The Impact of Demographic Factors on Drink Drive Collisions and their Characteristics in Great Britain?

Drinking under the influence of alcohol consumptions is not only a deadly combination but also a serious crime. Every day numerous people become victim of drinking and driving collisions, either they are killed or get severely injured. This research question will show case the trend and seriousness of such collisions over a period of five years (2017-2021).

Aims and Objectives:

I will analyse a comprehensive dataset of drink driving collisions, including demographics statistics of involved drivers. Also, I will focus to understand the spatial distribution of such collisions across different regions of Great Britain to identify high risk areas. Further, I will find the relationship between time period (festivals, holidays, days of week, and time of a day) and the numbers of drink-drive collisions. Also, comparisons will be done to determine whether the numbers of drink drive collisions on holidays or specific days of the week differs drastically from non-holidays or other days of week.

By answering this question, a great contribution can be done to the development of targeted interventions and policy measures to decrease the count of drink drive collisions and improve road safety. This research aims to promote responsible and safe driving behaviour by providing information on evidence-based strategies.

Data Acquisition:

The data used for this research is publicly available on the UK government and Metropolitan police website.
https://www.gov.uk/government/statistical-data-sets/reported-drinking-and-driving-ras51
https://www.met.police.uk/foi-ai/metropolitan-police/d/june-2022/data-for-drunk-driving-incidents-2017-2021/

The data available at the UK government website about the reported drink drive collisions and casualties is produced by Department for Transport. The data is published on 6th February 2014 and the last update was 27th July 2023. The available data covers the time period of 1979-2021.

The information about daily drink driving incidents recorded by the Metropolitan Police Service (MPS) for year 2021 is available at the metropolitan police website.

Driver's age specific data is not available to know the minimum and maximum age of drivers involved in such collisions. Except the latest updates, the data is sufficient to dig deeper into the research topic. It covers all the areas I am interested to research about.

Datasets Description:

The dataset is categorised into different categories, and each has been assigned a specific title. A description about the same is showed below.

Category	New table reference(Source Website)	Title
Overall drink-drive trends	RAS2001	Reported drink drive collisions and casualties in Great Britain
Characteristics of drink-drive collisions	RAS2011	By month
Characteristics of drink-drive collisions	RAS2012	By time of day
Characteristics of drink-drive collisions	RAS2013	By country and English region
Characteristics of drivers or riders involved	RAS2021	By sex of driver or rider
Characteristics of drivers or riders involved	RAS2022	By age of driver (cars only)
Casualties in drink-drive collisions	RAS2031	All casualties by casualty type, sex and age

For each year the number of collisions is categorised into three different categories Fatal, Serious and slight along with total collisions. Also, the casualties are grouped into three groups named killed, seriously injured and slight followed by total casualties each year.

Moreover, the daily basis records of drink drive collisions are represented in three columns.

Arrest Date (Year, Month & Day)	Custody Record Count	Offence Title Count

This data is focused on some specific set of offence titles based on drink and driving.

Offence Titles

Aid / abet driving of a motor vehicle on a road / public place when alcohol level above the prescribed limit
Attempt to drive motor vehicle - alcohol level above limit
Attempt to drive vehicle whilst unfit through drink
Cause death by driving without due care and attention / reasonable consideration while unfit through drink
Cause death by due care while over prescribed limit
Drive motor vehicle when alcohol level above limit
Drive whilst unfit through drink
In charge of motor vehicle - alcohol level above limit
In charge of vehicle whilst unfit through drink

The "Custody Record Count" totals show a count of Custody Records that had at least one of the Offence Titles listed above entered on the relevant Custody Record. The totals do not equate to the number of individuals. For example, an individual may have been arrested twice within the time period stated.

The "Offence Title Count" totals show a count of all of the Offence Titles listed above and do not equate to the number of individuals. For example, an individual can be arrested for a number of various offences and can include multiple counts of offences. The Offence Title does not indicate the outcome. For example, some Offence Titles may have resulted in "No Further Action".

Preparation:

Below displayed are some samples of original datasets.

RAS2001: Estimated number of reported drink drive collisions and casualties in Great Britain

This worksheet contains two tables seperated with a blank column. One table shows collision numbers and the other casualty numbers. Some cells refer to notes which can be found
Some cells in these tables have no data. When this is the case the cells are marked with shorthand: [x] for not available and [z] for not applicable

Estimated number of reported drink drive collisions in Great Britain: 1979 to 2021 [notes 1,2,5]

Collision year	Fatal collisions	Serious collisions (unadjusted)	Serious collisions (adjusted) [note 6]	Slight collisions (unadjusted)	Slight collisions (adjusted) [note 6]	Total collisions [note 7]
1979	1,380	5,630	[z]	12,460	[z]	19,470
1980	1,280	5,430	[z]	11,860	[z]	18,570
1981	1,200	4,940	[z]	10,900	[z]	17,040
1982	1,300	5,420	[z]	12,070	[z]	18,800
1983	950	4,750	[z]	11,430	[z]	17,130
1984	1,000	4,790	[z]	11,540	[z]	17,320
1985	900	4,900	[z]	11,460	[z]	17,260
1986	850	4,590	[z]	11,510	[z]	16,940
1987	780	4,220	[z]	10,560	[z]	15,560
1988	680	3,660	[z]	10,190	[z]	14,520
1989	700	3,390	[z]	10,300	[z]	14,390
1990	650	2,910	[z]	9,650	[z]	13,210

Estimated number of casualties in reported drink driv

Collision year	Killed central estimate	Killed lower estimate 95% CI [note 3]	Killed higher estimate 95% CI [note 3]
1979	1,640	[x]	[x]
1980	1,450	[x]	[x]
1981	1,420	[x]	[x]
1982	1,550	[x]	[x]
1983	1,110	[x]	[x]
1984	1,170	[x]	[x]
1985	1,040	[x]	[x]
1986	990	[x]	[x]
1987	900	[x]	[x]
1988	790	[x]	[x]
1989	810	[x]	[x]
1990	760	[x]	[x]

RAS2013: Estimated number of reported drink drive collisions and casualties in Great Britain by country and English region

This worksheet contains two tables seperated by a blank column. The first table shows collison numbers, and the second table shows casualty numbers.

Estimated number of reported drink drive collisions in Great Britain by country and English region [notes 1,2]

Collision year	Region or country	Fatal collisions	Serious collisions (unadjusted)	Serious collisions (adjusted) [note 3]	Slight collisions (unadjusted)	Slight collisions (adjusted) [note 3]	Total collisions [note 4]
2021	North East	10	40	40	80	80	130
2021	North West	20	110	130	320	310	460
2021	Yorkshire and Humberside	20	140	150	280	270	440
2021	East Midlands	20	100	140	340	300	460
2021	West Midlands	30	90	90	260	260	380
2021	Eastern	50	140	140	370	360	550
2021	South East	30	200	230	630	600	860
2021	London	10	110	110	400	400	510
2021	South West	30	110	130	360	340	490
2021	England	220	1,040	1,160	3,030	2,910	4,290
2021	Wales	10	60	80	150	130	220
2021	Scotland	10	60	60	90	90	150
2021	**Great Britain**	**240**	**1,160**	**1,290**	**3,260**	**3,130**	**4,660**

Estimated number of reported dri

Collision year	Region or country
2021	North East
2021	North West
2021	Yorkshire and Humberside
2021	East Midlands
2021	West Midlands
2021	Eastern
2021	South East
2021	London
2021	South West
2021	England
2021	Wales
2021	Scotland
2021	**Great Britain**

RAS2021: Estimated number of reported drink drive collisions and casualties by sex of driver over the drink-drive limit

This worksheet contains four tables separated with a blank column. These show collisions for males and females, followed by casualties for males and females. Some cells refer to notes w
Some cells in these tables have no data. When this is the case the cells are marked with shorthand: [z] for not applicable

Estimated number of reported drink-drive collisions involving a male driver in Great Britain [notes 1,2,5]

Collision year	Fatal collisions	Serious collisions (unadjusted)	Serious collisions (adjusted) [note 6]	Slight collisions (unadjusted)	Slight collisions (adjusted) [note 6]	Total collisions [note 7]
1979	1,340	5,370	[z]	11,630	[z]	18,340
1980	1,220	5,180	[z]	11,000	[z]	17,410
1981	1,150	4,680	[z]	10,180	[z]	16,020
1982	1,250	5,150	[z]	11,230	[z]	17,630
1983	900	4,430	[z]	10,560	[z]	15,900
1984	960	4,520	[z]	10,670	[z]	16,150
1985	860	4,590	[z]	10,550	[z]	16,000
1986	790	4,300	[z]	10,600	[z]	15,690
1987	730	3,910	[z]	9,660	[z]	14,300
1988	660	3,410	[z]	9,300	[z]	13,370
1989	670	3,140	[z]	9,300	[z]	13,110
1990	590	2,640	[z]	8,670	[z]	11,910

Estimated number of reported drink-drive collisions in

Collision year	Fatal collisions	Serious collisions (unadjusted)	Serious collisions (adjusted) [note 6]
1979	50	220	[z]
1980	60	230	[z]
1981	50	260	[z]
1982	60	280	[z]
1983	50	330	[z]
1984	40	280	[z]
1985	50	320	[z]
1986	50	300	[z]
1987	50	300	[z]
1988	30	250	[z]
1989	40	270	[z]
1990	50	270	[z]

RAS2022: Estimated number of reported road collisions involving a car drink driver, by driver age, e

This worksheet contains one table. Some cells refer to notes which can be found on the notes worksheet.

Collision year	Age group	Fatalities	Serious injuries (unadjusted)	Serious injuries (adjusted) [note 3]	Slight injuries (unadjusted)	Slight injuries (adjusted) [note 3]	Total casualties	Drink-drive collisio per 100 thousa licence hold
2021	Under 20 [Note 2]	20	40	50	140	130	190	
2021	20 to 24	20	160	180	470	450	660	
2021	25 to 29	40	180	200	490	470	700	
2021	30 to 34	30	150	170	500	480	680	
2021	35 to 39	30	130	150	380	370	550	
2021	40 to 49	20	150	170	480	460	640	
2021	50 to 59	10	80	90	270	260	360	
2021	60 or over	10	40	50	140	140	200	
2021	**All ages [Note 2]**	**170**	**940**	**1,050**	**2,920**	**2,800**	**4,020**	

RAS2031: Estimated number of drink-drive casualties, by age and sex, in Great Britain: 2010 to 2021

This worksheet contains one table. Some cells refer to notes which can be found on the notes worksheet.

Collision year	Sex	Age group	Killed or seriously injured casualties (unadjusted)	Killed or seriously injured casualties (adjusted) [note 6]	Total Casualties
2021	Male	0 to 15	40	40	120
2021	Male	16 to 24	300	340	1,090
2021	Male	25 to 59	850	920	3,000
2021	Male	60 or over	80	90	300
2021	Male	All ages [Notes 3,4]	1,290	1,400	4,560
2021	Female	0 to 15	30	30	160
2021	Female	16 to 24	100	110	510
2021	Female	25 to 59	250	270	1,280
2021	Female	60 or over	50	50	210
2021	Female	All ages [Notes 3,4]	430	470	2,180
2021	Total [Note 5]	0 to 15	70	80	280
2021	Total [Note 5]	16 to 24	410	450	1,610
2021	Total [Note 5]	25 to 59	1,100	1,190	4,280
2021	Total [Note 5]	60 or over	130	150	510
2021	Total [Note 5]	All ages [Notes 3,4]	1,720	1,880	6,740

RAS2031: Estimated number of drink-drive casualties, by age and casualty type, in Great Britain: 2010 to 2021

This worksheet contains one table. Some cells refer to notes which can be found on the notes worksheet.

