
Real Time Traffic

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Introduction

Presented by:
Zakaria Yehia

Introduction

Benefits of The Project

01 **Commuters and Drivers**
who can access up-to-date traffic information

02 **Public Transportation Authorities**
who can optimize routes, schedules, and fleet

03 **Emergency Services**
such as police, ambulance, and fire departments

04 **Urban Planners and Decision Makers**
who improve infrastructure planning and Traffic

05 **Logistics and Delivery Companies**
who can enhance operational efficiency

06 **Citizens and Local Communities**
who experience safer roads and less congestion

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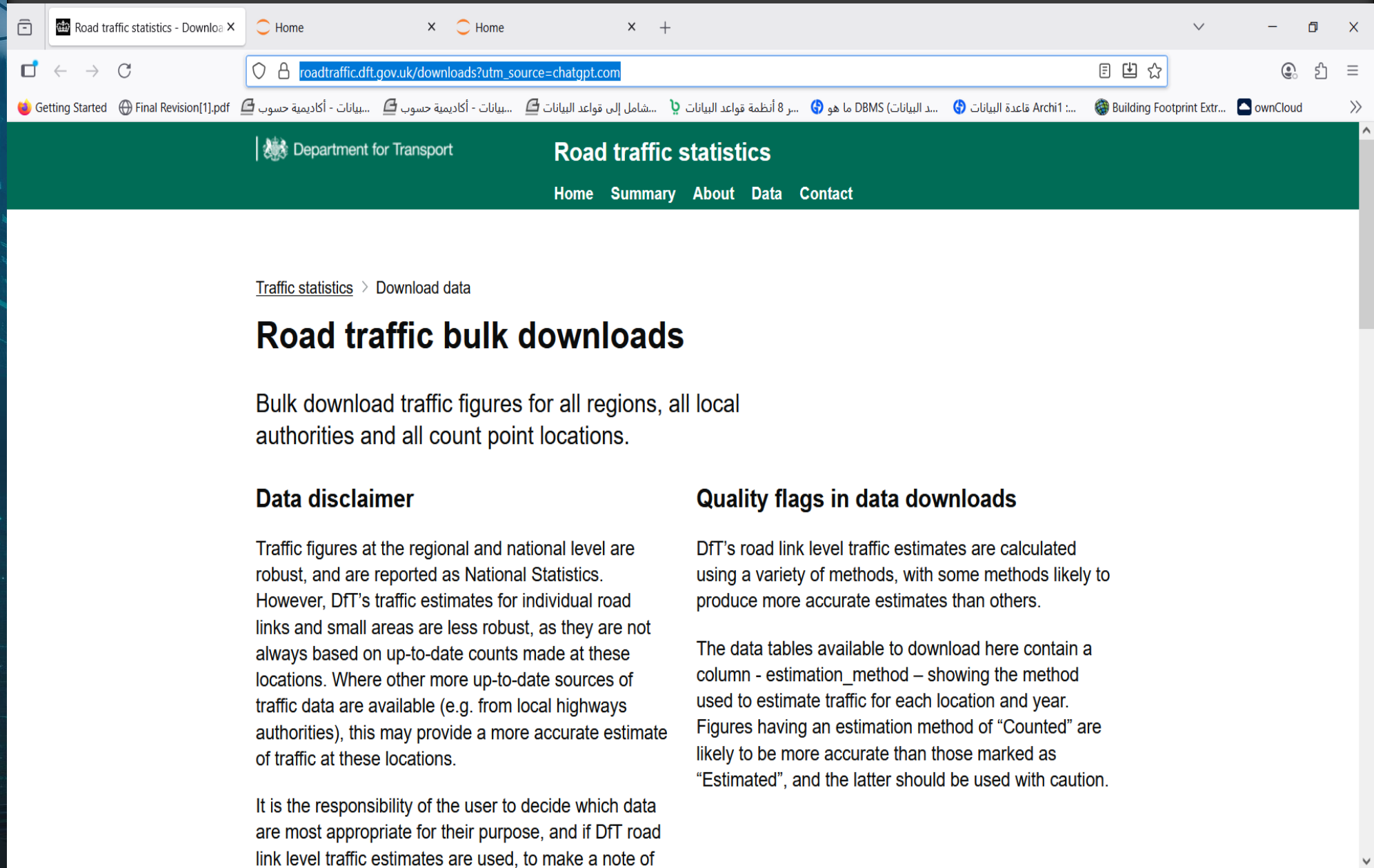
Data Source Link:
https://roadtraffic.dft.gov.uk/downloads?utm_source=chatgpt.com

Data Source



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رواد مصر الرقمية

Raw Data

46476 out of 1,085,000 records

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dft_traffic_counts_raw_counts3.csv - Excel

road_category	road_type	start_junction_road_name	end_junction_road_name	easting	northing	latitude	longitude	link_length_km	link_length_
PA	Major	Pierhead, Hugh Town	A3112	90200	10585	49.91501492	-6.31713812	0.3	0.19
PA	Major	Pierhead, Hugh Town	A3112	90200	10585	49.91501492	-6.31713812	0.3	0.19
PA	Major	Pierhead, Hugh Town	A3112	90200	10585	49.91501492	-6.31713812	0.3	0.19
PA	Major	Pierhead, Hugh Town	A3112	90200	10585	49.91501492	-6.31713812	0.3	0.19

count_point_id	direction_of_travel	year	count_date	hour	region_id	region_name	region_ons_code	local_authority_id	local_authority_name	local_authority_code	road_name
51	S	2004	5/21/2004	11	1	South West	E12000009	1	Isles of Scilly	E06000053	A3111
51	S	2004	5/21/2004	15	1	South West	E12000009	1	Isles of Scilly	E06000053	A3111

link_length_miles	pedal_cycles	two_wheeled_motor_vehicles	cars_and_taxis	buses_and_coaches	LGVs	HGVs_2_rigid_axle	HGVs_3_rigid_axle	HGVs_4_or_more_rigid_axle	HGVs_3_or_4_articulated_axle	HG
0.19	12	2	27	2	16	2	0	0	0	
0.19	10	1	29	1	13	2	0	0	0	
0.19	7	0	21	2	23	5	0	0	0	
0.19	5	2	3	1	13	0	0	0	0	

HGVs_3_or_4_articulated_axle	HGVs_5_articulated_axle	HGVs_6_articulated_axle	all_HGVs	all_motor_vehicles
0	0	0	2	49
0	0	0	2	46
0	0	0	5	51
0	0	0	0	19

