

ABSTRACT

The objective of this report is to analyse the crime in Greater Manchester with the local population data and Lower Layer Super Output Areas (LSOAs) and create a reporting tool called Crime Fighter.

This analysis focuses on the lower layer super output areas to build and analyse reports from crimes in Greater Manchester. Which I analysed the crime data and came up with various insights and visualisation.

TABLE CREATION

The data was imported to SQL SERVER MANAGEMENT STUDIO, which included the 24 months crime data from January 2017 to December 2018.

I did a union all of all 24 months crime data tables and saved into a table a called PoliceCrimeD and imported the LSOA data to the sql server management studio.

```
1  -- creating a table for the crime data joining all months from January,2017 to December, 2018.
2  select * into PoliceCrimeD
3  from (select * from jan2017
4  union all select * from jan2018
5  union all select * from feb2017
6  union all select * from feb2018
7  union all select * from march2017
8  union all select * from march2018
9  union all select * from April2017
10 union all select * from april2018
11 union all select * from may2017
12 union all select * from may2018
13 union all select * from june2017
14 union all select * from june2018
15 union all select * from july2017
16 union all select * from july2018
```

```

15 union all select * from july2017
16 union all select * from july2018
17 union all select * from August2017
18 union all select * from aug2018
19 union all select * from sept2017
20 union all select * from sept2018
21 union all select * from oct2017
22 union all select * from oct2018
23 union all select * from nov2017
24 union all select * from nov2018
25 union all select * from dec2017
26 union all select * from dec2018) as CrimeD
27
28
29 --Viewing the table
30 SELECT *
31 FROM PoliceCrimeD;

```

```

33 --CREATING PRIMARY KEYS
34 ALTER TABLE [CrimeWorks].[dbo].[PoliceCrimeD]
35 ADD [GeoLocation] GEOGRAPHY;
36
37
38 UPDATE [CrimeWorks].[dbo].[PoliceCrimeD]
39 SET GeoLocation = GEOGRAPHY::Point([Latitude], [Longitude], 4326)
40 WHERE [Longitude] IS NOT NULL
41 AND [Latitude] IS NOT NULL
42 AND CAST([Latitude] AS decimal(10, 6)) BETWEEN -90 AND 90
43 AND CAST([Longitude] AS decimal(10, 6)) BETWEEN -90 AND 90;
44
45 ALTER TABLE [CrimeWorks].[dbo].[PoliceCrimeD]
46 ADD ID INT IDENTITY;
47
48 ALTER TABLE [CrimeWorks].[dbo].[PoliceCrimeD]
49 ADD CONSTRAINT ID_PK
50 PRIMARY KEY NONCLUSTERED (ID);
51 GO
52

