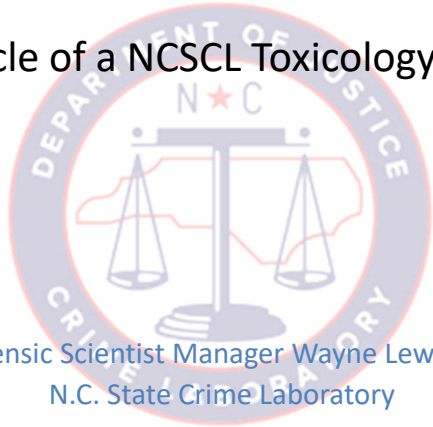


Lifecycle of a NCSCCL Toxicology Sample



Forensic Scientist Manager Wayne Lewallen
N.C. State Crime Laboratory

November 15, 2023

Disclaimer

Forensic science is an ever evolving and improving field and the North Carolina State Crime Lab updates its policies and procedures on a regular basis. Understanding that this talk may be viewed at a later date, it is important to note that the information contained here may no longer be valid and if you have questions or concerns about current policies and procedures please contact the North Carolina State Crime Lab.

Finally, analysts cannot speak about cases that are currently being worked or other case specific questions. If you have a case specific question in relation to a case that the crime lab has worked please contact the Lab legal counsel.



Presenter's Background

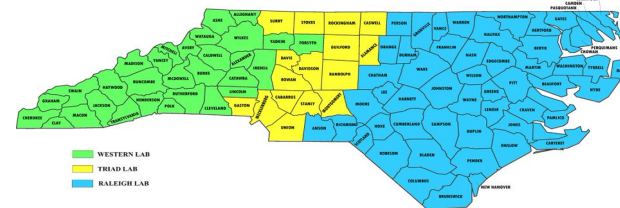
- Wayne Lewallen
 - B.S. Degree in Chemistry
- Worked for the GBI – Division of Forensic Sciences: 2001-2011
- Worked at the N.C. State Crime Lab since 2011
 - Over 20 years working Toxicology Cases
- ABFT Certified in Forensic Alcohol Analysis and Forensic Toxicology
- Chemical Analyst permit from the NC DHHS



North Carolina State Crime Lab (NCSCCL)

- The NC State Crime Laboratory System has labs in:
 - Raleigh (headquarters)
 - Hendersonville (Western Lab)
 - Greensboro (Triad Lab)

DRUG CHEMISTRY, LATENT EVIDENCE, TOXICOLOGY



Toxicology Status

- Full Toxicology
 - Raleigh: 4 – Manager, Supervisor, Scientists (1)
 - Triad: 2 – Supervisor, Scientists (1)
 - Western: 8 – Supervisor, Scientists (7)
- Alcohol Toxicology Only
 - Raleigh: 8
 - Triad: 1
- In Training:
 - Raleigh:
 - Alcohol - 2
 - Drug – 8
 - Triad:
 - Drug – 1
- Vacancies
 - Triad: 3
 - Western: 1



NCSCL – Toxicology

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Toxicologist Training

- Alcohol Toxicology
 - Instrument theory
 - Instrument operation\calibration
 - Pharmacokinetics and Pharmacodynamics
 - Blood Alcohol challenges
 - QA/QC and Measurement Uncertainty
 - Applicable NC General Statutes
 - Competency/Moot Court
- Drug Toxicology
 - Instrument theory
 - Instrument operation\calibration
 - Extractions
 - Pharmacokinetics and Pharmacodynamics
 - QA/QC and Measurement Uncertainty
 - Applicable NC General Statutes
 - Competency/Moot Court



NCSCL – Toxicology

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What happens when evidence is received at the State Crime Lab

- Evidence is received in the Evidence Control Unit
- A case is started in the Crime Lab's computer database
 - The database is a Laboratory Information Management System (LIMS) called Forensic Advantage (FA)
 - Information supplied by the officer is entered into the FA Web database.
 - Each case is given a unique Laboratory Case Number
 - A chain of custody for the evidence is recorded in the FA database
 - The persons handling the evidence are required to enter their personal password to record an entry into the chain of custody
- Toxicology evidence is stored in secure refrigerators



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Type of Case

List:

- DWI or
- DWI/fatality

For cases involving a fatality or serious injury to someone other than the driver, note the fatality of injury in the request for examination.

If both alcohol and drug use is suspected, then request "DWI – Blood Alcohol and DWI-Blood Drugs".

If Inhalant is suspected request DWI-Inhalant.

This will ensure that a full analysis is performed.

NCSCL – Toxicology

North Carolina State Crime Laboratory
request for examination or chemical analysis

By submitting this form, you acknowledge and agree laboratory personnel to the usual application and guidelines methods authorized by your laboratory and to sample submission to another laboratory to best meet your needs.

Part A: (Required for identifying evidence to laboratory)

| | | | |
|----------------------|---|-----------------------------|-------------------------|
| Requesting Agency: | N.C. State Police | Submitters: | Craven - District Court |
| Agency Address: | 2008 Hanes Blvd., Newbern, NC 28559-0222 | Agency File Number: | |
| Type of Case: | DWI - DWI | County of Offense: | Craven County |
| Date of Offense: | 02/22/2019 | Other Investigating Office: | |
| Requesting Officer: | | | |
| Submitting Other: | | | |
| Submission Method: | Carrier Mail | | |
| Return Method: | Retain and destroy after analysis | | |
| Completed: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | |
| Case Reference Case: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | |
| Extra Instructions: | | | |

Other Investigating Agencies:

| Agency Name | Officer Name | Agency File Number |
|-------------|--------------|--------------------|
| | | |

Victims / Suspects:

| DOB | Sex | Race | Victim/Suspect |
|-----|-----|------|----------------|
| | | | Suspect |

Business Victims / :

| Business Name | Business City | Victim / Suspect |
|---------------|---------------|------------------|
| | | |

Evidence:

Has any other laboratory been consulted to the laboratory previously? Yes No

File # (NCSCL Case Number):

| File # | Agency Name # | Evidence Description | File # (Moot Court) | Examine for |
|--------|---------------|----------------------|---------------------|-----------------|
| | 1 | Blood | | DWI Blood Drugs |

Part B: Division of the order (Other sections of the form are optional). Include details to determine how to be identified. Case involving body fluid (DNA) evidence.

Statement of facts:

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North Carolina State Crime Laboratory
REQUEST FOR EXAMINATION OF PHYSICAL EVIDENCE

By submitting this form, you acknowledge and agree that laboratory personnel have no legal obligation and no liability to either the submitting laboratory and/or to the submitting law enforcement laboratory or to the recipient of the evidence.

Part A:
 Requesting Agency Number: _____ (Required if submitting evidence to laboratory)
 Requesting Agency: N.C. State Police Jurisdiction: Criminal District Court
 Agency Address: 2207 News Blvd., New Bern, NC 28562-0322
 Request Date: 02/12/2010 Agency File Number:
 Date of Offense: 02/12/2010 County of Offense: Currituck County
 Requesting Officer: _____ Other Investigating Officer: _____
 Submitting Office: _____
 Submission Method: Cover Mail
 Retain and destroy after analysis: Yes No
 Keep Evidence: Yes No
 Cross Reference Case: Yes No
 Exhibitions: _____

Other Investigating Agencies:

| Agency Name | Officer Name | Agency File Number |
|-------------|--------------|--------------------|
| | | |

Witness / Suspect:

| DOB | Sex | Race | Witness / Suspect |
|-----|-----|------|-------------------|
| | | | |

Business Victim / :

| Business Name | Business City | Witness / Suspect |
|---------------|---------------|-------------------|
| | | |

Evidence:
 Has any evidence in this case been submitted to the laboratory previously? Yes No
 If yes, to which laboratory? _____

Officer #: _____ **Agency:** _____ **Address:** _____ **Phone:** _____

Complete Part B or attach a copy of the investigative report.
 Part B: Description of the incident (Brief summary of the events of the crime). Provide details as to who has been identified.
 Case number(s) and NCLEIS evidence.
 Statement of Facts

Examine for

List:

- If specific drug is suspected, list specific drug(s).
- Not all drugs can be tested for.

NCSCCL – Toxicology

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Toxicology – Evidence Submission

- **DWI Cases (Alcohol, Drug, Inhalant):** Blood is preferred
- When a negative breath alcohol test result is noted on the Request for Examination of Physical Evidence form or associated case documentation, no blood alcohol analysis will be performed.
- Record any specific drugs mentioned or found.
- After the analysis is completed, DWI toxicology evidence will be retained by the Laboratory until otherwise authorized.
- Collect 20 mL of blood in two 10 mL blood collection tubes from the subject as soon as possible.
- A minimum of 5 mL of blood is required for the analysis for any other impairing substances.

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Toxicology Evidence Submission

- **Non-DWI Cases (e.g., drug facilitated assault/rape cases, homicide suspects, custodial neglect):**
 - Collect and submit both urine and blood samples in drug facilitated assault/rape cases and other non-DWI type cases
 - Use a leak proof container placed in a zip-lock type plastic bag when submitting a urine sample.
 - The remaining portions of samples will be returned to the submitting agency upon completion of the examination.

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Toxicology Evidence Submission

- **Alcoholic Beverage Concentrations (e.g., illegally manufactured liquor or other liquids):**
 - In cases dealing with multiple buys or numerous samples from the same source, only two random samples will be analyzed.
 - Collect and submit a portion of the suspected Alcoholic Beverage in a sealed vial/container.
 - Submit only a 5-milliliter sample for analysis. The Laboratory will provide small sampling vials if needed.
 - The sample container should not leak air or liquid. Avoid having more air-space than liquid in the container.
 - The remaining portions of samples will be returned to the submitting agency upon completion of the examination.

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Toxicology – Submission

- A minimum of 1 mL of blood is required for the analysis for alcohol and/or other volatiles.
- A minimum of 5 mL of blood is required for the analysis for any other impairing substances.



The condition of the specimen submitted precludes analysis.