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Columns Names

Column Name	المعنى
count_point_id	رقم تعريف نقطة العدّ (مكان تم فيه عدّ المركبات).
direction_of_travel	اتجاه السفر (زي شمال، جنوب، شرق، غرب).
year	سنة تسجيل البيانات.
count_date	التاريخ الفعلي للعدّ (يوم العدّ).
hour	الساعة (الوقت اللي تم فيه العدّ – غالبًا من 0 إلى 23).
region_id	رقم تعريف المنطقة (رقم داخلي يستخدم لتحديد المنطقة).
region_name	اسم المنطقة (زي "East Midlands" أو "London").
region_ons_code	كود المنطقة حسب مكتب الإحصاء الوطني (ONS) للاستخدام الإحصائي.
local_authority_id	رقم تعريف السلطة المحلية (بلدية أو مجلس محلي).
local_authority_name	اسم السلطة المحلية (زي "Leeds City Council").
local_authority_code	كود السلطة المحلية (رمز مختصر).
road_name	اسم الطريق (زي A1، M25).
road_category	فئة الطريق (زي طريق سريع، طريق رئيسي، محلي، الخ).
road_type	نوع الطريق (قد يكون مزيد من التفصيل عن الفئة – مفرد، مزدوج، الخ).
start_junction_road_name	اسم الطريق عند بداية المفرق أو التقاطع.
end_junction_road_name	اسم الطريق عند نهاية المفرق أو التقاطع.
easting	الإحداثي الشرقي (نظام الإحداثيات البريطانية).
latitude	دائرة العرض (إحداثيات جغرافية).
longitude	خط الطول (إحداثيات جغرافية).
link_length_km	طول المقطع الطرقي بالكيلومترات.
link_length_miles	طول المقطع الطرقي بالأميال.
pedal_cycles	عدد الدراجات الهوائية.
two_wheeled_motor_vehicles	عدد الدراجات النارية (سكوتر، موتوسيكل).
cars_and_taxis	عدد السيارات العادية والتاكسي.
buses_and_coaches	عدد الحافلات.
LGVs	سيارات النقل الخفيف (Light Goods Vehicles) – زي الفانات الصغيرة.
HGVs_2_rigid_axle	شاحنات ثقيلة بعدد 2 محور صلب.
HGVs_3_rigid_axle	شاحنات ثقيلة بعدد 3 محاور صلبة.
HGVs_4_or_more_rigid_axle	شاحنات ثقيلة بعدد 4 أو أكثر من المحاور الصلبة.
HGVs_3_or_4_articulated_axle	شاحنات ثقيلة مفصلية بعدد 3 أو 4 محاور.
HGVs_5_articulated_axle	شاحنات ثقيلة مفصلية بعدد 5 محاور.
HGVs_6_articulated_axle	شاحنات ثقيلة مفصلية بعدد 6 محاور أو أكثر.
all_HGVs	إجمالي الشاحنات الثقيلة (HGVs).
all_motor_vehicles	إجمالي جميع المركبات الآلية (من موتوسيكلات لحد الشاحنات).

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Tools

05 GitHub

04 ArcGIS Online

03 Power BI

02 SQL Server

01 Python Jupyter

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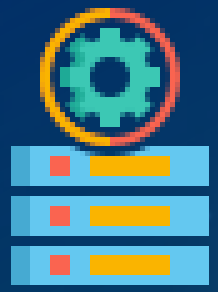
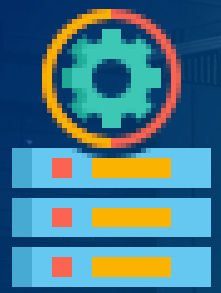
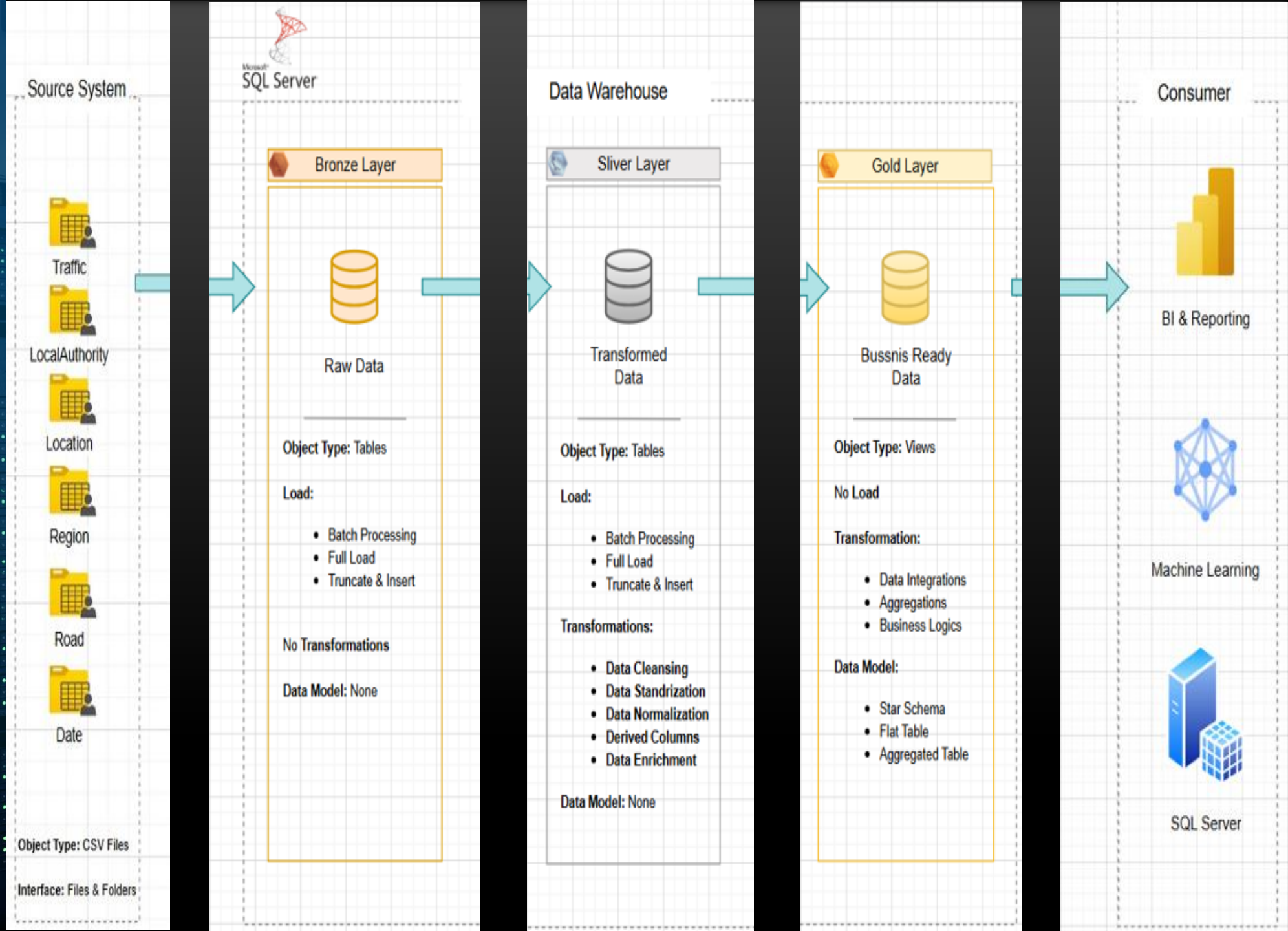


