



HARRIS COUNTY  
**INSTITUTE**  
OF FORENSIC SCIENCES

CELEBRATING **60** YEARS OF SCIENCE. SERVICE. INTEGRITY.

C SCIENCES



**2017** Annual Report





The **MISSION** of the Harris County Institute of Forensic Sciences is to provide medical examiner and crime laboratory services of the highest quality in an unbiased manner with uncompromised integrity.



# Accreditations

Accreditation Council for Graduate Medical Education

American Board of Forensic Toxicology

ANSI-ASQ National Accreditation Board  
ISO/IEC 17025 Program (Crime Laboratory)

ANSI National Accreditation Board  
ISO/IEC 17020 Program (Forensic Anthropology)

National Association of Medical Examiners

Texas Forensic Science Commission

Texas Medical Association for  
Continuing Medical Education

# Medical Examiner Service



Has the statutory duty to determine **cause and manner of death**



# Statistical Summary

- Harris County (HC) remains the **third most populous county** in the nation, exceeded only by Los Angeles and Cook counties
  - **4.6+ million** estimated HC population in 2017\*
  - **30,047** HC death certificates filed in 2017\*\*
  - **36%** (10,862) of HC deaths reported to HCIFS in 2017
  - **4,731** medicolegal (ML) cases received by HCIFS for examination
  - **5,794** inquest only cases reported
  - **330** trauma inquest cases reported
  - **2,742** scenes attended by Forensic Investigators
- **5,104** deaths were certified in 2017, including:
  - **4,731** Harris County ML cases (all brought to HCIFS for examination)
  - **330** trauma inquests
  - **43** out-of-county cases





# Statistical Summary

- **83%** of ML cases (**3,922**) received a full autopsy\*
  - **17%** of ML cases (**809**) received an external examination only
- **299** decedents unidentified on arrival
  - **0** decedents remained unidentified at the end of 2017\*\*
- **273** referrals to Harris County Bereavement Services
- **167** formal neuropathological consults and **215** unofficial consults\*\*\*
  - **11** child abuse consults
- **No hospital autopsies retained**



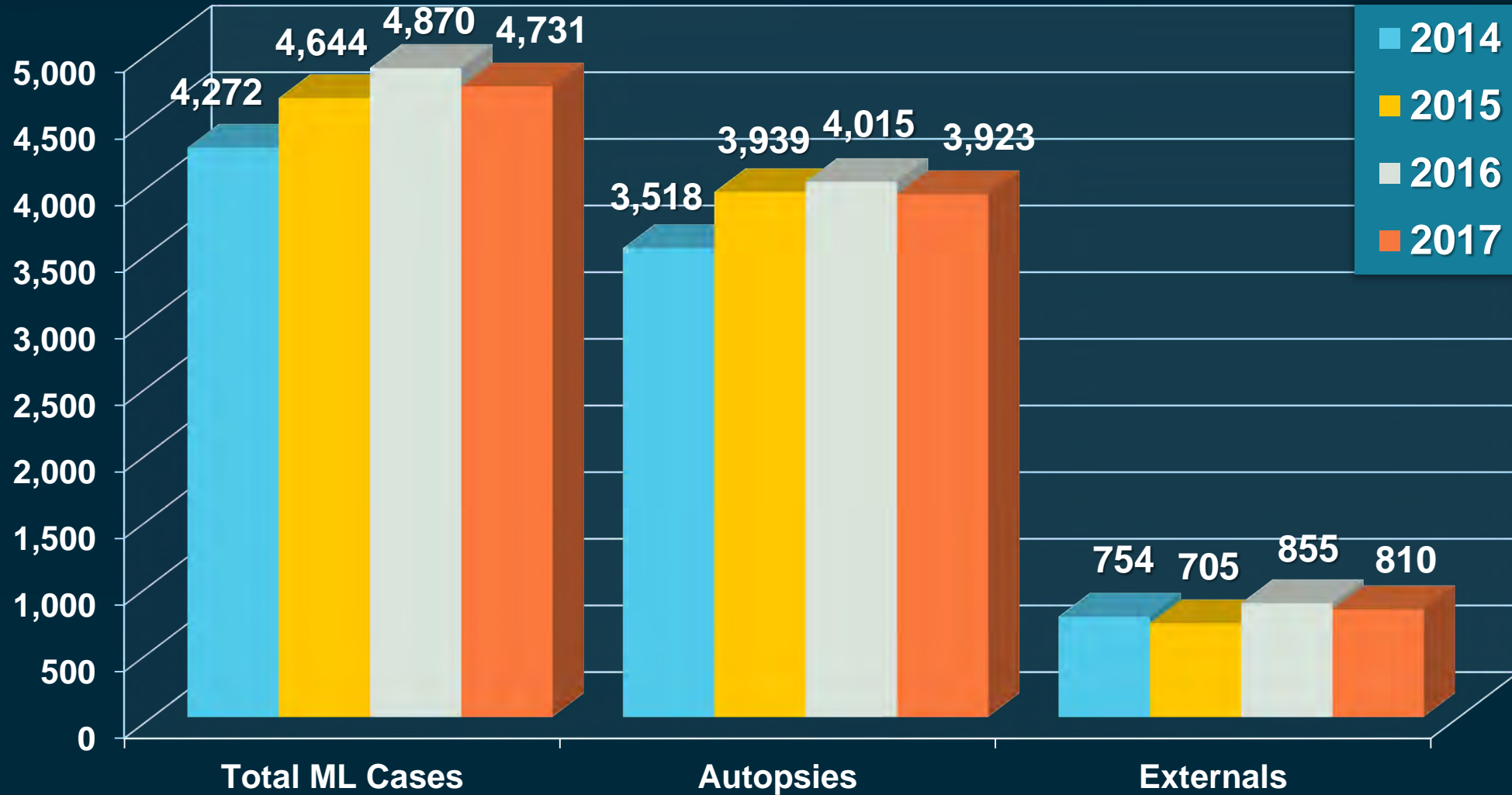
\* *Partial autopsies are not performed by the HCIFS*

\*\* *Exclude skeletal cases*

\*\*\* *Unofficial consults include gross, photo and microscopic consults*

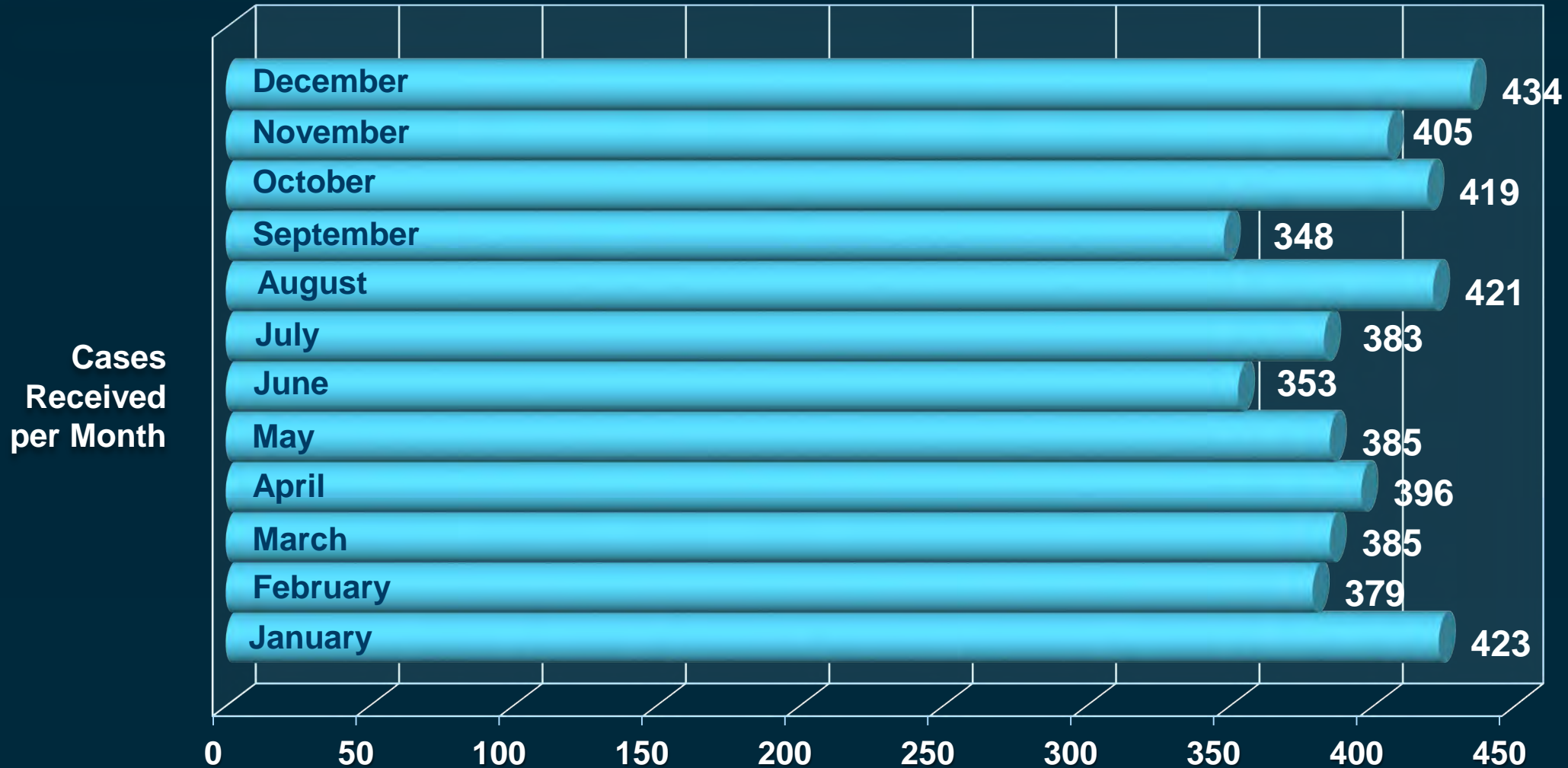


# Total Caseload (2014 - 2017)





# Monthly ML Caseload 2017





# Average Daily Medicolegal Caseload

2017: **13.0** cases | 2016: **13.4** cases | 2015: **12.7** cases

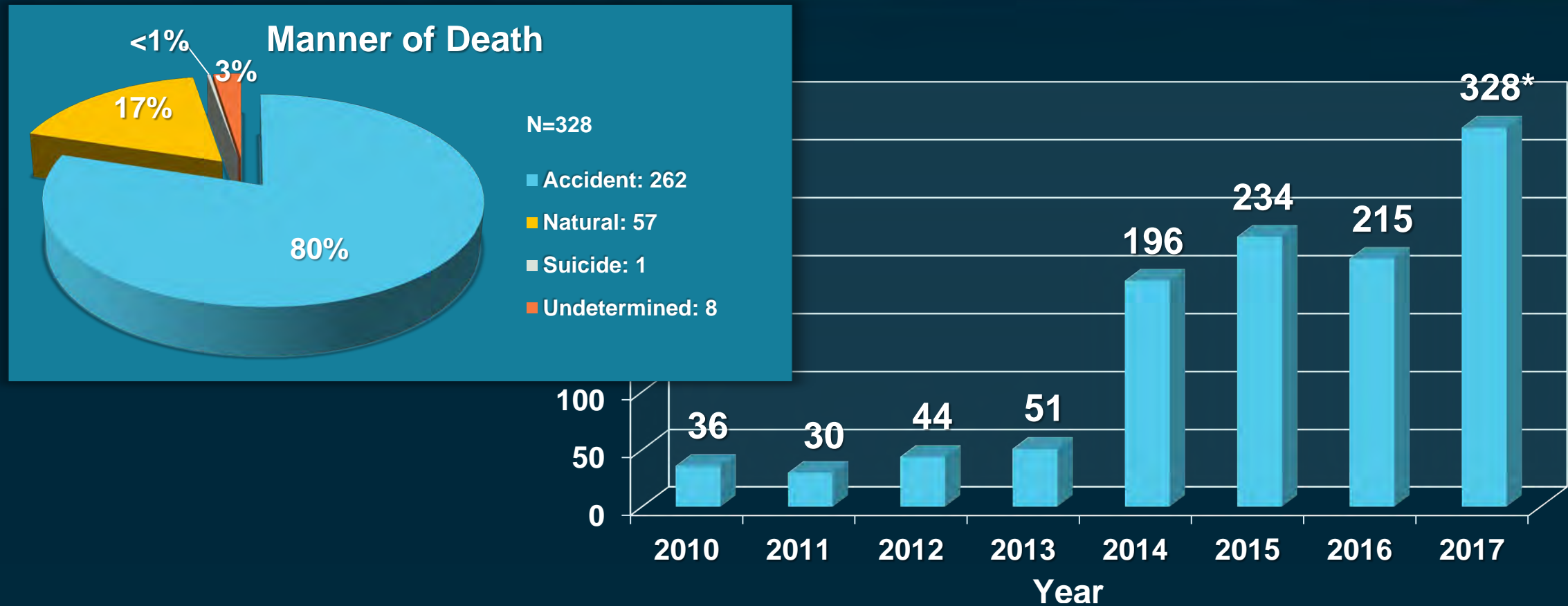
Months with  
**Highest** Average  
Daily Caseload:

2017 December: **14.0** cases  
2016 July: **15.2** cases  
2015 July: **13.7** cases

Months with  
**Lowest** Average  
Daily Caseload:

2017 September: **11.6** cases  
2016 October: **11.8** cases  
2015 September: **11.3** cases

# Trauma Inquest Case Stats



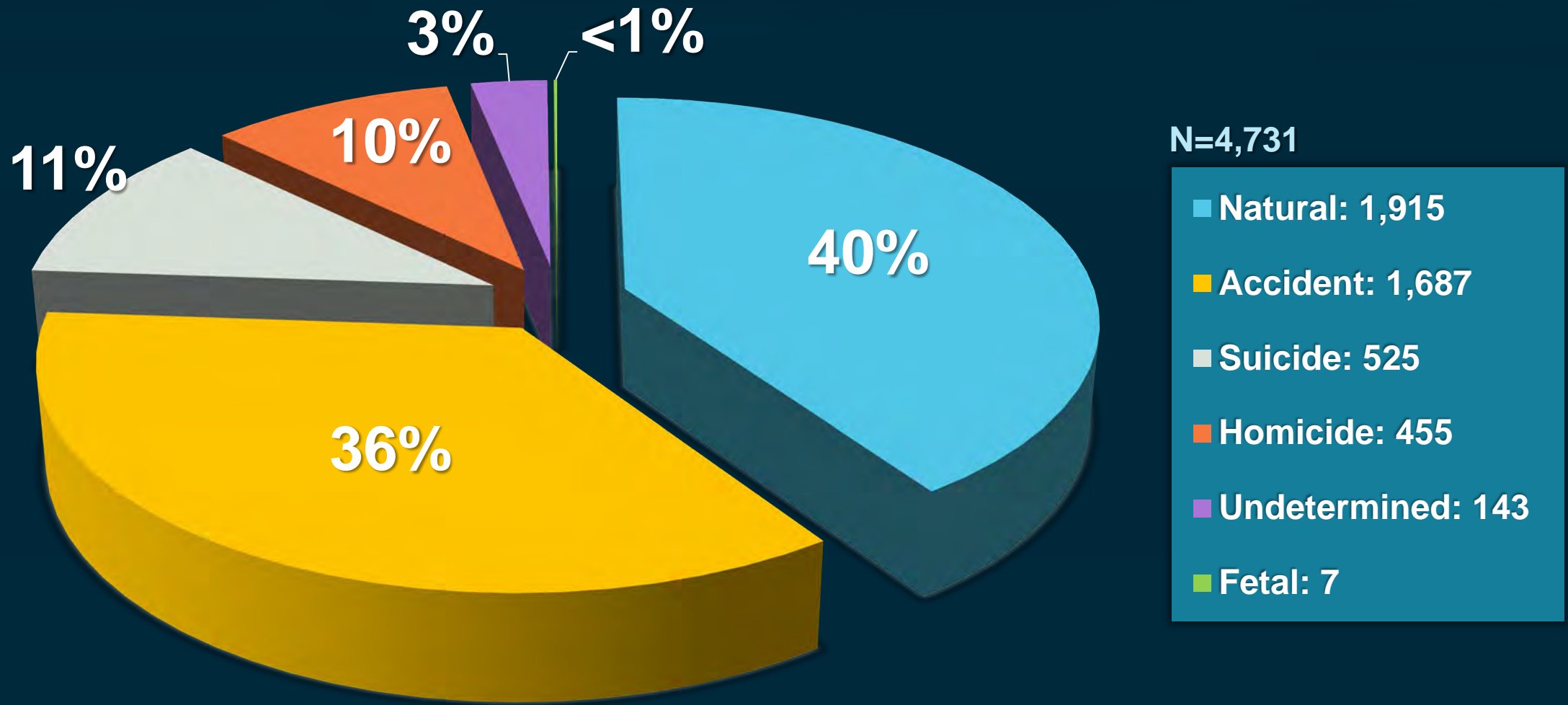
\*About **53%** increase compared with 2016; a record high for trauma inquest cases

\*\*Trauma inquest is a death investigation in which the medical examiner accepts jurisdiction and completes the death certificate, but the body of the deceased is not examined by medical examiner personnel. Prior to 2014, many of the deaths that we currently handle as trauma inquests were brought in for external examination. The practice of performing a trauma inquest in these cases is a more judicious use of HCIFS personnel, and streamlines family disposition of the body, without compromising the accuracy of death certification.



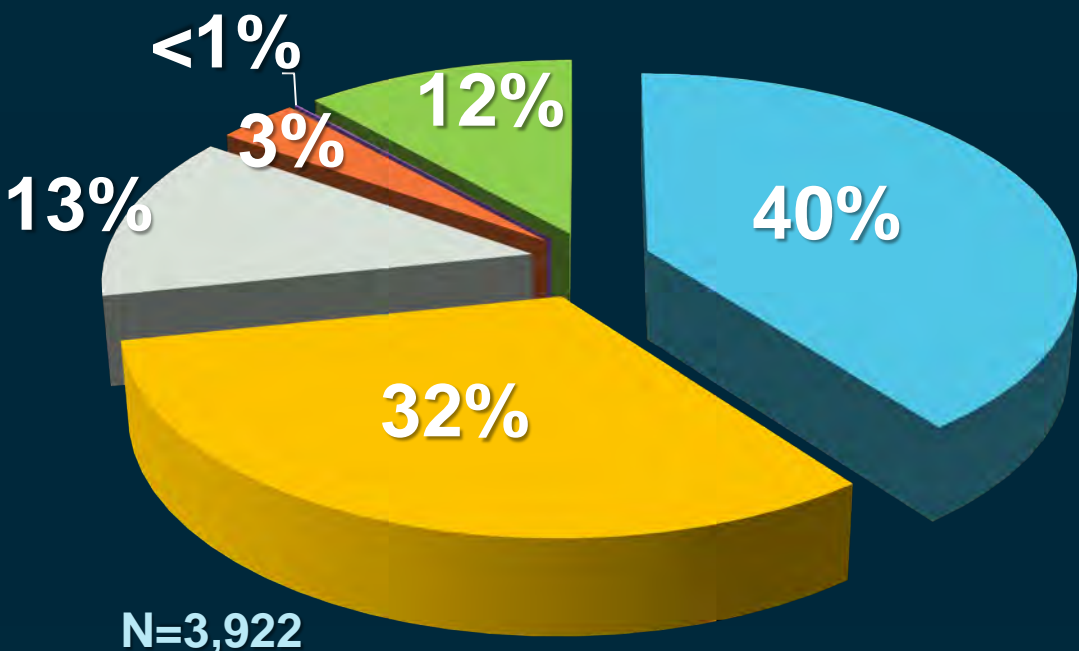


# Manner of Death – Autopsy and External Examinations



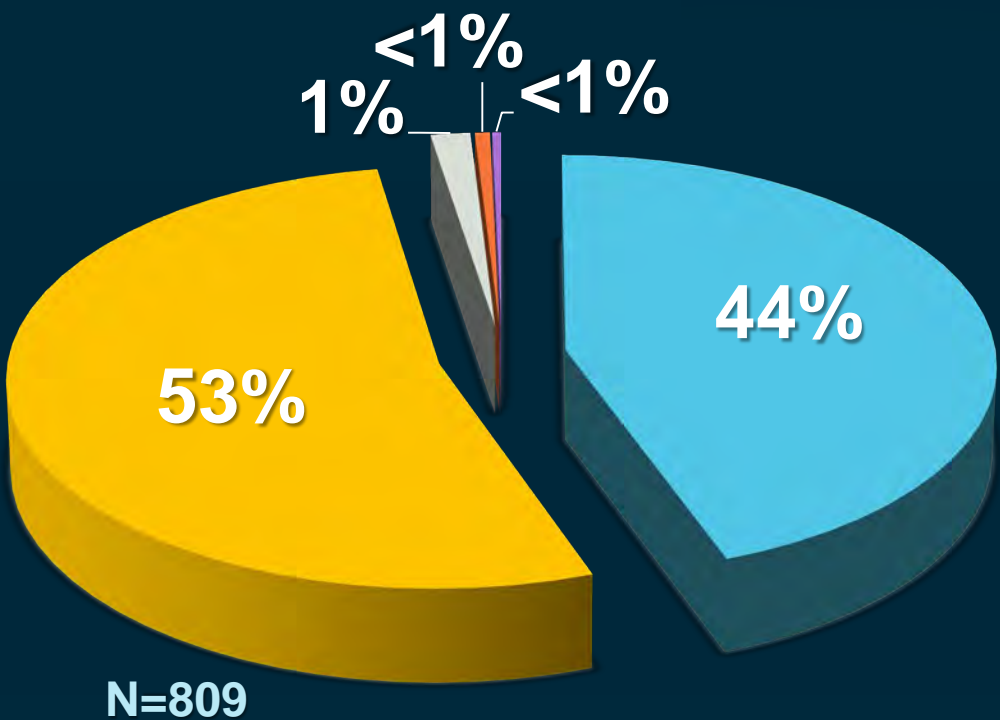
# Manner of Death Filtered by Autopsy and External Examinations

Autopsy Examinations



<span style="color: #00AEEF;">■</span> Natural: 1,555	<span style="color: #FFC000;">■</span> Accident: 1,258
<span style="color: #A9A9A9;">■</span> Suicide: 512	<span style="color: #FF4500;">■</span> Undetermined: 138
<span style="color: #800080;">■</span> Fetal: 4	<span style="color: #32CD32;">■</span> Homicide: 455

External Examinations

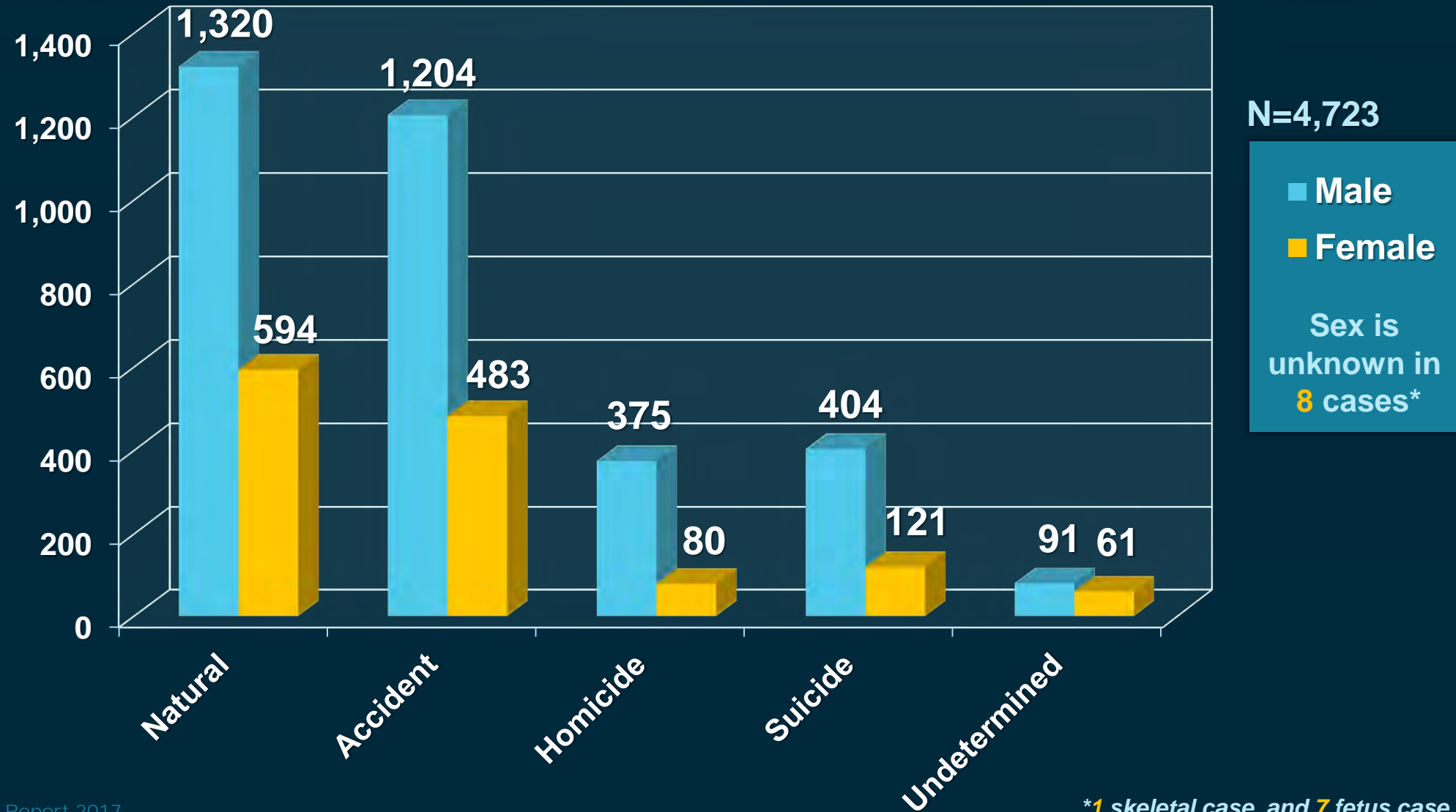


<span style="color: #00AEEF;">■</span> Natural: 359	<span style="color: #FFC000;">■</span> Accident: 429
<span style="color: #A9A9A9;">■</span> Suicide: 13	<span style="color: #FF4500;">■</span> Undetermined: 5
<span style="color: #800080;">■</span> Fetal: 3	

