

# 2021

# Annual Report



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## Mission Statement

The Knox County Regional Forensic Center seeks to:

- Provide accurate, timely, compassionate, and professional death investigative services for the citizens of Knox County and other counties it serves;
- Identify and develop an understanding of sudden, unexpected, and unnatural deaths and educate the public about those deaths;
- Assist law enforcement agencies in their investigations;
- Offer consults to medical professionals and attorneys;
- Render unbiased opinions and testimony in court; and
- Extend research support for local and national medical, legal, academic, and law enforcement organizations.



## Knox County Regional Forensic Center

### History

The Knox County Medical Examiner's Office has been in existence since the early 1950s when it operated out of a small, one-room morgue in the basement of the former University of Tennessee Hospital. In 1998, the Regional Forensic Center (RFC) moved to a new ground floor facility of the expanding University of Tennessee Medical Center. In 2014, Knox County, with financial support from the State of Tennessee, built an 18,000-square-foot facility located on Sullins Street in Knoxville, Tennessee, and officially began service as the Regional Forensic Center.

### Overview

The Knox County Regional Forensic Center is a department under the purview of the Knox County Mayor's Office. It serves as the Office for the Chief Medical Examiner for Knox and Anderson counties and provides autopsy and consultative services for 21 other counties in Middle and East Tennessee. The facility operates 24 hours a day, seven days a week, all year long. There is always at least one autopsy technician at the facility. There is also always a Medical Examiner/Forensic Pathologist on-call or on duty and a Medicolegal death investigator available to respond to death scene investigations.

### Legal Jurisdiction

There are three areas of the Tennessee Code that dictate how deaths and decedents are reported in the State of Tennessee.

### *Tennessee Code Annotated §38-7-104 – County Medical Examiner*

*A county medical examiner shall be appointed by the county mayor, subject to confirmation by the county legislative body, based on a recommendation from a convention of physicians residents in the county. A county medical examiner shall be a physician who is either a graduate of an accredited medical school authorized to confer upon graduates the degree of doctor of medicine (M.D.) and who is duly licensed in Tennessee, or is a graduate of a recognized osteopathic college authorized to confer the degree of doctor of osteopathy (D.O.) and who is licensed to practice osteopathic medicine in Tennessee, and shall be elected from a list of a maximum of two (2) doctors of medicine or osteopathy nominated by convention of the physicians, medical or osteopathic, residents in the county, the convention to be called for this purpose by the county mayor.*

### *Tennessee Code Annotated §38-7-104 – Medicolegal death investigators*

*A medical investigator shall be a licensed emergency medical technician (EMT), paramedic, registered nurse, physician's assistant or a person registered by or a diplomat of the American Board of Medicolegal death investigators and approved by the county medical examiner as qualified to serve as medical investigator...The county medical investigator may conduct investigations when a death is reported, as provided in §38-7-108, under the supervision of the county medical examiner. The county medical investigator may make pronouncements of death and may recommend to the county medical examiner that an autopsy be ordered. However, the county medical investigator shall not be empowered to sign a death certificate. The county medical examiner may delegate to the county medical investigator the authority to order an autopsy.*

### *Tennessee Code Annotated §38-7-108 – Death under suspicious, unusual or unnatural circumstances*

*Any physician, undertaker, law enforcement officer, or other person having knowledge of the death of any person from violence or trauma of any type, suddenly when in apparent health, sudden unexpected death of infants and children, deaths of prisoners or persons in state custody, deaths on the job or related to employment, deaths believed to represent a threat to public health, deaths where neglect or abuse of extended care residents are suspected or confirmed, deaths where the identity of the person is unknown or unclear, deaths in any suspicious/unusual/unnatural manner, found dead, or where the body is to be cremated, shall immediately notify the county medical examiner or the district attorney general, the local police or the county sheriff, who in turn shall notify the county medical examiner.*

## Function

The Knox County Regional Forensic Center serves citizens by investigating deaths that are unnatural and/or unexpected and determining the cause and manner of death; recognizing and collecting evidence needed for adjudication; defining public health and product safety risks; and providing compassionate services to families.

