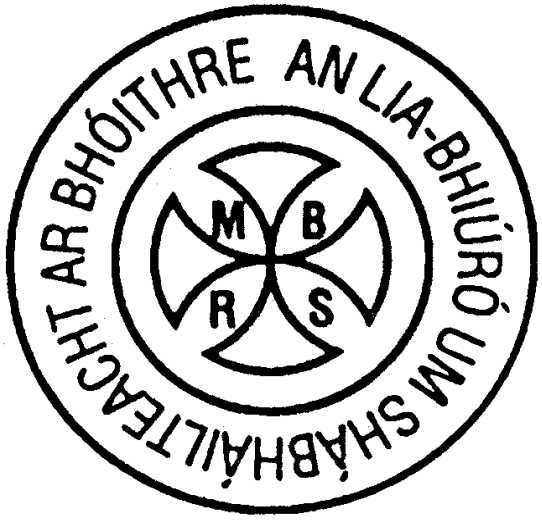
MEDICAL BUREAU OF ROAD SAFETY



ANNUAL REPORT 2017

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

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DIRECTORS INTRODUCTION

This Annual Report sets out a summary of the activities and performance of the Bureau, important and relevant data in the area of driving under the influence of intoxicants and the Bureau's ongoing essential role in the Road Safety Strategy 2013 – 2020.

The total number of specimens analysed for alcohol in blood, urine and breath and for drugs in blood and urine in 2017 totalled 10,482. This was a significant increase in the number of analyses compared with 2016. Alcohol remains the most prevalent intoxicant posing a danger on the roads and the mean alcohol level in blood specimens analysed in 2017 was 156mg/ml and in urine it was 181mg/100ml whilst in breath it was 45µg/100ml. Cannabis and benzodiazepine classes of drugs were the next most common intoxicants found on analysis. The younger male drivers continued to be the group in whom intoxicants were most often detected on analysis.

The implementation of the Road Traffic Act 2016 was one of the major tasks undertaken and completed in 2017. Preliminary drug testing devices were rolled out for use by An Garda Síochána at the roadside and in 86 Garda Stations nationwide. The new concentration levels in blood for cannabis, cocaine and heroin resulted in a significant increase in the number of specimens analysed for drugs. The confirmatory analyses for these drugs and the testing for drugs in oral fluid were successfully added to the Bureau's externally recognised accreditation. Training and information support in relation to preliminary drug testing and driving under the influence of drugs was provided for An Garda Síochána, the Prosecution Services, Members of the Judiciary, Doctors and Pharmacists.

In the area of preliminary breath testing the procurement and testing of new generation devices was nearing completion by the end of 2017 with an expected implementation and roll out in 2018.

The Bureau assisted in the exceptional reviews by a number of bodies of the number of preliminary alcohol breath tests carried out at the roadside by the Gardaí going back to the beginning of the decade and provided information to: An Garda Síochána; the Department of Transport, Tourism and Sport; the Policing Authority; Oireachtas Members and Committees; and the media, to help in an understanding and assessment of this important road safety measure and Garda enforcement.

With the increase in the number of specimens analysed and of information and data to be harvested from those results, this Annual Report expanded the type, breadth and depth of information provided in graphic format for both alcohol and drugs and this increased information platform will be further enhanced in 2018.

The Bureau is already making preliminary preparations for the celebration of its 50th Anniversary in 2018 when it is anticipated there will be a special research and academic event to mark that important milestone.

Professor Denis A. Cusack
Director

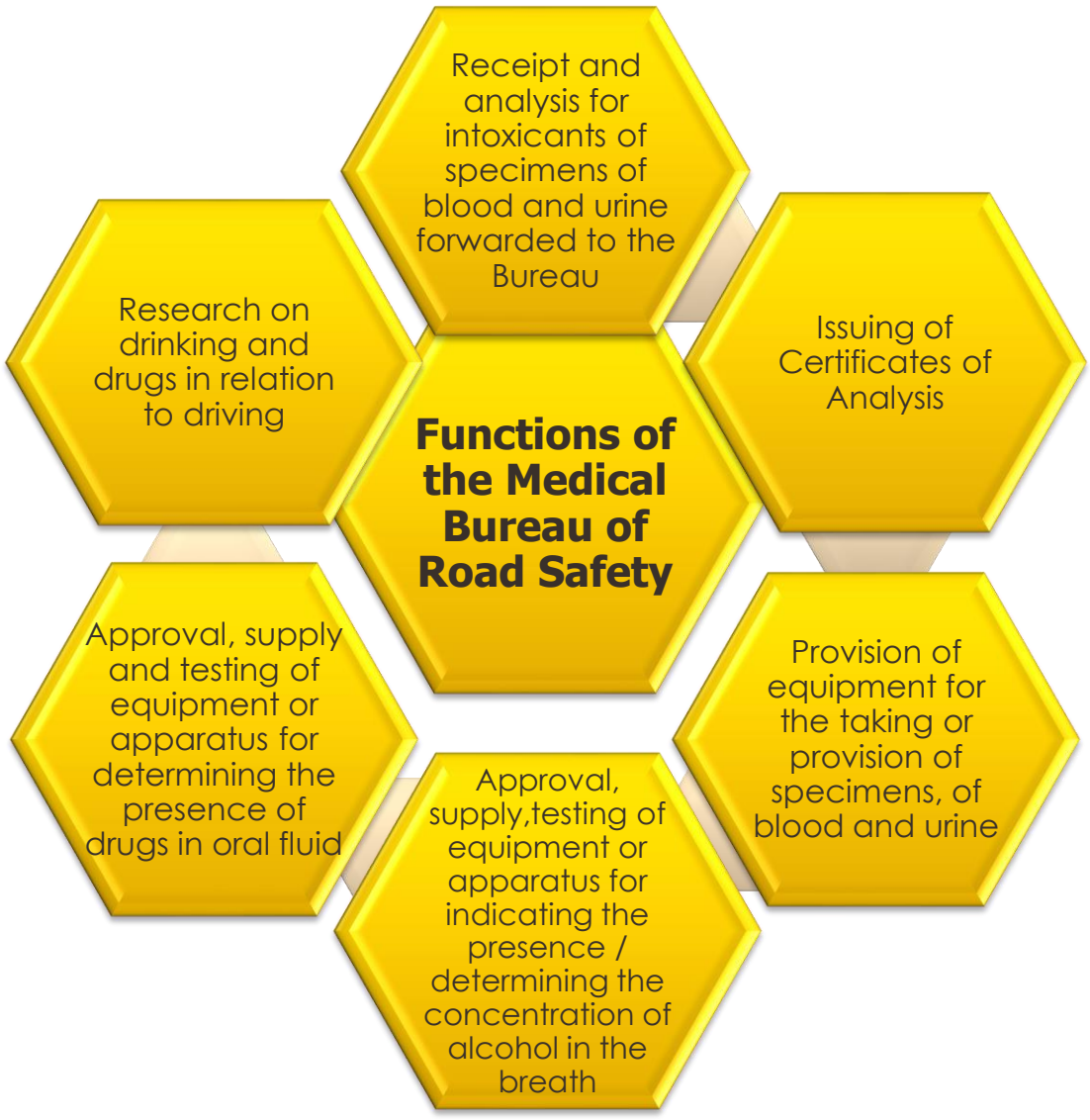
MISSION STATEMENT:

"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 and driving under the influence of drugs (DUID), specimens provided in hospitals, specimens taken from drivers involved in collisions and mandatory alcohol testing. Most recently the Road Traffic Act 2016 added Preliminary Drug Testing and Oral Fluid Drug Testing to include certifying the concentration of a drug or drugs.

The Bureau has had 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.

Currently the Bureau has several programmes and services in operation and these are:

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.

One of the major contributing factors to the operation of the Bureau is the skilled members of staff employed in the Bureau. 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 also has an appointed Quality Manager.

(see organisational chart on page 44)

Significant Achievements & Developments during 2017

Preliminary Drug Testing

On 13th April 2017 the relevant sections of the 2016 Road Traffic Act were implemented. This saw for the first time in Ireland Roadside Drug Testing being carried out on drivers. The Bureau installed 86 Preliminary Drug Testing devices in Garda Stations throughout the country and made available 50 mobile devices. The Preliminary Drug Testing Implementation Group continued communications throughout the year and post implementation was renamed as the PDT Review Group.

Laboratory Preliminary Drug Screening

The Bureau continued to develop a new Preliminary Drug Screening method using LC-MS-MS for the analysis of drugs to replace the currently used immunoassay system.

Confirmatory Drug Testing

The Bureau implemented changes in test methods to comply with the per-se levels introduced with the commencement of the 2016 Road Traffic Act. All blood confirmation testing was brought in-house from April 2017.

Preliminary Breath Alcohol Testing

The Bureau commenced a procurement for Roadside Breath Testing devices to include extra functionality to better suit the needs of An Garda Síochána. The initial procurement process was completed in December 2017 with the tender to be awarded in early 2018.

Quality Assurance

ISO 17025 accreditation was maintained in 2017 for the following tests:

- Blood and Urine Alcohol Analysis
- Evidential Breath Testing
- Preliminary Breath Testing
- Laboratory Preliminary Drug Screening
- Cannabis confirmation in Blood and Urine
- Benzodiazepine confirmation in Blood and Urine

Under flexible scope, Drugs in Oral Fluid testing was added to the scope after full assessment by INAB. Extension to scope was granted following an INAB assessment to cover testing of Preliminary Drug Testing devices and stk testing (consumable part of the drug testing system) for use at the roadside and in Garda Stations in 2017.

Health and Safety

The Bureau continued to monitor all aspects of health and safety throughout 2017 and had no reportable or significant 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. The Bureau hosted groups from other national and international agencies with the aim of sharing expertise and knowledge.

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

Bureau staff are involved in a LIMS user group along with other Public Service and Civil Service laboratories. The Bureau hosted several of these meetings in 2017.

Garda Seminars

Senior Bureau staff provided various seminars to Garda groups as required throughout 2017.

Director of Public Prosecutions

Presentation given in 2017 to update the DPP on the role of the Bureau and the technology involved in relation to 2016 Road Traffic Act and roadside/station based drug testing of oral fluid and per se blood levels for drugs.