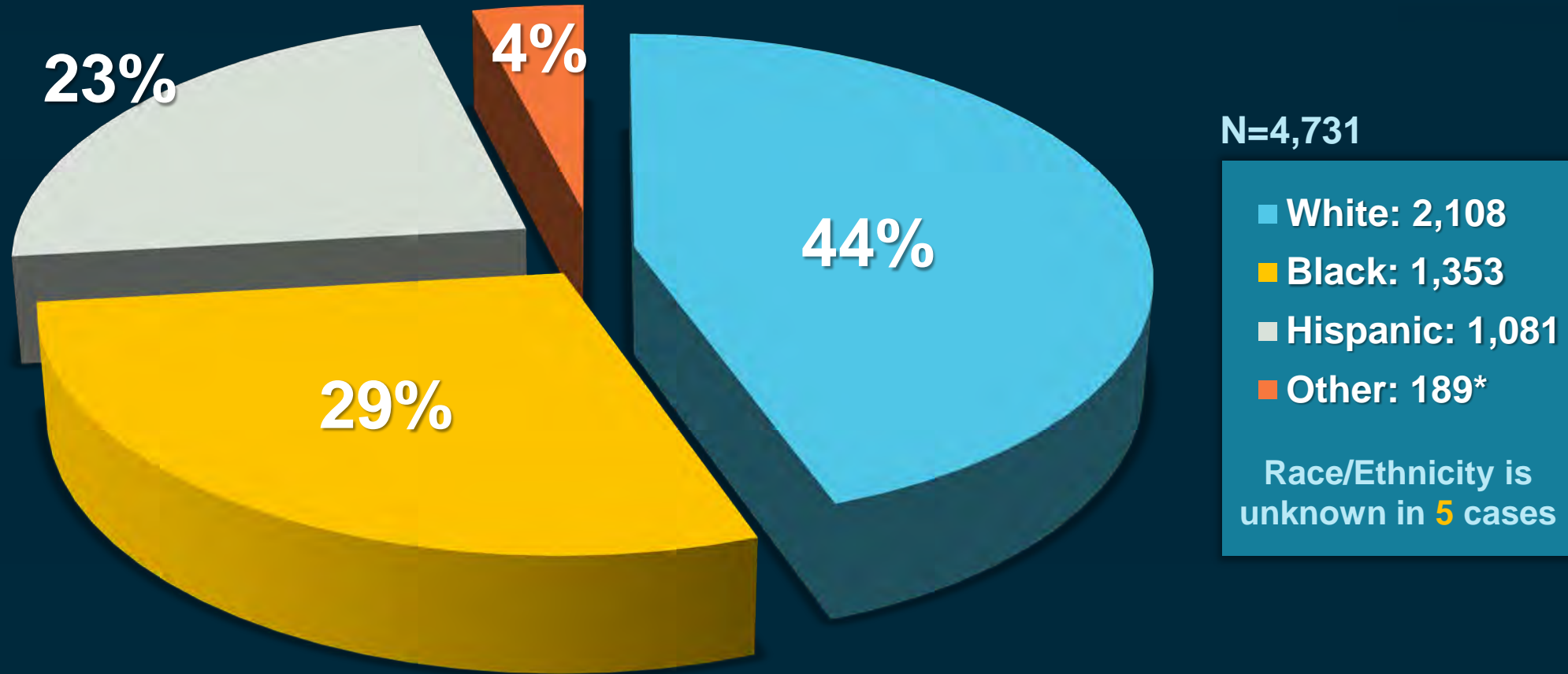




# Manner of Death Stratified by Sex



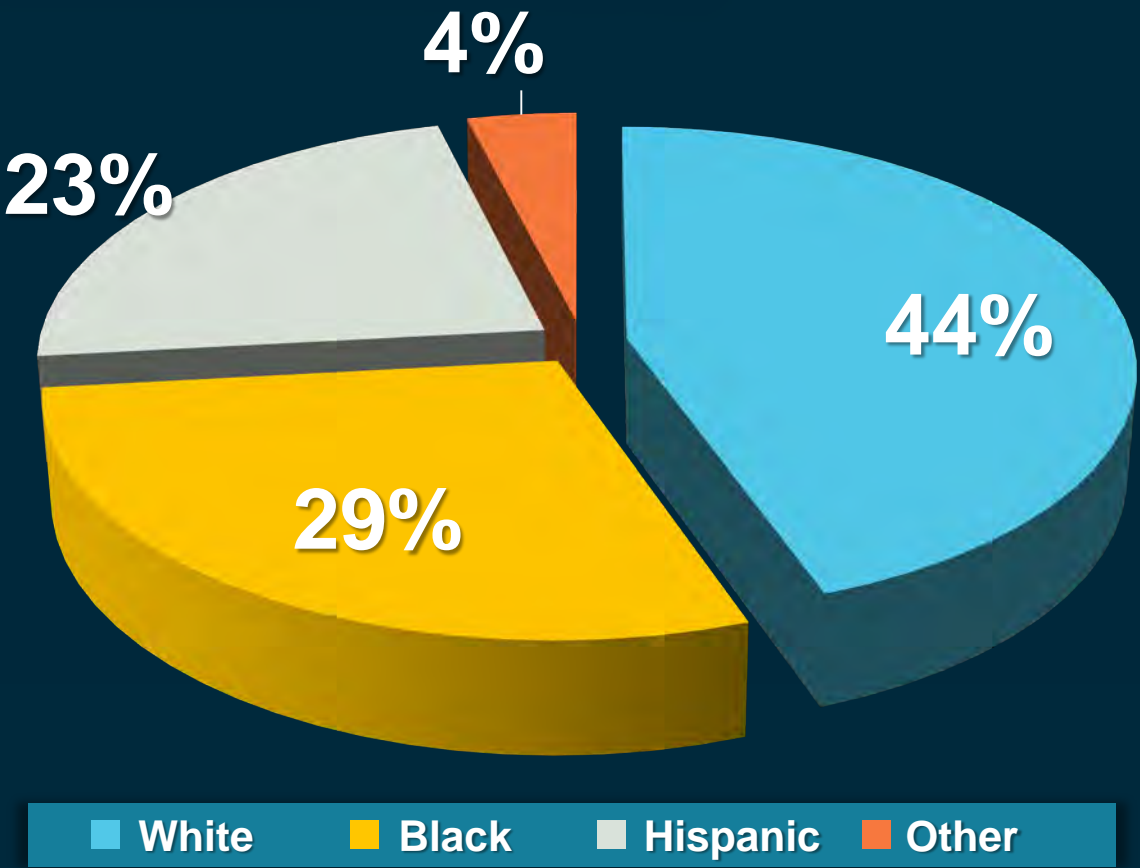
# Race/Ethnicity Components of ML cases



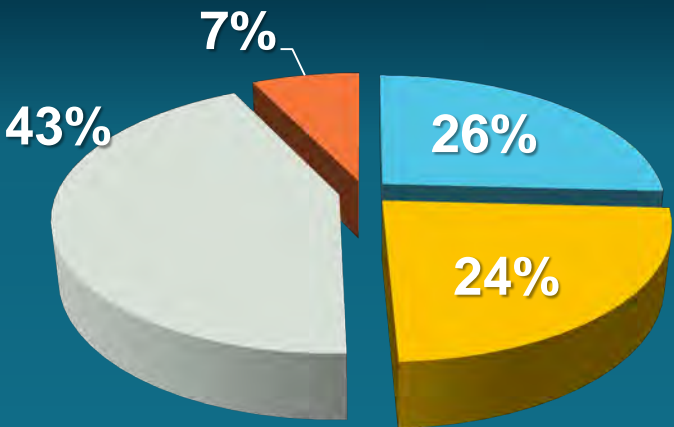


# Race/Ethnicity Case Demographic Data HCIFS Compared to Population

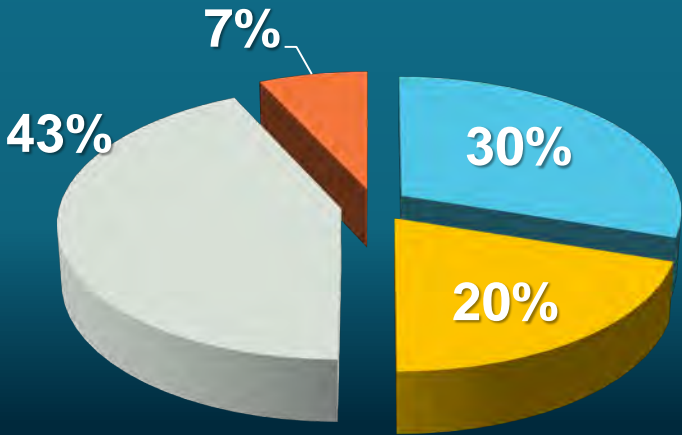
HCIFS Decedent Population\*



Houston City Population\*\*

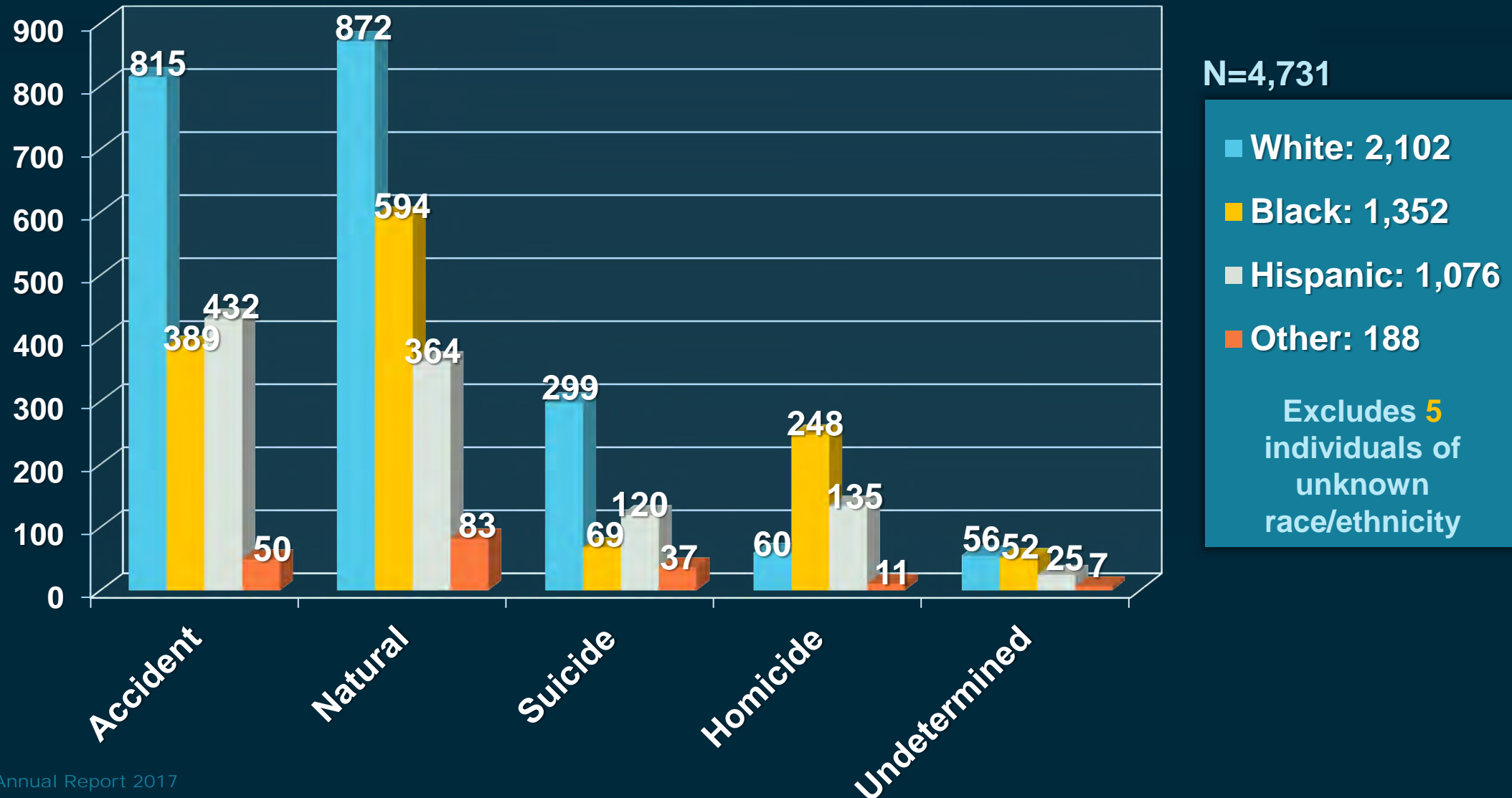


Harris County Population\*\*\*



\* HCIFS decedent population, **N=4,731**, excludes unknown race/ethnicity  
\*\* City of Houston population, **N=2,312,717**, estimated by Statistical Atlas  
\*\*\* Harris County population, **N=4,652,980**, estimated by Texas DSHS Center for Health Statistics

# ML Cases by Manner and Race/Ethnicity



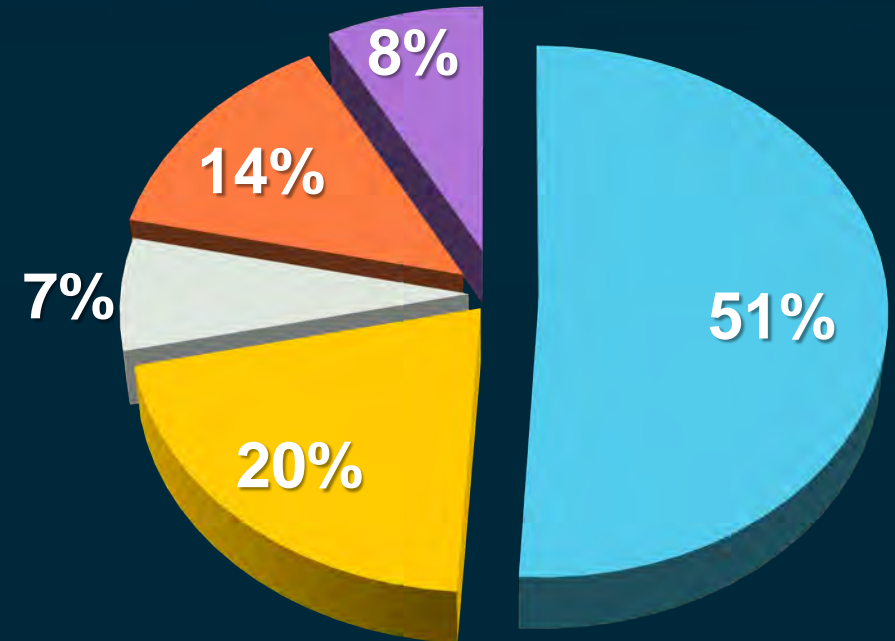


# Infant/Fetal Deaths

The birth count for Harris county is estimated to be 73,605 for 2017

(Data provided by Texas Department of State Health Services)

- **104** infant/fetal death cases  
(aged less than 1 year)
- **52** cases of Undetermined Manner
  - **26** were classified as Undetermined (co-sleeping)\*
- The cause of death in **5** of the **21** infant deaths with a natural manner was SIDS



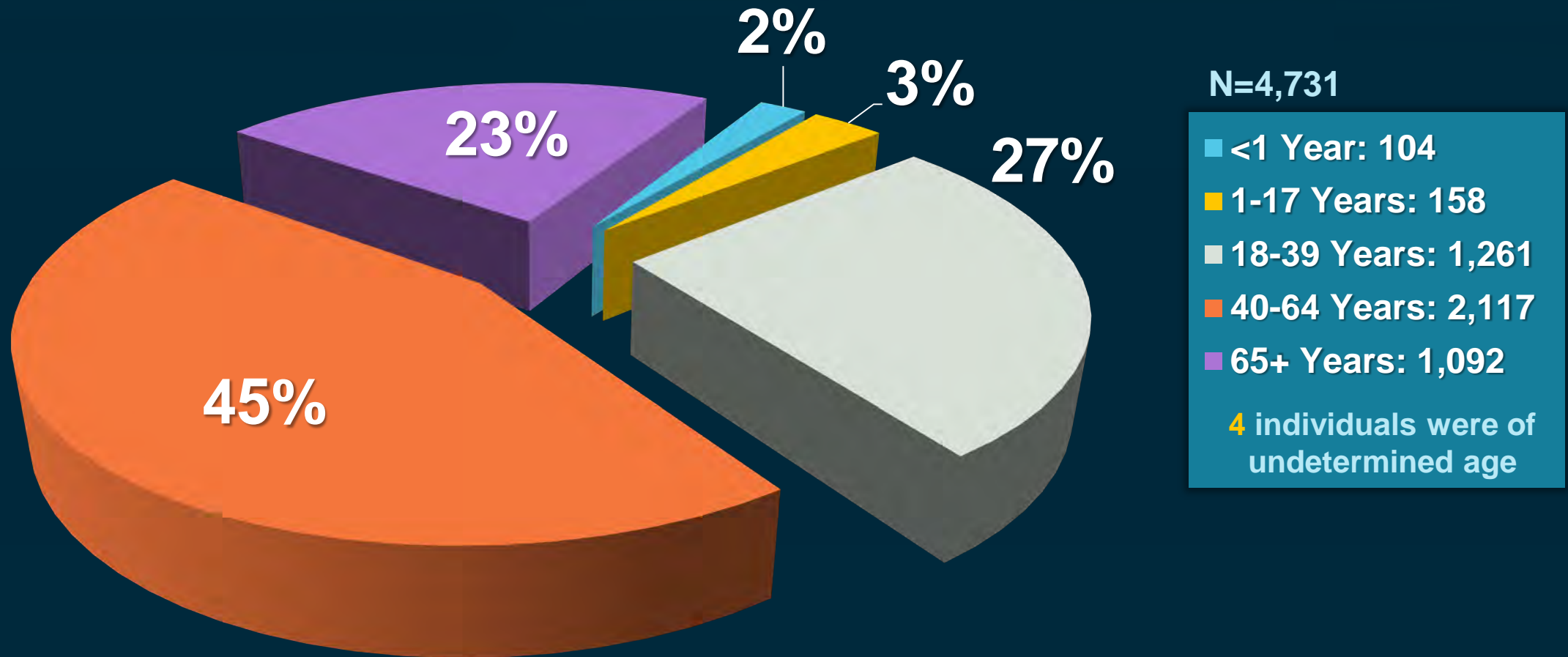
N=102

■ Undetermined: 52	■ Natural: 21
■ Fetal: 7	■ Accident: 14
■ Homicide: 8	

\* "Undetermined (co-sleeping)" are cases with no anatomic findings to indicate a cause of death, toxicological cause of death, or suspicion of foul play by investigation, but were co-sleeping with another individual at the time of their demise. These cases would otherwise be classified as Sudden Infant Death Syndrome (SIDS) but for the possibility of overlay. Therefore, the cause of death in this subset of cases was classified as "undetermined (co-sleeping)."



# ML Cases Age Categories – Represented By Proportion

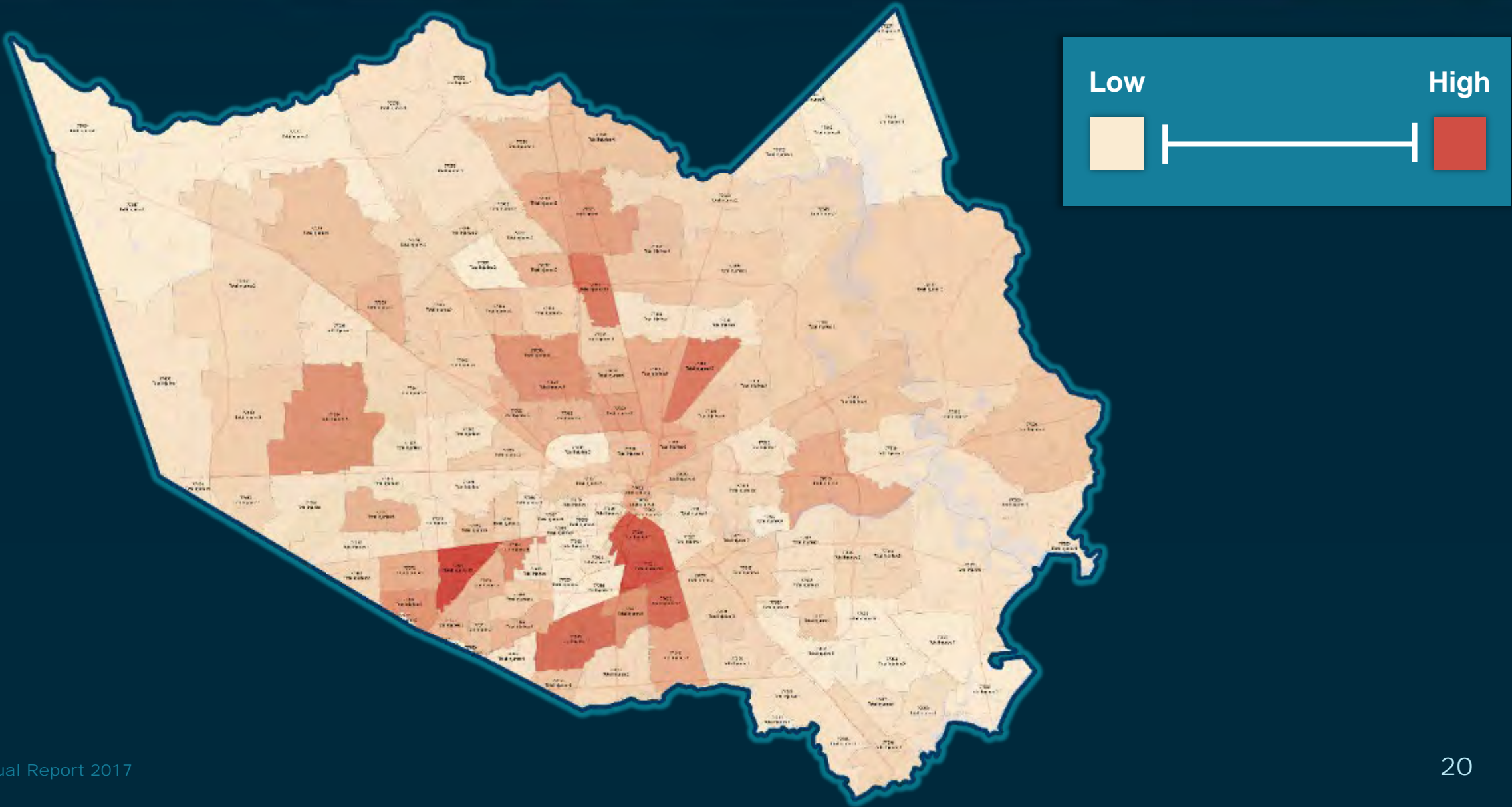


# Homicide Case Volume

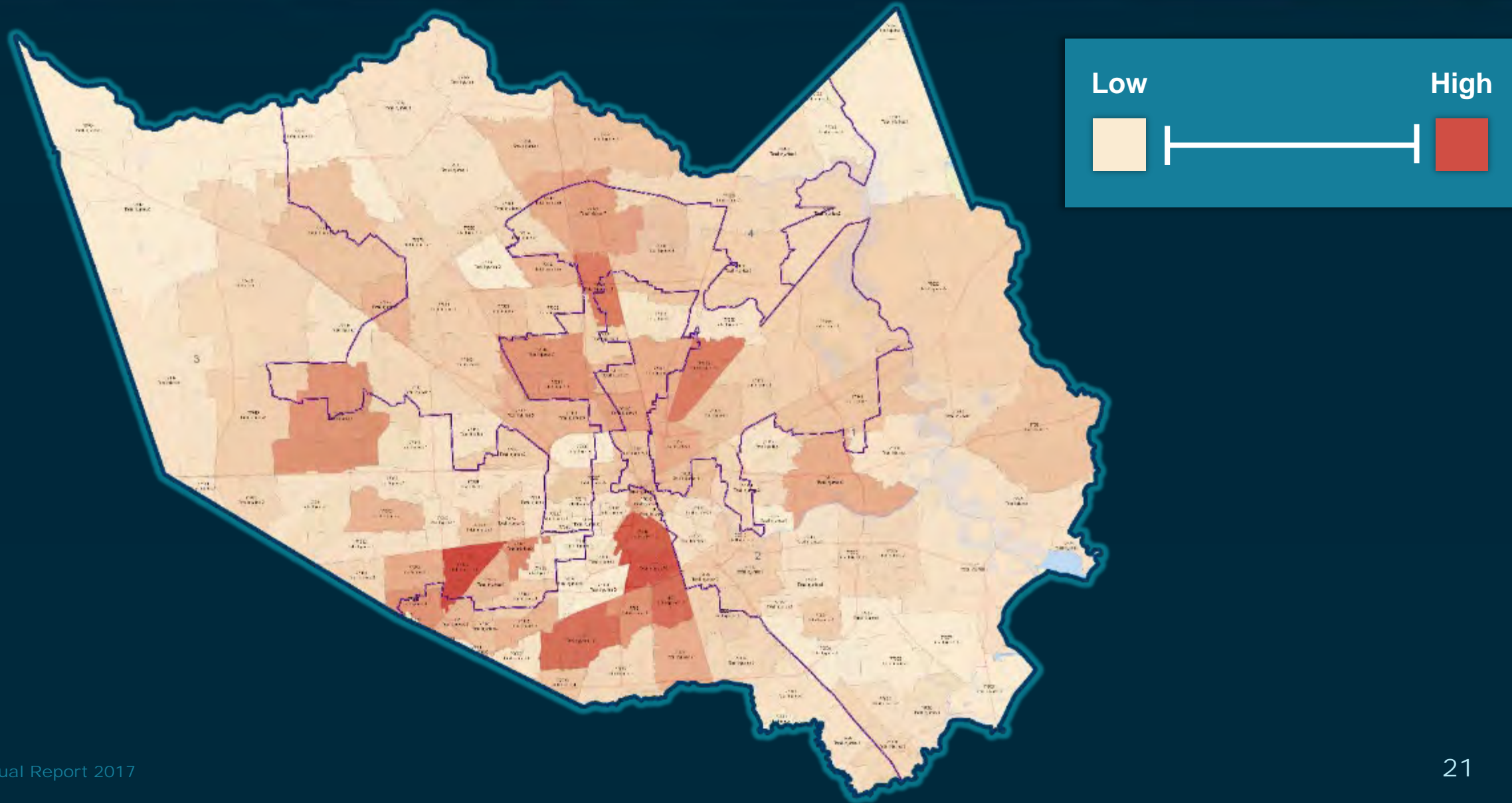




# Homicides Stratified by Injury Zip

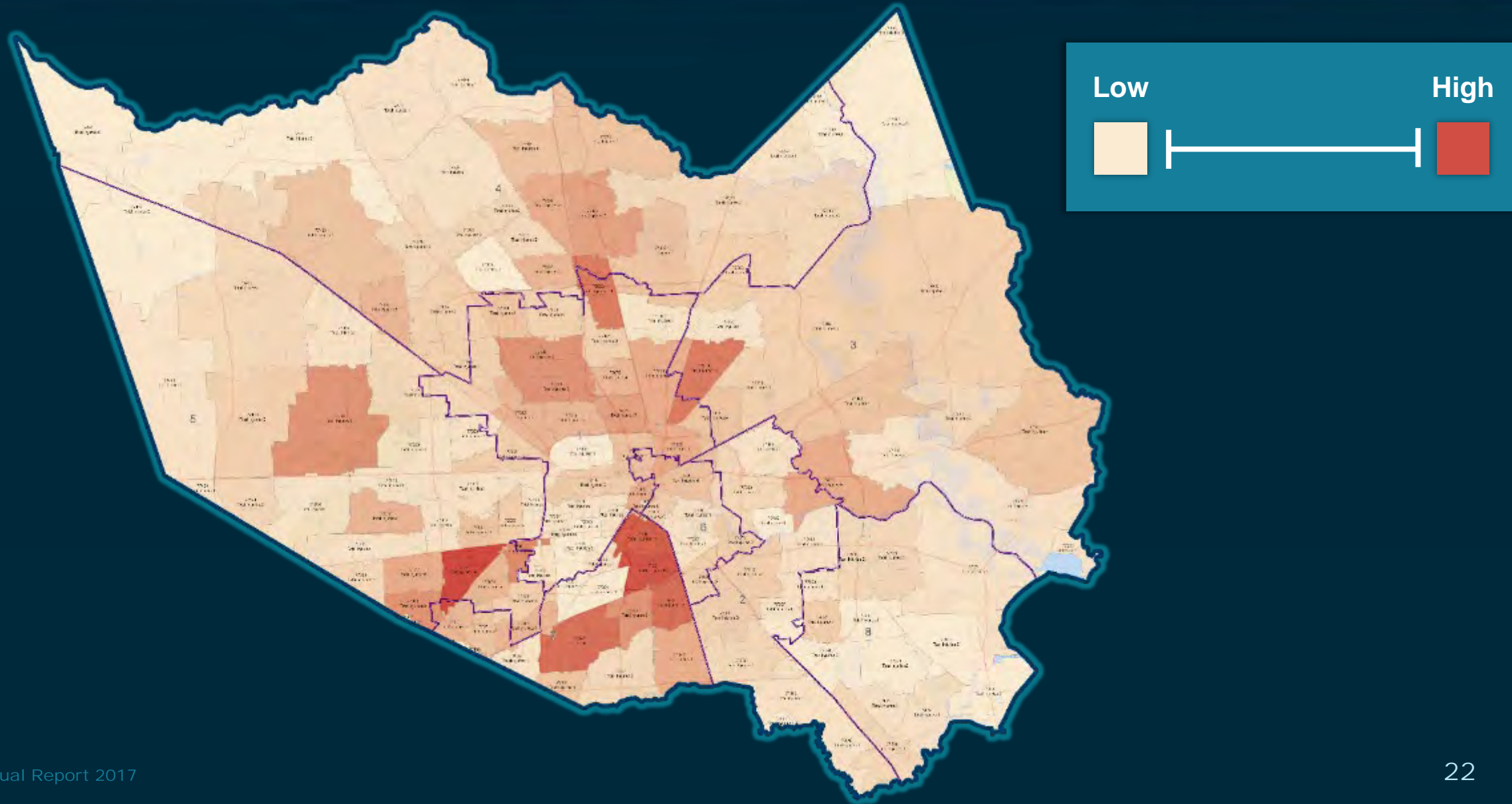


# Homicides Stratified by Injury Zip/Commissioner Precinct Boundary





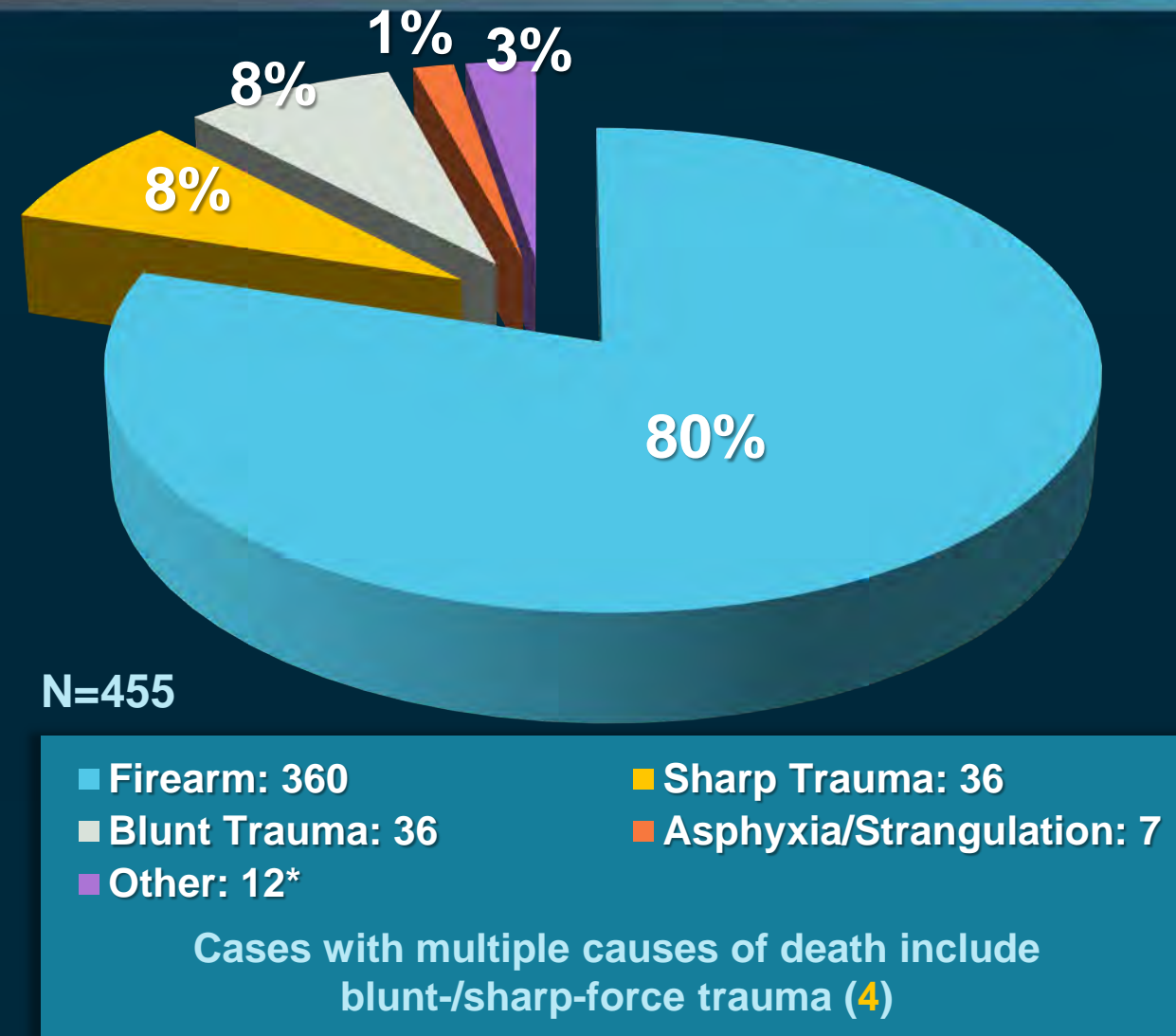
# Homicides Stratified by Injury Zip/Constable Precinct Boundary