Data Warehouse

Presented by:
Osama Ahmed
Mohamed Nsr
Sherif Gamal

Data Modeling





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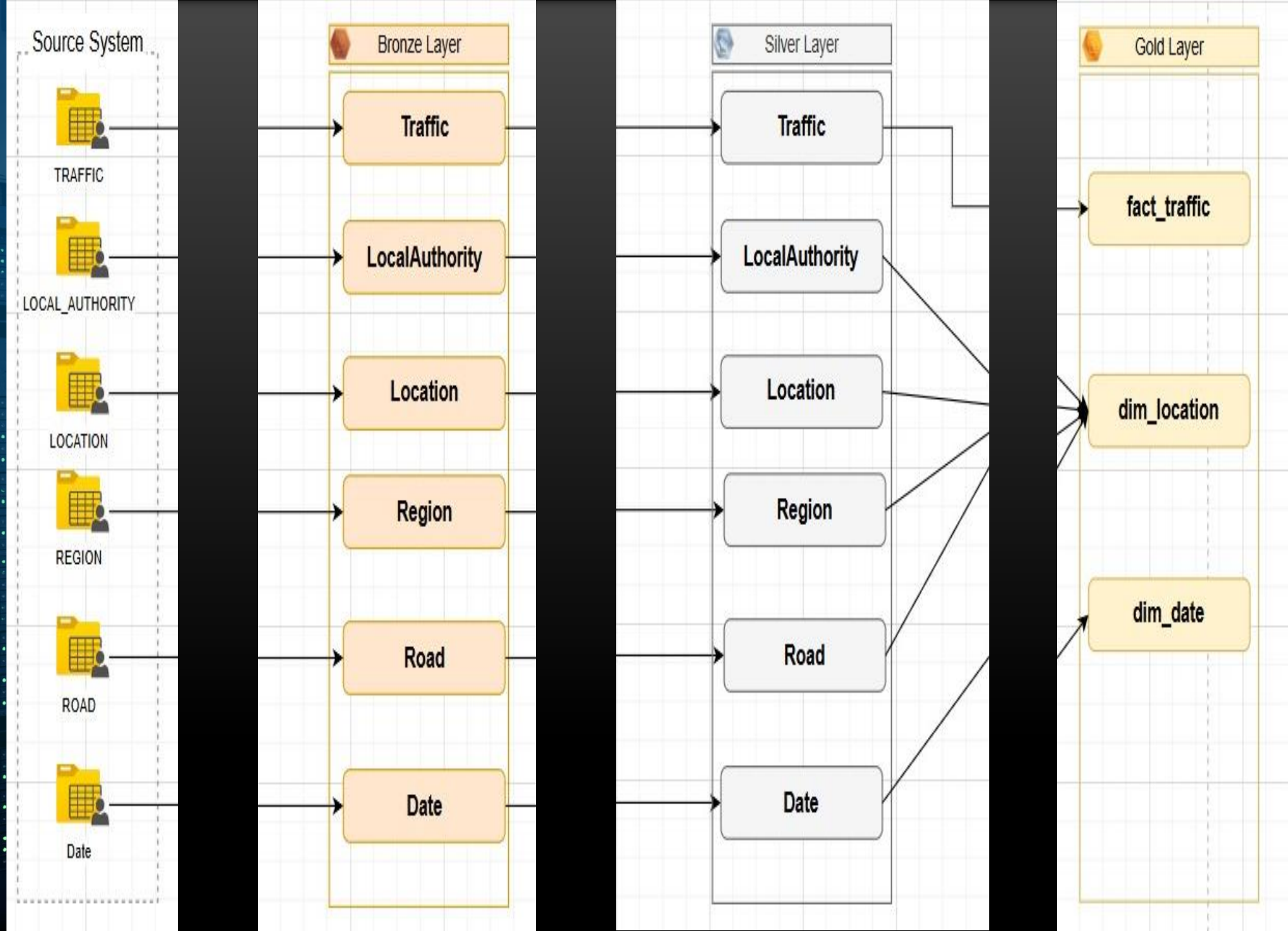
Data Flow Diagram