These investigations begin with the careful review of the scene of death and are supplemented, when appropriate, by physical examination, autopsy, toxicologic testing, and other studies.

The Center is responsible for the investigation and certification of cause and manner of death of all sudden, unexpected, violent, suspicious and/or unnatural deaths or deaths without medical attendance that occur in its jurisdictional counties.

The Knox County RFC also provides autopsy and consultative services for similar deaths occurring in 23 Middle and East Tennessee counties—Knox and Anderson are jurisdictional; the 21 others are not—at the written request of local authorities.

**Cause of death** refers to a disease, injury, drug toxicity or combination of factors that causes a physiological derangement severe enough to result in death.

**Manner of death** refers to the circumstances surrounding how a death occurred and has five possible classifications including natural, accidental, suicide, homicide or undetermined.

## ***National Missing and Unidentified Persons System (NamUs)***

As part of *Tennessee Code Annotated §38-6-1*, Regional Forensic Centers are also charged with taking control of an unidentified body and coordinating efforts with law enforcement and NamUs to identify the decedent. The RFC serves as a regional resource for East Tennessee counties with a need to identify a decedent or assist in finding a missing person and partners with NamUs to work cases to identify missing and unidentified persons.

## **Opioid Information**

### **Knox County Drug Related Death Task Force**

The RFC partners with the Office of the District Attorney in the Sixth Judicial District, Knox County Government, Knoxville Police Department, Knox County Sheriff's Office, Drug Enforcement TBI, and the Appalachia High-Intensity Drug Trafficking Area as part of the Knox County Drug Overdose Task Force.

The force was formed to address the growing drug abuse issues and increasing number of drug deaths in Knox County. The goals of the Task Force are:

- Identifying drug categories of interest, prosecutable street-level sources of illegal opiates and other drugs, and strategies to lower drug-related deaths, overdoses, and arrests;
- Developing best practices and a uniform data collection tool for local and regional use and a drug-related death data reference resource for medical and service professionals; and
- Creating a confidential and secure system (behind the Drug Related Death Task Force firewall) to collect law enforcement and medically sensitive information for quantification in order to analyze the information and data for use in redacted reports in collaboration with community partner agencies.

The RFC has also partnered with the Drug Enforcement Agency (DEA) and participates in its DEA360 program which focuses on coordinating education and community action for drug issues in Knox County.

## **Drug Related Deaths**

In late 2020, the Knox County Regional Forensic Center began a partnership with DEA Tox, the UCSF Mt. Zion Cancer Research lab dedicated to serving the DEA. Through this partnership drugs new to our region have been able to be detected, and quantified. This process has saved thousands of dollars to the local taxpayers by providing these services at no charge.

The RFC produces an annual Drug Related Death Report for Knox and Anderson counties, where Dr. Darinka Mileusnic-Polchan serves as Chief Medical Examiner. This report is inclusive of only jurisdictional counties because the RFC feels more able to perform a thorough investigation of these possible drug related deaths which ensures a greater confidence that the decedents were properly examined.

The Drug Related Death Report provides data on the number of drug deaths, demographic details about decedents, the location of injury, and/or death and the drugs involved therein. It also provides an overview of emerging drug trends.

For a copy of the most recent report, visit the Knox County Regional Forensic Center website at <https://www.knoxcounty.org/rfc/reports.php>.

## **Community Involvement and Educational Activities**

The RFC prides itself in regular interaction with the local community and tries to assure staff is well integrated into its service communities.

In 2021, the RFC completed the following community or service activities:

- Hosted pathology residents from the University of Tennessee Graduate School of Medicine, forensic dentistry fellows from the Department of General Dentistry's Forensic Odontology program, and graduate students and PhD candidates from the University of Tennessee's Forensic Anthropology program.