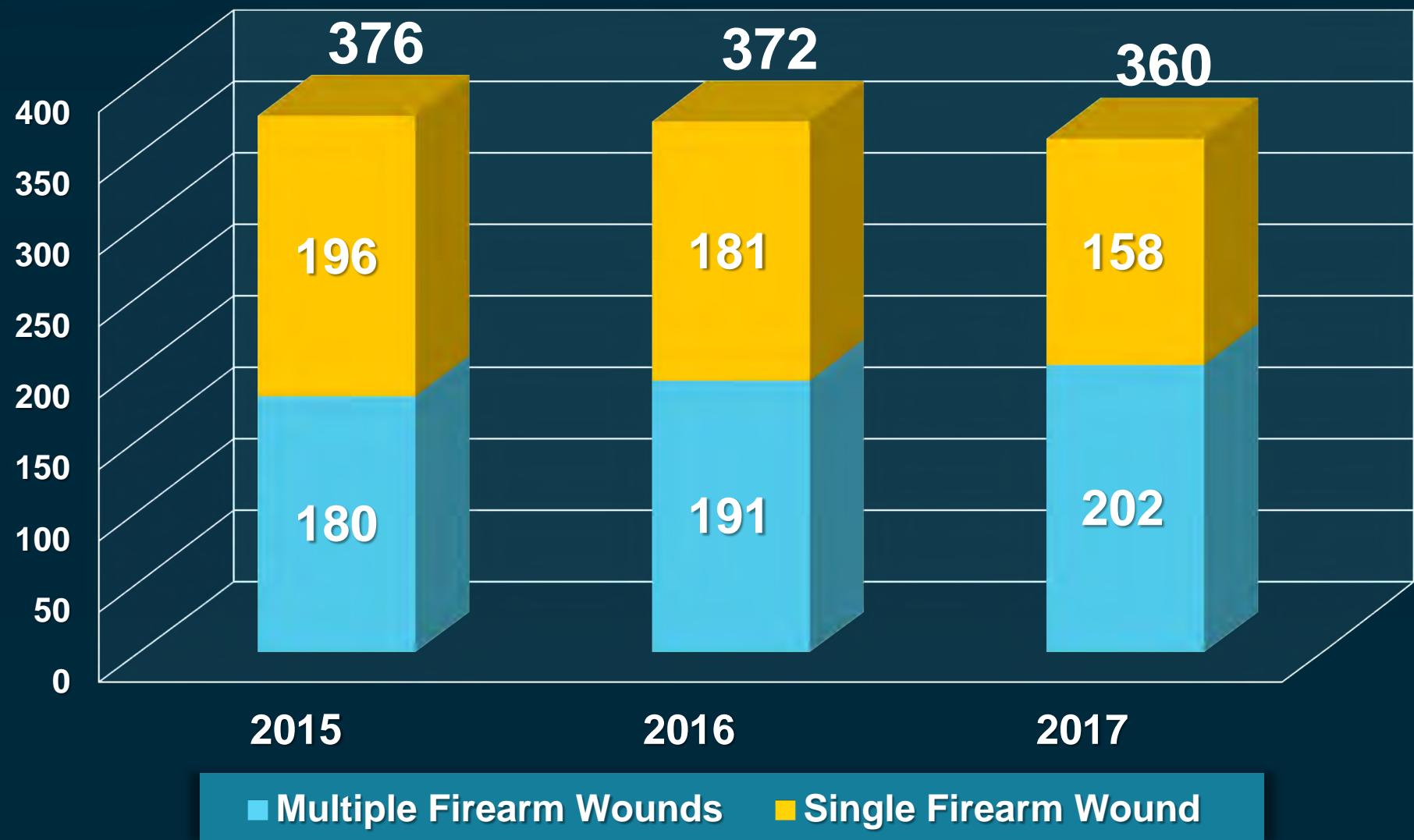


# Cause of Death in Homicide Cases

- **60** cases were linked to at least one other ML case (e.g. double murder, murder suicide, etc.)
  - Similar to number of total homicide cases in 2016 (**61**)
- At least **32** homicide cases are associated with domestic violence
- **11** homicide deaths occurred “while at work”

