SQL QUERIES FOR VALIDATION OF ROAD ACCIDENT ANALYSIS DASHBOARDS

```
USE road_accident;

SELECT * FROM road_accident;


-- CY & PY Accidents

-- Year = '2022'
SELECT COUNT(DISTINCT accident_index) AS CY_Accidents
FROM road_accident
WHERE YEAR(accident_date) = '2022';
```

	CY_Accidents
1	144419

```
-- Year = '2021'
SELECT SUM(number_of_casualties) AS PY_Casualties
FROM road_accident
WHERE YEAR(accident_date) = '2021';
```

	PY_Casualties
1	222146

```
-- CY & PY Casualties

-- Year = '2022'
SELECT SUM(number_of_casualties) AS CY_Casualties
FROM road_accident
WHERE YEAR(accident_date) = '2022';
```

	CY_Casualties
1	195737

```
-- Year = '2021'
SELECT SUM(number_of_casualties) AS PY_Casualties
FROM road_accident
WHERE YEAR(accident_date) = '2021';
```

	PY_Casualties
1	222146

-- Casualties by Road Surface Condition

```sql
SELECT
    Road_Conditions,
    SUM(number_of_casualties) AS Total_Casualties
FROM (
    SELECT
        CASE
            WHEN road_surface_conditions IN ('Frost or ice','Snow') THEN 'Snow / Ice'
            WHEN road_surface_conditions IN ('Flood over 3cm. deep','Wet or damp') THEN 'Wet'
            ELSE 'Dry'
        END AS Road_Conditions,
        number_of_casualties
    FROM road_accident
) t1
GROUP BY Road_Conditions
ORDER BY Total_Casualties DESC;
```

	Road_Conditions	Total_Casualties
1	Dry	279445
2	Wet	115657
3	Snow / Ice	22781

```sql
-- Year = '2022'
SELECT
    Road_Conditions,
    SUM(number_of_casualties) AS CY_Casualties
FROM (
    SELECT
        CASE
            WHEN road_surface_conditions IN ('Frost or ice','Snow') THEN 'Snow / Ice'
            WHEN road_surface_conditions IN ('Flood over 3cm. deep','Wet or damp') THEN 'Wet'
            ELSE 'Dry'
        END AS Road_Conditions,
        number_of_casualties
    FROM road_accident
    WHERE YEAR(accident_date) = 2022
) t1
GROUP BY Road_Conditions
ORDER BY CY_Casualties DESC;
```

	Road_Conditions	CY_Casualties
1	Dry	131976
2	Wet	50543
3	Snow / Ice	13218

```sql
-- Year = '2021'
SELECT
    Road_Conditions,
    SUM(number_of_casualties) AS CY_Casualties
FROM (
    SELECT
        CASE
            WHEN road_surface_conditions IN ('Frost or ice','Snow') THEN 'Snow / Ice'
            WHEN road_surface_conditions IN ('Flood over 3cm. deep','Wet or damp') THEN 'Wet'
            ELSE 'Dry'
        END AS Road_Conditions,
        number_of_casualties
    FROM road_accident
    WHERE YEAR(accident_date) = 2021
) t1
GROUP BY Road_Conditions
ORDER BY CY_Casualties DESC;
```

	Road_Conditions	PY_Casualties
1	Dry	147469
2	Wet	65114
3	Snow / Ice	9563

```sql
-- Total Casualties by Severity

SELECT SUM(number_of_casualties) AS CY_Casualties_by_severity_Fatal
FROM road_accident
WHERE accident_severity = 'Fatal';

SELECT SUM(number_of_casualties) AS CY_Casualties_by_severity_Serious
FROM road_accident
WHERE accident_severity = 'Serious';

SELECT SUM(number_of_casualties) AS CY_Casualties_by_severity_Slight
FROM road_accident
WHERE accident_severity = 'Slight';
```

