

PROJECT REPORT MIS071

Alcohol and drugs in road fatalities

2021 report based on 2019 data

R Ramnath

Report details

Report prepared for:	DfT		
Project/customer reference:	1-555		
Copyright:	© TRL Limited		
Report date:			
Report status/version:	Final		
Quality approval:			
A Kaminski (Project Manager)		L Smith (Technical Reviewer)	

Disclaimer

This report has been produced by TRL Limited (TRL) under a contract with DfT. Any views expressed in this report are not necessarily those of DfT.

The information contained herein is the property of TRL Limited and does not necessarily reflect the views or policies of the customer for whom this report was prepared. Whilst every effort has been made to ensure that the matter presented in this report is relevant, accurate and up-to-date, TRL Limited cannot accept any liability for any error or omission, or reliance on part or all of the content in another context.

When purchased in hard copy, this publication is printed on paper that is FSC (Forest Stewardship Council) and TCF (Totally Chlorine Free) registered.

Contents amendment record

This report has been amended and issued as follows:

Version	Date	Description	Editor	Technical Reviewer
1	20/07/2021	Draft report for DfT comment	RR	LS
2	18/11/2021	Final report	RR	LS

Document last saved on:	18/11/2021 12:17
Document last saved by:	Rishabh Ramnath

Contents

1	Introduction	2
2	Data collection	3
2.1	Method	3
2.2	Data quality	4
2.3	Drug data collection	5
2.4	Availability of data	6
2.5	Availability of data for fatality and collision characteristics	8
3	Blood alcohol data analysis	11
4	Summary	13
Appendix A	L407 data collection form	14

1 Introduction

The national database of recorded injury collisions, Stats19, is based on data collected by the police and is collated by DfT for use in monitoring road safety. The Stats19 data includes the results of breath tests conducted for drivers and riders in collisions but these data are not available for fatalities. Therefore this project collects Blood Alcohol Concentration (BAC) data for fatalities to supplement the breath test data to monitor the number of drink drive casualties.

BAC levels for road traffic fatalities aged 16 or older have been recorded by coroners in England and Wales since 1967 and by SFIUs¹ in Scotland since 1978. These data have been collated by TRL for over 30 years and have become the principle source of information on the role of alcohol in fatal road collisions.

Many coroners and SFIUs now also record whether there were any drugs present in road traffic fatalities, based on toxicology reports. The role of drugs in road collisions has become a topic of concern and therefore DfT commissioned TRL to collect additional data from the coroners and SFIUs on the presence of drugs in road traffic fatalities.

This report covers data for fatal road collisions that occurred in 2019 and contains an overview of the data collection method, a summary of the BAC and drug data collected, and the results of more detailed BAC analysis.

¹ Scottish Fatal Investigation Units. SFIUs were created in 2012 and are part of the Crown Office and Procurator Fiscal Service (COPFS) in Scotland and investigate accidental or unexplained deaths (<http://www.copfs.gov.uk/investigating-deaths/our-role-in-investigating-deaths>).

2 Data collection

2.1 Method

BAC and drug data for road traffic fatalities that occurred in 2019 were received from coroners and SFIUs from the start of 2019 until mid-June 2021. The data were gathered via a data collection form, known as the L407 (see Appendix A) and entered into a database.

Some coroners and SFIUs provide us with forms when they have completed a case for a road fatality, whilst others require us to indicate for which names data are required. Coroners and SFIUs do not hold the Stats19 accident reference numbers in their databases, so it is necessary to obtain fatality names to enable coroners and SFIUs to identify cases for which we require data. DfT provided us with provisional Stats19 data in January 2020 – the data which we provided to police forces to send us a list of all road traffic fatality names for 2019, which allowed us to collect some fatality names in advance. Data already received from coroners and SFIUs were matched with Stats19 collision data for 2019 using an algorithm once the full provisional 2019 Stats19 dataset was received in July 2020. This enabled fatalities for which there remained outstanding data to be identified. Names of those fatalities with outstanding data were actively sought from police forces, by providing the police with information extracted from Stats19 (the accident reference number, accident date and time, and age and gender of the fatality). Police forces were also asked to supply the name of the coroner of SFIU area that dealt with each case, although this information is not always available to the police. This process was repeated when the final published dataset was received in October 2020 to finalise the list of fatalities for which data was required.