Collision year	Casualty type	Age group	Killed or seriously injured casualties (unadjusted)	Killed or seriously injured casualties (adjusted) [note 6]	Total Casualties
2021	Pedestrians	0 to 15	10	10	30
2021	Pedestrians	16 to 24	20	20	40
2021	Pedestrians	25 to 59	60	60	110
2021	Pedestrians	60 or over	10	10	20
2021	Pedestrians	All ages [Notes 3,4]	100	110	210
2021	Cyclists	0 to 15	0	0	10
2021	Cyclists	16 to 24	0	0	10
2021	Cyclists	25 to 59	20	20	50
2021	Cyclists	60 or over	10	10	20
2021	Cyclists	All ages [Notes 3,4]	40	40	90
2021	Motorcyclists	0 to 15	0	0	0
2021	Motorcyclists	16 to 24	50	50	100
2021	Motorcyclists	25 to 59	130	140	260
2021	Motorcyclists	60 or over	10	10	20
2021	Motorcyclists	All ages [Notes 3,4]	190	210	380

RAS2011: Estimated number of reported drink drive collisions and casualties, by month: Great Britain, 2010 to 2021 [notes 1,2,3]

This worksheet contains one table.

Collision year	Collision month	Collisions	Casualties
2021	January	240	320
2021	February	240	320
2021	March	270	360
2021	April	310	440
2021	May	420	620
2021	June	390	590
2021	July	500	750
2021	August	470	690
2021	September	440	620
2021	October	480	730
2021	November	460	650
2021	December	430	660
2021	**Total**	**4,660**	**6,740**

RAS2012: Reported drink-drive collisions by severity and time of collisions: Great Britain [note 1]

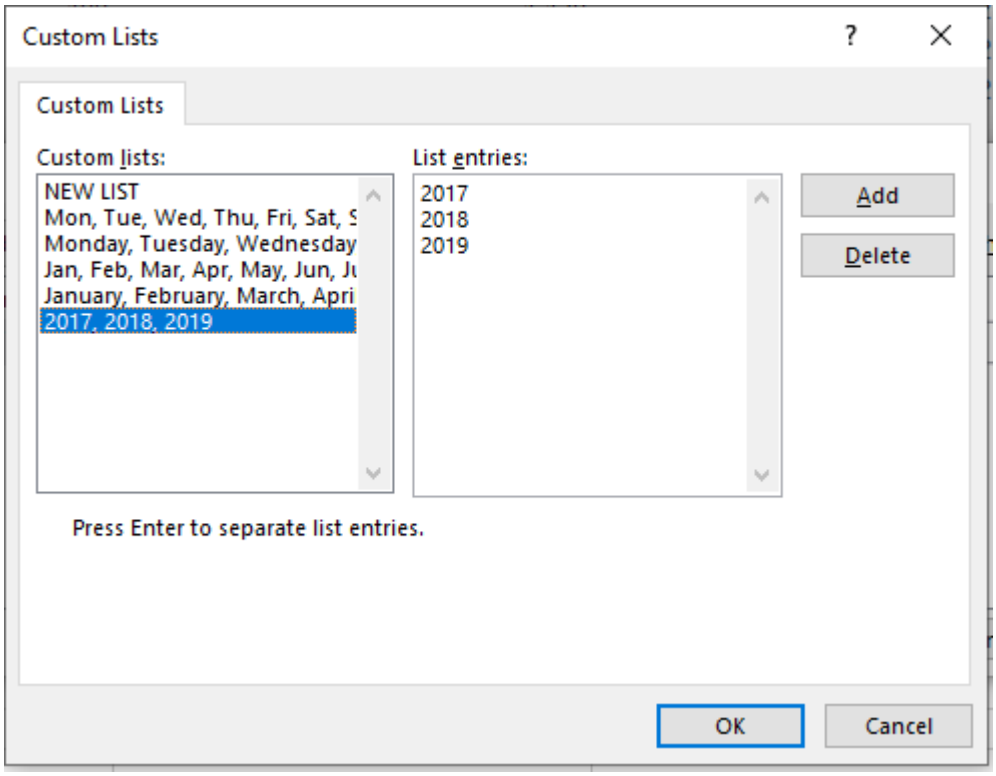
This worksheet contains one table. Some cells refer to notes which can be found on the notes worksheet.

Collision year	Time of Day	Fatal collisions	Serious collisions (unadjusted)	Serious collisions (adjusted) [note 2]	Slight collisions (unadjusted)	Slight collisions (adjusted) [note 2]	Total collisions [note 3]
2021	00:00 to 00:59	20	90	100	220	210	330
2021	01:00 to 01:59	30	60	70	190	180	270
2021	02:00 to 02:59	20	40	50	140	130	200
2021	03:00 to 03:59	20	40	40	80	80	140
2021	04:00 to 04:59	10	50	50	90	90	150
2021	05:00 to 05:59	0	20	30	70	70	100
2021	06:00 to 06:59	0	20	20	90	90	110
2021	07:00 to 07:59	0	20	30	70	70	100
2021	08:00 to 08:59	0	20	30	70	70	100
2021	09:00 to 09:59	0	10	20	60	60	80
2021	10:00 to 10:59	0	20	20	60	60	80
2021	11:00 to 11:59	0	20	20	50	50	70
2021	12:00 to 12:59	0	20	30	70	70	100
2021	13:00 to 13:59	0	20	30	90	80	120
2021	14:00 to 14:59	0	30	30	100	90	130
2021	15:00 to 15:59	0	30	30	110	100	140
2021	16:00 to 16:59	0	40	50	130	120	170
2021	17:00 to 17:59	10	60	70	170	160	240
2021	18:00 to 18:59	10	70	80	180	180	260
2021	19:00 to 19:59	10	70	80	220	210	300

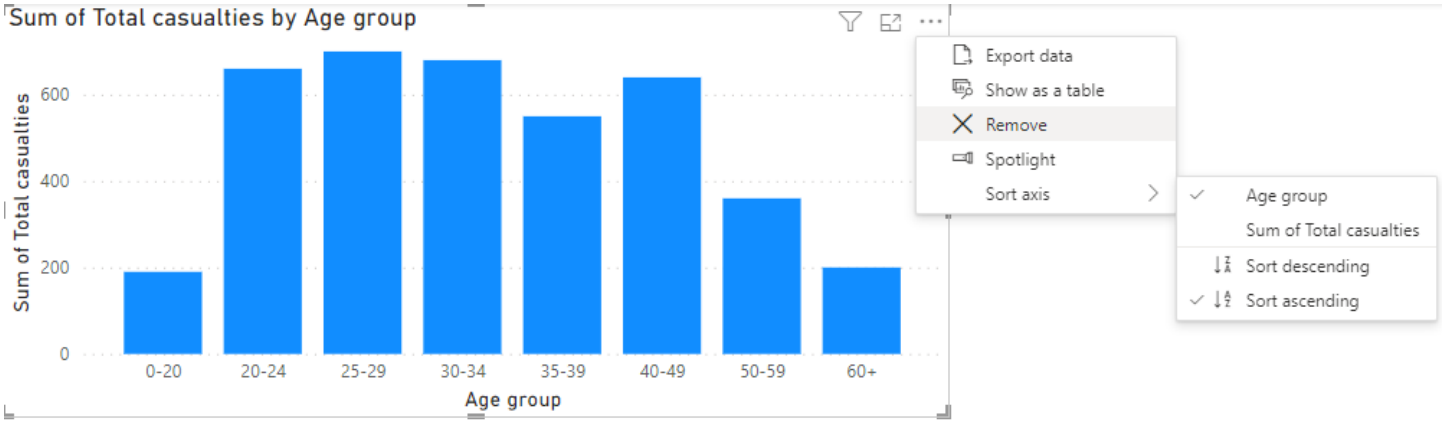
Drink Drive related Offence Title Data 2021 (please see "Notes" for criteria)		
Arrest Date (Year, Month & Day)	Custody Record Count	Offence Title Count
2021		
Jan		
01-Jan	43	46
02-Jan	8	9
03-Jan	14	14
04-Jan	4	4
05-Jan	9	9
06-Jan	8	9
07-Jan	15	15
08-Jan	9	11
09-Jan	13	13
10-Jan	15	15
11-Jan	7	7
12-Jan	6	6
13-Jan	5	5
14-Jan	6	6
15-Jan	15	15
16-Jan	23	24
17-Jan	23	24
18-Jan	9	10
19-Jan	6	7
20-Jan	9	9
21-Jan	7	7
22-Jan	7	7

To have more precise data files ready to import in Power BI, I have transferred the data from 2017 to 2021 into new files.

- I have deleted the columns mentioning unadjusted data because I have access to the updated/adjusted data.
- I deleted the repeating columns and created a collaborated data table.
- To make data tidy I have organized the data by applying custom list of years using Sort function.

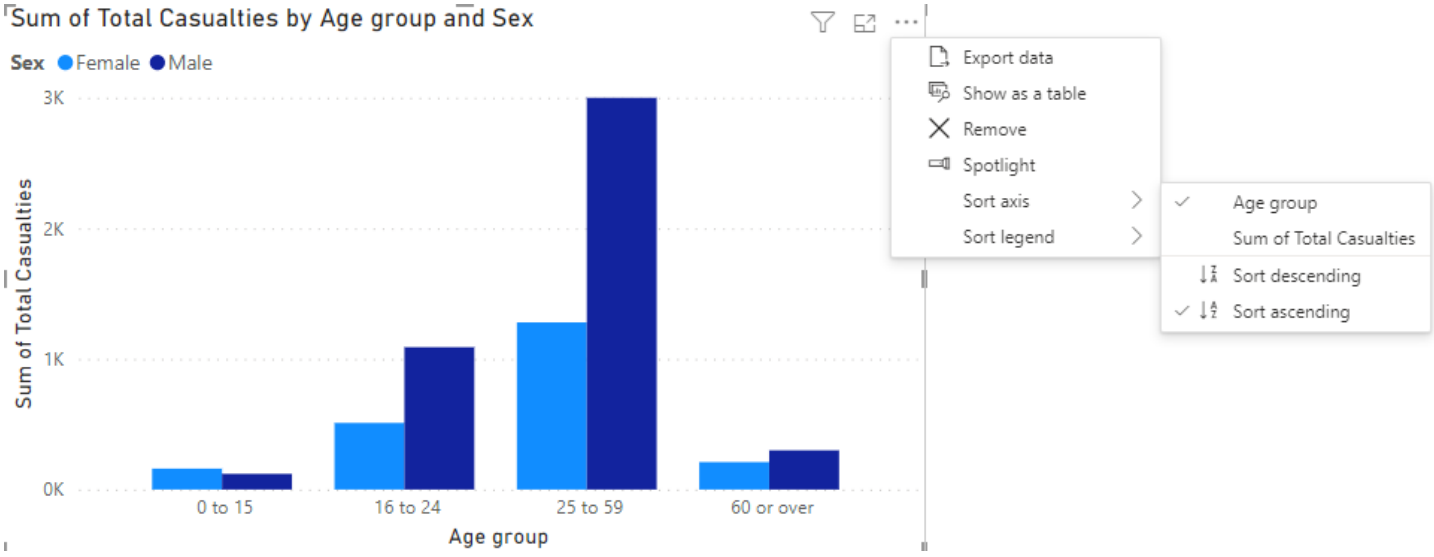


- To display data as per the age group I used Sort axis option of Power Bi with displayed settings. Visialization after sorting is shown below.