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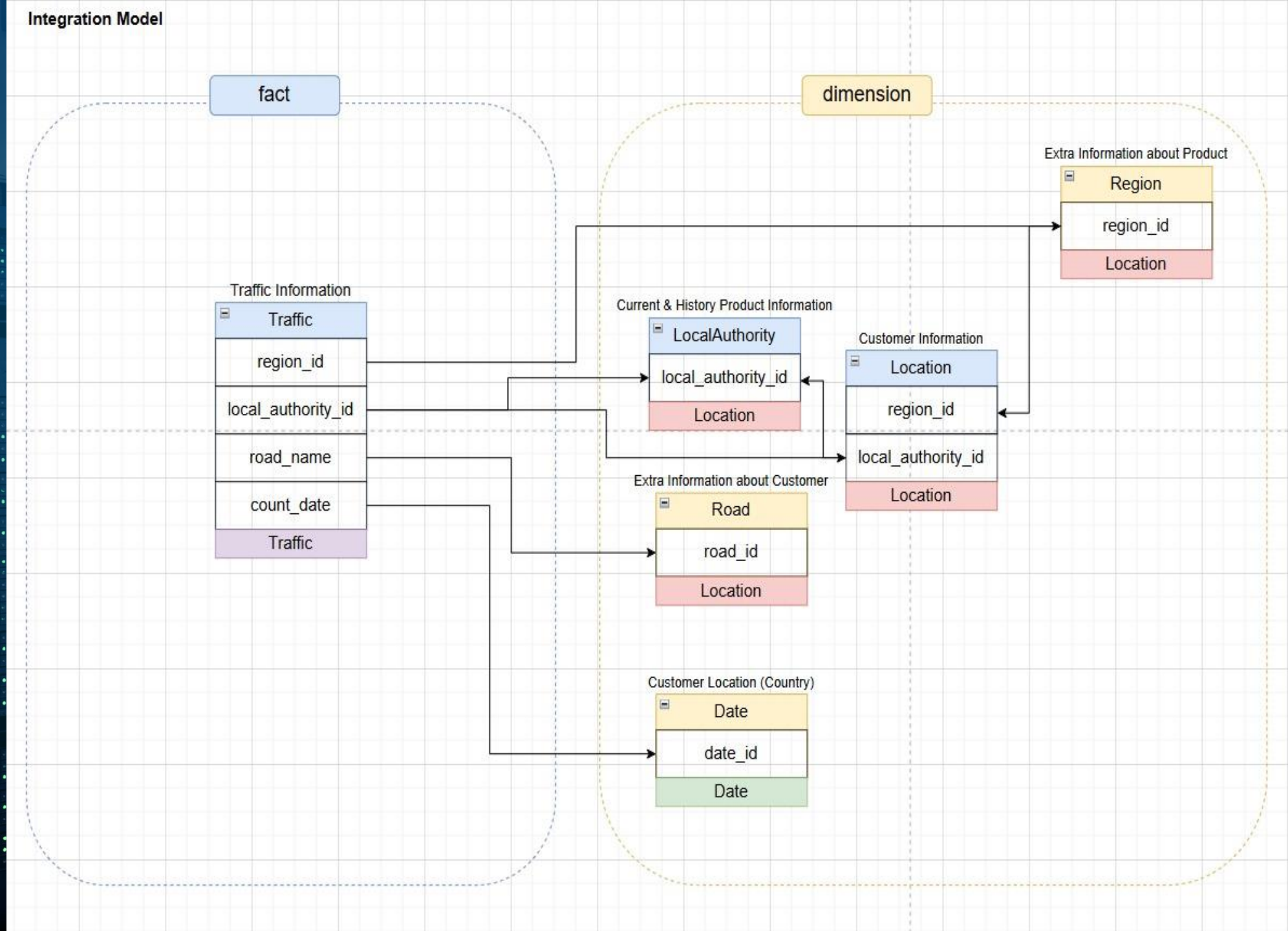
Integration Model



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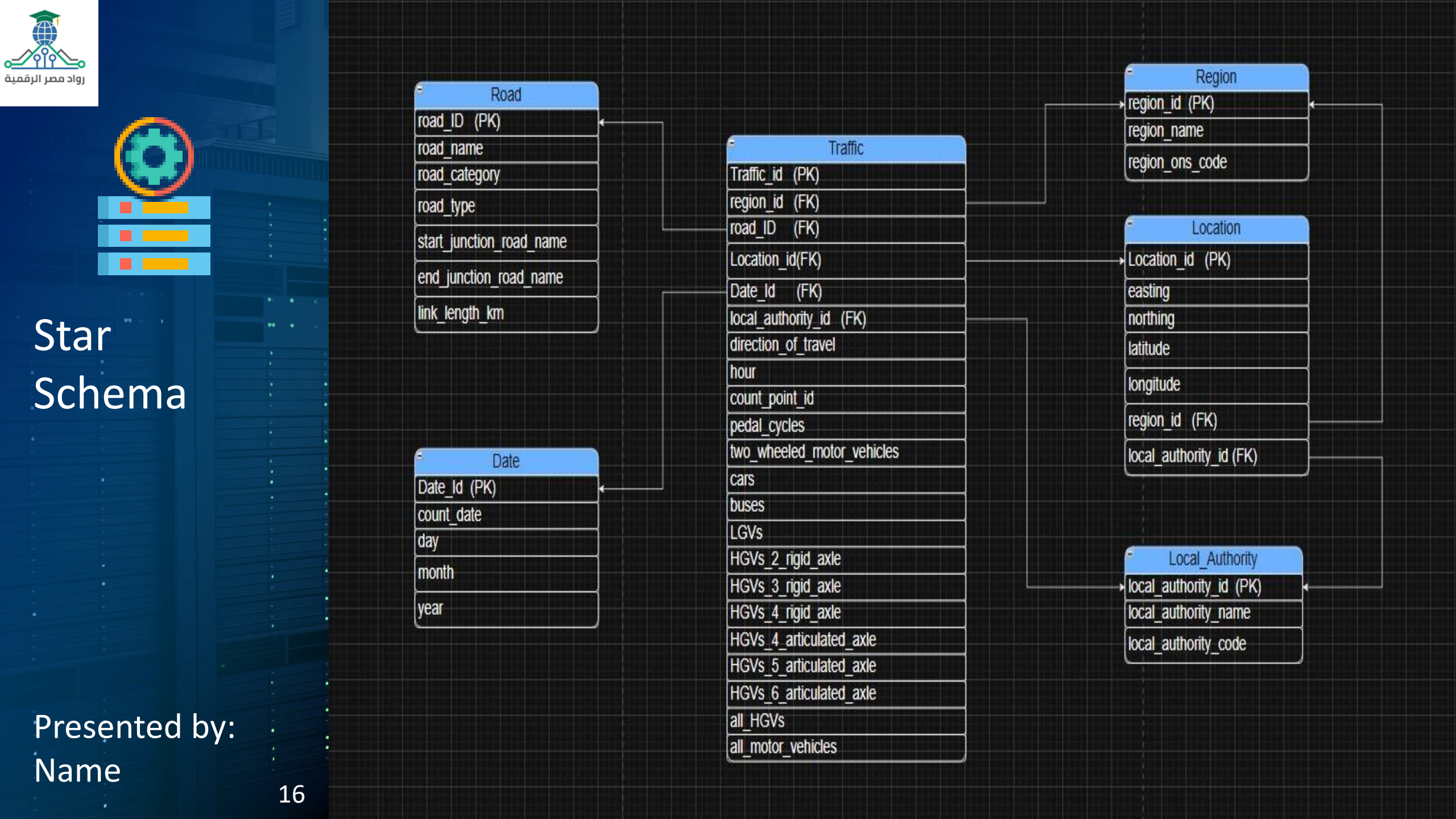
Star Schema



