ROAD ACCIDENT ANALYSIS USING (SQL Server)

```sql
use [road_accident];

select * from accident;



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select * from accident;


-- Current Year Casualties:
select sum(number_of_casualties) as CY_Casualties
from accident
where year(accident_date) = 2021;

-- Count of Accidents - 2022:
select round(count(distinct accident_index),1) as Count_Casualties_CY
from accident
where year(accident_date) = 2022;

-- CY Fatal Casualties(2022):
select accident_severity, count(*) as 'Count of Fatal'
from accident
where accident_severity = 'Fatal'
group by accident_severity;

select sum(number_of_casualties) as CY_fatal_Casualties
from accident
where accident_severity = 'Fatal' and year(accident_date) = 2022;


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-- CY Serious Casualties:
select sum(number_of_casualties) as CY_fatal_Casualties
from accident
where accident_severity = 'Serious' and year(accident_date) = 2022;

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-- CY Slight Casualties:
select sum(number_of_casualties) as CY_fatal_Casualties
from accident
where accident_severity = 'Slight' and year(accident_date) = 2022;
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-- Total Number of Casualties:

with fatal_Casualties as (
            select sum(number_of_casualties) as CY_Casualties_Fatal
            from accident
            where accident_severity = 'Fatal'
),

Slight_casualties as (
            select sum(number_of_casualties) as CY_Casualties_Fatal
            from accident
            where accident_severity = 'Slight'
),

Serious_casualties as (
            select sum(number_of_casualties) as CY_Casualties_Fatal
            from accident
            where accident_severity = 'Serious'
)
select * from fatal_casualties, slight_casualties, Serious_casualties;



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-- Percentage(%) of Accidents that got - Fatal:

select cast(sum(number_of_casualties) as decimal(10,2))*100 /
(select(cast(sum(number_of_casualties) as decimal(10,2))) from accident) as 'Percentage (%)'
from accident
where accident_severity = 'Fatal';


select cast(sum(number_of_casualties) as decimal(10,2))*100 /
(select(cast(sum(number_of_casualties) as decimal(10,2))) from accident) as 'Percentage (%)'
from accident
where accident_severity = 'Serious';

select cast(sum(number_of_casualties) as decimal(10,2))*100 /
(select(cast(sum(number_of_casualties) as decimal(10,2))) from accident) as 'Percentage (%)'
from accident
where accident_severity = 'Slight';

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-- Vehicle Groups:
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```sql
select
     case
         when vehicle_type IN ('Agricultural vehicle') THEN 'Agricultural'
         when vehicle_type IN ('Car', 'Taxi/Private hire car') THEN 'Cars'
         when vehicle_type IN ('Motorcycle 125cc and under',
                               'Motorcycle over 125cc and up to 500cc',
                               'Motorcycle over 500cc',
                               'Motorcycle 50cc and under') THEN 'Bikes'
        when vehicle_type IN ('Bus or coach (17 or more pass seats)','Minibus (8 - 16
passenger seats)') THEN 'Bus'
        when vehicle_type IN ('Goods over 3.5t. and under 7.5t','Van / Goods 3.5 tonnes mgw
or under',
                              'Goods 7.5 tonnes mgw and over') THEN 'Van'
        else 'other'
end as Vehicle_group,
sum(number_of_casualties) as 'CY - Casualties - 2022'
from accident
where year(accident_date) = 2022
group by
case
         when vehicle_type IN ('Agricultural vehicle') THEN 'Agricultural'
         when vehicle_type IN ('Car', 'Taxi/Private hire car') THEN 'Cars'
         when vehicle_type IN ('Motorcycle 125cc and under',
                               'Motorcycle over 125cc and up to 500cc',
                               'Motorcycle over 500cc',
                               'Motorcycle 50cc and under') THEN 'Bikes'
        when vehicle_type IN ('Bus or coach (17 or more pass seats)','Minibus (8 - 16