- Held numerous virtual conference calls with high school and college students interested in the field of forensic pathology and medicolegal death investigations.
- Spoke to Criminal Justice Classes at Anderson County High School.
- Presented on medicolegal death investigation at educational conferences for regional medical examiners, medicolegal death investigators, law enforcement, emergency response personnel, others involved in death investigation, and emergency medical services.
- Hosted conferences in conjunction with the National Forensics Academy that focus on providing training to law enforcement on death scene investigation, autopsy techniques, and fingerprinting decedents.
- Hosted new Knoxville Police Department recruits giving them a tour of the facility and providing lectures on medicolegal death investigation and forensic pathology topics.
- Served on the Knox County Child/Infant Fatality Death Review Team, the Anderson County Child/Infant Fatality Death Review Team, the Elder Abuse Coordinated Community Response Committee, the Metro Drug Coalition, the Overdose Fatality Review Team, and consulting for the East Tennessee District's Child/Infant Fatality Death Review Teams and the State of Tennessee Medical Examiner Advisory Council, and other regional infant death review teams.
- Shared lectures about RFC operations and death investigation processes with groups that include Knox County Emergency Management Agency and funeral home director groups, among others.
- Participated on committees with multiple state and regional government and non-government agencies focused on emergency preparedness and community development.
- Served with the 17 county Knox/East Tennessee Healthcare Coalition that includes hospitals, emergency management agencies, public health agencies, and healthcare organizations to address emergency medical management and healthcare planning within the region by holding tabletop and full-scale emergency preparedness exercises and training opportunities as well as working to seek grant opportunities for funding of regional and organizational needs.

## Community Care

One of the most important interactions in which the RFC staff participates is when Medical Examiners/Pathologists meet with family members to review autopsy findings. This is often a sensitive part of the family's grieving process. Staff is also available to consult with local physicians and hospitals, as needed, to discuss autopsy findings.

## Coverage

In 2021, RFC staff provided services—including personally requested private autopsies—to its two jurisdictional counties (Knox and Anderson) and 21 non-jurisdictional counties that include: Blount, Bradley, Campbell, Claiborne, Cocke, Cumberland, Fentress, Grainger, Hamblen, Jefferson, Loudon, McMinn, Meigs, Monroe, Morgan, Polk, Rhea, Roane, Scott, Sevier, and Union.

Jurisdictional counties (green on the map below) are those where Dr. Darinka Mileusnic-Polchan is the Chief Medical Examiner, and the RFC is the primary medicolegal death investigator. Non-jurisdictional counties (blue on the map below) are those where there is an appointed medical examining agency—not Dr. Mileusnic-Polchan or one of the other RFC Deputy/Assistant Medical Examiners—who is a Tennessee-licensed physician responsible for conducting medicolegal investigative activities. These agencies may or may not also have medicolegal death investigators working for them in their counties.



It is important to note that many cases come to Knox County from non-jurisdictional counties because of the Level 1 and 2 Trauma Center and referral hospitals located in the community. When this happens, the Knox County RFC coordinates activities with the Medical Examiner from the county in which the incident occurred.

## **Staffing**

There are 35 full-time staff at the Regional Forensic Center including the Chief Medical Examiner, the Deputy Chief Medical Examiner, four Assistant Medical Examiners/Forensic Pathologists, the Chief Administrative Officer, two Forensic Clerks, a manager for the nine Medicolegal Death Investigators, a manager for the ten Autopsy Technicians, two Night Morgue Attendants, a Physicians Administrative Assistant, two Administrative Assistants, and a part-time Forensic Intern. A Forensic Anthropologist is also contracted.

## **Medical Examiners/Forensic Pathologist**

All five Medical Examiners/Forensic Pathologists are board-certified by the American Board of Pathology in Anatomic, Clinical, and Forensic Pathology. They hold appointments as either Clinical Associate or Assistant Professors with the University of Tennessee and an affiliation with the board-certified Forensic Odontology group. They also assist with the University of Tennessee's Department of Pathology Resident Graduate Medical Education.