```

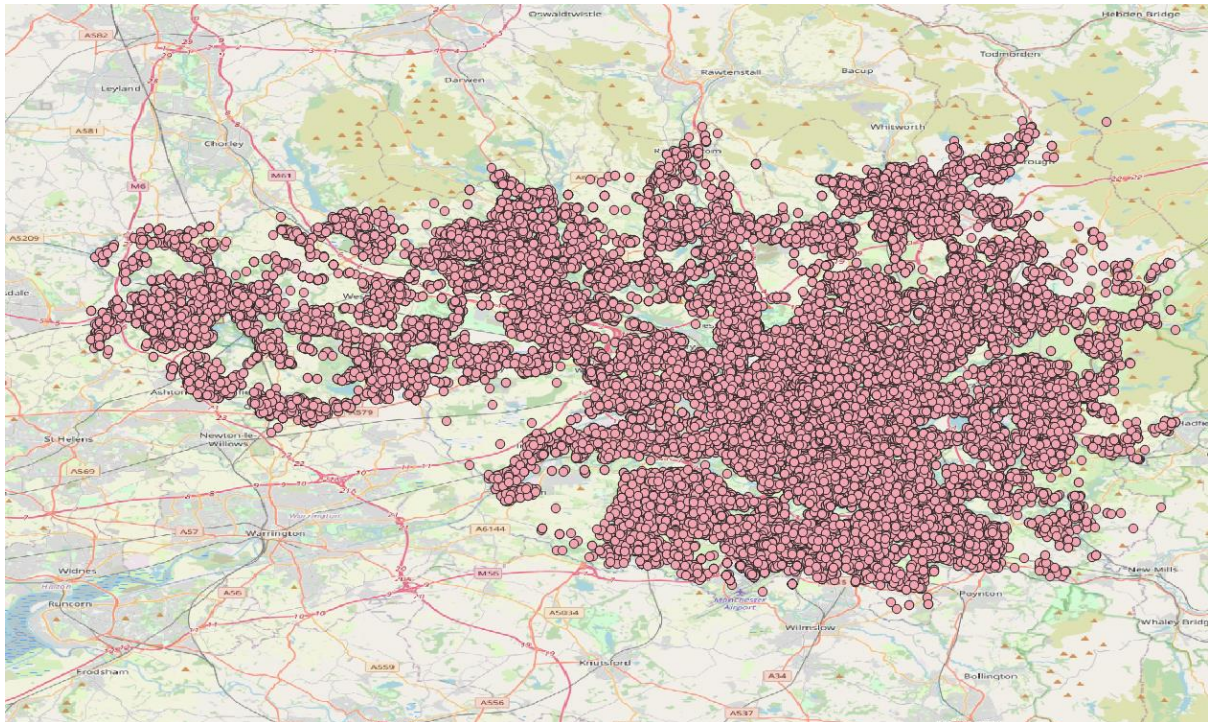
REPORT 1 (VEHICLE CRIMES IN GREATER MANCHESTER)

```
54 --Report 1 (SUMMARIZED CRIME REPORT OF GREATER MANCHESTER AND THE POPULATION IN EACH LSOA)
55 create view New_Summ_Greater_Manc_vehicleCrime_Report
56 as
57 select *
58 from [PoliceCrimeD]
59 where [Crime type] = 'vehicle crime';
```

Month	Reported by	Falls within	Longitude	Latitude	Location	LSOA code	LSOA name	Crime type	ID	GeoLocation
2017-01	Greater Manchester Police	Greater Manchester Police	-2.387617	53.544331	On or near Ann Street	E01004906	Bolton 032E	Vehicle crime	825	0xE6100000010C789961A3ACC54A4033FD12F1D61903C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.390179	53.544008	On or near Thomas Street	E01004906	Bolton 032E	Vehicle crime	834	0xE6100000010C9561DC0DA2C54A401880E42A161F03C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.392247	53.545638	On or near Russell Street	E01004906	Bolton 032E	Vehicle crime	843	0xE6100000010C38BA4A77D7C54A4005A22765522303C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.410789	53.542043	On or near Churchside	E01004861	Bolton 033A	Vehicle crime	1066	0xE6100000010C4B033FAA61C54A40C0D7344BE4B4903C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.410789	53.542043	On or near Churchside	E01004861	Bolton 033A	Vehicle crime	1075	0xE6100000010C4B033FAA61C54A40C0D7344BE4B4903C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.40519	53.545136	On or near St Gregorys Close	E01004862	Bolton 033B	Vehicle crime	1264	0xE6100000010CA6EF3504C7C54A4076543541D43D03C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.405019	53.541397	On or near Buckley Lane	E01004862	Bolton 033B	Vehicle crime	1272	0xE6100000010C8693347F4CC54A40A911FA997A3D03C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.411397	53.540899	On or near Byron Walk	E01004863	Bolton 033C	Vehicle crime	1378	0xE6100000010C35B8AD2D3CC54A404E61A5828A4A03C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.355286	53.541888	On or near Scott Street	E01004904	Bolton 034B	Vehicle crime	1740	0xE6100000010C240C03965CC54A4031D0B52FA0D702C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.381265	53.544514	On or near Martin Grove	E01004905	Bolton 034C	Vehicle crime	1831	0xE6100000010C691B7FA2B2C54A4022E010AD40C03C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.381588	53.541834	On or near Bolton Road	E01004905	Bolton 034C	Vehicle crime	1838	0xE6100000010C31EE06D15AC54A404E5E64027E0D03C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.379977	53.537219	On or near South Avenue	E01004907	Bolton 034D	Vehicle crime	2006	0xE6100000010C19E5997C3C44A4087DBA161310A03C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.380671	53.537145	On or near Kingsway	E01004907	Bolton 034D	Vehicle crime	2010	0xE6100000010CDF1AD82AC1C44A40F148BC3C9D0B03C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.372071	53.545828	On or near Ford Street	E01004910	Bolton 034G	Vehicle crime	2327	0xE6100000010C0C9E20B1DDC54A40F451465C00FA02C0