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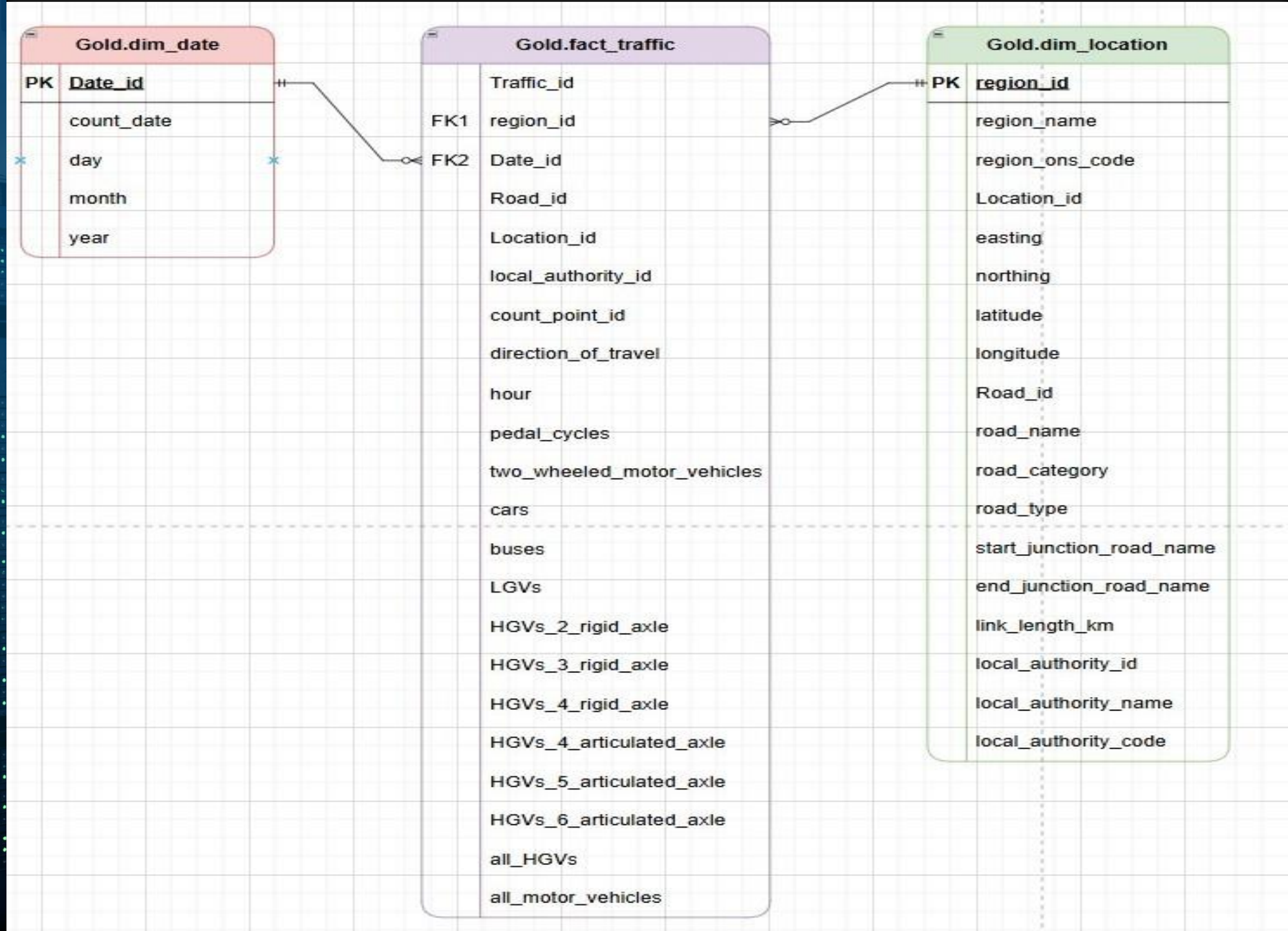
Gold Views



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Silver Layer

1. Layer Modeling

Table	Description	Key Column
Traffic	Fact table	Traffic_id
Road	Road information	Road_id
Region	UK regions	Region_id
LocalAuthority	Local authority details	Local_authority_id
Location	Coordinates	Location_id
Date	Date dimension	Date_id