- Toxicology cannot test cases with insufficient volume or clotted samples

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Sealed vacutainer



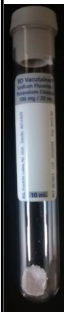
NCSCL – Toxicology

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General Misconceptions

“The collection tube was past its expiration date”

- The collection tubes (Vacutainers® - BD)
 - The Vacutainer contains a vacuum (negative pressure), designed to draw a blood sample into the tube
 - The Vacutainer also may contain additives – usually a blood preservative and/or anti-coagulant
 - The color of the rubber stopper on the tube indicates what is added to the tube during its manufacture
 - The expiration date applies only to the vacuum in the tube, not the additives
 - When the Vacutainer expires, the seal of the rubber stopper may have failed and allowed air into the Vacutainer
 - The Vacutainer may not draw in all the blood it was designed to



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Rush Requests

- The District Attorney’s offices can request a “Rush” on their cases via a special web-site or phone call
- The rush requests are evaluated and triaged by a lab manager

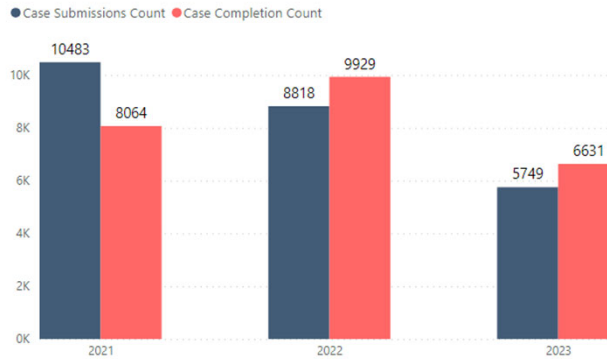


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Tox Submissions vs. completions

Case Submissions Vs Case Completion Count by Year



Case Work Status

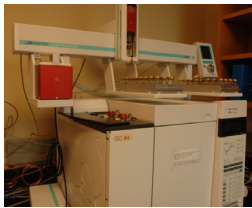
- Blood Alcohol
 - March 2023
 - Turn around time 30-60 days
- Blood Drug
 - May 2021
 - Turn around time 60-90 days

As a result of the current backlog and increased turnaround time of drug toxicology cases - effective February 1, 2022, the Toxicology section will suspend testing if an NCGS Schedule 1 substance is identified in DWI cases without a fatality.

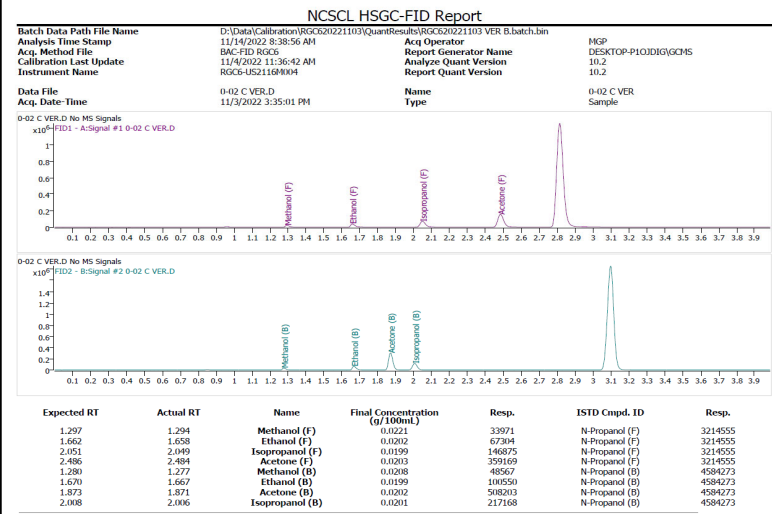


Blood Alcohol Concentration (BAC) analysis

- Head-Space Gas Chromatograph (HS-GC) instrument used
- A measured sample of the blood is put in a sealed vial along with a reference standard (internal standard)
- The vial is heated to make the chemicals that evaporate easily, like alcohols, move into the air in the vial (head-space)
- The GC uses a syringe through the rubber seal on the vial, to sample the head-space containing the alcohols
- The head-space sample is analyzed twice by the GC



Blood Alcohol Concentration (BAC)



Blood Alcohol Concentration (BAC) Reporting

BAC result – Includes the NCGS 20-4.01(1b) reporting requirement

Along with the measured value including the uncertainty of measurement or coverage probability

Reporting statement used when the BAC >0.08 and blood drug analysis was requested.

General Misconceptions

“The Lab’s BAC test is affected by how the blood sample is collected”
There are different types of tests for alcohol and drugs, and they each have different attributes.

BAC by Immunoassay (used by some hospitals)

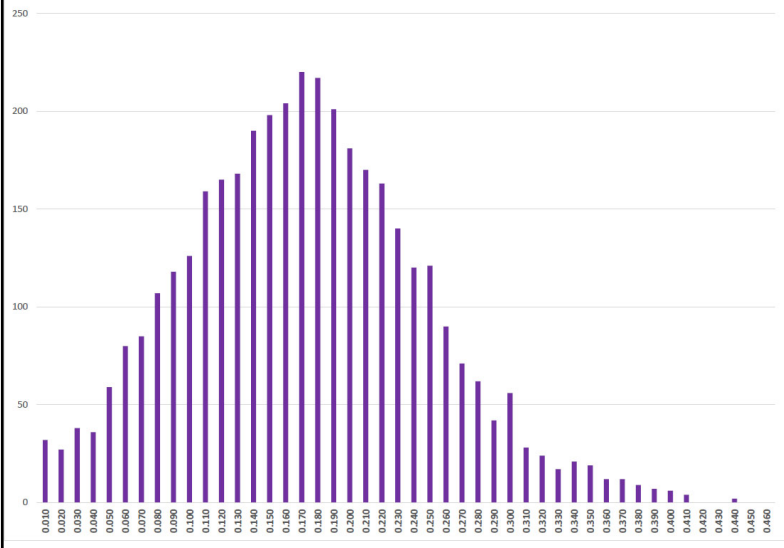
- Uses serum (a processed portion of blood)
 - Causes a BAC result that is higher than when testing whole blood
 - A calculation can be used to convert the SAC to a BAC value
- Damage to red blood cells can affect results, and is caused by...
 - Shaking the blood samples too much
 - Use of a small needle to collect the blood
 - Older samples
- Some cannot tell the difference between different types of alcohol

BAC by HS-GC (used by the NCSCCL)

- Uses whole blood
 - As defined by 20.4.01.(1a).a.
- The test is not affected by damaged blood cells
- Identifies the different types of alcohol and other volatiles
 - Ethanol (drinking alcohol)
 - Methanol (wood alcohol)
 - Isopropanol (rubbing alcohol)
 - Acetone (may be elevated in diabetics)
 - 1,1-Difluoroethane (duster spray)
 - Ether

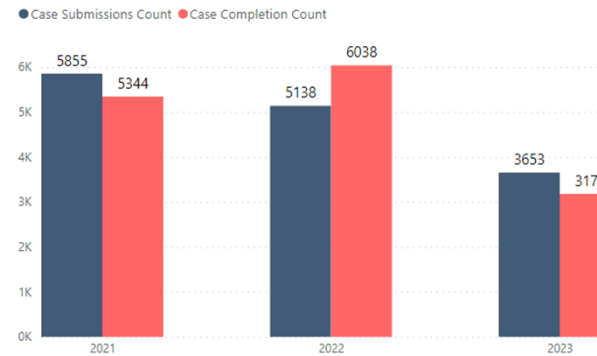


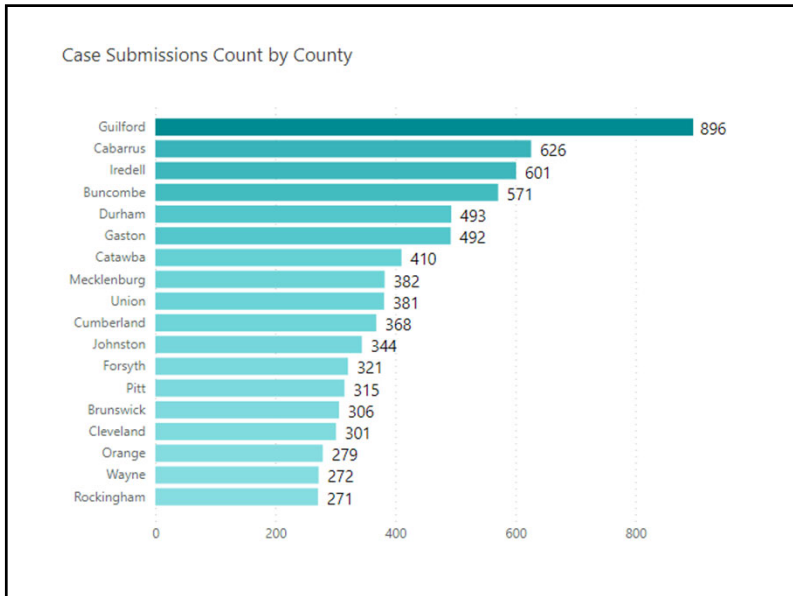
2022 Case Distribution



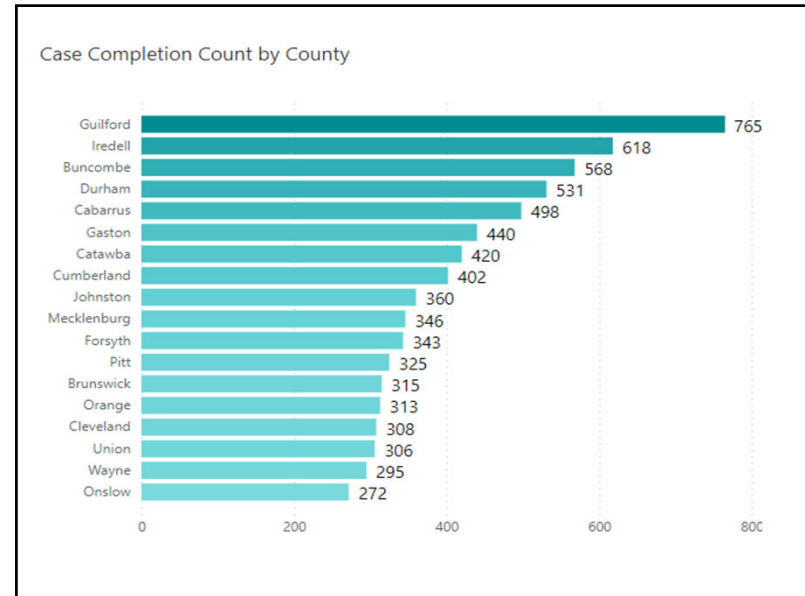
BAC Submissions vs. completions

Case Submissions Vs Case Completion Count by Year





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Drug Toxicology Testing Protocol