Above is a view created to store the summarized vehicle crime report across Greater Manchester and below is the visualization using OpenStreetMap as my OpenLayers plugin with QGIS.

I filtered the Greater Manchester Crime Data to where Crime type is Vehicle crimes and created a view of it before running a QGIS visualisation, the map showcases points in Greater Manchester where each vehicle crime occurred based on the longitude and latitude.



VEHICLE CRIMES IN GREATER MANCHESTER

REPORT 2 (ANTI-SOCIAL BEHAVIOURS CRIMES IN SALFORD)

```

63
64 --REPORT 2 ANTISOCIAL-BEHAVIOURS CRIMES IN SALFORD
65 create view NEW_ANTI_SOCIAL_BEHAVIOURS_CRIMES_IN_SALFORD
66 as
67 select *
68 from [PoliceCrimeD]
69 where [LSOA name] like 'salf%' and [Crime type] = 'Anti-social behaviour';

```

Month	Reported by	Falls within	Longitude	Latitude	Location	LSOA code	LSOA name	Crime type	ID	GeoLocation
2017-01	Greater Manchester Police	Greater Manchester Police	-2.333905	53.509412	On or near Stoneacre Court	E01005674	Salford 012B	Anti-social behaviour	6006	0xE6100000010C5018946934C14A405DC47762D6A802C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.320189	53.506213	On or near Parking Area	E01005674	Salford 012B	Anti-social behaviour	6010	0xE6100000010CB0E76B96CBCD4A40C24F1C40BF8F02C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.332305	53.509245	On or near Sulway Close	E01005674	Salford 012B	Anti-social behaviour	6014	0xE6100000010C6553AEF02EC14A40D4601A868FA802C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.320189	53.506213	On or near Parking Area	E01005674	Salford 012B	Anti-social behaviour	6017	0xE6100000010CB0E76B96CBCD4A40C24F1C40BF8F02C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.340597	53.495919	On or near Godolphin Close	E01005694	Salford 012C	Anti-social behaviour	6058	0xE6100000010C863B17467ABF4A40C26D6DE179C902C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.348377	53.499852	On or near Fourth Avenue	E01005696	Salford 012D	Anti-social behaviour	6073	0xE6100000010C86B7C267BBF4A40C26D6DE179C902C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.335191	53.508105	On or near Ogden Street	E01005698	Salford 012E	Anti-social behaviour	6177	0xE6100000010C90F7AA9509C14A40EC4E779E78AE02C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.335191	53.508105	On or near Ogden Street	E01005698	Salford 012E	Anti-social behaviour	6183	0xE6100000010C90F7AA9509C14A40EC4E779E78AE02C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.331809	53.507467	On or near Cottam Grove	E01005698	Salford 012E	Anti-social behaviour	6191	0xE6100000010C4D66BCADF4C04A40D0251C7A8BA702C0
2017-01	Greater Manchester Police	Greater Manchester Police	-2.335425	53.509066	On or near Bain Street	E01005700	Salford 012F	Anti-social behaviour	6242	0xE6100000010CB5C01E1329C14A401E166A4DF3AE02C0

Above is a view created to store the Anti-Social Behaviours crime report across Salford and below is the visualization using Google Satellite map as my OpenLayers plugin with QGIS.