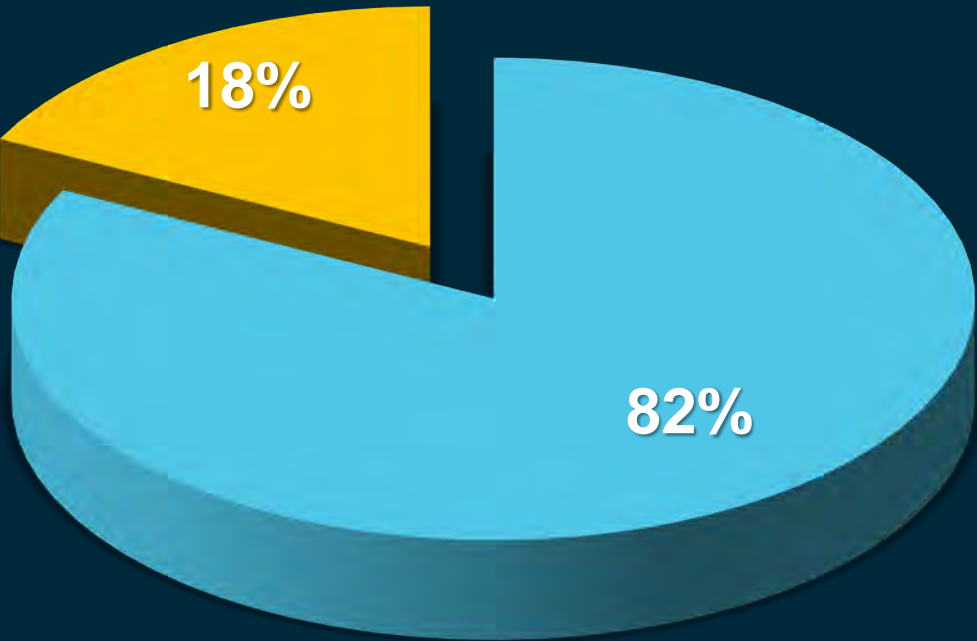


# Homicide Deaths by Firearms



# Homicide Deaths – Stratified by Demographic Category

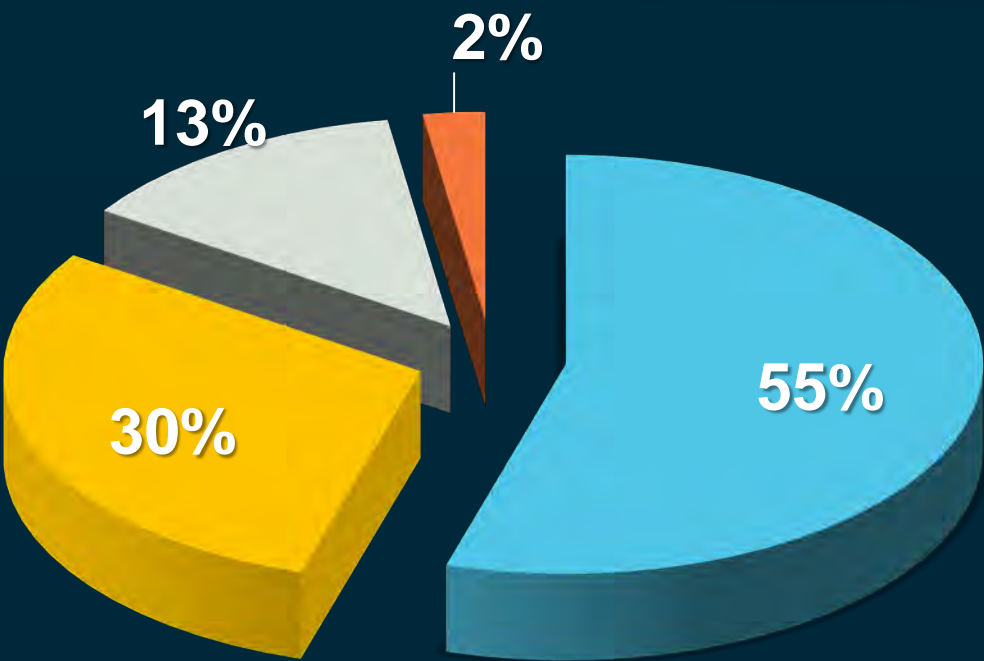
Sex



■ Male: 375    ■ Female: 80

Race/Ethnicity

N=455



■ Black: 248    ■ Hispanic: 135  
■ White: 60    ■ Asian: 11

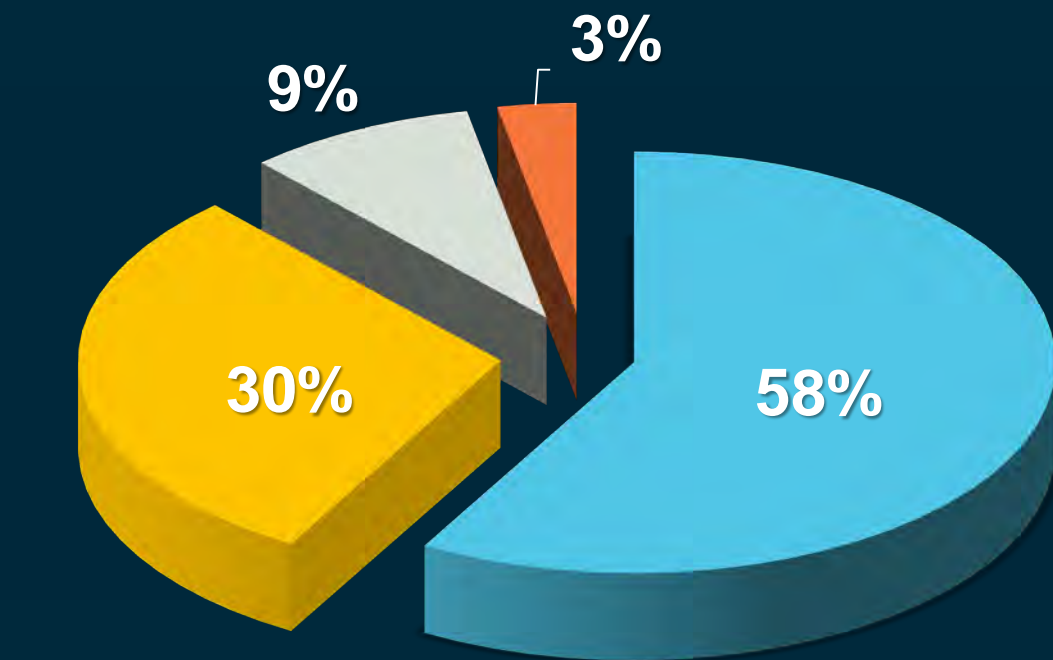


\* There is one homicide case with unknown race/ethnicity



# Homicide Deaths by Race/Ethnicity – Harris County & City of Houston

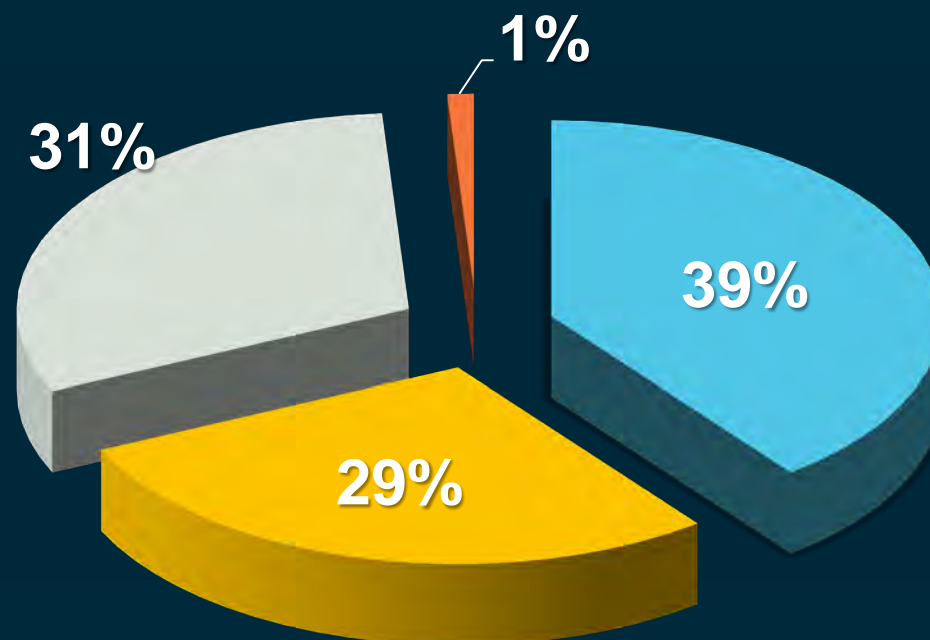
## City of Houston



N=364\*

## Harris County

*Excluding the City of Houston*

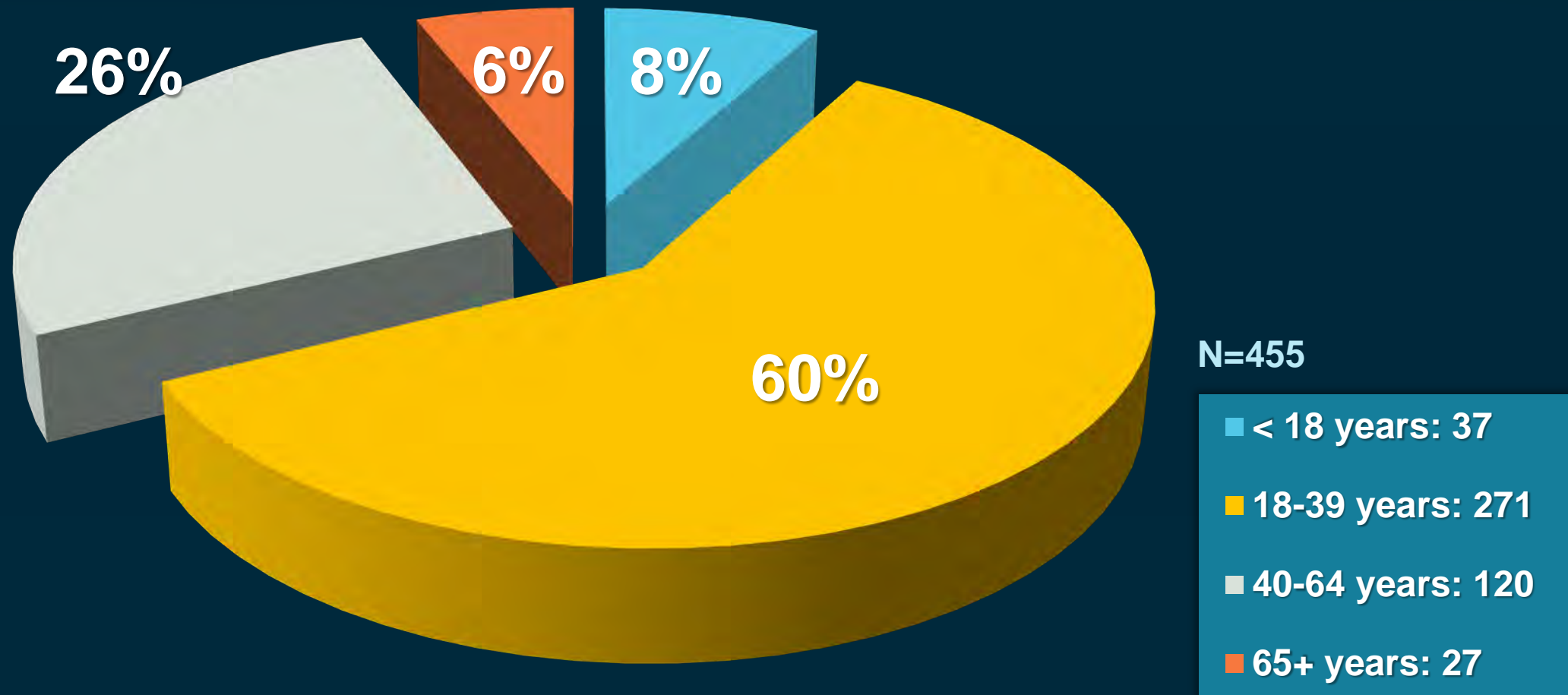


N=91

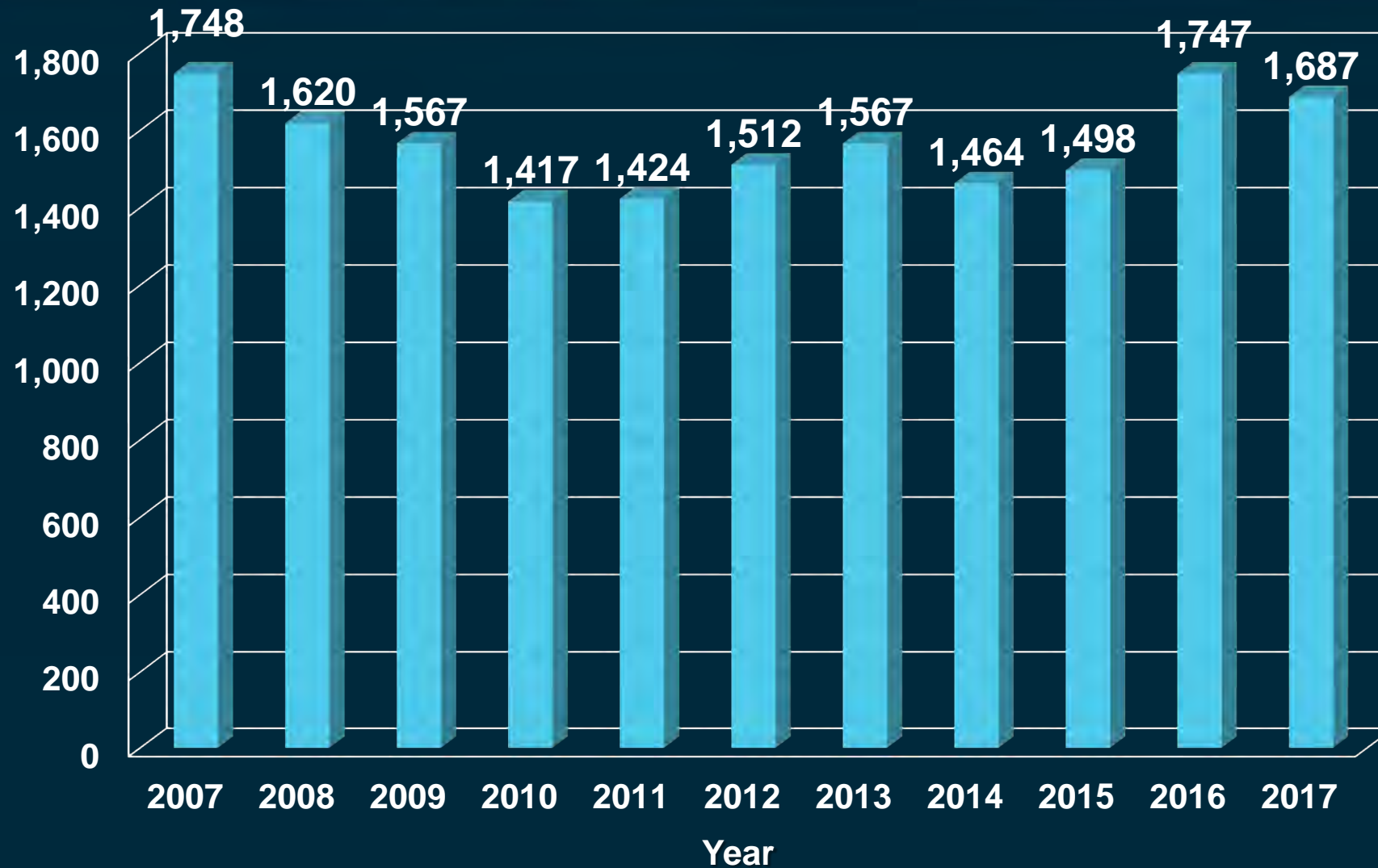
■ Black ■ Hispanic ■ White ■ Asian



# Homicide Deaths by Age Category

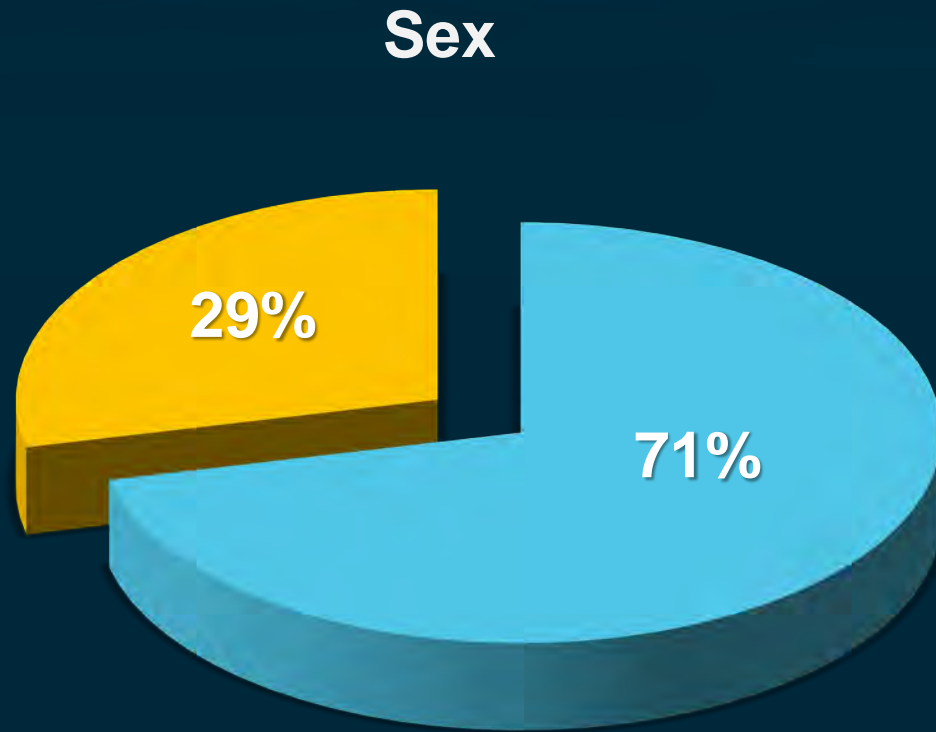


# ML Accidental Death Case Volume



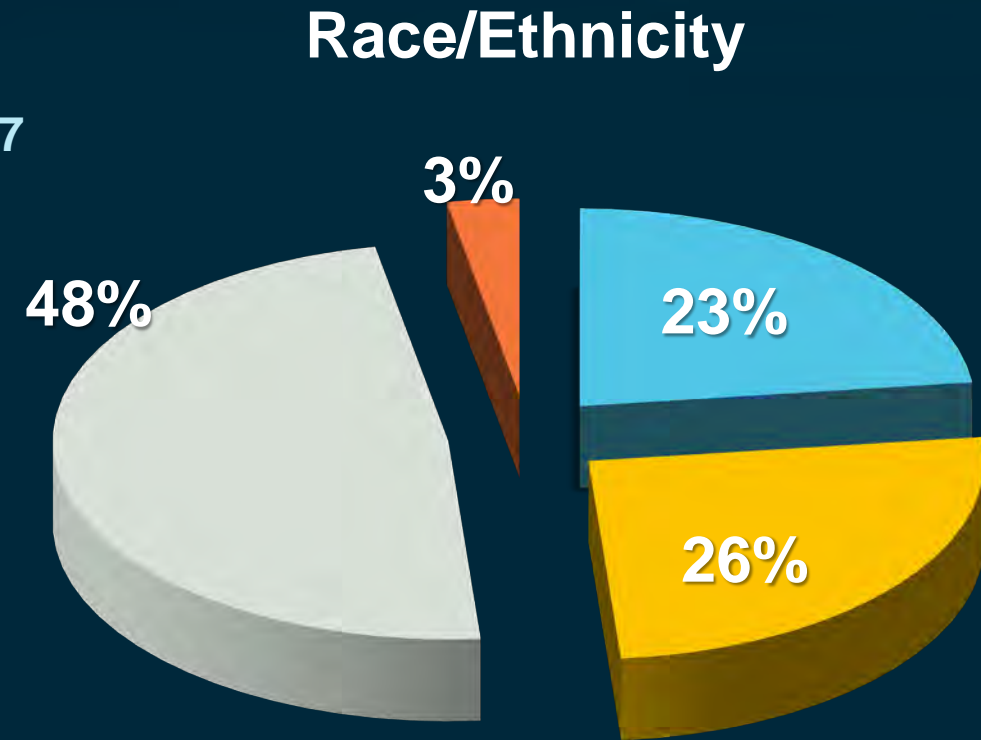


# ML Accidental Deaths – Stratified by Demographic Category



■ Male: 1,204 ■ Female: 483

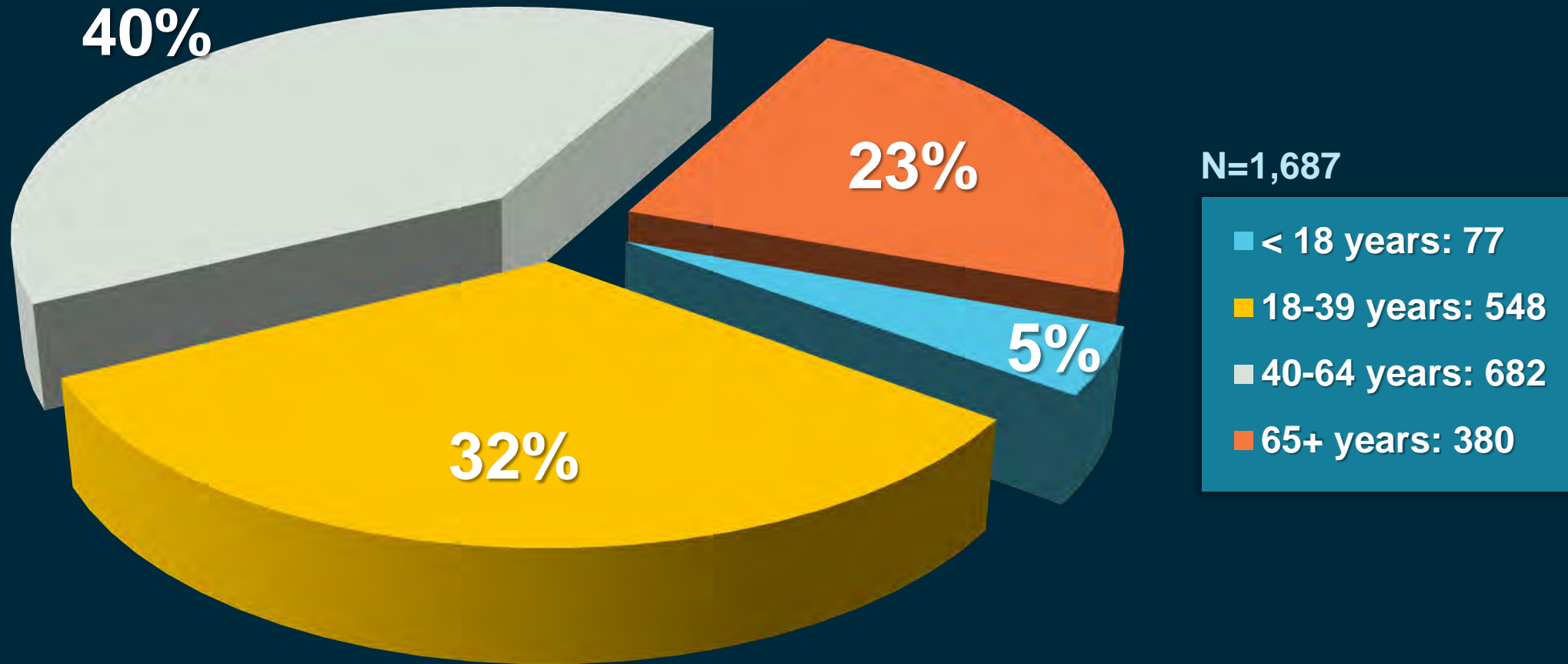
N=1,687



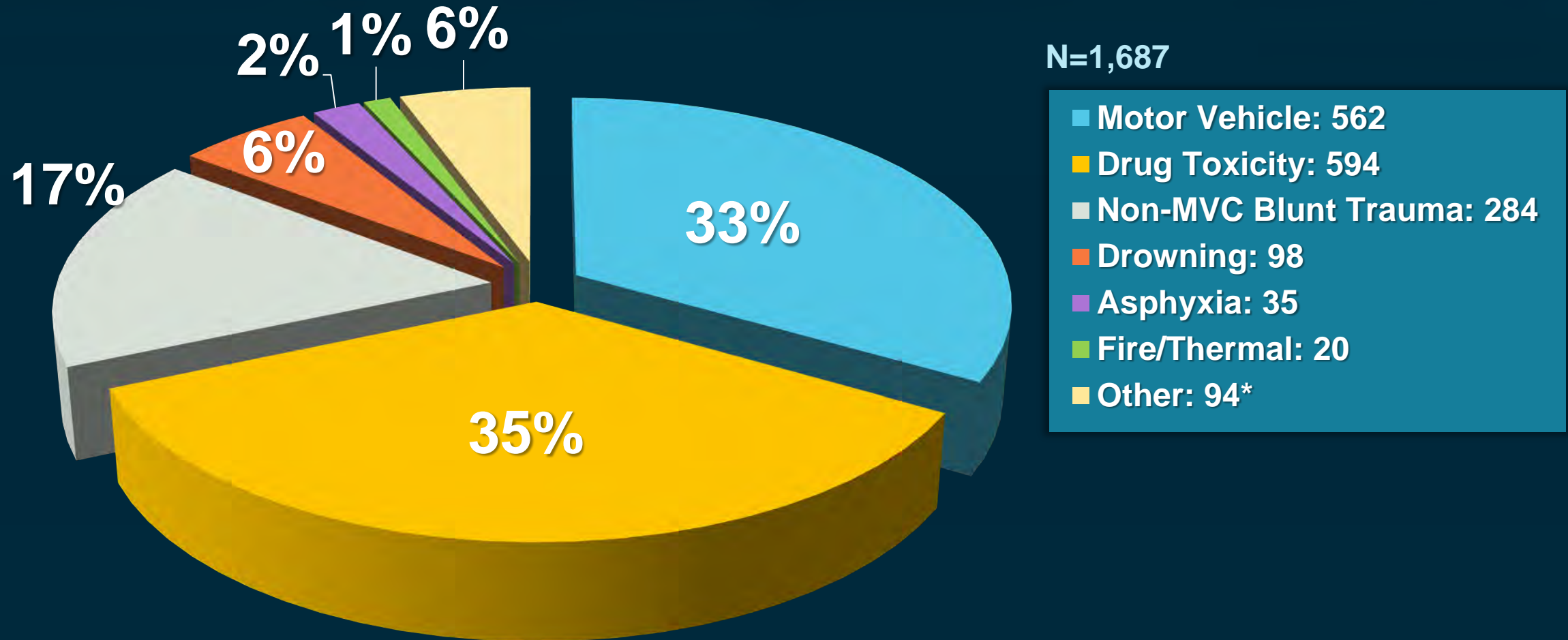
■ Black: 389 ■ Hispanic: 432  
■ White: 815 ■ Asian: 50



# ML Accidental Deaths by Age Category



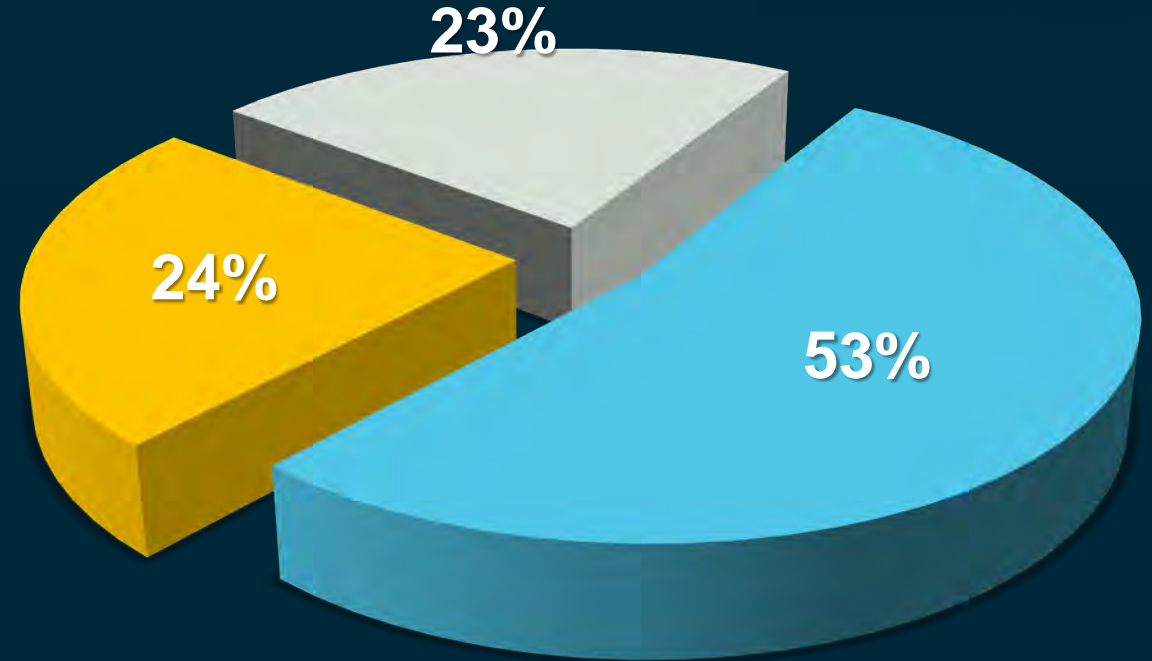
# Most Common Causes of ML Accidental Death





# Motor Vehicle Crash (MVC) Death Cases

- MVC fatalities include **32** children aged 2 months to 17 years
- **3** children were pedestrians, aged 5 years to 15 years of age
- **18%** of driver fatalities (**53**) were under 25 years of age
- **19** stranded motorists were hit while stopped



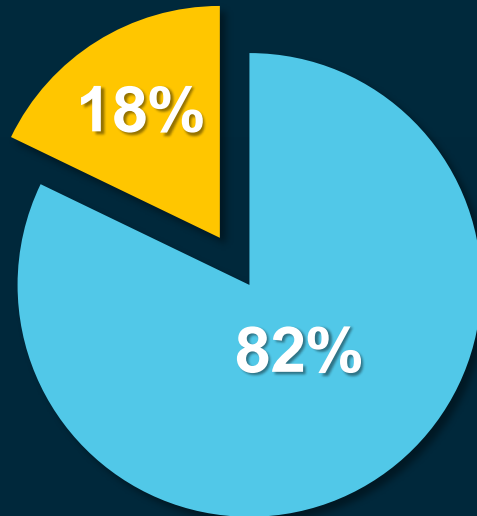
N=562

- Driver: 297
- Passenger or Unknown Position: 136
- Pedestrian: 129



# MVC Sex and Age Distributions

Driver Sex Distribution

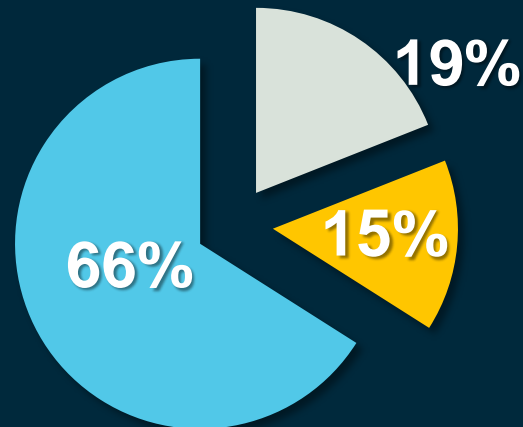


N=297

■ Male: 244  
■ Female: 53

The youngest driver fatality was 16; the oldest 94

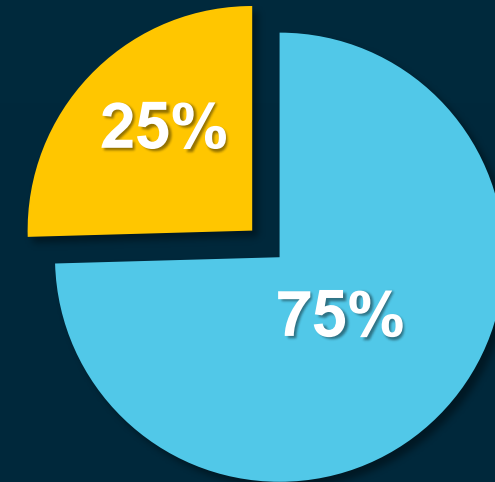
Proportion of drivers who were teens or senior citizens



N=297

■ 16 to 25 years: 57  
■ 65+ years: 43  
■ Other Ages: 197

Sex Distribution all MVC



N=562

■ Male: 419  
■ Female: 143



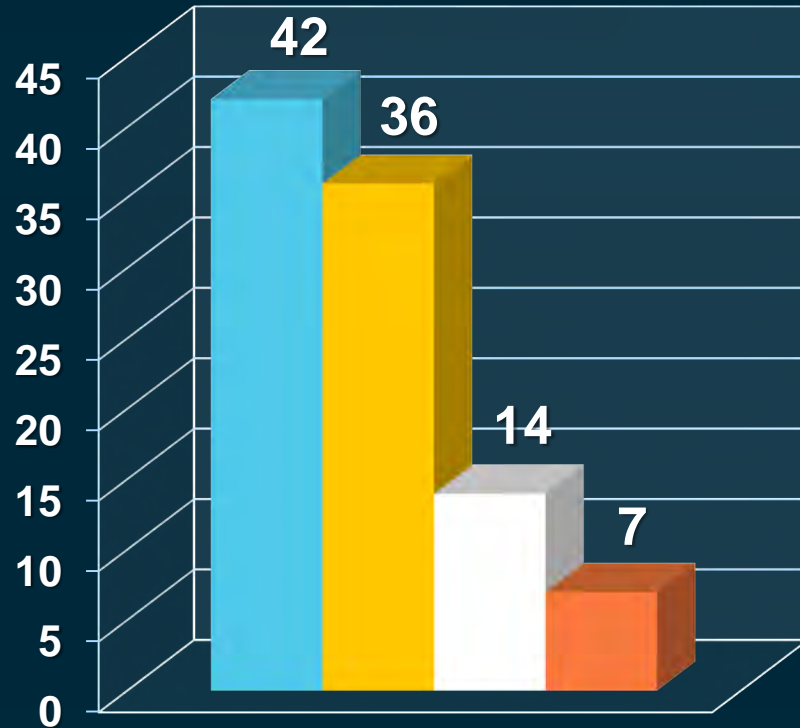
# Accidental Drowning

- **99** total cases of Accidental Drowning in 2017  
(Includes cases of submerged vehicles)
  - Includes **34** drowning cases related to Harvey
- Age range is **2** years to **91** years
  - Includes **14** young children aged 2 to 7 years
  - **68** of the drowning cases are males compared to **31** females



# Accidental Drowning – Case Demographics

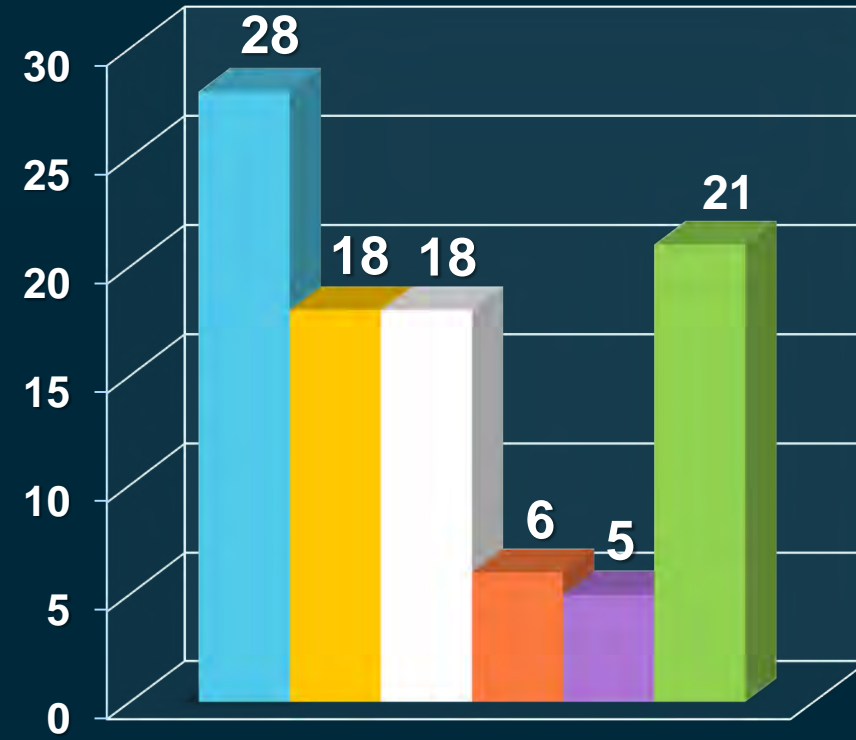
## Race/Ethnicity



N=99

■ White ■ Hispanic ■ Black ■ Asian

## Type of Water



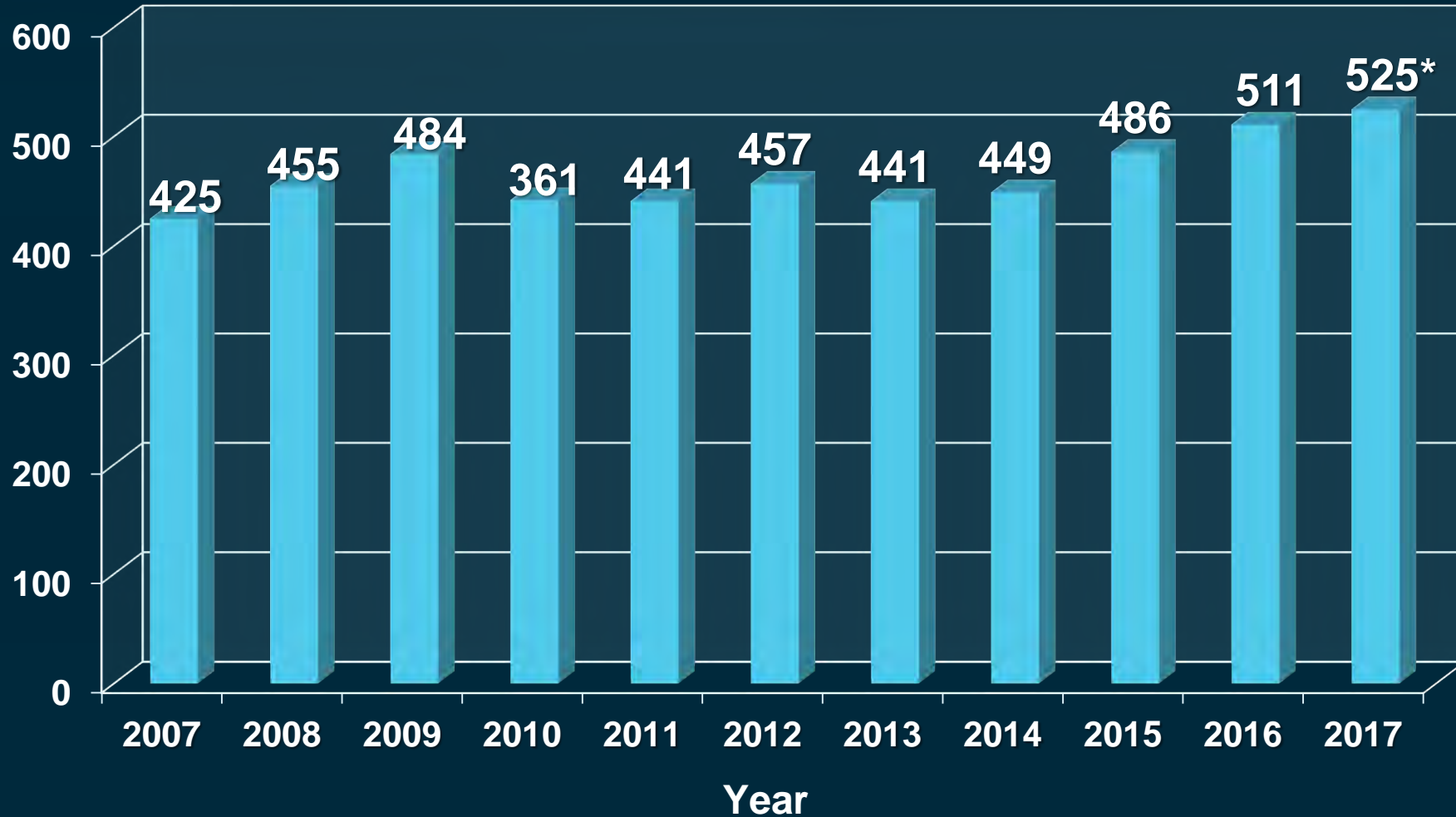
N=96

■ Natural Water ■ Residential Pool  
■ Bath Tub ■ Ditch/Residential Basin  
■ Community Pool ■ Other\*





# ML Suicide Case Volume

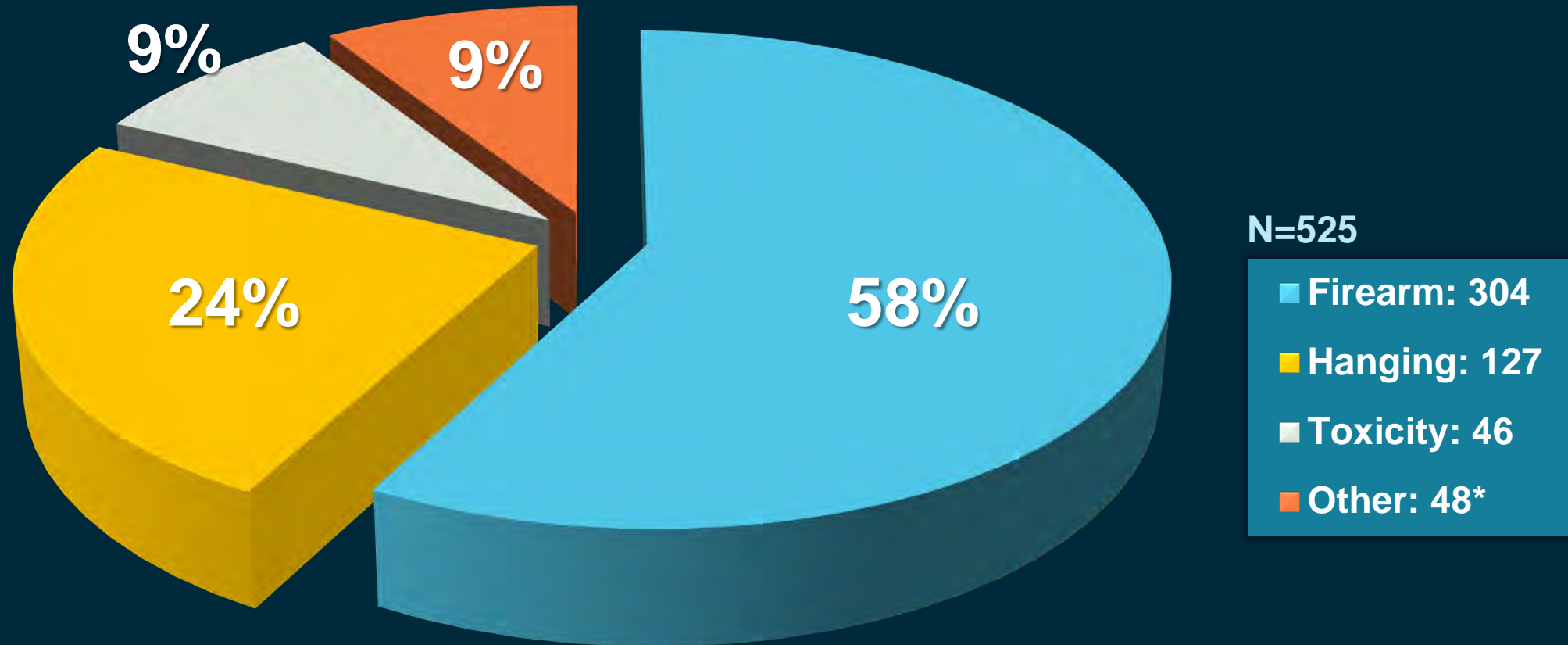


# ML Suicide Case Demographics

- Male to female ratio is **3.34** to **1**
- Age range is **11** to **92** years
- The majority (**57%**) of suicide cases occur among White individuals
- Number of companion Suicide/Homicide cases:
  - 2014: 5
  - 2015: 15
  - 2016: 11
  - **2017: 17**

