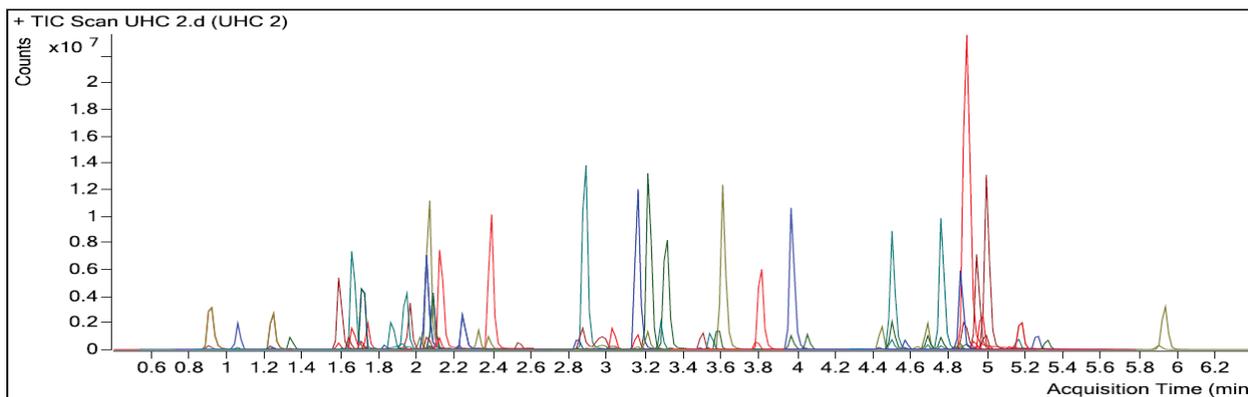


# Indiana State Department of Toxicology

## 2016 Annual Report



A Liquid Chromatography-Time of Flight (LC-TOF) drug screening instrument and a chromatogram produced by the LC-TOF are pictured on the cover. Beginning in January 2017, the Indiana State Department of Toxicology (ISDT) will use the LC-TOF to screen for the same drugs as the older ELISA method used in 2016, plus sixteen additional drugs. As ISDT develops new methods for drug confirmation testing, the LC-TOF will allow for easier modification of screening panels. The LC-TOF is also more specific than the ELISA, which will assist in determining which cases proceed to the confirmation phase of testing.

## **Overview**

The Indiana State Department of Toxicology (ISDT) provides science-based support to the state's criminal justice system, including impaired and dangerous driving enforcement programs. ISDT conducts analyses for alcohol and drugs in blood samples submitted by law enforcement agencies and coroners; trains and certifies breath test operators; inspects, maintains, and certifies breath testing instruments; and certifies ignition interlock device models. Additionally, the Department furnishes expert testimony regarding both the laboratory and the breath testing program.

ISDT's objectives are to provide accurate and timely toxicology services in an ethical and forensically sound manner and an accurate and reliable breath testing program for the State of Indiana. We hold that quality results come through professional, ethical, and unbiased analyses of all evidentiary samples entrusted to the laboratory for testing.

The Department's strategy is to establish a professional work environment that encourages excellence; hire highly-qualified staff; provide appropriate resources to enable employees to accomplish ISDT's goals and objectives; develop a training program that ensures each employee is always learning; clearly communicate expectations, goals, and objectives to each employee; and to provide the necessary technical and administrative leadership.

## **Budget**

ISDT's budget is comprised of general fund appropriations, limited fees to support the breath test program, and, when awarded, federal grants. In 2016 the Indiana Criminal Justice Institute awarded the Department an Edward Byrne Memorial Justice Assistance Grant in the amount of \$91,960 to create an internet-accessible database of breath test program certification records. The database will allow public access, using an online search, to the certification status of breath test operators and breath test instruments, increasing both the transparency and accessibility of this information. ISDT received a second grant from the Indiana Criminal Justice Institute of \$400,000 from National Highway Traffic Safety Administration funds for reduction of its laboratory testing backlog. These funds will be used during the first half of 2017 to decrease turnaround times for traffic-related drug request cases.

## **Staffing**

ISDT ended the year with 20 of its 23 positions filled as detailed in Table 1. The Department contracts with the Indiana Office of Technology, the State Budget Agency, and the State Personnel Department for computer support, accounting services, and human resource matters, respectively. The organization chart and contact information for ISDT are provided in the last two pages of this report.