- Analysis for **drugs in blood** - if requested
 - Screen:
 - 5 panel ELISA
 - QTOF
 - Drugs Confirmation Extractions
 - Confirmatory instruments:
 - Gas Chromatograph / Mass Spectrometer (GC-MS)
 - Liquid Chromatograph / Tandem Mass Spectrometer (LC-MS-MS)
 - Liquid Chromatograph / Quadrupole Time of Flight Mass Spectrometer (QTOF)
- **For a compound to make it on our report, it must be identified and confirmed in two separate tests!**

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ELISA - Drug Screening

Immunoassay test

Enzyme-linked Immunosorbent assay (ELISA)

Hospitals and work-place drug testing uses this, or a similar test, for drug testing.

5 Panels

1. Barbiturates
2. Benzodiazepines
3. Cannabinoids
4. Amphetamine/MDA
5. Methamphetamine/MDMA

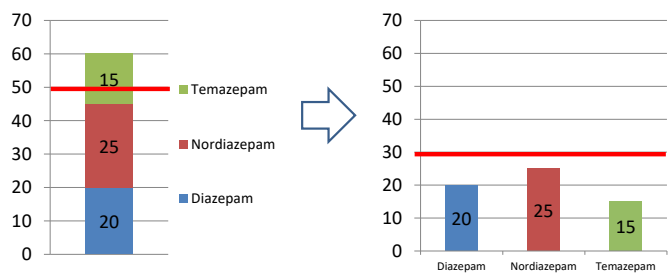
NCSCL – Toxicology

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Unconfirmed Screening test (ELISA)

ELISA "cut-off" at 50 ng/ml – test is POSITIVE

The GC/MS limit of detection at 30 ng/ml means that none of the drugs are identified.



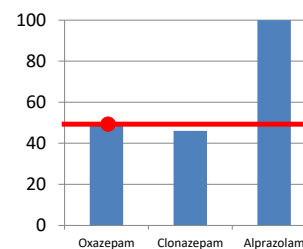
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Unconfirmed Screening test (ELISA)

Cross-reactivity

The ELISA response for each drug at the same concentration



- In a "class" assay, the test has a different sensitivity to each drug - referred to as "Cross-reactivity"
- The "cut-off" is set using one drug at a specific concentration
- Therefore, the "cut-off" concentration can not be used to estimate the concentration of a "class" assay drug
- Example: cut-off is set at 50ng/ml with Oxazepam, but 50 ng/ml of Clonazepam will give a negative result



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LC-QTOF-MS



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Screening on Steroids

- Immunoassay limitations
 - Assay Type
 - Cross Reactivity
 - Expansion requires extensive Lab Validation
- QTOF – multiple drugs/metabolites in a single sample.
 - Multiple classes of compounds
 - No Cross Reactivity
 - Additional compounds added with ease
 - Drug Specific Cutoffs



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QTOF Panel

| Benzodiazepines | Opiates/Opioids | Fentanyl | Prescription |
|------------------------|-----------------------------------|--------------------------------|--------------------------------------|
| 7-Aminoclonazepam | Buprenorphine | Acetyl Fentanyl | EDDP Lidocaine |
| 7-Aminoflunitrazepam | Codeine | Acryl Fentanyl | Methadone Lorazepam |
| Alpha-hydroxylprazolam | Codeine-6beta-D-Glucuronide | Carfentanil | Carisoprodol Meclizine |
| Alprazolam | Dihydrocodeine | Cyclobutyl Fentanyl | Meprobamate Meperidine |
| Bromazepam | Heroin | Cyclohexyl Fentanyl | Tramadol Metaxalone |
| Chlordiazepoxide | Hydrocodone | Cyclopropyl Fentanyl | O-Desmethyiltramadol Methylphenidate |
| Clonazepam | Hydromorphone | Isobutryl Fentanyl | Zolpidem (Ambien) Metoclopramide |
| Delorazepam | 6-Monoacetylmorphine (6MAM) | Meta-Fluorobutryl Fentanyl | Amiripitline Mirazapine |
| Desallyflurazepam | Morphine | Meta-Fluoroisobutryl Fentanyl | Aripiprazole Olanzapine |
| Diazepam | Morphine-3-beta-d-Glucuronide | Methoxyacetyl Fentanyl | Bupropion Oxcarbazepine |
| Dichlazepam | Norhydrocodone | Norfentanyl | Carbamazepine Paroxetine |
| Estazolam | Noroxycodone | Ocfentanyl | Chlorpheniramine Pentazocine |
| Etizolam | Oxycodone | Ortho-Fluorobutryl Fentanyl | Citalopram Phenytoin |
| Flualprazolam | Oxymorphone -3-beta-D-Glucuronide | Ortho-Fluoroisobutryl Fentanyl | Clozapine Pregabalin |
| Flubromazepam | Oxymorphone | Para-Fluorobutryl Fentanyl | (Dextro)Methorphan Primidone |
| Flubromazolam | | Para-Fluoroisobutryl Fentanyl | Diphenhydramine Promethazine |
| Flunitrazepam | | Para-Methoxybutryl Fentanyl | Doxylamine Quetiapine |
| Flurazepam | | Phenyl Fentanyl | Duloxetine Risperidone |
| Lorazepam | Cocaine | Tetrahydrofuran Fentanyl | Fluoxetine Sertraline |
| Lorazepam Glucuronide | Benzoyllecgonine | Valeryl Fentanyl | Gabapentin Tapentadol |
| Midazolam | Cocacethylene | | Guaifenesin Thioridazine |
| Nitrazepam | Cocaine | | Haloperidol Trazodone |
| Nordiazepam | Ecgonine Methyl Ester | | Lamotrigine Venlafaxine |
| Oxazepam | | | Levetiracetam Verapamil |
| Phenazepam | | | |
| Triazolam | | | |

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QTOF - Screen

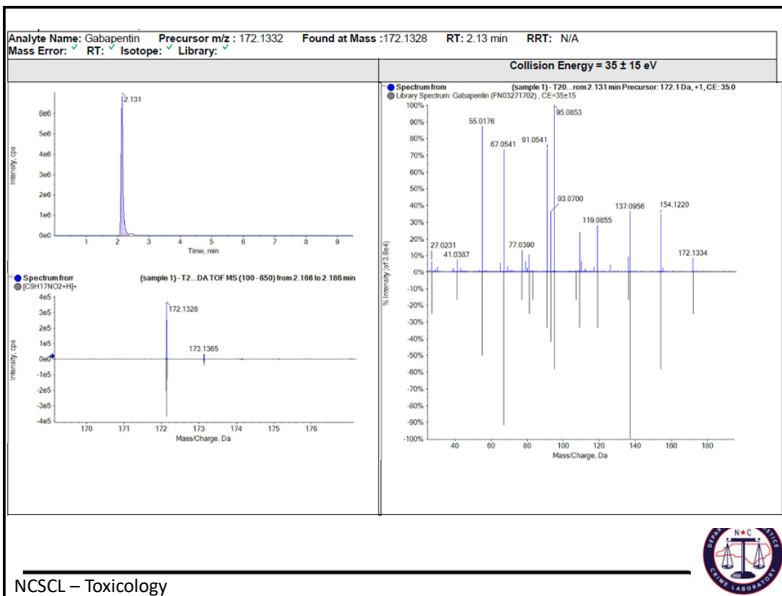
Summary

| Analyte Peak Name | Peak Height | Area | RT | Mass Error (ppm) | Mass Error | RT | Isotope | Library |
|------------------------|-------------|-------------|------|------------------|------------|----|---------|---------|
| 7-Aminoclonazepam | 312019.80 | 880600.00 | 4.16 | 0.90 | ✓ | ✓ | ✓ | ✓ |
| Alpha-Hydroxylprazolam | 4633.80 | 13420.00 | 5.87 | 4.60 | ✓ | ✓ | ✓ | ✓ |
| Alprazolam | 136564.00 | 389200.00 | 6.07 | 2.10 | ✓ | ✓ | ✓ | ✓ |
| Clonazepam | 200551.90 | 545200.00 | 5.80 | 1.60 | ✓ | ✓ | ✓ | ✓ |
| Cotinine | 261653.60 | 1012000.00 | 2.87 | -0.70 | ✓ | ▲ | ✓ | ✓ |
| Diphenhydramine | 176218.80 | 513700.00 | 4.94 | 1.70 | ✓ | ✓ | ✓ | ✓ |
| Gabapentin | 6996147.70 | 29350000.00 | 2.13 | -2.60 | ✓ | ✓ | ✓ | ✓ |
| Mepivacaine IS | 217993.80 | 693400.00 | 3.31 | 0.50 | ✓ | ✓ | ✓ | ✓ |
| Meprobamate | 554719.20 | 1946000.00 | 4.29 | 0.40 | ✓ | ✓ | ✓ | ✓ |
| Nalorphine | 24900.50 | 80890.00 | 2.50 | 1.60 | ✓ | ✓ | ✓ | ✓ |
| THC-COOH | 180268.70 | 413800.00 | 7.21 | 2.00 | ✓ | ✓ | ✓ | ✓ |
| Trazodone | 1663173.10 | 6379000.00 | 5.04 | 0.10 | ✓ | ✓ | ✓ | ✓ |