These staff members are responsible for the professional medicolegal death investigation, and determination of the cause and manner of death for cases handled at the RFC. They are experts in the evaluation of sudden unexpected natural deaths and unnatural deaths such as those caused by firearms, sharp and blunt force trauma, among others. They are frequently called to testify on cause of death and share their medical findings and interpretations, particularly in homicide cases. These individuals consult in forensic pathology, neuropathology, odontology, anthropology, toxicology, and other disciplines to assist in their evaluations of cases.

Forensic Pathologists complete death certificates for cases in Knox and Anderson counties. At the request of the County Medical Examiners, they will also complete death certificates on certain cases sent to the RFC from other counties. When physicians in Knox and Anderson counties refuse to sign a Death Certificate on their patient, as defined by State Code, forensic pathologists will complete death certificates for those cases, in order to ensure that the final act of patient/victim care is completed for the decedents and their families.

## **Medicolegal Death Investigators (MDI)**

The medicolegal death investigators are required to become certified by the American Board of Medicolegal Death Investigators; seven of the local investigators are Diplomats with the organization and two are in the process of earning certification.

These staff members have an initial responsibility for accepting or declining jurisdiction for death cases reported to the RFC. If jurisdiction is accepted, MDIs are responsible for a variety of activities to guarantee the case is properly investigated.

## **Autopsy Technicians**

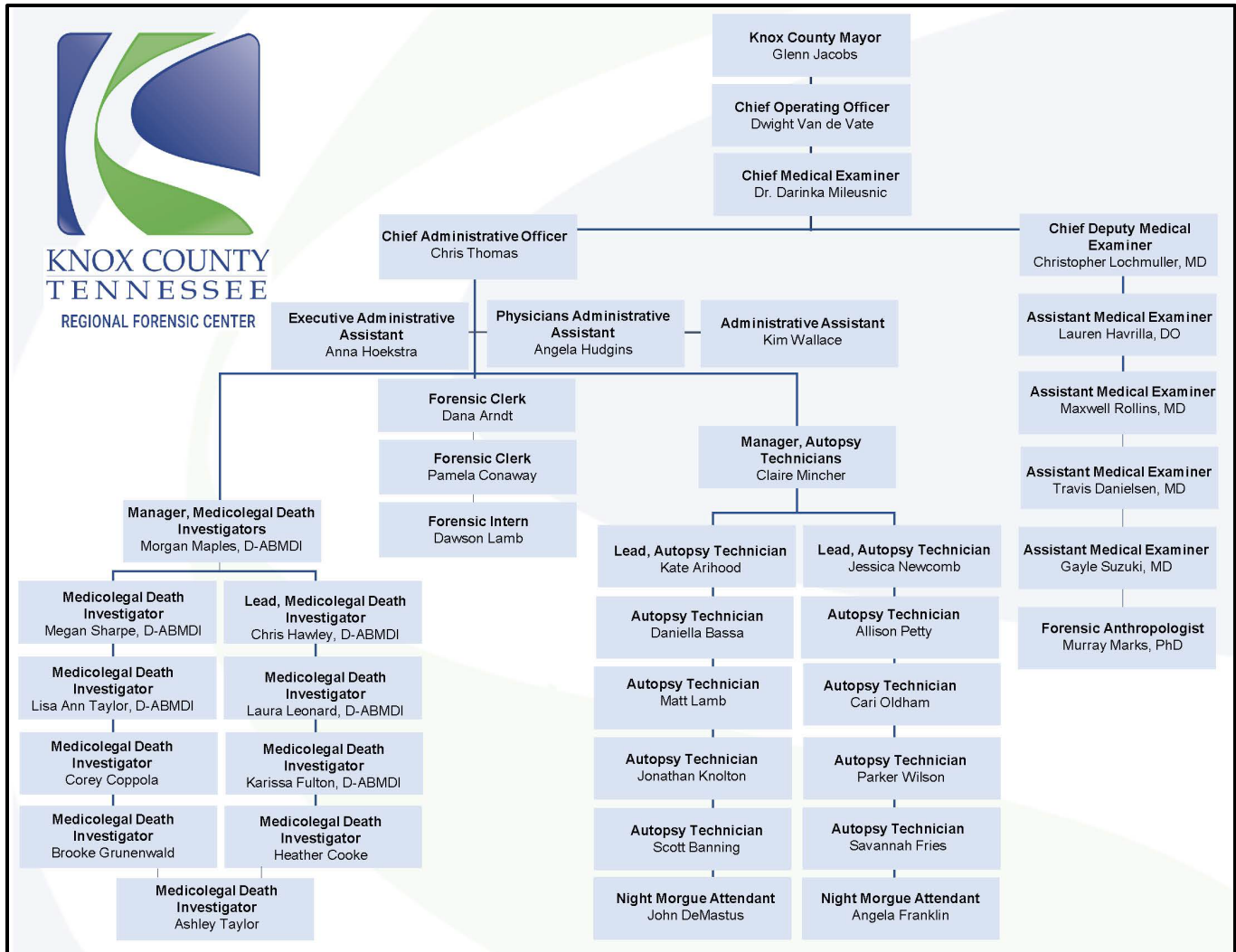
The Autopsy Technician staffers are responsible for coordinating anthropology assignments, X-rays, lab testing, and other activities for the decedent; receiving/releasing them from the RFC; assisting Forensic Pathologists in conducting autopsies and external examinations; and working with funeral homes to transition the decedent for their final disposition, assisting in finger printing, and evidence processing for law enforcement.