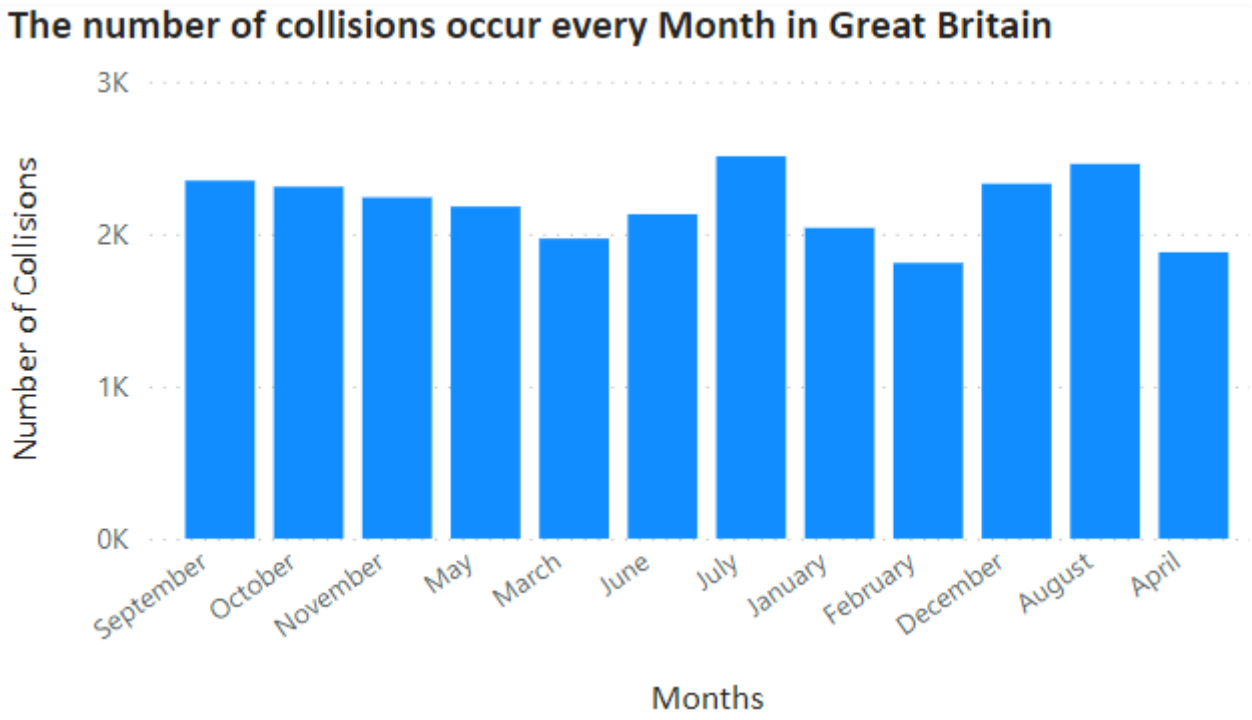


- Similarly, to sort the data of below displayed format I used the same settings in Power Bi.

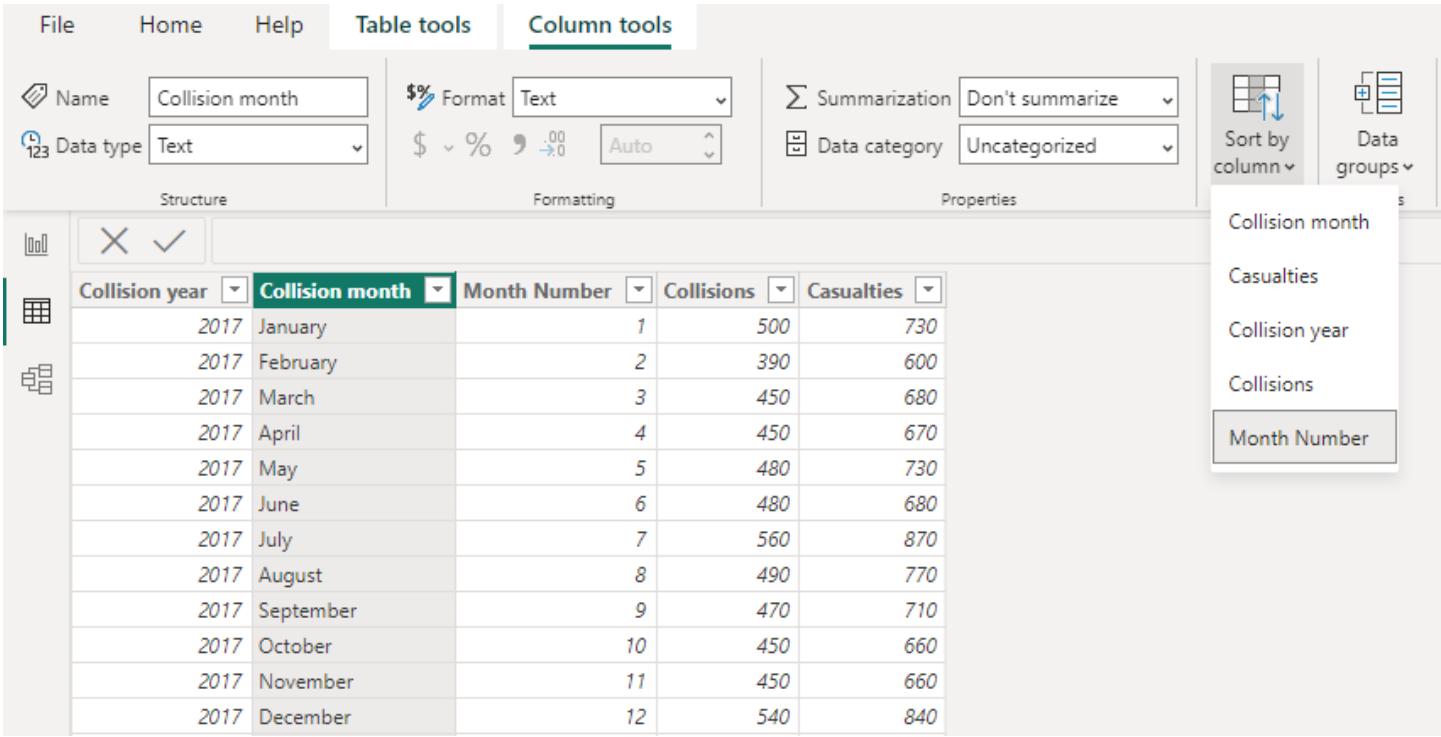
Collision year	Sex	Age group	Killed or seriously injured casualties	Total Casualties
2021	Male	0 to 15	40	120
2021	Male	16 to 24	340	1,090
2021	Male	25 to 59	920	3,000
2021	Male	60 or over	90	300
2021	Female	0 to 15	30	160
2021	Female	16 to 24	110	510
2021	Female	25 to 59	270	1,280
2021	Female	60 or over	50	210



- By default months does not appear in proper order from January-December in Power Bi, even after setting the Sort axis. Below shown figure shows how the data appears by default.



To fix this issue I created a Custom column named Month Number in relation to Collision Months. Then, sorted the column Collision Months by Month Number. The figure below shows the same steps.



Collision year	Collision month	Month Number	Collisions	Casualties
2017	January	1	500	730
2017	February	2	390	600
2017	March	3	450	680
2017	April	4	450	670
2017	May	5	480	730
2017	June	6	480	680
2017	July	7	560	870
2017	August	8	490	770
2017	September	9	470	710
2017	October	10	450	660
2017	November	11	450	660
2017	December	12	540	840

- The sorting technique of creating a Custom Column in Power Bi is used for sorting different visualizations by Date, Days of week and Time of day.

Resulted datasets after Preparation:

Collisions and Casualties in Great Britain (2017-2021).

Collision year	Fatal collisions	Serious collisions	Slight collisions	Total collisions	Killed central estimate	Serious injuries	Slight injuries	Total casualties
2017	220	1260	4220	5700	250	1560	6790	8600
2018	210	1270	4410	5890	240	1550	6890	8680
2019	210	1390	3750	5350	230	1690	5880	7800
2020	200	1070	3360	4620	220	1270	4990	6480
2021	240	1290	3130	4660	260	1610	4860	6740

Collisions and Casualties by Regions.

Collision year	Region	Fatal collisions	Serious collisions	Slight collisions	Total collisions	Killed	Seriously injured	Killed or seriously injured
2017	North East	0	40	130	180	0	60	
2017	North West	20	150	400	580	20	190	
2017	Yorkshire and Humberside	20	140	300	460	30	170	
2017	East Midlands	20	120	350	500	20	160	
2017	West Midlands	30	90	370	500	30	130	
2017	Eastern	30	140	510	670	30	160	
2017	South East	40	200	790	1040	60	250	
2017	London	10	110	640	760	10	130	
2017	South West	30	120	380	530	30	150	
2017	England	200	1120	3890	5220	230	1380	
2017	Wales	10	70	140	220	10	100	
2017	Scotland	10	100	160	270	10	130	

Casualties of Car drivers by age group.

Collision year	Age group	Fatalities	Serious injuries	Slight injuries	Total casualties
2021	0-20	20	50	130	190
2021	20-24	20	180	450	660
2021	25-29	40	200	470	700
2021	30-34	30	170	480	680
2021	35-39	30	150	370	550
2021	40-49	20	170	460	640
2021	50-59	10	90	260	360
2021	60+	10	50	140	200

People of different age group and sex who suffered from drink drive collisions.

Collision year	Sex	Age group	Killed or seriously injured casualties	Total Casualties
2021	Male	0 to 15	40	120
2021	Male	16 to 24	340	1090
2021	Male	25 to 59	920	3000
2021	Male	60 or over	90	300
2021	Female	0 to 15	30	160
2021	Female	16 to 24	110	510
2021	Female	25 to 59	270	1280
2021	Female	60 or over	50	210

Casualty type by age group.

Collision year	Casualty type	Age group	Killed or seriously injured casualties	Total Casualties
2021	Pedestrians	0 to 15	10	30
2021	Pedestrians	16 to 24	20	40
2021	Pedestrians	25 to 59	60	110
2021	Pedestrians	60 or over	10	20
2021	Cyclists	0 to 15	0	10
2021	Cyclists	16 to 24	0	10
2021	Cyclists	25 to 59	20	50
2021	Cyclists	60 or over	10	20
2021	Motorcyclists	0 to 15	0	0
2021	Motorcyclists	16 to 24	50	100
2021	Motorcyclists	25 to 59	140	260
2021	Motorcyclists	60 or over	10	20

Monthly Distribution.

Collision year	Collision month	Month Number	Collisions	Casualties
2021	January	1	240	320
2021	February	2	240	320
2021	March	3	270	360
2021	April	4	310	440
2021	May	5	420	620
2021	June	6	390	590
2021	July	7	500	750
2021	August	8	470	690
2021	September	9	440	620
2021	October	10	480	730
2021	November	11	460	650
2021	December	12	430	660

Hourly Distribution.