SPECIMENS RECEIVED IN THE LABORATORY FOR ANALYSIS

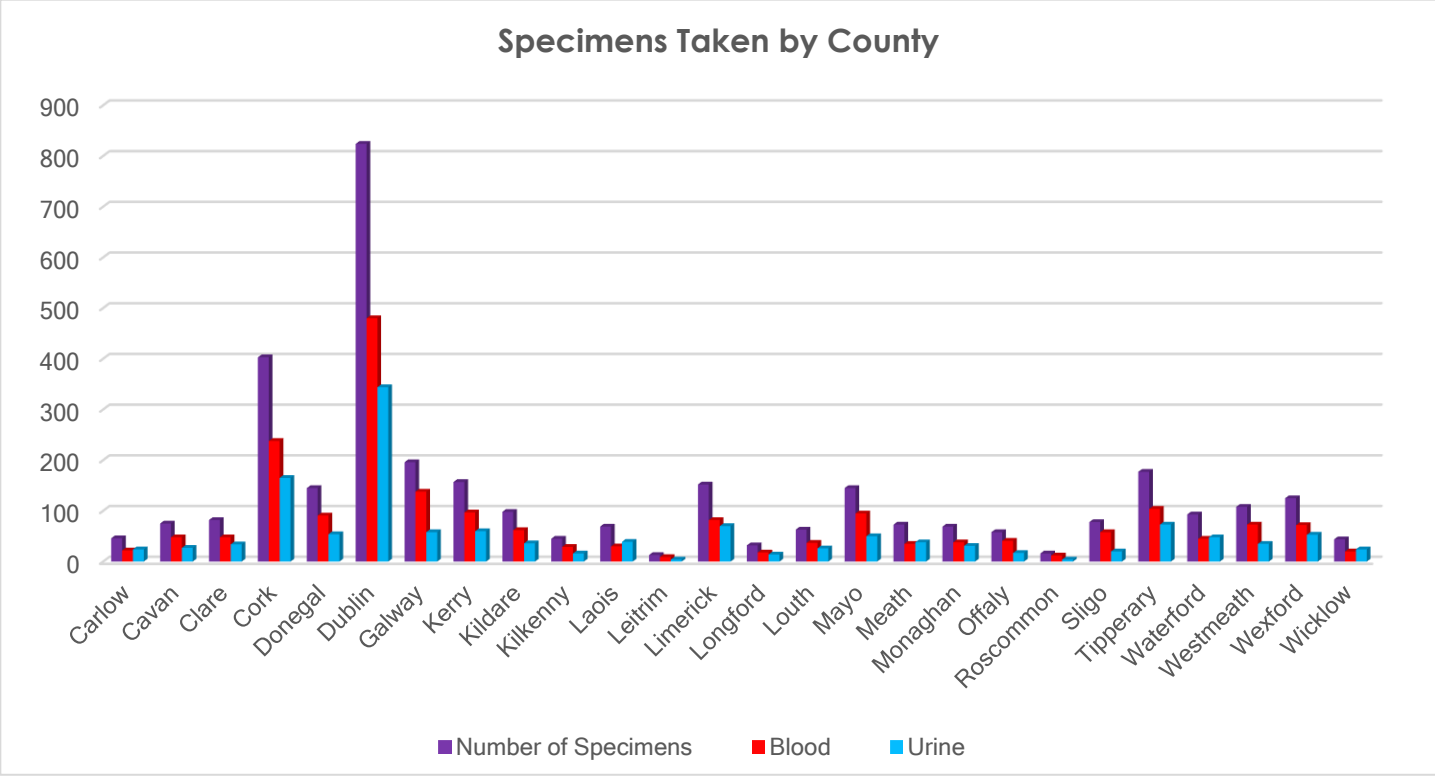
In 2017, a total of 3,386 blood and urine specimens were analysed for alcohol and/or drugs.

There was a significant change in the number of specimens tested for drugs due to the introduction of the Preliminary Drug Testing (Drugs in Oral Fluid testing).

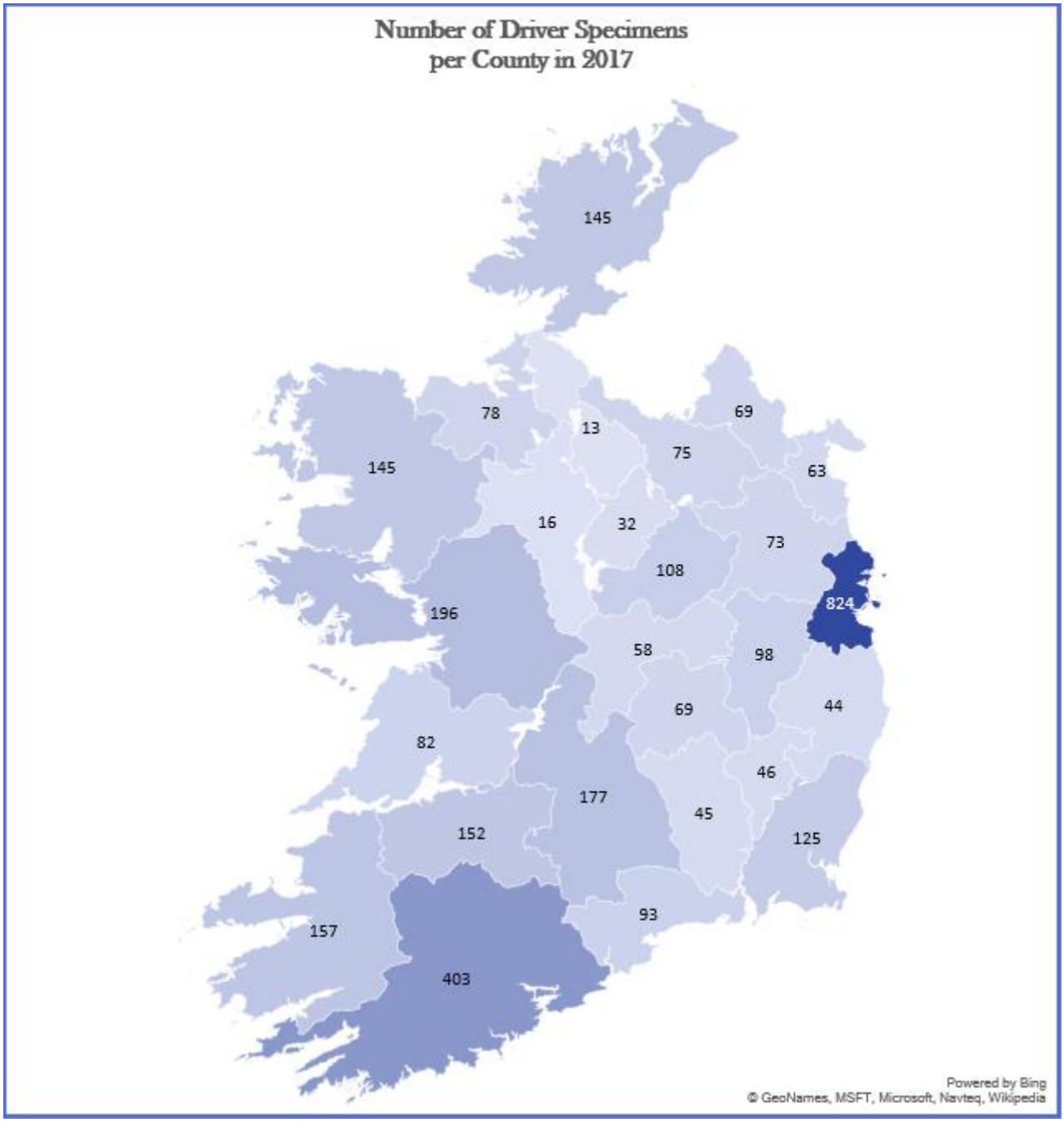
Table 1
Total Number of Specimens Received within Programmes

Programme	2017	2016	Increase
Alcohol Blood & Urine	3,386	3,019	12%
Toxicology Blood & Urine	1,592	1,133	40%
Evidential Breath Testing	5,512	4,988	11%

Chart 1



Blood & Urine Specimens



ALCOHOL PROGRAMME: BLOOD & URINE

In April 2017, a new Principal Analyst, Ms. Louise Lawlor was appointed as head of the Alcohol Programme. The Blood and Urine Alcohol Programme was merged with the Breath Alcohol Programme to form one Alcohol Programme. This improved efficiency by combining staff and resources into the one team.

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 2017 was 6,900 and 6,999 kits were issued (See Tables 2 & 3). This was an increase on the previous year in anticipation of the change in the Road Traffic Legislation and the possible increase in the requirement for blood provision in drug driving cases.

Table 2
Kits Prepared in Medical Bureau of Road Safety

	2017	2016
BLOOD KITS	3,700	3,100
URINE KITS	3,200	2,700
JUGS	2,900	2,800

Table 3
Kits issued to An Garda Síochána

	2017	2016
BLOOD KITS	3,800	3,200
URINE KITS	3,199	2,500
JUGS	3,300	2,600

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 3,386 blood and urine specimens were received for analysis during 2017. Five specimens were received for drug testing only as the drivers had been tested for alcohol using an Evidential Breath Testing instrument. In 95 (2.8%) 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 increase on 2016. The number of blood and urine specimens received in 2017 increased by 12% on the number received during 2016.

Number of Specimens Provided in Hospitals

In 2017 there were 524 specimens provided in hospitals, this represents 15.5% of total blood and urine specimens.

Unconscious Drivers

In 2017, 6 specimens were forwarded to the Bureau for analysis following blood draws from unconscious drivers.

Mean Alcohol Level in Blood and Urine

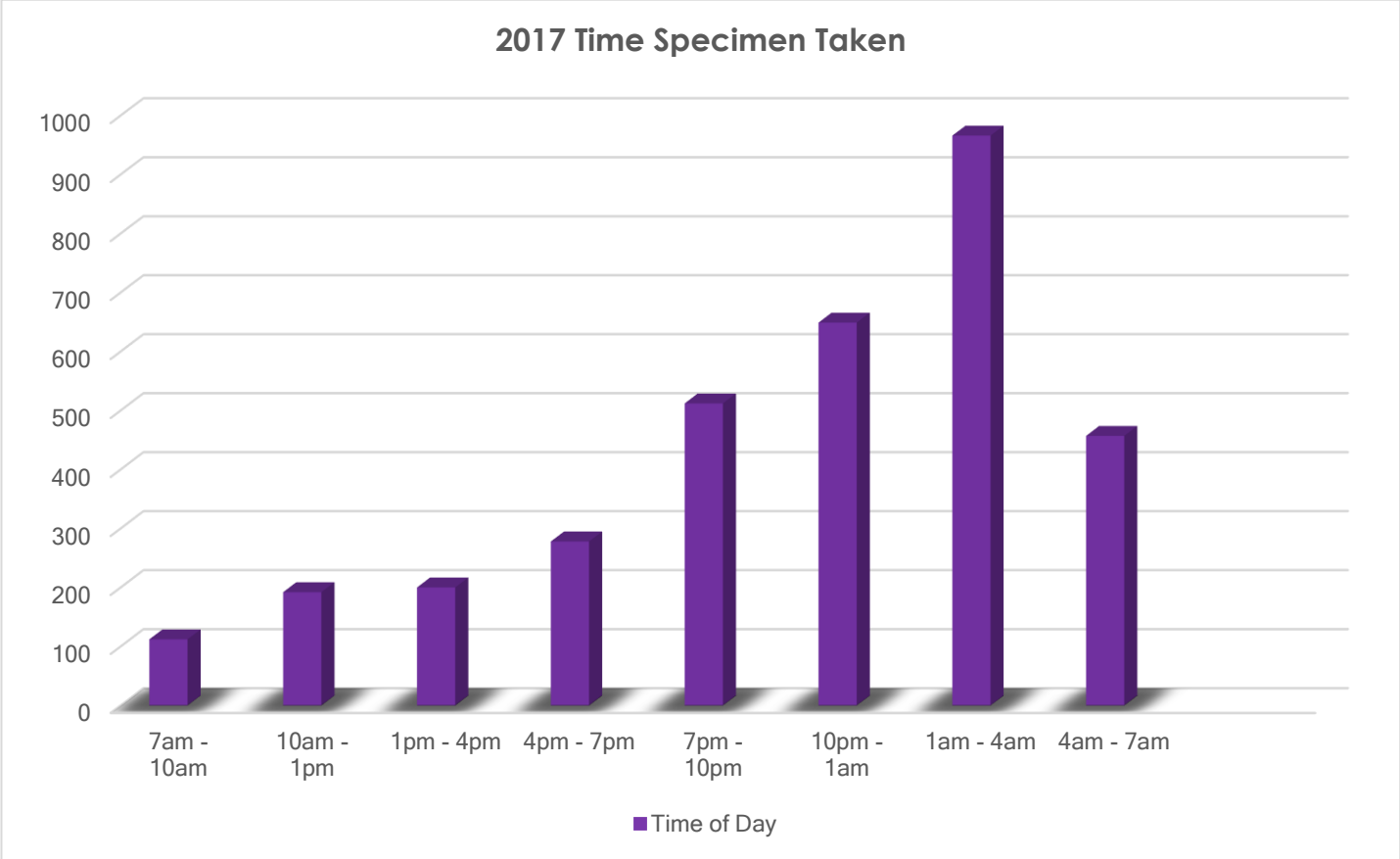
The mean alcohol level in blood was 156mg/100ml and in urine was 181mg/100ml for 2017 excluding specimens which had no trace of alcohol.

The max alcohol level in blood was 422mg/100ml and in urine was 438mg/100ml for 2017.

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.