	CY_Casualties_by_severity_Fatal
1	7135

	CY_Casualties_by_severity_Serious
1	59312

	CY_Casualties_by_severity_Slight
1	351436

```sql
--  CY Casualties by Severity
SELECT SUM(number_of_casualties) AS CY_Casualties_by_severity_fatal
FROM road_accident
WHERE YEAR(accident_date) = '2022' AND accident_severity = 'Fatal';

SELECT SUM(number_of_casualties) AS CY_Casualties_by_severity_serious
FROM road_accident
WHERE YEAR(accident_date) = '2022' AND accident_severity = 'Serious';

SELECT SUM(number_of_casualties) AS CY_Casualties_by_severity_Slight
FROM road_accident
WHERE YEAR(accident_date) = '2022' AND accident_severity = 'Slight';
```

	CY_Casualties_by_severity_fatal
1	2855

	CY_Casualties_by_severity_serious
1	27045

	CY_Casualties_by_severity_Slight
1	165837

```sql
--  PY Casualties by Severity
SELECT SUM(number_of_casualties) AS PY_Casualties_by_severity_fatal
FROM road_accident
WHERE YEAR(accident_date) = '2022' AND accident_severity = 'Fatal';

SELECT SUM(number_of_casualties) AS PY_Casualties_by_severity_serious
FROM road_accident
WHERE YEAR(accident_date) = '2022' AND accident_severity = 'Serious';

SELECT SUM(number_of_casualties) AS PY_Casualties_by_severity_Slight
FROM road_accident
WHERE YEAR(accident_date) = '2022' AND accident_severity = 'Slight';
```

	PY_Casualties_by_severity_fatal
1	2855

	PY_Casualties_by_severity_serious
1	27045

	PY_Casualties_by_severity_Slight
1	165837

-- Total Severity Percentage

```
SELECT CAST(CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) * 100 /
(SELECT CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) FROM road_accident) AS DECIMAL(10,2)) AS Fatal_Percentage
FROM road_accident
WHERE accident_severity = 'Fatal';

SELECT CAST(CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) * 100 /
(SELECT CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) FROM road_accident) AS DECIMAL(10,2)) AS Serious_Percentage
FROM road_accident
WHERE accident_severity = 'Serious';

SELECT CAST(CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) * 100 /
(SELECT CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) FROM road_accident) AS DECIMAL(10,2)) AS Slight_Percentage
FROM road_accident
WHERE accident_severity = 'Slight';
```

	Fatal_Percentage
1	1.71

	Serious_Percentage
1	14.19

	Slight_Percentage
1	84.10

-- Casualities w.r.t Weather_Conditions

```
SELECT
    Weather_Condition,
    SUM(number_of_casualties) AS Total_Casualties
FROM (
    SELECT
        CASE
            WHEN weather_conditions IN ('Fine + high winds','Fine no high winds') THEN 'Fine'
            WHEN weather_conditions IN (
                'Fog or mist',
                'Snowing + high winds',
                'Snowing no high winds'
            ) THEN 'Snow / Fog'
            WHEN weather_conditions IN (
                'Raining + high winds',
                'Raining no high winds'
            ) THEN 'Rain'
            ELSE 'Other'
        END AS Weather_Condition,
        number_of_casualties
    FROM road_accident
) t1
GROUP BY Weather_Condition
ORDER BY Total_Casualties DESC;
```

	Weather_Condition	Total_Casualties
1	Fine	334650
2	Rain	57730
3	Snow / Fog	13538
4	Other	11965

```sql
-- Year = '2022'
SELECT
    Weather_Condition,
    SUM(number_of_casualties) AS CY_Casualties
FROM (
    SELECT
        CASE
            WHEN weather_conditions IN ('Fine + high winds','Fine no high winds') THEN 'Fine'
            WHEN weather_conditions IN (
                'Fog or mist',
                'Snowing + high winds',
                'Snowing no high winds'
            ) THEN 'Snow / Fog'
            WHEN weather_conditions IN (
                'Raining + high winds',
                'Raining no high winds'
            ) THEN 'Rain'
            ELSE 'Other'
        END AS Weather_Condition,
        number_of_casualties
    FROM road_accident
    WHERE YEAR(accident_date) = 2022
) t1
GROUP BY Weather_Condition
ORDER BY CY_Casualties DESC;
```