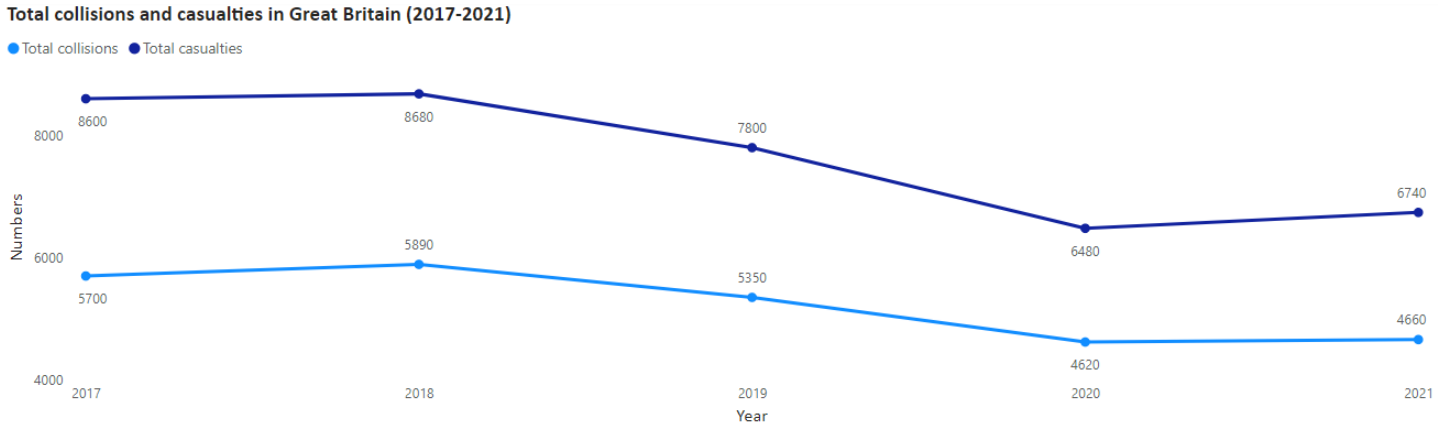
Collision year	Time of Day	Hour Number	Fatal collisions	Serious collisions	Slight collisions	Total collisions
2021	0 to 59 AM	1	20	100	210	330
2021	1 to 1:59 AM	2	30	70	180	270
2021	2 to 2:59 AM	3	20	50	130	200
2021	3 to 3:59 AM	4	20	40	80	140
2021	4 to 4:59 AM	5	10	50	90	150
2021	5 to 5:59 AM	6	0	30	70	100
2021	6 to 6:59 AM	7	0	20	90	110
2021	7 to 7:59 AM	8	0	30	70	100
2021	8 to 8:59 AM	9	0	30	70	100
2021	9 to 9:59 AM	10	0	20	60	80
2021	10 to 10:50 AM	11	0	20	60	80
2021	11 to 11:59 AM	12	0	20	50	70

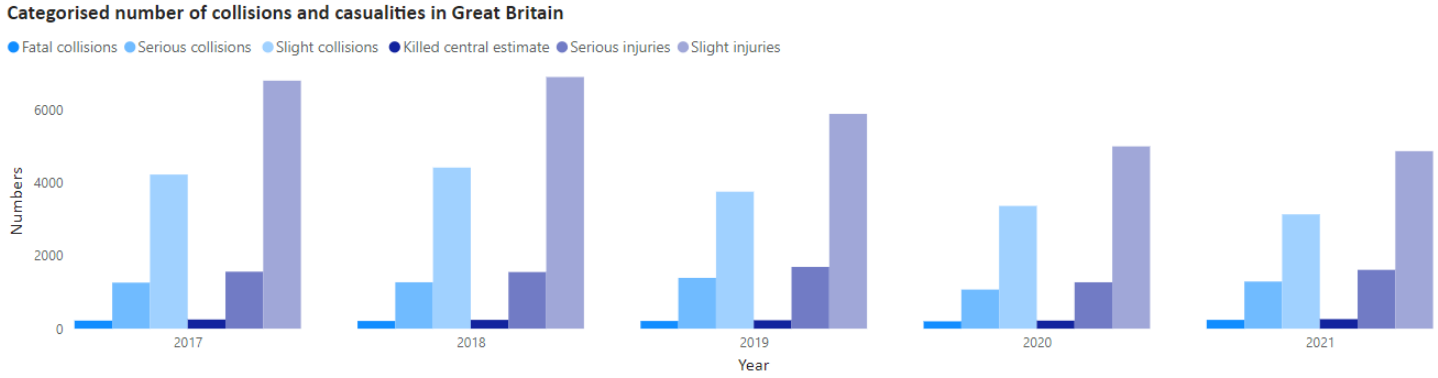
Daily basic data.

Month	Month number	Date	Day	Week day number	Custody Record Count	Offence Title Count
January	1	1	Friday	5	43	46
January	1	2	Saturday	6	8	9
January	1	3	Sunday	7	14	14
January	1	4	Monday	1	4	4
January	1	5	Tuesday	2	9	9
January	1	6	Wednesday	3	8	9
January	1	7	Thursday	4	15	15
January	1	8	Friday	5	9	11
January	1	9	Saturday	6	13	13
January	1	10	Sunday	7	15	15

Exploratory Data Analysis:

Before I dig deeper into the research question, I preferred to have a look on the historical patterns of such collisions. Also, I focused to know about the seriousness of drink drive collisions and casualties throughout the period of five continuous years from 2017-2021.





A slight decrease can be seen in the number of collisions from 2018 till 2020. However, a slight increase is noticed in 2021 after the COVID-19 pandemic period.

Further it is analysed, the count of fatal collisions is less as compared to the serious and slight collisions. Even though fatal collisions are less in numbers, but they are more hazardous.

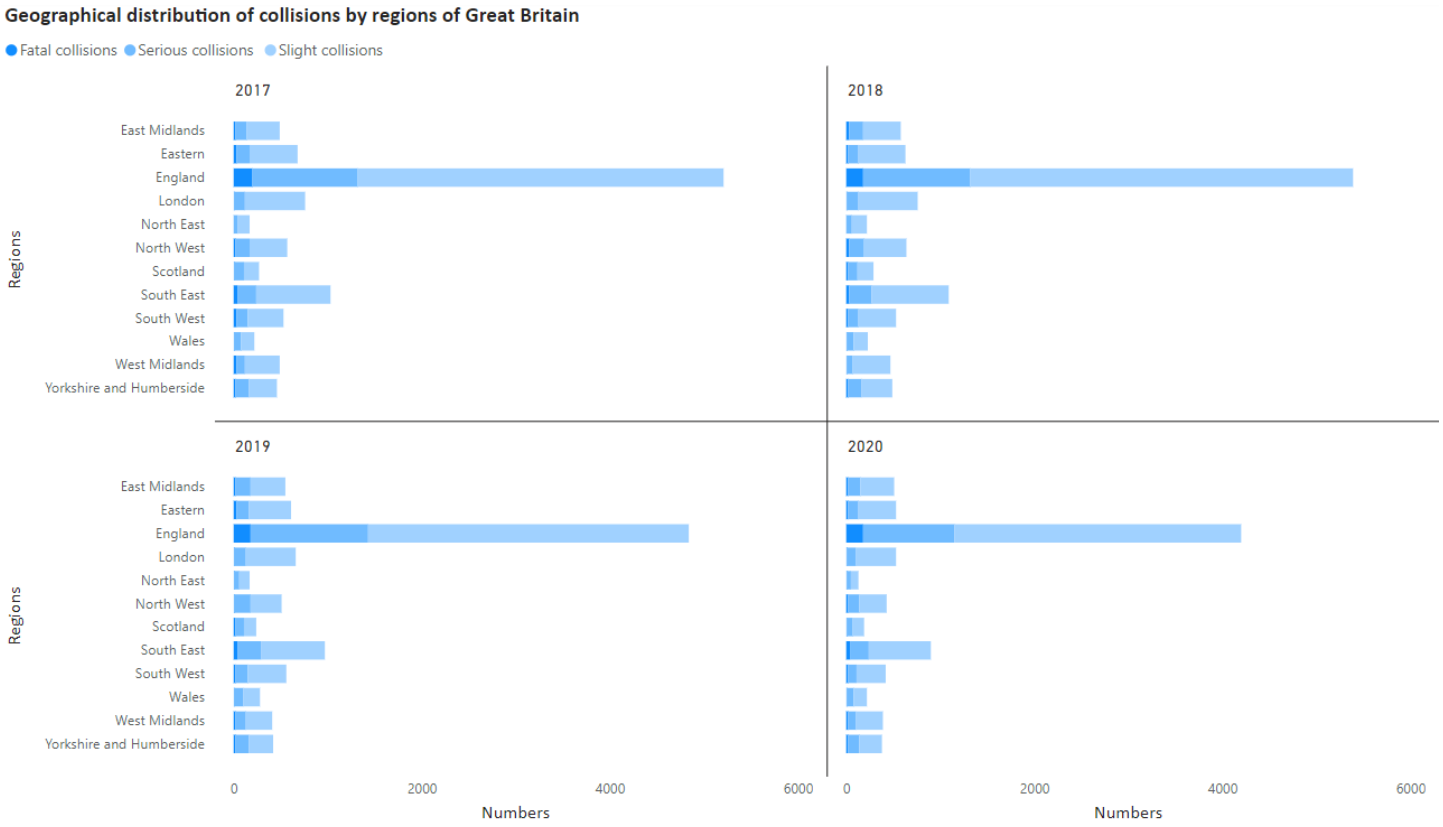
Simultaneously, the count of people who got killed in such collisions is less, but many get effected in other form of serious and slight injuries.

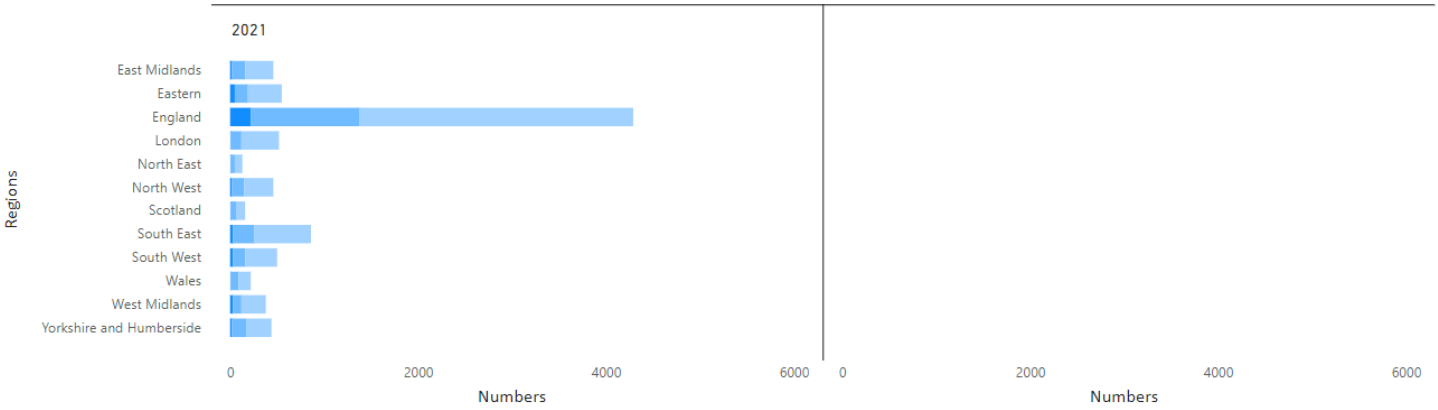
Spatial Distribution of collisions across different Regions:

The geographical patterns of drink drive collisions will enable the identification of areas where the concentration of such incidents is very high throughout the time period. Further there is a scope to investigate for the regional variations based on incident rates.

(GOV.UK, 2021)

Note: Due to the limitations of Power BI and Tableau as it does not recognise regions of Great Britain, I referred to the UK government website to showcase the regional map.





England is the leading region in drink drive collisions. Followed by, South East, Eastern, London and South West. From the regional map it can be seen that all these regions fall into the south of Great Britain. So the Southern part of Great Britain is high-risk area that needs immediate attention.

However, in comparision to all the other regions the incident rates in North East, Scotland and Wales are less.
As far as fatal collisions are considered, England, Eastern, South East, South West and West Midlans are more prone to it among other regions.