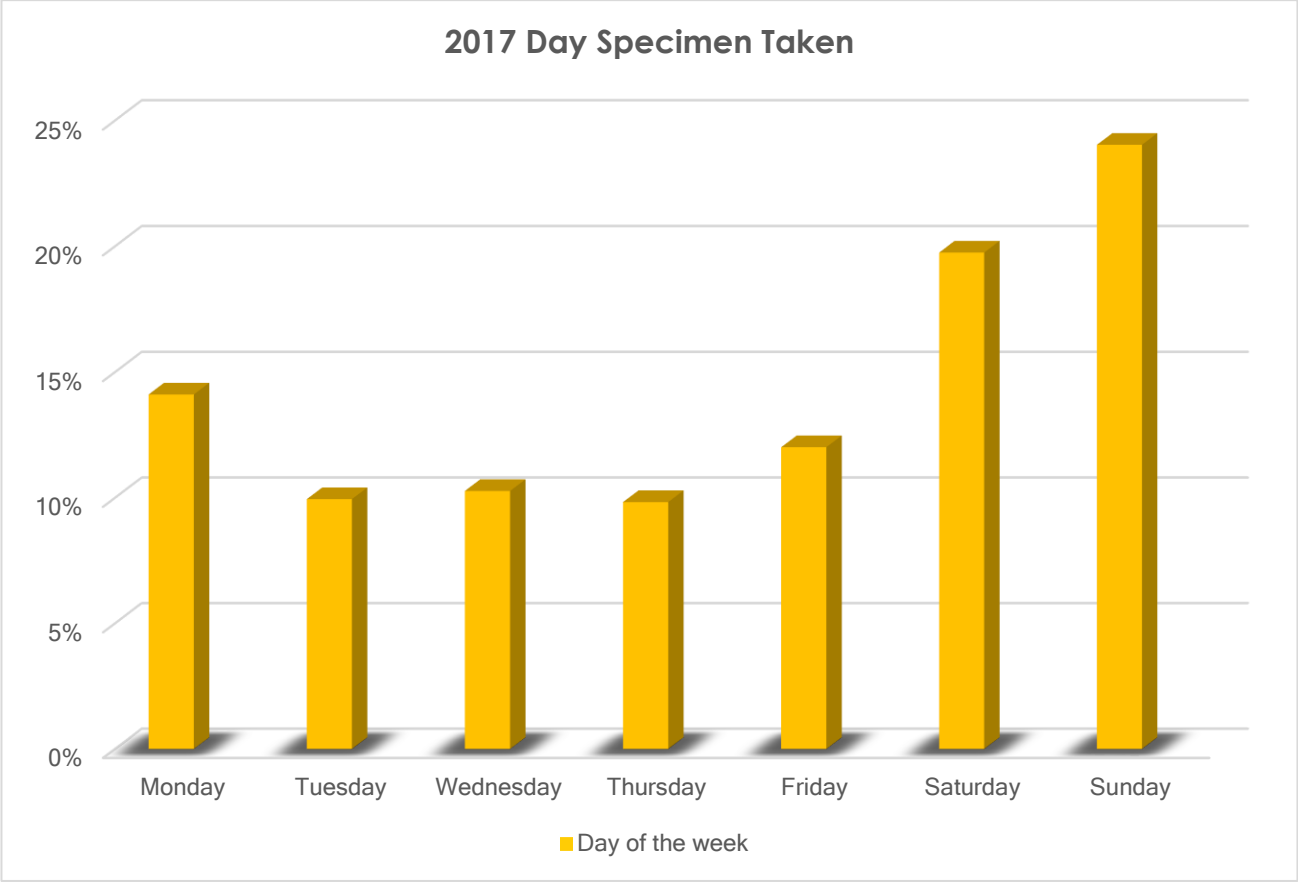
Chart 2



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 into the following morning; hence the levels indicated for Monday which could be early morning times.

Chart 3



Gender Analysis

A similar pattern was seen in the male/female ratio in 2017 compared to previous years with 82% of drivers providing specimens being male.

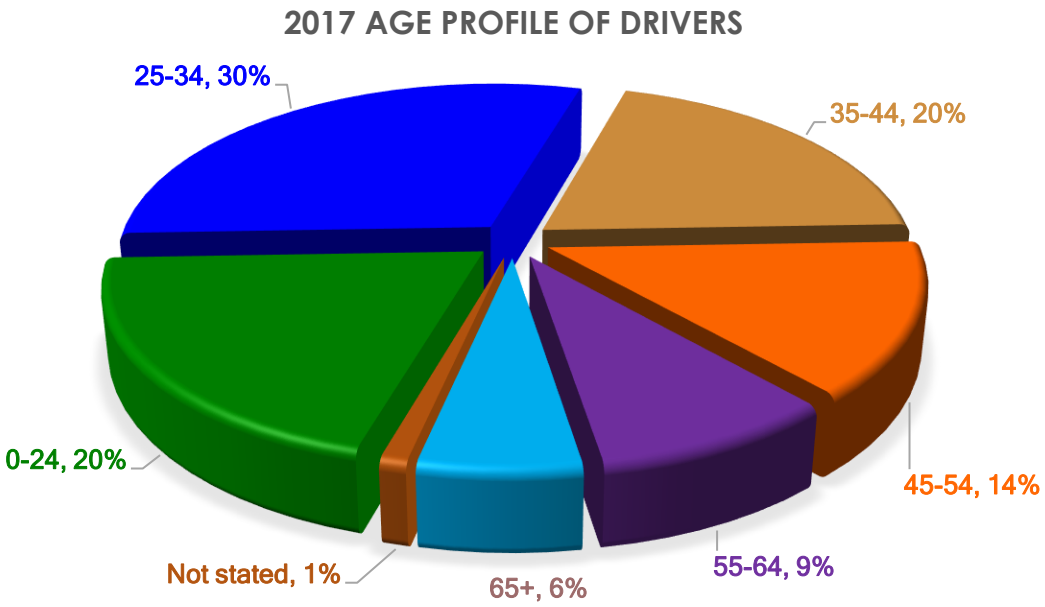
Table 4
Gender Profile of Specimens received – Blood & Urine

	2017	2016
MALE	82%	80%
FEMALE	18%	19%
UNKNOWN	0%	1%

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. However, there are significant numbers of drivers in the ≤24 and 35-44 age category.

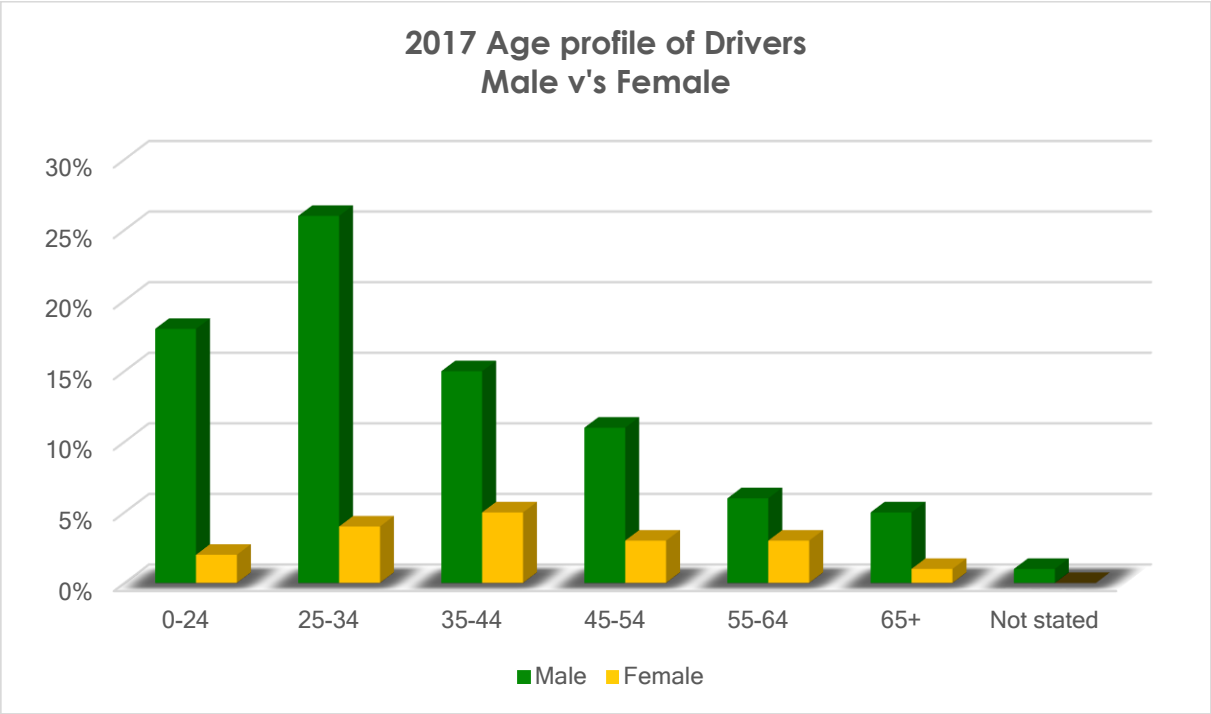
Chart 4



Age Profile by Gender

Once divided by gender there is a difference in the trend between male and female drivers. The largest group for males is the 25-35yr whereas the largest group for females is the 35-44yr age group.

Chart 5



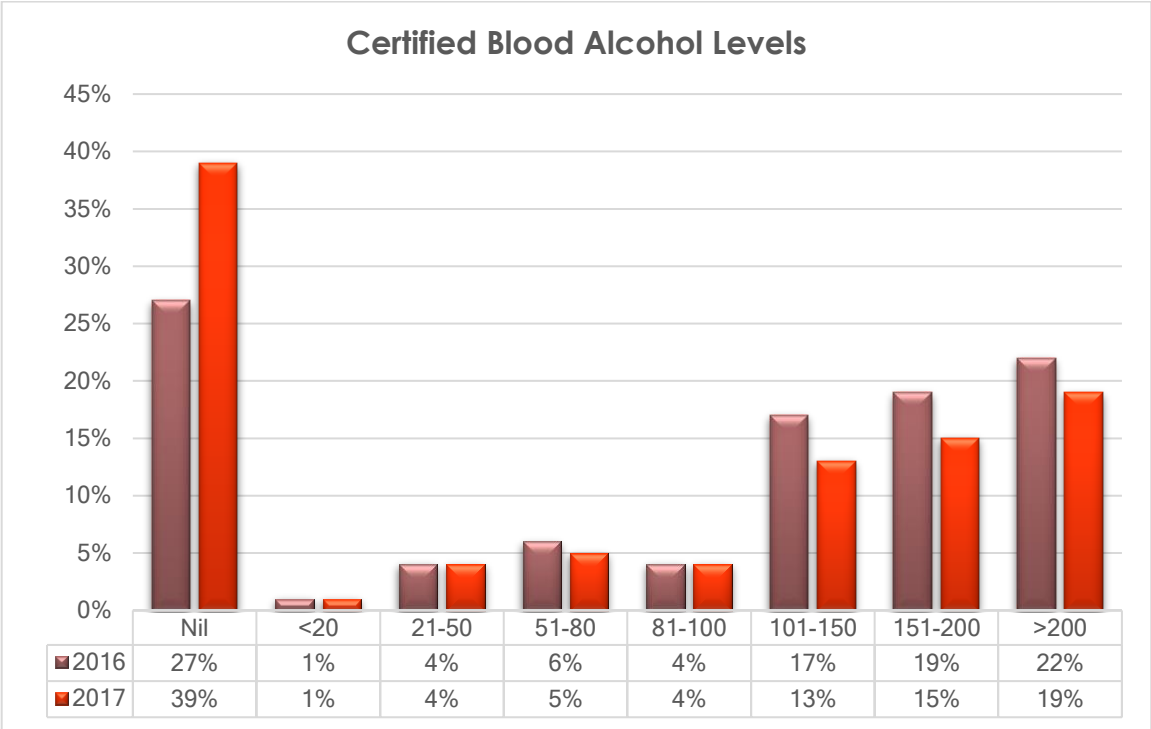
Over Twice the Limit of 50mg/100ml** (Blood) or 67mg/100ml** (Urine)

During 2017 there were 1,559 specimens certified which were two or more times over these limits. This figure represents 46% of the total number of specimens certified. This is a slight drop of 1.7% on 2016.