NCSL – Toxicology

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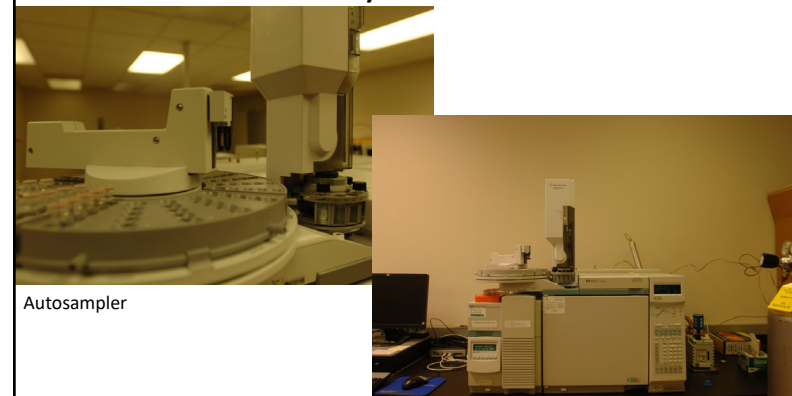


NCSL – Toxicology



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GC/MS



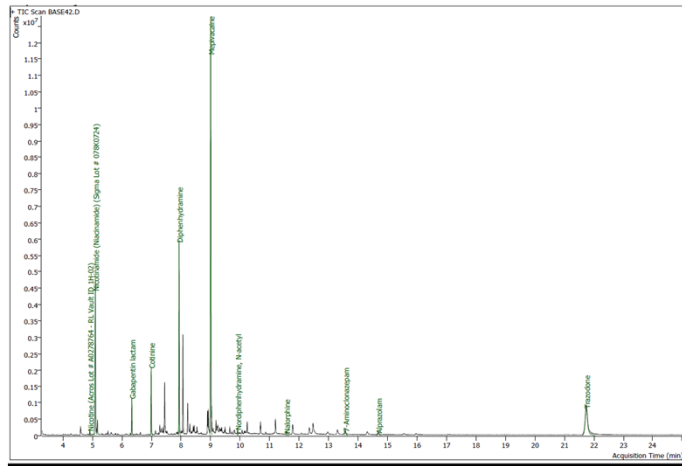
Autosampler

Gas Chromatograph Mass Spectrometer

NCSL – Toxicology

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Confirmatory Drug Analysis – GC/MS

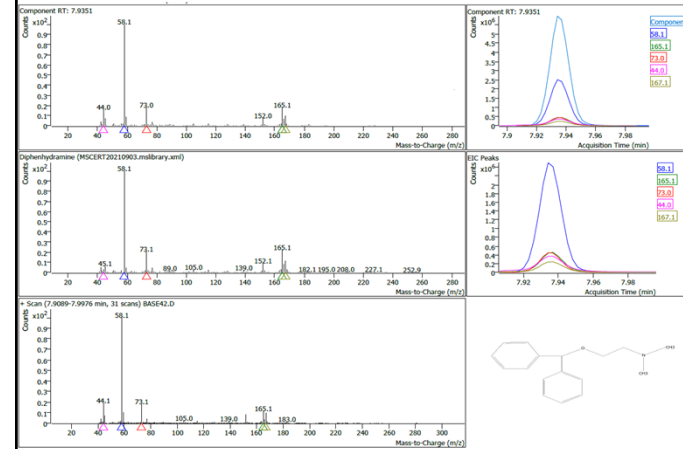


NCSCl – Toxicology



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Confirmatory Drug Analysis – GC/MS



NCSCl – Toxicology

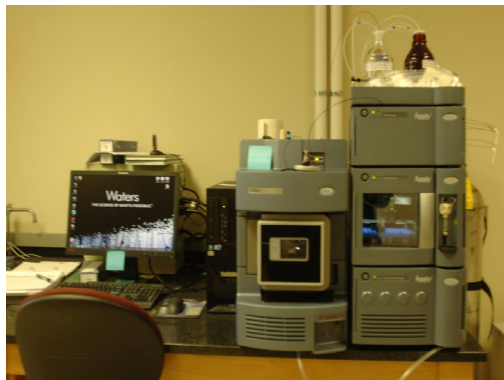


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Confirmatory Drug Analysis – LC/MS/MS

-Ultra Performance Liquid Chromatograph Tandem Mass Spectrometer

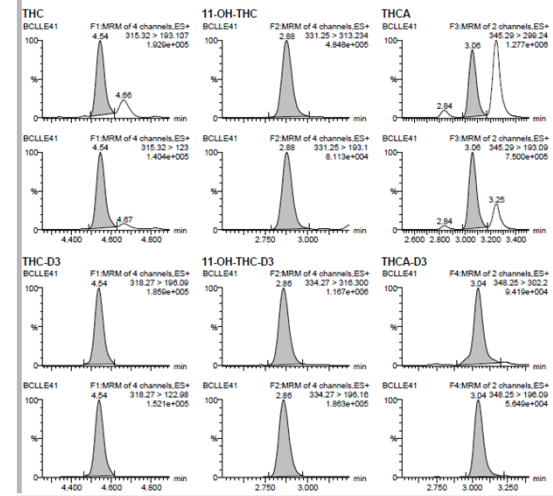
- Used for the identification and quantification of Blood Cannabinoids (THC, 11-OH-THC, and THCA)



NCSCl – Toxicology

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LC/MS/MS



NCSCl – Toxicology



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DWI – Blood Drug Reporting

NCGS 90-89 Schedule I reporting – further drug toxicology analysis will be discontinued

For a compound to make it on our report, it must be identified and confirmed in two separate tests!
 - If a compound is not identified in two tests or no substances seen during analysis, the reporting statement on the report will reflect that

Report will reflect confirmed substances only along with the instrumentation/ methods used for analysis

North Carolina Department of Justice
North Carolina State Crime Laboratory
Western

Laboratory Report Summary

TO: [REDACTED] DATE: June 13, 2022
 CRIME LAB NO.: [REDACTED]
 CASE RECORD NO.: [REDACTED]
 AGENCY FILE NO.: [REDACTED]
 EXAMINED BY: [REDACTED]
 SUBMITTED BY: [REDACTED]
 DATE OF OFFENSE: January 27, 2021
 DATE SUBMITTED: February 2, 2022

LOCATION: [REDACTED]
 TYPE OF CASE: DWI
 SUBJECT(S): [REDACTED]

AFFIDAVIT AND REVOCATION REPORT (BLOOD TEST)

The undersigned being first duly sworn say:

- I am a Chemical Analyst duly authorized to analyze a person's blood to determine the alcohol concentration or presence of an impairing substance therein.
- At the time this analysis was made I possessed a current permit issued by the Department of Health and Human Services authorizing me to conduct such analysis. My Permit Number is [REDACTED]
- I analyzed the blood of the above-named person in accordance with methods approved by the North Carolina State Crime Laboratory and the Department of Health and Human Services, and made the following determination(s):
 - Analysis confirmed the presence of the following substance(s):
 - EtOH (m - Schedule I)
 - Due to the confirmed presence of a NCGS 90-89 Schedule I substance or its metabolite, further drug toxicology analysis was discontinued.
- I analyzed the blood of the above-named person in accordance with methods approved by the North Carolina State Crime Laboratory and the Department of Health and Human Services, and made the following determination(s):
 - No impairing substances were identified.
- I analyzed the blood of the above-named person in accordance with methods approved by the North Carolina State Crime Laboratory and the Department of Health and Human Services, and made the following determination(s):
 - Analysis confirmed the presence of the following substance(s):
 - 7-Adiccipol/opioid
 - Cocaine
 - GABAPENTIN
 - Lamotrigine
 - Tetrahydrocannabinol (THC) = 2.2 +/- 0.5 ng/ml at a coverage probability of 95.43%
 - 11-nor- Δ^9 -tetrahydrocannabinol-9-carboxylic acid (THCA) = 18 +/- 3 ng/ml at a coverage probability of 95.43%
 - Analysis performed using immunoassay, LC-OTOP-MS, GC-MS and LC-MS/MS.
 - The disposition of this evidence is as follows: The evidence will be retained until otherwise authorized.

End of Report

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Non-DWI Reporting

Items of evidence submitted will show on the report

Both alcohol and drug reporting for each item.

NCSC is currently unable to perform urine Cannabinoid testing

Page 1 of 2

North Carolina Department of Justice
North Carolina State Crime Laboratory
Western

Laboratory Report Summary

TO: [REDACTED] DATE: June 2, 2022
 CRIME LAB NO.: [REDACTED]
 CASE RECORD NO.: [REDACTED]
 AGENCY FILE NO.: [REDACTED]
 EXAMINED BY: [REDACTED]
 SUBMITTED BY: [REDACTED]
 DATE OF OFFENSE: November 20, 2021

LOCATION: [REDACTED]
 TYPE OF CASE: Second Degree Rape
 SUBJECT(S): [REDACTED]

ITEMS SUBMITTED BY: [REDACTED] ON NOVEMBER 24, 2021:

Item 1: [REDACTED]
 Item 2: Blood (Four Item T)
 Item 3: Urine (Four Item T)

TYPE OF EXAMINATION REQUESTED:

Toxicology.

RESULTS OF EXAMINATION AND CONCLUSIONS (The following relate only to the items tested):

Item 2:

- The blood alcohol concentration is 0.00 grams of alcohol per 100 milliliters, as defined by NCGS 20-4-01 (18).
- Analysis confirmed the presence of the following substance(s):
 - Hydroxy Bupropion
 - Oxycodone
- Analysis performed using MS-GC, immunoassay, LC-OTOP-MS, GC-MS and LC-MS/MS.