	Weather_Condition	CY_Casualties
1	Fine	157987
2	Rain	26314
3	Other	5808
4	Snow / Fog	5628

```sql
-- Year = '2021'
SELECT
    Weather_Condition,
    SUM(number_of_casualties) AS PY_Casualties
FROM (
    SELECT
        CASE
            WHEN weather_conditions IN ('Fine + high winds','Fine no high winds') THEN 'Fine'
            WHEN weather_conditions IN (
                'Fog or mist',
                'Snowing + high winds',
                'Snowing no high winds'
            ) THEN 'Snow / Fog'
            WHEN weather_conditions IN (
                'Raining + high winds',
                'Raining no high winds'
            ) THEN 'Rain'
            ELSE 'Other'
        END AS Weather_Condition,
        number_of_casualties
    FROM road_accident
    WHERE YEAR(accident_date) = 2021
) t1
GROUP BY Weather_Condition
ORDER BY PY_Casualties DESC;
```

	Weather_Condition	PY_Casualties
1	Fine	176663
2	Rain	31416
3	Snow / Fog	7910
4	Other	6157

-- Casualties w.r.t vehicles

```sql
-- Total Casualties
SELECT
    vehicle_group,
    SUM(number_of_casualties) AS Total_Casualties
FROM (
    SELECT
        CASE
            WHEN vehicle_type = 'Agricultural vehicle' THEN 'Agricultural'
            WHEN vehicle_type IN (
                'Motorcycle 125cc and under',
                'Motorcycle 50cc and under',
                'Motorcycle over 125cc and up to 500cc',
                'Motorcycle over 500cc',
                'Pedal cycle'
            ) THEN 'Bike'
            WHEN vehicle_type IN (
                'Bus or coach (17 or more pass seats)',
                'Minibus (8 - 16 passenger seats)'
            ) THEN 'Bus'
            WHEN vehicle_type IN ('Car', 'Taxi/Private hire car') THEN 'Car'
            WHEN vehicle_type IN (
                'Goods 7.5 tonnes mgw and over',
                'Goods over 3.5t. and under 7.5t',
                'Van / Goods 3.5 tonnes mgw or under'
            ) THEN 'Van'
            ELSE 'Other'
        END AS vehicle_group,
        number_of_casualties
    FROM road_accident
) t1
GROUP BY vehicle_group
ORDER BY Total_Casualties DESC;
```

	Vehicle_Group	Total_Casualties
1	Car	333485
2	Bike	33764
3	Van	33472
4	Bus	11710
5	Other	4420
6	Agricultural	1032

```sql
-- Year = '2022'
SELECT
    vehicle_group Vehicle_Group,
    SUM(number_of_casualties) AS CY_Casualties
FROM (
    SELECT
        CASE
            WHEN vehicle_type = 'Agricultural vehicle' THEN 'Agricultural'
            WHEN vehicle_type IN (
                'Motorcycle 125cc and under',
                'Motorcycle 50cc and under',
                'Motorcycle over 125cc and up to 500cc',
                'Motorcycle over 500cc',
                'Pedal cycle'
            ) THEN 'Bike'
            WHEN vehicle_type IN (
                'Bus or coach (17 or more pass seats)',
                'Minibus (8 - 16 passenger seats)'
            ) THEN 'Bus'
            WHEN vehicle_type IN ('Car', 'Taxi/Private hire car') THEN 'Car'
            WHEN vehicle_type IN (
                'Goods 7.5 tonnes mgw and over',
                'Goods over 3.5t. and under 7.5t',
                'Van / Goods 3.5 tonnes mgw or under'
            ) THEN 'Van'
            ELSE 'Other'
        END AS vehicle_group,
        number_of_casualties
    FROM road_accident
    WHERE YEAR(accident_date) = 2022
) t1
GROUP BY vehicle_group
ORDER BY CY_Casualties DESC;
```

