



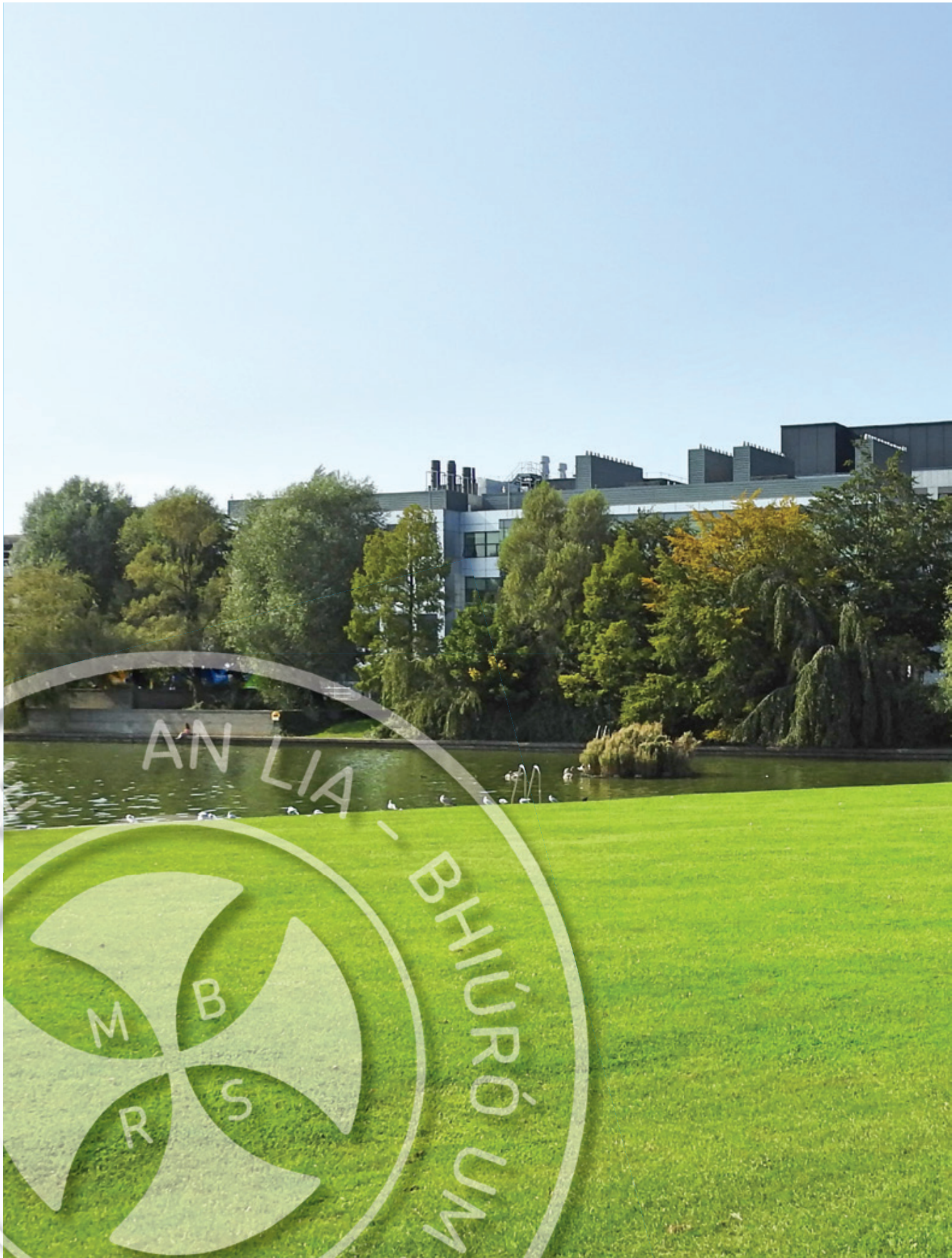
# MEDICAL BUREAU OF ROAD SAFETY



## ANNUAL REPORT 2019

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







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## Directors Introduction

The Annual Report for 2019 presents a summary of the activities and performance of the Medical Bureau of Road Safety providing relevant and important information and data on driving under the influence of intoxicants and the Bureau's continuing role in the Road Safety Strategy 2013-2020.

The Bureau provides a high quality national forensic scientific and medical service in intoxicant detection and research. This plays an integral and central role in reducing deaths and injuries on Ireland's roads which have seen a reduction in road traffic deaths per million of population to 28 in 2019, the second lowest rate in the European Union. The Bureau continues in partnership with the Department of Transport, Tourism and Sport, An Garda Síochána and the Road Safety Authority as well as with other national and international bodies in the challenging endeavour to reach "Vision Zero" for road deaths and injuries.

The rollout of the new generation preliminary alcohol breath testing devices supplied to the Gardaí was completed in 2019 with 1,400 Dräger 7510 devices available for roadside alcohol detection. In the year, the preliminary drug testing programme at the roadside and in Garda Stations had a complement of 161 Dräger DrugTest 5000 devices in operation. Evidential alcohol breath testing instruments were available in 87 Garda stations nationwide.


The number of blood and urine specimens received for alcohol analysis increased by 25% over 2018 and for drug toxicology analysis increased by 50%. Evidential breath testing numbers decreased by 11% over 2018 figures. The significant increase in blood and urine specimens for analysis continued to challenge the resources of the Bureau but Quality Assurance with ISO accreditation was maintained for the large number of tests required and the Bureau participated in several Proficiency Testing Schemes. The number of blood and urine testing kits issued by the Bureau increased from 4,100 in 2018 to 6,134.

This report provides some detailed epidemiological data such as the mean blood, urine and breath alcohol levels detected (147mg/100ml, 183 mg/100ml and 45µg/100ml respectively) and the percentage of drivers with significant alcohol levels (32% for blood and urine and 45% for breath). Of the 3,230 blood and urine specimens tested for drugs, 2,375 (74% of toxicology specimens and 49% of all specimens received) were positive for at least one drug class on preliminary testing leading to a 34% overall increase in drug confirmation testing.

Training and information programmes continued for An Garda Síochána, Doctors and Prosecution Services. The Bureau also continued its role in participating in and contributing to national and international conferences and learning and in its membership of relevant bodies such as the Ministerial Committee on Road Safety; and the National Office for Traffic Medicine at the Royal College of Physicians of Ireland on medical fitness to drive guidelines.

The Bureau looks forward to playing its part in the exciting new challenges ever-present in order to improve and support road safety for all our citizens into 2020.

**Professor Denis A. Cusack**  
Director

A black sign with white text and a white arrow pointing right. The sign is supported by blue pillars. In the background, there is a modern building with large windows and some greenery.

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

## MISSION STATEMENT:

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*“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.”*

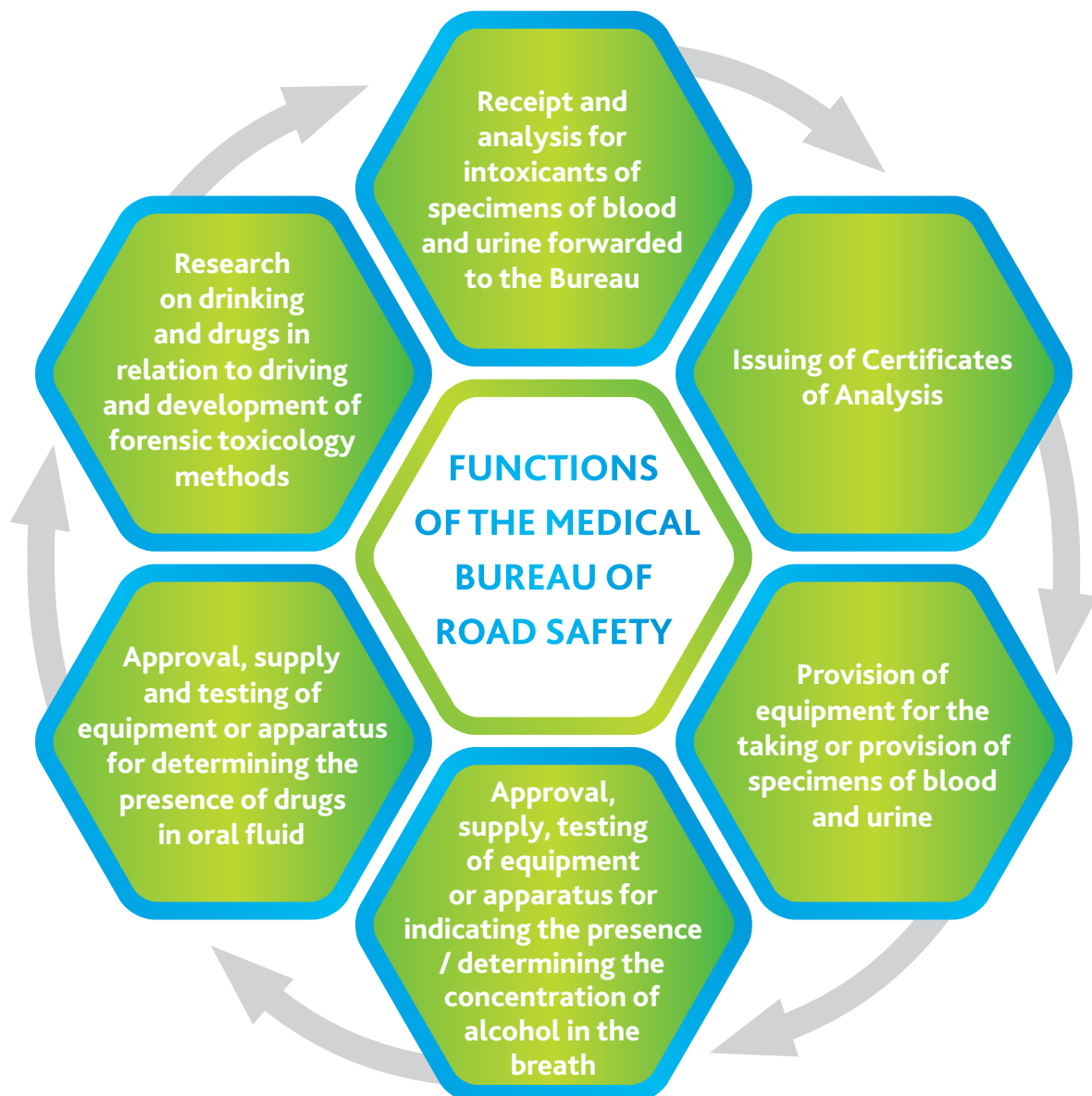
# FUNCTIONS OF THE MEDICAL BUREAU OF ROAD SAFETY

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).