Item 3:

- The urine alcohol concentration is 0.00 grams of alcohol per 100 milliliters, as defined by NCGS 20-4-01 (18).
- Analysis confirmed the presence of the following substance(s):
 - Hydroxy Bupropion
 - Oxycodone
 - Amphetamine
- Urine cannabinoids generally cannot be identified by current State Crime Laboratory analytical procedures.
- Analysis performed using MS-GC, immunoassay, and GC-MS.

DISPOSITION:

The evidence will be retained for pickup unless otherwise authorized.

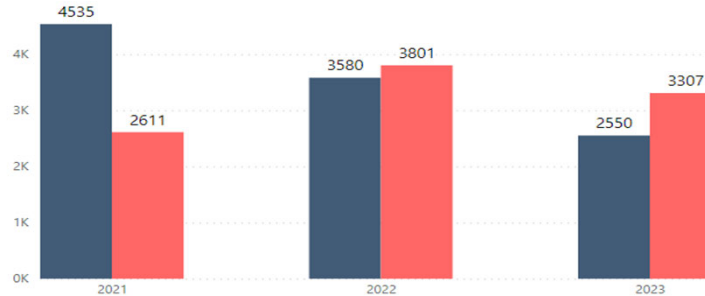
End of Report

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Drug Toxicology Submissions vs. Completions

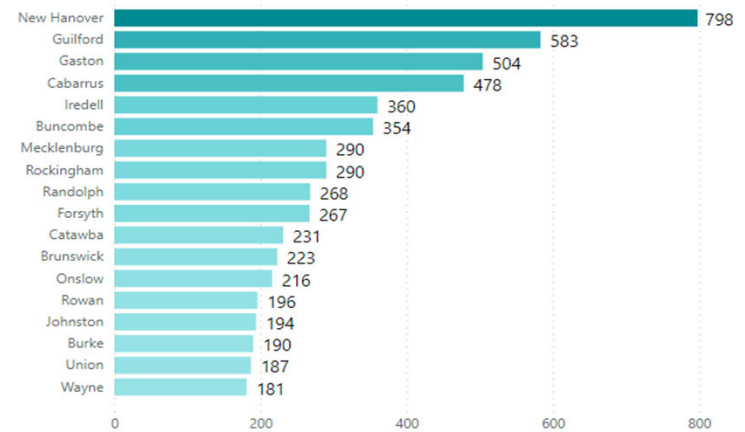
Case Submissions Vs Case Completion Count by Year

● Case Submissions Count ● Case Completion Count

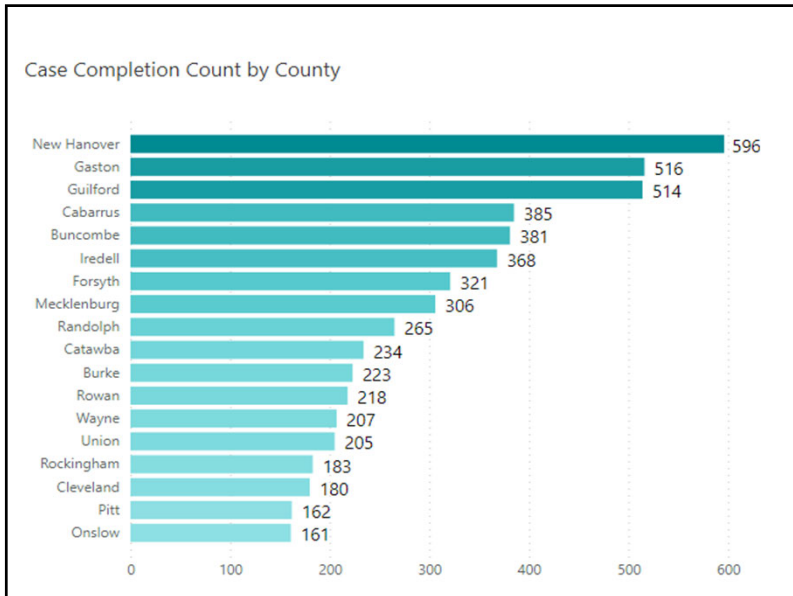


43

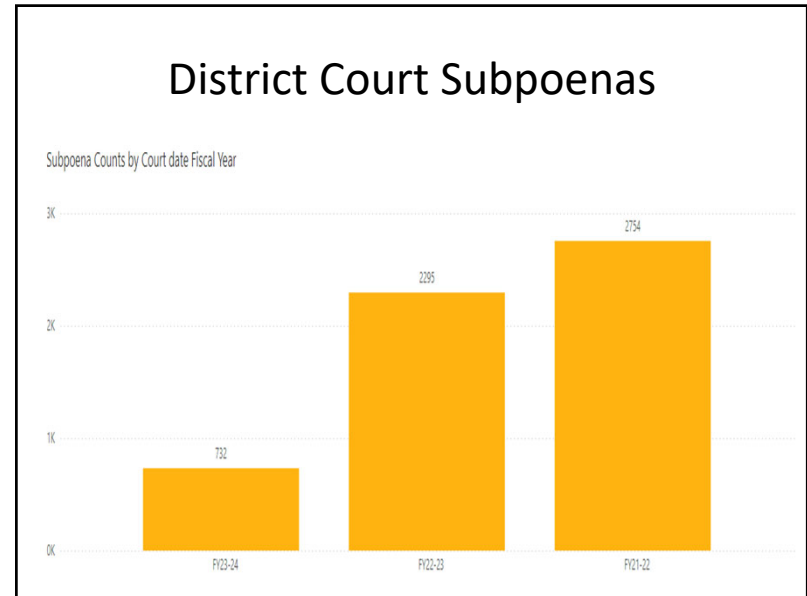
Case Submissions Count by County



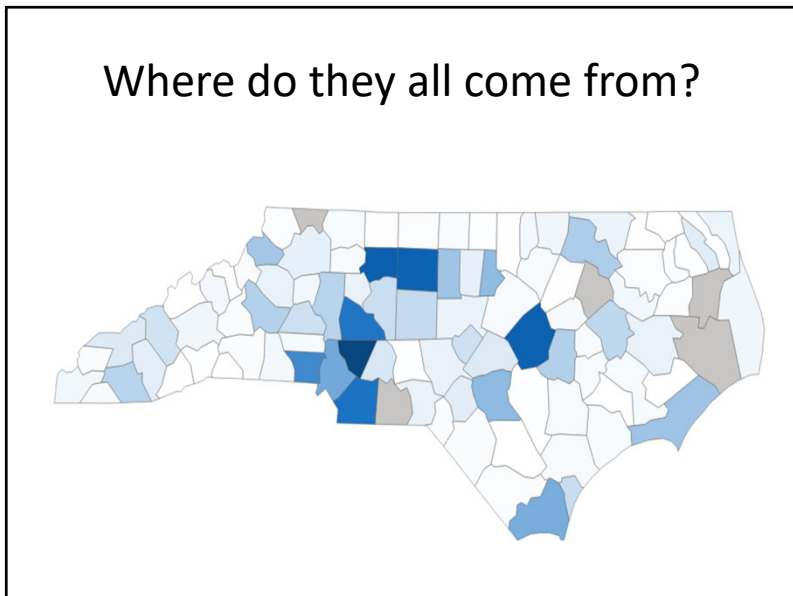
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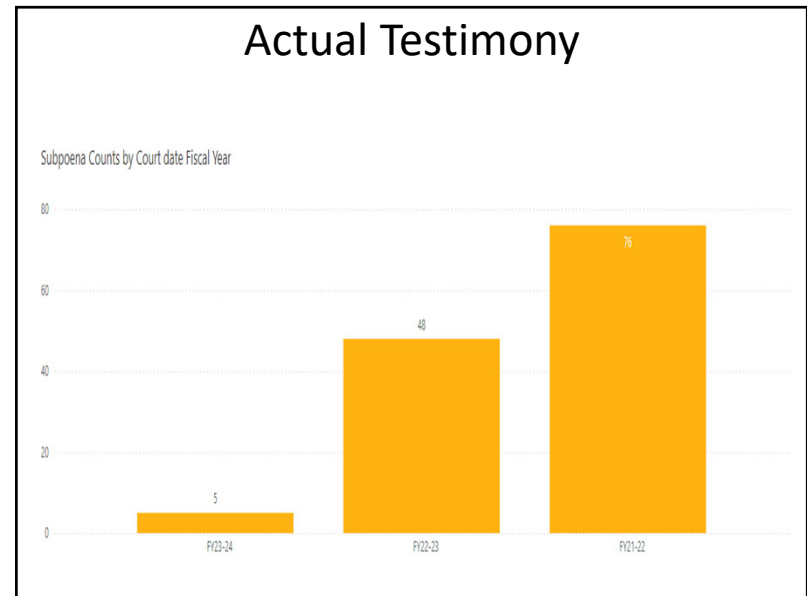
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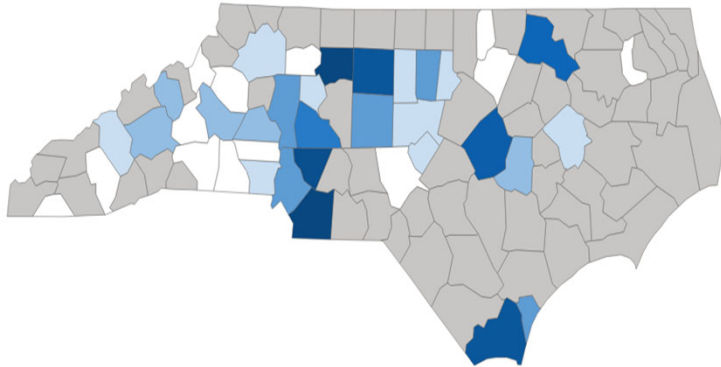