I filtered the Greater Manchester Crime Data to where Crime type is Anti-Social behaviours and created a view of it before running a QGIS visualisation, the map showcases points in Salford where each Anti-Social Behaviours crime occurred based on the longitude and latitude.



ANTI-SOCIAL BEHAVIOURS CRIMES IN SALFORD

REPORT 3 (TOP 10 LSOAs IN SALFORD WITH THE HIGHEST NUMBER OF ANTI SOCIAL BEHAVIOR CRIMES)

This shows the Salford LSOAs with the highest number of vehicle crimes. Salford 026A LSOA, has the largest number of crimes with a total 210 reports over the 2 years.

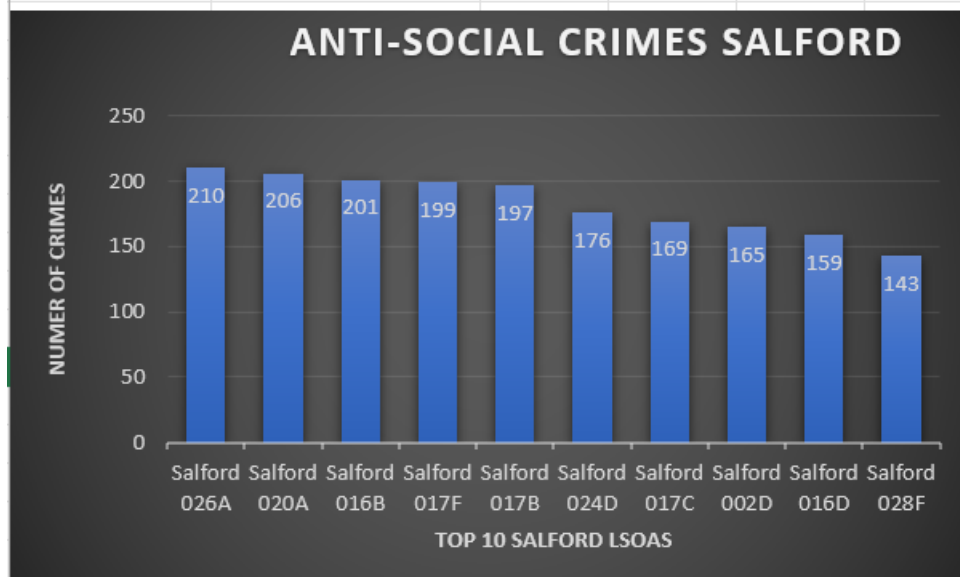
```

81 select A.[LSOA name] AS Salford_LSOA, [Crime type], COUNT(A.[Crime type]) as number_of_crimes, [all ages] as Population
82 FROM policecrimed as A
83 INNER join [output area] as B
84 ON A.[LSOA NAME] = B.[LSOA NAME]
85 where [Crime type] = 'Anti-social behaviour' and A.[LSOA name] LIKE 'Salford%'
86 GROUP BY A.[LSOA name], [all ages], [Crime type]
87 ORDER BY number_of_crimes DESC;

```

	Salford_LSOA	Crime type	number_of_crimes	Population
1	Salford 026A	Anti-social behaviour	210	1809
2	Salford 020A	Anti-social behaviour	206	1593
3	Salford 016B	Anti-social behaviour	201	2315
4	Salford 017F	Anti-social behaviour	199	3151
5	Salford 017B	Anti-social behaviour	197	1556
6	Salford 024D	Anti-social behaviour	176	1674
7	Salford 017C	Anti-social behaviour	169	1881
8	Salford 002D	Anti-social behaviour	165	1535
9	Salford 016D	Anti-social behaviour	159	2779
10	Salford 028F	Anti-social behaviour	143	2626