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Silver Layer

2. Data Cleansing

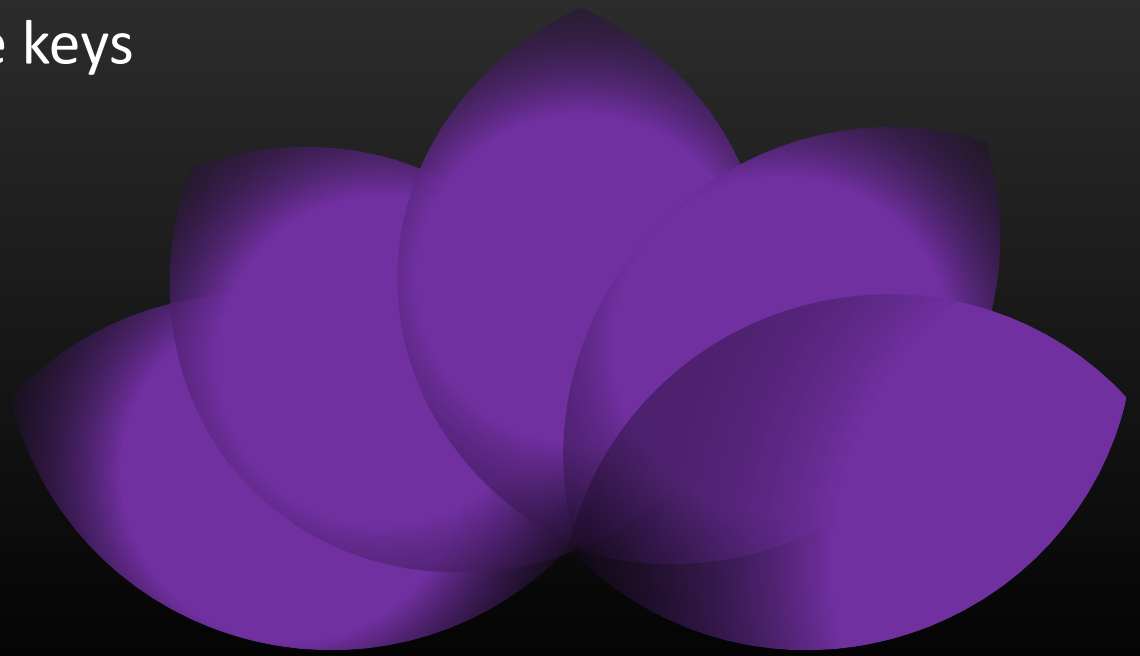
1
Removed duplicates

2
Added surrogate keys

3
Validated datatypes

4
Ensured FK relationships

5
Prepared clean CSVs for SQL Server



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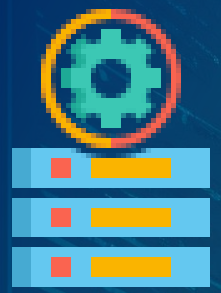

Silver Layer

2. Data Cleansing

	count_point_id	region_id	local_authority_id	hour	pedal_cycles	two_wheeled_motor_vehicles
count	1.048575e+06	1.048575e+06	1.048575e+06	1.048575e+06	1.048575e+06	1.048575e+06
mean	1.955818e+04	6.101257e+00	1.000306e+02	1.249998e+01	4.488582e+00	1.005708e+01
std	1.038657e+04	2.987455e+00	5.084223e+01	3.452096e+00	2.196031e+01	1.962231e+01
min	5.100000e+01	1.000000e+00	1.000000e+00	1.000000e+00	0.000000e+00	0.000000e+00
25%	8.455000e+03	4.000000e+00	6.700000e+01	9.500000e+00	0.000000e+00	2.000000e+00
50%	1.791700e+04	6.000000e+00	9.300000e+01	1.200000e+01	0.000000e+00	5.000000e+00
75%	2.754600e+04	9.000000e+00	1.380000e+02	1.550000e+01	3.000000e+00	1.000000e+01
max	3.725800e+04	1.100000e+01	2.140000e+02	1.800000e+01	2.396000e+03	6.500000e+02

cars	buses	LGVs	HGVs_2_rigid_axle	HGVs_3_rigid_axle	HGVs_4_rigid_axle	HGVs_4_articulated_axle
1.048575e+06	1.048575e+06	1.048575e+06	1.048575e+06	1.048575e+06	1.048575e+06	1.048575e+06
8.307018e+02	9.831411e+00	1.564751e+02	3.094480e+01	5.202474e+00	6.121944e+00	4.662569e+00
7.993067e+02	1.438566e+01	1.748856e+02	4.198828e+01	7.531922e+00	1.007306e+01	9.762673e+00
0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00
3.160000e+02	2.000000e+00	5.100000e+01	7.000000e+00	1.000000e+00	0.000000e+00	0.000000e+00
5.650000e+02	6.000000e+00	9.400000e+01	1.600000e+01	3.000000e+00	2.000000e+00	1.000000e+00
1.037000e+03	1.200000e+01	1.890000e+02	3.600000e+01	6.000000e+00	7.000000e+00	4.000000e+00
9.709000e+03	8.660000e+02	4.440000e+03	1.636000e+03	2.670000e+02	7.960000e+02	9.270000e+02

HGVs_5_articulated_axle	HGVs_6_articulated_axle	all_HGVs	all_motor_vehicles
1.048575e+06	1.048575e+06	1.048575e+06	1.048575e+06
1.728968e+01	2.006401e+01	8.428547e+01	1.091351e+03
3.980883e+01	4.762750e+01	1.342393e+02	1.059629e+03
0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00
0.000000e+00	0.000000e+00	1.300000e+01	4.130000e+02
3.000000e+00	3.000000e+00	3.200000e+01	7.230000e+02
1.300000e+01	1.400000e+01	8.500000e+01	1.356000e+03
7.170000e+02	1.430000e+03	2.498000e+03	1.090500e+04

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Data Analysis

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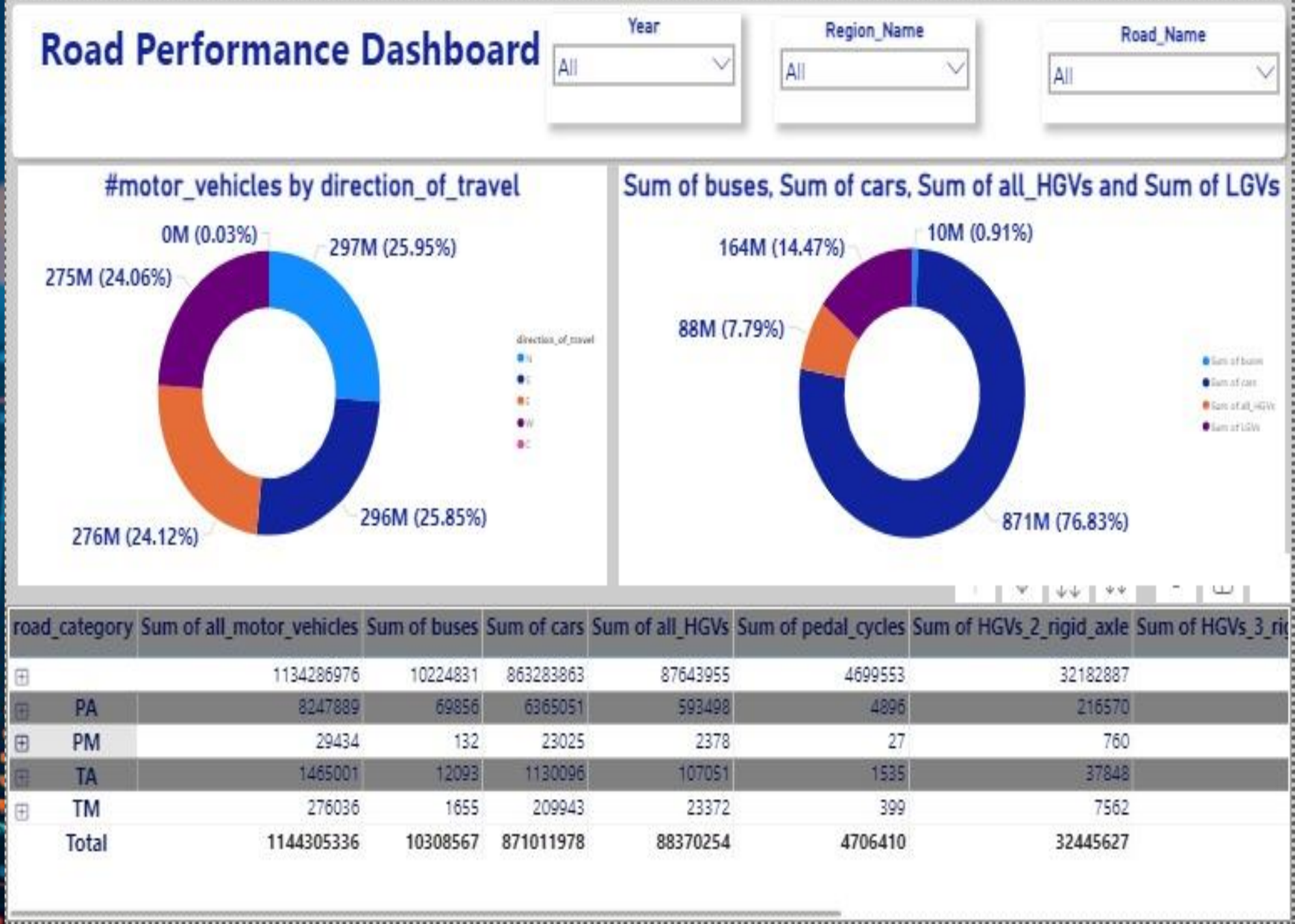
Analysis