	Vehicle_Group	CY_Casualties
1	Car	155804
2	Van	15905
3	Bike	15610
4	Bus	6042
5	Other	1977
6	Agricultural	399

```sql
-- Year = '2021'
SELECT
    vehicle_group Vehicle_Group,
    SUM(number_of_casualties) AS PY_Casualties
FROM (
    SELECT
        CASE
            WHEN vehicle_type = 'Agricultural vehicle' THEN 'Agricultural'
            WHEN vehicle_type IN (
                'Motorcycle 125cc and under',
                'Motorcycle 50cc and under',
                'Motorcycle over 125cc and up to 500cc',
                'Motorcycle over 500cc',
                'Pedal cycle'
            ) THEN 'Bike'
            WHEN vehicle_type IN (
                'Bus or coach (17 or more pass seats)',
                'Minibus (8 - 16 passenger seats)'
            ) THEN 'Bus'
            WHEN vehicle_type IN ('Car', 'Taxi/Private hire car') THEN 'Car'
            WHEN vehicle_type IN (
                'Goods 7.5 tonnes mgw and over',
                'Goods over 3.5t. and under 7.5t',
                'Van / Goods 3.5 tonnes mgw or under'
            ) THEN 'Van'
            ELSE 'Other'
        END AS vehicle_group,
        number_of_casualties
    FROM road_accident
    WHERE YEAR(accident_date) = 2021
) t1
GROUP BY vehicle_group
ORDER BY PY_Casualties DESC;
```

	Vehicle_Group	PY_Casualties
1	Car	177681
2	Bike	18154
3	Van	17567
4	Bus	5668
5	Other	2443
6	Agricultural	633

-- Casualties w.r.t. Month

```sql
-- Year = '2022'
SELECT DATENAME(MONTH, accident_date) Month_Name, SUM(number_of_casualties) CY_Casualties
FROM road_accident
WHERE YEAR(accident_date) = '2022'
GROUP BY DATENAME(MONTH, accident_date), MONTH(accident_date)
ORDER BY MONTH(accident_date);
```

	Month_Name	CY_Casualties
1	January	13163
2	February	14804
3	March	16575
4	April	15767
5	May	16775
6	June	17230
7	July	17201
8	August	16796
9	September	17500
10	October	18287
11	November	18439
12	December	13200

```sql
-- Year = '2021'
SELECT DATENAME(MONTH, accident_date) Month_Name, SUM(number_of_casualties) PY_Casualties
FROM road_accident
WHERE YEAR(accident_date) = '2021'
GROUP BY DATENAME(MONTH, accident_date), MONTH(accident_date)
ORDER BY MONTH(accident_date);
```

	Month_Name	PY_Casualties
1	January	18173
2	February	14648
3	March	17815
4	April	17335
5	May	18852
6	June	18728
7	July	19682
8	August	18797
9	September	18456
10	October	20109
11	November	20975
12	December	18576

-- Casualties w.r.t. Road_Type

```sql
-- Year = '2022'
SELECT road_type Road_Type, SUM(number_of_casualties) CY_Casualties
FROM road_accident
WHERE YEAR(accident_date) = '2022'
Group By road_type
ORDER BY CY_Casualties DESC;
```

	Road_Type	CY_Casualties
1	Single carriageway	144653
2	Dual carriageway	31912
3	Roundabout	12683
4	One way street	3499
5	Slip road	2990

```sql
-- Year = '2021'
SELECT road_type Road_Type, SUM(number_of_casualties) PY_Casualties
FROM road_accident
WHERE YEAR(accident_date) = '2021'
Group By road_type
ORDER BY PY_Casualties DESC;
```

	Road_Type	PY_Casualties
1	Single carriageway	165045
2	Dual carriageway	35456
3	Roundabout	14145
4	One way street	3890
5	Slip road	3610

-- Casualties w.r.t. Area

```sql
-- Year = '2022'
SELECT urban_or_rural_area Area,SUM(number_of_casualties) CY_Casualties,
    CAST(CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) * 100 /
        CAST((SELECT SUM(number_of_casualties)
          FROM road_accident
          WHERE YEAR(accident_date) = '2022') AS DECIMAL(10,2)) AS DECIMAL(10,2)) Percentage
FROM road_accident
WHERE YEAR(accident_date) = '2022'
Group By urban_or_rural_area
ORDER BY CY_Casualties DESC;
```

	Area	CY_Casualties	Percentage
1	Urban	121251	61.95
2	Rural	74486	38.05

```sql
-- Year = '2021'
SELECT urban_or_rural_area Area,SUM(number_of_casualties) PY_Casualties,
    CAST(CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) * 100 /
        CAST((SELECT SUM(number_of_casualties)
        FROM road_accident
        WHERE YEAR(accident_date) = '2021') AS DECIMAL(10,2)) AS DECIMAL(10,2)) Percentage
FROM road_accident
WHERE YEAR(accident_date) = '2021'
Group By urban_or_rural_area
ORDER BY PY_Casualties DESC;
```