## **Administration**

The Forensic Clerks and Administrative Assistants are responsible for coordinating Forensic Pathologists' schedules for depositions and court testimony, medical billing, tracking death certifications, completing open records requests, assuring proper case closure, and coordinating indigent internment, among other activities. They work with funeral homes, law enforcement, District Attorney's office, lawyers, families, media, and others

to ensure requested information is provided in a timely manner. Forensic Clerks are also responsible for coordinating proper death certificate actions between the State of Tennessee Department of Vital Records, Funeral Homes, and the Regional Forensic Center.

The Center’s organizational structure is as follows.



## National Association of Medical Examiners Accreditation

The National Association of Medical Examiners (NAME) is the national professional organization of forensic pathologists, physician medical examiners, medicolegal death investigators, death investigation system administrators and consultants who perform the official duties of medicolegal investigation of deaths of public interest in the United States.

Accreditation is a rigorous process and requires a lengthy inspection by an independent Medical Examiner appointed by the NAME. The accreditation requirements are extensive and include more than 360 items covering diverse points of quality ranging from how specimens are labeled to the professional qualifications/certifications of staff members.

The Knox County Regional Forensic Center achieved the distinction of Accreditation by the National Association of Medical Examiners in May 2010 and has maintained accreditation since that date. The Center undergoes an annual review of accreditation standards and an on-site inspection every four years. Receiving full accreditation with no deficiencies in June 2019 marked 10 years of continuous accreditation for the RFC. The most recent on-site visit occurred in July 2020 and earned the RFC full accreditation. The next on-site visit will be in 2024.



Below is a table outlining the essential NAME data collected in 2021. For clarification, “in jurisdiction” references Anderson and Knox counties; “non-jurisdiction” refers to the other 21 service/referral counties the RFC serves. A “full autopsy” is classified as a complete external and internal examination of a decedent. An “external examination” is one focusing on the exterior of the decedent and review of medical records. A “limited examination” is one focused on a specific organ or region of the body, and external examination.