**Table 1: Department of Toxicology Staffing as of 12/31/16**

<b>Position</b>	<b>Staff</b>	<b>Position</b>	<b>Staff</b>
Director	1	Analytical Lab Supervisor	1
Assistant Director	1 (1 vacant)	Forensic Scientist	9 (1 vacant)
Toxicologist/QA Manager	1	Evidence Control	2 (1 vacant)
General Counsel	1	Breath Test Supervisor	1
Program Coordinator	1	Breath Test Inspector	4 (1 long term disability)
Administrative Assistant	1		

## **Training**

The field of forensics, including toxicology, is constantly evolving and ever-changing. In order for its employees to remain current on developments in the toxicology field, ISDT must be committed to career-long learning for its employees.

Department staff attended the Borkestein Course on Alcohol & Highway Safety, Intox EC/IR II Maintenance School, ASCLD/LAB Assessor Training, Society of Forensic Toxicologists workshop, and Legal and Ethics training, as well as three conferences: International Association for Chemical Testing, American Academy of Forensic Sciences, and Midwest Crime Directors Meeting in 2016. Employees who attend training or conferences, upon their return, share the knowledge gained with other staff.

## **Customers**

In 2016, ISDT analyzed blood samples submitted by 376 agencies, including coroners, town marshals, municipal and county departments, and state law enforcement agencies. This compares to submissions by 330 agencies in 2015. Approximately 8% of the agencies submitting evidence in 2016 were using the Department's laboratory services for the first time. Most agencies submit samples for analysis in evidence collection kits provided by the Department. ISDT encourages agencies to return expired ISDT-furnished evidence collection kits for refurbishment and redistribution, which results in cost savings for the Department of approximately \$3.45 per kit.

ISDT's web site ([www.IN.gov/isdt](http://www.IN.gov/isdt)) includes information on ordering evidence collection kits, sample submission protocols, testing parameters, and available training, as well as a listing of certified ignition interlock device models.

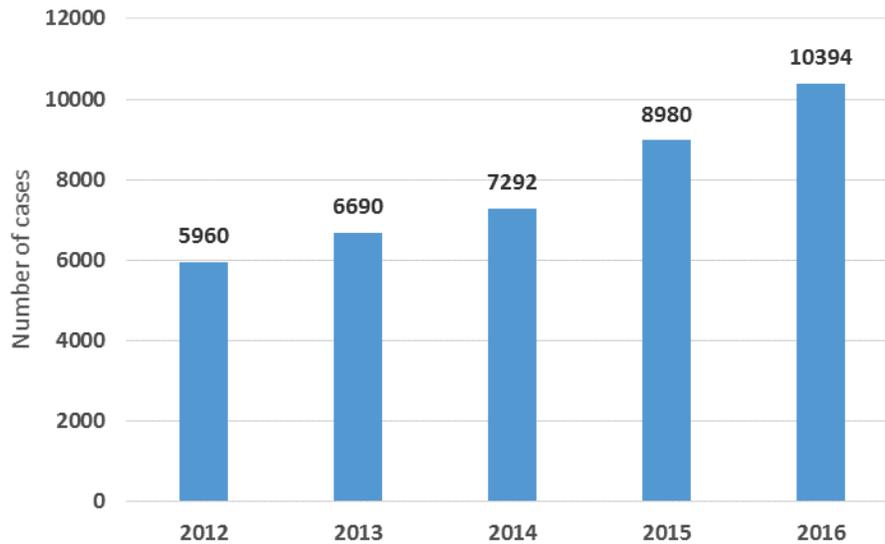
## **Blood Analysis Program**

ISDT has continued to see a steady increase in case submissions for alcohol and drug analyses, as shown in Chart 1. ISDT received 10,394 submissions in 2016 for which reports were generated. This is an increase of 74% over submissions in 2012, which was Department's first year as a state agency, and a 16% increase over 2015 submissions.