Responses were received from all of the 50 police forces that were contacted; however, one police force preferred to send the fatality names directly to the coroner instead of to TRL, and for one police forces the fatality names were received from DfT through CRASH². There were two fatalities for which names which could not be found by police forces that responded to our request. Memorandums of Understanding for data sharing have been agreed between DfT and several police forces to enable the sharing of fatality names with TRL.

Once the fatality names had been received, an algorithm was used to indicate the corresponding coroner(s) or SFIU(s) for each case (where this information had not been supplied by the police). The relevant coroner or SFIU was then asked to supply BAC and drug data for each fatality that they dealt with. To make this process as simple as possible for the coroners and SFIUs, TRL created partially-completed L407 forms for each case using data supplied in Stats19 and by the police. The majority of these were emailed to the coroners and SFIUs, although some coroners preferred to have a paper copy posted). Some coroners and SFIUs responded with the required data after our initial request; others were re-contacted on subsequent occasions to obtain the data.

Coroners and SFIUs were also asked to supply or clarify missing or incomplete data on the L407 forms that they had provided, such as time of death or drug data.

² CRaSh: Collision Recording and Sharing

Some road traffic fatalities are not tested for BAC level and/or drugs for several reasons, such as timescales or medical reasons. Toxicological analysis is also more likely to be requested for some groups (e.g. drivers and motorcyclists) than for others (e.g. passengers and pedestrians).

Of the 87 coroners and SFIUs in Great Britain, 85 provided us with some data and 83 of these supplied some drug data in addition to the BAC data. Some coroners and SFIUs were unable to provide all or some of the requested data for several reasons, including:

- Ongoing criminal proceedings (58% of requested but unreceived 2019 forms)
- Inability to locate information (14% of requested but unreceived 2019 forms)
- Died due to natural causes/suicide/murder (2% of requested but unreceived 2019 forms)
- Other reasons (2% of requested but unreceived 2019 forms)

The remaining 22% of forms were not received for reasons unknown.

The global Covid-19 pandemic in 2020 and 2021 and the resulting lockdown restrictions in the UK also had an impact on the collection of 2019 data. There were two coroners who indicated they were unable to provide any data as a result of the pandemic and another two who provided some data but was unable to return all the forms they had been sent. In total, there were 59 forms (9% of requested but unreceived 2019 forms) which coroners informed TRL they could not provide because of Covid-19. However, this is likely to be an underestimate of the effect of the pandemic on data collection because it does not account for more indirect consequences of the lockdown restrictions such as the delaying of inquests or crown court proceedings which also results in data not being received.

2.2 Data quality

Data collection requires coroners, SFIUs, or their staff, to complete an L407 form electronically or manually, and to send the form to TRL. TRL staff then input the data into the database at TRL. The data can therefore be prone to transcribing errors or other mistakes.

To ensure quality of the final data set, various checks are run throughout the process. Checks are run on the data as it is entered, every month before the monthly report is produced, before first matching with the Stats19 data (in the year following the collisions) and before closing the dataset in June (of the year following Stats19 availability). These checks are detailed below.

Data entry checks:

- Check the following fields are completed:
 - Collision date and time (if time unknown then assume 00:01)
 - Death date and time (if time unknown then assume 23:59)
- Date of death is after date of collision
- Date of death is before data entry date

- Age at collision is within 5 years of the age calculated as the difference between the date of birth and the date of death.
- BAC level lies within BAC range (i.e that the numeric value entered lies within the range entered).
- The combination of fatality name and coroner or SFIU area is not a duplicate

Monthly report checks:

- BAC level lies within BAC range (to double check no entries have bypassed the check above)
- Check combined date time fields match individual date and time fields (collision and death – in case any records have been updated)
- Check of dates for anyone who died more than 30 days after the collision

Annual report checks:

- Check that there are no L407 records matched to multiple Stats19 fatalities and that there are no Stats19 fatalities matched to multiple L407 records
- Check cases with matching full names, check sample of matching initial and surname
- Check that cases with drug data have 'drug toxicology requested' set to yes on L407 and those with 'drug data from' = 'toxicology report' have drug data recorded
- Check that the number of Stats19 fatalities with a match to an L407 fatality is the same as the number of L407 fatalities with a match to a Stats19 fatality

2.3 Drug data collection

Coroners had the option to provide drug data in the table on the L407 form or to provide a copy of the toxicology report. The toxicology reports varied in style and level of detail provided. Some included details of all of the drugs tested for, and indicated those where positive results were found, whereas other reports included phrases such as 'tests for common drugs of abuse showed no positive results'.