Demographic Statistics:

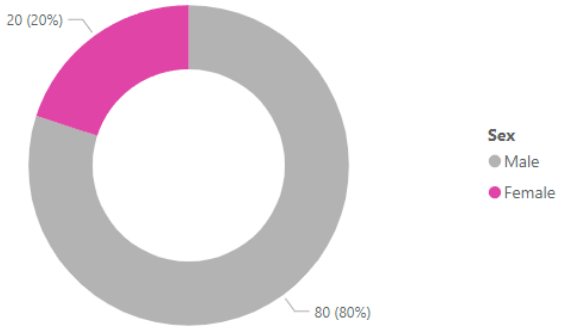
Further I will shed light on the profiles of drivers involved in the alcohol influenced driving accidents in Great Britain.
To narrow down the research and have more clear exposure to the insights I will use the latest data of 2021.

Gender Representation:

I have described the representation of males and females among drivers involved in the drink drive collisions. Also, the proportion of people who suffered from different casualties due to collisions are described by gender.

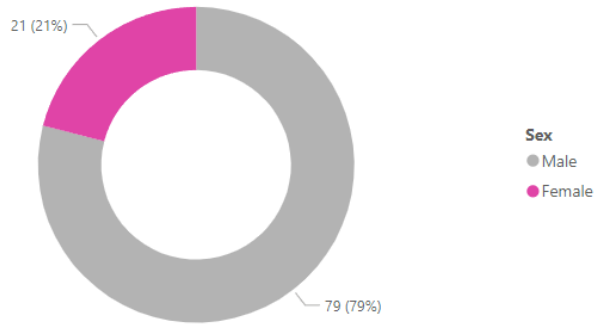
Percentage of drink drive collisions by sex(2021)

The proportion of male and female drivers over the drink-drive limits driving different vehicles



Percentage of drink drive casualties by sex(2021)

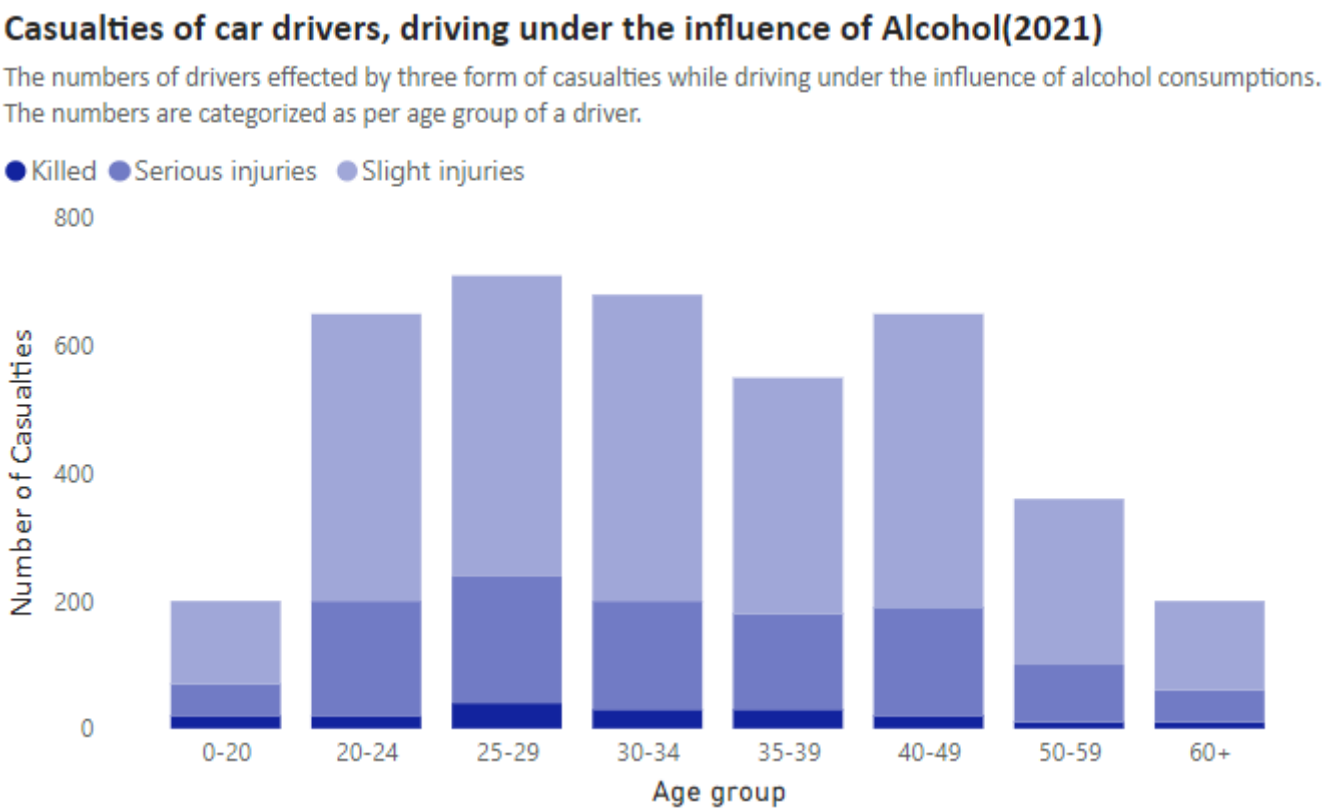
From the total population effected by alcohol influenced driving collisions the proportion of males and females is:



From all the driver who were driving different type of vehicle over the drink-drive limits, 80% are men and remaining 20% are women.
Simultaneously, among the people who suffered from different casualties, males accounted for 79% of the casualties' rate, while females represented the remaining 21%.

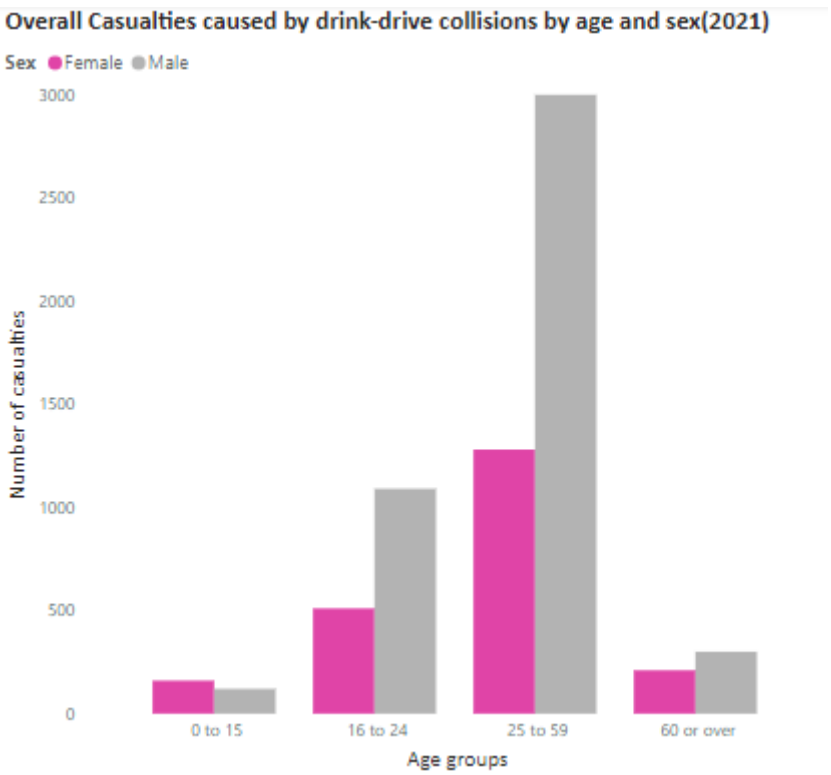
Age Distribution (Car drivers):

The number of car drivers who suffered from different casualties are described by their age group.



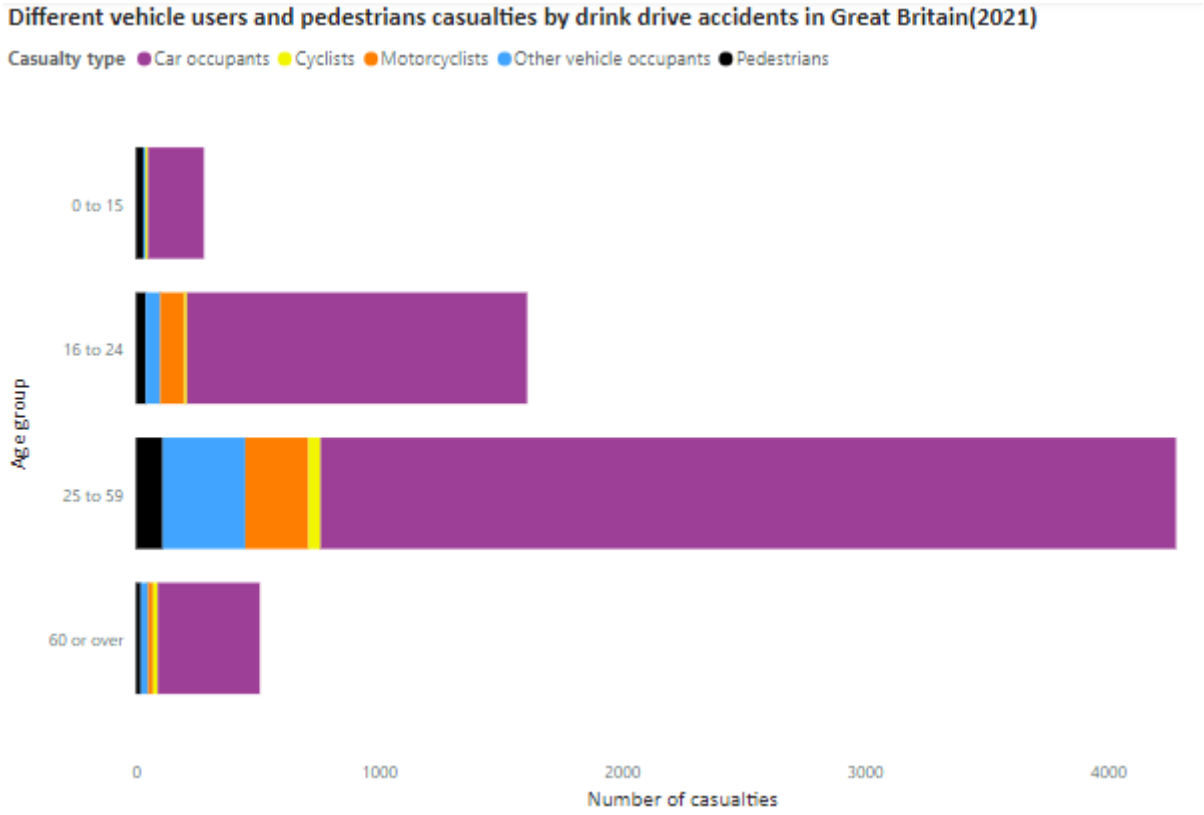
Among all the age groups 0-20 and 60+ are less likely to drive under the influence of alcohol. The number of young (0-20) and elder (60+) drunk car drivers who suffer from different casualties are approximately same. But youngsters are slightly more prone to die during drink drive collisions than elders. However, most drink drivers fall into 25-29 age group and there are higher chances of getting die or having serious injuries during such collisions than others. Followed by, (30-34), (40-49) and (20-24) age groups.

Age Distribution (Overall public):



Men above 15 years of age are more likely to get die or severely injured during drink drive accidents, especially those falls into 25 to 59 age group. It can be noticed, male casualties are more than double of the female casualties in between the age of 16 and 59.
Whereas 160 girls and 120 boys aged 15 years or younger are effects by collisions.