Cases may be submitted to ISDT for alcohol analysis, drug analysis, or both. Cases submitted in 2016 included 7,911 requests for alcohol analysis, which is a 12% increase over the 7,058 requests submitted in 2015, and 7,962 requests for drug analysis, which is a 16% increase over the 6,849 requests submitted

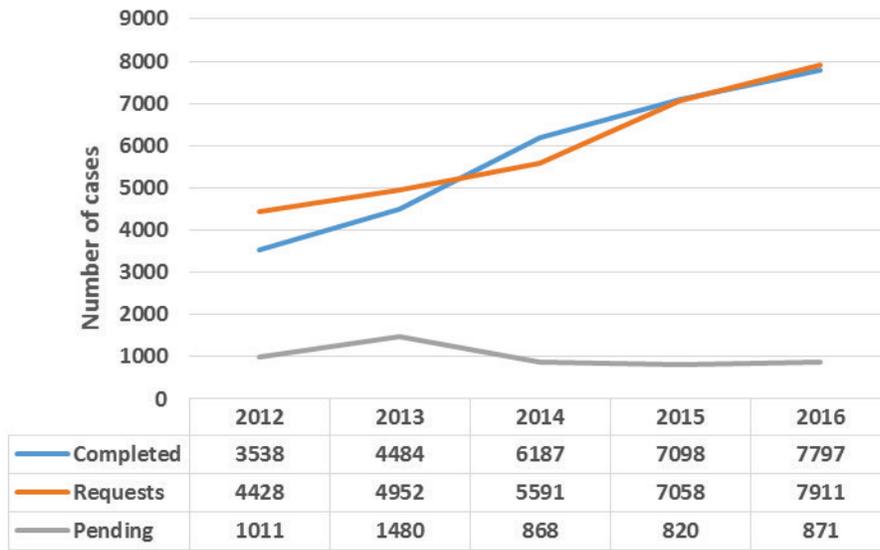
in 2015. Offenses reported with submission information indicated that 62% of the cases completed by ISDT involved operating a vehicle while intoxicated, 18.7% involved personal injury crashes including serious bodily injury, 15.2% involved property damage crashes, 0.4% involved fatal crashes, with other types of submissions accounting for the remaining 3.7%. Of the 10,394 cases analyzed, 96.2% of the cases were traffic-related.

**Chart 1: Department of Toxicology Submissions**



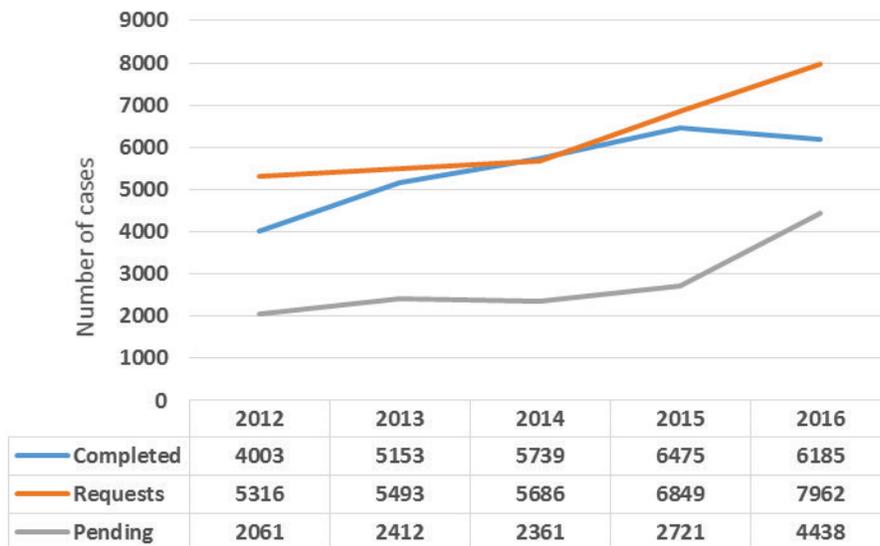
ISDT completed 7,797 requests for alcohol analysis in 2016, as shown in Chart 2, which represents a 120% increase in completed requests for alcohol analysis when compared to 2012. The number of requests pending at the end of 2016 was 140 cases less than the number of requests pending at the end of 2012, even though requests increased significantly in 2016. The number of pending alcohol requests did rise slightly during 2016 as compared to 2015 pending requests, with 871 cases pending analysis at the end of 2016. However, as of March 2017 when this report was written there were less than 100 alcohol analysis requests pending. The average turnaround time in 2016 for an alcohol request was 54 days. The average turnaround time for an alcohol analysis request increased in 2016 as compared to 2015 due to allocation of staff resources to validation of new drug screening and confirmation methods.

**Chart 2: Alcohol Analyses Completed, Requests, and Pending**



ISDT completed 6,185 requests for drug analysis in 2016, as shown in Chart 3, which was slightly less than the 6,475 requests completed in 2015. With the 16% increase in drug requests from 2015 to 2016 and the slight decrease in completions in 2016, the number of pending drug requests increased to 4,438 requests pending analysis by the end of 2016. In 2015 the average turnaround time for a drug request was 123 days, while the average turnaround time in 2016 was 153 days.