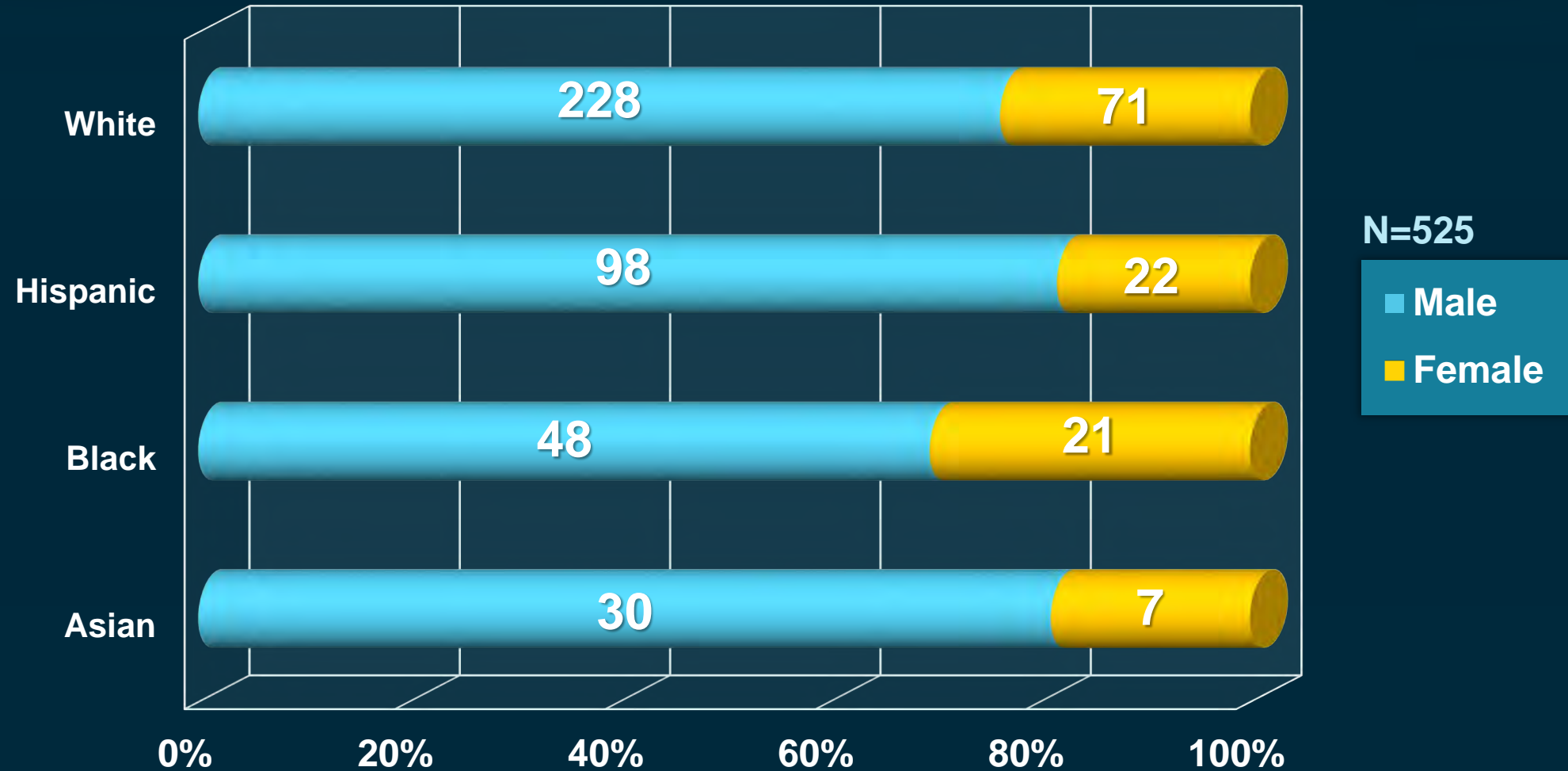


# Causes of Death in ML Suicides

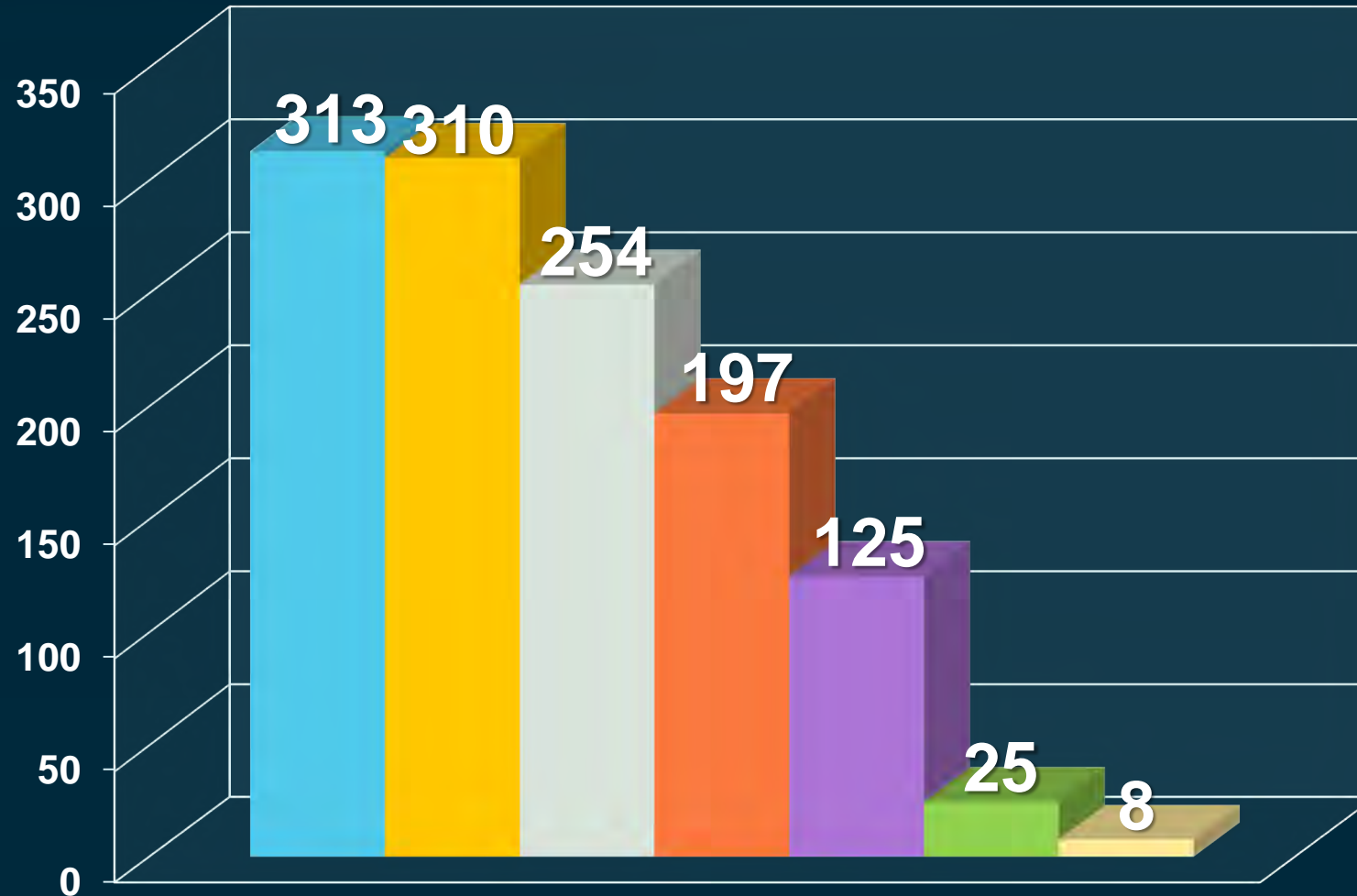




# ML Suicide Cases – Stratified by Sex & Race/Ethnicity



# Most Frequent Substances Listed in Cause of Death for ML Cases



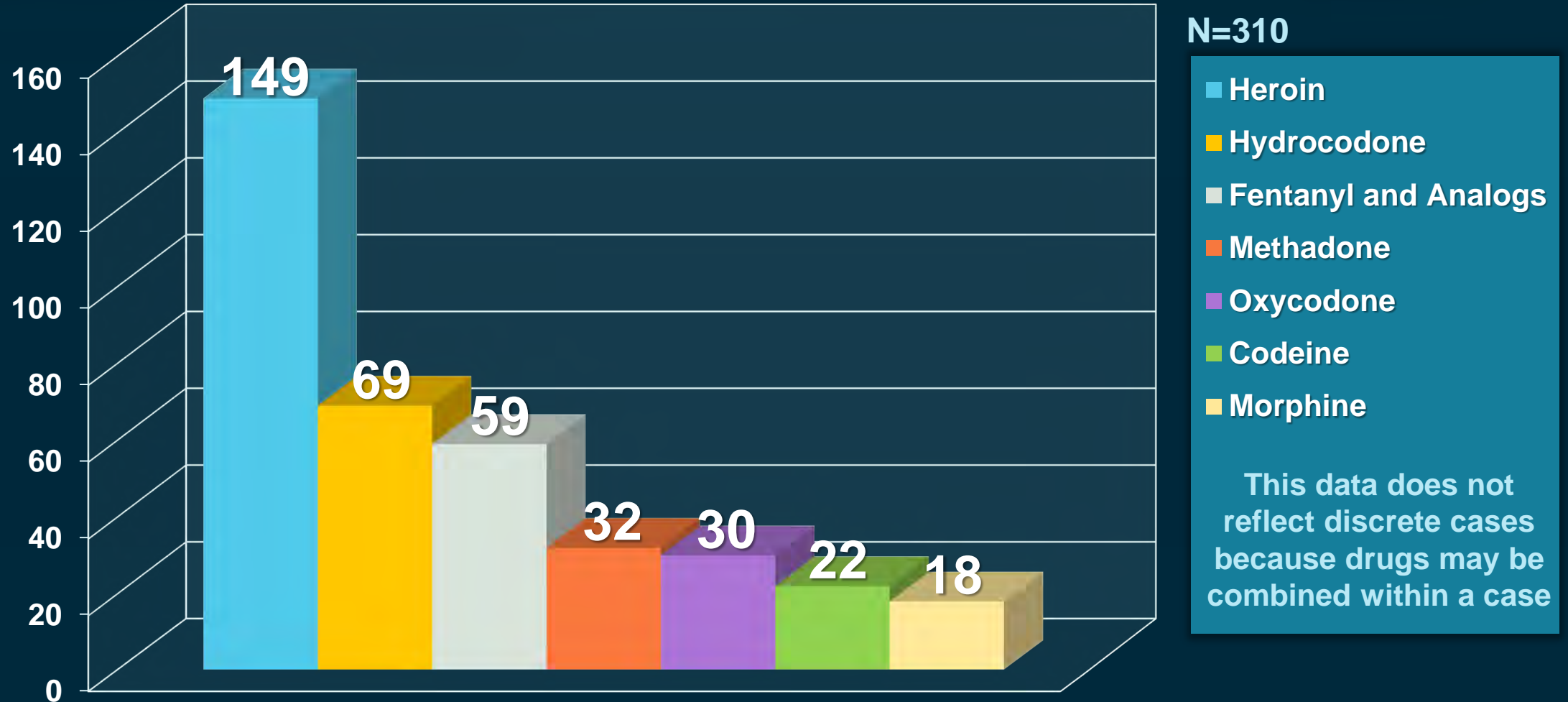
N=648

- Ethanol
- Opiates/Opioids
- Cocaine
- Benzodiazepines
- Amphetamine/Meth
- Carisoprodol
- Acetaminophen

This data does not reflect discrete cases because drugs may be combined within a case

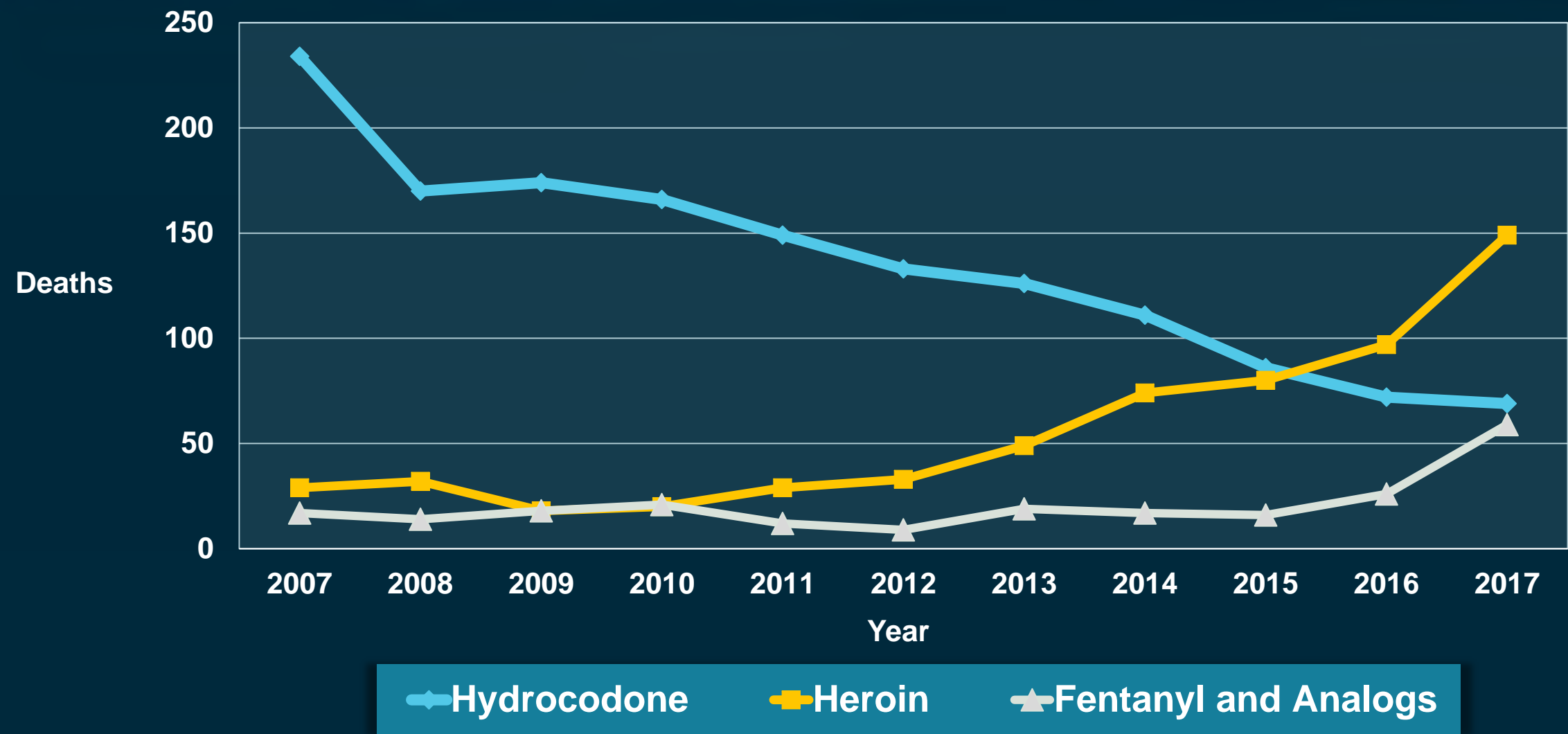


# Opiates/Opioids Listed in Cause of Death for ML Cases





# Hydrocodone, Heroin and Fentanyl in Cause of Death for ML Cases



# Harvey

- Harvey made landfall on the Texas coast at Corpus Christi as a **Category 4** Hurricane
- **1 Trillion** gallons of water fell on Harris County
- **5,352** calls for help were received by police and fire departments by August 28, 2017
- **32,422** homes in Texas were reported as damaged as of August 31, 2017



# Harvey Response | August 25 – September 1, 2017

47



Death scene responses  
requiring high-water vehicles

36



Storm-related  
deaths

123



Post-mortem  
examinations

329



Reports of  
death received

24



-hour  
operations  
maintained

122



Releases to  
funeral homes

26



External agencies  
responding

112



Positive  
identifications

44



Family meetings  
and resource referrals

14



Staff on-site  
for the duration

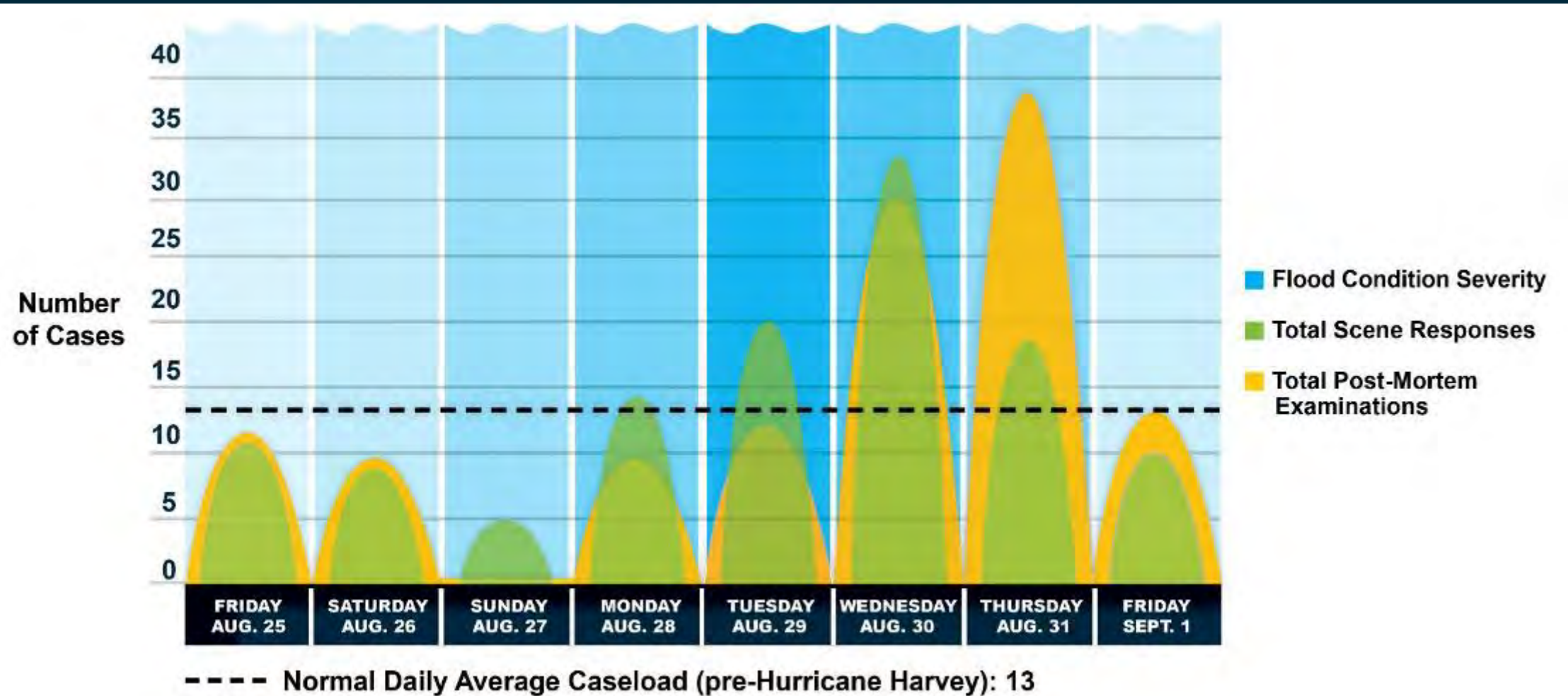
535



Media  
responses

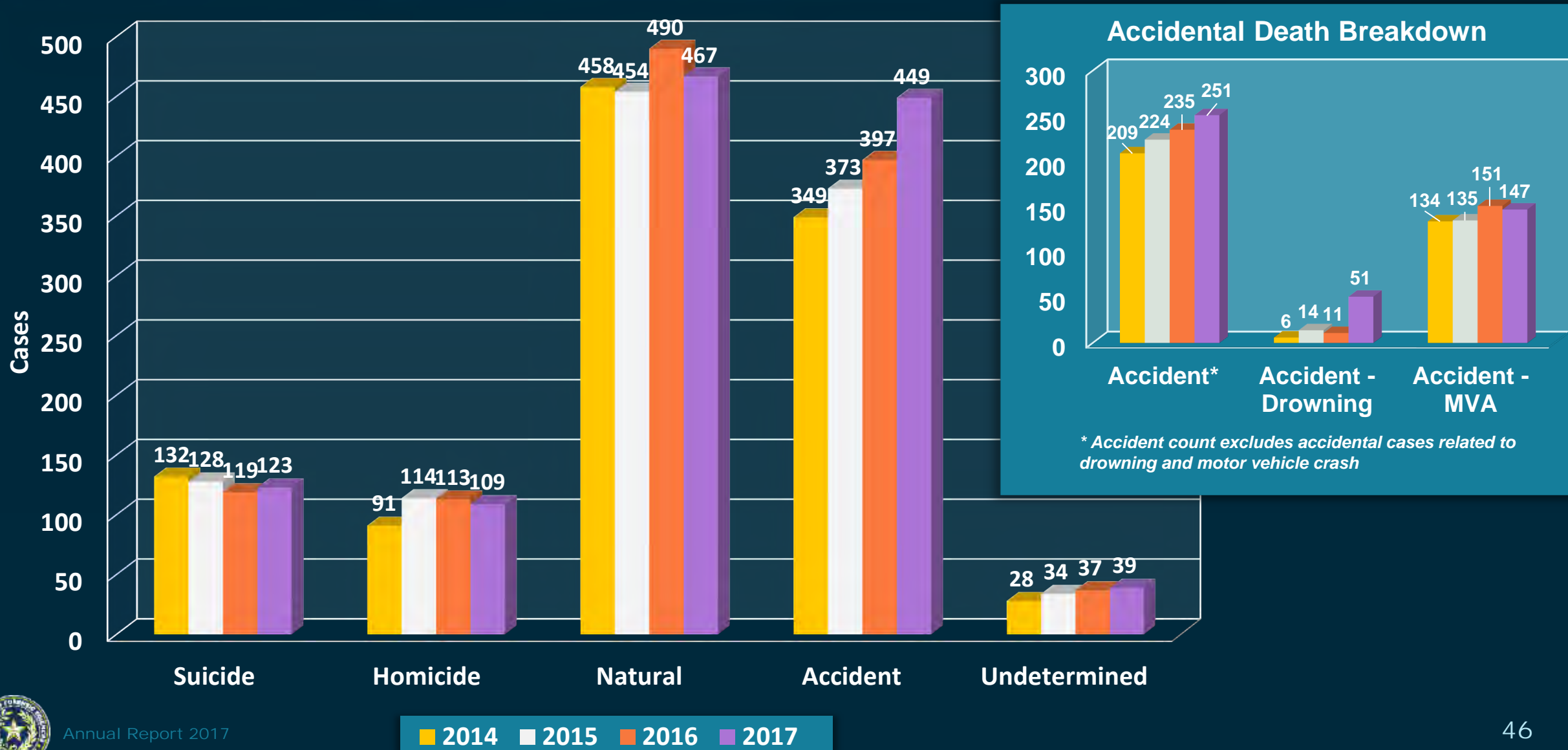


# Harvey Response | August 25 – September 1, 2017



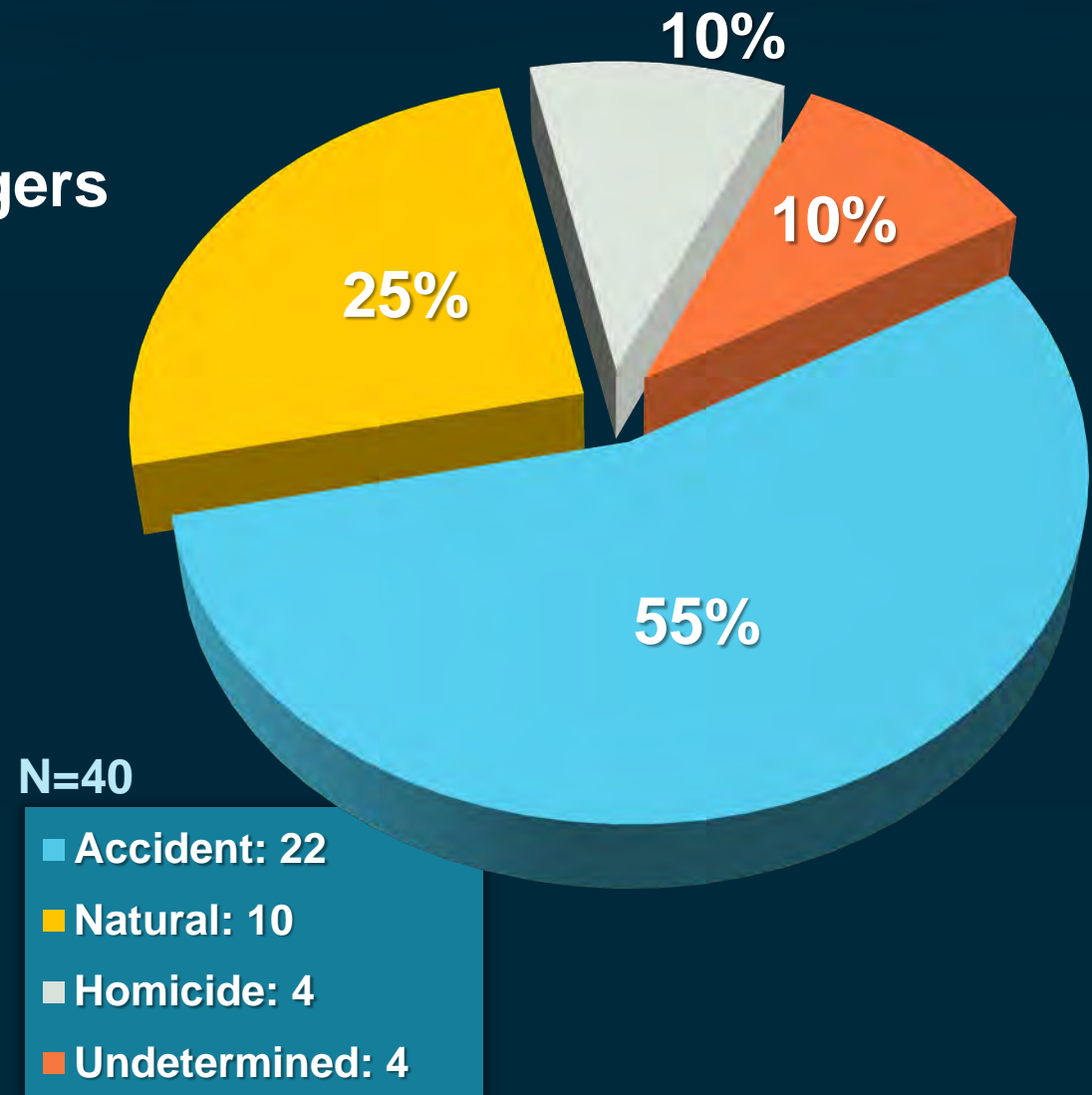


# ML Case Volume Following Harvey: August – October

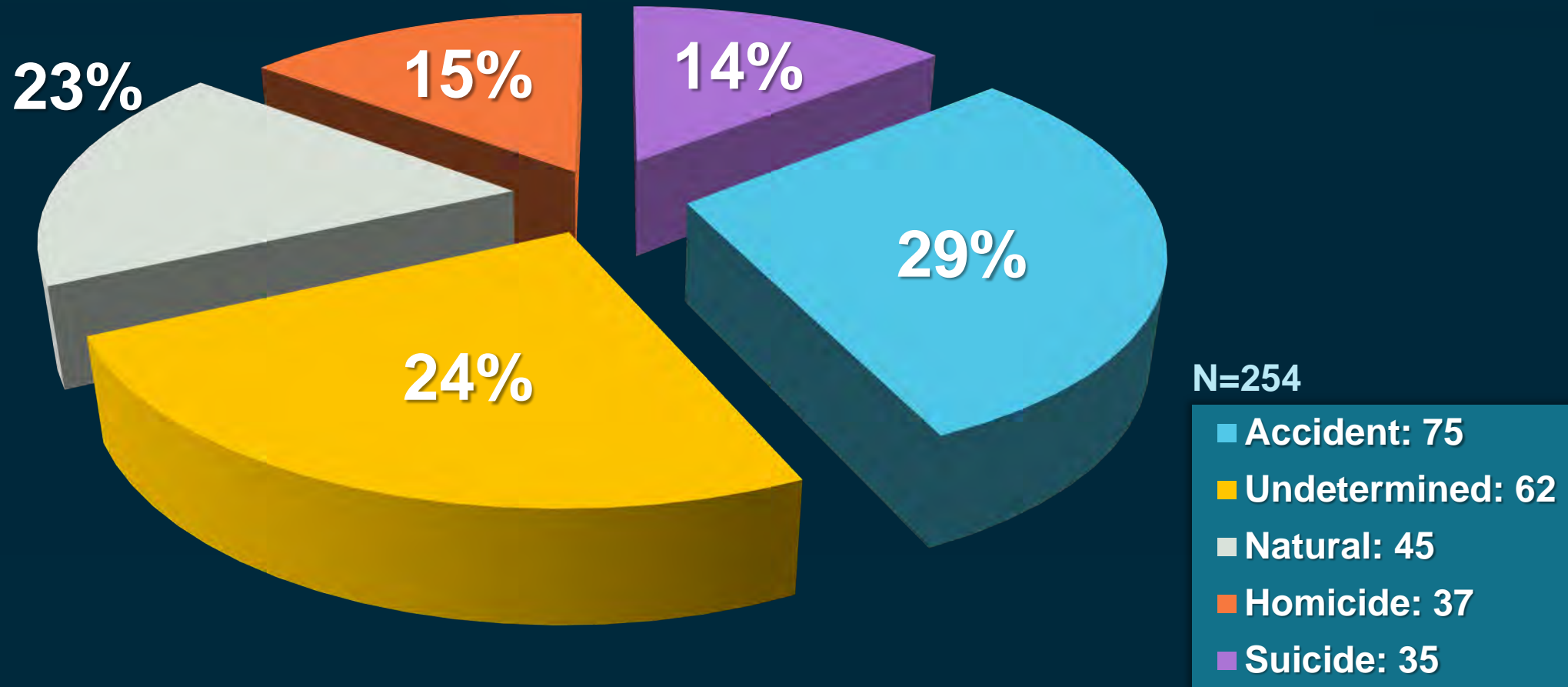


# Toddler Deaths (Aged 1-4 Years)

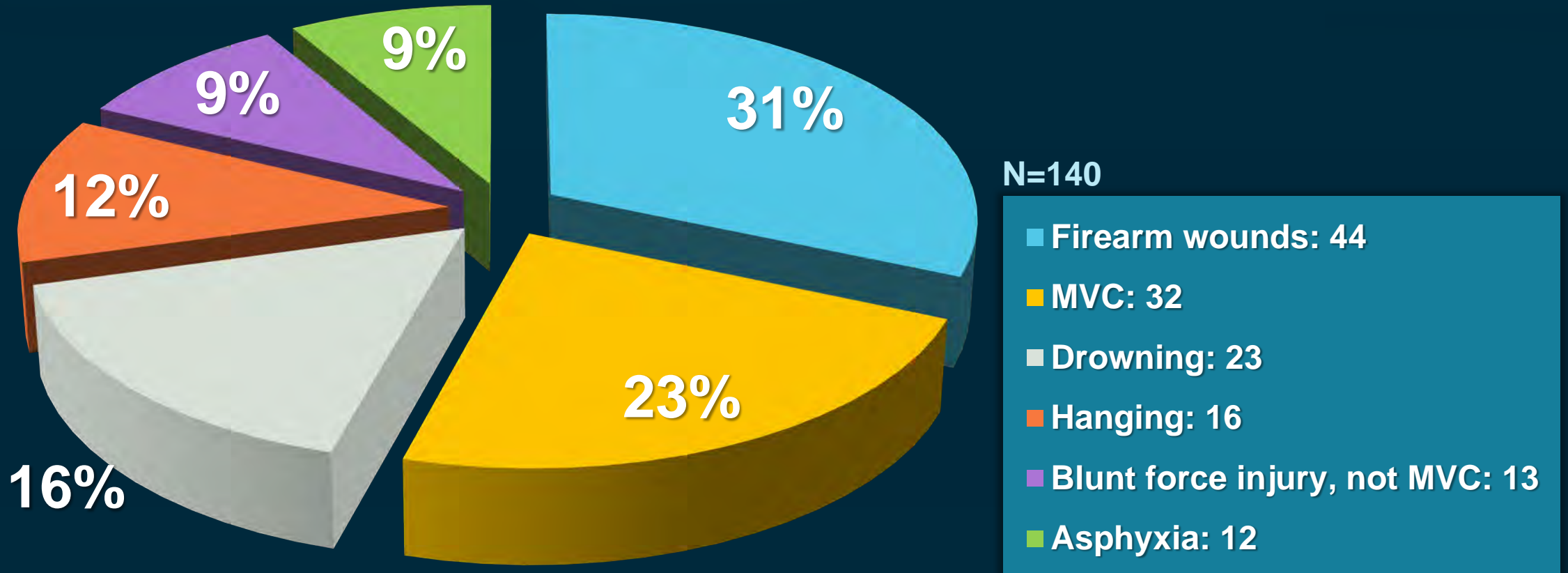
- Injury Deaths Include:
  - 6 toddlers died in MVC as passengers
  - 10 toddlers drowned in accidents
  - 4 Homicide cases
    - 1 males
    - 3 females