Age Distribution (Different vehicle users and pedestrians):
The visualization focusing on examining the impact of alcohol influenced driving accidents across different age groups and user types, including car occupants, cyclists, motorcyclists, other vehicle occupants and pedestrians.

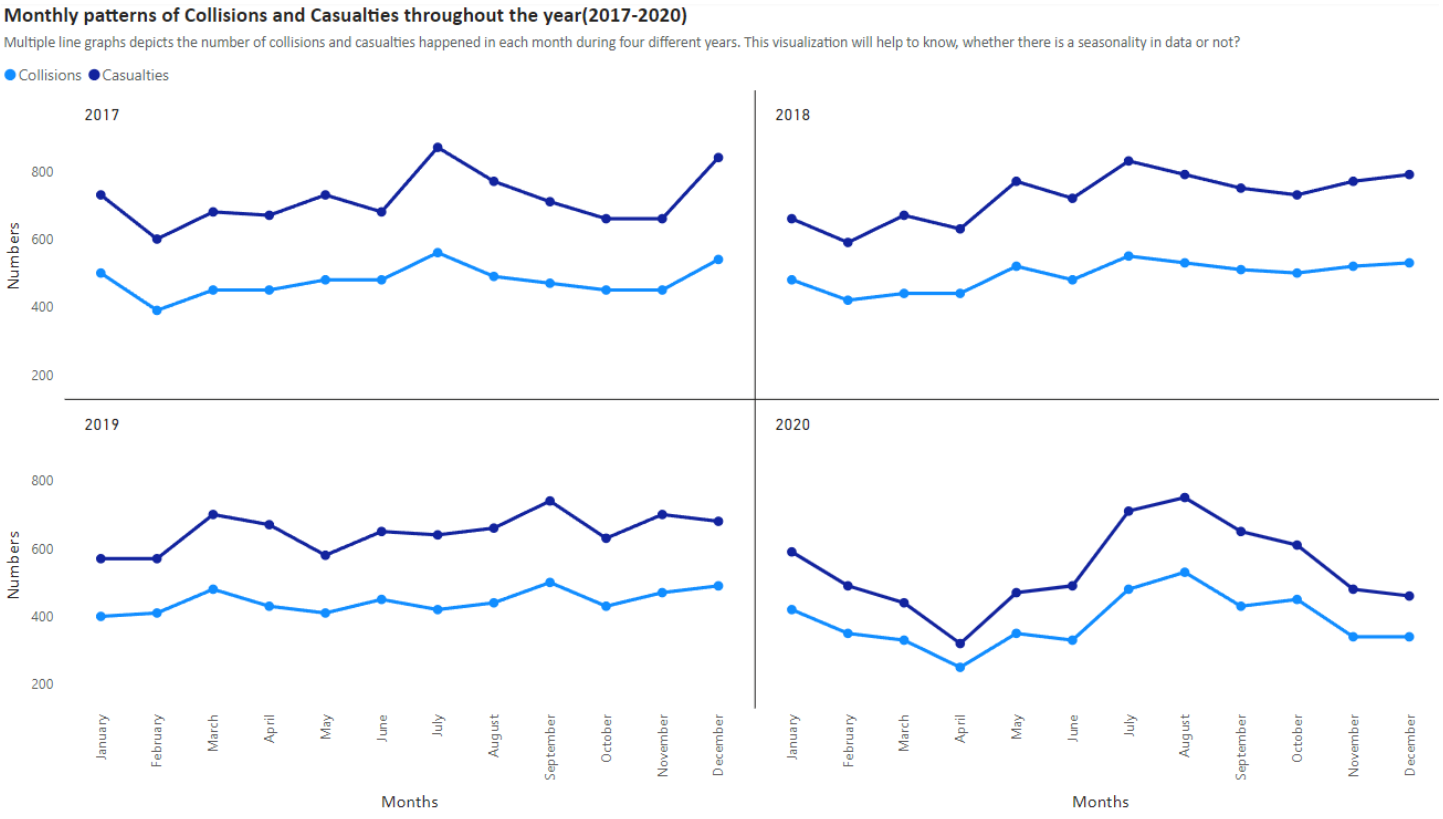


The highest number of total casualties in each category are recorded amongst the 25 to 59 years old, with total of 4,280 casualties across all casualty type. Among the population effected by collisions, most users are car occupants across different age groups. However, the least number of casualties are observed in 0 to 15 age group, recorded 280 casualties in total.

Incident Characteristics:

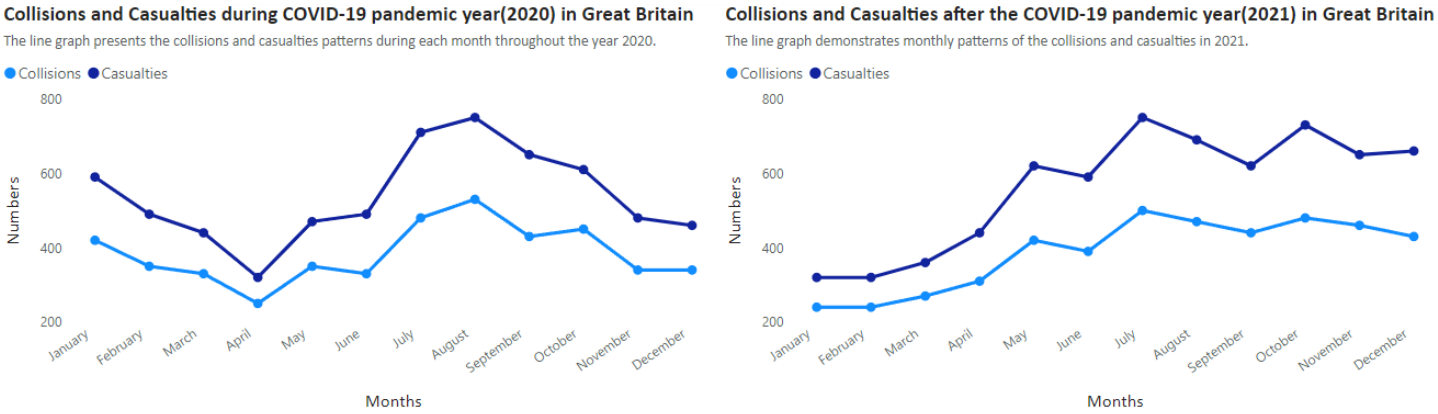
I aim to explore the distribution of Collisions and Casualties occurred due to alcohol influenced driving across months, day of week and time of the day.

Analysis of Months (2017-2020):



As per analysis of monthly historical data, there is no significant seasonal pattern in drink drive accidents. However, during initial two months of every year there are slightly a smaller number of collisions and casualties as compared to rest of the months.

Analysis of Months (2020-2021):



As per historical data of each year a significant decrease is noticed in the collisions and casualties. As per my knowledge and information available on other official sources, COVID- 19 pandemic has great contribution in the decline of such collisions.

Both years are considered as COVID-19 years by the UK Government. It initially begins in the start of year 2020. So, to be safe many people used to stay at home and avoid unnecessary outings.

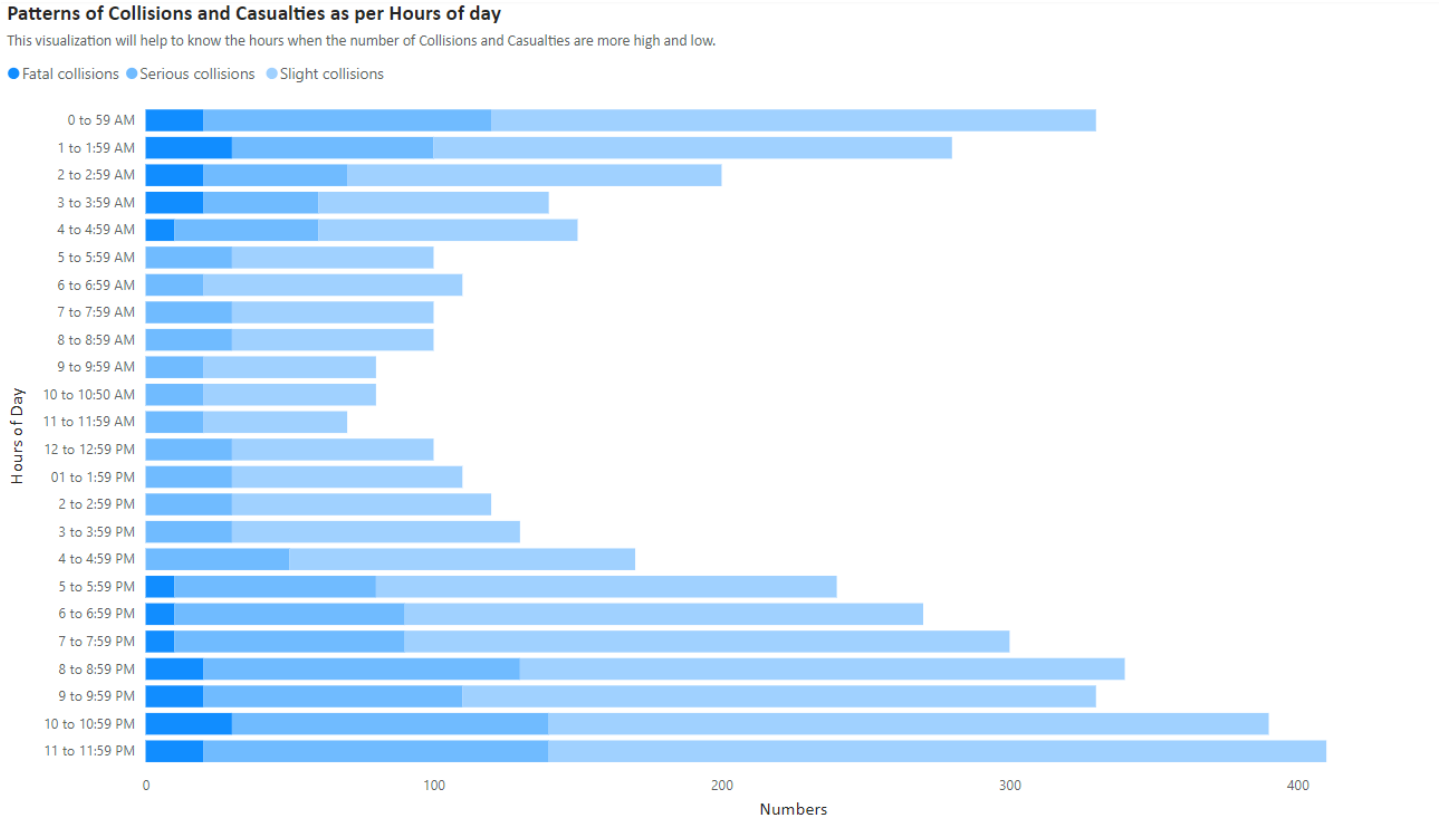
Further, during the peak of COVID-19 pandemic government took some measures to curb the impact of deadly virus. UK government has announced the First National Lockdown on 23rd March 2020 with guidelines

mentioning the closer of all non-essential shops, restaurants, pubs, bars etcetera and restrictions on group gathering. Followed by Second National Lockdown was announced on 5th November, 2020 and Third National Lockdown on 4th January 2021 with same guidelines.

(GOV.UK, 2022)

The impact of these Lockdowns is clearly noticeable in the monthly collisions and casualties' patterns of both years.