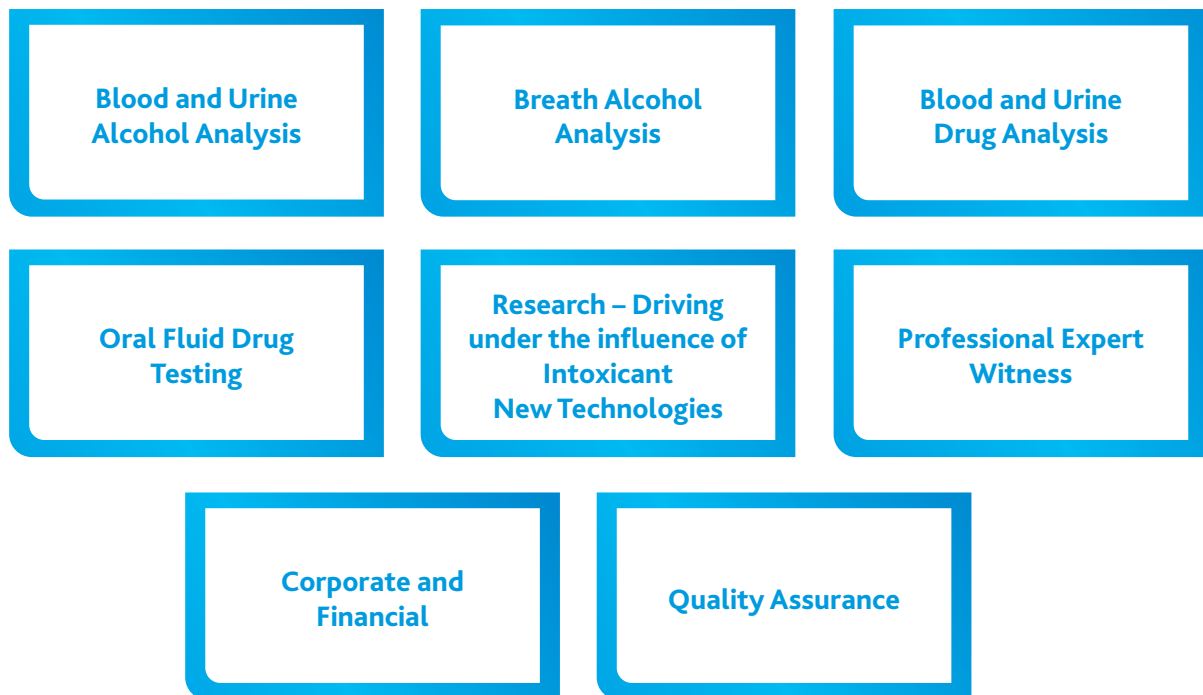
There have been many legislative changes such as the introduction of evidential breath alcohol testing (EBT) and driving under the influence of drugs (DUID), specimens provided in hospitals, specimens taken from drivers involved in collisions and mandatory intoxicant testing to include Preliminary Breath 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.

Through 2019 the Bureau continued to focus 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 fulfil the interconnected 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, An Garda Síochána, defence, prosecution and the public.

The continued successful operation of the Bureau is dependent on 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)



# ACHIEVEMENTS & DEVELOPMENTS DURING 2019

## Preliminary Drug Testing

Preliminary Drug Testing (PDT) continued to increase at a moderate rate throughout the country. In compliance with action 124 of the Road Safety Strategy 2013-2020 the PDT review group chaired by the Chief Analyst and with members from the MBRS, AGS and DTTAS continued to meet to review and assess use of roadside drug testing as well as review new technologies and testing systems available which may further enhance drug detection capabilities by An Garda Síochána.

## Laboratory Preliminary Drug Screening

The Bureau continues to carry out Preliminary Drug Screening using LC-MS-MS for the analysis of drugs. All specimens which had an alcohol level of less than 80mg/100ml blood or equivalent were screened for the presence of drugs. The LC-MS-MS screening method allows the specific drug or drugs to be identified at this preliminary stage.

## Laboratory Confirmatory Drug Testing

All specimens that screened positive for a drug or drugs were forwarded for confirmatory analysis. In many cases polydrug use is evident. The Bureau certifies the presence of drugs and certifies the concentration of those drugs specified in Schedule 2 of the Road Traffic Act 2016.

All laboratory drug testing is carried out in the Bureau's facility in University College Dublin.

## Preliminary Breath Alcohol Testing

Preliminary Breath Testing devices are provided to An Garda Síochána for use at the roadside to test drivers breath for the presence of alcohol. The Bureau continue to calibrate these devices biannually and there are 1,400 available for use by the force at all times.

## Evidential Breath Alcohol Testing

The Bureau continued to maintain 86 evidential breath alcohol testing instruments in Garda stations throughout the country. Each instrument is tested biannually by a Bureau Scientist.

## Quality Assurance

ISO 17025 accreditation was maintained in 2019 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 is committed to providing a safe environment for all employees, visiting engineers, Gardaí and others. The Bureau Safety Statement was reviewed and throughout the year Safety Monitors continued to assess and maintain the highest safety standards. University College Dublin's parent Safety Statement is adhered to and staff in the Bureau have access to the full suite of health and wellness offerings made available by the university. 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 2019.

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).

### Garda Seminars

Senior Bureau staff provided seminars within continuous professional development courses for An Garda Síochána which were sponsored by the Road Safety Authority.



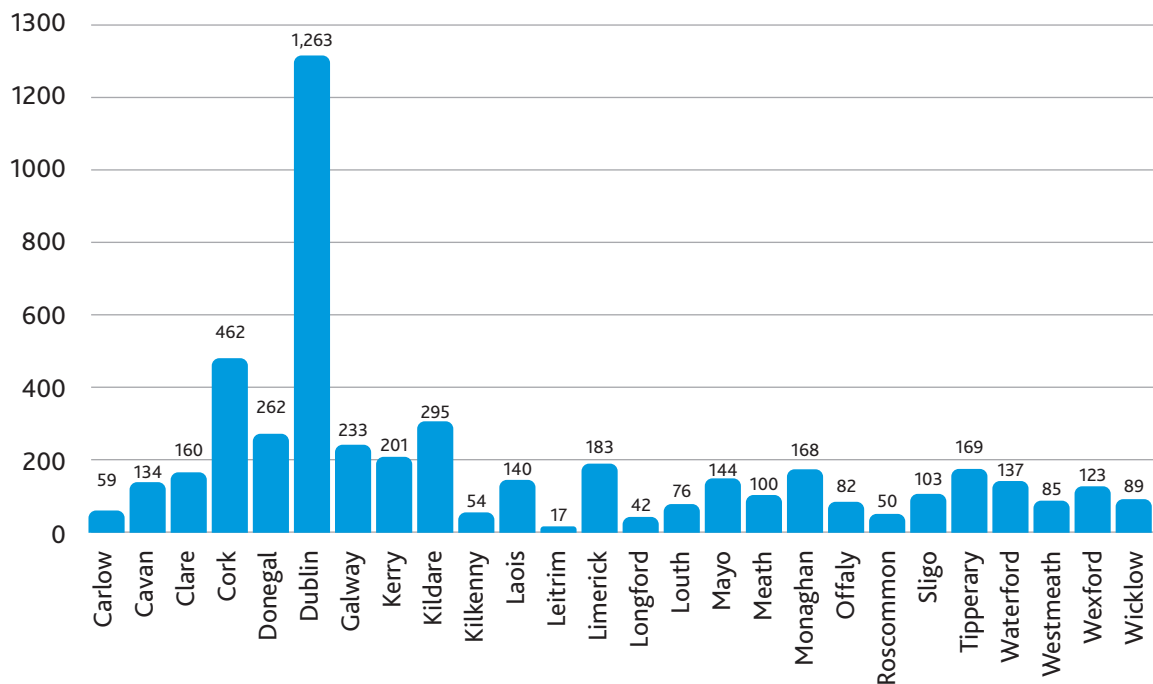
# SPECIMENS RECEIVED IN THE LABORATORY FOR ANALYSIS

In 2019, a total of 4,854 blood and urine specimens were received for alcohol and/or drug testing. This is a 25% increase on 2018. There has been a significant shift in the ratio of blood to urine specimens. The per se drug levels introduced in the RTA 2016 are relevant to blood and not urine, this along with the increased use of the preliminary drug testing device at the roadside is believed to have driven this ratio shift. This has resulted in an increase in specimens being forwarded for drug testing by 50% compared to 2018.