Presented by:
Sara Hisham

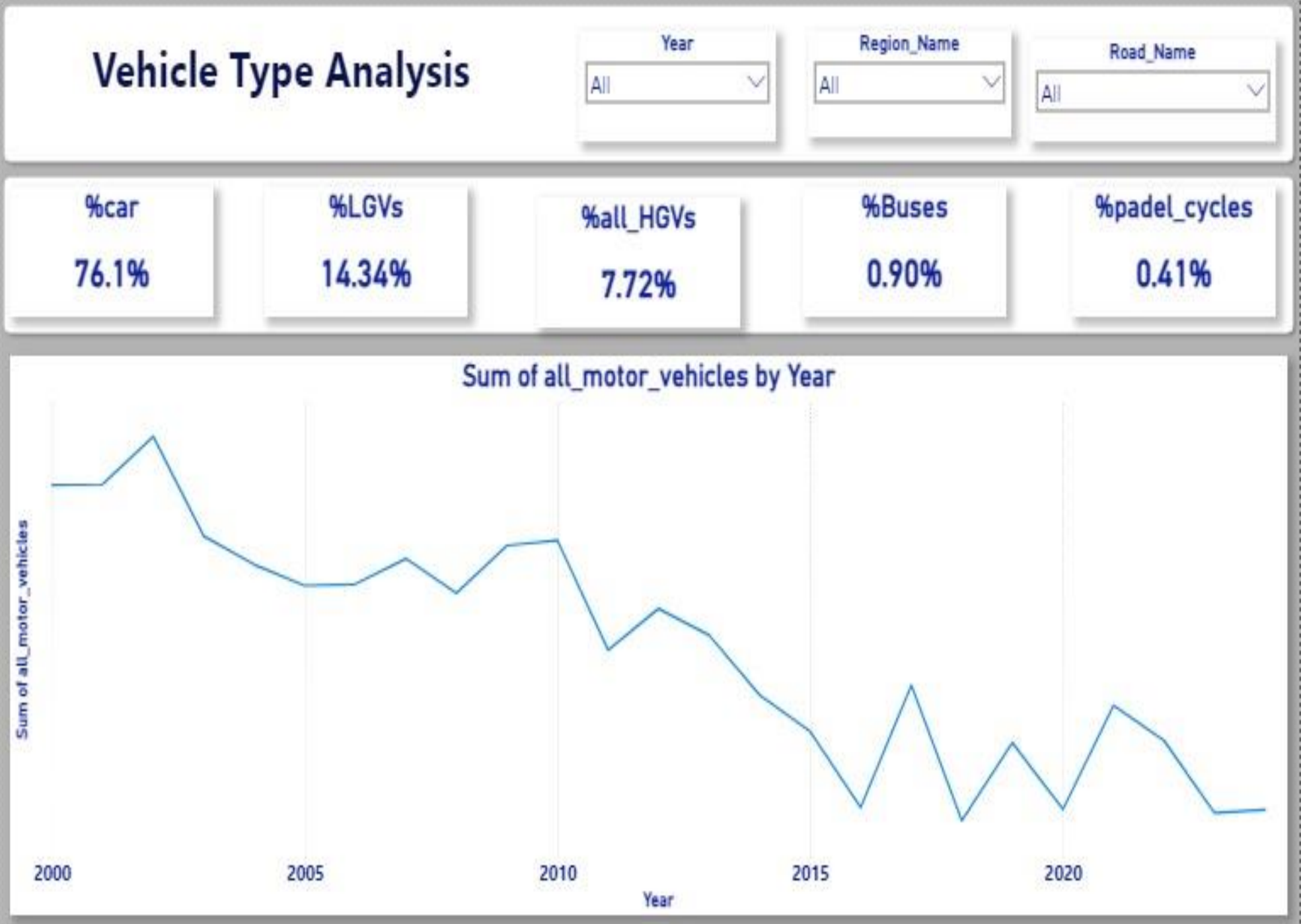
Analysis



road_category	Sum of all_motor_vehicles	Sum of buses	Sum of cars	Sum of all_HGVs	Sum of pedal_cycles	Sum of HGVs_2_rigid_axle	Sum of HGVs_3_rig
	1134286976	10224831	863283863	87643955	4699553	32182887	
PA	8247889	69856	6365051	593498	4896	216570	
PM	29434	132	23025	2378	27	760	
TA	1465001	12093	1130096	107051	1535	37848	
TM	276036	1655	209943	23372	399	7562	
Total	**1144305336**	**10308567**	**871011978**	**88370254**	**4706410**	**32445627**	