Temporal Distribution of Collisions:



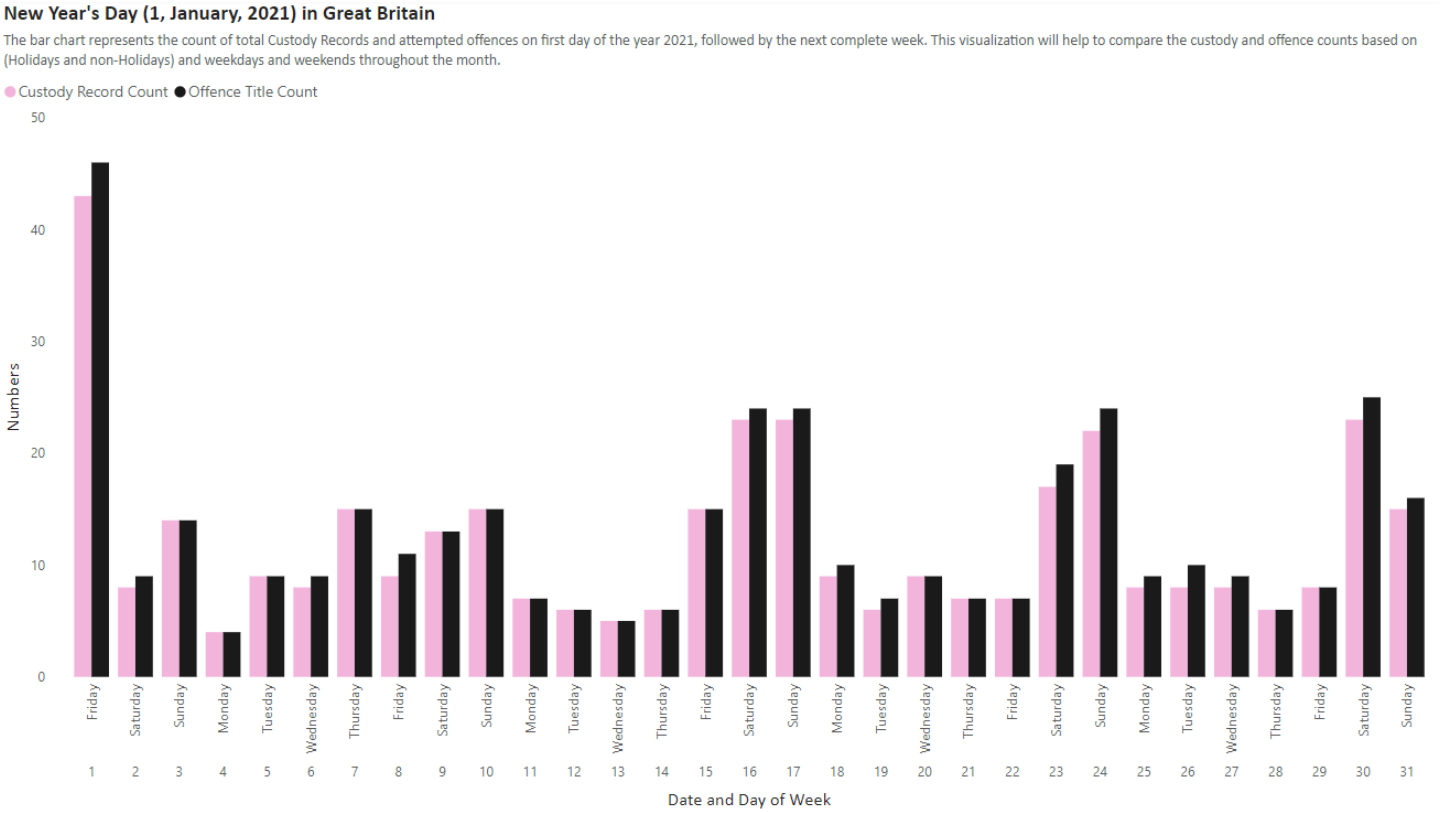
The bar chart illustrates the distribution of drink drive accidents specifically depicting the severity of collisions. I have analysed, 5 PM (Evening) to 5 AM (Morning) are the peak-hours in perspective of overall and specifically fatal collisions. However, daytime period from 5 AM to 5 PM can be considered slightly safe as compared to rest of the day because there are 0 fatal collisions during this time.

Overall, the frequency of such accidents is significantly high during midnight and early morning than rest of the day.

Analysis of Well-Attended Festivals/Events in comparison to Ordinary Non-Festival Days and differentiating Weekdays from Weekends:

The available dataset for this analysis provides information about the number of Custodies recorded and the title count of the offences that took place on each day.

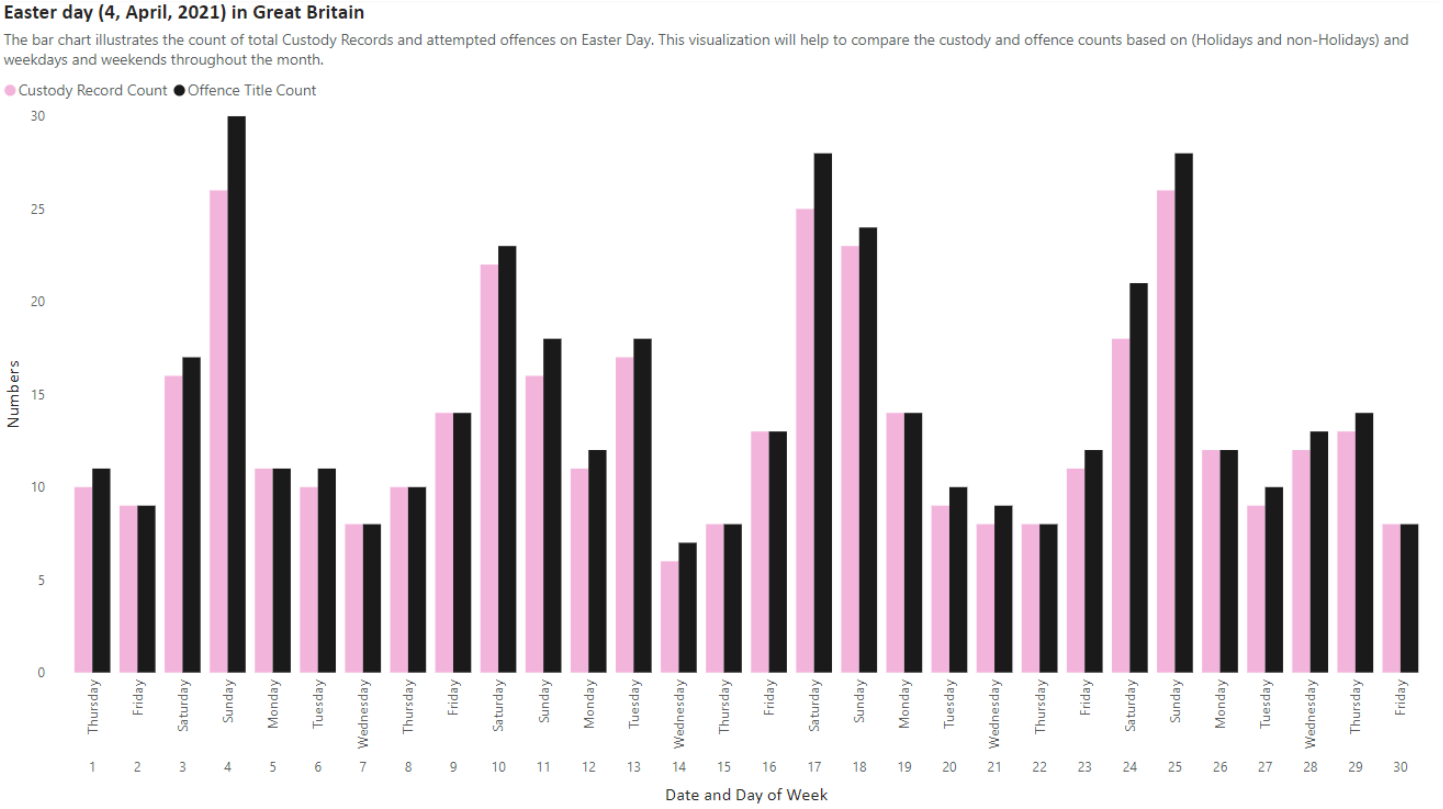
January:



It is clearly noticeable from the visualization, there is a drastic difference in the count of offences and custodies happened on the day of New Year (1st January 2021) in comparison to all the other non-festival days of same month. For example, the count of same measures is roughly one-third or lower compared to New Year's Day on the three other Fridays.

Furthermore, during Weekends the frequency of offences and custodies is more in contrast to Weekdays. To be precise, the count of measures on weekdays is roughly half of that on Weekends.

April:



Likewise, a dramatic contrast is evident in the count of offences and custodies on Easter Day when compared to Ordinary Non-Festival days, excluding Weekends.

December:

December month is popular for the Christmas Eve, Boxing Day and Mid-night New Year celebration. It is easily distinguishable from the visualization, the count of offences and custodies is significantly high throughout the Christmas Week, Weekends and Mid-night of New Year.

Narrative:

I begin this research with a clear focus to explore the detailed relationship between demographic attributes and drink drive collisions in Great Britain. By this comprehensive study I aim to investigate how demographic factors, such as age, gender and location influence the occurrence, patterns and characteristics of these collisions. This narrative highlights the crucial aspects that shape the dynamics of alcohol influenced accidents.

Great Britain is a popular tourist hub, millions of tourist's visit here to explore different tourist attractions. The Southern area, especially London, England, has a different level of hype among travellers as compared to other regions. Night life of London, England is very famous and people celebrate in Pubs, Clubs, restaurants and bars for long. Consequently, these regions have higher density of alcohol-selling establishments and nightlife, potentially leading to increased alcohol influenced collisions.

As per analysis, men are more likely to be involved in such collisions and they are more vulnerable of casualties in comparison to women. Middle age car drivers, especially those in the range 20-34 are more prone to fatal or serious casualties while drunk driving, while younger and elder are less. Car occupants are at higher risk to be killed or seriously injured as compared to other road users. Even, pedestrians and cyclists are not safe on road.

From evening to early morning are the deadliest hours for road users. Even, during daytime people suffer from injuries due to drunk drivers. Further, offences related to alcohol influenced driving increases during festivals and weekends.

Targeted Interventions:

The targeted interventions can be tailored to address specific findings and insights from this research.

Geographically Targeted Interventions:
Targeted measures like increased police presence, sobriety checkpoints and enhanced public transportation during peak hours should be considered.
Youth Education Programs:
Awareness programs of risks about drink driving should be implemented in schools and universities. These programs should address peer influence, social norms and responsible decision making.
Custody Record and Offence Title Analysis:
In-depth analysis of Custody Record and Offence Title should be done to identify recurring patterns and modus operandi. Further, this information can be used for the early detections and prevention of repeat offences.
Public-Private Partnerships:
Collaboration should be done with transportation companies and private stakeholders like businesses, pubs, bars and restaurants to promote responsible alcohol service and encourage patrons to use designated driver services.

Policy Measures:

Random Sobriety Checkpoints:
Implementing random sobriety checkpoints can discourage drink driving and increase the perceived risk of getting caught.
Ignition Interlock Programs:
There should be a requirement for convicted drivers to install ignition interlock devices in their vehicles, which require them to pass a Breathalyzer Test before starting the car.

Licence Suspension and Revocation:
For those caught driving under the influence, especially for repeat offenders their license should be revoked immediately.
Responsible Beverage Service Training:
Training should be provided to bar and restaurant staff in responsible beverage service, including recognizing the signs of intoxication and refusing to serve intoxicated customers.

Visualizations Justification:

Throughout the research, each method is chosen with a specific goal and consideration in mind to enhance the clarity and understanding of research results.