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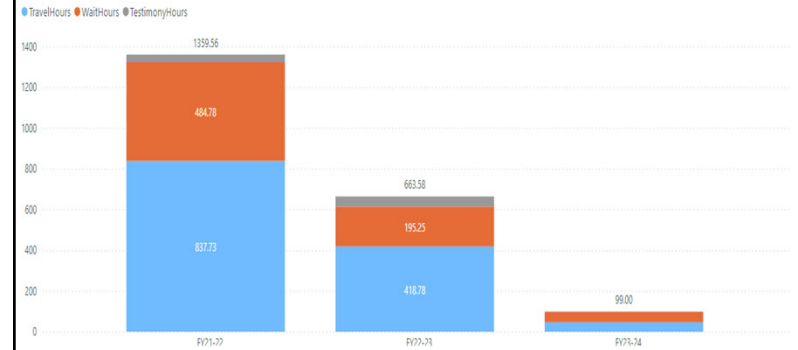
48

Actual Testimony Locations



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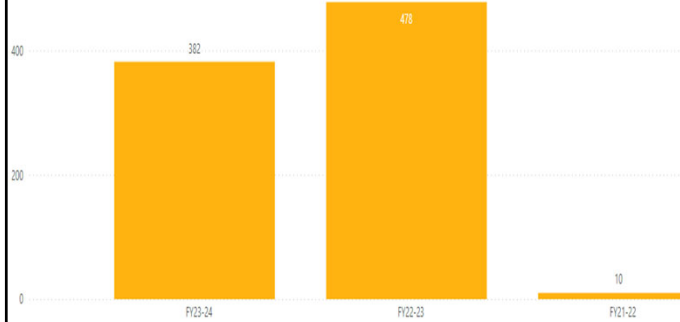
District Court Hours



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Virtual Testimony

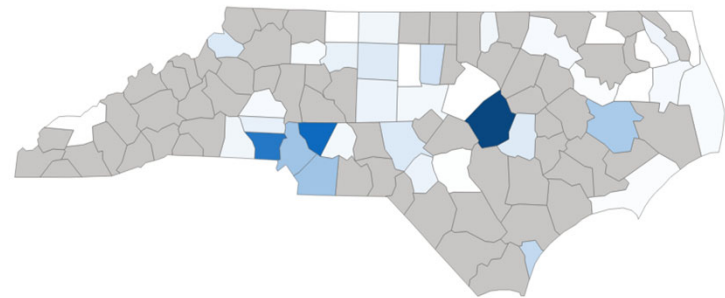
Subpoena Counts by Court date Fiscal Year



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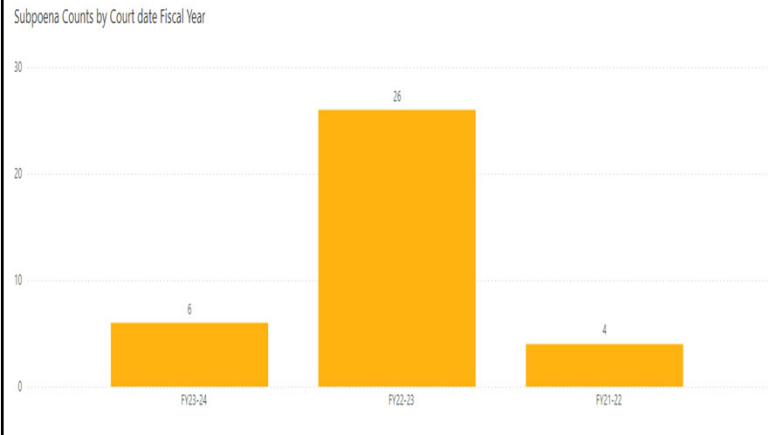
51

Where are they all coming from?



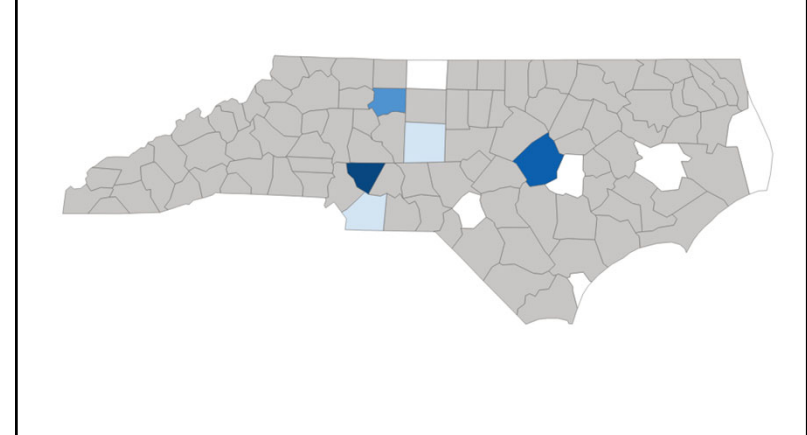
52

Actual Virtual Testimony



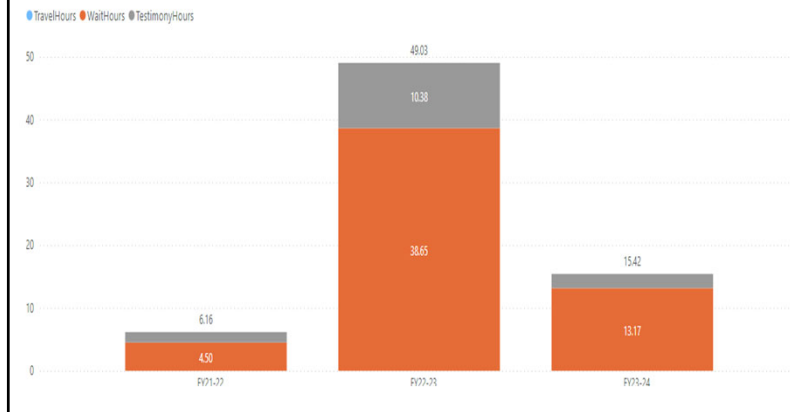
53

Actual Virtual Testimony Locations



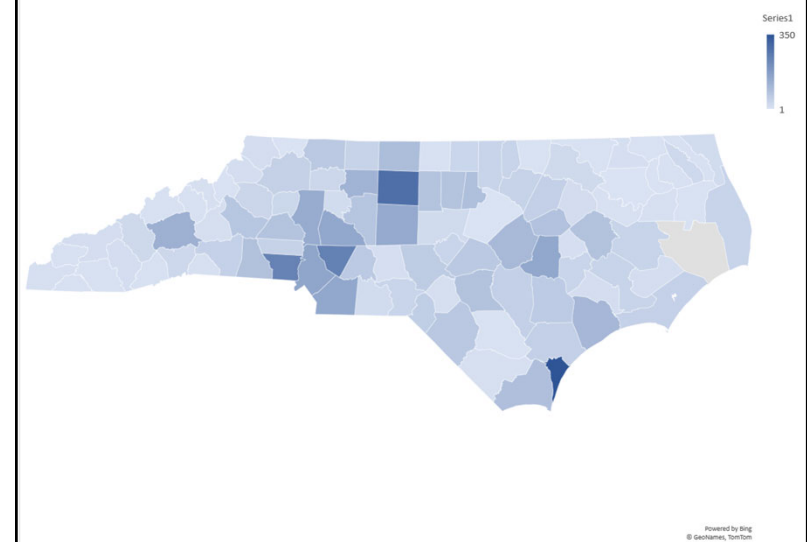
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Virtual Testimony Hours

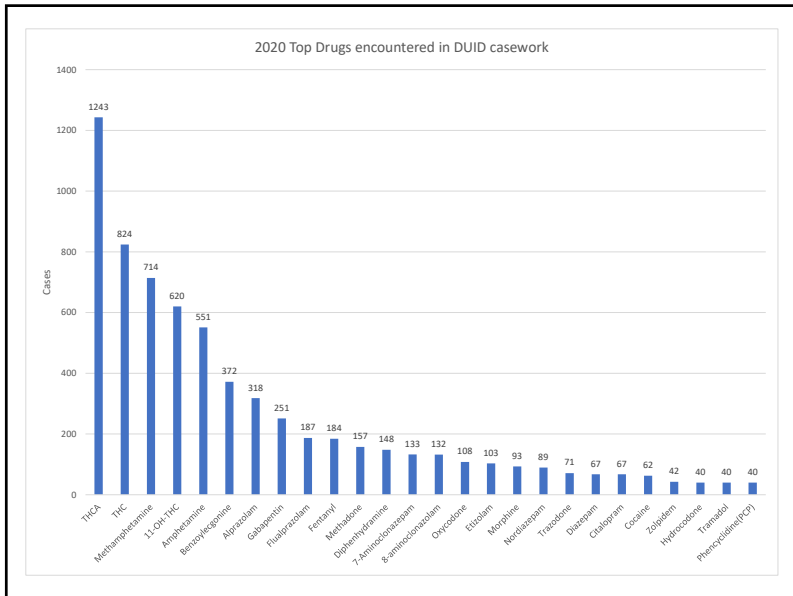


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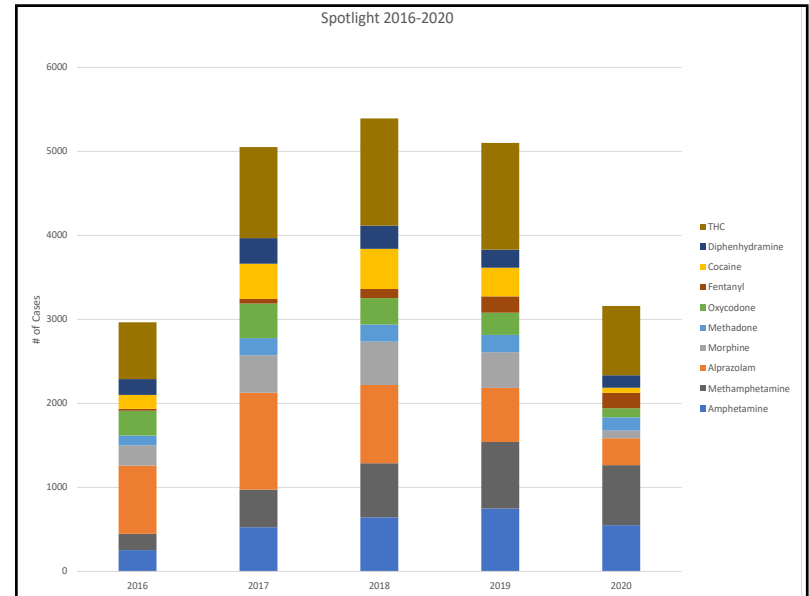
2020 DUID Submissions