# Manner of Death in Children (Aged 0-17 Years)

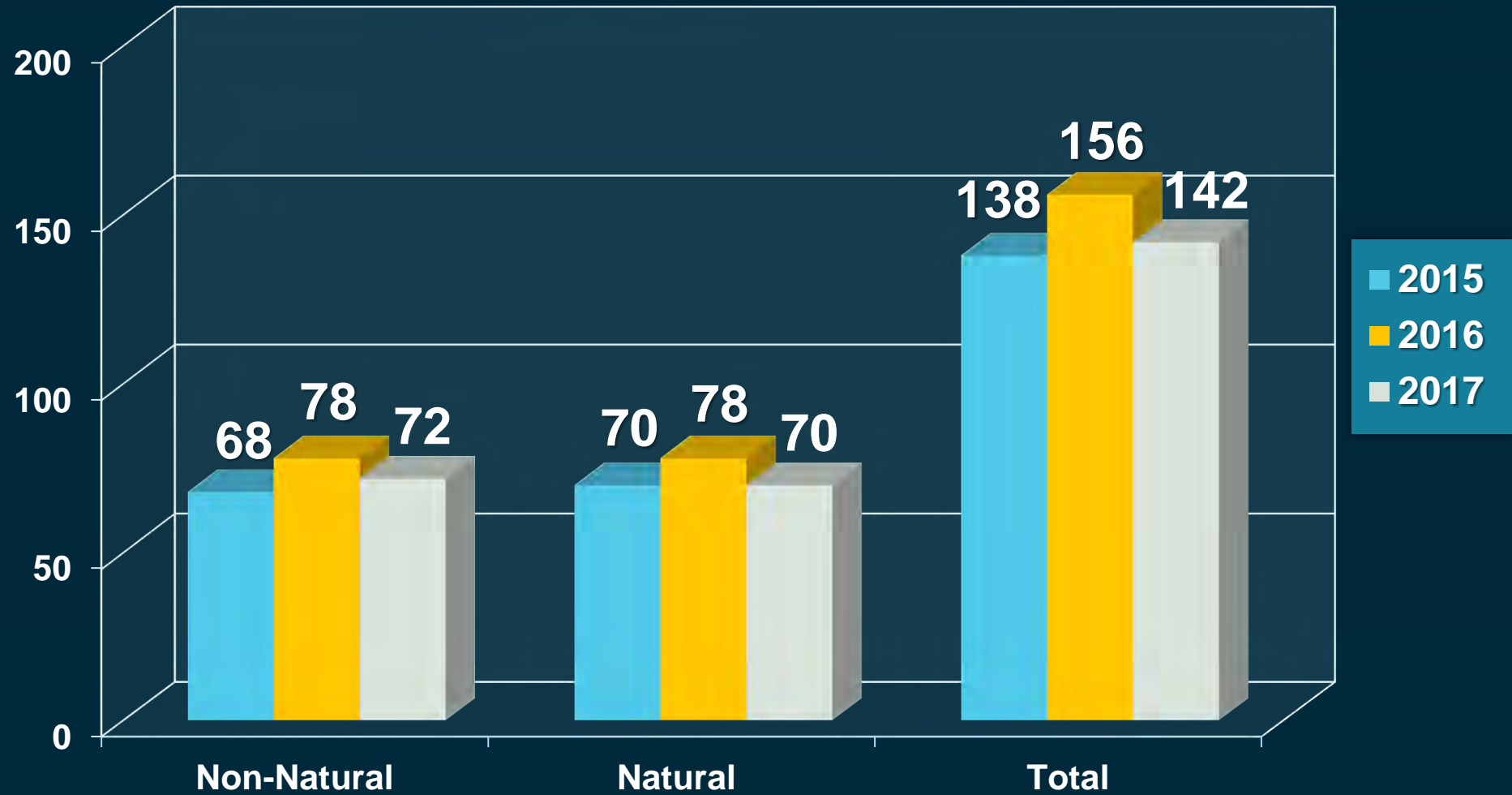


# Cause of Death in Children (Aged 0-17 Years)

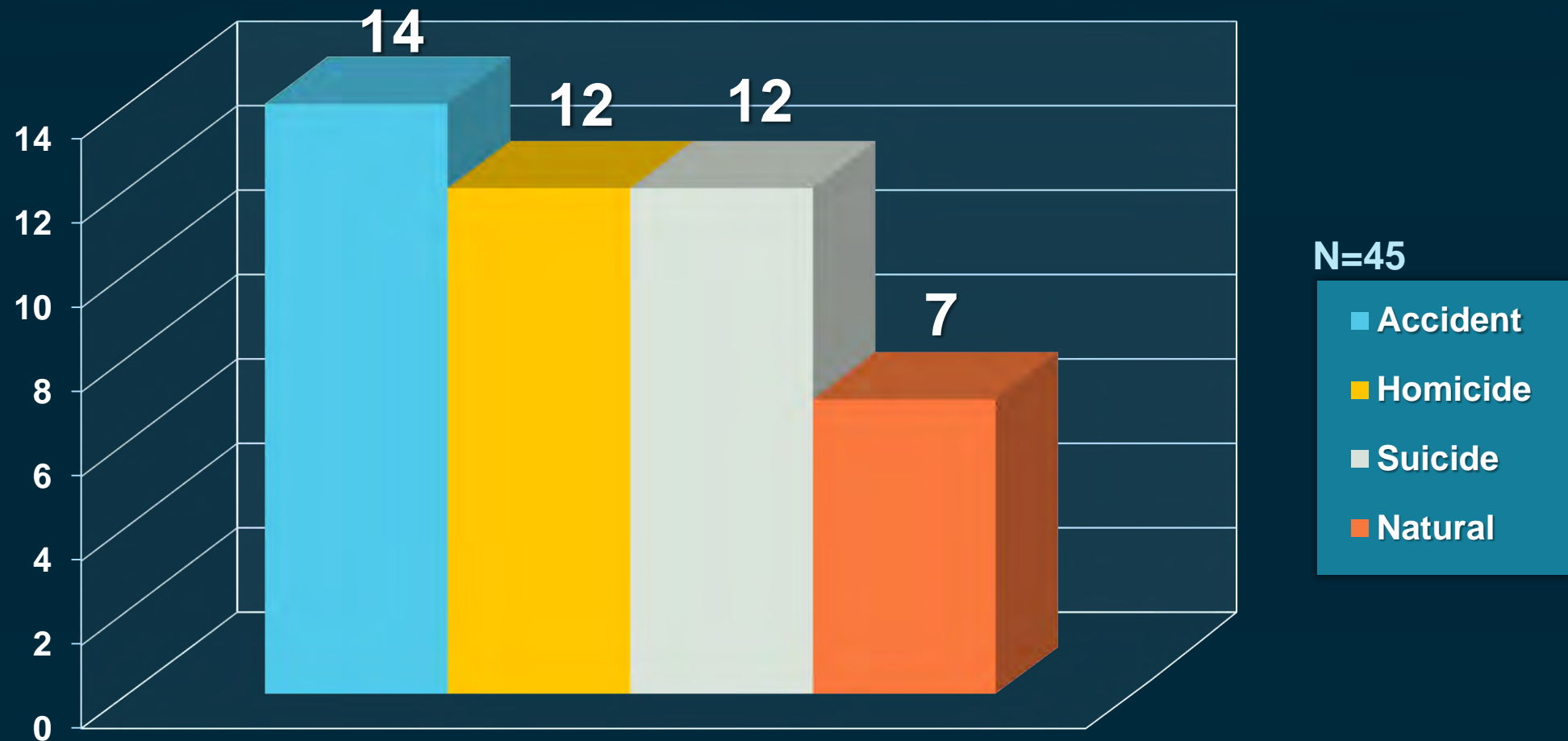




# “While at Work” Deaths

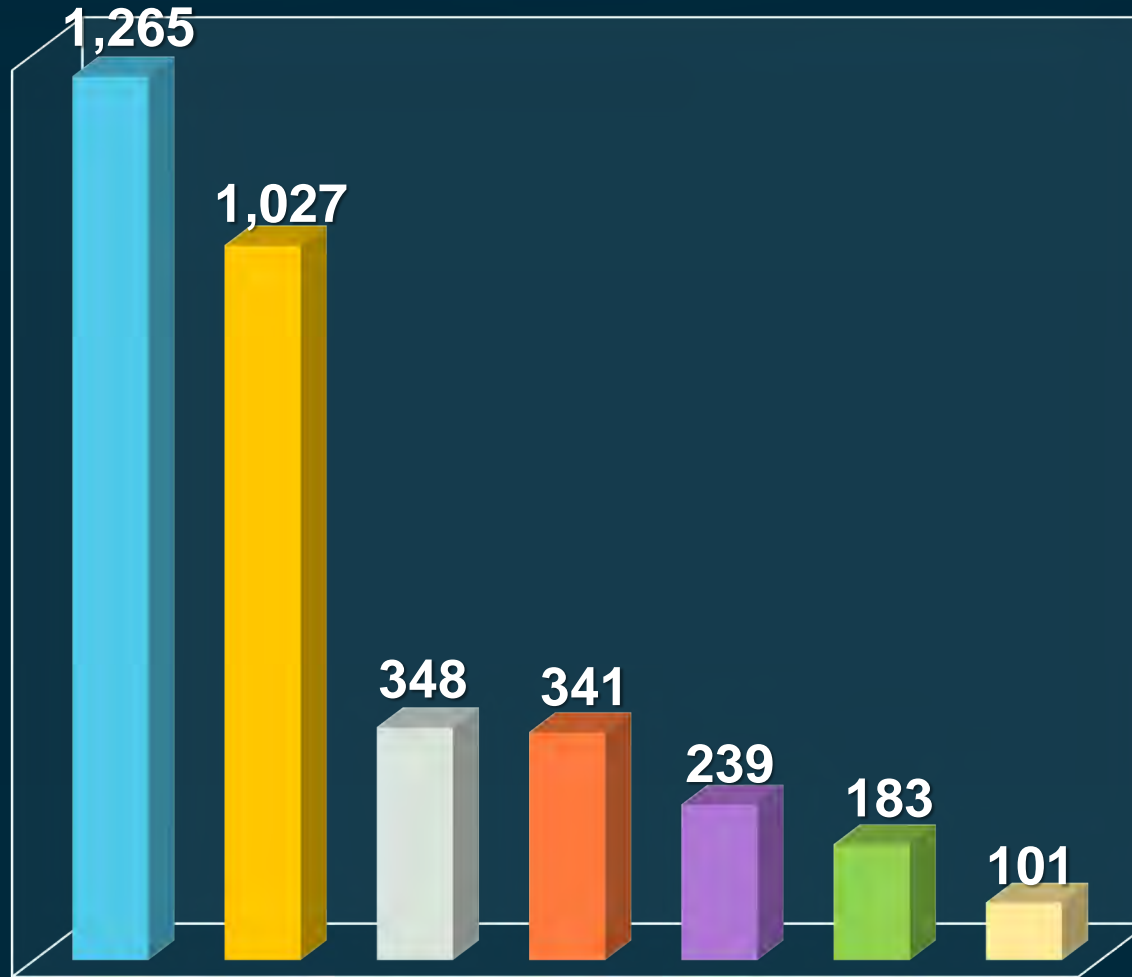


# Death During Police Intervention\*



*\* These include deaths in which the circumstances of the death place the decedent in either direct or indirect contact with law enforcement such as incarceration, apprehension and pursuit. This category of death is not limited to police shootings, arrest-related deaths, apprehension deaths or in-custody deaths.*

# Most Frequent Causes of Natural Death



## 1,914 Natural Deaths in 2017

- Hypertensive Cardiovascular
- Atherosclerotic Cardiovascular
- Diabetes Mellitus
- Obesity
- Chronic Ethanolism
- Chronic Obstructive Pulmonary Disease
- Other forms of cardiac death

This data does not reflect discrete cases because diseases may be combined within a case



# Diabetes and Obesity

- For **375** decedents, diabetes mellitus was listed in the primary cause (**68**) or the contributing cause (**307**) of death
  - **68%** were either overweight or obese (*Body Mass Index, BMI = 25<sup>+</sup>*)
- BMI was calculated for **4,261** decedents aged 13 years or older, at least 60” tall and weighing at least 100 pounds:
  - **1,317** (31%) were obese with a BMI of 30 or greater
  - **1,262** (30%) were overweight with a BMI between 25 and 29
  - The greatest BMI was **96** (690 lbs./71” tall)
  - **18** decedents weighing more than 400 lbs.
  - **1,682** (39%) decedents were of normal weight or underweight





# Organ & Tissue Donation Summary

- HCIFS maintains agreements with:
  - LifeGift
  - Lions Eye Bank of Texas at Baylor College of Medicine
- **440** ML cases were released in 2017 for organ and/or tissue donation



# Forensic Anthropology

- Staffed by five doctoral-level forensic anthropologists, four of whom are certified as Diplomates by the American Board of Forensic Anthropology
- 2017 case work:
  - **238** total cases received with written reports provided
  - **56** autopsy consultations without written reports
  - **14** skeletal cases examined
  - **25** death scenes with skeletal recovery
  - **33** cases of remains determined to be non-human

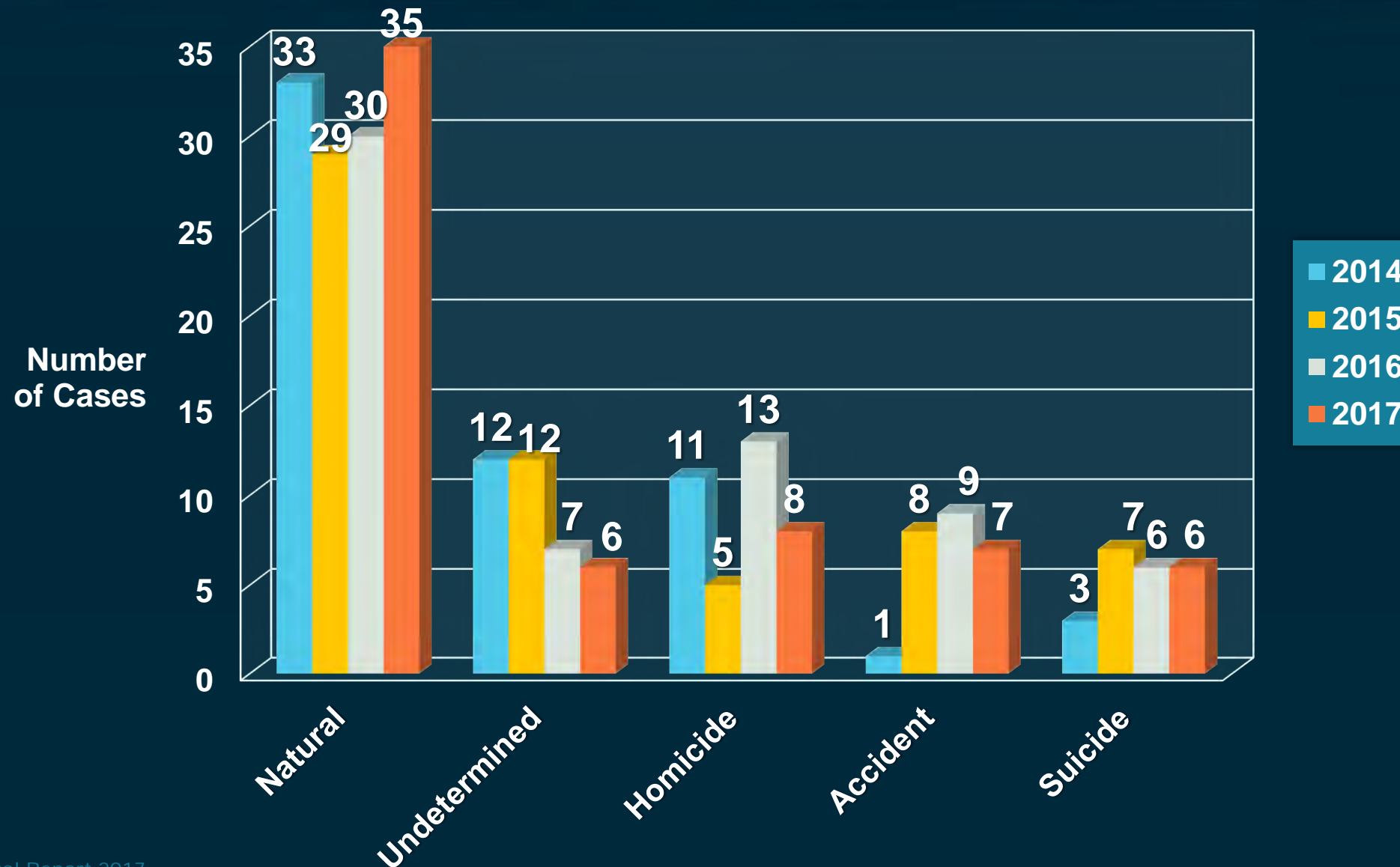


# Forensic Entomology

- **Staffed by a board-certified, doctoral-level Forensic Entomologist**
  - Reports are peer-reviewed by external doctoral-level entomologists from three major academic institutions
- **2017 Casework:**
  - **62** Cases
  - **40** Scene Collection
  - **18** Autopsy Collections
  - **4** Scene and Autopsy Collections



# Forensic Entomology by Manner of Death





# Quality Management Division



**A separate division of HCIFS**

**Ensures that services provided by the Institute are **reliable** and of **high quality****

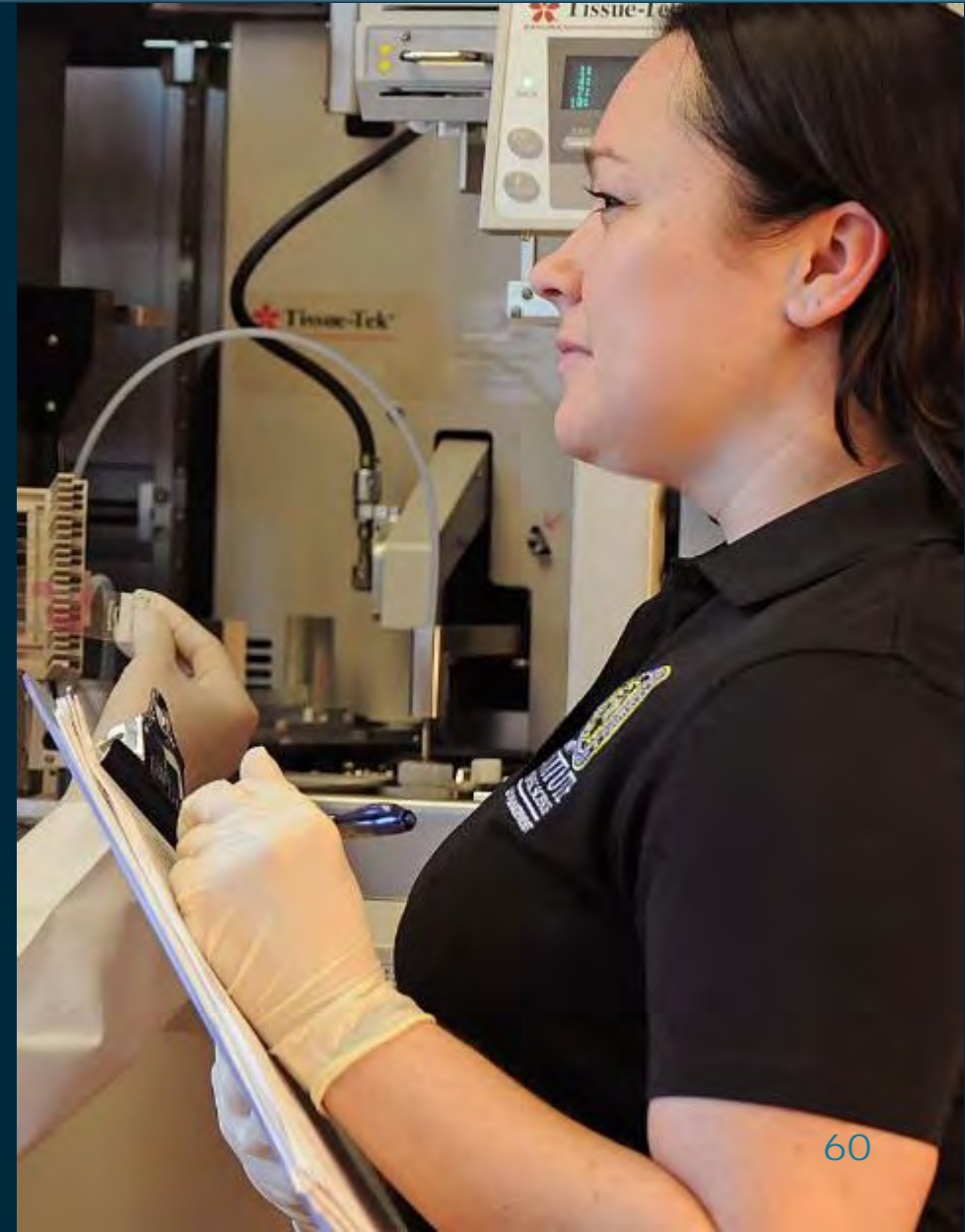
# Responsibilities

- Maintains a **documented quality management system** that meets all accreditation and county requirements
- Facilitates **quality improvements** within each division of HCIFS
- Monitors the **continued use of best practices** and ensures the reliability of records released for discovery



# 2017 Accomplishments

- **395** standard operating procedures reviewed
- **235** proficiency tests administered
- **494** court orders processed
- **9** internal audits conducted
- **83** internal training sessions provided





# Crime Laboratory Service



Image: Shau Lin Hon/Slyworks Photography

Provides **analytical testing services** to the  
HCIFS Medical Examiner Service, the justice system and  
law enforcement agencies in Harris and surrounding counties



# Statistical Summary

- **Cases received: 22,805**  
(Approximately a **13% decrease** from 2016)
- **Cases completed: 22,900**  
(Approximately a **8% decrease** from 2016)
- **Total Number of submitting agencies: 75**
- **68% of laboratory personnel have a professional certification**
  - American Board of Criminalistics: **51** analysts
  - American Board of Forensic Toxicology: **11** analysts
  - Association of Firearm and Tool Mark Examiners: **4** examiners



# Crime Laboratory Service: Drug Chemistry



**Analyzes suspected drug evidence seized by law enforcement agencies**



# Drug Chemistry Laboratory

In accordance with Texas state statutes, identifies **confiscated, illegal and dangerous drugs**, including:

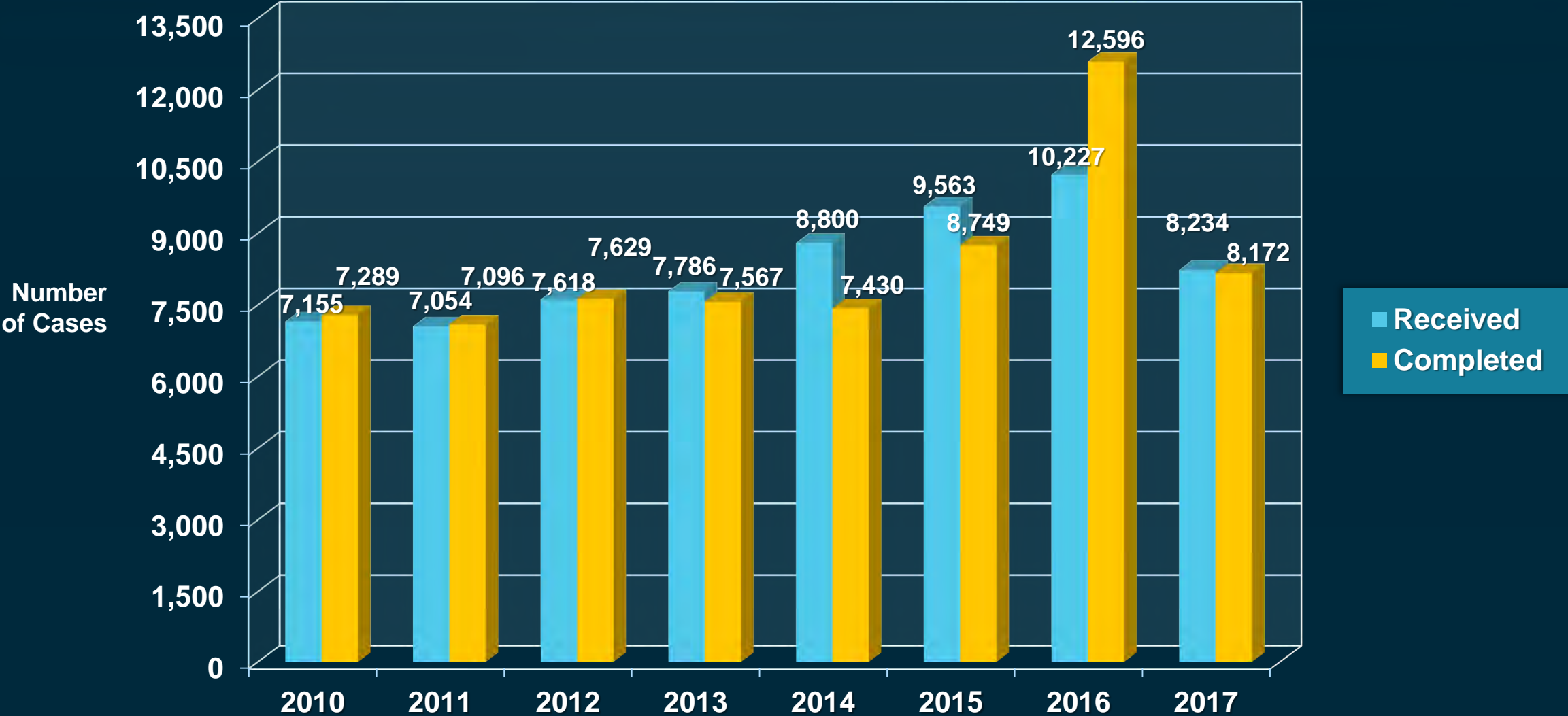
- Plant material
- Powders, tablets, liquids
- Drug paraphernalia

The laboratory also develops and *implements* methods to **identify new “designer” drugs** including:

- Stimulants known as “Bath Salts”
- Synthetic cannabinoids such as “Spice” or “K2”
- NBOMe hallucinogens