**Chart 3: Drug Analyses Completed, Requests, and Pending**

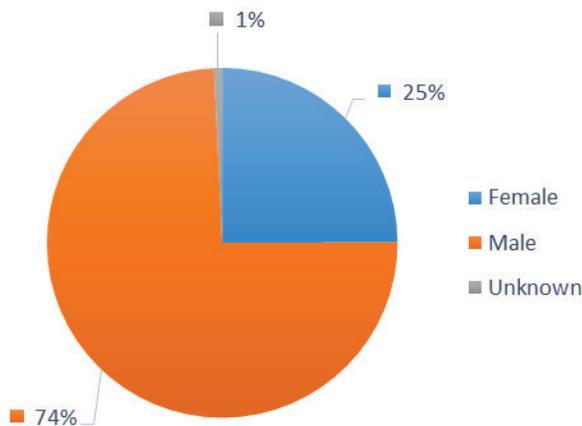


**Table 2: Pending Analysis Summary**

	2012	2013	2014	2015	2016
Alcohol Analysis	1011	1480	868	820	871
Drug Analysis	2061	2412	2361	2721	4438
Total	3072	3892	3229	3541	5309
Over 15 Days	2012	2013	2014	2015	2016
Alcohol Analysis	856	1390	680	555	681
Drug Analysis	1895	2318	2165	2477	4252
Total	2751	3708	2845	3032	4933
Over 30 Days	2012	2013	2014	2015	2016
Alcohol Analysis	691	1063	461	261	396
Drug Analysis	1688	1989	1956	2181	3944
Total	2379	3052	2417	2442	4340

As shown in Table 2, there were 5,309 total pending requests at the close of 2016, with the majority of the requests being for drug analysis. The number of alcohol analysis requests pending longer than 30 days increased as compared to 2015, but there were fewer pending requests older than 30 days at year-end in 2016 than there were in 2014. The number of drug requests pending longer than 30 days also increased as compared to 2015.

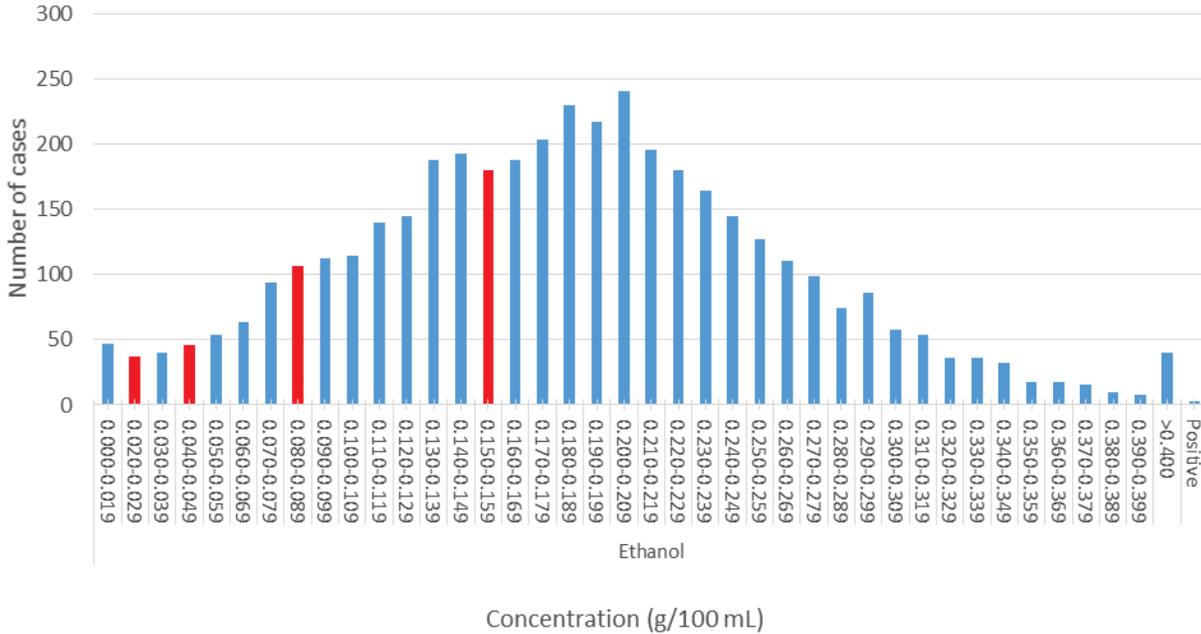
**Chart 4: Blood Alcohol Analysis by Gender**



As indicated by submitting agencies on the Toxicology Analysis Request form (TAR) the majority (74%) of samples submitted for alcohol analysis were from male subjects, with samples from female subjects comprising 25%. This ratio is consistent with the ratio of male to female breath test subjects.