Drug data from the toxicology reports and the L407 forms were entered into the database. The data recorded included:

- Type of sample (for example, blood, urine)
- If a drug was found, the name of the drug, and the level as described in the report, either qualitatively (such as 'present') or quantitatively (for example, 27mg/100ml)
- If toxicological analysis for drugs was carried out but no drugs were found, a record was entered into the data to indicate this

Cases were included in the analysis whatever the time elapsed between the collision, death and sample, since different drugs are detectable for a different amount of time in the body and it would be difficult to identify an appropriate elapsed time for all drugs.

The drug levels were not checked to assess whether any If the values were exceedingly high. This is because there are many drugs recorded and the evels are very variable. However, it would be useful in the future to check the levels and units for those drugs included in the drug driving legislation

No attempt has been made to determine whether the level of a drug would have caused impairment at the time of the collision, since this is due to many factors such as the time elapsed since the drug was last taken, metabolisation rates, whether drugs were found in blood and/or urine, a person's previous use of the drug, and whether the drug was used in combination with other drugs and/or alcohol.

2.4 Availability of data

Table 1 gives a summary of the number of fatalities in Stats19 for 2018 and 2019, the number of L407 forms returned that were matched to Stats19 and those cases where BAC data were available and some drug testing was carried out.

As in previous studies, only data from adult fatalities that died within 12 hours of a collision are used for analysis of blood alcohol levels.

Table 1: Number of cases and percentage of Stats19 fatalities with BAC and drug data

Number of cases:	2018	2018%	2019	2019%
Stats19 fatalities aged 16 or over	1,736	100%	1,713	100%
Data from coroners and SFIUs for fatalities aged 16 or over with match to Stats19	1,496	86%	1,355	79%
Of which fatalities died within 12 hours of collision	1,128	65%	962	56%
Of which with BAC data available	931	54%	796	46%
Of which with some drug data received from coroners and SFIUs	1,054	61%	958	56%
Number adult fatalities who died within 12 hours of a collision with known BAC but not matched to Stats19	19	-	24	-
Number adult fatalities with some drug data received but not matched to Stats19	27	-	28	-

There were 1,713 adult road traffic fatalities reported in 2019. 1,355 of these (79%) were matched with data received from the coroners and SFIUs, slightly lower than the proportion in 2018. Those cases where the death occurred more than 12 hours after the collision, or where the BAC was unknown, were excluded, which reduced the data available for analysis of BAC to 796 cases (46% of adult fatalities in Stats19).

The unknown BACs include those cases where no sample was taken, the sample was not analysed, or the result was unknown.

In 2019 56% of Stats19 fatalities were matched with data that included some drug testing (which may have been that no drugs were found), a slight decrease from 61% in 2018. Different drugs have different metabolisation rates in different people and therefore, in contrast to the BAC data, a restriction on the time of death relative to the collision has not

been used for drug data analysis. Therefore in total, there are a greater number of fatalities with drug data available for analysis than the number with useable BAC data.

The descriptions of analytical findings contained in the toxicology reports varied considerably, with a variety of terms being used to indicate presence or otherwise of drugs. In some cases there was no descriptive term, but a numeric level was entered, and in some cases this numeric level was given in terms of 'less than...'. In some cases both a descriptive term and a numeric level (or 'less than...') was provided.

Many of the toxicology reports did not list all of the drugs that the test would have identified; they listed only those drugs where the analysis showed positive results. The drugs reported may have been medication or drugs of abuse used before the collision, which may have impaired a road user, or may have been used in emergency medical treatment, although some drugs can be abused or used medically.

Discussions with some of the providers of toxicology reports confirmed that the analysis methods used (for example, gas or liquid chromatography-mass spectrometry) analyse samples for a wide range of drugs rather than samples being individually tested for specific drugs, although the range of drugs tested for by different laboratories is likely to differ.