**Table 1 Total Number of Specimens Received within Programmes**

Programme	2019	2018	Increase/Decrease
Alcohol Blood & Urine	4,854	3,865	25%
Toxicology Blood & Urine	3,229	2,152	50%
Evidential Breath Testing	5,372	6,021	-11%

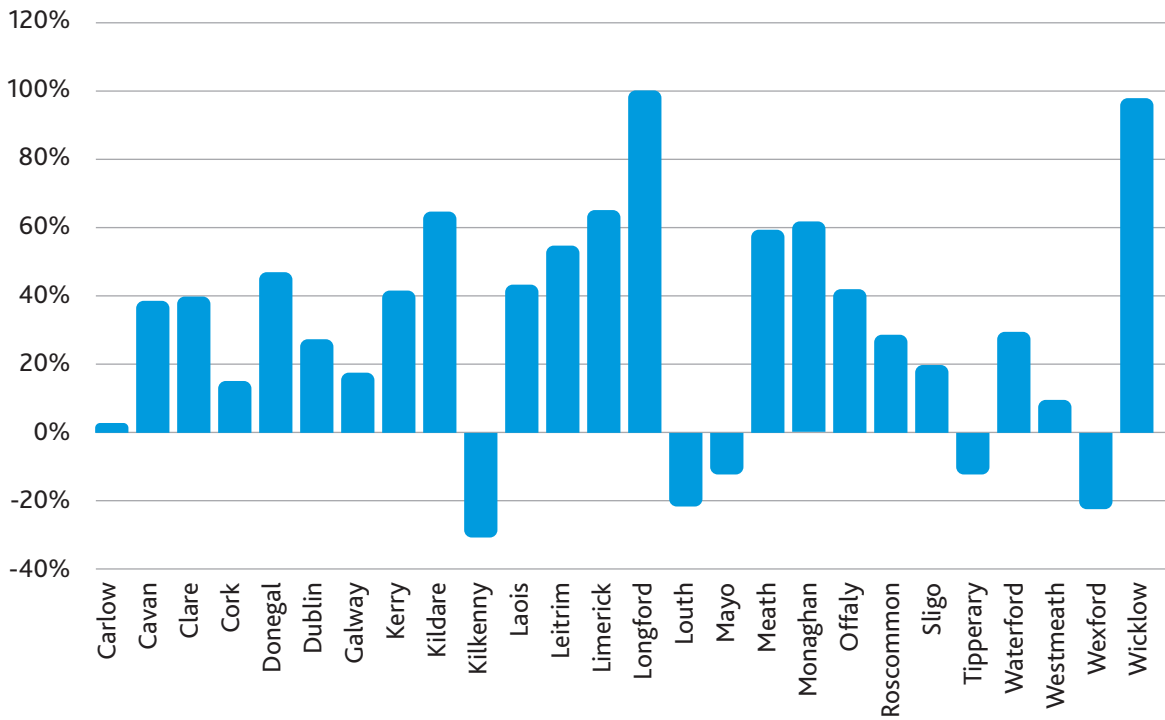
**Chart 1 Blood & Urine Specimens received by County**



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



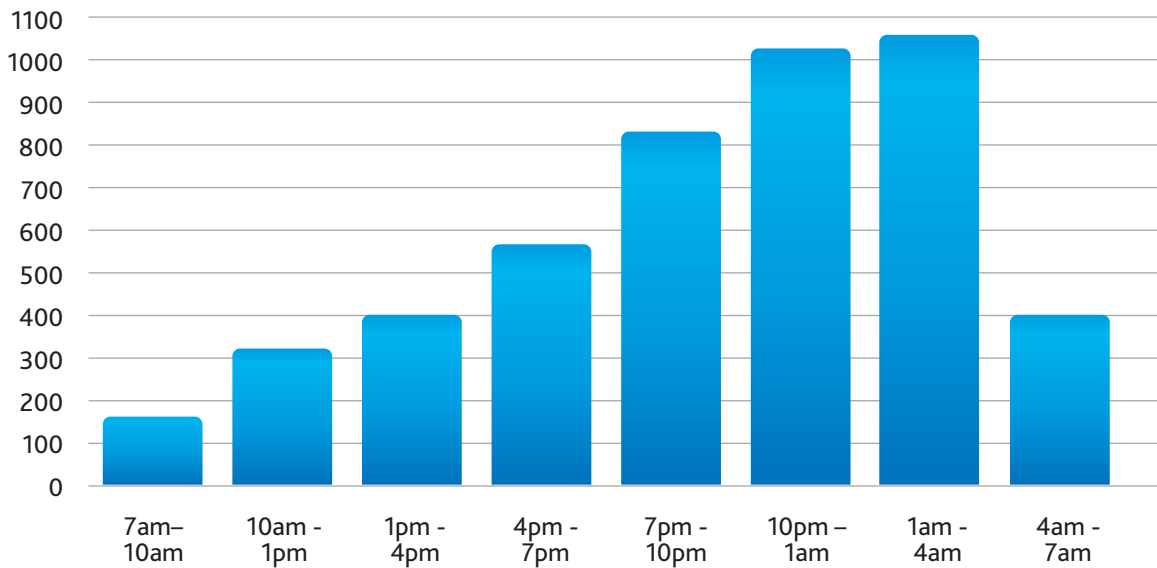
Chart 2 % difference by county 2018 v 2019



### 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

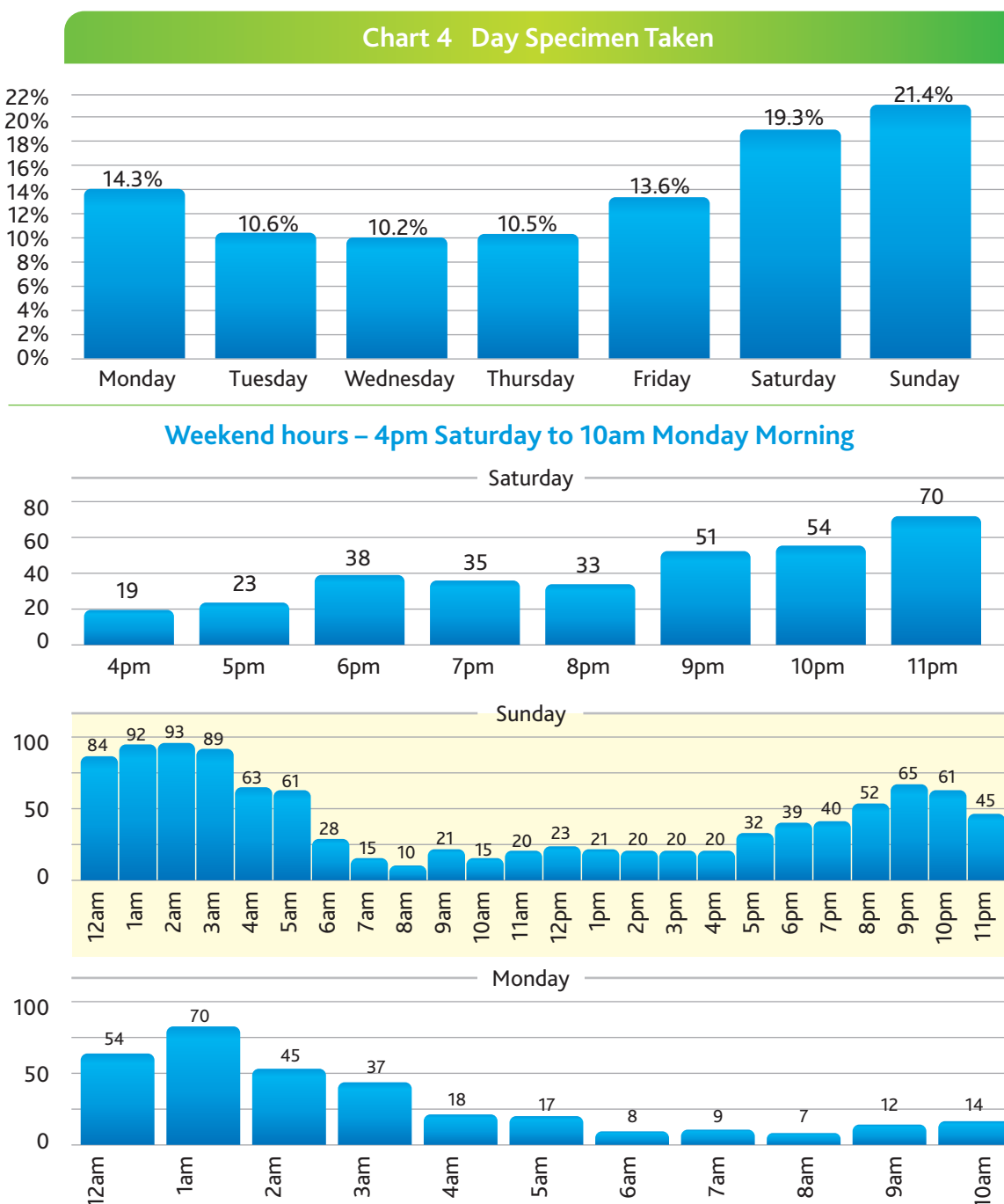
In 2019 there were 544 specimens provided in hospitals, this represents 11% of total blood and urine specimens.

### Unconscious Drivers

In 2019, 6 specimens were forwarded to the Bureau for analysis following blood draws from unconscious drivers.

### Analysis of Day

As per Chart 4 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.



The above charts display that the most prevalent hours for intoxicant drivers is late night to early morning.

### Gender Analysis

A similar pattern was seen in the male/female ratio in 2019 compared to previous years with 86% of drivers providing specimens being male.

**Table 2 Gender Profile of Specimens received – Blood & Urine**

	2019	2018
<b>MALE</b>	86%	83%
<b>FEMALE</b>	14%	17%

### Age Profile

The age profile of drivers providing blood and urine specimens in the 25 – 34 year old bracket continues to contribute to the greatest percentage of arrested drivers.

