

MEDICAL BUREAU OF ROAD SAFETY

ANNUAL REPORT 2018



MEDICAL BUREAU OF ROAD SAFETY, HEALTH SCIENCES
CENTRE, UNIVERSITY COLLEGE DUBLIN, BELFIELD, DUBLIN 4





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Directors Introduction

This Annual Report for the 50th Anniversary year sets out a summary of the activities and performance of the Medical Bureau of Road Safety, together with important and relevant information and data in the area of driving under the influence of intoxicants and also the Bureau's ongoing core and integral role in the Road Safety Strategy 2013 – 2020.

The Bureau was established in 1968 and in its 50 years of existence its mission has been to provide a high quality national forensic service in intoxicant detection thus supporting the effective operation of road traffic legislation passed by the Oireachtas. There has been an enormous improvement in roads safety in recent decades. In 1998 Ireland had 124 road traffic deaths per million of the population and this reduced to 30 in 2018, the second lowest rate in the European Union. The Bureau has been one of the core contributors to this improvement together with its partners in the Department of Transport, Tourism and Sport, the Road Safety Authority, An Garda Síochána and other organisations and bodies. It has continued to contribute to the Ministerial Committee on road safety and at RSA and Garda road safety launches as well as playing its role at international level on committees and conferences in many countries.

The preliminary drug testing programme completed its first full year in 2018 with 157 Dräger DrugTest 5000 devices provided to the Gardaí for mandatory intoxicant testing checkpoints and 87 garda stations. The roll out of the new Dräger 7510 preliminary alcohol breath testing devices commenced in October 2018 with a total of 625 devices provided to the Gardaí with the remaining 775 devices to be provided in the first half of 2019.

The number of blood and urine specimens received for alcohol analysis increased by 14% over 2017 and the corresponding figure for toxicology analysis was a 34% increase. There was a 9% increase in evidential breath testing numbers. These significant increases have been a challenge which the Bureau addressed successfully in the year. Training and information support continued to be provided for An Garda Síochána, the Prosecution Services, Doctors and Pharmacists. The Bureau continued to be involved in proficiency testing programmes with a number of providers for a large number of analytes throughout the year and also continued its successful accreditation with the Irish National Accreditation Board for its wide variety of laboratory testing functions.

In October the Bureau marked its 50th Anniversary with a celebration and academic meeting opened by Mr. Shane Ross T.D., Minister for Transport, Tourism and Sport and Professor Andrew Deeks, President of University College Dublin emphasising the continuing strong links between the two organisations since the establishment of the Bureau. The academic programme included international and national speakers and was attended by representatives from the Bureau's many partner organisations. The Bureau now looks forward to its next fifty years.

Professor Denis A. Cusack
Director

50 YEAR CELEBRATION

The Medical Bureau of Road Safety was established under the Road Traffic Act 1968 in November of that year. The Board of the Bureau held its Inaugural Meeting on 2nd December 1968.

On Thursday 18th October 2018 the Medical Bureau of Road Safety held a ceremony to mark 50 years at the frontline of forensic road safety nationally and internationally from 1968 – 2018. It commenced with the unveiling of a celebratory plaque by Shane Ross, TD, Minister for Transport, Tourism and Sport and Professor Andrew Deeks, President of University College Dublin.

Opening remarks were made by the MBRS Chair, Dr. Declan Bedford. This was followed by a number of presentations on intoxicated driving, road safety and court proceedings over the past 50 years. There were representatives from the Road Safety Authority and An Garda Síochána in attendance.

The Keynote Speaker was Professor Eilish Gilvarry from the UK followed by Professor Denis Cusack, Director Medical Bureau of Road Safety, Ms. Helen Kearns, MBRS, Dr Richard Maguire, MBRS and Ms. Stephanie O'Brien, Office of the Director of Public Prosecutions.



L – R: Mr. Michael McDermott, MBRS Board Member, Professor Denis Cusack, Director MBRS, Professor Andrew Deeks, President of University College Dublin, Shane Ross, TD, Minister for Transport, Tourism and Sport and Dr. Declan Bedford, MBRS Chair.



L-R: Shane Ross, TD, Minister for Transport, Tourism and Sport, Ms. Moyagh Murdock, RSA, Chief Superintendent Aidan Reid, An Garda Síochána, Professor Andrew Deeks, President of University College Dublin



Dr. Declan Bedford, MBRS Chair.



L-R: Ms. Helen Kearns, Chief Analyst, MBRS, Ms. Stephanie O'Brien, Office of the Director of Public Prosecutions, Professor Denis Cusack, Director MBRS, Professor Eilish Gilvarry, Keynote Speaker, Dr. Richard Maguire, Principal Analyst, Toxicology, MBRS



MISSION STATEMENT:

“To provide a high quality national forensic service in alcohol and drug (intoxicant) detection in support of the effective operation of the road traffic legislation and contribution to road safety and medical fitness to drive measures.”

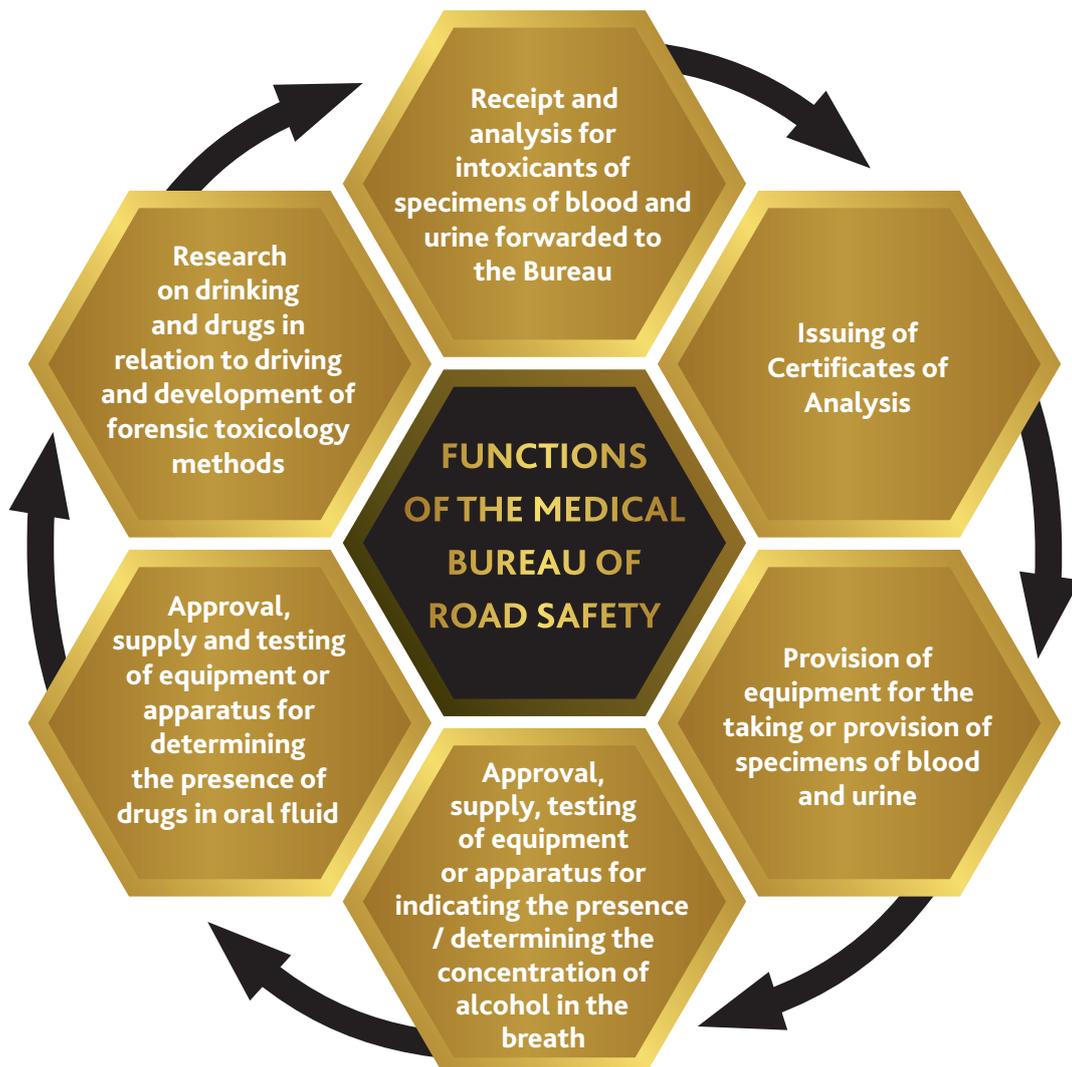
FUNCTIONS OF THE MEDICAL BUREAU OF ROAD SAFETY

The responsibility for chemical testing of intoxicants in driving in Ireland rests with the Medical Bureau of Road Safety which is a corporate body established in November 1968 by the Minister for Local Government under Part V of the Road Traffic Act, 1968.

The Minister's title was altered to Minister for the Environment & Local Government on 22nd July 1997. In June 2002 the Medical Bureau

of Road Safety came under the aegis of the Minister for Transport under the Transfer of Departmental Administration and Ministerial Functions Order 2002.

Since 2011 the Medical Bureau of Road Safety is under the Department of Transport, Tourism and Sport. The functions of the Bureau are laid down in the Road Traffic Acts 1968 – 2016.



When the Bureau was established in 1968 it commenced operating for Roadside Alcohol Testing, Blood and Urine Alcohol Analysis, the Issue of Certificates and provision of equipment for the taking of specimens (kits).

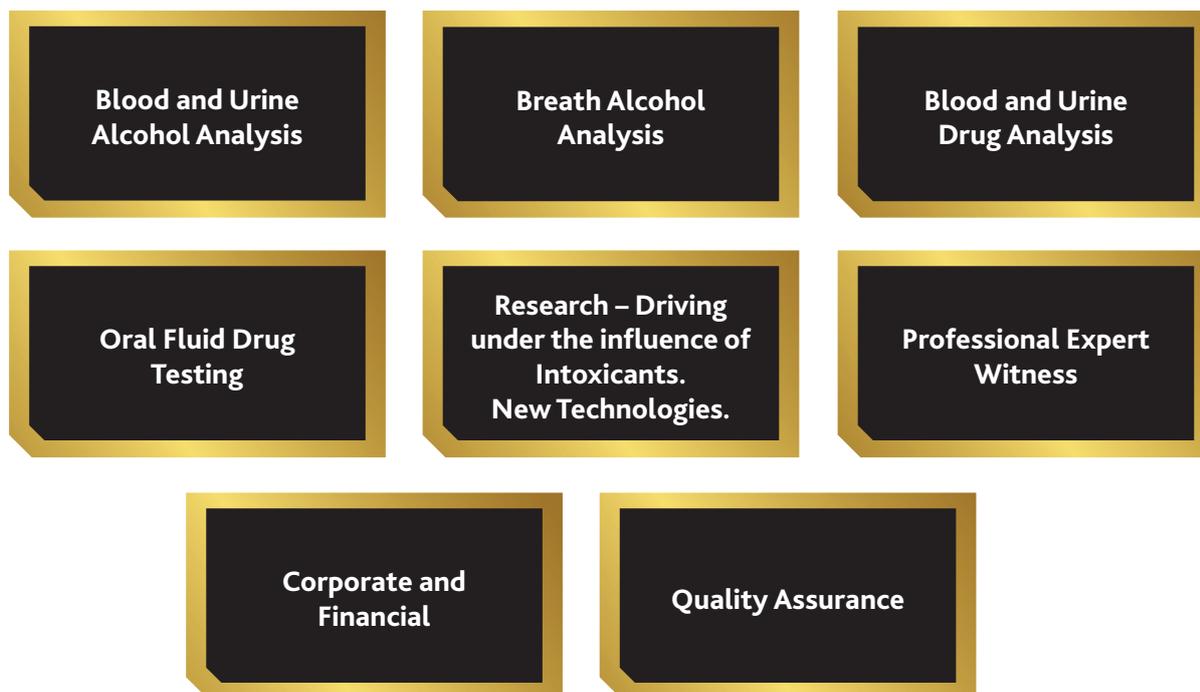
There have been many legislative changes such as the introduction of evidential breath alcohol testing (EBT) and driving under the influence of drugs (DUID), specimens provided in hospitals, specimens taken from drivers involved in collisions and mandatory intoxicant testing to include Preliminary Breath Alcohol testing (PBT) and Preliminary Drug Testing (PDT). The Bureau issues certificates under section 17 of the Road Traffic Act 2010 (as amended 2016), certifying the concentration of alcohol in blood or urine, certifying the presence of a drug or drugs in

blood or urine and certifying the concentration of a drug or drugs in blood.