Charts:

Line Graph:
It is used to display trends and patterns over time. In this way I used it to showcase the variations in number of collisions and casualties over continuous interval of years and months.
Bar Charts and Pie Charts:
Bar charts and pie charts are used to show the distribution and comparison of categorical variables. The data used in this research is categorical like types of collisions and casualties, sex, location, months, age and different road users.

Colours:

Colour Consideration as per Data Type:
For categorical data like gender, Custody records, offence count and casualty type I have used different colours that are easily distinguishable.
For different types of collisions and casualties I have used two colours with different intensity to maintain the relation.
Consistency and Meaning:
I considered consistent colour schemes throughout related visualizations to maintain coherence. A specific meaning is associated with each intensity of same colour like Dark Purple (Killed), Medium (Seriously Injured) and Light (Slightly injured).
While choosing colours I kept in mind colour-blind friendly, colour interaction, cultural associations, contrast and readability and the number of colours.

Typography:

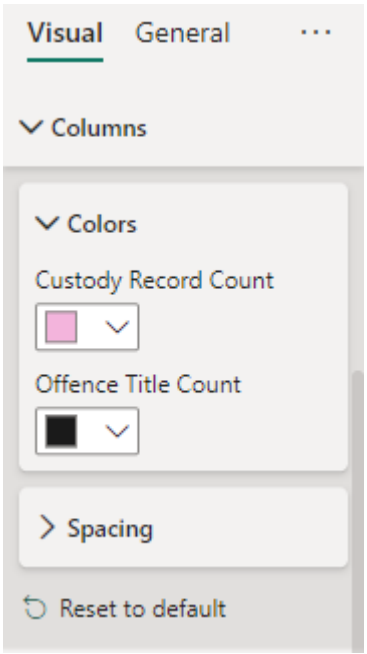
I maintained the consistency of Font usage throughout the report. I used a Sans-serif (Calibri) by considering its readability.

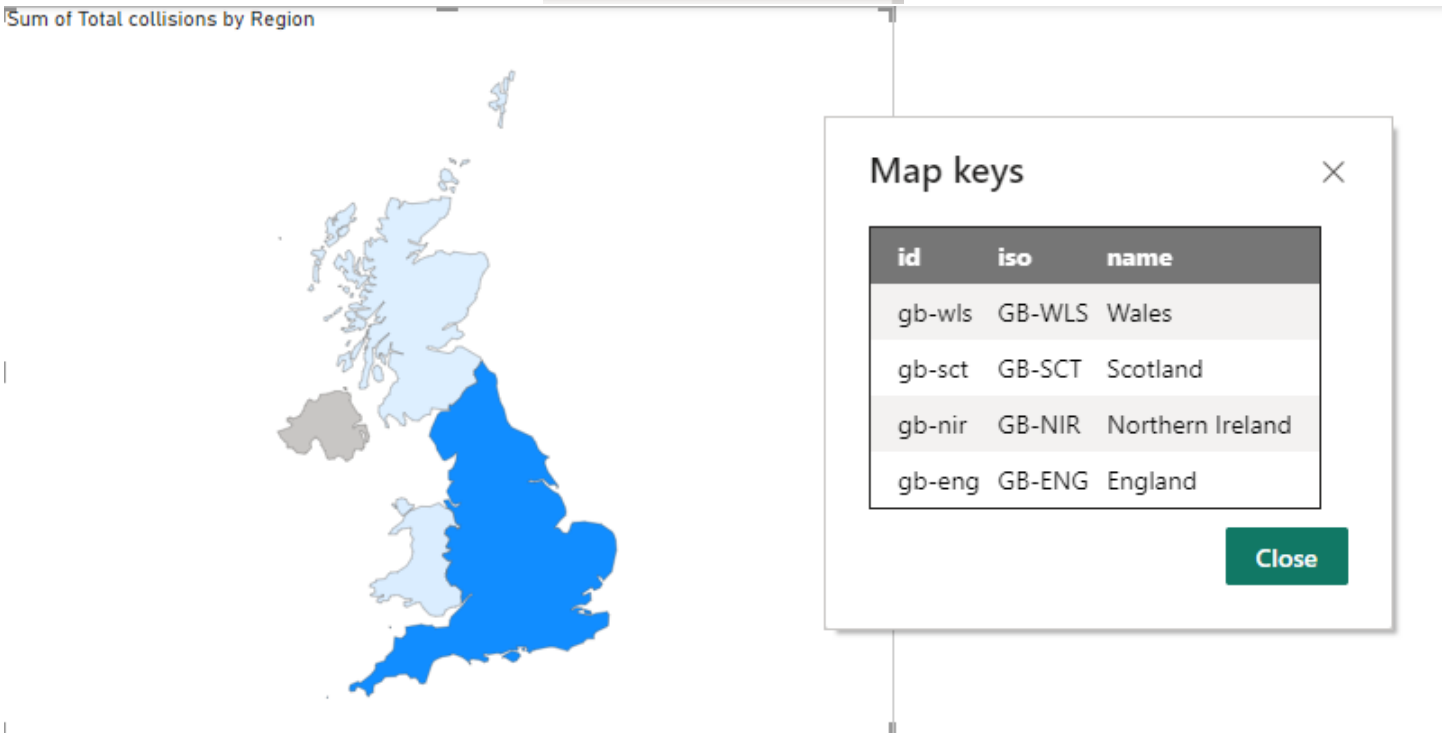
Chart Junk and Data Ink Ratio:

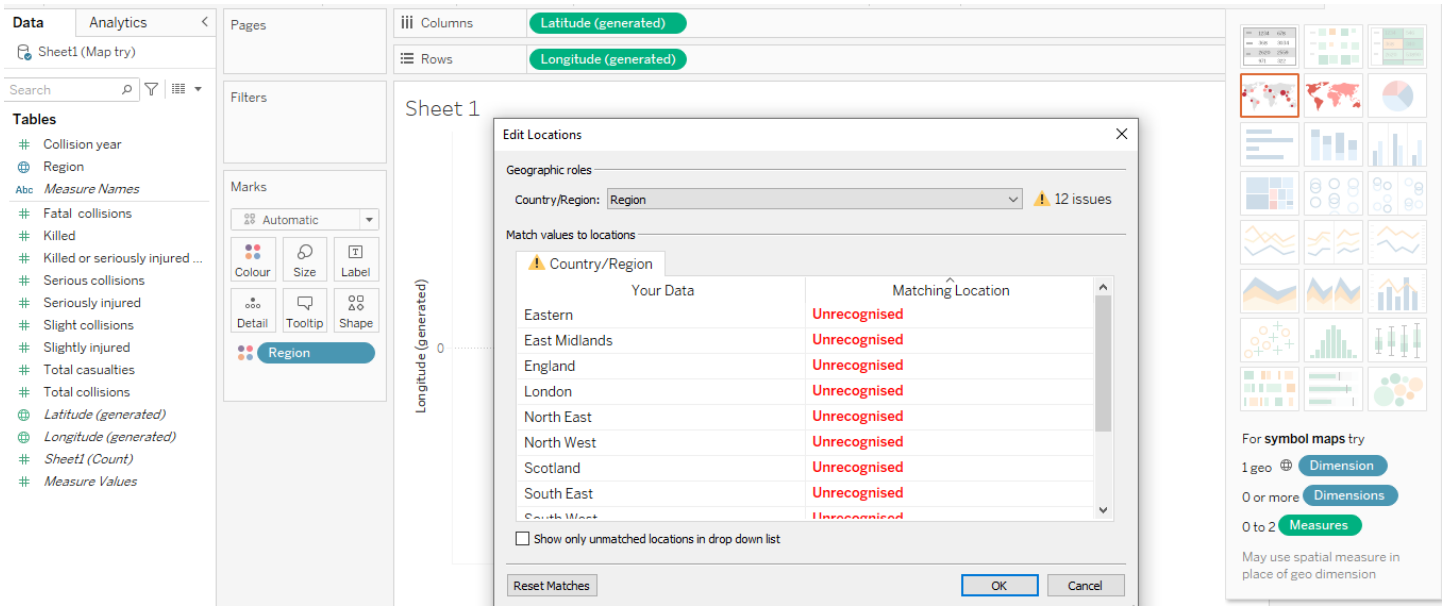
I considered chart junk and data ink ratio while creating visualizations. I removed the gridlines.

Feedback:

Overall I got positive feedback for different aspects of report. But he suggested me to do some changes in visualizations.
My colleague advised me to highlight the columns with specific colour. For example, for showing the Offence title and custody records on festivals and weekends a different colour can be used. But, Power Bi does not provide the feature to give different colours while using double columns in column chart. Also he suggested me to use maps for showing geographical distribution. But due to the limitations of Power Bi and Tableau 2023.2 version it is not recognising the regions of Great Britain even after using longitude and latitude. Power Bi is limited to recognize just four regions of Great Britain. Tableau does not have any option for regions of Great Britain for unrecognized areas.
Justification:


Visual
General
Columns
Colors
Custody Record Count
Offence Title Count
Spacing
Reset to default


Sum of Total collisions by Region
Map keys
id iso name
gb-wls GB-WLS Wales
gb-sct GB-SCT Scotland
gb-nir GB-NIR Northern Ireland
gb-eng GB-ENG England
Close


Data
Analytics
Sheet1 (Map try)
Tables
Collision year
Region
Measure Names
Fatal collisions
Killed
Killed or seriously injured ...
Serious collisions
Seriously injured
Slight collisions
Slightly injured
Total casualties
Total collisions
Latitude (generated)
Longitude (generated)
Sheet1 (Count)
Measure Values
Pages
Filters
Marks
Automatic
Colour
Size
Label
Detail
Tooltip
Shape
Region
Columns
Latitude (generated)
Rows
Longitude (generated)
Sheet 1
Edit Locations
Geographic roles
Country/Region: Region
12 issues
Match values to locations
Country/Region
Your Data
Matching Location
Eastern Unrecognised
East Midlands Unrecognised
England Unrecognised
London Unrecognised
North East Unrecognised
North West Unrecognised
Scotland Unrecognised
South East Unrecognised
Show only unmatched locations in drop down list
Reset Matches
OK
Cancel
For symbol maps try
1 geo Dimension
0 or more Dimensions
0 to 2 Measures
May use spatial measure in place of geo dimension

References

GOV.UK. (2021). Retrieved from GOV.UK: https://www.gov.uk/government/statistics/country-and-regional-analysis-2021/country-and-regional-analysis-guidance#data-tables

GOV.UK. (n.d.). *GOV.UK*. Retrieved from Regional Map: https://www.gov.uk/government/statistics/country-and-regional-analysis-2021/country-and-regional-analysis-guidance

Parlimentary Advisory Council for Transport Safety. (n.d.). Retrieved from Parlimentary Advisory Council for Transport Safety: https://www.pacts.org.uk/wp-content/uploads/PACTS-Drink-Driving-Taking-stock-moving-forward-Report-6.0.pdf

Sherrington, A. (2022, July 25). *GOV.UK*. Retrieved from GOV.UK: https://gds.blog.gov.uk/2022/07/25/2-years-of-covid-19-on-gov-uk/

Statistics Canada. (n.d.). Retrieved from https://www150.statcan.gc.ca/n1/edu/power-pouvoir/ch9/bargraph-diagrammeabarres/5214818-eng.htm

World Health Organization. (n.d.). Retrieved from World Health Organization: https://cdn.who.int/media/docs/default-source/documents/health-topics/road-traffic-injuries/ifrc-drink-driving-2022-final.pdf?sfvrsn=f3e09010_6&download=true