*** 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.*

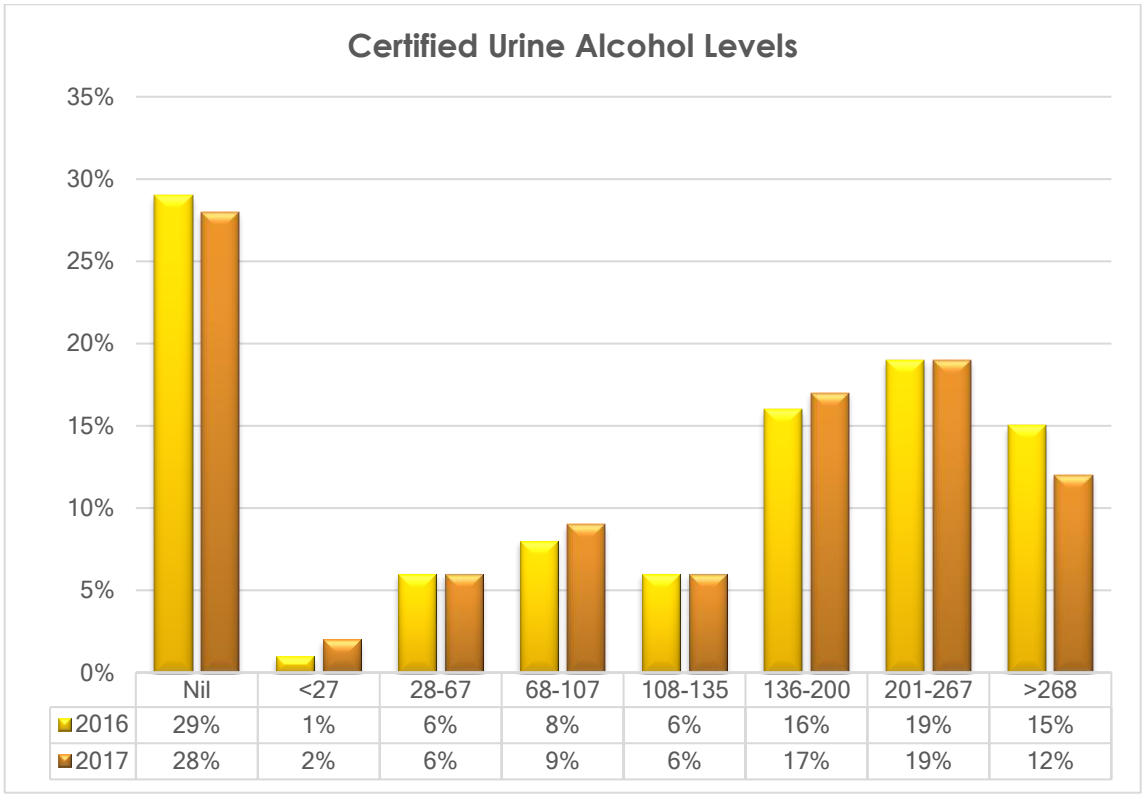
Charts 6 and 7 show the proportion of drivers in the different bands for blood and urine respectively.

Chart 6



	Nil	<20	21-50	51-80	81-100	101-150	151-200	>200
2016	27%	1%	4%	6%	4%	17%	19%	22%
2017	39%	1%	4%	5%	4%	13%	15%	19%

Chart 7



	Nil	<27	28-67	68-107	108-135	136-200	201-267	>268
2016	29%	1%	6%	8%	6%	16%	19%	15%
2017	28%	2%	6%	9%	6%	17%	19%	12%

ALCOHOL PROGRAMME: BREATH

The main functions of the Breath Alcohol programme are:

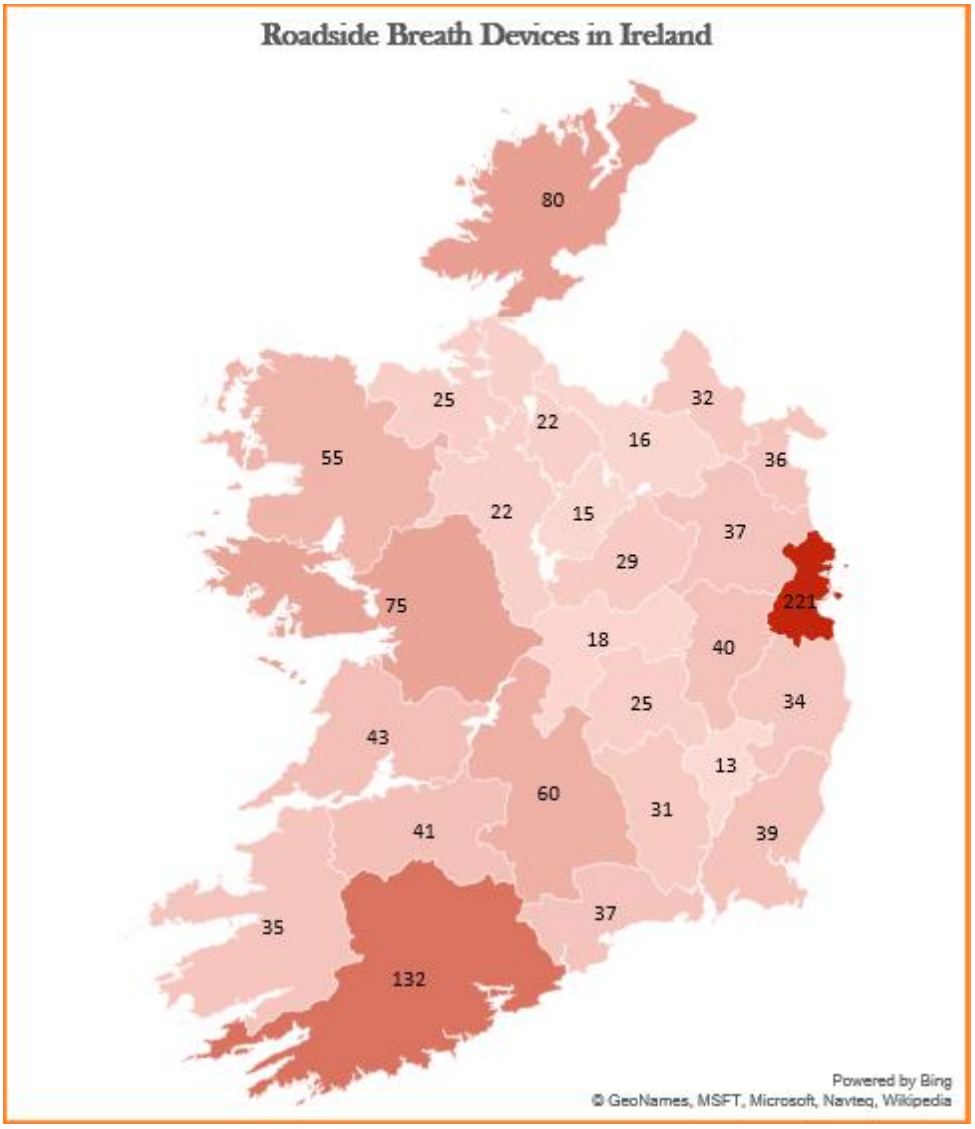
- The approval, supply and testing of apparatus for indicating the presence of alcohol in the breath (roadside preliminary breath testing devices)
- The approval, supply and testing of apparatus for determining the concentration of alcohol in the breath (evidential breath testing instruments)
- Provision of expert assistance to the Courts and DTTAS.
- 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 Draeger 6510 electronic devices issued to An Garda Síochána in approximately 373 Garda Stations throughout the country.

A total of 1,029 devices were checked and re-issued in 2017.

The distribution of Roadside Breath Alcohol devices is outlined in the map below.

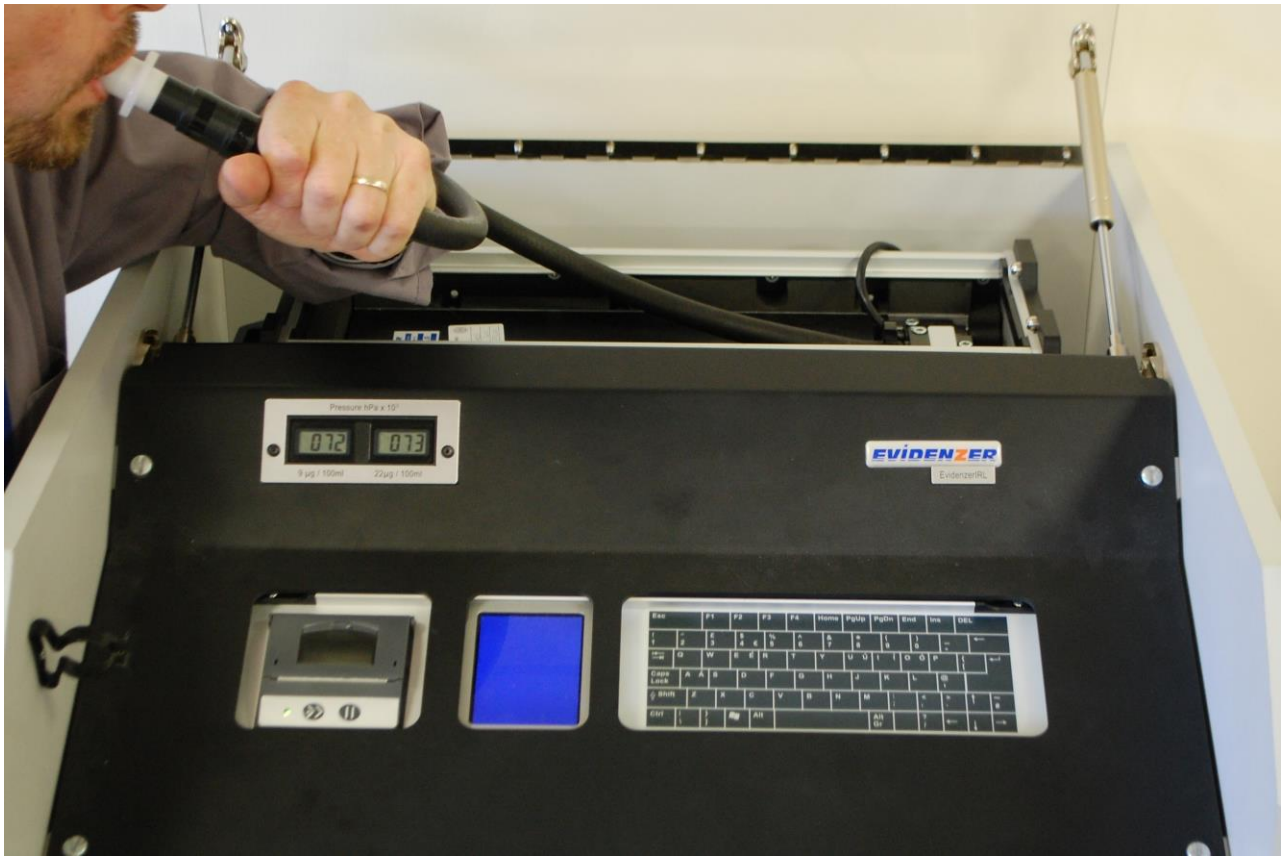


Invitation to Tender

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 Draeger 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 new tender awarded in early 2018.

Evidential Breath Alcohol Testing

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



Equipment

In 2017, a gas regulator replacement programme was undertaken for all 86 garda stations. This is due for completion by the end of 2018. 22 stations were completed in 2017.

Training and Assessment

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. The following training courses were held during 2017:

- 7 Operator/Supervisor Training Courses

A total of 131 Gardaí were trained as Operators including 65 who were trained as Supervisors.

Testing & Visits to Garda Stations

Bureau Scientists visited and tested each instrument that had been previously installed in Garda stations on at least two occasions, onsite visits totalled 202 in 2017 (also 202 in 2016). These visits covered testing and maintenance and are an essential element in assuring the quality of breath alcohol test results for evidential purposes.