The Road Traffic Act 2018 introduced a more severe penalty for drivers having alcohol levels between 50mg/100ml and 80mg/100ml blood and equivalent in urine or breath, recognizing that even at low levels of alcohol driving is impaired.

The Bureau continued to expand and develop all aspects of its work while focusing on its legal responsibilities as set out in the Road Traffic Acts (RTA) and in accordance with the Government's Road Safety Strategy.

The Bureau operates to fulfill the intertwined functions below.



The Bureau continues to keep up to date with technology and use the best methods of analysis. It has kept abreast of innovation in instrumentation in the field of alcohol and drug detection both in the laboratory and outside of the laboratory – roadside and garda stations.

The Bureau provides a service to the Department of Transport, Tourism and Sport, the Courts, the Garda Síochána, both defence and prosecution lawyers and the public.

The continued successful operation of the

Bureau is the investment in staff training and skill enhancement. The Director is responsible for the day to day running of the Bureau. The Chief Analyst is responsible for the day to day running of the laboratories and their programmes. Each programme has a programme manager at Principal Analyst level. The Senior Administrator is responsible for the Corporate/Financial programme and for overall administration within the Bureau. The Bureau has a Quality Manager at Principal Analyst level.

(see organisational chart on page 36)

SIGNIFICANT ACHIEVEMENTS & DEVELOPMENTS DURING 2018

Preliminary Drug Testing

Preliminary Drug Testing (PDT) continued to increase at a moderate rate throughout the country. The PDT review group with members from the MBRS, AGS and DTTAS continued to meet to review and assess use and ensure continued support of the programme.

Laboratory Preliminary Drug Screening

The Bureau implemented a new Preliminary Drug Screening method using LC-MS-MS for the analysis of drugs, this replaced the previously used immunoassay system. The new screening method allows the specific drug to be identified at this preliminary stage rather than the class of drug which had been the case with the immunoassay test.

Confirmatory Drug Testing

The Bureau continued to carry out all blood confirmation testing in-house in 2018 and from May 2018 all urine confirmatory testing was carried out in-house.

Preliminary Breath Alcohol Testing

The Bureau commenced procurement for Roadside Breath Testing devices to include extra functionality to meet the requirements of An Garda Síochána. The initial procurement process was completed in December 2017 with the tender awarded in early 2018 to Dräger for the provision of preliminary breath testing devices; the Dräger 7510. The new devices have the same alcohol measurement capability but have extra functionality in terms of location tracking and data storage. A total of 1,400 devices will be deployed to An Garda Síochána. A total of 625 were deployed by the end of 2018 with the remainder to be issued in 2019.

Quality Assurance

ISO 17025 accreditation was maintained in 2018 for the following tests:

- Blood and Urine Alcohol Analysis
- Evidential Breath Testing
- Preliminary Breath Testing
- Preliminary Drug Testing
- Drug testing in Oral Fluid
- Laboratory Preliminary Drug Screening
- Cannabis confirmation in Blood and Urine
- Benzodiazepine confirmation in Blood and Urine.
- Multidrug confirmatory testing in Blood

Under flexible scope multidrug confirmatory testing in Urine was added to the list of accredited tests and was added to the scope of testing following auditing by INAB (Irish National Accreditation Board) in early 2019.

Health, Welfare and Safety

The Bureau reviewed its Safety Statement and continued to monitor all aspects of Health and Safety throughout 2018. All staff are made aware of their role with regard to Health, Welfare and Safety and a staff seminar on Dignity and Respect was held during 2018. There were no reportable or significant accidents or incidents in the year.

Knowledge Sharing and Development

Bureau staff and the Director presented at and attended many conferences, meetings and working groups related to the work of the Bureau with the aim of sharing expertise and knowledge.



The Bureau also hosted several secondary school transition year students for a week each during 2018.

Bureau staff are involved in a LIMS (Laboratory Information Management System) user group along with other Public Service and Civil Service laboratories. The Bureau hosted several of these meetings in 2018.

Bureau scientists sit on national and international standards and knowledge sharing committees and working groups including OIML (International Organisation of Legal Metrology), Eurachem, UKIAFT (United Kingdom and Ireland Association of Forensic Toxicologists) and EMCDDA (European Monitoring Centre for Drugs and Drug Addiction).

The Principal Analyst in Toxicology, the Director and Dr. Shane Cullinan (RCSI) published an article in the publication The Irish Pharmacist in 2018 entitled Drug Driving and the Irish Pharmacist.

Garda Seminars

Senior Bureau staff provided various seminars to Garda groups as required throughout 2018.

Global Light of Hope Award

The Director accepted the Global Light of Hope 2017 award, Ambassador of the Year for Road Safety and Road Victims presented to him by the Irish Road Victims Association in March 2018 and which he accepted as recognising the work of the staff of the Medical Bureau of Road Safety.

SPECIMENS RECEIVED IN THE LABORATORY FOR ANALYSIS

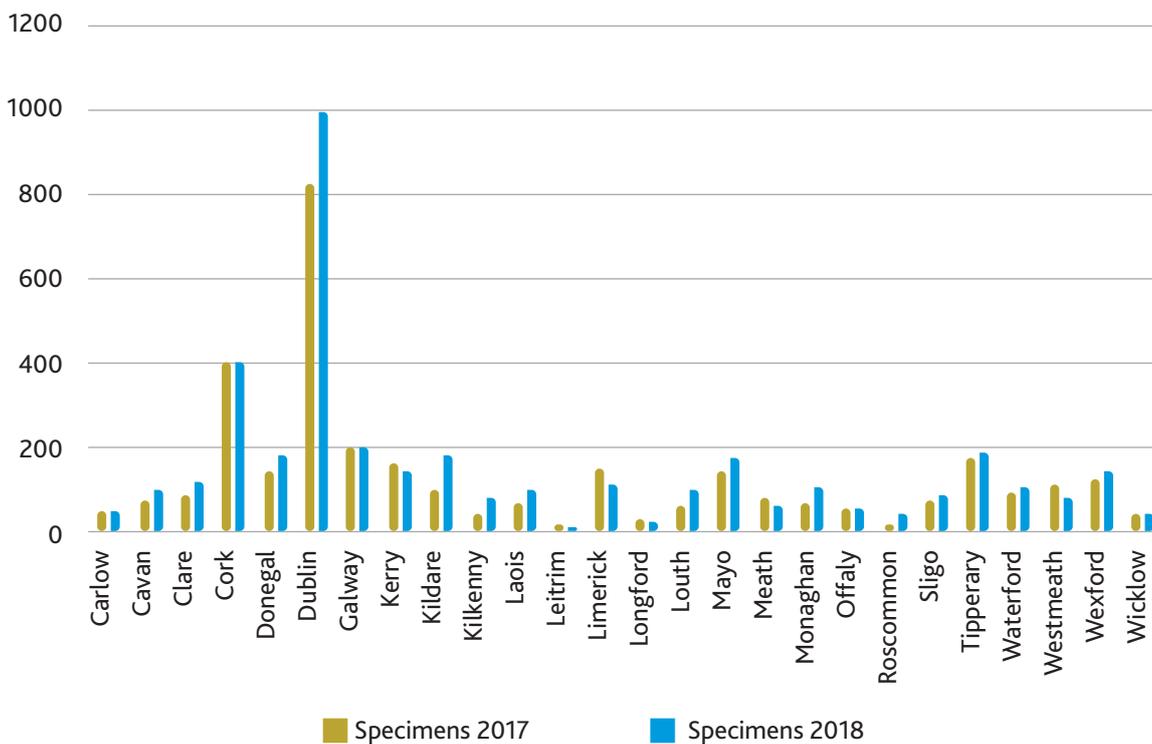
In 2018, a total of 3,865 blood and urine specimens were analysed for alcohol and/or drugs.

There was a significant increase in the number of samples being forwarded to the Bureau for analysis for the second year running since the implementation of the Road Traffic Act 2016, which introduced Preliminary Drug Testing by An Garda Síochána and per se level testing for cannabis, cocaine and heroin.

Table 1 Total Number of Specimens Received within Programmes

Programme	2018	2017	Increase
Alcohol Blood & Urine	3,865	3,386	14%
Toxicology Blood & Urine	2,152	1,592	34%
Evidential Breath Testing	6,021	5,512	9%

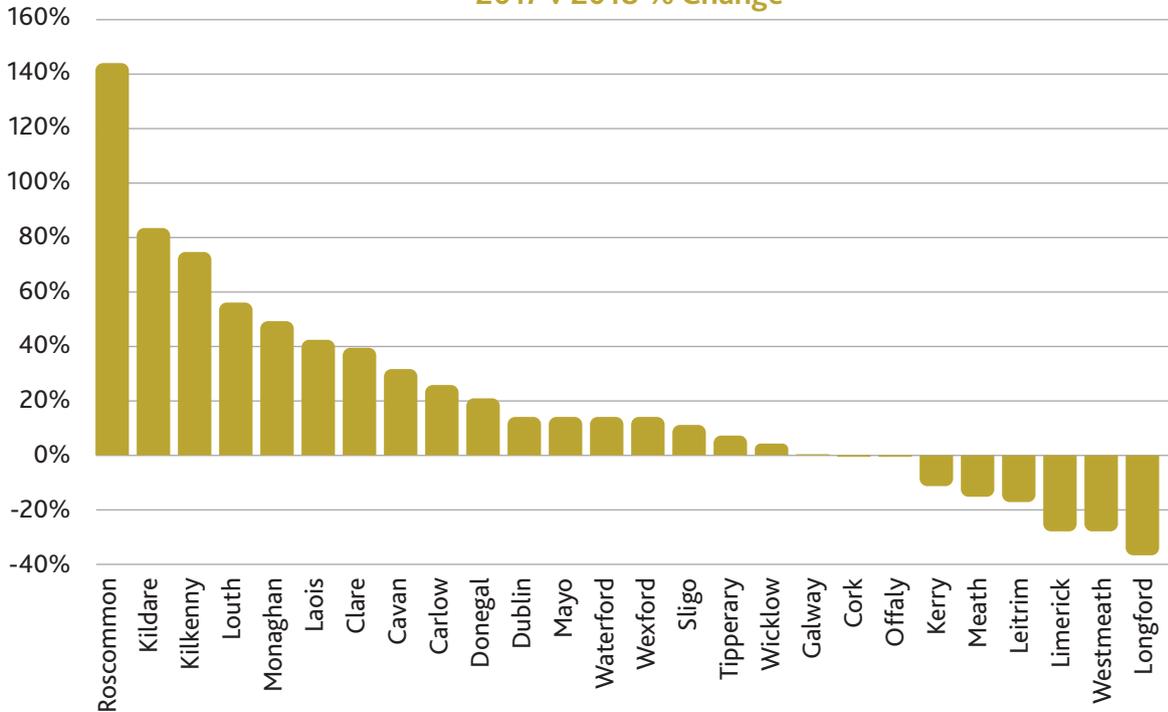
Chart 1 Blood & Urine Specimens by County 2017 v 2018*