The drug data for 2019 are not analysed further in this report; analysis of data from 2014-2018 is analysed further in a separate report (J Hammond, 2021) which includes analysis of types of drugs.

There were 24 fatalities in 2019 for which death occurred within 12 hours of the collision and BAC data were available but which could not be matched with Stats19 records. Of these, all 24 fatalities also had drug data recorded. There were also an additional four unmatched fatalities with drug data recorded where the fatality either did not die within 12 hours or did not have BAC data recorded.

From the short text descriptions of the collisions, received with the blood alcohol data, it appears that five of the 24 unmatched fatalities with BAC data and died within 12 hours were not in Stats19 because they were as a result of collisions which occurred on private land or suicides, – neither of which should be included in Stats19. Of the remaining 19 fatalities, 11 cases were included in the provisional Stats19 but not the final Stats19. This indicates that these forms were proactively sent out and responses were received from the Coroner. It was not clear why the remaining 8 fatalities were unmatched; they may also fall under these categories (died abroad, on private land, suicide, or natural causes) as the descriptions are not very comprehensive, or some cases may have been received from coroners proactively but coded in Stats19 as a serious injury if the death did not occur at the scene and the Stats19 record was not updated.

Of the additional four unmatched fatalities with drug data, one was as a result of a collision abroad and one died more than 30 days after the collision and so would also not be included in Stats19 and one was coded as a serious injury in Stats19. The reason that the remaining one did not match with Stats19 is not clear.

As mentioned in Section 2.1, the Covid-19 pandemic and resulting restrictions have had an effect on availability of 2019 data.

2.5 Availability of data for fatality and collision characteristics

The following tables give, for various fatality and collision characteristics:

- The number of adult fatalities in Stats19
- The number of adult fatalities with valid BAC data who died within 12 hours and matched with Stats19
- The number of adult fatalities with drug data and matched with Stats19

Note that the figures give the number of fatalities tested, including both those above and below the BAC limit and those with and without drugs detected.

Table 2 shows the number of fatalities in 2019 by road user type and the availability of BAC and toxicology data.

Table 2: Samples by road user group

Road user group	Number of fatalities in Stats19	Number of fatalities who died within 12 hours with valid BAC data		Number of fatalities with drug data	
		Number	% of Stats19	Number	% of Stats19
Pedestrian	452	183	40%	235	52%
Pedal cyclist	90	30	33%	42	47%
Motorcyclist	335	200	60%	227	68%
Car driver	507	281	55%	335	66%
Goods vehicle driver	55	37	67%	40	73%
Other road user	30	5	17%	7	23%
Passenger	244	60	25%	72	30%
Total	1,713	796	46%	958	56%

Pedal cyclists and motorcyclists include riders and passengers. Car drivers include taxi and minibus drivers. Goods vehicle drivers include vehicles of LGVs ($\leq 3.5t$) and HGVs ($>3.5t$). Bus/coach drivers, horse riders and user of mobility scooters are included in Other road user.

Table 2 shows that a higher percentage of motor vehicle drivers (cars, goods vehicles and motorcycles) have valid BAC data and drug data than non-drivers (pedestrians, pedal cyclists and passengers). This is also the case for toxicology data. This could be because passengers and pedestrians are not subject to any legal limits for alcohol or drugs and therefore some coroners do not request BAC and toxicology tests for these road user groups.

Table 3 shows number of fatalities with valid BAC data and toxicology by age group.

Table 3: Samples by age group

Age group	Number of fatalities in Stats19	Number of fatalities who died within 12 hours with valid BAC data		Number of fatalities with drug data	
		Number	% of Stats19	Number	% of Stats19
16-19	91	46	51%	51	56%
20-24	167	93	56%	116	69%
25-29	146	81	55%	95	65%
30-39	240	137	57%	163	68%
40-49	192	107	56%	115	60%
50-59	239	120	50%	141	59%
60+	638	212	33%	277	43%
All ages	1,713	796	46%	958	56%

The age group with the highest percentage of fatalities with valid BAC data is the 30-39 age group which has 57% of fatalities with BAC data. However, the 20-24 age group has the highest percentage of fatalities with toxicology data (69%) (both these figures are not inclusive of the "unknown" category which only has 3 fatalities). For both BAC and toxicology, the percentage of fatalities with BAC and drug data is lowest for the 60+ age group.