Table 5

2017 Certified Breath Alcohol Levels

µg. of Alcohol per 100ml of Breath	2017		2016	
	No	(%)	No	(%)
Nil	30	1%	29	1%
<= 9	320	5%	249	5%
10 – 22	914	17%	703	14%
23 – 35	941	17%	796	16%
36 – 44	567	10%	534	11%
45 – 66	1,326	24%	1,230	24%
67 & Over	1,414	26%	1,447	29%

Breath Alcohol Analysis

In 2017, a total of 6,271 drivers were brought to Garda Stations with the intention of them providing breath specimens for alcohol analysis. 2.4% 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. Of the remaining 6,119, 10% of drivers either failed or refused to provide breath specimens. A total of 5,512 Section 13 Certificates were issued.

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

50% of breath specimens provided were over twice this limit.

***(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.)*

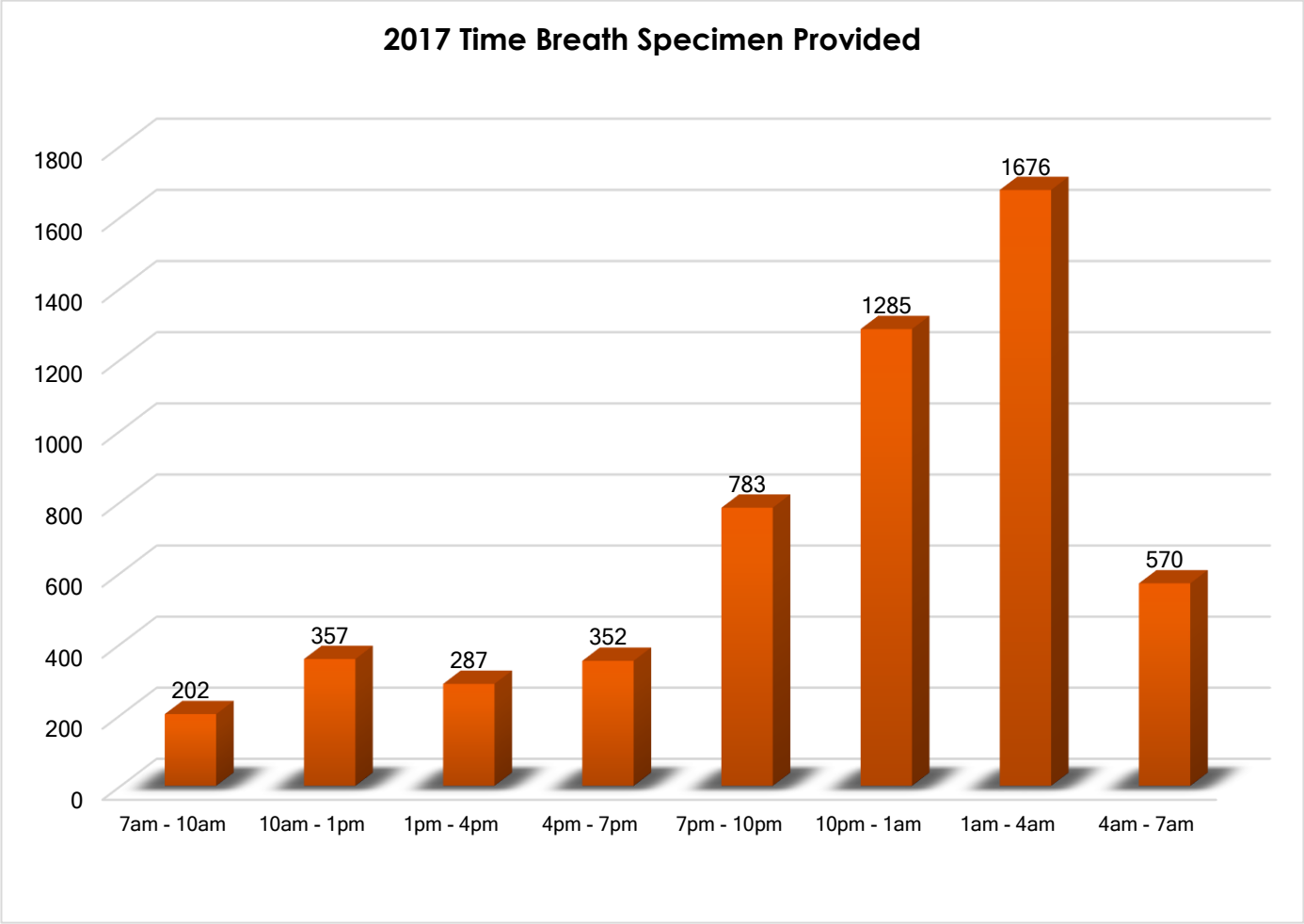
Mean Alcohol Level in Breath

Excluding breath specimens which returned a zero alcohol result the mean alcohol level in breath was 45µg/100ml in 2017.

Analysis of Time

Of the total number of valid breath specimens (5,512) 69% were provided between the hours of 9.00 p.m. and 6.00 a.m., 14% between 4.00 p.m. and 9.00p.m. and the remaining 17% between 6.00 a.m. and 4.00 p.m.

Chart 8



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 6
Gender Profile of Breath Specimens provided

	2017	2016
MALE	86%	88%
FEMALE	14%	12%

The age profile of drivers is shown in chart 10 and the age profile with gender breakdown is shown in chart 9.

Chart 9

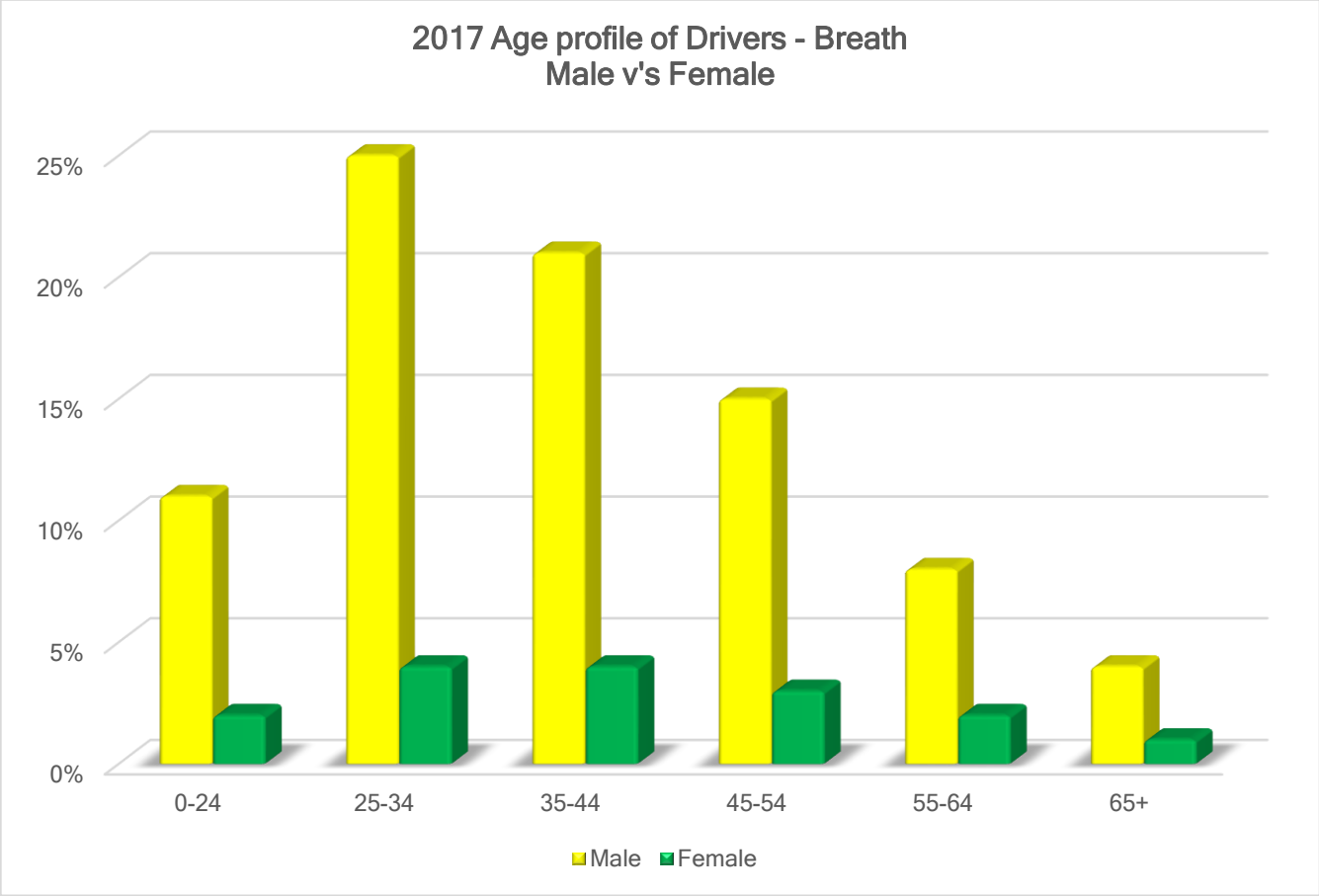
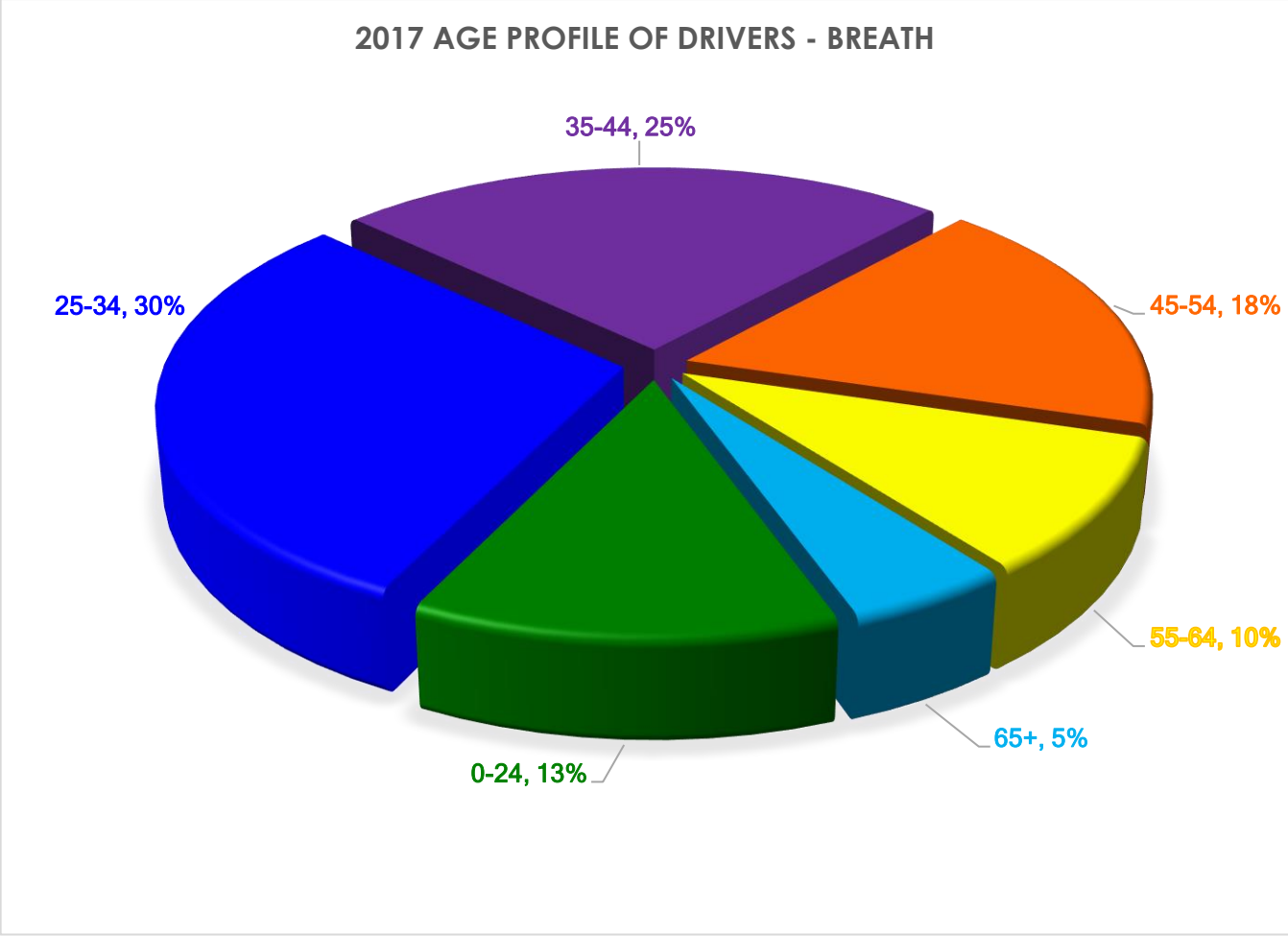


Chart 10



The largest age category was found to be 25-34 years old at 30%. Of these 48% were between 25 and 29 years of age.