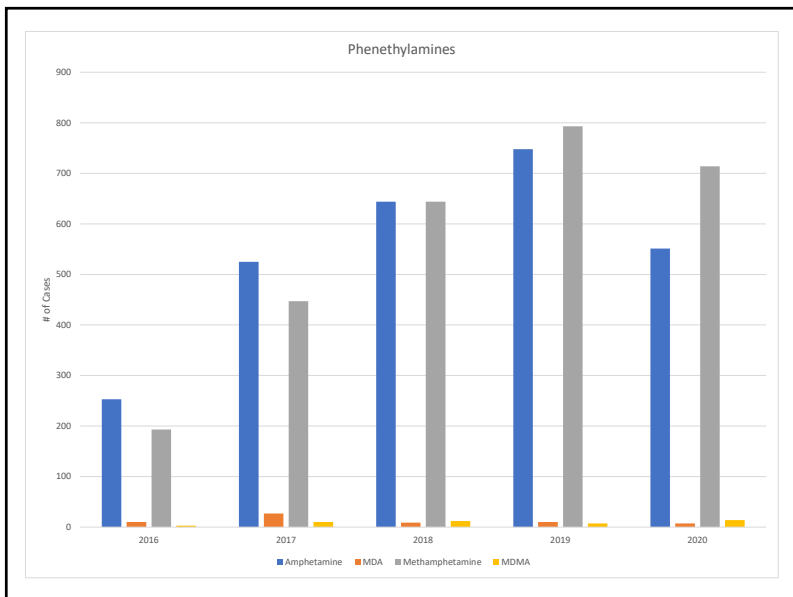
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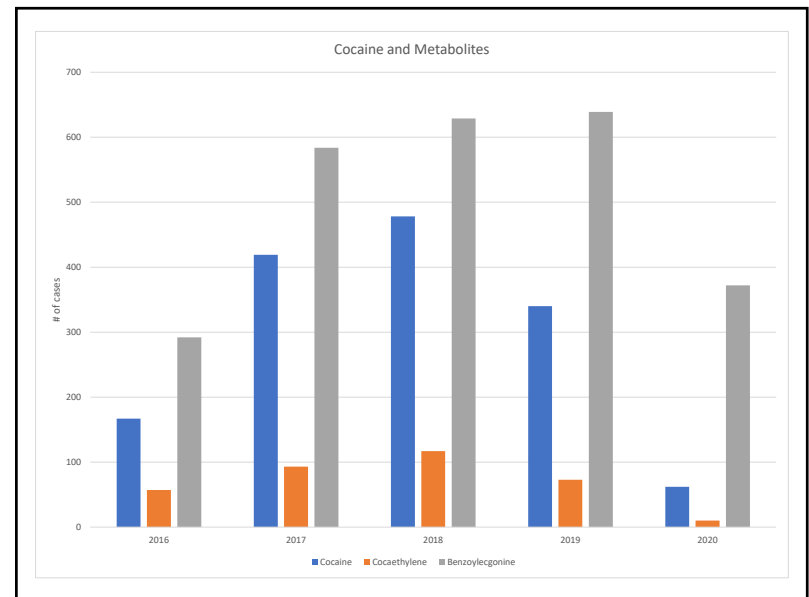
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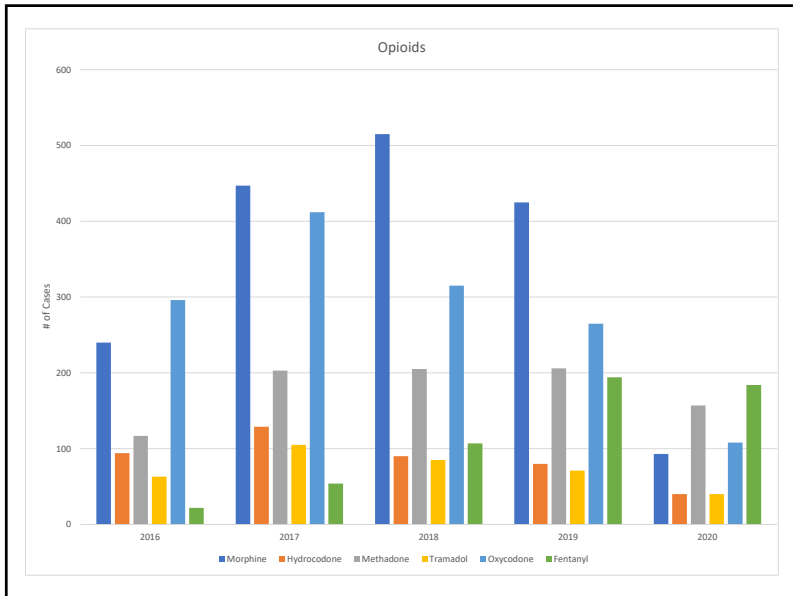
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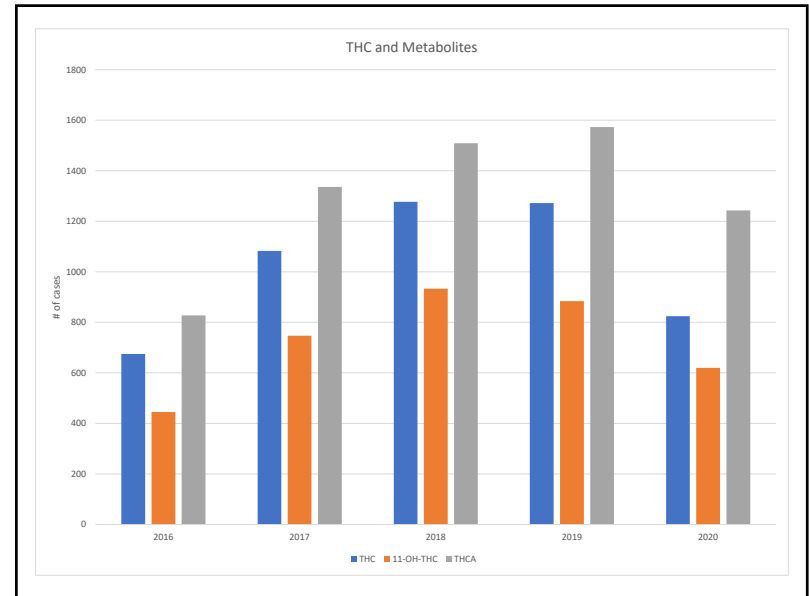
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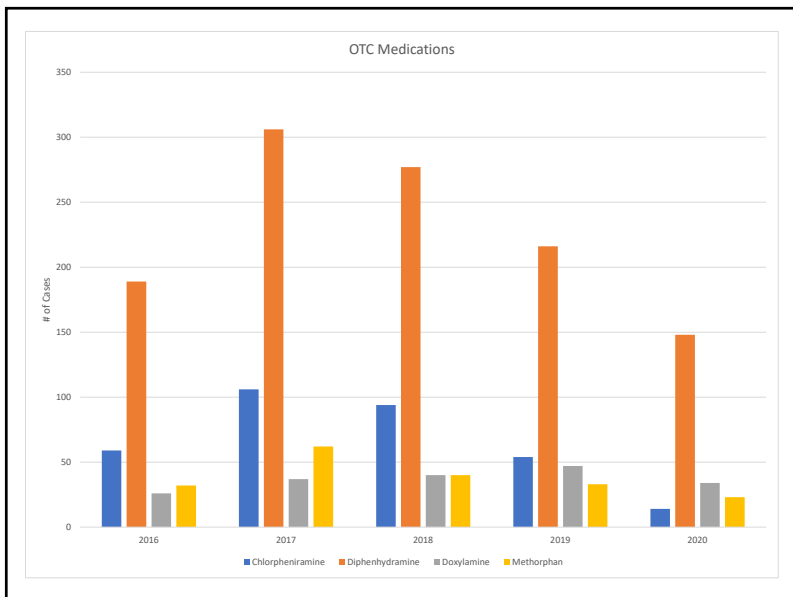
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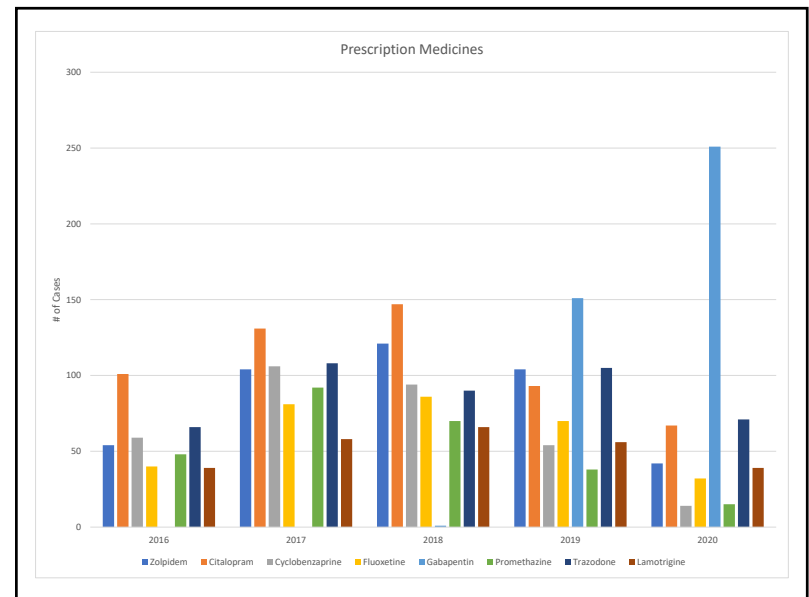
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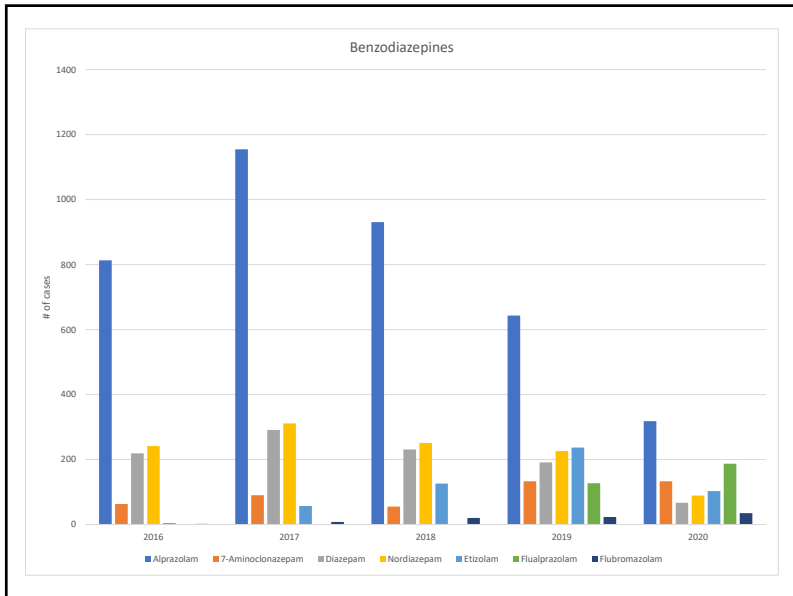
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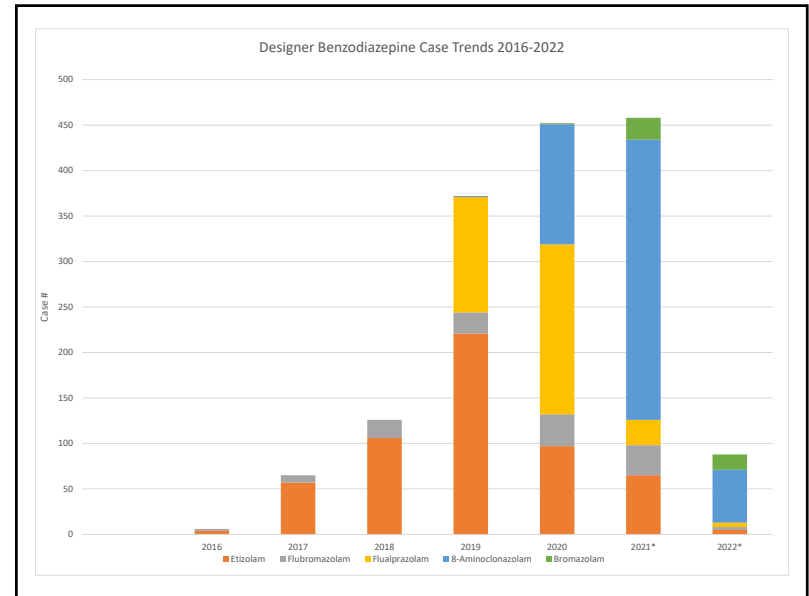
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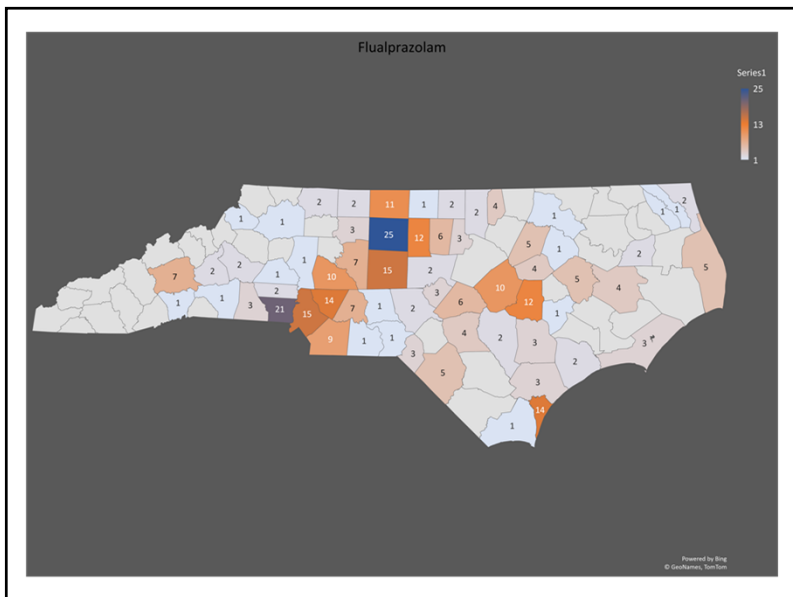
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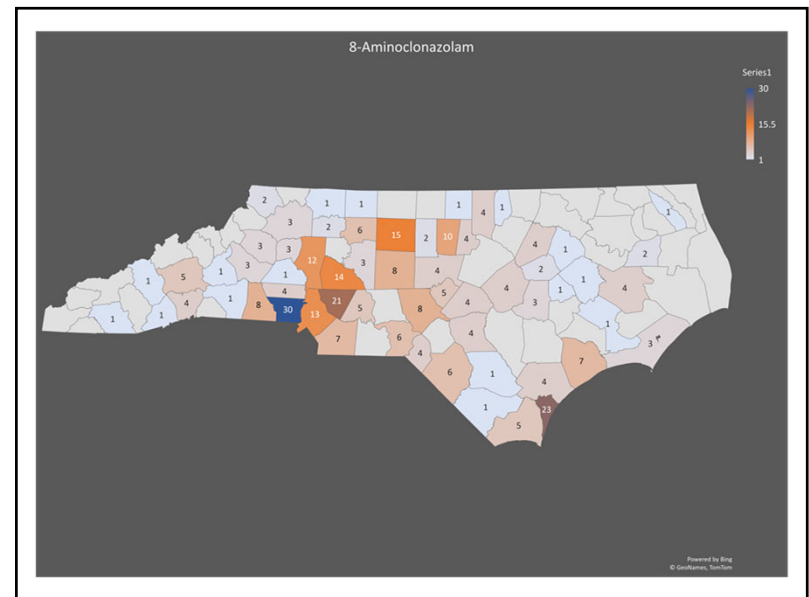
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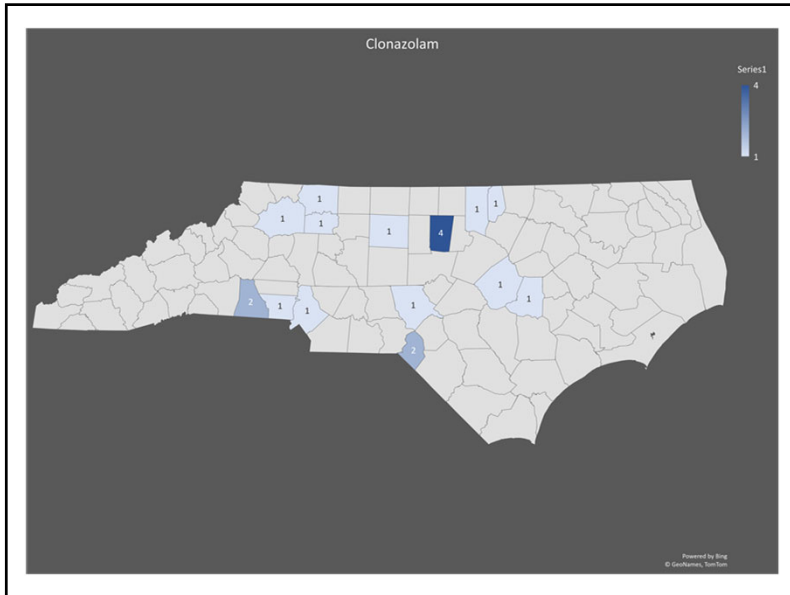
66