passenger seats)') THEN 'Bus'
        when vehicle_type IN ('Goods over 3.5t. and under 7.5t','Van / Goods 3.5 tonnes mgw
or under',
                              'Goods 7.5 tonnes mgw and over') THEN 'Van'
        else 'other'
end;

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-- Current year Casualties Monthly Trend:

select datename(month, accident_date) as 'Monthly Trend', sum(number_of_casualties) as 'CY-
Casualties-Monthly-Trend'
from accident
where year(accident_date) = 2022
group by datename(month, accident_date);

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-- Types of Roads - Total Number of Casualties:
select road_type, sum(number_of_casualties) as 'Total Number of Casualties'
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```sql
from accident
where year(accident_date) = 2022
group by road_type
order by sum(number_of_casualties) desc;

-- Area wise percentage and Total number of Casualties:
select Urban_or_Rural_Area, count(*) as 'Count',
       sum(number_of_casualties) as 'Total number of Casualties'
from accident
where year(accident_date) = 2022
group by Urban_or_Rural_Area;

select Urban_or_Rural_Area,
       sum(number_of_casualties) as 'Total number of Casualties',
       cast(cast(sum(number_of_casualties) as decimal(10,2)) * 100 /
       (select(cast(sum(number_of_casualties) as decimal(10,2)))
               from accident) as decimal(10,2)) as '% of Casualties in rural / urban areas'
from accident
where year(accident_date) = 2022
group by Urban_or_Rural_Area;

with case1 as(
 select cast(sum(number_of_casualties) as decimal(10,2))*100 /
(select(cast(sum(number_of_casualties) as decimal(10,2))) from accident) as Percentage_rural,
count(number_of_casualties) as 'Count of Casualties'
from accident
where Urban_or_Rural_Area = 'Rural'
),
case2 as(
select cast(sum(number_of_casualties) as decimal(10,2))*100 /
(select(cast(sum(number_of_casualties) as decimal(10,2))) from accident) as Percentage_urban,
count(number_of_casualties) as 'Count of Casualties'
from accident
where Urban_or_Rural_Area = 'Urban'
)
select *, Percentage_rural + Percentage_urban from  case1, case2;

select datename(month, accident_date) as Month, sum(number_of_casualties) 'Total Number of
Cas'
from accident
where datename(year,accident_date) = 2021
group by datename(month, accident_date)
order by sum(number_of_casualties) desc;

select Urban_or_Rural_Area,sum(number_of_casualties) as 'Total number of Casualties',
       cast(cast(sum(number_of_casualties) as decimal(10,2)) * 100 /
       (select cast(sum(number_of_casualties) as decimal(10,2))
               from accident) as decimal(10,2)) as '% of Casualties in rural / urban areas'
from accident
-- where year(accident_date) = 2022
```

```sql
group by Urban_or_Rural_Area;

-------------------------------------------------------------------------
-- Count of Casualties by Light Conditions:
select light_conditions, count(*) as 'Count of Light Conditions'
from accident
group by light_conditions;


select
     case
         when light_conditions like '%Darkness%' then 'Darkness'
         else 'Day Light'
    end as Light_Conditions,
    count(number_of_casualties) as 'Count -of'
from accident
group by
     case
         when light_conditions like '%Darkness%' then 'Darkness'
         else 'Day Light'
end;

-----------------------------------------------------------------------------
select
     case
         when light_conditions like '%Darkness%' then 'Darkness'
         else 'Day Light'
    end as Light_Conditions,
    ceiling(sum(number_of_casualties) *100 /
    (select sum(number_of_casualties) from accident))

from accident
-- where year(accident_date) = 2021
group by
          case
         when light_conditions like '%Darkness%' then 'Darkness'
         else 'Day Light'
end;

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--- top 10 Local Authority with Total number of Casualties:

select top 10 local_authority, sum(number_of_casualties) as 'Total Number of Casualties'
from accident
group by local_authority
order by 'Total Number of Casualties' desc;
```