*Note: Number of Specimens forwarded to the Bureau for analysis by An Garda Síochána

Blood & Urine Specimens received by County

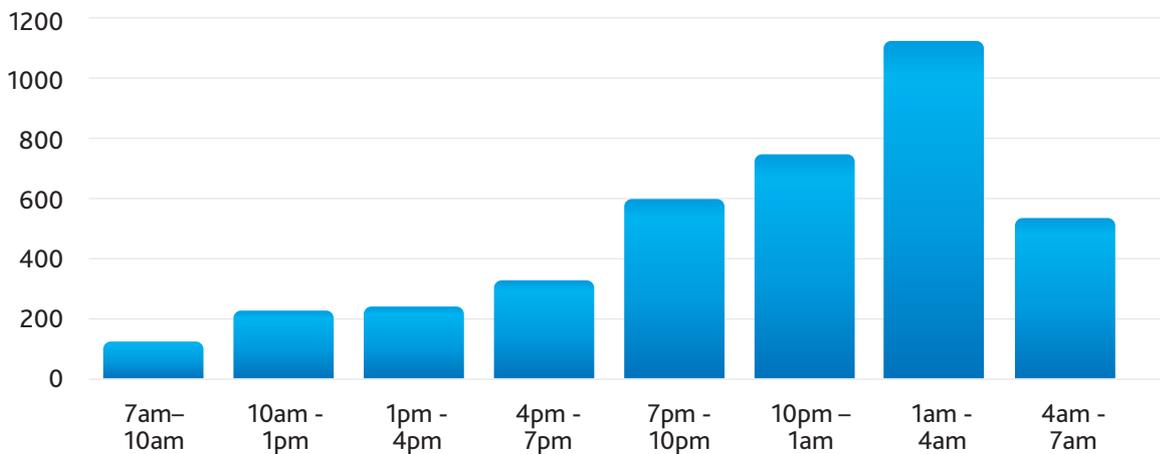
Chart 2
2017 v 2018 % Change



Analysis of Time

Specimens of blood and urine are much more likely to be provided in the evening to early hours of the morning as can be seen from the chart below. This remains unchanged from previous years.

Chart 3 Time Specimen taken



Number of Specimens Provided in Hospitals

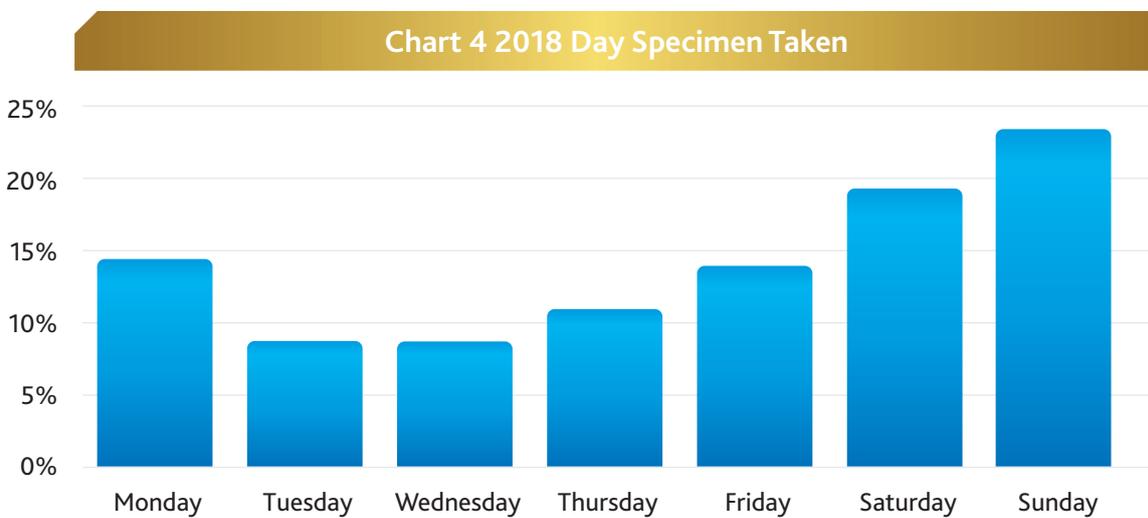
In 2018 there were 544 specimens provided in hospitals, this represents 14% of total blood and urine specimens.

Unconscious Drivers

In 2018, 6 specimens were forwarded to the Bureau for analysis following blood draws from unconscious drivers.

Analysis of Day

From the chart below, it is evident that more specimens of blood and urine are provided on Saturday, Sunday and Monday. However, the time specimens are provided can also impact these figures; hence the levels indicated for Monday which could be early morning times.



Gender Analysis

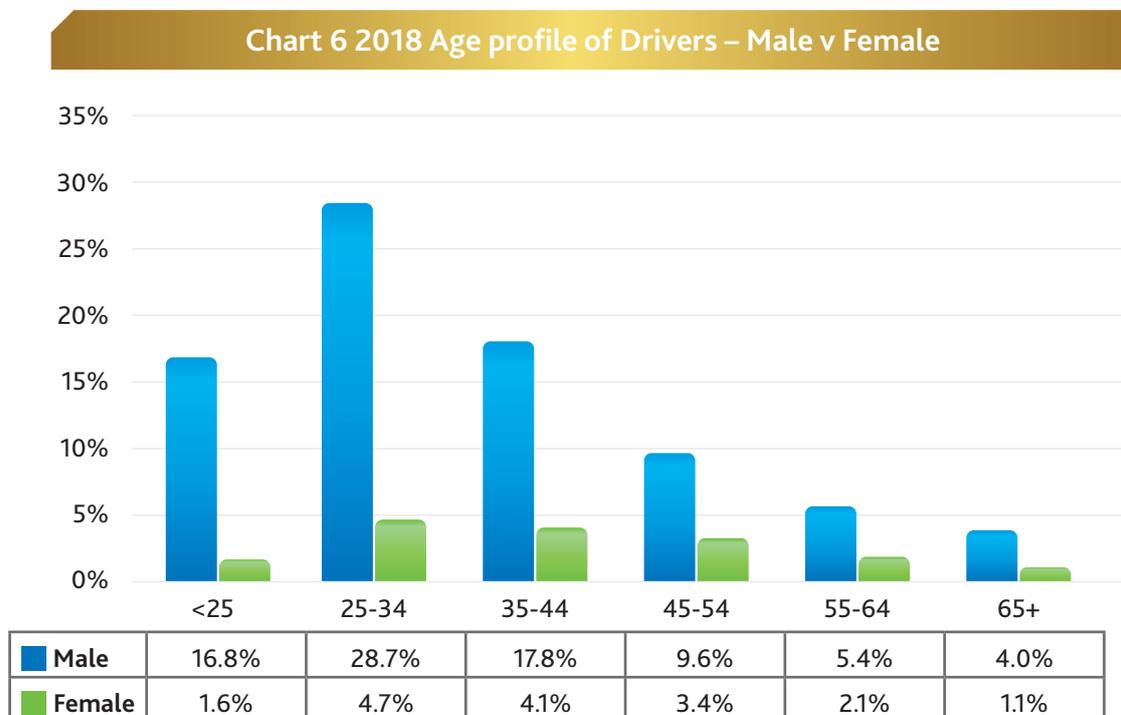
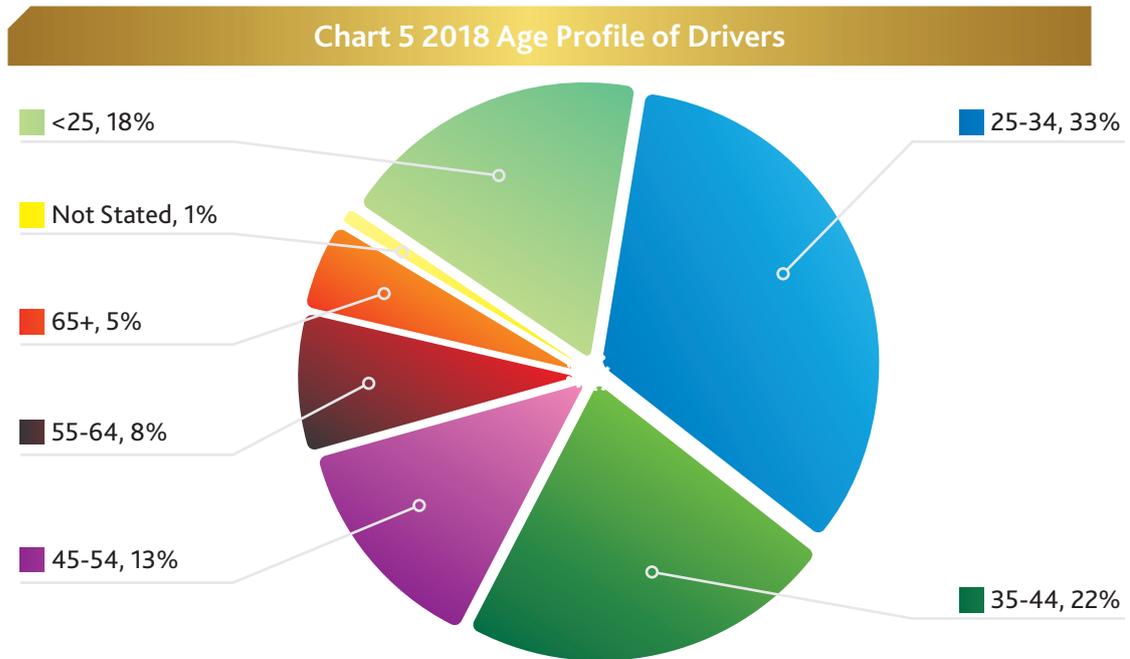
A similar pattern was seen in the male/female ratio in 2018 compared to previous years with 83% of drivers providing specimens being male.

Table 2 Gender Profile of Specimens received – Blood & Urine

	2018	2017
MALE	83%	82%
FEMALE	17%	18%

Age Profile

It is notable that the age profile of drivers providing blood and urine specimens in the 25 – 34 year old bracket contribute to the greatest percentage of arrested drivers. There has been a steady increase in the contribution made by the drivers in the age 25-34 over the past four years but in the age category <25 there has been a slight decrease.



ALCOHOL PROGRAMME: BLOOD & URINE

The main functions of the Blood and Urine programme are:

- The receipt and analysis of specimens of blood and urine forwarded to the Bureau
- The determination of the concentration of alcohol in blood and urine specimens
- The issue of Certificates of Analysis
- The testing of spurious specimens
- Provision of expert assistance to the Courts and the Department of Transport, Tourism and Sport
- Collection and analysis of data in relation to alcohol tests



Provision of Blood and Urine Kits

The number of specimen kits prepared in 2018 was 2,900 (consisting of 1,500 blood kits and 1,400 urine kits.)

In total 4,100 kits were issued, comprising of 2,700 blood kits and 1,400 urine kits to Garda Central Stores in 2018.

1,400 jugs were prepared and issued. (See Table 3). This was a decrease compared to recent years as sufficient stock was already distributed in Garda Stations nationwide.

Table 3 Kits Prepared & Issued by the Medical Bureau of Road Safety

	Kits Prepared		Kits Issued	
	2018	2017	2018	2017
BLOOD KITS	1,500	3,700	2,700	3,800
URINE KITS	1,400	3,200	1,400	3,200
JUGS	1,400	2,900	1,400	3,300

The Bureau retained a contingency supply of at least 500 of each kit type throughout the year.



An Lia-Bhiúró um Shábháilteacht ar Bhóithre Medical Bureau of Road Safety

Blood and Urine Alcohol Analysis

Blood and Urine specimens are analysed using Headspace Gas Chromatography with Flame Ionisation Detection (HSGC-FID). Each specimen is analysed at least twice by two different scientists using two different HSGC-FID systems. The results of analyses must concur before issue of a Certificate of Analysis.