**Chart 5 2019 Age Profile of Drivers**

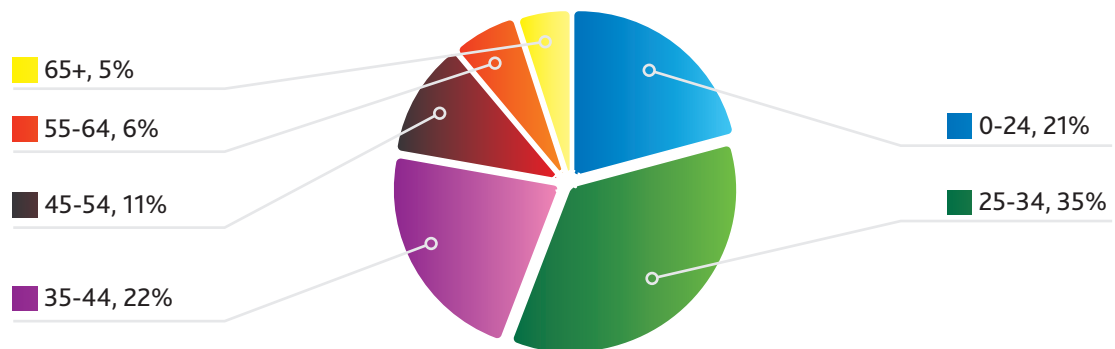
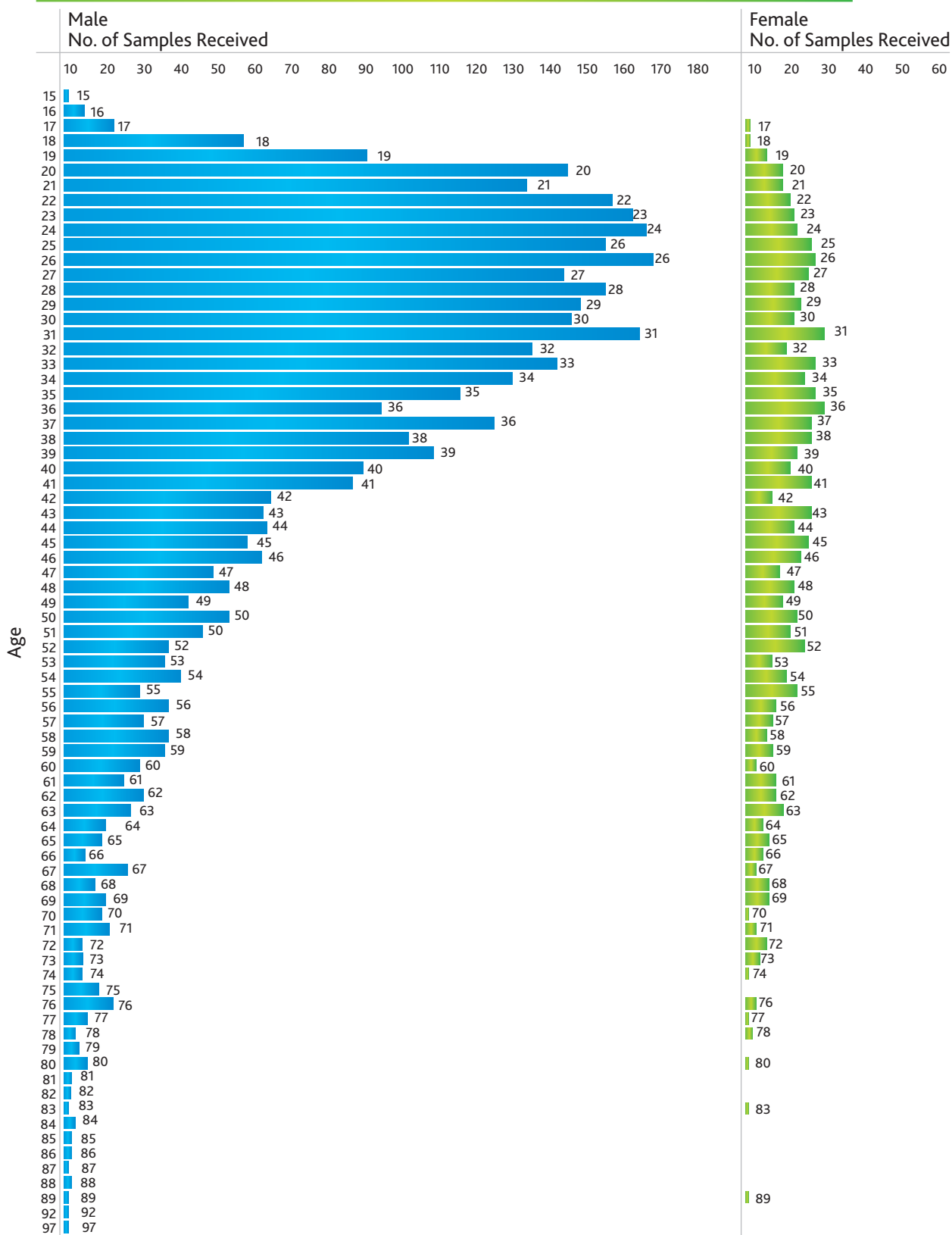




Chart 6 2019 Age Profile by Gender



# ALCOHOL PROGRAMME: BLOOD & URINE

This programme is led by Principal Analyst, Ms Louise Lawlor.

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 2019 was 4,900 (consisting of 3,600 blood kits and 1,300 urine kits.)

In total 6,134 kits were issued, comprising of 4,589 blood kits and 1,545 urine kits to Garda Central Stores in 2019.

1,400 jugs were prepared and issued. (See Table 3).

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

	Kits Prepared		Kits Issued	
	2019	2018	2019	2018
<b>BLOOD KITS</b>	3,600	1,500	4,589	2,700
<b>URINE KITS</b>	1,300	1,400	1,545	1,400
<b>JUGS</b>	1,400	1,400	1,400	1,400

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







### 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 4,854 blood and urine specimens were received for analysis during 2019, 42 specimens were received for drug testing only as the drivers had been tested for alcohol using an Evidential Breath Testing instrument. In 61 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 from 2018. The number of blood and urine specimens received in 2019 increased by 25% on the number received during 2018.

### Mean Alcohol Level in Blood and Urine

The mean alcohol level in blood was 147mg/100ml and in urine was 183mg/100ml for 2019 excluding specimens which had no trace of alcohol.

### Max Alcohol Level in Blood and Urine

The max alcohol level in blood was 393mg/100ml and in urine was 472mg/100ml for 2019.

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

During 2019 there were 1,521 specimens certified which were two or more times over these limits. This figure represents 32% 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**

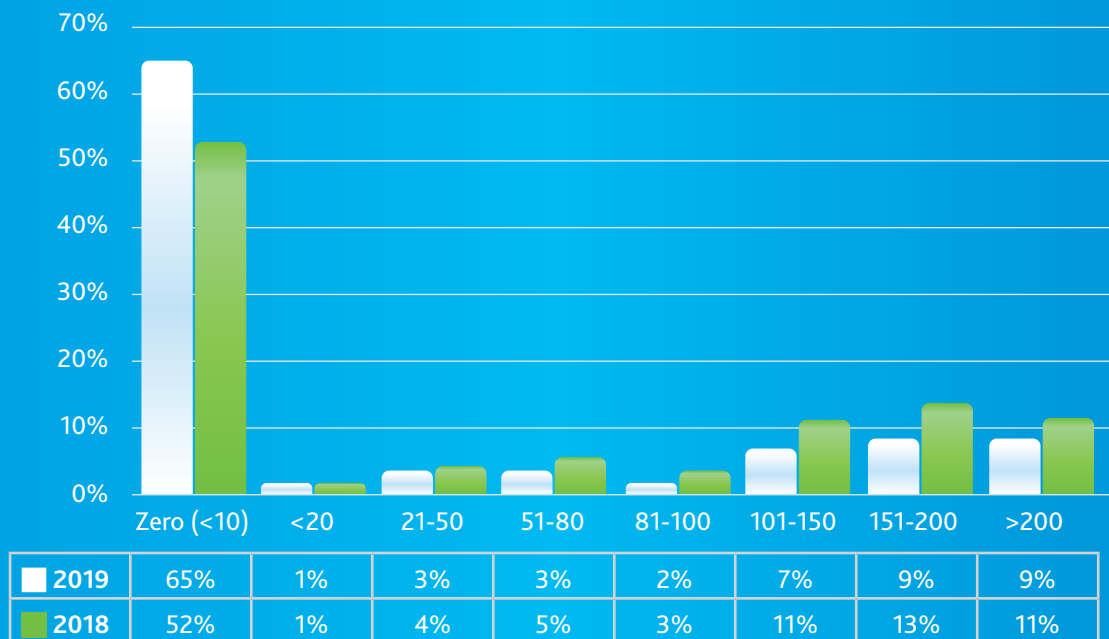
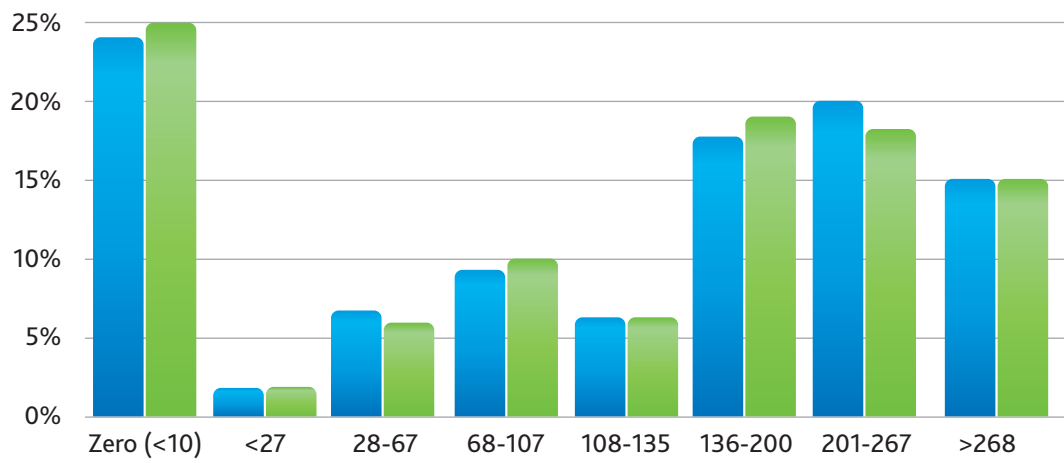




Chart 8 Certified Urine Alcohol Levels



2019	24%	2%	7%	9%	6%	17%	20%	15%
2018	25%	2%	6%	10%	6%	19%	18%	15%



# ALCOHOL PROGRAMME: BREATH

This programme is led by Principal Analyst, Ms Louise Lawlor.