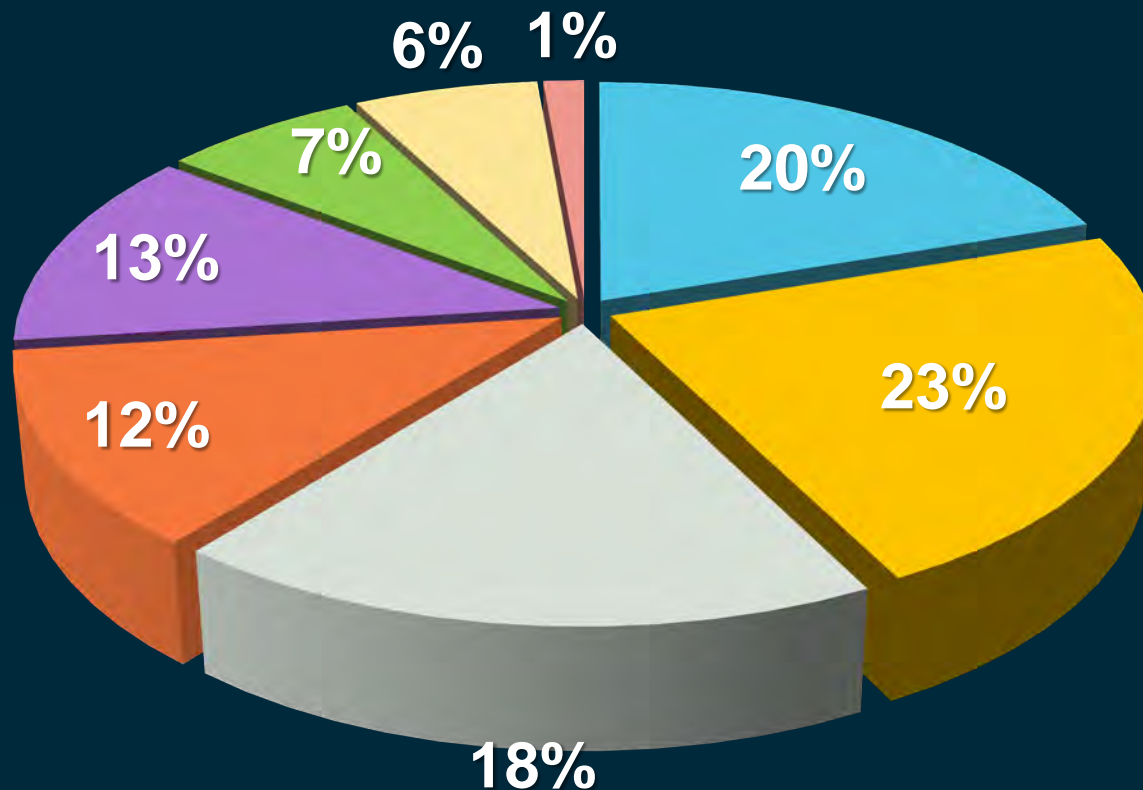
# Cases Received & Completed





# Test Results

- **8,095** unique IFS cases handled
- **21,435** items received and processed
- **15,126** positive results reported

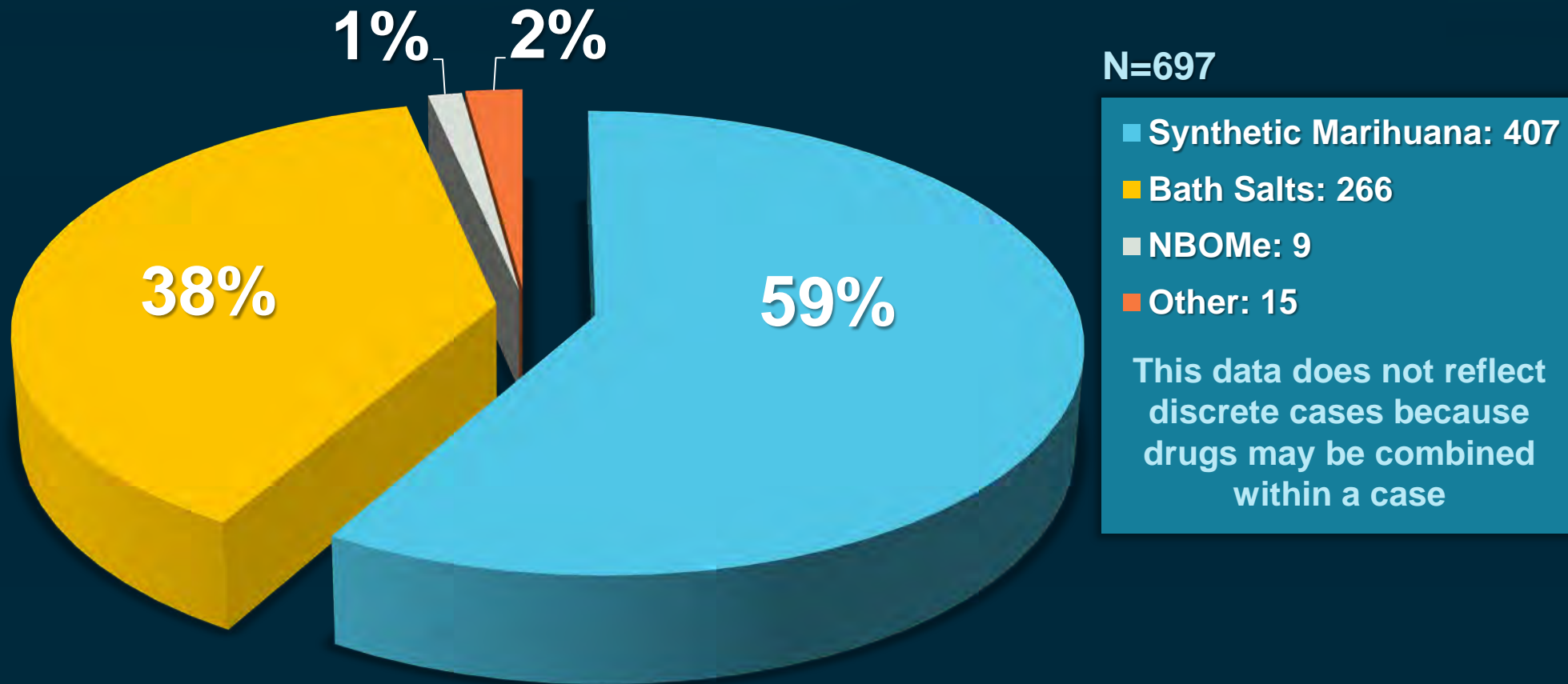


N=15,126

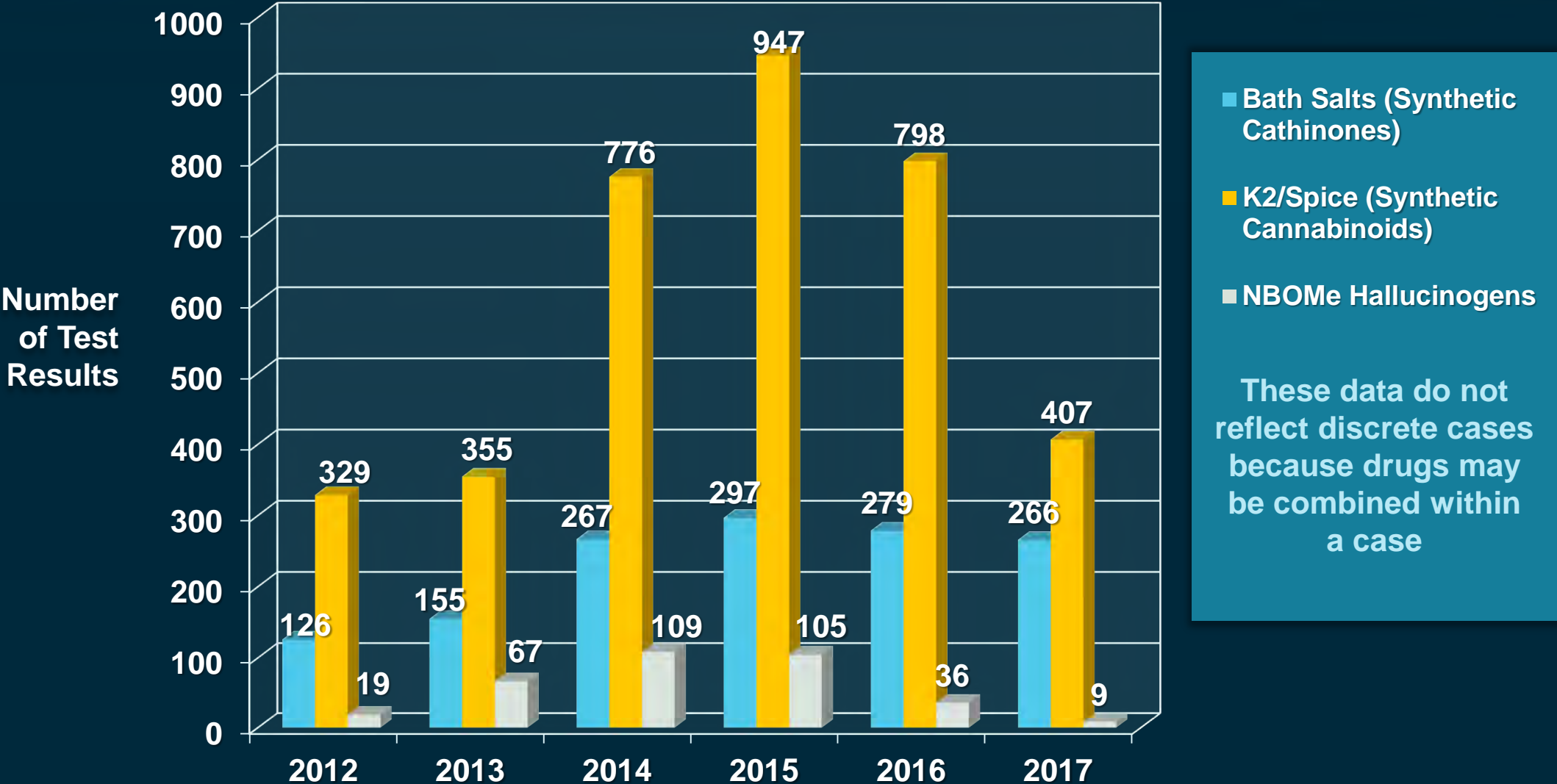
■ Marijuana/THC:	2,999
■ Methamphetamine:	3,428
■ Non-Controlled Substances:	2,768
■ General Pharmaceuticals:	1,846
■ Cocaine:	1,883
■ Pharmaceutical Opioids:	1,030
■ Designer Drugs:	959
■ Other:	213



# Breakdown of Designer Drugs Test Results



# Designer Drug Trends



# Crime Laboratory Service: Forensic Genetics



Image: *Shau Lin Hon/Slyworks Photography*

**Analyzes biological fluids and tissues such as blood, semen, muscle and bone**



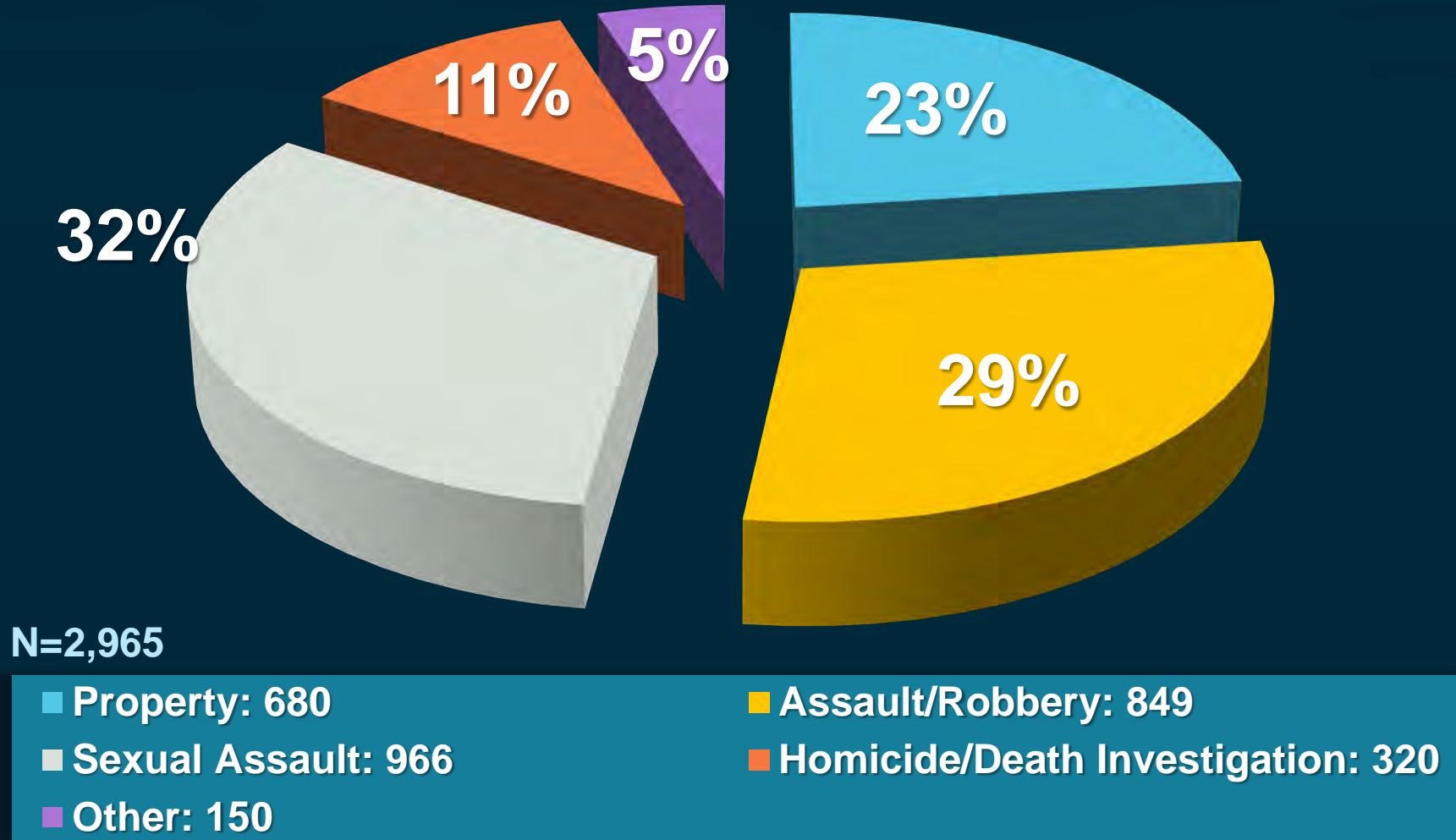
# Forensic Genetics Laboratory

## **Conducts DNA testing primarily for:**

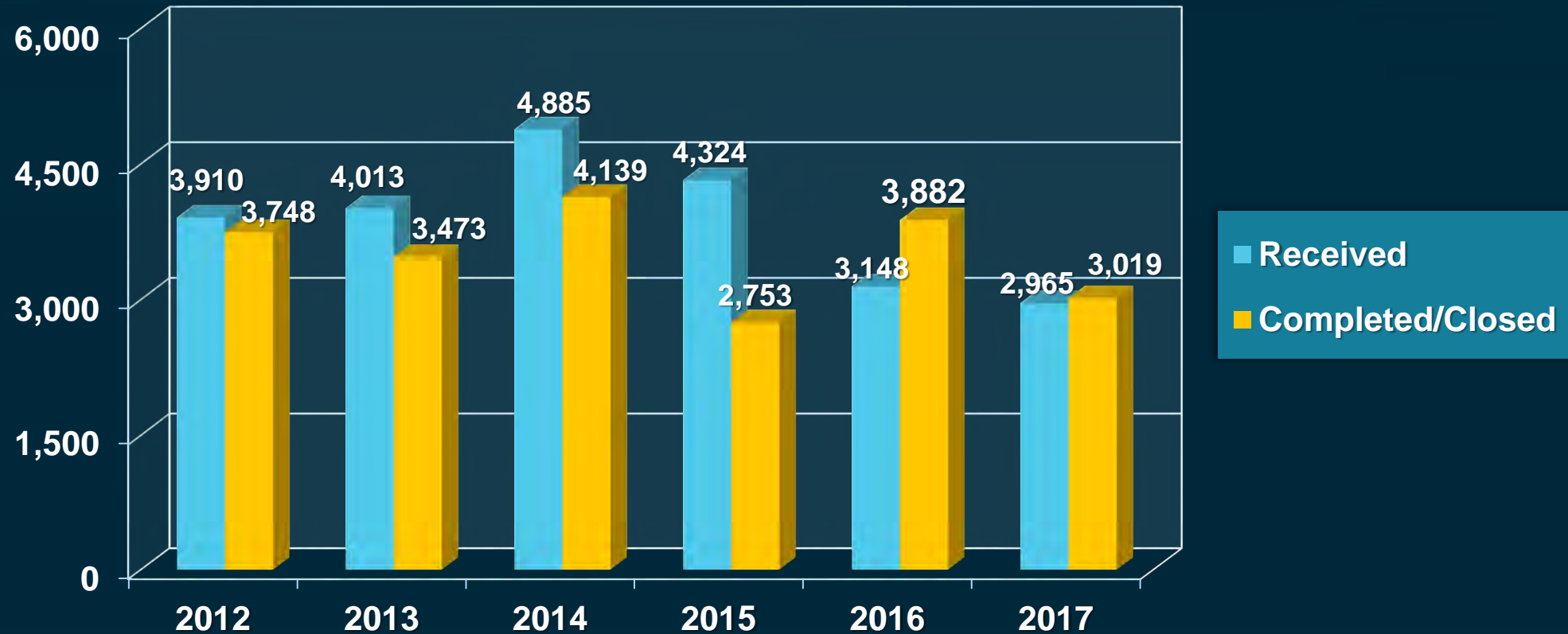
- Law enforcement agencies
- HCIFS medical examiners and forensic anthropologists to assist in positively identifying decedents
- Cases submitted for **DNA** testing include crimes against persons such as sexual assault, homicide and robbery, as well as property crimes such as burglary and theft
- Crimes against persons are given **first priority** for testing



# Case Submissions Stratified by Type



# Cases Received & Completed/Closed

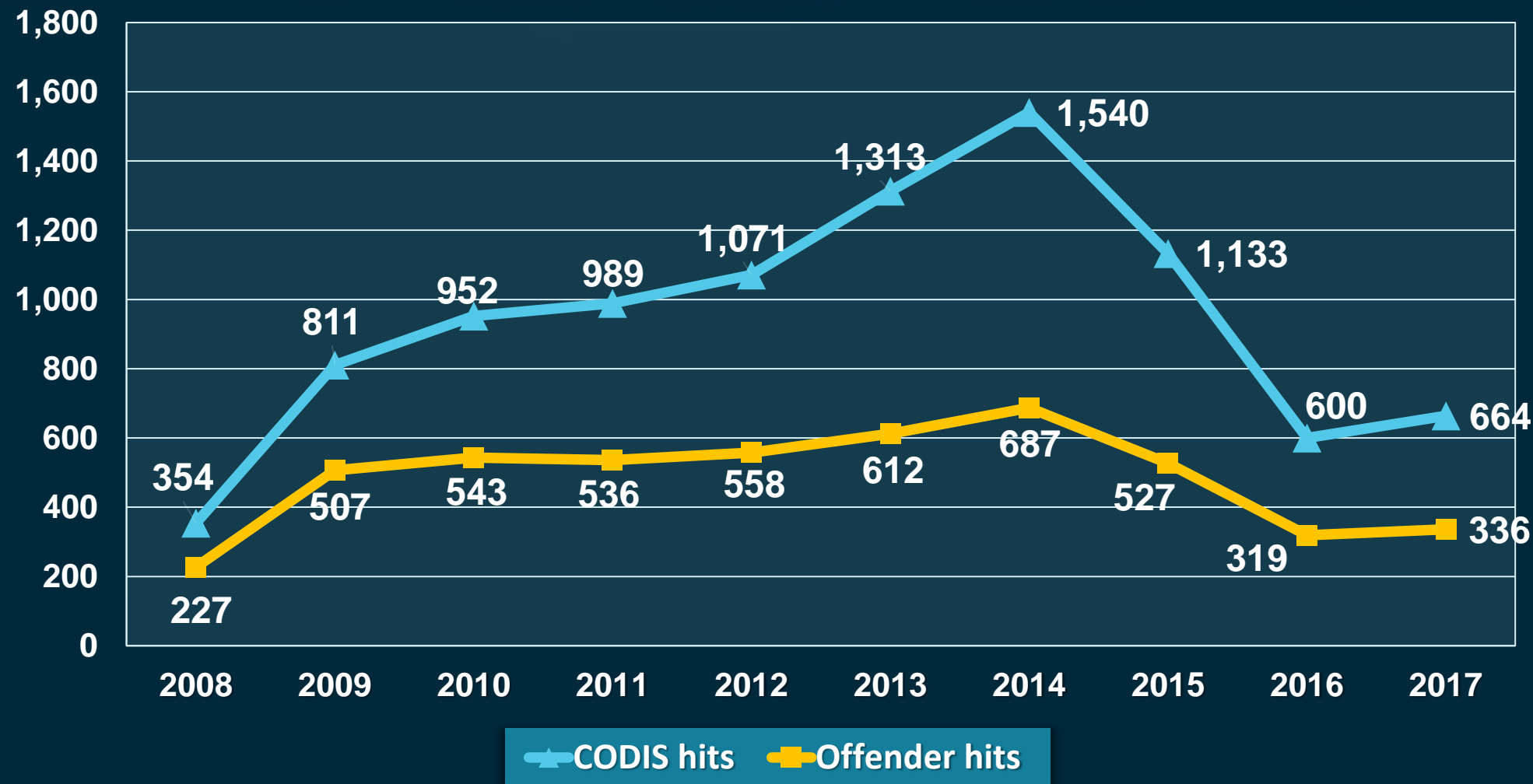


The laboratory paused the collection and analysis of touch DNA property crimes in July 2015 to focus on crimes against persons, which typically requires more testing and more complex interpretations.

Increasing DNA testing of crimes against persons decreases the number of cases the lab can complete.



# CODIS Hits





# Trace Evidence DNA Collection Team

Specialized DNA analysts who attend select death scenes to **collect DNA and trace evidence** from bodies that have been:

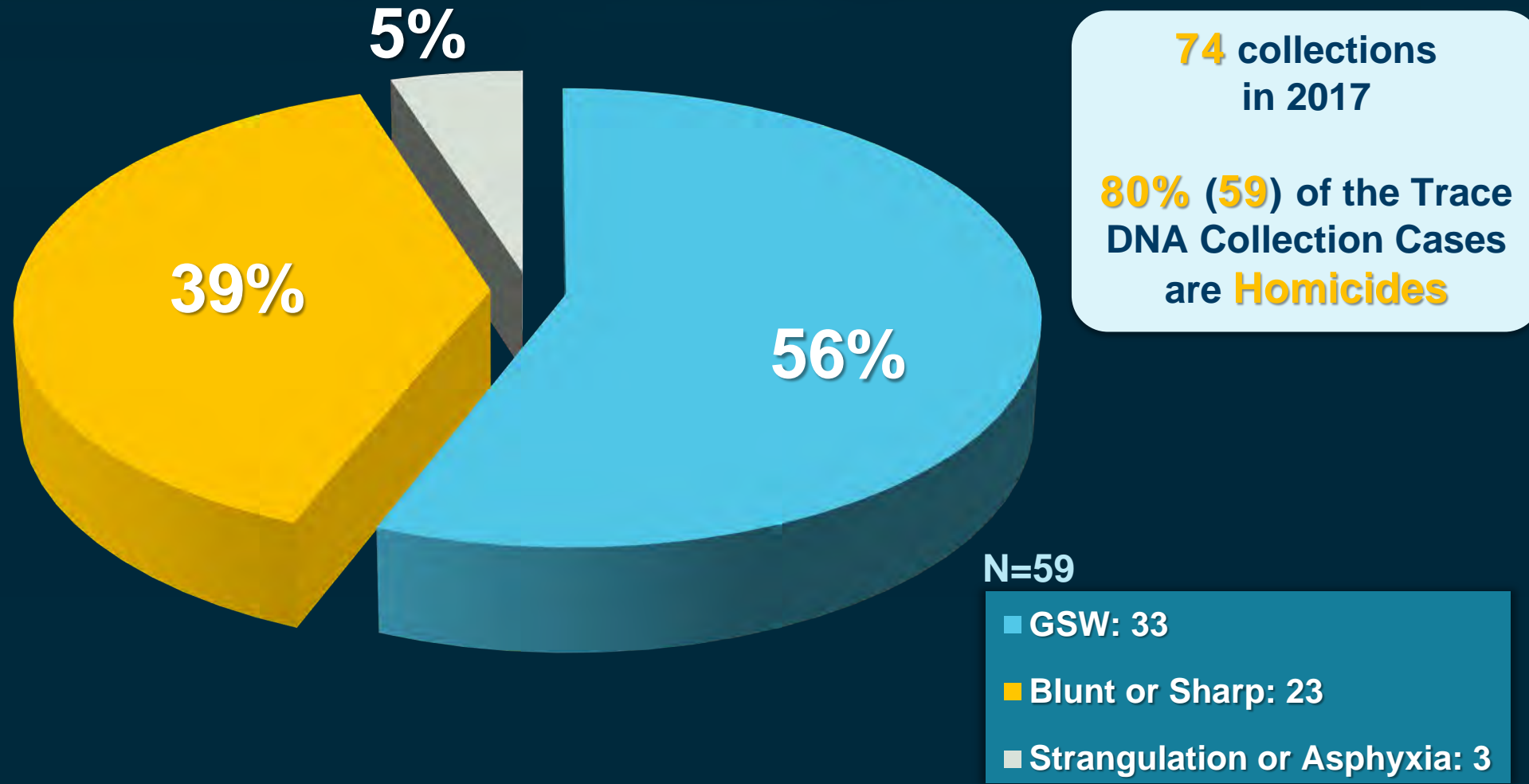
- Dumped
- Bound
- Thought to have been in close contact with the perpetrator

The team has had a number of **successes obtaining DNA** different from that of the victim

This information assists investigators in **solving crimes**



# Trace DNA Collection: Homicide Cases by Cause of Death





# Crime Laboratory Service: Forensic Toxicology



**Provides analytical services in medicolegal death investigations, driving while impaired (human performance alcohol and drug testing), and drug-facilitated sexual assault investigations**

# Forensic Toxicology Laboratory

Analyzes **biological evidence** submitted by the HCIFS Medical Examiner Service and law enforcement agencies in Harris County for:

- Death investigations
- Driving while impaired (DWI) and driving under the influence (DUI) cases
- Drug-facilitated sexual assaults
- Other criminal investigations

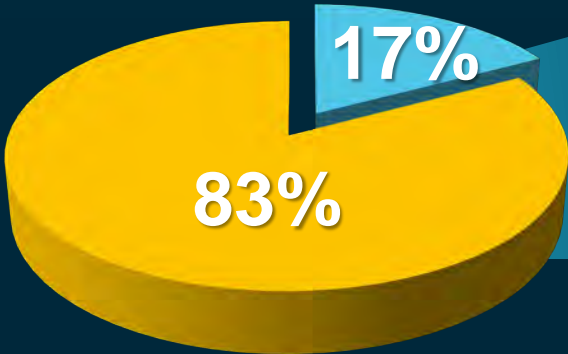
The only forensic toxicology laboratory in Texas **dually accredited** by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board and the American Board of Forensic Toxicology



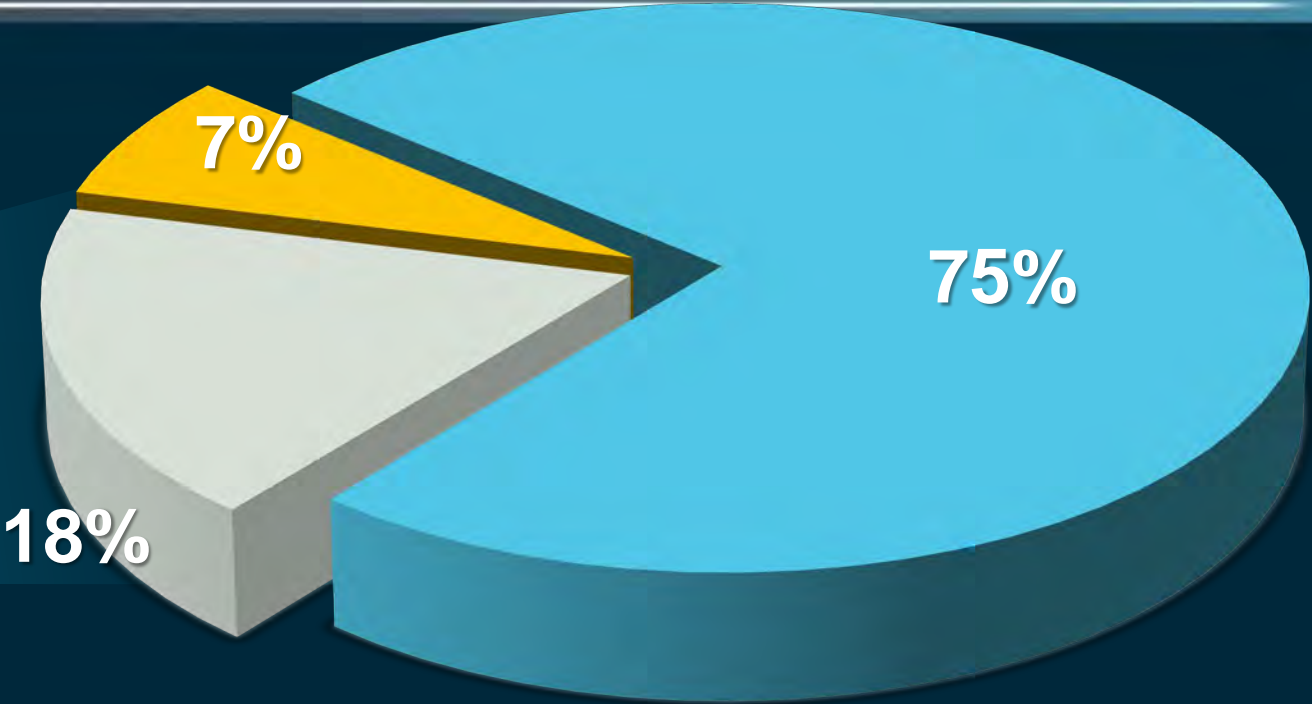


# DWI Case Analysis Distribution

Of the 25% of DWI Cases that Receive Drug Screening:



- Drug Screen Negative
- Drug Screen Positive



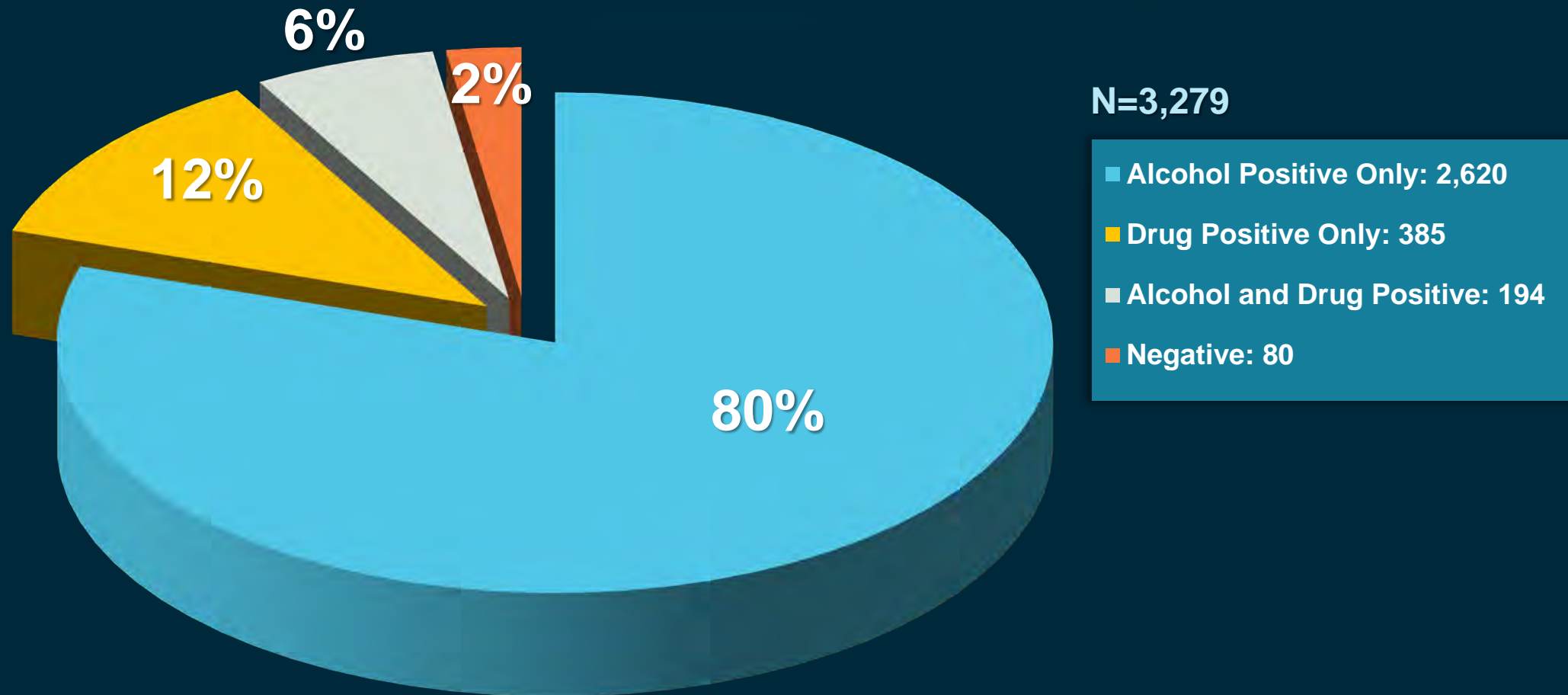
N=3,283

- Alcohol Testing Only
- Alcohol Testing, Drug Screening & Confirmation
- Alcohol Testing, Drug Screening

- Alcohol Testing Only: Alcohol testing was performed; results were  $\geq 0.10$  g/100 mL
- Alcohol Testing, Drug Screening & Confirmation: Alcohol testing results were  $< 0.10$  g/100 mL; drug screening and confirmation testing was performed
- Alcohol Testing, Drug Screening: Alcohol testing results were  $< 0.10$  g/100 mL; drug screening was performed with negative results



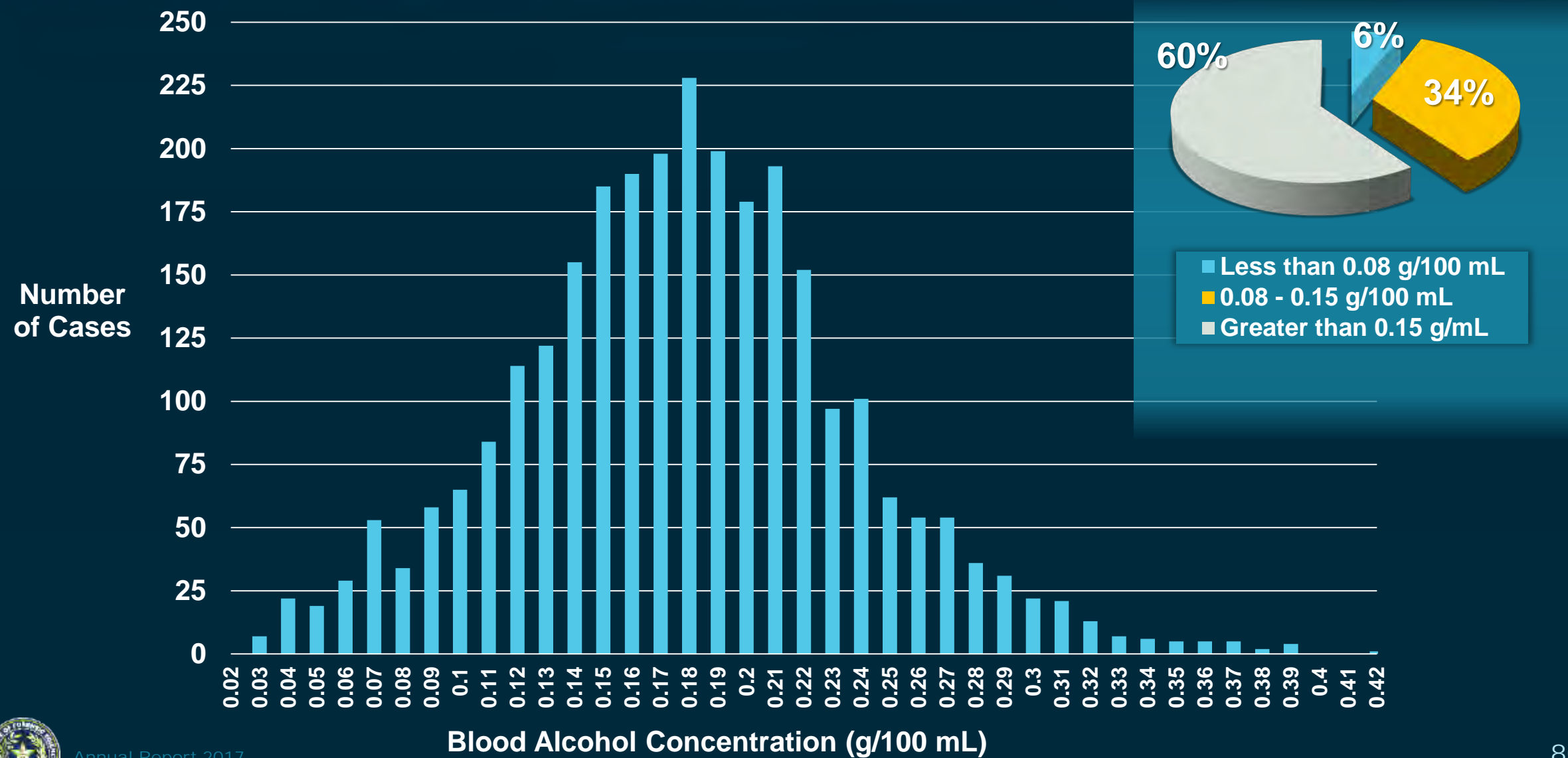
# DWI Case Result Distribution



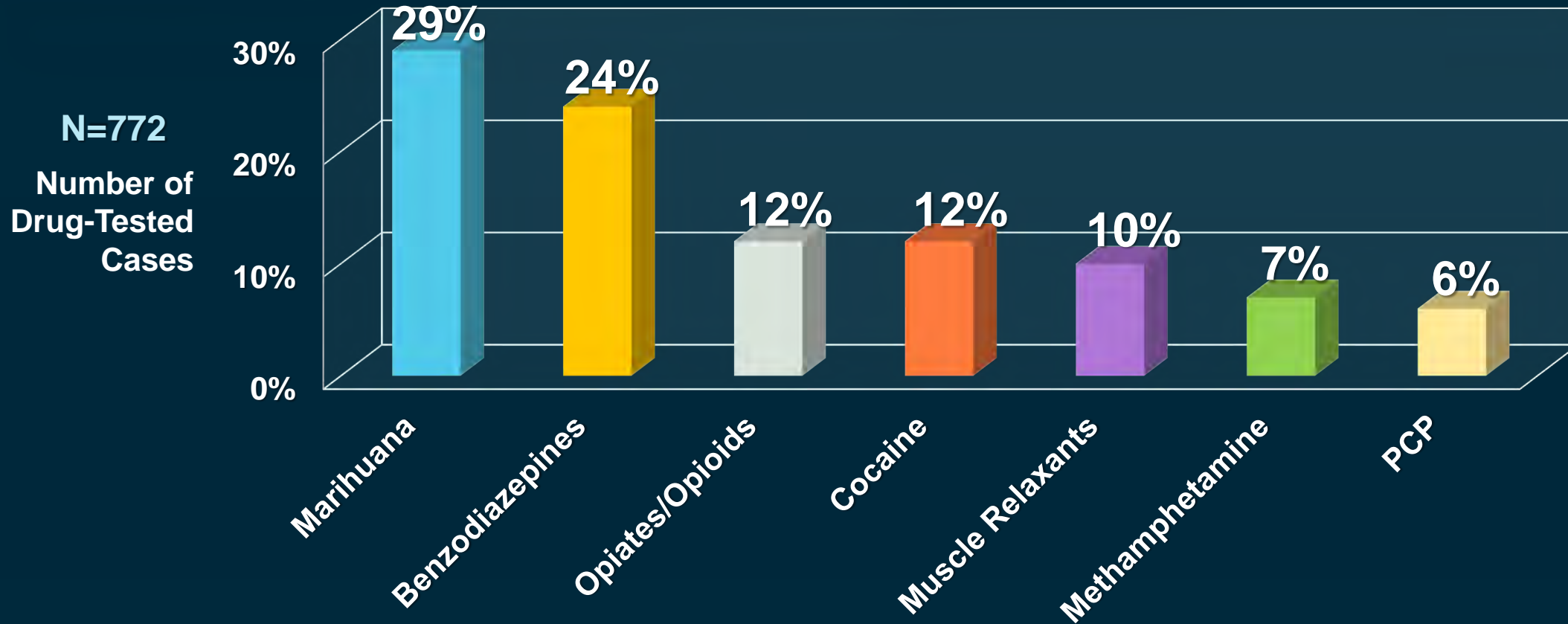
- Alcohol Positive Only: Cases with alcohol test result  $\geq 0.10$  g/100 mL which may or may not contain other drugs



# DWI Blood Alcohol Concentrations



# Drug Prevalence in Drug-Tested DWI Cases



True prevalence may be underrepresented as one case could have multiple drugs from a single drug class, e.g. opiates or benzodiazepines

Other identified drug classes include: anti-seizure medicines, over-the-counter cough and cold medicines, and anti-depressants





# Crime Laboratory Service: Physical Evidence



**Evaluates fired cartridge casings and bullets recovered from crime scenes, and firearms involved in violent, gun-related incidents**



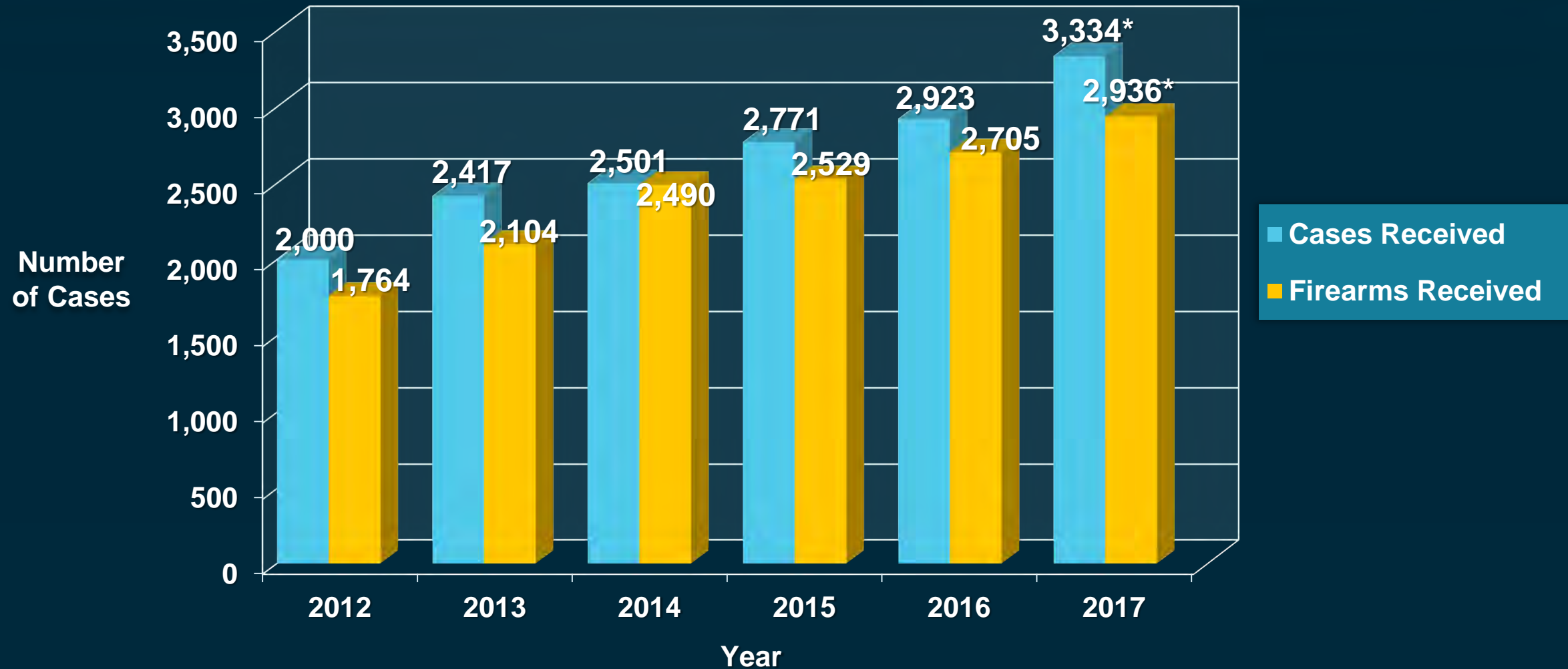
**Analysis in the three forensic sub-disciplines of Gunshot Residue Analysis, Fire Debris Analysis and Automotive Paint Analysis**

# Firearms Identification Laboratory

- Conducts examinations of evidence related to investigations of **gun-related offenses**
- Cases received are comprised of **weapons, bullets** and **cartridge casings**
- Serves as a **regional facility** for the National Integrated Ballistics Information Network database

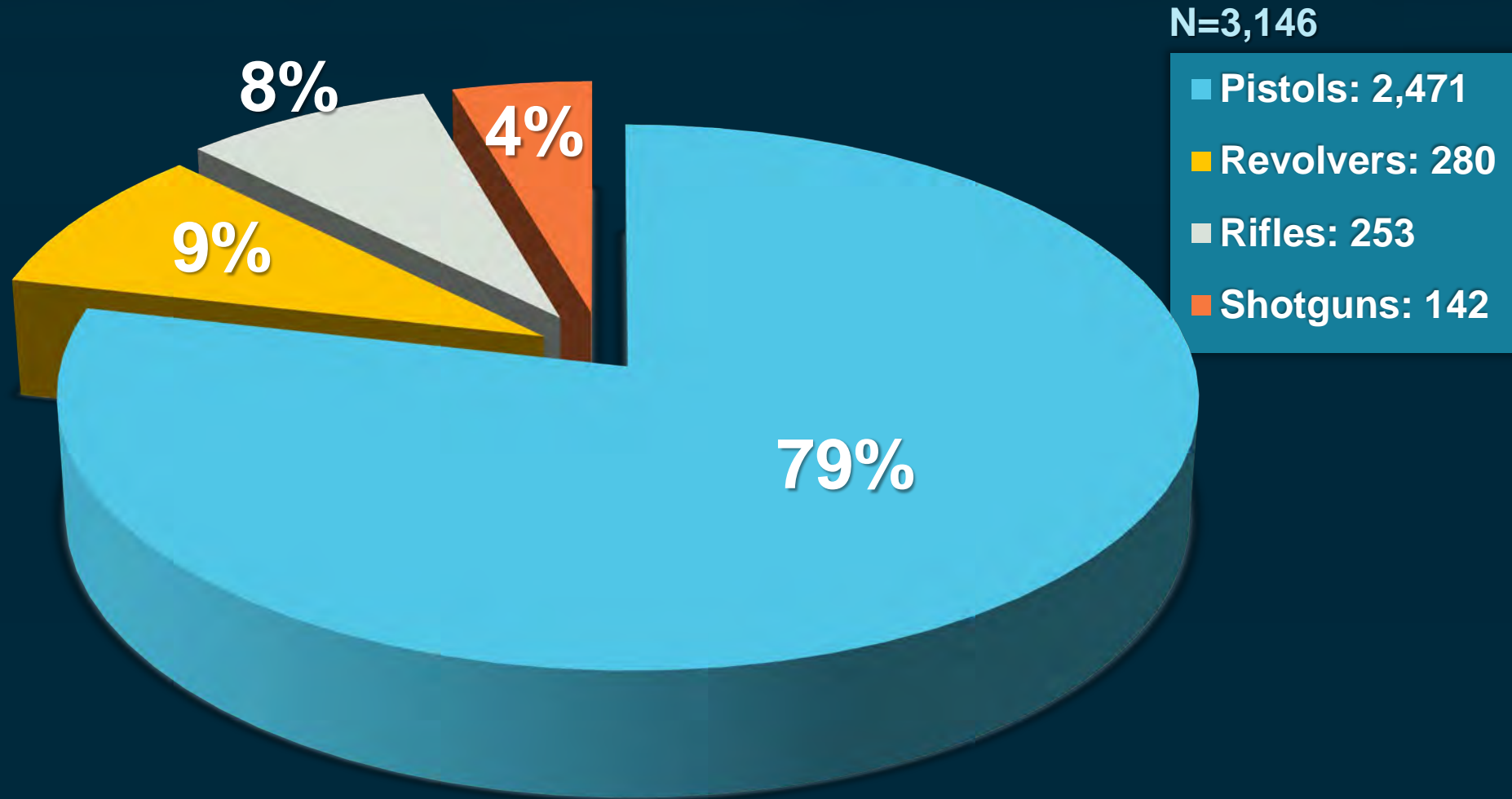


# Firearms Identification Casework





# Firearms Cases Completed by Type





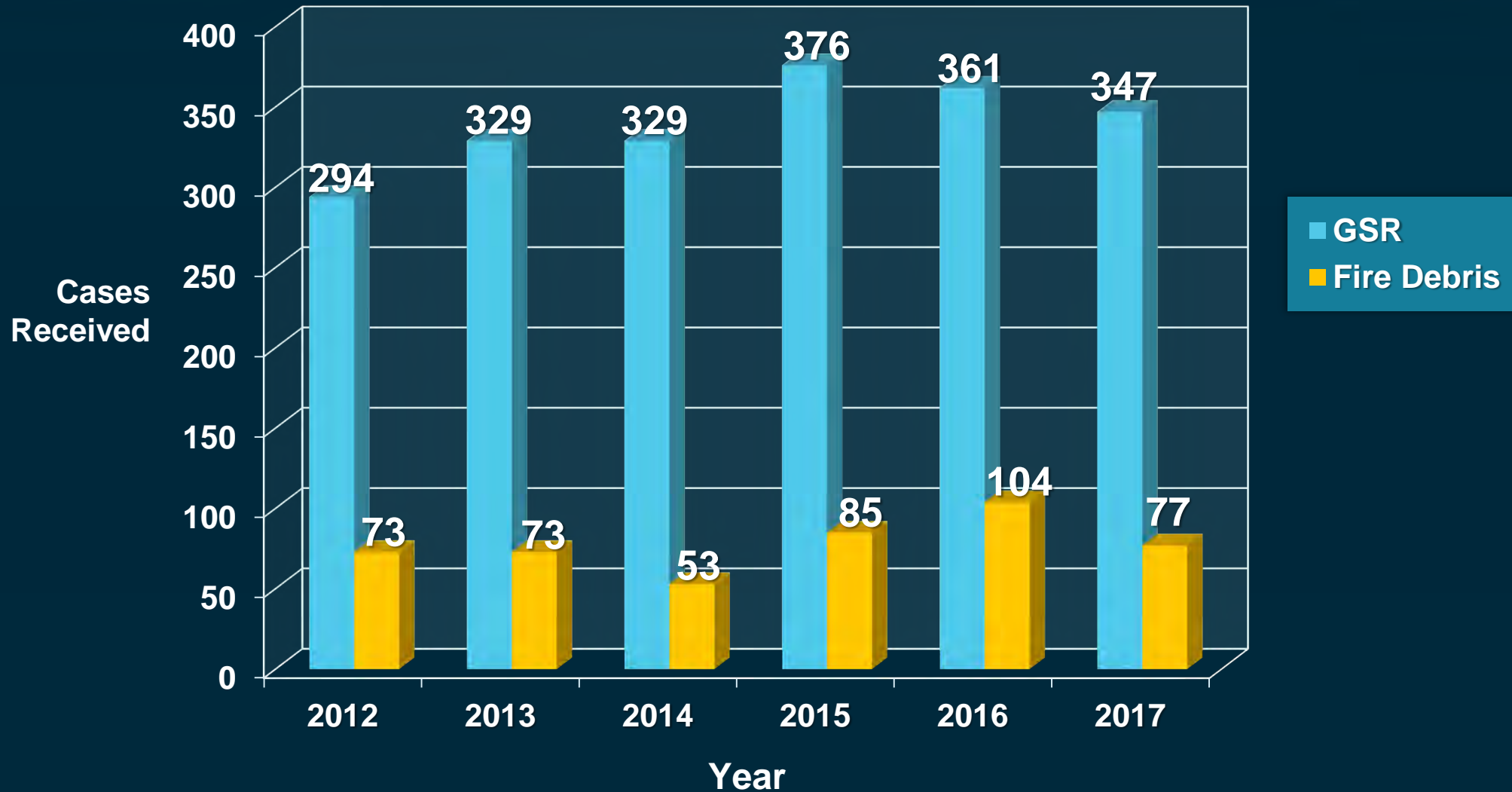
# Trace Evidence

**Provides analytical support to the HCIFS Medical Examiner Service and law enforcement in two areas:**

- **Fire Debris Analysis**
  - Examines evidence from fires to assist investigators in determining the presence of ignitable liquid residues
- **Gunshot Residue (GSR) Analysis**
  - Assists in determining whether a person or object has an association with the discharge of a firearm



# Trace Evidence Casework



# Published Scientific Work



7 published works in peer-reviewed journals



# Publications by HCIFS Doctors & Scientists

	Authors	Title	Publication
1	<b>Bakota EL, Kelly AT</b> , Walterscheid JP, <b>Phatak DR</b>	A Case Report of Fatal Desmethyl Carbodenafil Toxicity	<i>Journal of Analytical Toxicology</i> . 2017;41(3):250-255.
2	Drake SA, <b>Wolf DA</b> , Meininger JC, Cron SG, Reynold T, Wade CE, Holcomb JB	Methodology to reliably measure preventable trauma death rate	<i>Trauma Surgery &amp; Acute Care Open</i> . 2017; 2:1-6.
3	<b>Derrick SM</b> , Hipp J, Goel P	Chapter 23: The CADI Method of Computer-Assisted Radiographic Identification	<i>In: Bartelink E and Latham K (eds). New Perspectives in Forensic Human Skeletal Identification. Elsevier.</i>
4	Love JC, <b>Derrick SM</b>	Chapter 12: A Life History of Skeletal Trauma: Cases from a Medical Examiner's Office.	<i>In: Tegtmeier C and Martin D(eds.). Broken Bones, Broken Bodies: Bioarchaeological and Forensic Approaches of Accumulative Trauma and Violence. Lexington Books.</i>
5	<b>Crowder CM</b> , Andronowski JM, Dominguez DM.	Bone Histology as an Integrated Tool in the Process of Human Identification.	<i>In: Latham K, Bartelink E, and Finnegan M (eds.). New Perspectives in Forensic Human Skeletal Identification.</i>
6	<b>Fleischman JM</b> , Kendell AE, Eggers CC, Fulginiti LC.	Unidentified Border Crosser Deaths in Arizona: Expanding Intra-state Collaborative Efforts in Identification.	<i>Journal of Forensic Sciences</i> . 2017;62(4):840-849.
7	<b>Wiersema, J., Pierce, M., Woody, A., &amp; Sanford, M.</b>	Evidence Management: Best Practices in Medicolegal Death Investigation.	<i>In: Mozayani A and Fisher CP (eds).Forensic Evidence Management: From the Crime Scene to the Courtroom. CRC Press</i>
8	<b>Jennifer Ross</b> , Adriana Olar, Christine Fuller	A Pediatric Case of Diffuse Glioma Diagnosed at Autopsy	<i>Academic Forensic Pathology</i> . 2017; 7(4): 657-666.



# Internship and Fellowship Programs



# Internship Program

- **HCIFS prepares students for future careers in Forensic Science in many different scientific disciplines as well as in technical, professional and administrative capacities**
- **16 summer interns and 6 fall interns from the following disciplines:**

- Histology
- Forensic Anthropology
- Forensic Investigations & Emergency Management
- Victim's Assistance
- Systems Support
- Drug Chemistry
- Firearms Identification
- Forensic Genetics
- Forensic Imaging
- Forensic Toxicology
- Trace Evidence



# Medical Examiner Fellowship Programs

## ***Forensic Pathology Fellowship:***

**A 1-year fellowship that is a required training program for all new pathologists seeking Forensic Pathology Board certification**

**Fellows focus on the data acquisition and documentation processes from medical and non-medical sources with particular emphasis placed on the correlation of scene observations (forensic investigation) with autopsy and forensic toxicological findings**





# Medical Examiner Fellowship Programs

## ***Forensic Anthropology:***

**An 18-month grant-funded fellowship/research project investigating the sources of cognitive bias influencing forensic anthropological casework and the validation of anthropological equipment and software used at HCIFS**





# Crime Laboratory Fellowship Programs

## ***Forensic Toxicology:***

A 2-year fellowship providing training for doctorate-level scientists seeking specialization in Forensic Toxicology

The program involves a combination of learning:

- Forensic toxicology analytical operations
- Method validations
- Publications/presentations
- Interpretation skills
- Court testimony training



# Crime Laboratory Fellowship Programs

## ***Forensic Genetics:***

A 2-year program designed to train life science doctorates in casework and validation methods

Fellows focus on furthering specialized testing in Forensic Genetics, including animal and insect DNA testing





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