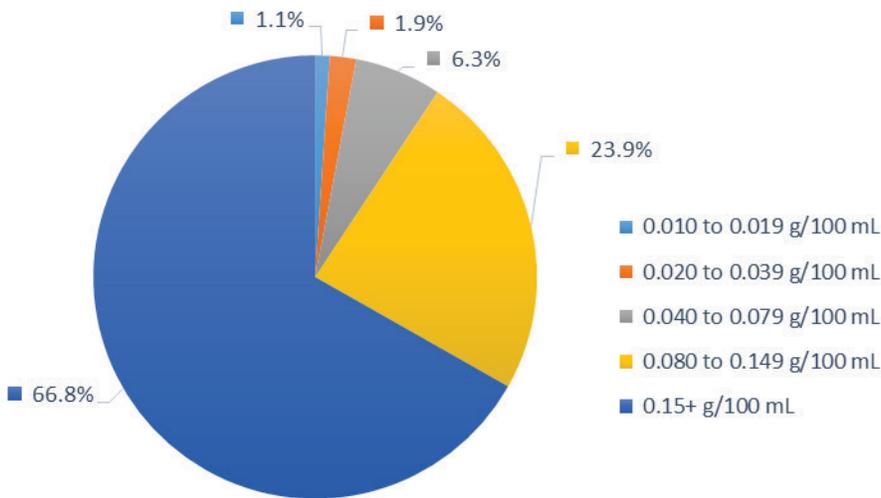
Chart 5 shows the distribution of blood alcohol analysis results by blood alcohol concentration range. The red bars indicate the legal limits for juveniles (0.02 g/100 mL of blood), commercial driver license holders (0.04 g/100 mL of blood), and operating a vehicle while intoxicated (0.08 and 0.15 g/100 mL of blood).

**Chart 5: Blood Alcohol Case Distribution by Results**



Of the total number of blood alcohol results reported, 90.7% of the values were 0.08 g/100 mL of blood or greater which is consistent with the 89.2% of breath test subjects with a concentration of 0.08 g/210 L of breath or greater. Significant was the percentage of subjects with alcohol concentrations greater than 0.15 for blood test subjects, 66.8% (Chart 6) compared to 43.7% of breath test subjects (Chart 8).

**Chart 6: Blood Alcohol Subject Test Results by Selected Ranges**



## Breath Testing Program

ISDT certified six ignition interlock device models in 2016. The certifications are valid for three years. In December, vendors of the certified device models reported that 1,238 certified ignition interlock devices were installed in vehicles in Indiana.

There are 205 Intox EC/IR II evidentiary breath test instruments strategically located throughout the state as shown in Figure 1. ISDT is required by Indiana Administrative Code (Title 260) to inspect and certify each of the breath test instruments at least once every 180 days. All of the required breath test instrument inspections and certifications remained current during 2016. The Department also routinely completed instrument service requests by the next business day.

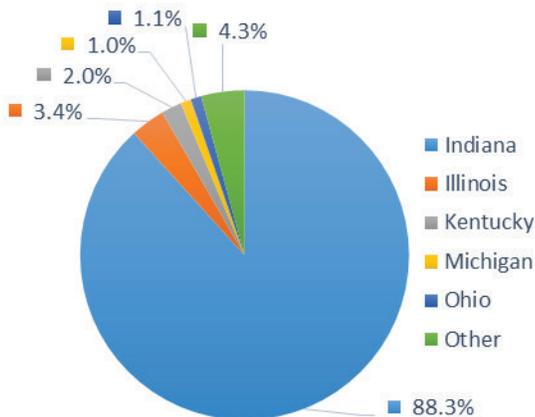
ISDT conducted 13 breath test operator classes at the Indiana Law Enforcement Academy in 2016. Enrollment for each class was limited to 40 students. A total of 497 law enforcement officers were trained and certified as new breath test operators in 2016. Requests for class enrollment still pending at the end of 2016 were accommodated in the 2017 January and February classes.