	Area	PY_Casualties	Percentage
1	Urban	134613	60.60
2	Rural	87533	39.40

-- Casualties w.r.t. Light Conditions

```sql
-- Year = '2022'
SELECT
    Light_Conditions,
    SUM(number_of_casualties) AS CY_Casualties,
    CAST(CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) * 100 /
            CAST((SELECT SUM(number_of_casualties)
            FROM road_accident
            WHERE YEAR(accident_date) = '2022') AS DECIMAL(10,2)) AS DECIMAL(10,2)) Percentage
FROM (
    SELECT
        CASE
            WHEN light_conditions IN (
                'Darkness - lighting unknown',
                'Darkness - lights lit',
                'Darkness - lights unlit',
                'Darkness - no lighting'
            ) THEN 'Night'
            ELSE 'Day'
        END AS Light_Conditions,
        number_of_casualties
    FROM road_accident
    WHERE YEAR(accident_date) = '2022'
) t1
GROUP BY Light_Conditions
ORDER BY CY_Casualties DESC;
```

	Light_Conditions	CY_Casualties	Percentage
1	Day	144539	73.84
2	Night	51198	26.16

```sql
-- Year = '2021'
SELECT
    Light_Conditions,
    SUM(number_of_casualties) AS CY_Casualties,
    CAST(CAST(SUM(number_of_casualties) AS DECIMAL(10,2)) * 100 /
            CAST((SELECT SUM(number_of_casualties)
            FROM road_accident
            WHERE YEAR(accident_date) = '2021') AS DECIMAL(10,2)) AS DECIMAL(10,2)) Percentage
FROM (
    SELECT
        CASE
            WHEN light_conditions IN (
                'Darkness - lighting unknown',
                'Darkness - lights lit',
                'Darkness - lights unlit',
                'Darkness - no lighting'
            ) THEN 'Night'
            ELSE 'Day'
        END AS Light_Conditions,
        number_of_casualties
    FROM road_accident
    WHERE YEAR(accident_date) = '2021'
) t1
GROUP BY Light_Conditions
ORDER BY CY_Casualties DESC;
```

	Light_Conditions	CY_Casualties	Percentage
1	Day	160424	72.22
2	Night	61722	27.78

-- Top 10 Locations Casualities

```sql
SELECT TOP 10 local_authority Locations, SUM(number_of_casualties) Total_Casualities
FROM road_accident
GROUP BY local_authority
ORDER BY Total_Casualities DESC;
```

	Locations	Total_Casualities
1	Birmingham	8611
2	Leeds	5821
3	Bradford	4431
4	Manchester	4366
5	Liverpool	4052
6	Cornwall	3820
7	Sheffield	3737
8	Kirklees	3312
9	County Durham	3295
10	Westminster	3169

```sql
-- Year = '2022'
SELECT TOP 10 local_authority Locations, SUM(number_of_casualties) CY_Casualities
FROM road_accident
WHERE YEAR(accident_date) = '2022'
GROUP BY local_authority
ORDER BY CY_Casualities DESC;
```

	Locations	CY_Casualities
1	Birmingham	4092
2	Leeds	2764
3	Cornwall	2092
4	Bradford	2089
5	Liverpool	2077
6	Manchester	1962
7	Sheffield	1764
8	County Durham	1708
9	Cheshire East	1656
10	Kirklees	1614

```sql
-- Year = '2021'
SELECT TOP 10 local_authority Locations, SUM(number_of_casualties) PY_Casualities
FROM road_accident
WHERE YEAR(accident_date) = '2021'
GROUP BY local_authority
ORDER BY PY_Casualities DESC;
```

	Locations	PY_Casualities
1	Birmingham	4519
2	Leeds	3057
3	Manchester	2404
4	Bradford	2342
5	Liverpool	1975
6	Sheffield	1973
7	Glasgow City	1879
8	Cornwall	1728
9	Kirklees	1698
10	County Durham	1587