A total of 3,865 blood and urine specimens were received for analysis during 2018. 17 specimens were received for drug testing only as the drivers had been tested for alcohol using an Evidential Breath Testing instrument. In 77 (2%) cases, certificates were not issued either because of some defect in the specimen or in the documentation accompanying the specimen. This level of "non-issue" is a slight decrease on 2017. The number of blood and urine specimens received in 2018 increased by 14% on the number received during 2017.

Mean Alcohol Level in Blood and Urine

The mean alcohol level in blood was 154mg/100ml and in urine was 192mg/100ml for 2018 excluding specimens which had no trace of alcohol.

The max alcohol level in blood was 463mg/100ml and in urine was 528mg/100ml for 2018.

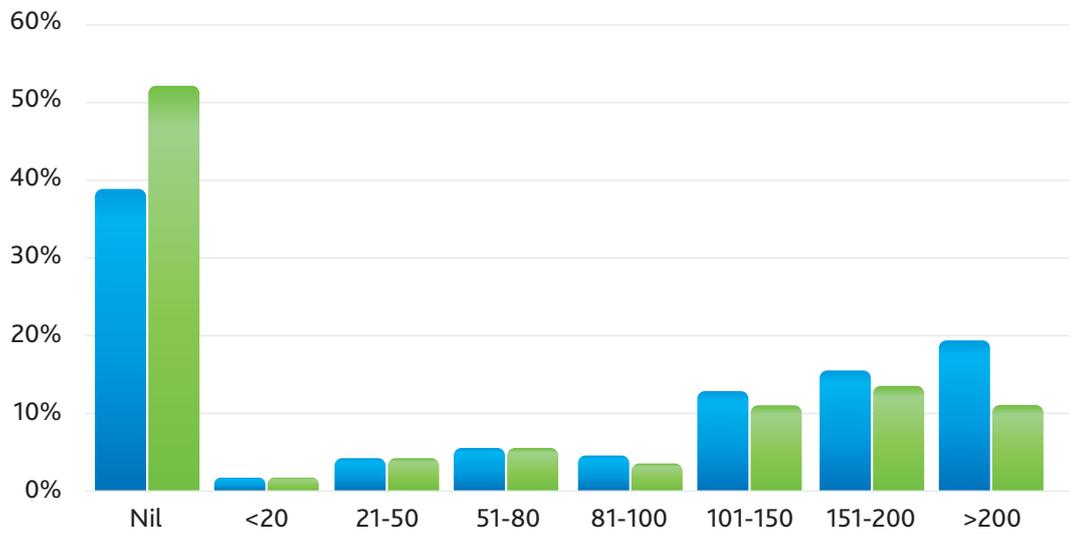
Over Twice the Limit of 50mg/100ml** (Blood) or 67mg/100ml** (Urine)

During 2018 there were 1,518 specimens certified which were two or more times over these limits. This figure represents 40% of the total number of specimens certified.

*** It is important to note that on receipt of specimens for testing, the Bureau does not receive driver classification details; i.e., Fully Licenced Drivers versus Professional, Learner and Novice Drivers where the legal limits are reduced.*

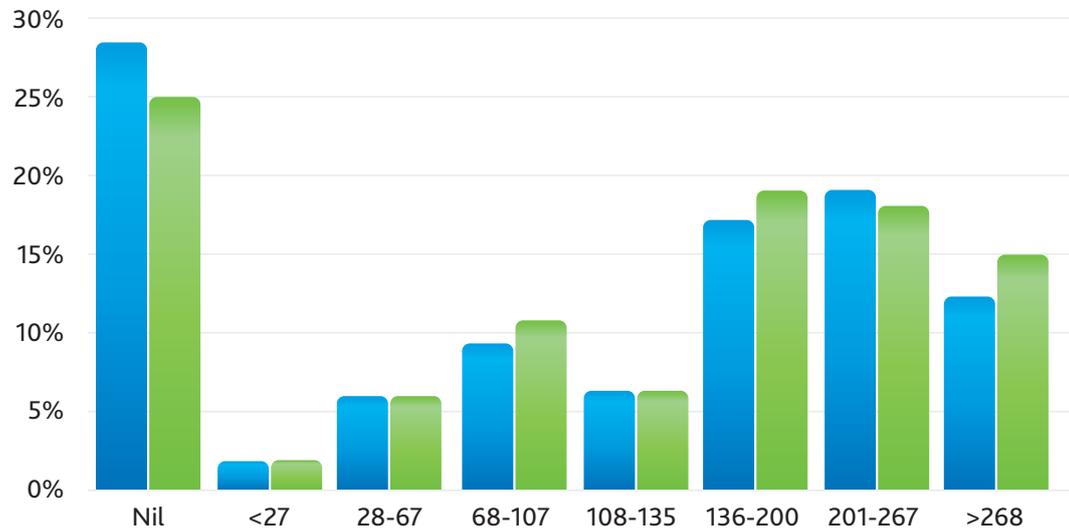
Charts 7 and 8 show the proportion of drivers in the different bands for blood and urine respectively.

Chart 7 Certified Blood Alcohol Levels



2017	39%	1%	4%	5%	4%	13%	15%	19%
2018	52%	1%	4%	5%	3%	11%	13%	11%

Chart 8 Certified Urine Alcohol Levels



2017	28%	2%	6%	9%	6%	17%	19%	12%
2018	25%	2%	6%	10%	6%	19%	18%	15%

ALCOHOL PROGRAMME: BREATH

The main functions of the Breath Alcohol programme are:

- The approval, supply and testing of apparatus for indicating the presence of alcohol in the breath (roadside preliminary breath testing devices)
- The approval, supply and testing of apparatus for determining the concentration of alcohol in the breath (evidential breath testing instruments)
- Provision of expert assistance to the Courts and DTTAS (Department of Transport, Tourism and Sport).
- Provision of training courses for EvidenzerIRL Operators and Supervisors.

- Collection and analysis of data in relation to evidential breath alcohol tests.

Roadside Breath Alcohol Testing

The Bureau continued to support approximately 1,100 Dräger 6510 electronic devices issued to An Garda Síochána in approximately 373 Garda Stations throughout the country until the commencement of the Breath Screening Device replacement programme in October 2018. The replacement programme will be completed mid-2019. Both Dräger 6510 and Dräger 7510 devices issued continue to be supported.



Invitation to Tender

The Bureau, in conjunction with UCD Procurement, the Office of Government Procurement and Education Procurement in U.L, issued an invitation to tender for the supply of Roadside Breath Alcohol Screening Devices in 2017. These devices were to upgrade the Dräger 6510 devices due to limited support on the older devices and the introduction of GPS and data download facility on the newer models. Some of the 6510 devices in use were over 10 years old. Four suppliers responded and committed to supplying a total of 3 devices for evaluation. Testing was completed in November 2017 and the tender was awarded to Dräger for the supply of the Dräger 7510 alcohol breath screening device in 2018.

Evidential Breath Alcohol Testing

The Bureau continued to support and maintain the 86 EvidenzerIRL instruments in Garda stations throughout Ireland.

Garda Training

The Bureau provided instruction to 42 Garda

Trainers on the operation of Dräger 7510 devices to enable them to further train garda personnel.

The Bureau continued to provide Operator and Supervisor training courses in conjunction with An Garda Síochána. This is a one and a half day training course which was devised to train Garda Operators and Supervisors in the use of the EvidenzerIRL instrument.

A total of 122 Gardaí were trained as EBT Operators including 68 who were trained as Supervisors.

Testing EBT instruments in Garda Stations

Bureau Scientists tested each instrument that had been previously installed in Garda stations on at least two occasions, onsite testing was carried out on 200 occasions in 2018 (202 in 2017).

This testing is an essential element in assuring the quality of breath alcohol test results for evidential purposes.

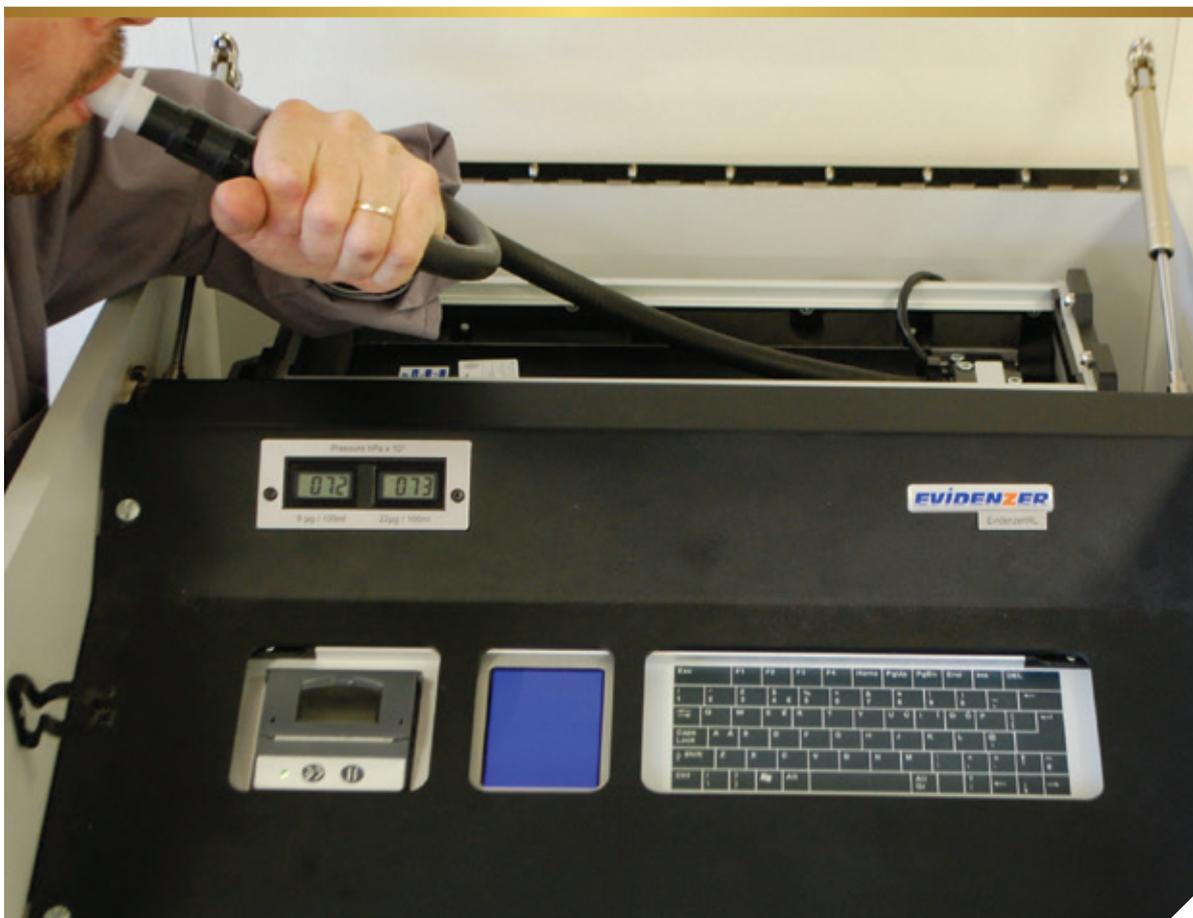
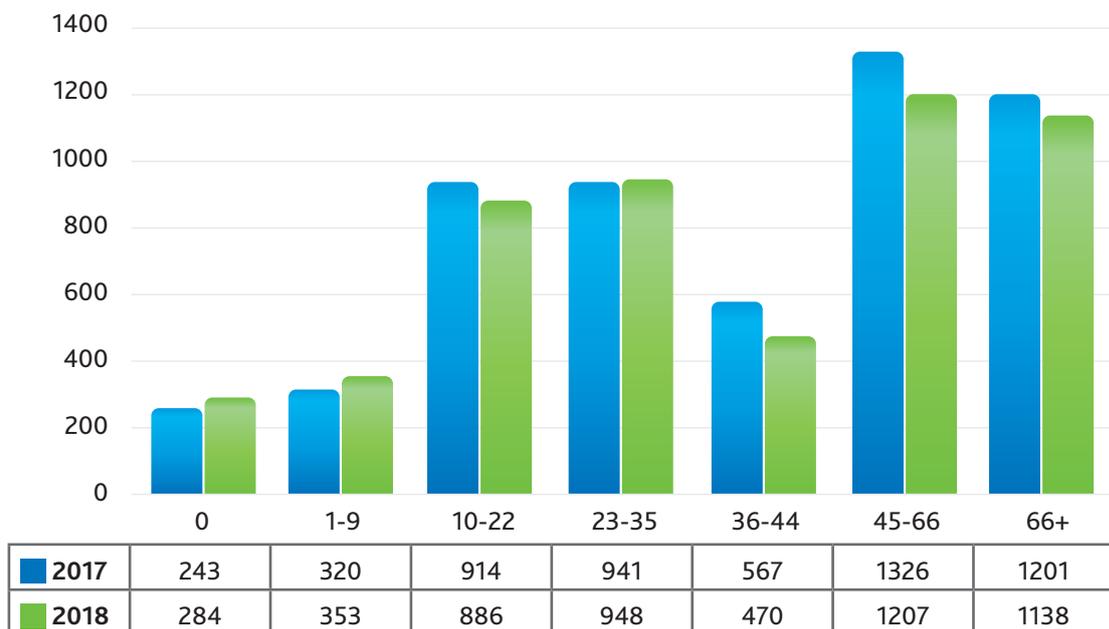