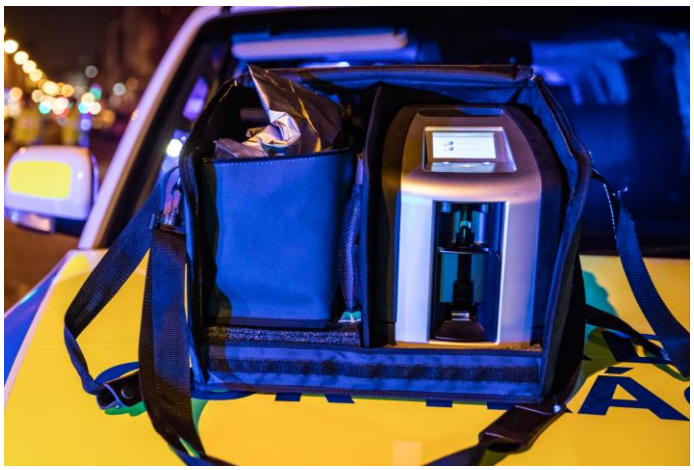
TOXICOLOGY PROGRAMME

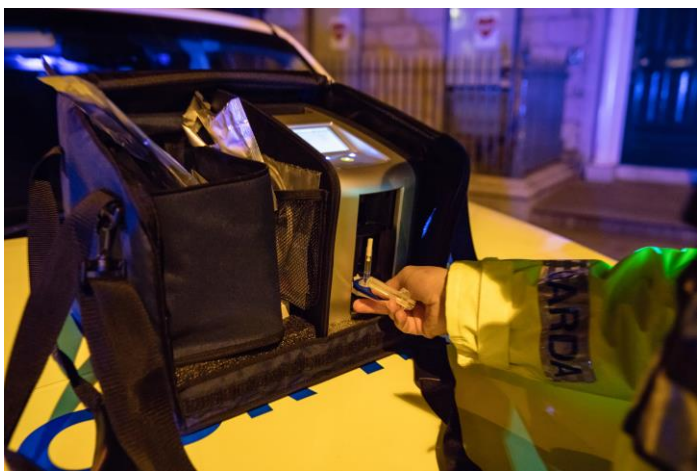
This programme is led by Principal Analyst, Dr Richard Maguire. The main functions of this programme in 2017 are:

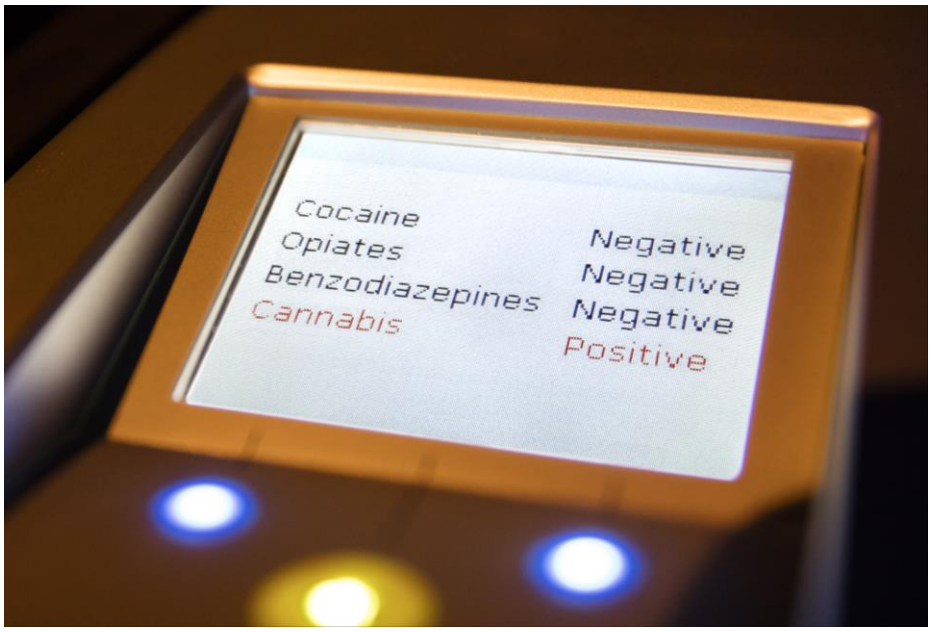
- The analysis of blood and urine specimens for the presence and/or concentration of drugs.
- The issue of Certificates of Analysis for the presence and/or concentration of a drug or drugs.
- Provision/maintenance of Preliminary Drug Testing Device (oral fluid) and consumables.
- Development of new methods 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 Drug Testing

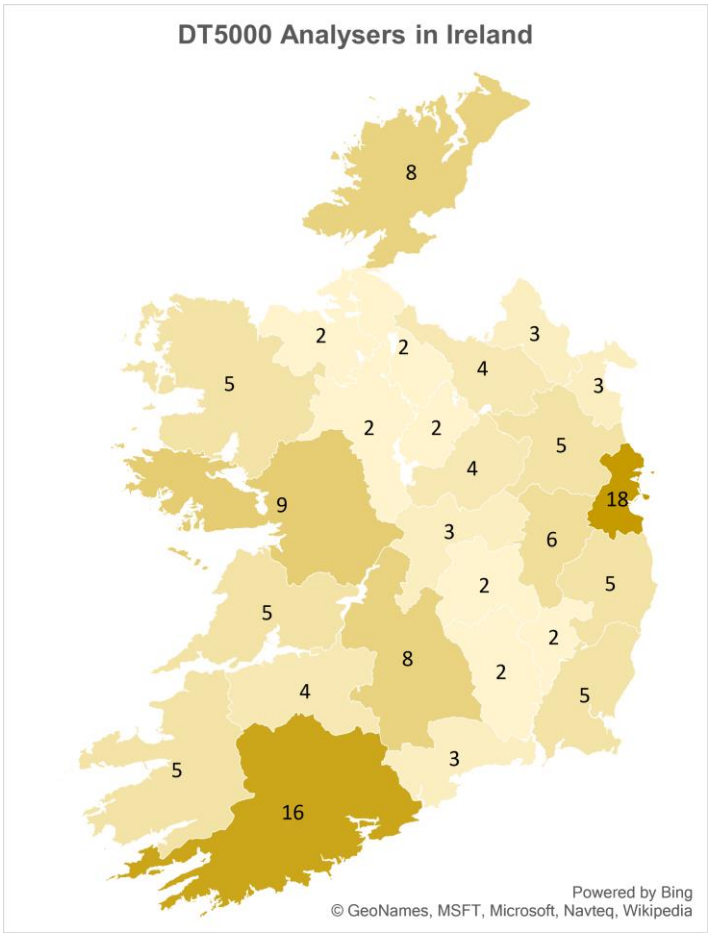
The enactment of the 2016 Road Traffic Act enabled the introduction of oral fluid drug testing at the roadside and in Garda stations. The Bureau managed the approval, supply and testing of the Draeger Drug Test 5000 oral fluid testing system for this purpose. The Bureau provided comprehensive training on the operation of the DT5000 to 72 members of An Garda Síochána to certified trainer level. The system (pictured below) is comprised of an analyser and a cassette or STK. The STK is used to collect the specimen and includes the analytical component of the system. The cassette is inserted into the analyser once an oral fluid specimen is taken. It takes ca. 1 minute to collect a specimen and a further 8 minutes for the test to develop and for the analyser to report the result to the operator as either positive or negative.







The analyser is able to detect Cannabis, Cocaine, Opiate and Benzodiazepine use. 50 analysers were made available for mobile use and 47 were deployed and an additional 86 were provided for use in Garda stations. The map below indicates the locations where mobile and station base analysers were deployed.



The Bureau purchased 21,000 consumable STKs for use in 2017 and 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 were satisfied with the performance of the DT5000 in 2017 and will continue to monitor its performance on an ongoing basis.

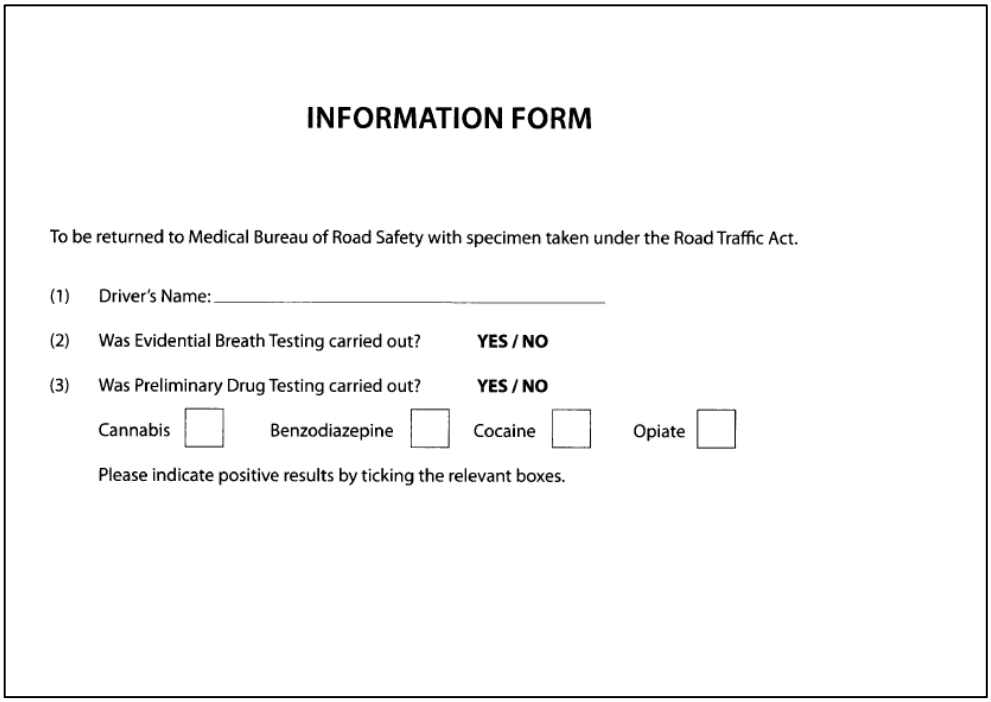
The number of tests on the analysers available to An Garda Síochána were collated following the first 6 months of use, with a 12-month review planned for May 2018; however, it is important to note, this is not a measure of enforcement activity and the current system does not distinguish between tests conducted for training, demonstration, quality control or enforcement purposes. The activity from the introduction of the system on 13th April 2017 to October 2017 is tabulated below.

Table 7

Analyser Use Type	Number of tests*
Mobile	729
Station Based	295
Total	1,024

*Review from April 13th, 2017 to October 2017 only

When oral fluid is collected from a driver after testing, and is positive for a drug or drugs, the Bureau request 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.



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.

In all, 191 specimens were identified as positive through receipt of this information form in 2017 and the correlation between the performance of the DT5000 and the lab testing was satisfactory. Of the 191 which could be compared with lab results prevalence of drugs detected by the DT5000 was 123 (64%) were positive for cannabis, 66 (35%) were positive for cocaine, 16 (8%) were positive for opiates and 10 (5%) 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 Bureau continued to test all blood and urine specimens under the blood equivalent alcohol limit of 80mg/100mls and urine equivalent alcohol limit of 107mg/100mls. In addition, specimens which have alcohol above the limit are tested if requested by a Superintendent or Inspector.