For both BAC and toxicology, Table 4 shows that a higher percentage of male fatalities had data than female fatalities. Also, the number of male fatalities is considerably larger than the number of female fatalities.

Table 4: Samples for males and females

Sex	Number of fatalities in Stats19	Number of fatalities who died within 12 hours with valid BAC data		Number of fatalities with drug data	
		Number	% of Stats19	Number	% of Stats19
Male	1,279	642	50%	774	61%
Female	434	154	35%	184	42%
Total	1,713	796	46%	958	56%

Table 5 shows the availability of BAC and toxicology by time period of the collision.

Table 5: Samples by time of day

Time period	Number of fatalities in Stats19	Number of fatalities who died within 12 hours with valid BAC data		Number of fatalities with drug data	
		Number	% of Stats19	Number	% of Stats19
22:00-03:59	321	175	55%	211	66%
04:00-21:59	1,392	621	45%	747	54%
All days and times	1,713	796	46%	1,054	56%

The percentage of fatalities with BAC data is higher for collisions that happened between 22:00 and 03:59 than between 04:00 and 21:59, and this is also the case for the drug data. However, there is a much greater proportion of collisions that occurred between 04:00 and 21:59 than between 22:00 and 03:59.

3 Blood alcohol data analysis

Table 6 and Table 7 show summaries of the BAC data for 2018 and 2019. The figures for Scotland are presented separately to those for England and Wales because the legal limit in Scotland was reduced to 50mg/100ml of blood in December 2014. Note that the figures in these tables include drivers, riders, passengers and pedestrians.

Table 6: Number and percentages of fatalities by BAC level – England & Wales

		2018	2018%	2019	2019%
Fatalities aged 16 or over (Stats19)		1,579	-	1,550	-
Fatalities with known BAC (and died within 12 hours) (Stats19 matched with L407)		815	100%	704	100%
Fatalities with a known BAC exceeding (mg/100ml):	9	266	33%	240	34%
	50	171	21%	183	26%
	80	155	19%	169	24%
	100	141	17%	160	23%
	150	114	14%	123	17%
	200	73	9%	64	9%

Overall, 24% of the total fatalities in England and Wales in the database for 2019 had a BAC level above the legal limit of 80mg/100ml and 9% had at a BAC level of 200mg/100ml or above. The proportion of driver fatalities with a BAC level over the legal limit was 18%.

Table 7: Number and percentages of fatalities by BAC level – Scotland

		2018	2018%	2019	2019%
Fatalities aged 16 or over (Stats19)		157	-	163	-
Fatalities with known BAC (and died within 12 hours) (Stats19 matched with L407)		116	100%	92	100%
Fatalities with a known BAC exceeding (mg/100ml):	9	31	27%	22	24%
	50	20	17%	13	14%
	80	16	14%	10	11%
	100	15	13%	10	11%
	150	14	12%	8	9%
	200	10	9%	6	7%

Of the total fatalities in Scotland in 2019 in the database, 14% had a BAC level above the legal limit of 50mg/100ml and 7% had at a BAC level of 200mg/100ml or above. The proportion of driver fatalities with a BAC level over the legal limit was 11%.

The proportions of both total fatalities and driver fatalities in Scotland with a BAC level over the legal limit in 2019 have decreased compared with 2018 and this is likely to be as a result

of higher levels of BAC data availability in 2018. In particular, the proportion of non-driver fatalities with BAC data was 41% in 2019 down from 83% in 2018. This is likely to have contributed to the decrease in proportion of total fatalities over the legal limit as non-drivers are more likely to have higher BAC levels than drivers (19% of non-drivers had a BAC level over the legal limit in 2019 compared to 11% of drivers).

4 Summary

Coroners and SFIUs were asked to supply BAC and drug data for adult road traffic fatalities that occurred in 2019. The data were matched with the fatalities in the Stats19 database of collisions reported to and by the police.

Out of a total of 1,713 adult road traffic fatalities in Stats19, there were 796 cases where data were supplied by the coroners or SFIUs, where the death was within 12 hours of the collision and where the blood alcohol level was known. There were 958 cases matched to Stats19 that were tested for the presence of drugs and for which the results were made available by the coroners and SFIUs.