Chart 9 Certified Breath Alcohol Levels



Breath Alcohol Analysis

In 2018, a total of 6,021 drivers were brought to Garda Stations and provided breath specimens for alcohol analysis. 2.3% of these were cases where the EvidenzerIRL flagged a reason why the Section 13 certificate could not be produced, for example safeguards such as Mouth Alcohol or Breath Difference. 10% of drivers either failed or refused to provide breath specimens. A total of 5,286 breath specimens were completed with a Section 13 certificate issued.

Over Twice the Limit of 22 µg /100ml** (Breath)

From the total of 5,286 completed breath specimens, 44% of these were over twice this limit. This is slightly higher than the blood & urine specimen results over twice the limit at 40%.

*** (It is important to note that on receipt of specimens for testing, the Bureau does not receive driver classification details; i.e., Fully Licenced Drivers versus Professional, Learner and Novice Drivers where the legal limits are reduced to 9 µg.)*

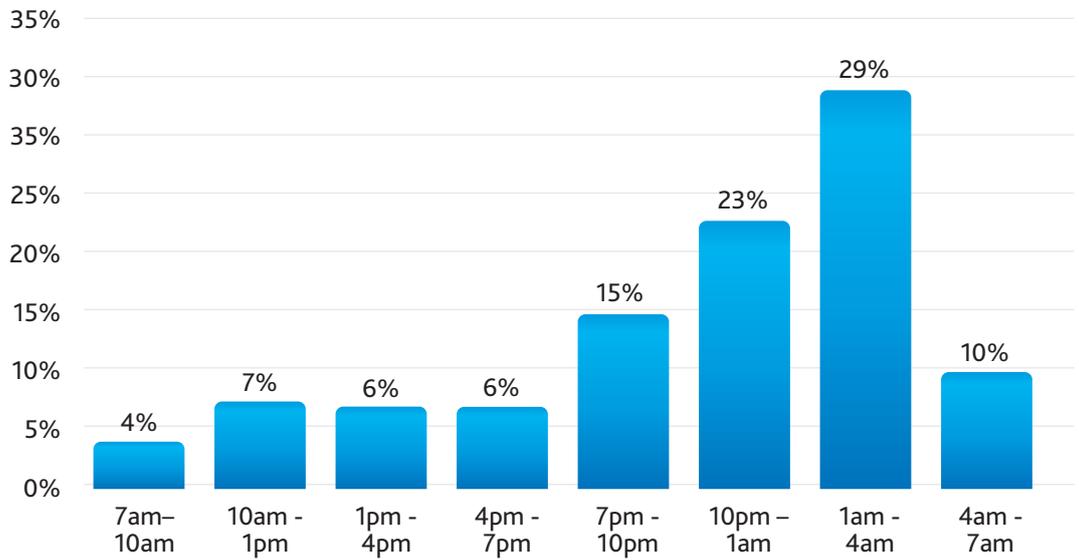
Mean Alcohol Level in Breath

Excluding breath specimens which returned a zero alcohol result the mean certified alcohol level in breath was 45µg/100ml in 2018.

Analysis of Time

Of the total number of breath specimens (6,021) 77% were provided between the hours of 7pm and 7am, 11% between 7am and 1pm and the remaining 12% between 1pm and 7pm.

Chart 10 2018 Time Breath Specimens Provided



Gender in Evidential Breath Testing Specimens

The number of male drivers required to provide a breath specimen far exceeds the number of female drivers, the male to female ratio being 7:1. Five driver breath specimens did not have a date of birth entered, these have been excluded from the Table and Charts with age profiles below.

Table 4 Gender Profile of Breath Specimens provided

	2018	2017
MALE	87%	86%
FEMALE	13%	14%

Chart 11 2018 Age Profile of Drivers- Breath

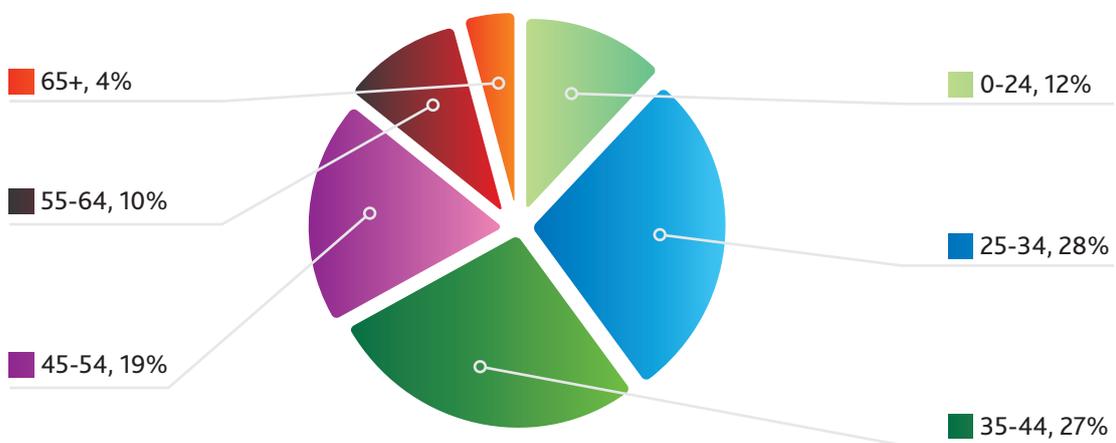
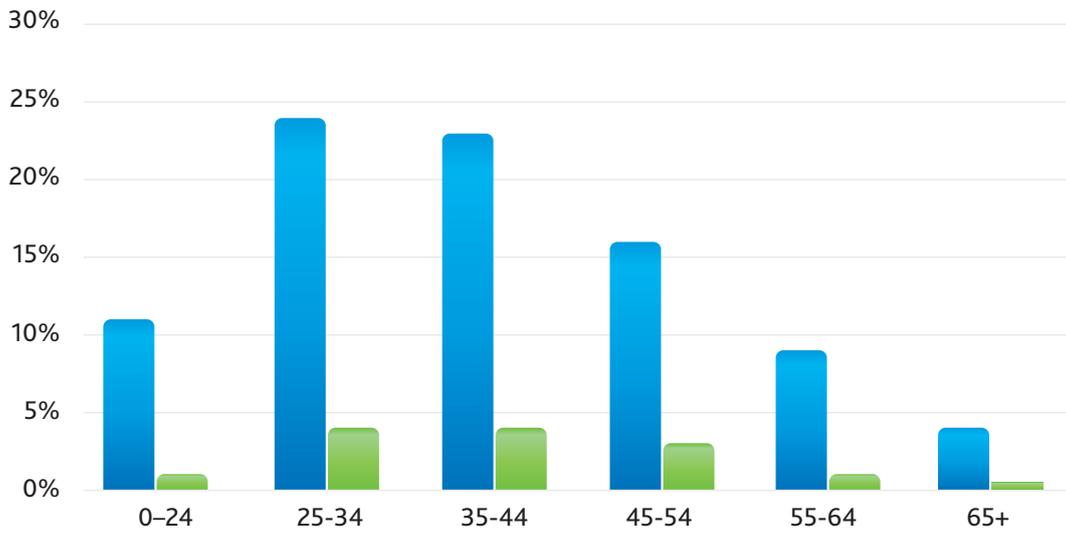


Chart 12 2018 Age Profile of Drivers - Breath Percentage Male and Female



% male (of total)	11%	24%	23%	16%	9%	4%
% female (of total)	1%	4%	4%	3%	1%	0.4%



TOXICOLOGY PROGRAMME

This programme is led by Principal Analyst, Dr Richard Maguire. The main functions of this programme in 2018 were:

- The analysis of blood and urine specimens for the presence and/or concentration of drugs.
- The issue of Certificates of Analysis for the presence and/or concentration of a drug or drugs.
- Provision/maintenance of Preliminary Drug Testing Devices (oral fluid) and quality control of consumables.
- Development of new methods of drug testing.
- Provision of expert assistance to the Courts and Department of Transport, Tourism and Sport.
- Collection and analysis of data in relation to toxicology tests.

➤ Research on drugs that cause impairment in drivers.

The MBRS toxicology section continued to test all specimens under the limit for alcohol of 80mg/100ml in blood and 107mg/100ml in urine. There were 22 over the limit specimens specifically requested by An Garda Síochána and 14 Evidential Breath Testing negative specimens sent to the MBRS for drug testing.

Roadside/Station Based Preliminary Drug Testing (PDT)

The PDT program was introduced in 2017 and effective from 13th April 2017. This provided 86 stationary DT5000 analysers and 47 mobile analysers. By the end of 2018 there were 87 stationary analysers and 60 mobile units. The analyser is able to detect Cannabis, Cocaine, Opiates and Benzodiazepines in oral fluid.



During 2018, 18 Gardaí trained in the use of the DT5000 to trainer level. The Bureau purchased 4,500 consumable STKs for use with the devices in 2018. The Bureau also managed the quality control testing of the consumable cassette (STK) part of this system and conducted performance testing approximately every 6 months on each analyser to ensure reliable operation. The MBRS was satisfied with the performance of the DT5000 in 2018 and will continue to monitor its performance on an ongoing basis.

The number of tests on the analysers available to An Garda Síochána were collated for 2018; however, it is important to note, this is not a measure of enforcement activity and the current system does not distinguish between tests conducted for training, demonstration, quality control or enforcement purposes. The activity for 2018 is shown below.

Table 5

ANALYSER USE TYPE	NUMBER OF TESTS
Mobile	3,572
Station Based	349
Total	3,921



When oral fluid is collected from a driver for testing, and is positive for a drug or drugs, the Bureau requests that An Garda Síochána submit an "Information Form" (see below) indicating the results of the roadside test. This is to enable a comparison of the performance of the DT5000 and subsequent laboratory testing.