<b>Measure</b>	<b>2021</b>	<b>2020</b>
Deaths in jurisdiction (all deaths including non-ME/C cases)	9,830	8,757
Deaths reported to the office	8,416	6,939
Deaths investigated (certified)	8,416	6,939
Scenes investigated by ME/C staff	1,556	1,493
Decedents brought to the facility	2,851	2,371
Inspections (external examinations)	1,237	1,102
Autopsies performed in jurisdiction	654	567
Autopsies performed outside jurisdiction	861	691
Partial autopsies	23	9
Toxicology only	0	0
Microscopic studies	1,048	947
Formal neuropathologic studies	21	4
Formal cardiac pathologic studies	0	0
Deaths certified as homicide	111	97
Homicides autopsied	110	96
Death certified as suicide	210	203
Suicides autopsied	136	120
Non MVA-Accident deaths certified	1,379	1,041
Non MVA-Accident deaths autopsied	841	627
MVA Accidental deaths certified	218	183
MVA-Accidental deaths autopsied	79	79
Deaths certified as natural	913	835
Natural deaths autopsied	393	303
Deaths certified as undetermined or unclassified	44	44
Undetermined autopsied	42	38
Unidentified decedents	2	2
Unidentified decedents autopsied	2	2
Organ donations	230	72
Corneal and other tissue donations	176	60

Note: Homicides not autopsied were remanded to other jurisdictions for autopsy.

## Regional Forensic Center Cases in 2021

Based on the latest United States Census Bureau data, the approximate combined population of Knox and Anderson counties is 561,529. According to the reported provisional data from Tennessee Vital Statistics, 9,830 deaths occurred in the two counties in 2021, or 1.75 percent of the population. Out of these deaths, 7,450 or 75.78 percent, were reported to the Medical Examiner.

Based on analysis of the circumstances, and scenes, of these reported deaths and the medical history of the decedents, the Regional Forensic Center performed autopsies on 1,885 of these reported deaths equating to 19.17 percent of all deaths within the RFC jurisdiction.

## Referrals

Every referral requires a preliminary screening by the RFC medicolegal death investigators to determine if the case falls within the jurisdiction of the Medical Examiner. There were deaths reported to the Medical Examiner in which jurisdiction was released to another county.