Any person certified as a breath test operator must be recertified at least every two years from the month of the last certification or recertification. Due to the transition to the Intox EC/IR II evidentiary breath test instrument in 2015, no breath test operators were due to be recertified in 2015. However, in 2016 ISDT recertified 3,598 breath test operators using the on-line Intox EC/IR II recertification program developed in 2015.



Figure 1: Location of ISDT Certified Breath Test Instruments

Chart 7: State of Issued Driver License

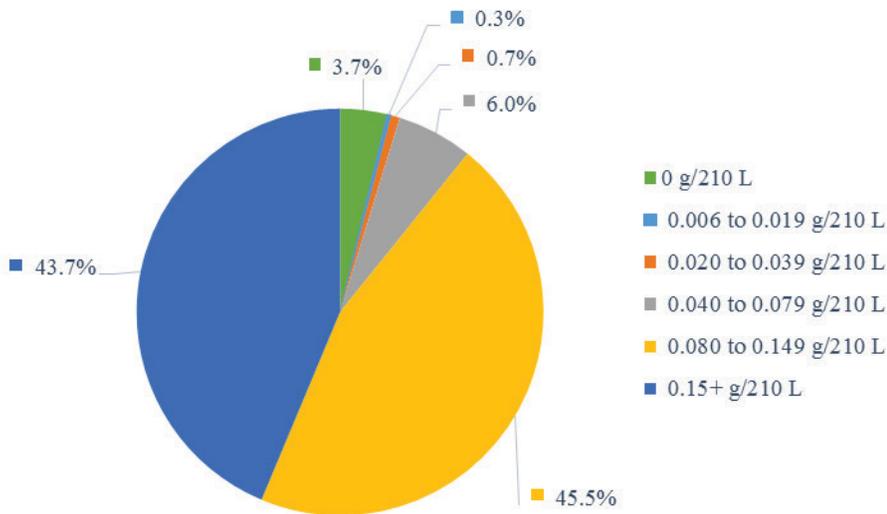


Certified breath test operators administered more than 20,000 subject breath tests in 2016. The distribution of these tests by county is shown in Table 3 above. As in 2015, the ten counties with the greatest number of subject tests administered in 2016 accounted for approximately half of all the breath tests administered for the year. Of the subjects tested in 2016, 88.3% had licenses from Indiana, 3.4% from Illinois, 2% from Kentucky, 1.1% from Ohio, 1% from Michigan, and the remaining 4.2% were from other states, as shown in Chart 7.

**Table 3: County and Number of Subject Tests Conducted**

Lake	2,002	Vigo	214	Dubois	105	Washington	64
Marion	1,831	Hancock	213	Owen	102	Newton	59
Allen	1,195	Warrick	166	Perry	100	Franklin	57
Elkhart	997	Whitley	157	Decatur	99	Gibson	56
Hamilton	930	Dearborn	155	Pike	97	Scott	53
Porter	724	Boone	153	Greene	96	Fayette	50
Clark	711	Clinton	150	Huntington	96	Starke	50
St. Joseph	631	Adams	149	Putnam	94	Ripley	49
Floyd	525	Miami	145	Tipton	91	Jefferson	44
Johnson	490	Shelby	142	Fountain	89	Carroll	42
Vanderburgh	484	Noble	139	Vermillion	83	Wayne	39
Tippecanoe	441	Jackson	133	Wells	83	Crawford	37
Madison	415	Steuben	132	Jennings	81	Switzerland	37
Hendricks	393	Daviess	127	Lawrence	81	Ohio	32
Monroe	393	Cass	126	Posey	79	Marshall	31
Howard	358	Wabash	121	Knox	77	Benton	30
LaPorte	351	LaGrange	117	Sullivan	77	Fulton	30
Delaware	304	Jasper	115	Brown	75	Martin	30
DeKalb	253	Morgan	114	Clay	70	Union	27
Bartholomew	243	Randolph	112	Parke	70	Pulaski	22
Henry	227	White	112	Orange	69	Rush	21
Kosciusko	223	Harrison	110	Spencer	67	Warren	19
Grant	216	Montgomery	107	Jay	64	Blackford	10