Presented by:
Ahmed Salama

Analysis



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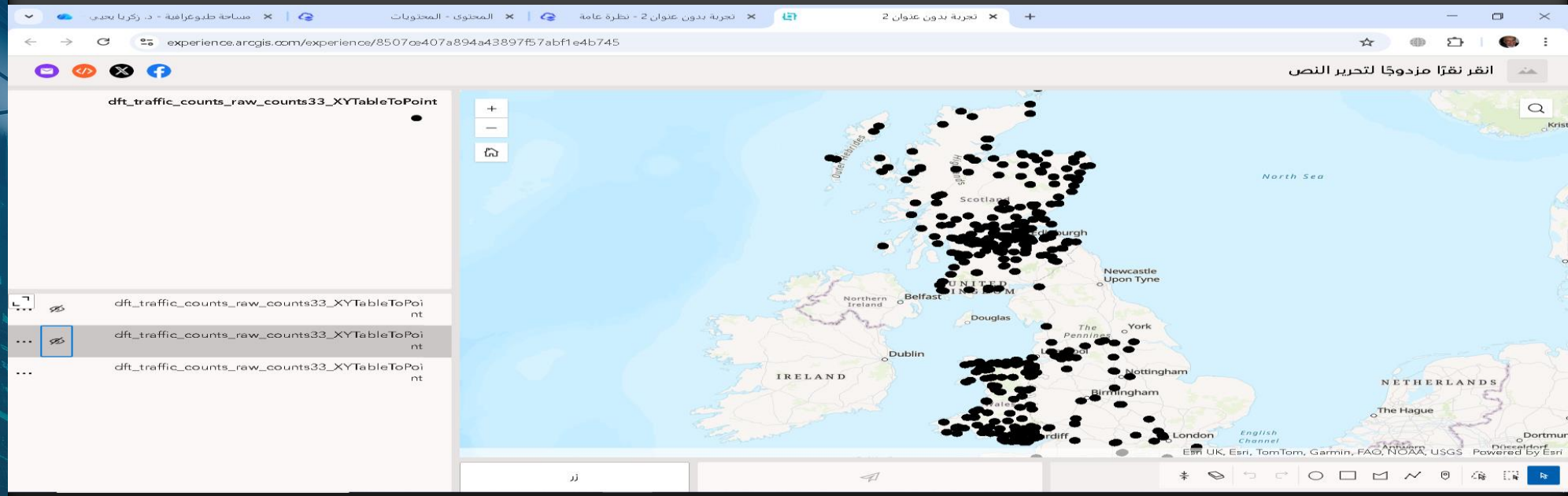
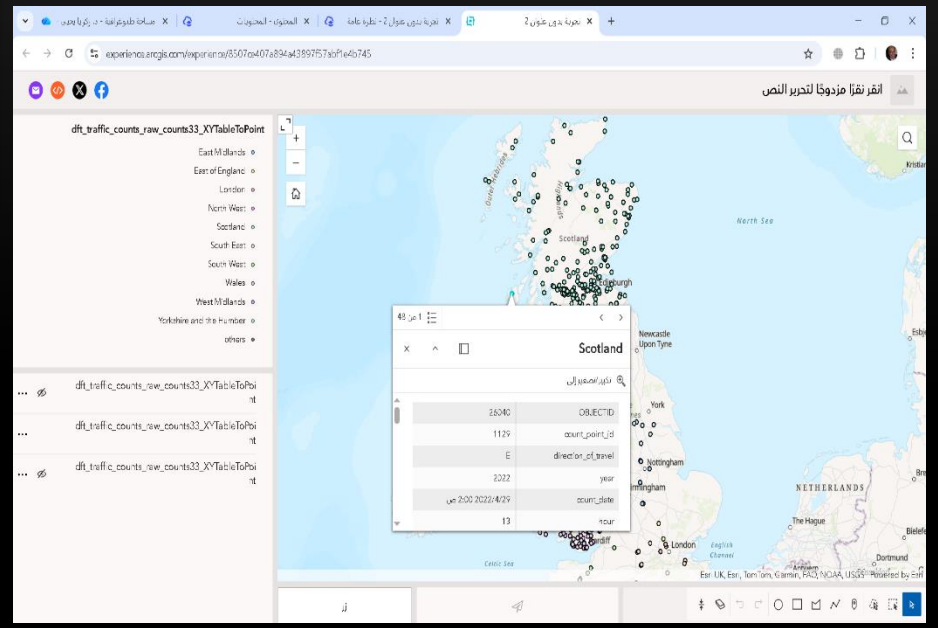
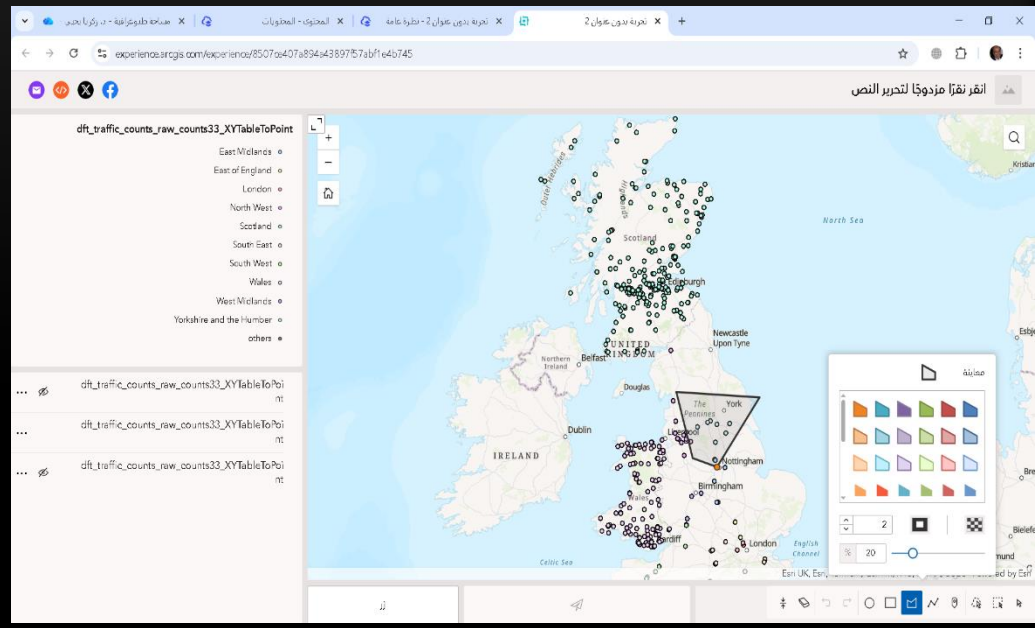
ArcGIS Online

https://experience.arcgis.com/experience/8507ce407a894a43897f57abf1e4b745







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Thank You