident, average speed, and average response time (aggregated by window during year XXXX) out of the selected top 20 roadways

Results for 2019 stored in: **t20_query3_2019**
Results for 2020 stored in: **t20_query3_2020**

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Query #4: Incident Frequency, Avg Response Time, Avg Speed Comparison by *Hour of Day* (2019 vs. 2020)

```
SELECT COUNT(distinct incident_id) as num_incidents, AVG(response_time_sec) as avg_response,  
AVG(speed) as avg_speed, hour_of_day FROM "incidents"."showdown_merge"  
WHERE xdgroupp in (SELECT xdgroupp FROM "incidents"."top20" as t20) AND year = XXXX  
GROUP BY hour_of_day ORDER BY hour_of_day;
```

Results for 2019 stored in: **t20_query4_2019**

Results for 2020 stored in: **t20_query4_2020**

Query #5: Incident Frequency, Avg Response Time, Avg Speed Comparison by *Day of Week* (2019 vs. 2020)

```
SELECT COUNT(distinct incident_id) as num_incidents, AVG(response_time_sec) as avg_response,  
AVG(speed) as avg_speed, day_of_week FROM "incidents"."showdown_merge"  
WHERE xdgroupp in (SELECT xdgroupp FROM "incidents"."top20" as t20) AND year = XXXX  
GROUP BY day_of_week;
```

Results for 2019 stored in: **t20_query5_2019**

Results for 2020 stored in: **t20_query5_2020**

Query #6: Incident Frequency, Avg Response Time, Avg Speed Comparison by *Day # of the Year* (2019 vs. 2020)

```
SELECT COUNT(distinct incident_id) as num_incidents, AVG(response_time_sec) as avg_response,  
AVG(speed) as avg_speed, day FROM "incidents"."showdown_merge"  
WHERE xdgroupp in (SELECT xdgroupp FROM "incidents"."top20" as t20) AND year = 2020  
GROUP BY day ORDER BY day;
```

Results for 2019 stored in: **t20_query6_2019**

Results for 2020 stored in: **t20_query6_2020**

Query #7: Incident Frequency, Avg Response Time, Avg Speed Comparison by *Hour of Day* (2017-2021)

```
SELECT COUNT(distinct incident_id) as num_incidents, AVG(response_time_sec) as avg_response,  
AVG(speed) as avg_speed, hour_of_day FROM "incidents"."showdown_merge"  
WHERE xdgroupp in (SELECT xdgroupp FROM "incidents"."top20" as t20)  
GROUP BY hour_of_day ORDER BY hour_of_day;
```

Results for 2019 stored in: **t20_query7**

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Query #7: Response Time Scatter by *Hour of Day* (2017-2021)

```
SELECT response_time_sec, hour_of_day FROM "incidents"."showdown_merge"  
WHERE xdgroupp in (SELECT xdgroupp FROM "incidents"."top20" as t20)  
ORDER BY hour_of_day;
```

Results stored in: **t20_query8**

Query #9: Getting the *Bottom 20* Roadways

```
SELECT xdgroupp, COUNT(distinct id_original) as cnt, AVG(congestion) as cong  
FROM "incidents"."showdown_merge" WHERE xdgroupp != 0  
GROUP BY xdgroupp HAVING COUNT(distinct id_original) > 10 AND AVG(congestion) != 0.0  
ORDER BY cong ASC LIMIT 20;
```

Explanation: Query to identify our 'bottom 20' roadways (xdgroups) using congestion average as the ranking factor (this time with ASC instead of DESC). However, we make sure to only use roadways with *at least* 15 prior accidents, and some *non-zero* measure of congestion.

Results stored in: **b20_query1**

Query #10: Incident Frequency by *Month* (2017-2021) → Bottom 20

```
SELECT COUNT(distinct incident_id) as num_incidents, month FROM "incidents"."showdown_merge"  
WHERE xdgroupp in (SELECT xdgroupp FROM "incidents"."bottom20" as b20) AND year = 2021  
GROUP BY month;
```

Explanation: Query to count unique incidents per month in year XXXX, out of the selected bottom 20 roadways

Note: Some months aren't reported in the results, because they have 0 accidents

Results for 2017 stored in: **b20_query2_2017**

Results for 2018 stored in: **b20_query2_2018**

Results for 2019 stored in: **b20_query2_2019**

Results for 2020 stored in: **b20_query2_2020**

Results for 2021 stored in: **b20_query2_2021**

Query #11: Incident Frequency, Avg Response Time, Avg Speed Comparison by *Hour of Day* (2017-2021) → Bottom 20

```
SELECT COUNT(distinct incident_id) as num_incidents, AVG(response_time_sec) as avg_response,  
AVG(speed) as avg_speed, hour_of_day FROM "incidents"."showdown_merge"  
WHERE xdgroupp in (SELECT xdgroupp FROM "incidents"."bottom20" as b20)  
GROUP BY hour_of_day ORDER BY hour_of_day;
```

Results stored in: **b20_query3**