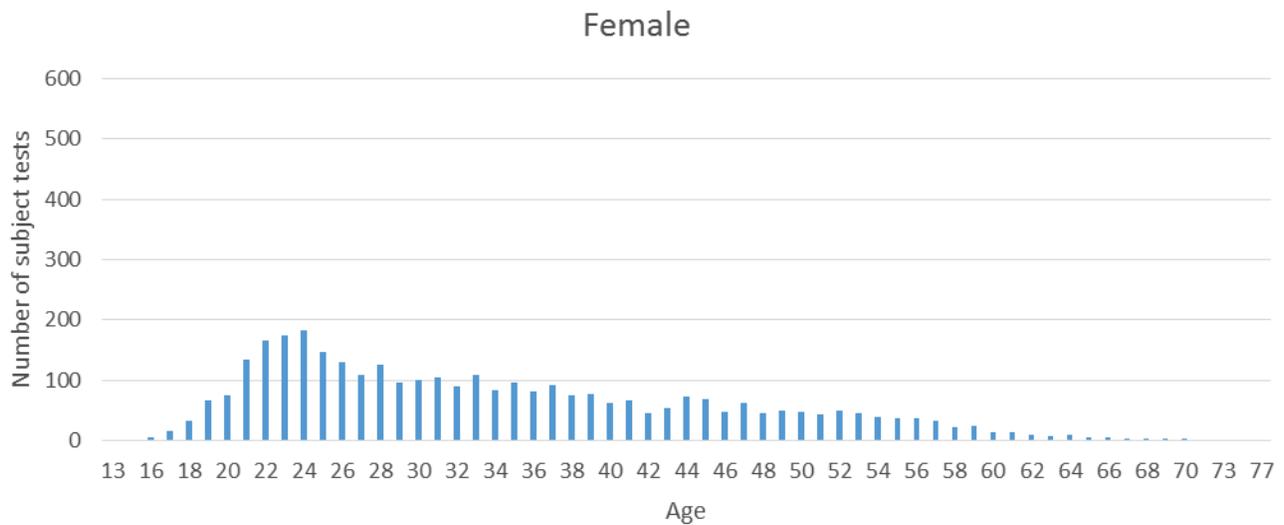
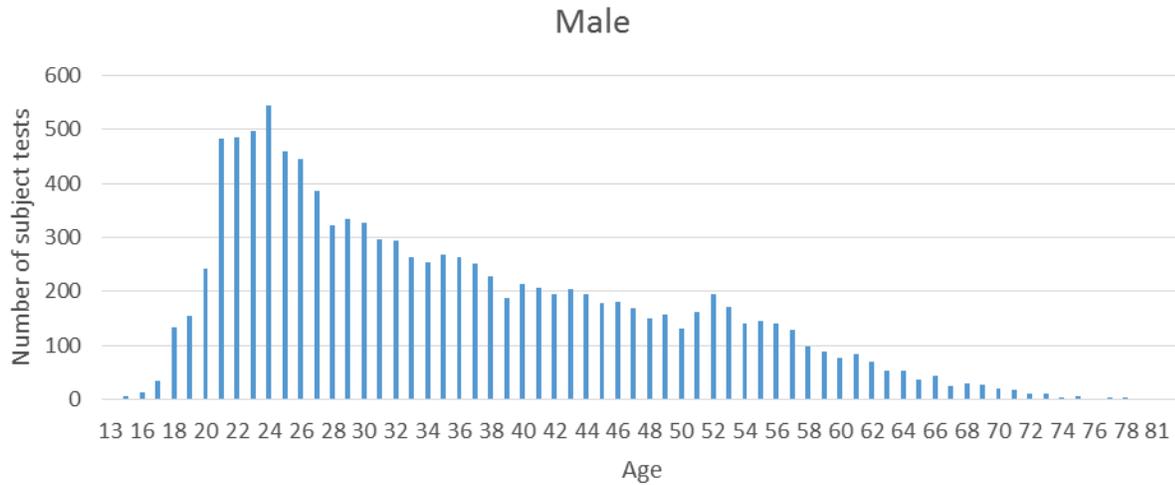
**Chart 8: Breath Alcohol Subject Test Results by Selected Ranges**