The number specimens analysed for the presence of a drug or drugs was 1,592 in 2017. While the vast majority were below the limits stated above, 22 specimens were above the limits and were tested following a request from An Garda Siochana. Another 5 specimens were tested following evidential breath testing, which is an increase on specimens of this type in 2016 where there was only 1.

Initial screening testing was conducted for Cannabis, Cocaine, Opiates, Methadone, Benzodiazepines, Amphetamines and Methamphetamines. Specimens which had been positive on roadside testing/station-based testing were also put through initial lab testing as previously mentioned.

Of the 1,592 specimens tested 997 (63%) were found to be positive for at least one drug class on preliminary drug testing, while 595 (37%) were negative for the drugs targeted by the MBRS. The chart below (Chart 11) shows the prevalence of the drugs detected in all specimens of blood and urine. As in previous years cannabis was the most prevalent followed by the benzodiazepines. The bar chart below (Chart 12) shows the prevalence and extent of polydrug use in the tested specimens for blood and urine.

Chart 11

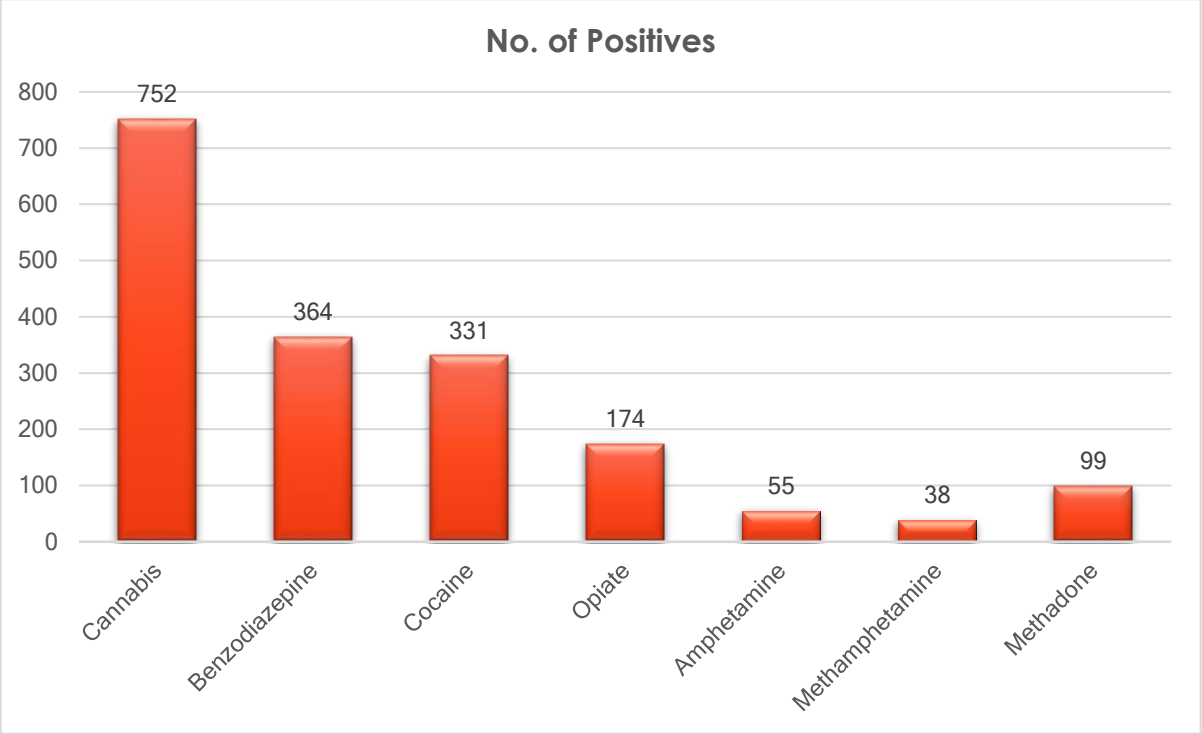
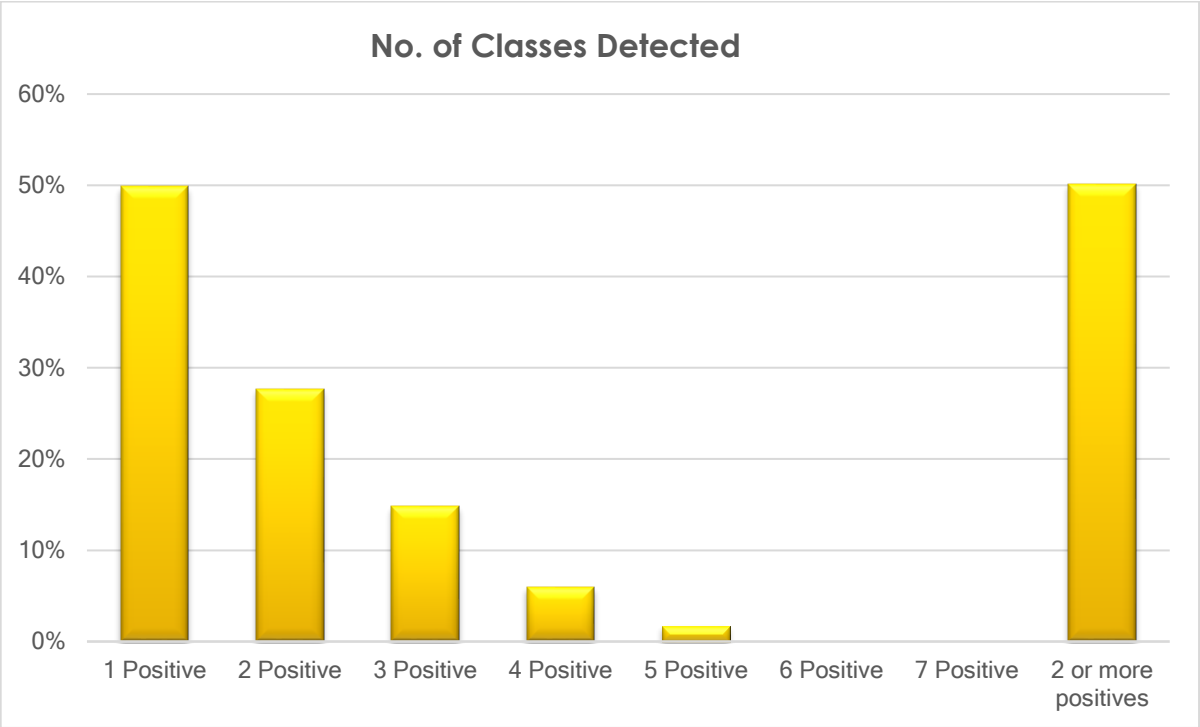


Chart 12



Once a positive specimen was detected at the initial screening test using ELISA immunoassay, confirmation was carried out using Gas Chromatography with tandem Mass Spectrometry for Cannabis and Liquid Chromatography with tandem Mass Spectrometry for all other drugs. In recent years, for practical and resource related reasons, only one drug would be confirmed even in cases where there were multiple positives on initial testing. All specimens received on or after 13th April 2017 were forwarded for confirmation of all drugs detected on screening, as far as specimen volume permitted. Previously blood and urine specimens requiring confirmation for drugs other than Cannabis and Benzodiazepines were sent to LGC in the UK but this practice ceased in April 2017 as the Bureau developed a new blood confirmatory methodology for all drugs so that only a small number for urine specimens needed to be sent to LGC for confirmation. Confirmation of all drugs detected on screening is a very important development that will give all stakeholders the most complete view of drug use in drivers. This increased the workload in the area of confirmatory analysis significantly. The extent of this increase is highlighted in the tables below. The first table (table 8) shows the difference in the number of confirmation between 2016 and 2017 and this shows that the increase in confirmations was 75%. Table 9 shows the confirmation rate which is calculated from the number of specimens which had drugs confirmed following positive screening in the laboratory test.

Table 8

DRUG CLASS	2017	2016	% Change
Cannabis	723	546	32%
Benzodiazepines	284	194	46%
Cocaine	274	57	380%*
Opiate/Methadone	201	46/7	279%*
Amphetamine/Methamphetamine	62	16/13	113%*
Total	1,544	879	75%

*Prior to the 12th of April only one drug class was confirmed hence the higher percentage change for these drugs in 2017.

Table 9

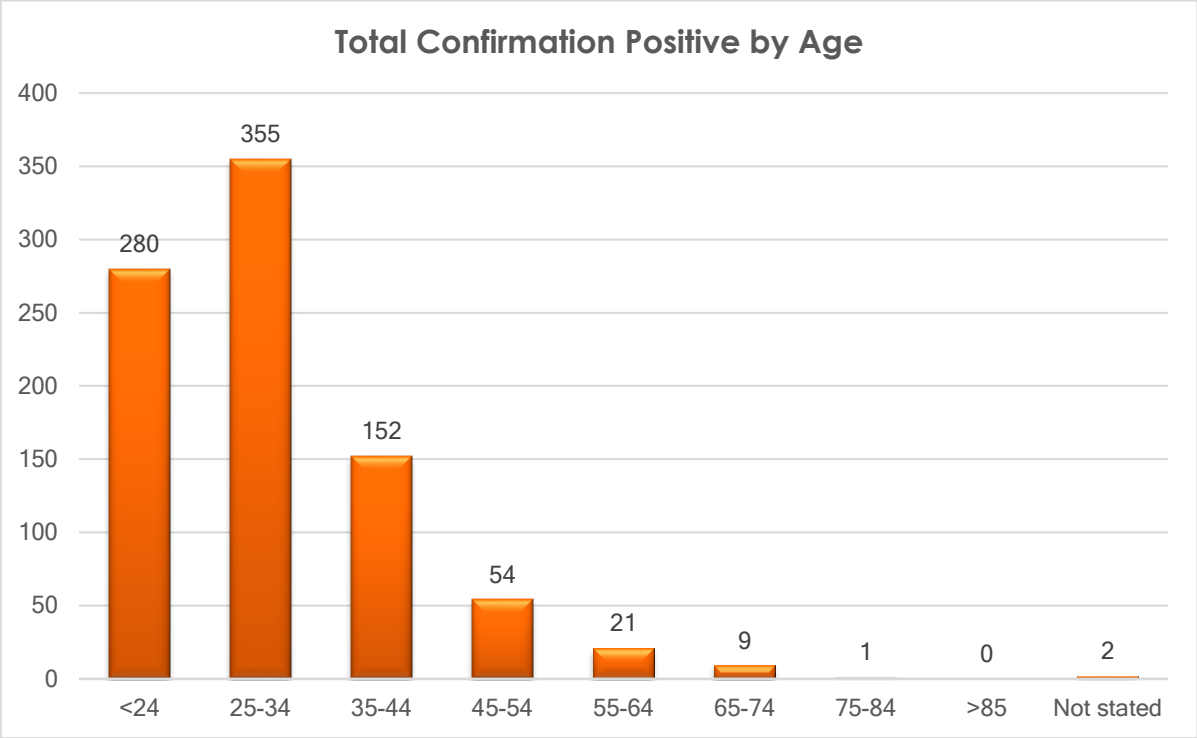
DRUG CLASS	Confirmation rate
Cannabis	93%
Benzodiazepines	95%
Cocaine	94%
Opiate/Methadone	98%
Amphetamine/Methamphetamine	98%

A review of the age and gender profiles was carried out and is detailed below showing males as most prevalent (Table 10) and the 16-34 year age group represent the greatest drug use in arrested drivers (chart 13).

Table 10

TOTAL CONFIRMAITON POSITIVE GENDER DATA	% Male	% Female
Cannabis	93	7
Benzodiazepines	72	28
Cocaine	94	6
Opiate/Methadone	72	28
Amphetamine/Methamphetamine	97	3

Chart 13



Another measure introduced with the 2016 Road traffic Act was per se level for Cannabis, Cocaine and Heroin in whole blood (see table below). This necessitated the development and introduction of new analytical method for Cocaine and Heroin and amendment to the existing Cannabis method.

Table 11

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

The number of drivers with blood specimens, greater than or equal to the legal limits for drugs, was 337 and in these cases the newly introduced green concentration certificate for drug concentration were issued to drivers in 2017.