The main functions of the Breath Alcohol programme are:

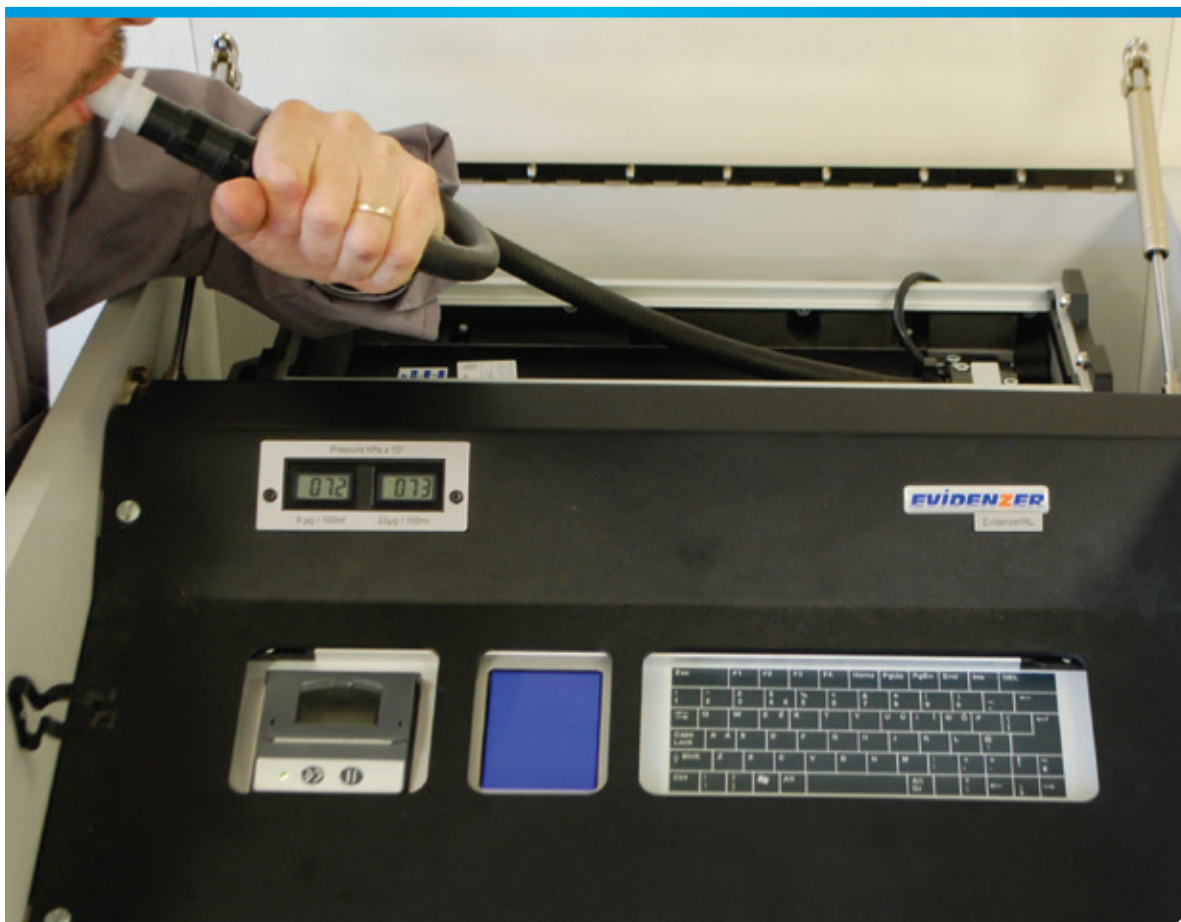
- The approval, supply and testing of apparatus for indicating the presence of alcohol in the breath (roadside preliminary breath testing devices)
- The approval, supply and testing of apparatus for determining the concentration of alcohol in the breath (evidential breath testing instruments)

- 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 roll-out of the new 7510 Dräger PBT devices was completed in 2019. The hot-swap system created in 2018 was imbedded in 2019. The hot-swap system provides a more efficient service





to An Garda Síochána as a device is returned for calibration, a calibrated device is exchanged. The MBRS recalled all 6510 Dräger PBT devices from Gardaí in 2019. A total of 2,270 calibrations were conducted on 7510 devices with devices being calibrated biannually.

### 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 88 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

course providing training to Garda Operators and Supervisors in the use of the EvidenzerIRL instrument.

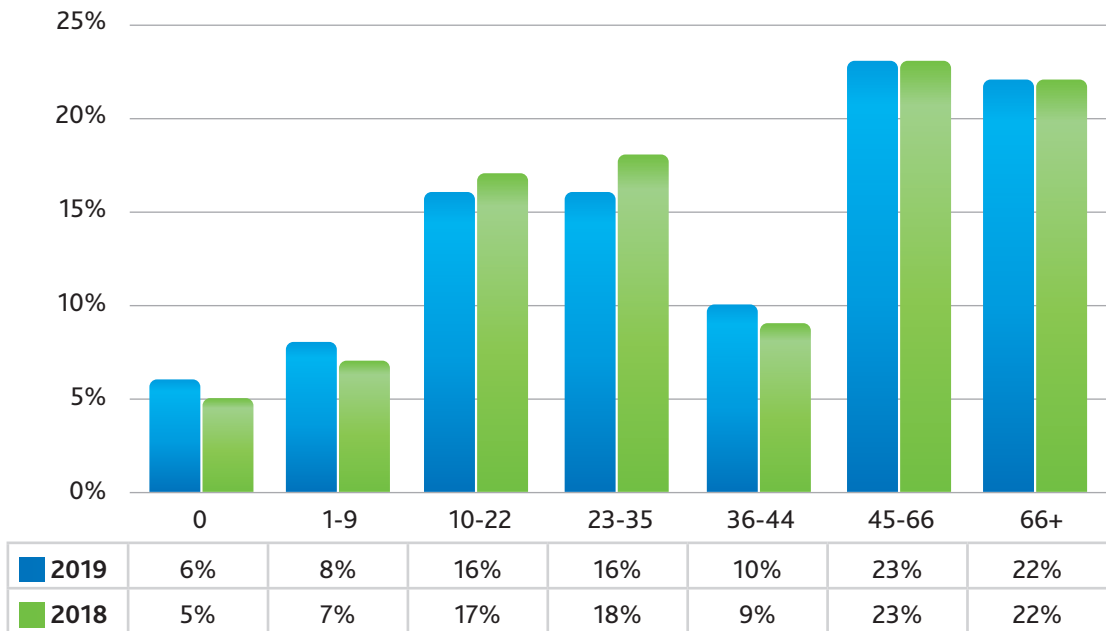
A total of 298 Gardaí were trained as EBT Operators including 169 who were also trained as Supervisors.

### Testing EBT instruments in Garda Stations

Bureau Scientists tested each instrument installed in Garda stations on at least two occasions. This onsite testing was carried out on 213 occasions in 2019 (200 in 2018).

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 2019, a total of 5,372 drivers were brought to Garda Stations and provided breath specimens for alcohol analysis. 2% 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 4,723 breath specimens were completed with a Section 13 certificate issued.

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

From the total of 5,372 completed breath specimens, 45% of these were over twice this limit. This is slightly higher than the blood & urine specimen results over twice the limit at 32%.

\*\* (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/100ml.)

### Mean Alcohol Level in Breath

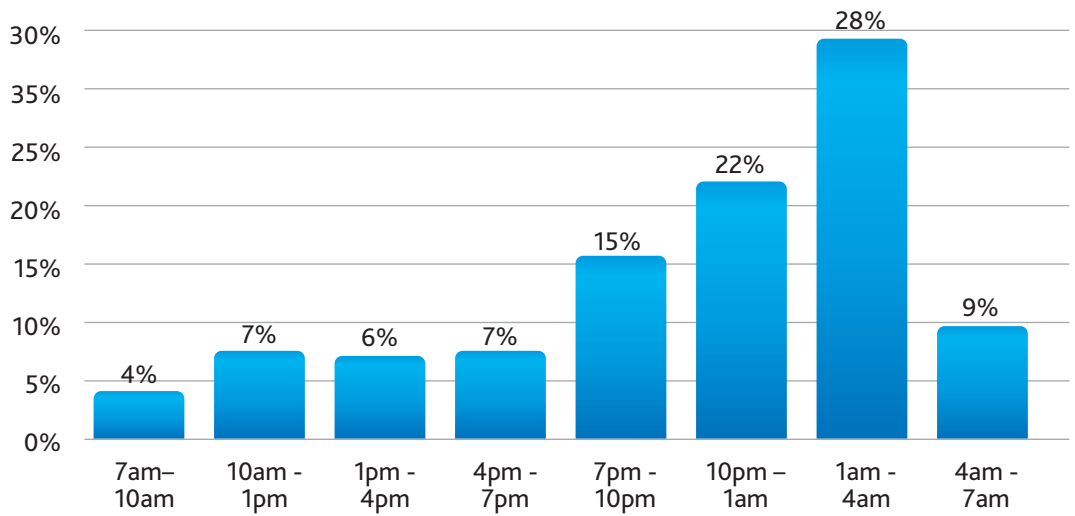
Excluding breath specimens which returned a zero alcohol result the mean certified alcohol level in breath was 45µg/100ml in 2019.

### Analysis of Time

Of the total number of breath specimens (5,372) 75% were provided between the hours of 7pm and 7am, 11% between 7am and 1pm and the remaining 13% between 1pm and 7pm.