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Can the Toxicology Lab determine if a person was impaired?

No

- Impairment is affected by several factors that are unknown, including:
 - How much drug was used
 - When was it used
 - What is the persons tolerance to the drug
 - How long have they used it
 - How much do they regularly use
 - Combined effects with other drugs
 - There may be drug present that the lab cannot test for
 - Daily/hourly variations in the person's health




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Can the Toxicology Lab determine if a person was impaired?... No

What can the Lab's Forensic Toxicologist testify to about impairment?

- We can identify drugs that are in the blood
- We can tell if the drugs have the potential to be impairing, and generally how they impair
- We can give ranges of how long some drugs can be detected in blood, with an average use




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ASB Best Practices

- American Standards Board in conjunction with Organization of Scientific Area Committees (OSAC)
- 9 Tox Standards
 - Measurement Traceability/Validation
 - Scope of Testing – DUI/DFSA/Medico-legal
 - Report Content
 - Guidelines for Opinions and Testimony in FT.



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Guidelines for Opinions and Testimony in Forensic Toxicology

- **Appropriate Opinions and Testimony by a Toxicologist**
 - Discuss lab report and supporting analytical work
 - With appropriate references – qualify a concentration as sub-therapeutic, therapeutic, toxic, lethal
 - Address Pharmacokinetics\Dynamics of drugs
 - Address impairment for the **average individual** to the extent that effects are consistent with documented pharmacodynamic and toxicodynamic properties of the substance and within the context of a given case



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Guidelines for Opinions and Testimony in Forensic Toxicology (cont.)

- **Inappropriate Opinions and Testimony by a Toxicologist**
 - should not opine as to a specific individual's degree of impairment based solely on a quantitative result.
 - should not opine as to the absolute cause of an accident.
 - should not opine as to the effects of a drug or combination of drugs on a specific individual without context of a given case. This does not preclude a toxicologist from addressing general effects of drugs at varying concentrations.



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Final Words

- The Toxicology Lab is continually looking to improve our service to the judicial system.
- The processes discussed in this presentation will change over time to improve our product.



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Contact Information



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