In all, 625 specimens were returned with Preliminary Drug Testing forms in 2018. Of these 563 were positive for at least one of the four drugs that the DT5000 can detect. Of the 563 positive cases the prevalence of drugs detected by the DT5000 was 408 (72% 2018, 64% 2017) were positive for cannabis, 230 (41% 2018, 35% 2017) were positive for cocaine, 45 (8% 2018, 8% 2017) were positive for opiates and 38 (7% 2018, 5% 2017) were positive for benzodiazepines. The overwhelming detection is for illicit drugs rather than opiates and benzodiazepines which can be legitimately purchased and/or prescribed but can also be misused.

Laboratory Testing

The MBRS toxicology section continued to test all specimens under the limit for alcohol of 80mg/100ml in blood and 107mg/100ml in urine. There were 2,144 specimens analysed for the presence of a drug or drugs which is a 34% increase on the number of specimens tested in 2017. Of these, 2,099 which were under the alcohol limit above were automatically tested for drugs. 28 specimens which were over the limit for alcohol above, were tested following a specific request from An Garda Síochána. This represents a 27% increase when compared

to 2017. 17 specimens which were above the alcohol limit above which had been tested for alcohol using EBT were also tested, this is a factor of 3.4 times the number of the same type of specimens in 2017.

Initial screening testing was conducted for cannabis, cocaine, opiates, methadone, benzodiazepines, amphetamines and methamphetamine. A new screening method based on LC-MS-MS replaced the old Immunoassay based ELISA test in September 2018. While the ELISA test was fit for purpose, this new method, which was several years in development, is a significant improvement which will allow flexibility in adding new drugs and their metabolites to the MBRS drug panel. This new LC-MS-MS approach provides information at the screening stage as to the specific drugs and metabolites that are in specimens rather than the class of drugs, which was the case for some drugs with the immunoassay.

Of the 2,144 specimens tested 1,628 (76%) were found to be positive for at least one drug class on preliminary drug testing, while 516 (24%) were negative for the drugs targeted by the MBRS. The chart below (Chart 13) shows the prevalence of the drugs detected in all specimens of blood and urine. As in previous years Cannabis remains the next most prevalent drug after alcohol, however in 2018 Cocaine has now replaced Benzodiazepines as the next most prevalent drug. The bar chart below (Chart 14) shows the prevalence and extent of polydrug use in the tested specimens for blood and urine.

INFORMATION FORM

To be returned to Medical Bureau of Road Safety with specimen taken under the Road Traffic Act.

(1) Driver's Name: _____

(2) Was Evidential Breath Testing carried out? **YES / NO**

(3) Was Preliminary Drug Testing carried out? **YES / NO**

Cannabis Benzodiazepine Cocaine Opiate

Please indicate positive results by ticking the relevant boxes.

Chart 13 Drug Prevalence from Screening Positive Specimens 2018

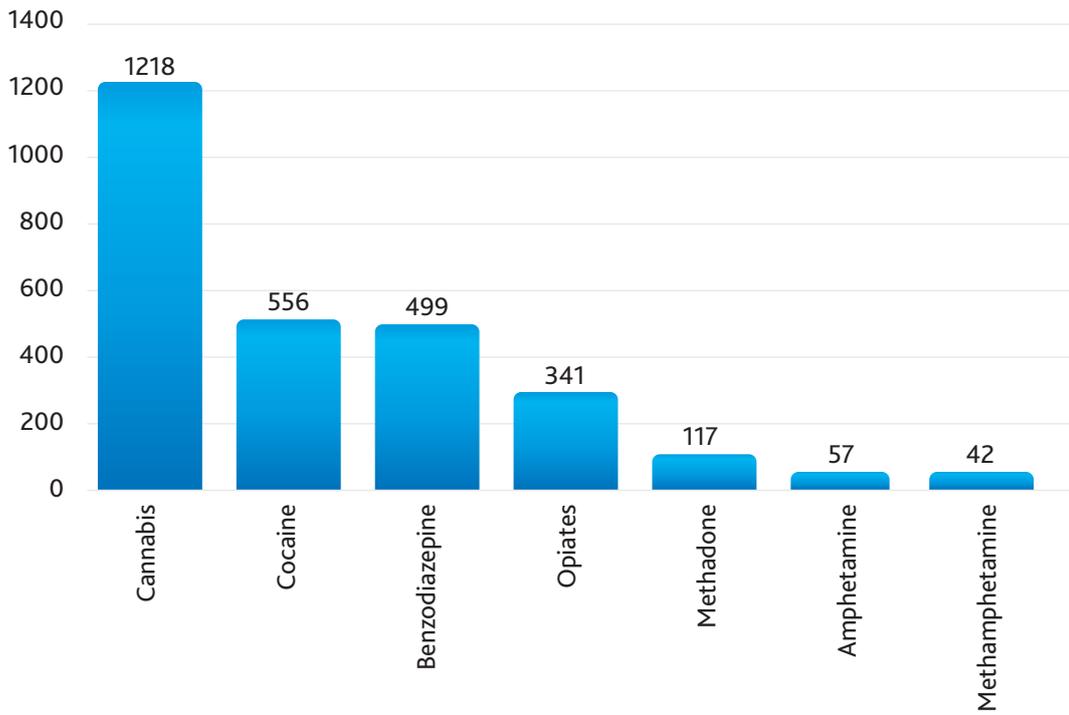
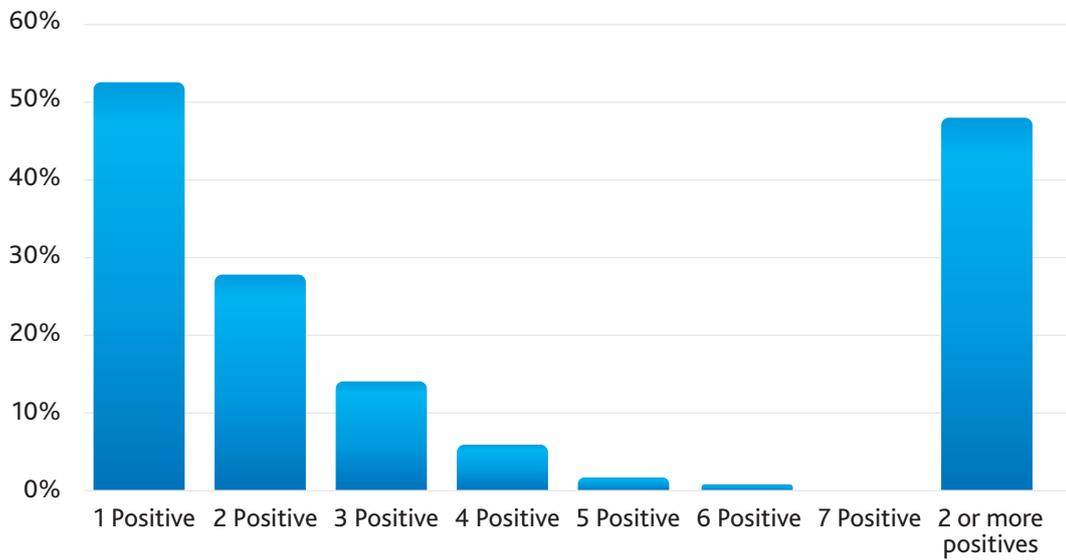
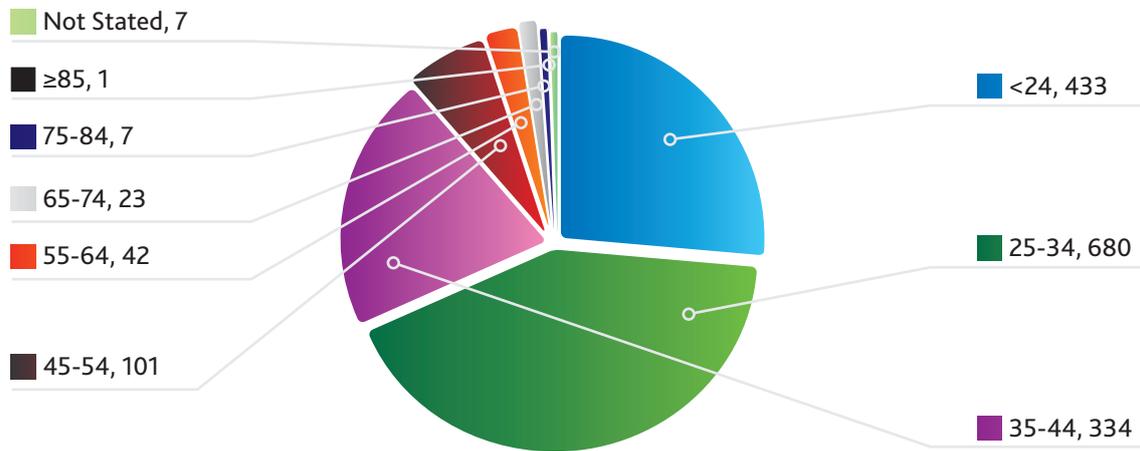


Chart 14 No. of classes detected per specimen 2018



The gender profile was 87% male and 13% female based on screening positive data and age profile of positive specimens is shown in chart 15 below:

Chart 15 Total screening positive by age 2018



Once a positive specimen is detected at the initial screening test, confirmation is carried out using Gas Chromatography with tandem Mass Spectrometry for Cannabis and Liquid Chromatography with tandem Mass Spectrometry for all other drugs. All specimens positive on lab screening in 2018 were forwarded for confirmation of all drugs detected at the screening stage, as far as specimen volume permitted. Previously, urine specimens requiring confirmation for drugs other than Cannabis and Benzodiazepines were sent to Eurofins (formerly LGC) in the UK. This practice ceased in March 2018 and all specimens requiring drug analysis after this date were tested in the Bureau’s UCD facility. Only 20 urine specimens were tested by Eurofins in 2018.

The workload in the area of confirmatory analysis has increased significantly. The overall increase in specimens being forwarded to the Bureau due to increased enforcement of the legislation by AGS has resulted in a 35% increase in screening testing. The extent of the increase in confirmatory testing for the various drugs/classes is highlighted in the tables below. The first table (Table 6) shows the difference in the number of confirmatory analyses between 2017 and 2018 and this shows that the increase in confirmations was in the order of 54% across the board. Table 7 shows the confirmation rate which is calculated from the number of specimens which had drugs confirmed following positive screening in the laboratory test.

Table 6

DRUG CLASS	2018	2017	% Change
Cannabis	1,034	723	43%
Benzodiazepines	468	284	65%
Cocaine	535	274	95%
Opiate/Methadone	260	201	29%
Amphetamine/Methamphetamine	82	62	32%
Total	2,379	1,544	54%



Table 7

DRUG CLASS	Confirmation rate
Cannabis	92%
Benzodiazepines	93%
Cocaine	93%
Opiate/Methadone	85%
Amphetamine/Methamphetamine	85%

The 2016 Road Traffic Act (enacted April 2017) introduced per se levels for Cannabis, Cocaine and Heroin in whole blood (see Table 8 below). 2018 was the first full year of analysis and reporting under the per se levels.

Table 8

Drug	Legal Limit
Δ 9-Tetrahydrocannabinol (Cannabis)	1ng/ml
11-nor-9-carboxy- Δ 9-tetrahydrocannabinol (Cannabis)	5ng/ml
Cocaine	10ng/ml
Benzoylcegonine (Cocaine)	50ng/ml
6-acetylmorphine (Heroin)	5ng/ml

The number of drivers with drug results greater than or equal to the per se legal limits was 963 in 2018 which is an increase of 186% when compared to 2017. Although the new measures only came into effect on the 13th of April 2017 there were 337 specimens certified above the legal limit in 2017.