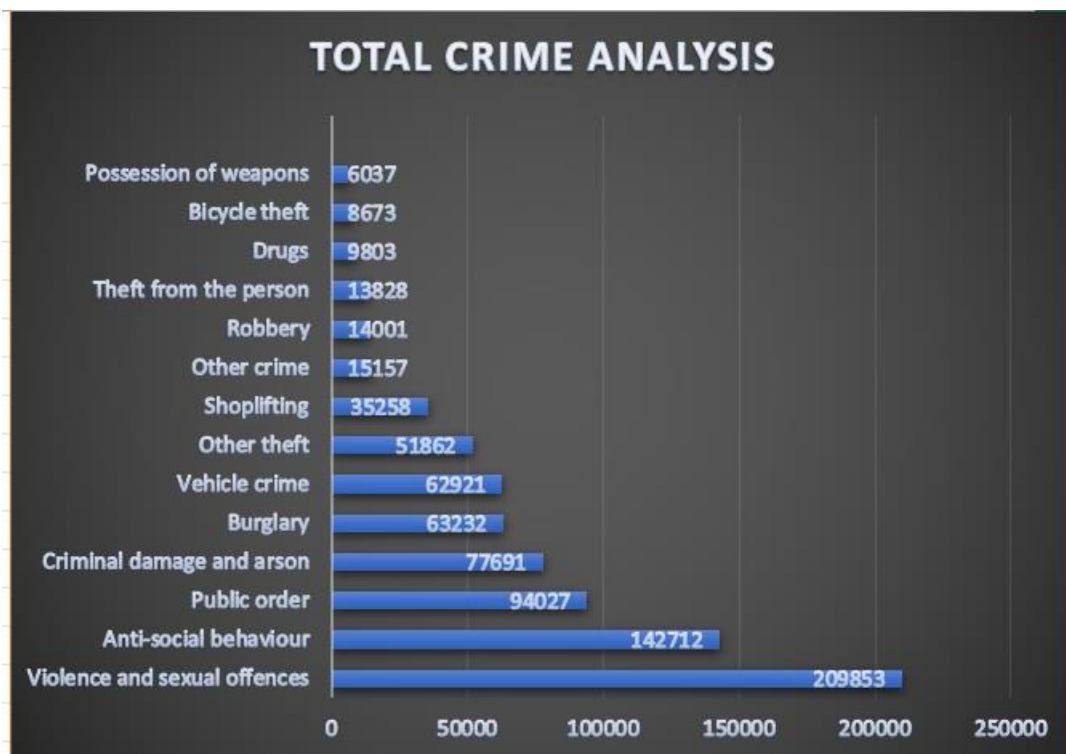
SALFORD LSOAs	NUMBER OF CRIMES				
Salford 026A	210				
Salford 020A	206				
Salford 016B	201				
Salford 017F	199				
Salford 017B	197				
Salford 024D	176				
Salford 017C	169				
Salford 002D	165				
Salford 016D	159				
Salford 028F	143				



REPORT 4 (TOTAL CRIME ANALYSIS IN GREATER MANCHESTER)

This shows the total number of crimes in Greater Manchester and how frequent they were committed. From the chart below, Violence and sexual offences are the most crimes committed in Greater Manchester according to the Crime Data while Possession of weapons is the least committed crime.

	A	B
1	GREATER_MANCHESTER_CRIMES	number_of_crimes
2	Other theft	51862
3	Robbery	14001
4	Public order	94027
5	Drugs	9803
6	Burglary	63232
7	Other crime	15157
8	Bicycle theft	8673
9	Theft from the person	13828
10	Shoplifting	35258
11	Possession of weapons	6037
12	Vehicle crime	62921
13	Anti-social behaviour	142712
14	Criminal damage and arson	77691
15	Violence and sexual offences	209853



```

88  --REPORT 4 (AN ANALYSIS ON TOTAL CRIMES IN GREATER MANCHESTER)
89  select ([Crime type]) AS GREATER_MANCHESTER_CRIMES, COUNT(A.[Crime type]) as number_of_crimes
90  FROM policecrimed as A
91  INNER join [output area] as B
92  ON A.[LSOA NAME] = B.[LSOA NAME]
93  GROUP BY [Crime type]
94  order by number_of_crimes desc;