**Chart 10 2019 Time Breath Specimen 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 6:1.

**Table 4 Gender Profile of Breath Specimens provided**

	2019	2018
MALE	86%	87%
FEMALE	14%	13%

**Chart 11 2019 Age Profile of Drivers - Breath**

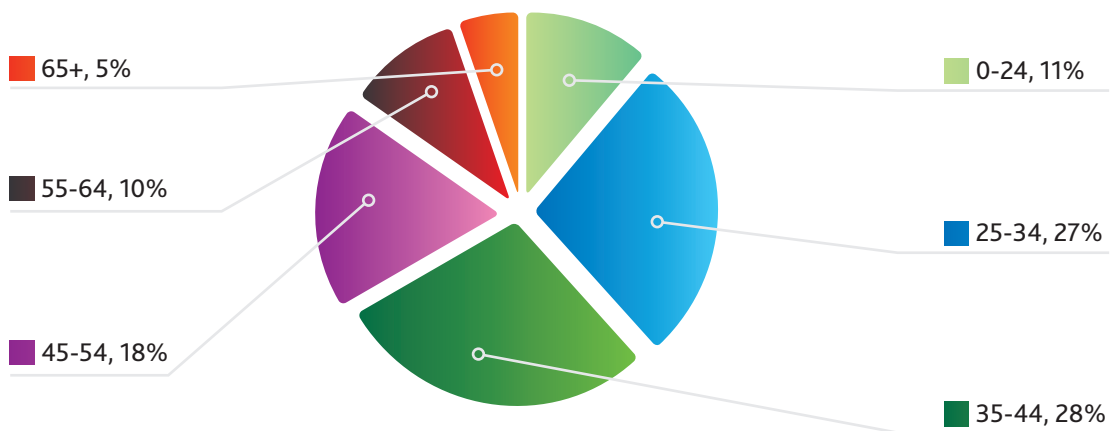
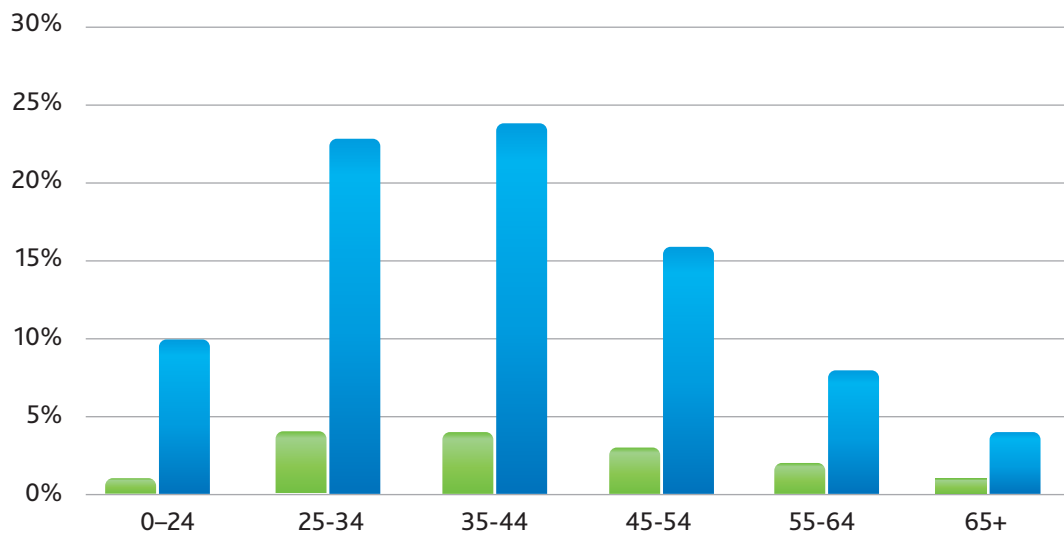




Chart 12 2019 Age Profile of Drivers - Breath % Male and Female



<span style="color: green;">■</span> % female (of total)	1%	4%	4%	3%	2%	1%
<span style="color: blue;">■</span> % male (of total)	10%	23%	24%	16%	8%	4%



# TOXICOLOGY PROGRAMME

This programme is led by Principal Analyst, Dr Richard Maguire. The main functions of this programme in 2019 were:

- › The analysis of blood and urine specimens for the presence and/or concentration of a drug or 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.

## Roadside/Station Based Preliminary Drug Testing (PDT)

The PDT programme 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 86 stationary analysers and 60 mobile units. There was a further increase in mobile devices to 75 during 2019 bringing the total mobile devices issued to 161 by the end of the year. The analyser can detect Cannabis, Cocaine, Opiates and Benzodiazepines in oral fluid.





The Bureau purchased 13,950 consumable cassette STKs for use with the devices in 2019. The Bureau also managed the quality control testing of the 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 2019 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 2019; 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 2019 is shown below.

While there was a significant increase in mobile use (93%), the usage of the station-based analysers remained very low. Taking QC (Quality Control) testing into account the use of stationary devices represents only 6% of total usage. 35 stationary analysers were made available for mobile use during the 2019 Christmas Road Safety campaign.

When an oral fluid sample is collected from a driver for testing, and is positive for a drug

Table 5

ANALYSER USE TYPE	NUMBER OF TESTS
Mobile	6,881
Station Based	554
Total	7,435



## 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.

or drugs, the Bureau requests that An Garda Síochána submit an "Information Form" (see above) 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, 1,484 (137% increase on 625 in 2018) specimens were returned with Preliminary Drug Testing forms in 2019. Of these 1,423 indicated a positive for at least one of the four drugs that the DT5000 can detect.

Of the 1,423 positive cases the prevalence of drugs detected by the DT5000 was as follows: 66% were positive for cannabis (72% 2018, 64% 2017), 42.9% were positive for cocaine (41% 2018, 35% 2017), 8.2% were positive for

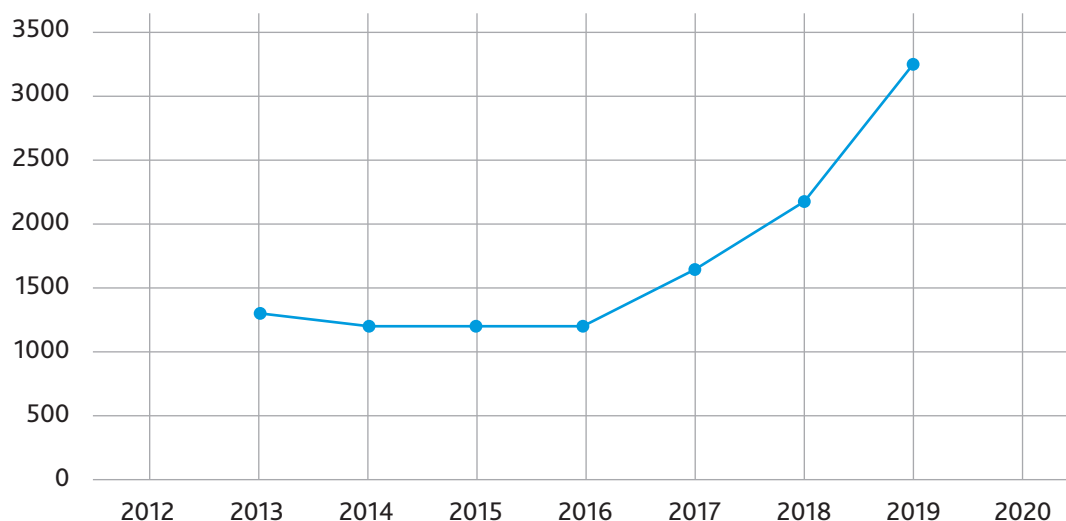
opiates (8% 2018, 8% 2017) and 3.8% were positive for benzodiazepines (7% 2018, 5% 2017). The overwhelming detection is for illicit drugs rather than opiates and benzodiazepines which can be legitimately purchased and/or prescribed but can also be misused.

### Laboratory Testing

#### Blood and Urine Specimen Overview

There were 3,230 specimens analysed for the presence of a drug or drugs which is a 51% increase on the number of specimens tested in 2018 which is a significant increase. The chart below shows how this figure has changed since 2013 (Chart 13)

**Chart 13 Number of Blood/Urine Specimens Tested 2013 to 2019**



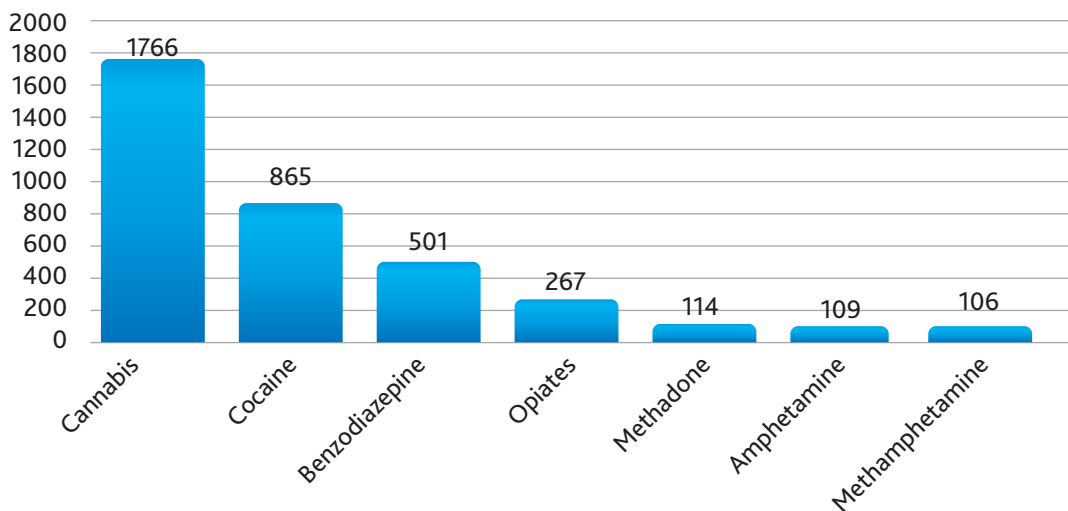


Toxicological analysis was required for 66% of all specimens received (11% increase on 2018 where 55% of all specimens required Tox). The MBRS toxicology section continued to test all specimens under the limit for alcohol of 80mg/100ml in blood and 107mg/100ml in urine. There were 39 (77% increase on the 22 in 2018) over the limit specimens specifically requested by An Garda Síochána and 42 (200% increase on the 14 in 2018) Evidential Breath Testing negative specimens sent to the MBRS for drug testing. An additional 41 specimens which were over the alcohol limit stated above but were received with a positive preliminary drugs test at either the roadside or in a Garda station were also automatically tested for drugs. The measures introduced in the 2016 Road Traffic Act empowered the Gardaí to take blood where drugs were indicated by a preliminary test. This resulted in a shift in the specimen type towards blood rather than urine with 86% of specimens analysed for toxicology being blood and 14% urine in 2019.