The Covid-19 pandemic had a small effect on availability of 2019 data. Two coroners informed TRL they could not provide data as a result of the pandemic and another two were able to provide some data but unable to return all forms.

The following groups of fatalities had a lower of availability of data, which may suggest bias in the data relating to which fatalities a coroner provides BAC and drug data, or, in the case of the BAC data, there may be differences in the time between the collision and death for different type of fatalities.

- Passengers, pedal cyclists and pedestrians (for whom the drink or drug driving legislation does not apply)
- Ages 60+
- Females

Further engagement with coroners, SFIUs and toxicologists to understand the decision making process for requesting toxicology and the interpretation of the results would help to understand any possible bias.

Overall, 24% of fatalities in England and Wales had a BAC that was over the English and Welsh legal alcohol limit of 80mg/100ml and 14% of fatalities in Scotland had a BAC that was over the Scottish limit of 50mg/100ml.

The BAC data are used by DfT in conjunction with the Stats19 data to report on the number of drink drive casualties. The recent analysis of the toxicology data (J Hammond, 2021) shows the potential of the toxicology data to be used for reporting road deaths involving different types of drugs, although it remains difficult to know whether the drugs present would have impaired the driver.

The data on alcohol and drugs in road fatalities could also be used to identify the types of collisions involving alcohol and/or drugs and the drugs identified to target educational measures or to develop case studies.

Acknowledgements

The authors would like to thank the police forces of Great Britain, the coroners of England and Wales, and the SFIUs for supplying data for this study.

Appendix A L407 data collection form



Department
for Transport



OFFICIAL – SENSITIVE
TRL FORM L407
Details of a fatal road casualty

The information provided on this form is used by the Department for Transport to monitor road safety and inform drug and drink-driving policies.

Please take the time to provide as much information as you can. Your collaboration is highly appreciated.

If you have any queries, please contact us at L407data@trl.co.uk

Accident details

Did the accident occur at a public road in Great Britain? ¹		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Forename of the deceased:		Date of the accident	
Surname of the deceased:		Time of the accident	
Gender:		Date of death:	
Date of birth:		Time of death:	
Age at death:			

Was a blood sample taken and analysed for alcohol?

Yes <input type="checkbox"/>	If YES, please indicate the level below: _____ mg alcohol/100 ml blood
No <input type="checkbox"/>	

Was the deceased:			Select the type of vehicle (if applicable):		
A driver/rider <input type="checkbox"/>	A passenger <input type="checkbox"/>	A pedal cyclist <input type="checkbox"/>	Car/taxi <input type="checkbox"/>	Motorcycle <input type="checkbox"/>	Van/lorry <input type="checkbox"/>
A pedestrian <input type="checkbox"/>	Other <input type="checkbox"/>	Not known <input type="checkbox"/>	Bus/coach <input type="checkbox"/>	Other <input type="checkbox"/>	Not known <input type="checkbox"/>

Was toxicology requested for drugs other than alcohol (including medicines)?

Yes No

If Yes, could you send us a copy attached to this form at the return address (see next page):

Yes, I have attached No, I cannot attach

If Not attached, please use the table on the back to indicate ALL drugs that were detected as per the toxicology report.

¹ We are only interested in accidents occurring on public roads in GB. If your answer is "NO" then you do not need to fill this form. For example, car parks and private roads should not be included.

TURN PAGE ->

Alcohol and drugs in road fatalities



This report summarises the collection of blood alcohol content (BAC) and drug data for road traffic fatalities in 2019. These data are collected every year from Coroners and Scottish Fatal Investigation Units, matched to the Stats19 database of reported injury collisions in Great Britain, and delivered to the Department for Transport to help inform their drink driving statistics. This report contains an overview of the data collection method and a summary of BAC and drug data availability. More detailed analysis is also presented including breakdowns of BAC and drug data availability by road user class, fatality age and gender and time of collision. In addition, the BAC data have been analysed to examine the proportion of fatalities with BAC data recorded which were over the legal limit for driving.

TRL

Crowthorne House, Nine Mile Ride,
Wokingham, Berkshire, RG40 3GA,
United Kingdom

T: +44 (0) 1344 773131

F: +44 (0) 1344 770356

E: enquiries@trl.co.uk

W: www.trl.co.uk

ISSN N/A

ISBN N/A

071