```

106 %

Results Messages

	GREATER_MANCHESTER_CRIMES	number_of_crimes
1	Violence and sexual offences	209853
2	Anti-social behaviour	142712
3	Public order	94027
4	Criminal damage and arson	77691
5	Burglary	63232
6	Vehicle crime	62921
7	Other theft	51862
8	Shoplifting	35258
9	Other crime	15157
10	Robbery	14001
11	Theft from the person	13828
12	Drugs	9803
13	Bicycle theft	8673
14	Possession of weapons	6037

REPORT 5 (SUMMARIZED REPORT ON THE TOP 10 LSOAs WITH THE HIGHEST CRIME REPORTS IN GREATER MANCHESTER)

This shows the LSOAs with the highest crime report over the 2 years, Manchester 055B LSOA has the highest number of crimes reported in this period.

```
101 | --Report 5 The summarised crime report in greater manchester LSOAs, their population and number of crimes in each.
102 | select A.[LSOA name] AS LSOA, COUNT(A.[Crime type]) as number_of_crimes, [all ages] as Population
103 | FROM policecrimed as A
104 | INNER join [output area] as B
105 | ON A.[LSOA NAME] = B.[LSOA NAME]
106 | GROUP BY A.[LSOA name], [all ages]
107 | order by number_of_crimes desc;
```

	LSOA	number_of_crimes	Population
1	Manchester 055B	16536	3676
2	Manchester 054C	15899	1588
3	Manchester 060A	6495	1811
4	Rochdale 010C	5425	1930
5	Tameside 013A	5374	2263
6	Stockport 014B	4973	2873
7	Oldham 024B	4523	2291
8	Bolton 022E	4070	2024
9	Manchester 053D	3998	1525
10	Wigan 008C	3514	1764
11	Bury 008E	3420	2146
12	Bolton 016D	3234	1740
13	Manchester 054E	2985	1166
14	Tameside 007E	2000	1500

TOP 10 LSOA	NUMBER OF CRIMES				
Manchester 055B	16536				
Manchester 054C	15899				
Manchester 060A	6495				
Rochdale 010C	5425				
Tameside 013A	5374				
Stockport 014B	4973				
Oldham 024B	4523				
Bolton 022E	4070				
Manchester 053D	3998				
Wigan 008C	3514				



REPORT 6 (TOP TEN LSOAs VEHICLE CRIMES IN VEHICLE CRIMES IN GREATER MANCHESTER)

For vehicle crimes in Greater Manchester, over the 2 years of study, Manchester 060A has the largest number of vehicle crimes with a total 485 reports.

115

--Report 6 (THE NUMBER OF VEHICLE CRIMES IN EACH LSOA in GREATER MANCHESTER AND POPULATION)

116

select A.[LSOA name] AS GreaterManchester_LSOA, [Crime type], COUNT(A.[Crime type]) as number_of_crimes, [all ages] as Population

117

FROM policecrimed as A

118

INNER join [output area] as B

119

ON A.[LSOA NAME] = B.[LSOA NAME]

120

where [Crime type] = 'vehicle crime'

121

GROUP BY A.[LSOA name], [all ages], [Crime type]

122

order by number_of_crimes desc;

106 %

Results Messages

	GreaterManchester_LSOA	Crime type	number_of_crimes	Population
1	Manchester 060A	Vehicle crime	485	1811
2	Manchester 054C	Vehicle crime	479	1588
3	Manchester 055B	Vehicle crime	461	3676
4	Manchester 055E	Vehicle crime	436	2428
5	Manchester 053D	Vehicle crime	436	1525
6	Manchester 058C	Vehicle crime	388	2275
7	Manchester 055A	Vehicle crime	302	3722
8	Trafford 002E	Vehicle crime	257	1508
9	Manchester 056B	Vehicle crime	250	1546
10	Manchester 056C	Vehicle crime	245	1718

LSOA s	NUMBER OF VEHICLE CRIMES			
Manchester 060A	485			
Manchester 054C	479			
Manchester 055B	461			
Manchester 055E	436			
Manchester 053D	436			
Manchester 058C	388			
Manchester 055A	302			
Trafford 002E	257			
Manchester 056B	250			
Manchester 056C	245			