Initial screening testing was conducted for cannabis, cocaine, opiates, methadone, benzodiazepines, amphetamines and methamphetamine using Liquid Chromatography with Mass Spectrometry (LC-MS-MS).

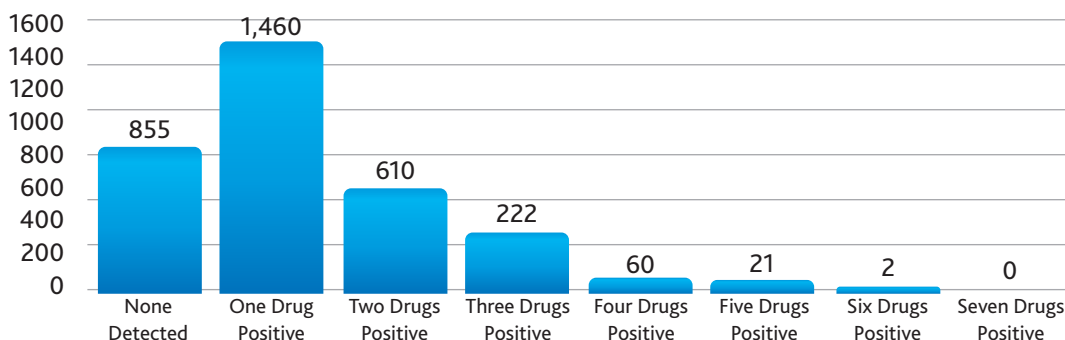
Of the 3,230 specimens tested 2,375 (74% of Toxicology specimens and 49% of all specimens) were found to be positive for at least one drug class on preliminary laboratory drug testing, while 855 (26%) were negative for the drugs targeted by the MBRS at the thresholds used by the MBRS. Chart 14 below 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, as in 2018 Cocaine remains the second most prevalent. Chart 15 shows the prevalence and extent of polydrug use in the tested specimens for blood and urine.

Chart 14 Drug Prevalence Screening 2019



Again, polydrug use was commonly detected in 2019 and this is shown in chart 15 where 45% of cases had 2 or more drugs detected.

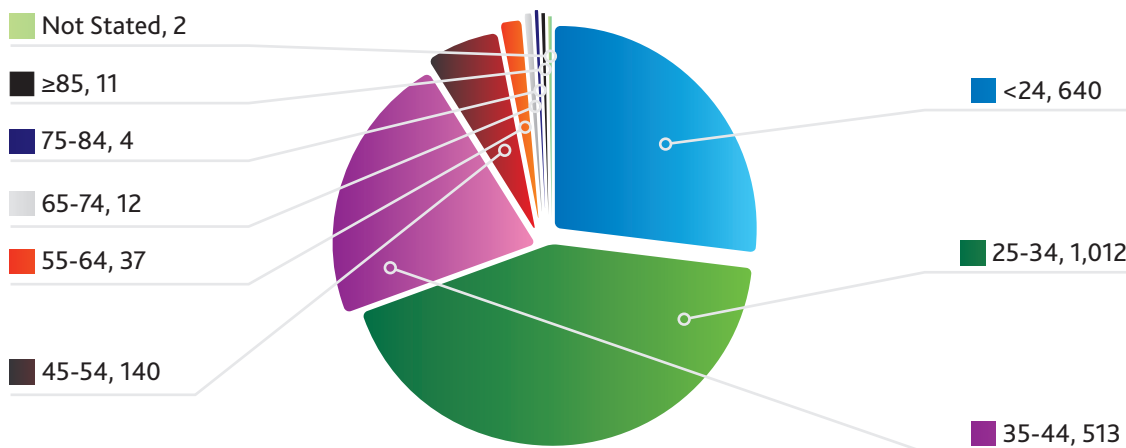
Chart 15 No. of classes detected per specimen 2019





The gender profile was 88% male and 12% female based on screening positive data. The age profile of positive specimens is shown in chart 16 below with the vast majority being in the 44 and underage bracket.

**Chart 16 Total Screening Positive by Age 2019**



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 2019 were forwarded for confirmation of all drugs detected at the screening stage, as far as specimen volume permitted.

The workload in confirmatory testing has also increased significantly. The extent of the

increase in confirmatory testing for the various drugs/classes is highlighted in Table 6 below. This table shows the difference in the number of confirmatory analyses testing positive in 2019 with the percentage increase/decrease compared to 2018 and this shows that the increase in confirmations was in the order of 33.6% across the board. In each case a small number of specimens could not be confirmed due to specimen volume limitations and small number were found to be negative on confirmation.

**Table 6**

DRUG CLASS	2018	2019	% Change
Cannabis	1,034	1,747	68.9% Increase
Benzodiazepines	468	475	1.5% Increase
Cocaine	535	852	59.2% Increase
Opiate/Methadone	260	308	18.5% Increase
Amphetamine/Methamphetamine	82	157	91.5% Increase
<b>Total</b>	<b>2,649</b>	<b>3,539</b>	<b>33.6% Increase</b>



Table 7

DRUG CLASS	Screened Positive	Confirmed Positive	Confirmed Negative	Insufficient for Confirmation	Confirmation Rate
Cannabis	1,766	1,745	2	19	99%
Benzodiazepines	501*	467	8	25	93%
Cocaine	865	822	30	12	95%
Opiate/Methadone	314	296	12	6	94%
Amphetamine/ Methamphetamine	161	158	2	1	98%

\*1 specimen reported before confirmation could be completed.

The 2016 Road Traffic Act (enacted April 2017) introduced *per se* levels for Cannabis, Cocaine and Heroin in whole blood (see Table 8 below). 2019 was the second full year of analysis and reporting under the *per se* levels.

Table 8

Drug	Legal Limit
Δ9-Tetrahydrocannabinol (Cannabis)	1ng/ml
11-nor-9-carboxy-Δ9-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 1,833 in 2019 which is an increase of 90% when compared to 2018. The number of certificates issued arising from the *per se* offence exceeded the number issued for presence for the first time. Table 9 below shows the differences between 2018 and 2019 for the drug certificates issued.

Table 9

Certificate Type	2018	2019	% Difference
Concentration	963	1,833	90% Increase
Presence	1,435	1,793	25% Increase
Concentration and Presence (2 certificates)	269	420	56% Increase
None Detected	508	823	62% Increase



*The 2016 Road Traffic Act (enacted April 2017) introduced per se levels for Cannabis, Cocaine and Heroin in whole blood. 2019 was the second full year of analysis and reporting under the per se levels.*



# QUALITY ASSURANCE

In 2019, the Medical Bureau of Road Safety transitioned from ISO 17025:2005 to the newly revised ISO 17025:2017 published late 2017. The new edition of the standard has a stronger focus on information technologies and incorporates the use of computer systems, electronic records and the production of electronic results and reports. A new requirement introduced risk-based thinking to minimise deviations and maximise opportunities in the Bureau's quality management system as they arise.

Following the annual surveillance visit in April 2019 the Bureau was Accredited to ISO 17025:2017 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 tests which are in addition to the published Scope of Accreditation.

Two tests were added to this record in early 2019:

1. The addition of a Multidrug analysis to quantify, using LC-MS-MS, several analytes in urine including 6-Acetylmorphine, Cocaine, Benzoylcegonine, Codeine, Morphine, EDDP, MDA, S-Methamphetamine, MDMA, S-Amphetamine and Methadone.
2. A preliminary drug test to identify the presence of, using LCMSMS, multiple analytes (64) in whole blood and urine. Including but not limited to Amphetamines & Stimulants, Cannabinoids, Cocaine & Metabolites, Tranquilisers, Non - Opiate Narcotics and Opiates.

These tests were subsequently incorporated into the Bureau's Scope of Accreditation following the INAB visit in April 2019. 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 10 details the schemes for 2019.

Table 10 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	Over 210 analytes are available including 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
<b>Alcohol in Blood and Urine</b>	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
<b>Evidential Breath Testing</b>	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 2019 was €5,843,000.

# 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
<b>Name</b>	<b>Position</b>	<b>Attendance Record</b>
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 until 19th Aug 2019	2 of 2
Professor Patricia Fitzpatrick	Board Member	4 of 4

## Bureau Membership and Meetings

During 2019 the Medical Bureau of Road Safety held four meetings. These meetings were held on 21st March, 18th July, 29th September and 5th December 2019.

Sadly, in August 2019, Mr. Michael McDermott passed away. He had been a Board member since the 25th May 2018. Though his time as a Board Member was relatively short, his contribution was immense, and the Board very much valued his input during the fifteen months. He attended the meetings with such enthusiasm, expertise, and professionalism. He will be sadly missed.