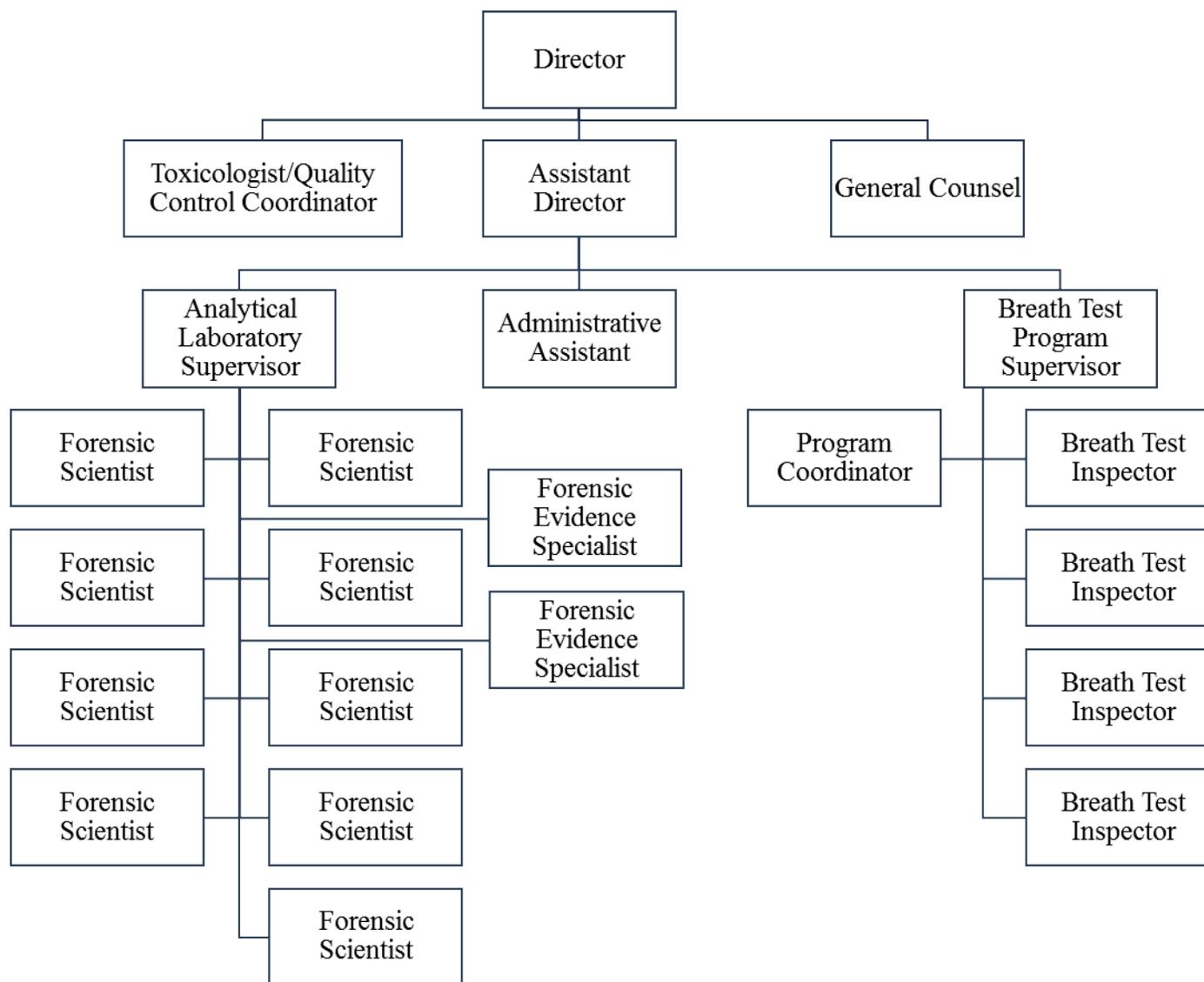
Of the subjects tested, as seen in Chart 8, 10.8% had breath alcohol concentrations between 0.000 and 0.079 g/210 L of breath, 45.5% had breath alcohol concentrations between 0.080 and 0.149 g/210 L, and 43.7 % had breath alcohol concentrations of 0.150 g/210 L or greater. Subjects with breath alcohol concentrations over the 0.04 g/210 L legal limit for commercial driver license holder but under the 0.08 OVWI legal limit constituted 6.0% of the subject tests. The 2016 distribution of subject breath alcohol concentration levels is consistent with 2015 breath test results.

As shown in Chart 9 & 10, approximately 50% of all breath test subjects were between the ages of 21 and 35, with the second largest age group (25%) consisting of subjects between the ages of 36 and 49, with the majority of breath test subjects (76%) male.

**Chart 9 & 10: Number of Breath Alcohol Subjects Tested by Gender**



INDIANA STATE DEPARTMENT OF TOXICOLOGY



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