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QUALITY ASSURANCE

The Medical Bureau of Road Safety maintained its ISO 17025 Accreditation in 2018 for the following areas:

- Blood and Urine alcohol analysis
- Drug analysis
- Breath Testing analysis

The Bureau operates a Flexible Scope; this facilitates the addition of new drug tests or changes in methods to the Bureau's Scope of Accreditation as they are developed in-house. A master list of flexible scope changes is maintained as part of the flexible scope procedure to record changes to accredited tests or add accredited tests which are in addition to the published Scope of Accreditation.

Two tests were added to this record in early 2017:

Upgrade of GC-MS instrumentation to GC-MS-MS used in the quantitation Δ^9 -Tetrahydrocannabinol and 11-nor-9-carboxy- Δ^9 -tetrahydrocannabinol in blood and urine and lowering the quantitation range of Δ^9 -Tetrahydrocannabinol in blood (0.5 to 35ng/ml).

These tests and the extension to scope were subsequently incorporated into the Bureau's Scope of Accreditation following the INAB visit in March 2017. Full details of the Scope of Accreditation are available at <https://www.inab.ie/Directory of Accredited Bodies>.



PROFICIENCY TESTING

The laboratory participates in several Proficiency Testing schemes.

Table 9 details the schemes for 2018.

Table 9 Proficiency Testing Programmes				
Programme	Provider	Scheme	No. Specimens	Analytes
Toxicology	CAP	Drugs of Abuse in Whole Blood and Urine	8 specimens per annum	Amphetamines & Stimulants Cannabinoids Cocaine & Metabolites Minor Tranquilisers Non - Opiate Narcotics Opiates
	Labquality	Drugs of Abuse in Urine	6 specimens per annum	Amphetamines & Stimulants Cannabinoids Cocaine & Metabolites Minor Tranquilisers Non - Opiate Narcotics Opiates
	LGC Standards Proficiency Testing	Drugs of Abuse in Urine	12 specimens per annum	Amphetamines & Stimulants Cannabinoids Cocaine & Metabolites Minor Tranquilisers Non - Opiate Narcotics Opiates, Creatinine

Table 12 Proficiency Testing Programmes

Programme	Provider	Scheme	No. Specimens	Analytes
	LGC Standards Proficiency Testing	Toxicology	8 specimens per annum	Amphetamines & Stimulants Cannabinoids Cocaine & Metabolites Minor Tranquilisers Non - Opiate Narcotics Opiates
	LGC Standards Proficiency Testing	Drugs in Oral Fluid	12 specimens per annum	Amphetamines & Stimulants Cannabinoids Cocaine & Metabolites Minor Tranquilisers Non - Opiate Narcotics Opiates
	LGC Standards Proficiency Testing	Tox- Benzodiazepines	8 specimens per annum	Diazepam, Nordiazepam, Temazepam, Oxazepam, Nitrazepam
	LGC Standards	Tox – Z – Drugs	8 specimens per annum	Zopiclone, Zaleplon, Zolpidem
Alcohol in Blood and Urine	Labquality	Blood	8 specimens per annum	Alcohol
	Labquality	Urine Quantitative	4 specimens per annum	pH, Creatinine & Urea
	LGC Standards Proficiency Testing	Tox – Blood & Tox Urine	24 specimens per annum	Alcohol
Evidential Breath Testing	CTS, Inc.	568 Breath Alcohol Simulator Solution Analysis	2 solutions per annum	Alcohol

FINANCIAL INFORMATION

The Medical Bureau of Road Safety derives its finances from an Annual Grant from the Department of Transport, Tourism and Sport. The total grant allocation for the Bureau for 2018 was €4,912,000.

CORPORATE GOVERNANCE

The Board of the Medical Bureau of Road Safety operates in accordance with the Code of Practice for the Governance of State Bodies. The Board is accountable to the Department of Transport, Tourism and Sport and the Department of Finance. The Board meets 4 times per year and is responsible for the proper management of the Bureau. It makes major strategic decisions and reviews the Bureau's risk management strategy and control processes on an annual basis.

Board Members

The Board of the Medical Bureau of Road Safety comprises of five members (including the Director) and is appointed by the Minister for Transport, Tourism and Sport.

BOARD MEMBERS

Name	Position	Attendance Record
Dr. Declan Bedford	Chairman	4 of 4
Professor Denis Cusack	Board Member and Director	4 of 4
Mr. Paul Burns	Board Member	4 of 4
Mr. Michael Mc Dermott	Board Member	3 of 3
Professor Patricia Fitzpatrick	Board Member	4 of 4

Bureau Membership and Meetings

During 2018 the Medical Bureau of Road Safety held four meetings. These meetings were held on 29th March, 18th July, 27th September and 6th December 2018.

Schedule of Fees and Aggregate Expenses paid to Directors during 2018

During 2018 the following fees were paid:

BOARD FEES PAID

Board Member	Type of Fee	Paid 2018	Paid 2017
Dr. Declan Bedford	Fee for Chairperson of Board of State Body	€8,978	€6,542
	Fee for Non-Executive members of Boards of State Bodies	-	€1,496
Mr. Paul Burns	Fee for Non-Executive members of Boards of State Bodies	€5,985	€5,985
Mr. Michael Mc Dermott	Fee for Non-Executive members of Boards of State Bodies	€3,604	-
Professor Patricia Fitzpatrick	No Fee for Non-Executive members of Boards of State Bodies	-	-



Compliance

The Board is pleased to report that during the year ended 31st December 2018 the Medical Bureau of Road Safety complied with the relevant provisions of the Code of Practice for the Governance of State Bodies. An Internal Audit was performed.

Disclosure

Section 22 of the Protected Disclosures Act 2014 requires the Publication of an Annual Report each year relating to the number of protected disclosures made in the preceding year and any actions taken in response to such disclosures. Pursuant to this requirement, the Medical Bureau of Road Safety confirms that no protected disclosures were received in accordance with the provisions of the Protected Disclosures Act, 2014 for the period from 1st January 2018 – 31st December 2018.

Statutory Requirements

The Medical Bureau of Road Safety confirms that it complied with its statutory requirements during 2018.

Ethics in Public Office

The members of the Board who held office at the 31st December 2018 had no interests for the purposes of the Ethics in Public Office Acts 1995 and 2001.

Audit and Risk Committee

The Audit and Risk Committee reviews any aspect which relates to the financial matters of the Medical Bureau of Road Safety. The Committee operates under formal terms of reference. The meetings are attended by members of the Committee and it reports to the Board four times per year.

External Financial Audit

The Comptroller and Auditor General performed the annual audit of the 2017 Financial Statements during 2018. No significant issues were raised during the audit.

Internal Audit

The Internal Audit function is a key element in informing the Board on the effectiveness of the system of internal financial control. The internal auditor operates in accordance with the Code of Practice for the Governance of State Bodies. An Internal Audit report was prepared in relation to 2018.

Procurement

Competitive tendering is the normal policy utilized by the Medical Bureau of Road Safety in the procurement process. It affirms that it complied with procurement procedures and relevant EU Directives as set out in the Code of Practice for the Governance of State Bodies during 2018.

Strategic Planning

The Bureau compiled its Annual Strategic Plan for 2019 and its Five-Year Strategic Plan 2019 – 2023 and both strategies were forwarded to the Minister. The Plans set out the Bureau's key objectives over the coming year and years in conjunction with its key actions to achieve these objectives. Both strategies can be viewed on the Bureau's website.

Prompt Payment of Account

The Board acknowledges their responsibility for ensuring compliance in relation to the Prompt Payment of Accounts Act. Under an agreement with University College Dublin, suppliers are paid in the first instance by the College which is then reimbursed by the Bureau.

It is the policy of the Medical Bureau of Road Safety to ensure that all invoices are paid promptly. University College Dublin, as a public-sector body, is required to comply with the requirements of the Act in relation to payments to suppliers for the supply of goods or services and therefore has strict procedures in place.

In the case of a small number of suppliers, the Bureau will issue payment by cheque directly to the supplier. The controls in relation to processing of invoices, credit notes and dealing with supplier disputes can only provide reasonable and not absolute assurance against material non-compliance with the Act.

Professional Witness

The area of road safety traffic enforcement and in particular driving under the influence of intoxicants, alcohol and drugs is one of the most litigated areas in the criminal law sphere in Ireland. The Bureau provides expert witness in cases before the Courts. In 2018 there were 10 court attendances by Bureau staff.

STATEMENT ON INTERNAL CONTROL

Scope of Responsibility

On behalf of the Medical Bureau of Road Safety, I acknowledge the Board's responsibility for ensuring that an effective system of internal control is maintained and operated. This responsibility takes account of the requirements of the Code of Practice for the Governance of State Bodies (2016).

Purpose of the System of Internal Control

The system of internal control is designed to manage risk to a tolerable level rather than to eliminate it. The system can therefore only provide reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded and that material errors or irregularities are either prevented or detected in a timely way.

The system of internal control, which accords with guidance issued by the Department of Public Expenditure and Reform has been in place in the Medical Bureau of Road Safety for the year ended 31 December 2018 and up to the date of approval of the financial statements.

Capacity to Handle Risk

The Medical Bureau of Road Safety has an Audit and Risk Committee (ARC) comprising of three Board members. The ARC met four times in 2018.

The Medical Bureau of Road Safety has also established an internal audit function which is adequately resourced and conducts a programme of work agreed with the ARC.

The ARC has developed a risk management policy which sets out its risk appetite, the risk management processes in place and details the roles and responsibilities of staff in relation to risk. The policy has been issued to all staff who are expected to work within the Medical Bureau of Road Safety's risk management policies, to alert management on emerging risks and control

weaknesses and assume responsibility for risks and controls within their own area of work.

Risk and Control Framework

The Medical Bureau of Road Safety has implemented a risk management system which identifies and reports key risks and the management actions being taken to address and, to the extent possible, to mitigate those risks.

A risk register is in place which identifies the key risks facing the Medical Bureau of Road Safety and these have been identified, evaluated and graded according to their significance. The register is reviewed and updated by the ARC on an annual basis. The outcome of these assessments is used to plan and allocate resources to ensure risks are managed to an acceptable level.

The risk register details the controls and actions needed to mitigate risks and responsibility for operation of controls assigned to specific staff. I confirm that a control environment containing the following elements is in place:

- › procedures for all key business processes have been documented,
- › financial responsibilities have been assigned at management level with corresponding accountability,
- › there is an appropriate budgeting system with an annual budget which is kept under review by senior management,
- › there are systems aimed at ensuring the security of the information and communication technology systems,
- › there are systems in place to safeguard the assets, and
- › control procedures over grant funding to outside agencies ensure adequate control over approval of grants and monitoring and review of grantees to ensure grant funding has been applied for the purpose intended.

Ongoing Monitoring and Review

Formal procedures have been established for monitoring control processes and control deficiencies are communicated to those responsible for taking corrective action and to management and the Board, where relevant, in a timely way. I confirm that the following ongoing monitoring systems are in place:

- › key risks and related controls have been identified and processes have been put in place to monitor the operation of those key controls and report any identified deficiencies,
- › reporting arrangements have been established at all levels where responsibility for financial management has been assigned, and
- › there are regular reviews by senior management of periodic and annual performance and financial reports which indicate performance against budgets/ forecasts.

Procurement

I confirm that the Medical Bureau of Road Safety has procedures in place to ensure compliance with current procurement rules and guidelines and that during 2018 the Medical Bureau of Road Safety complied with those procedures.

Review of Effectiveness

I confirm that the Medical Bureau of Road Safety has procedures to monitor the effectiveness of its risk management and control procedures. The Medical Bureau of Road Safety's monitoring and review of the effectiveness of the system of internal financial control is informed by the work of the internal and external auditors, the Audit and Risk Committee which oversees their work, and the senior management within the Medical Bureau of Road Safety responsible for the development and maintenance of the internal financial control framework.

I confirm that the Board conducted an annual review of the effectiveness of the internal controls for 2018.