## Schedule of Fees and Aggregate Expenses paid to Directors during 2019

During 2019 the following fees were paid:

### BOARD FEES PAID

Board Member	Type of Fee	Paid 2019	Paid 2018
Dr. Declan Bedford	Fee for Chairperson of Board of State Body	€8,978	€8,978
	Fee for Non-Executive members of Boards of State Bodies	-	-
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	€3,797	€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 2019 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 2019 – 31st December 2019.

### Statutory Requirements

The Medical Bureau of Road Safety confirms that it complied with its statutory requirements during 2019.

### Ethics in Public Office

The members of the Board who held office at the 31st December 2019 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 2018 Financial Statements during 2019. 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 2019.

### 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 2019.

### Strategic Planning

The Bureau compiled its Annual Strategic Plan for 2020 and its Five-Year Strategic Plan 2020 – 2024 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 2019 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 2019 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 2019.

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 2019 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 2019.

### Internal Control Issues

No weaknesses in internal control were identified in relation to 2019 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 2019.

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

**Dr. Declan Bedford**  
Chairman



# FREEDOM OF INFORMATION

During 2019 the Bureau received four requests which were dealt with as follows:

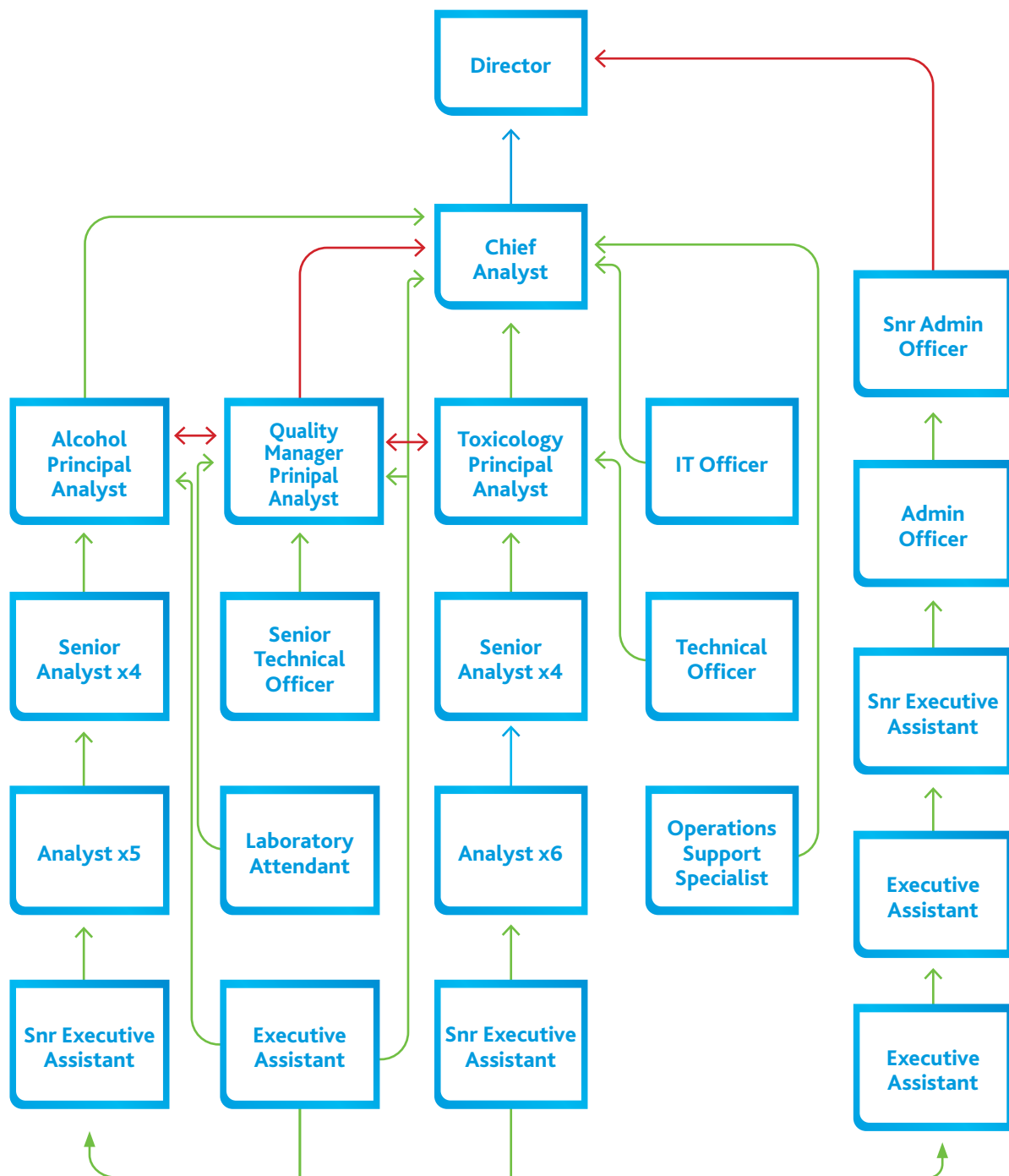
Decision	Number of Requests
Granted	3
Administrative Pathway	1
Total	4

Category of Requester	Number Received
Journalist	1
Solicitor	3
Other	0
Total	4

# STAFFING

The Bureau continued during 2019 to operate within its Employment Control Framework complement.

# MEDICAL BUREAU OF ROAD SAFETY ORGANISATION CHART





# COURSES AND CONFERENCES ATTENDED BY STAFF IN 2019

## Courses and Conferences attended by staff in 2019

1. A Senior Technical Officer attended the Public Sector Energy Conference in UCD Belfield on 17th January 2019.
2. The Director attended the Academic Day Conference of the Medico-Legal Society of Ireland at the Kings Inns, Dublin on 16th January 2019.
3. A Senior Analyst attended a meeting of the UKIAFT Validation Working Group at Eurofins, London on 29th January 2019.
4. A Principal Analyst and Quality Manager attended an INAB 17025-2017 Information Session in Dublin Castle on 06th February 2019.
5. A Principal Analyst and a Senior Analyst attended a 3-day meeting of OIML in Paris from 13th - 15th February 2019.
6. The Director attended a meeting of the Medical Advisory Panel on Alcohol, Drugs and Driving, UK in the Department of Transport, London on 3rd March 2019.
7. A Principal Analyst attended a 6-day IACT conference in Idaho from 31st March - 05th April 2019.
8. A Principal Analyst attended a Borkenstein Alcohol Course in Indiana from 11th - 15th May 2019.
9. A Senior Analyst and an Analyst attended the 1-day IMSS conference in NIBRT, UCD on 16th May 2019.
10. A Senior Analyst attended a 2-day UKIAFT Validation Group Meeting and Annual Mid-Year Meeting at Angela Ruskin University, Cambridge on 16th May 2019
11. Two Executive Assistants attended a Public Sector Tendering and Procurement Conference in Stillorgan, Co. Dublin on 22nd May 2019
12. The Director attended a meeting of the Scientific Advisory Board of the International Criminal Court in The Hague, The Netherlands on 19th June 2019.
13. The Director attended and presented at the International Council on Alcohol, Drugs and Traffic Safety in Edmonton, Alberta, Canada 18th to 21st August 2019.
14. The Chief Analyst, a Senior Analyst and an Analyst attended the TIAFT Conference over three days in Birmingham on 03rd September 2019.
15. The Director attended the Coroners Society of Ireland Meeting in County Monaghan 6th to 9th September 2019.
16. An Analyst attended a Borkenstein Drugs Course in Los Angeles, California from 22nd - 27th September 2019.
17. A Senior Analyst attended a LIMS User Group in the State Lab on 23rd September 2019.
18. An IT Officer attended a ManageEngine Seminar in Dublin on 01st October 2019.



### Courses and Conferences attended by staff in 2019

19. The Director attended a meeting of the Medical Advisory Panel on Alcohol, Drugs and Driving, UK in the Department of Transport, London on 2nd October 2019.
20. The Director attended and was a guest speaker at the Road Safety Authority Academic Day at the Royal College of Surgeons in Ireland on 7th October 2019.
21. An Analyst attended a course on Measurement Uncertainty and Uncertainty for Compliance Assessment at The State Laboratory 08th October 2019.
22. The Director attended the NOTM Working Group on Traffic Medicine in the Royal College of Physicians of Ireland, Setanta House on 10th October 2019
23. Two Analysts attended a 2-day TotalChrom Comprehensive User Training course in Seer Green, UK from 29th - 30th October 2019.
24. Two Analysts attended a 1.5-day PerkinElmer GC User Group Meeting in Seer Green, UK on 06th November 2019.
25. The Director attended and was a guest speaker at the 2nd International Caparica Conference in Translational Forensics 2019 in Caparica, Portugal 18th to 20th November 2019.
26. The Director attended and was a guest speaker at the International Council of the Red Cross Human Rights Conference in Coimbra, Portugal 26th to 29th November 2019.
27. An IT Officer attended an 8-day course on MS Querying Microsoft SQL Server in Dublin from 04th - 12th December 2019.
28. An Analyst attended a 1-week Borkenstein Course on Alcohol and Highway Safety in San Diego from 08th - 13th December 2019.
29. An Analyst attended a CSTAR course on Managing Data and Introduction to Data Analytics in UCD on 10th December 2019.

# 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.

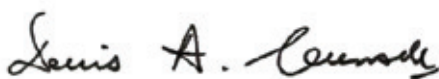
The Bureau utilizes initiatives to improve energy efficiency. A Building Management System (BMS) is used to monitor and control heating, air handling units, water boiler (direct hot water supply) and extractor fans. Each

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 are fitted throughout the building to minimise energy consumption.

The Medical Bureau of Road Safety implemented a major lighting upgrade in 2019 which has resulted in reduced energy use (and hence energy costs), lower maintenance costs and a substantially enhanced lighting environment in the building at large and in the Bureau laboratories in particular.

# 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