The Bureau continued to develop and improve existing methods and develop new analytical methods in 2017. To complement the significant developments in this area the Bureau tendered for and purchased two Agilent LC-MS-MS instruments in 2017. It is notable that this tender was conducted through the Education Procurement Service in the University of Limerick and other agencies benefitted from the tender process and would have the opportunity to purchase instruments from this exercise.

LIMS (Laboratory Information Management System) developments also continued in Toxicology in 2017 to enable electronic recording of results for new methods and newly enacted legal measures.

The Toxicology section also had an article accepted for peer reviewed publication in the Journal of Chromatography B entitled 'An atmospheric pressure chemical ionization liquid chromatographic-tandem mass spectrometry method for the analysis of benzodiazepines in urine'. This is published in volume 1064 on the 1st of October 2017, pages 22-27.

QUALITY ASSURANCE

The Medical Bureau of Road Safety maintained its ISO 17025 Accreditation in 2017 for the following areas:

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

An application for extension to scope to include the performance testing of the Preliminary Drug Testing device and STK testing was submitted to INAB (Irish National Accreditation Board) in October 2016 for assessment in early 2017.

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 12 details the schemes for 2017.

Table 12

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
	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 2017 was €5,074,000.

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**
Professor Cecily Kelleher	Chairman	1 of 1
Professor Denis Cusack	Board Member and Director	4 of 4
Ms. Nicola Hayes	Board Member	3 of 3
Mr. Paul Burns	Board Member	4 of 4
Dr. Declan Bedford	Board Member / Chairman	4 of 4
Professor Patricia Fitzpatrick	Board Member	1 of 1

Bureau Membership and Meetings

During 2017 the Medical Bureau of Road Safety held four meetings. These meetings were held on 30th March, 29th June, 28th September and 7th December 2017.

Schedule of Fees and Aggregate Expenses paid to Directors during 2017

During 2017 the following fees were paid:

BOARD FEES PAID		
Board Member	**Type of Fee**	**Paid**
Mr. Paul Burns	Fee for Non-Executive members of Boards of State Bodies	€5,985
Dr. Declan Bedford	Fee for Non-Executive members of Boards of State Bodies Fee for Chairperson of Board of State Body	€1,496 €6,542

Compliance

The Board is pleased to report that during the year ended 31st December 2017 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.

Statutory Requirements

The Medical Bureau of Road Safety during 2017 confirms that it complied with its statutory requirements.

Ethics in Public Office

The members of the Board who held office at the 31st December 2017 had no interests for the purposes of the Ethics in Public Office Acts 1995 and 2001.

Audit and Risk Committee

The Audit and Rick 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 reports to the Board 4 times per year.

External Financial Audit

The Comptroller and Auditor General performed the annual audit of the 2016 Financial Statements during 2017. 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 2017.

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 2017.

Strategic Planning

The Bureau compiled its Annual Strategic Plan for 2018 and its Five Year Strategic Plan 2018 – 2022 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 area in the criminal law sphere in Ireland. The Bureau is involved in advising on and through its scientists giving expert witness in cases before the Courts.

In 2017 there were 8 court attendances by Bureau staff.

STATEMENT ON INTERNAL CONTROL

Scope of Responsibility

On behalf of 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 Medical Bureau of Road Safety for the year ended 31 December 2017 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 2017.

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 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 2017 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. 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 2017.

Internal Control Issues

No weaknesses in internal control were identified in relation to 2017 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 2017.

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

Dr. Declan Bedford

Chairman

Freedom of Information

During 2017 the Bureau received ten requests which were dealt with as follows:

- Refused 3
- Part Granted 2
- Granted 3
- Transferred to UCD 1
- Administrative Pathway 1

Total **10**

Category of Requestor:

- Journalist 5
- Oireachtas 2
- Other 3

Total **10**

GDPR (General Data Protection Regulation)

During 2017 the Bureau carried out analysis on policies and procedures to prepare for the introduction of the new EU regulation on 25th May 2018.

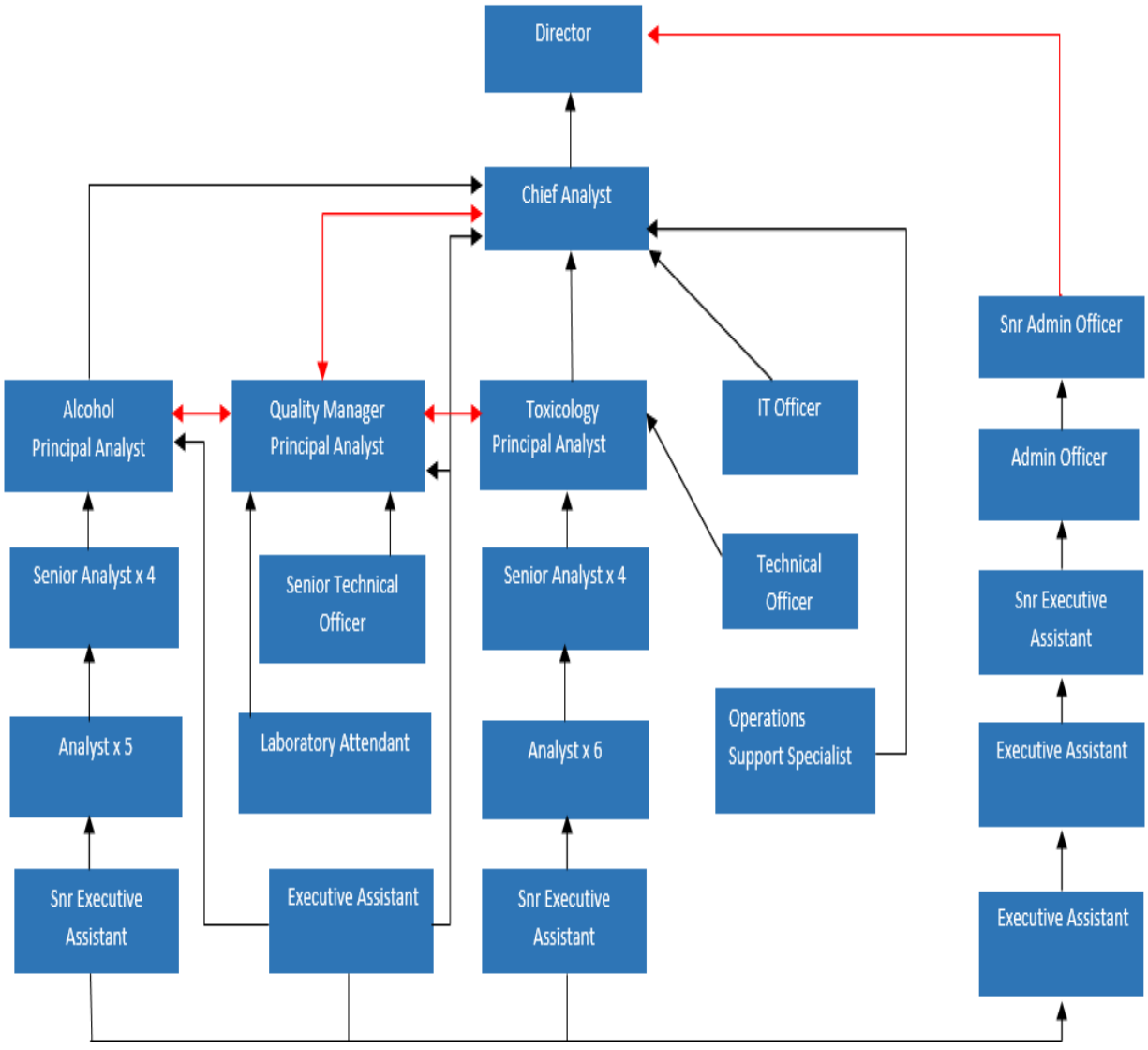
Staffing

The Bureau continued during 2017 to operate within its Employment Control Framework complement.

During the year there were changes in Bureau staffing following resignations within the scientific area.

MEDICAL BUREAU OF ROAD SAFETY

ORGANISATION CHART



COURSES AND CONFERENCES ATTENDED BY STAFF IN 2017

1	The Operation Support Specialist, Senior Technical Officer, Technical Officer, two Executive Assistants and three Analysts attended Courtroom Skills training on 27th January 2017 in the MBRS.
2	The Operation Support Specialist attended a two-hour eProcurement training course on 8th February 2017 in UCD.
3	A Senior Analyst attended a one-day conference: UCD Women in Leadership, on 9th February 2017 in UCD.
4	The IT Officer attended a five day Certified Ethical Hacker course from 27th February to 3rd March 2017 in Sandyford, Dublin.
5	A Senior Analyst and an Analyst attended the UK Annual Clinical Research and Forensic Toxicology Meeting on 2nd March 2017 in London, England.
6	The Chief Analyst attended a meeting of the European Transport Safety Council on Preventing Drug Driving in Europe on 7th March 2017 at the European Parliament in Brussels.
7	An Analyst and a Senior Analyst attended the Draeger Drug and Alcohol conference on the 9th and 10th of March 2016 in Manchester, England.
8	A Senior Analyst and an Analyst attended the LTG UKIAFT joint meeting on the 10th March 2017 in London, England.
9	The Operation Support Specialist, Senior Technical Officer, a Laboratory Assistant, two Executive Assistants and two Analysts attended a three-hour Manual Handling Course on 23rd March 2017 in UCD.
10	A Principal Analyst and a Senior Analyst attended the International Association of Chemical Testing (IACT) conference from 23rd – 28th April 2017 in Colorado Springs, USA.
11	An Analyst attended TrainMiC Metrology in Chemistry workshop on 25th April 2017 at the State Laboratory, Co. Kildare.
12	The Director attended the two-day Faculty of Forensic and Legal Medicine Conference on 5th and 6th May 2017 in London, England.
13	An Analyst attended a UKIAFT meeting on 5th May 2017 in Edinburgh, Scotland.
14	Three Analysts attended the annual conference of the Irish Mass Spectrometry Society on 10th May 2017 in Dublin.
15	A Principal Analyst attended Drugs in Road Traffic – Nordic Meeting Point, on 11th May 2017 in Stockholm, Sweden.
16	An Analyst attended the six-day Borkenstein Alcohol Course from 14th May 2017 at Indiana University, USA.
17	A Senior Analyst attended a two-day SQL Introduction course on 7th and 8th June 2017 in Sandyford, Dublin.

18	A Principal Analyst and a Senior Analyst attended LIMS User Group meeting on 5th July 2017 at FSI, Dublin.
19	Two Senior Analysts and an Analyst attended the UKIAFT conference in Oxford, England on the 31st August and 1st September 2017.
20	The Director attended a meeting of the Coroners Society of Ireland on 1st September 2017.
21	The Operation Support Specialist commenced study for a Certificate in Safety and Health in UCD.
22	An Analyst attended a five-day Borkenstein Drug course from 9th – 13th October 2017 in Austin, Texas, USA.
23	The Director attended a meeting of the Medical Advisory Panel on Alcohol, Drugs and Driving, UK Department of Transport, on 10th October 2017 at the Department of Transport, London, UK.
24	The Quality Manager attended a three-day course on Lab Management – Role of the Quality Manager and Technical Management from 11th – 13th October 2017 in London, England.
25	An Analyst attended a 1-day Eurachem Ireland Workshop on Hyphenated Analytical Techniques on 19th October 2017 at Backweston Laboratory Campus, Co. Kildare.
26	A Principal Analyst attended a 1-day International Symposium on Drug Impaired Driving in Lisbon, Portugal on 23rd October 2017.
27	The Chief Analyst and a Principal Analyst attended a 2-day People Management Programme in UCD on 23rd November and 8th December 2017.
28	Throughout 2017, the Bureau organized two in-house training days to address specific needs of the staff. External experts were included in these training days and members from An Garda Síochána and the Director of Public Prosecutions Office delivered interesting and valuable seminars. MBRS staff also availed of short courses offered by UCD Learning and Development. Many of these courses were in the area of IT.

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 discussions to implement a major lighting upgrade of the facility commenced in 2017.

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.