Internal Control Issues

No weaknesses in internal control were identified in relation to 2018 that require disclosure in the financial statements.

Tax Compliance

The Medical Bureau of Road Safety is committed to compliance with taxation laws and was compliant during 2018.

On behalf of the Board of the Medical Bureau of Road Safety:

Dr. Declan Bedford
Chairman



FREEDOM OF INFORMATION

During 2018 the Bureau received three requests which were dealt with as follows:

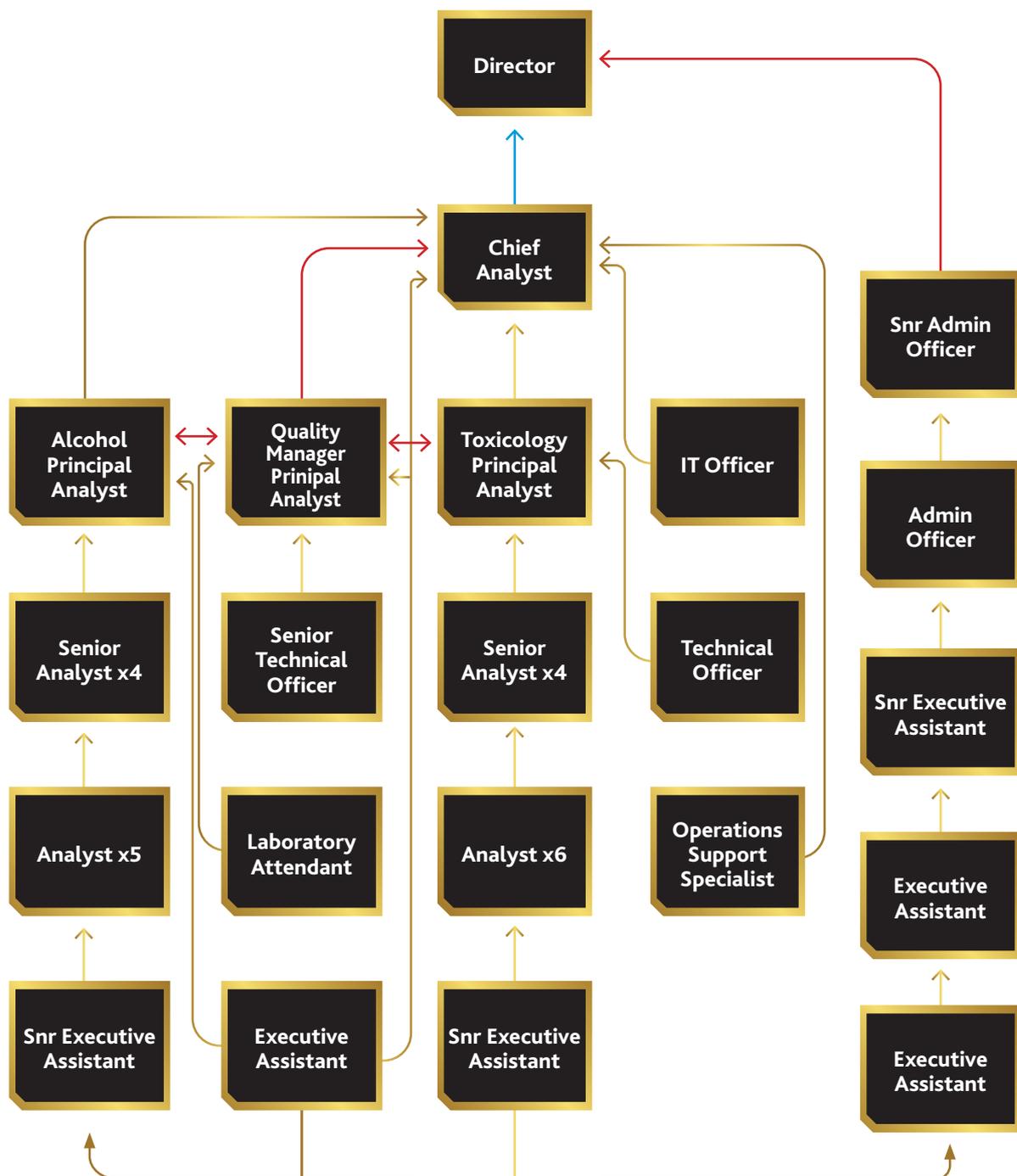
Decision	Number of Requests
Granted	1
Administrative Pathway	2
Total	3

Category of Requester	Number Received
Journalist	1
Solicitor	1
Other	1
Total	3

STAFFING

The Bureau continued during 2018 to operate within its Employment Control Framework complement.

MEDICAL BUREAU OF ROAD SAFETY ORGANISATION CHART



COURSES AND CONFERENCES ATTENDED BY STAFF IN 2018

Courses and Conferences attended by staff in 2018

- 1 The Chief Analyst and two Senior Analysts attended the joint annual Meeting of SOFT and TIAFT at Boca Raton, Florida from 7th - 11th January 2018. (Rescheduled from 2017)
- 2 The Quality Manager attended a two day UCD People Management Programme on 30th - 31st January 2018 in UCD.
- 3 The Director was a guest speaker at Educational Meetings in the Irish College of General Practitioners on 6th February (Wexford), 17th February (Dublin) and 12th April 2018 (Cavan).
- 4 A Principal Analyst and a Senior Analyst attended the OIML meeting in Warsaw, Poland from 14th of February 2018 for 5 and 2.5 days, respectively.
- 5 An Administrative Officer attended a two day UCD People Management Programme on 27th February and 20th March 2018 in UCD.
- 6 An Analyst attended the UKIAFT LTG meeting on 09th March 2018 in London.
- 7 The Director was a guest speaker at a 1 day seminar of the International Road Victims Association in Mullingar, Co. Westmeath on 18th March 2018.
- 8 The Director attended a meeting of the Medical Advisory Panel on Alcohol, Drugs and Driving, UK in the Department of Transport, London on 21st March 2018.
- 9 An IT Officer attended the AD IT Security seminar on 22nd March 2018 in Ballsbridge, Dublin.
- 10 The Senior Administrative Officer, an Administrative Officer, Senior Executive Assistant and Executive Assistant attended the CMG GDPR Conference on 11th April 2018 in the Stillorgan Park Hotel, Dublin.
- 11 The Director attended a RCPI Working Group on Traffic Medicine in the RCPI, Dublin on 12th April 2018.
- 12 A Principal analyst attended the International Association of Chemical Testing conference from 29th April 2018 for 6 days in Indianapolis, USA.
- 13 A Principal Analyst and two Analysts attended the one day Irish Mass Spectrometry Society conference on 09th May 2018 in the Red Cow Hotel, Dublin.
- 14 The Director attended a 2 day International Faculty of Forensic and Legal Medicine Conference in the RCP, London from 10th - 12th May 2018.
- 15 An Analyst attended a 6 day Borkenstein Alcohol Course from 13th May 2018 in Indiana University, USA.
- 16 An Analyst attended a two day Eurochem workshop on 14th and 15th May 2018 in Dublin Castle, Dublin.
- 17 A Senior Administrative Officer and an Administrative Officer attended a course on the Role of the Data Protection Officer at CMG Training on 14th May 2018, Sandyford, Dublin.
- 18 An Analyst and a Laboratory Assistant attended Mask Face Fitting Training on 22nd May 2018 at UCD SIRC, UCD.

Courses and Conferences attended by staff in 2018

19	A Senior Technical Officer attended a one day PAT Testing course on 24th May 2018 at the National Enterprise Park, Portlaoise, Co. Laois
20	An Analyst attended a one day Agilent GC/GCMS User Meeting on 24th May 2018 at Teagasc, Dublin.
21	The Director was a guest speaker at the International Academy of Legal Medicine International Conference in Fukuora, Japan from 5th – 8th June 2018.
22	The Director attended the Annual Conference in the Irish College of General Practitioners as a guest speaker on 25th May 2018.
23	A Senior Analyst attended a one day meeting of the UK and Ireland Association of Forensic Toxicologists on 28th June 2018 at Charing Cross, London.
24	The Director was a guest speaker at the Road Safety Authority meeting on 25th July 2018.
25	A Senior Analyst attended the five day TIAFT 2018 conference from 26th - 30th August 2018 in Ghent, Belgium.
26	The Director was a guest speaker at the International Council on Alcohol, Drugs and Traffic Safety in Prague, Czech Republic from 1st – 4th September 2018.
27	The Director attended the Coroners Society of Ireland Meeting in Portlaoise from 7th – 8th September 2018.
28	The IT Officer attended the three day Thermo Fisher launch from 10th - 12th September 2018 in Berlin, Germany.
29	A Technical Officer and two Analysts attended a half-day Manual Handling training course on 18th September 2018 in UCD.
30	A Principal Analyst/Quality Manager attended a Chemistry Network meeting on 19th September 2018 in Kildare.
31	A Principal Analyst attended a 3 day EvidenzerIRL User Group meeting from 1st - 3rd October in Sweden.
32	A Principal Analyst attended a five day conference of the Society of Forensic Toxicologists from 7th - 12th October in Minneapolis, Minnesota, USA
33	The Director attended a RCPI Working Group on Traffic Medicine in the RCPI, Dublin on 8th October 2018.
34	The Director attended a meeting of the Medical Advisory Panel on Alcohol, Drugs and Driving, UK in the Department of Transport, London on 17th October 2018.
35	The Director and staff of the Medical Bureau of Road Safety attended an Academic Meeting on 18th October 2018 to mark the occasion of the 50th Anniversary.
36	The Quality Manager attended the Paradigm User Group Meeting on 23rd October 2018 in Celbridge, Co. Kildare.
37	11 staff attended Dräger 7510 training on 24th October 2018 at the MBRS.
38	A Principal Analyst and a Senior Analyst attended a two day UKIAFT annual conference on 1st - 2nd November 2018 at the Hilton Kilmainham, Dublin.
39	Two Analysts attended the AGM of UKIAFT on 2nd November 2018 at the Hilton, Kilmainham, Dublin.
40	An Analyst attended Agile Yellow Belt training on 28th November 2018 at Ardmore Annex, UCD.
41	An Analyst attended a 2 day conference on New Psychoactive Substances 2018 on 29th-30th November 2018 in London.

ENERGY CONSUMPTION

Under the Government's commitment to improve public energy efficiency by 33% in 2020 the Medical Bureau of Road Safety has registered for and is reporting through the SEAI online system. The Bureau's main energy usage is gas and electricity which is necessary for operating a forensic laboratory and ancillary facilities, e.g. heating and lighting, laboratory equipment, air handling, computers and servers.

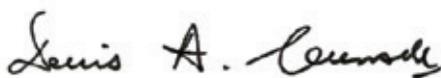
The Bureau utilizes initiatives to improve energy efficiency. A Building Management System (BMS) is used to monitor and control heating, air handling units, water boiler (direct

hot water supply) and extractor fans. Each of the four floors of the Bureau's premises is managed individually and automatic controls are scheduled accordingly. Energy efficient light bulbs, movement sensors and timer switches have been fitted throughout the building to further reduced energy consumption.

The Medical Bureau of Road Safety has been further liaising with UCD Building and Services to decrease energy consumption and plans to implement a major lighting upgrade of the facility in 2019.

LEGAL DISCLAIMER

The descriptions and statistics contained within this report are of a condensed and general informative nature only. They should not, by themselves, be relied upon in determining legal rights or other decisions under the Road Traffic Acts. Readers and users are advised to verify with their legal advisors any information on which they may wish to rely.



Professor Denis A. Cusack,
Director.



Dr. Declan Bedford,
Chairman.



**MEDICAL BUREAU OF ROAD SAFETY, HEALTH SCIENCES
CENTRE, UNIVERSITY COLLEGE DUBLIN, BELFIELD, DUBLIN 4**