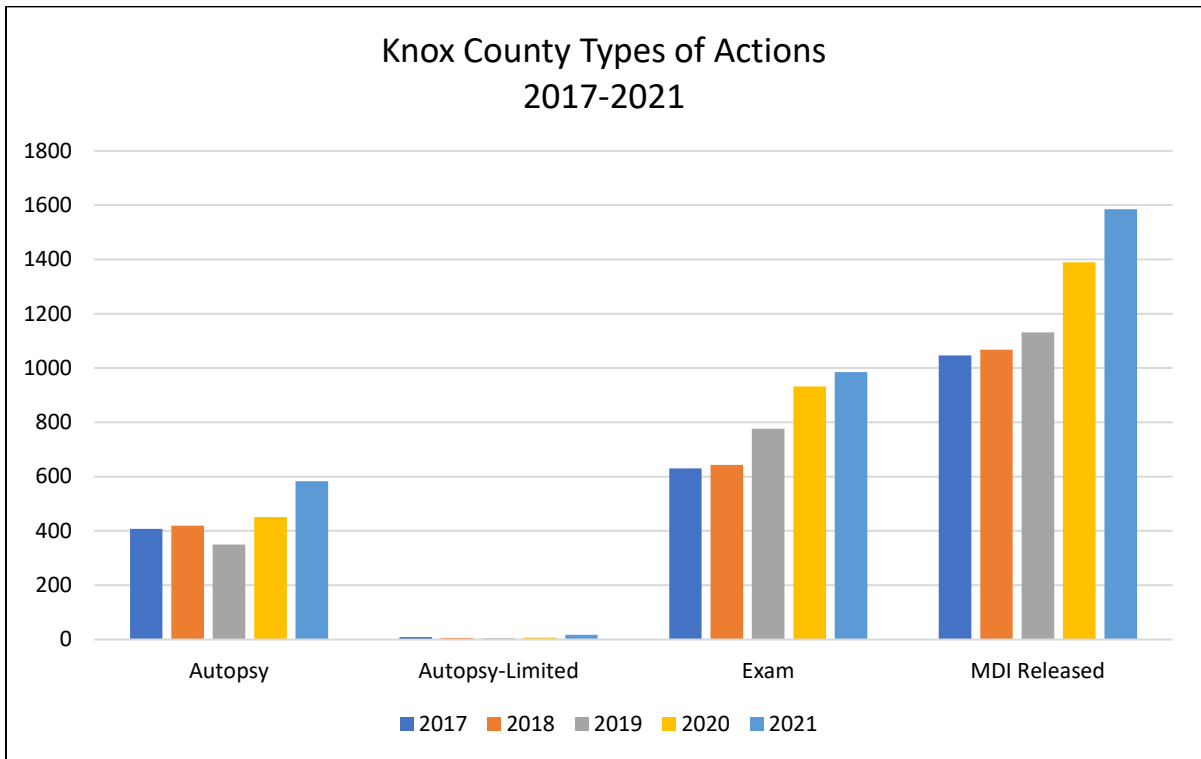
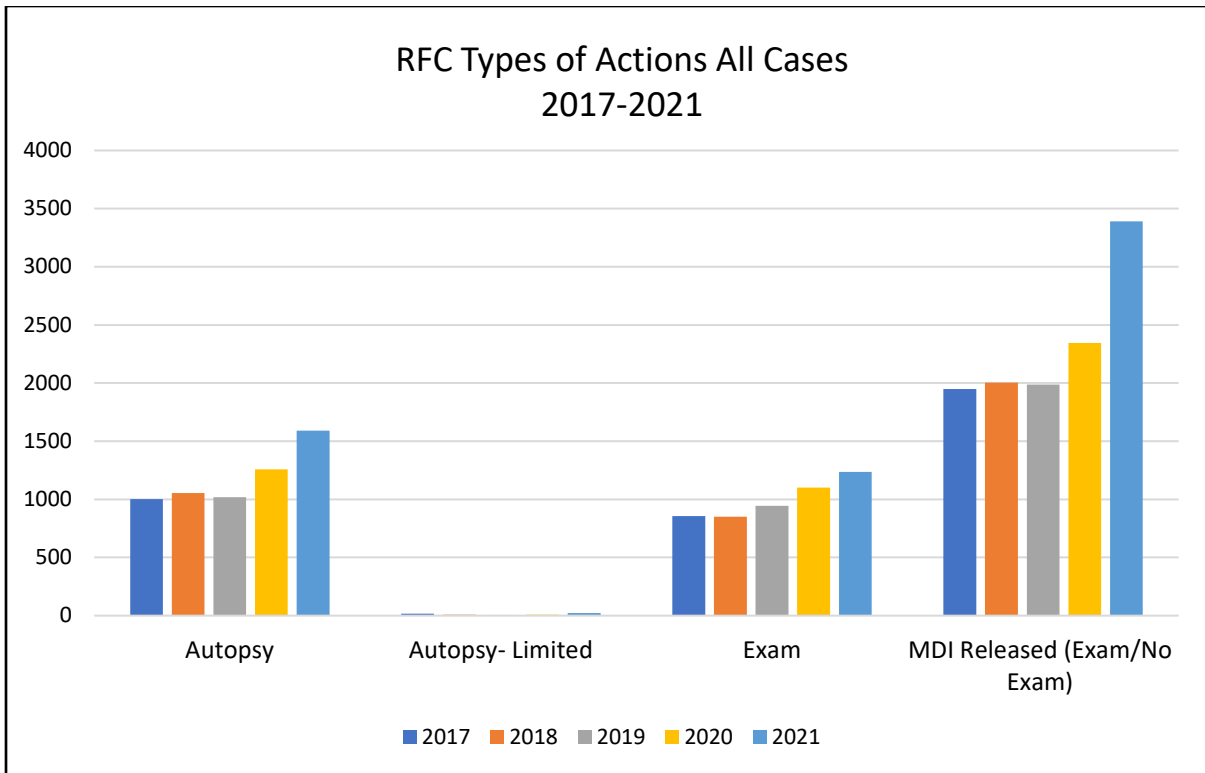
## Data

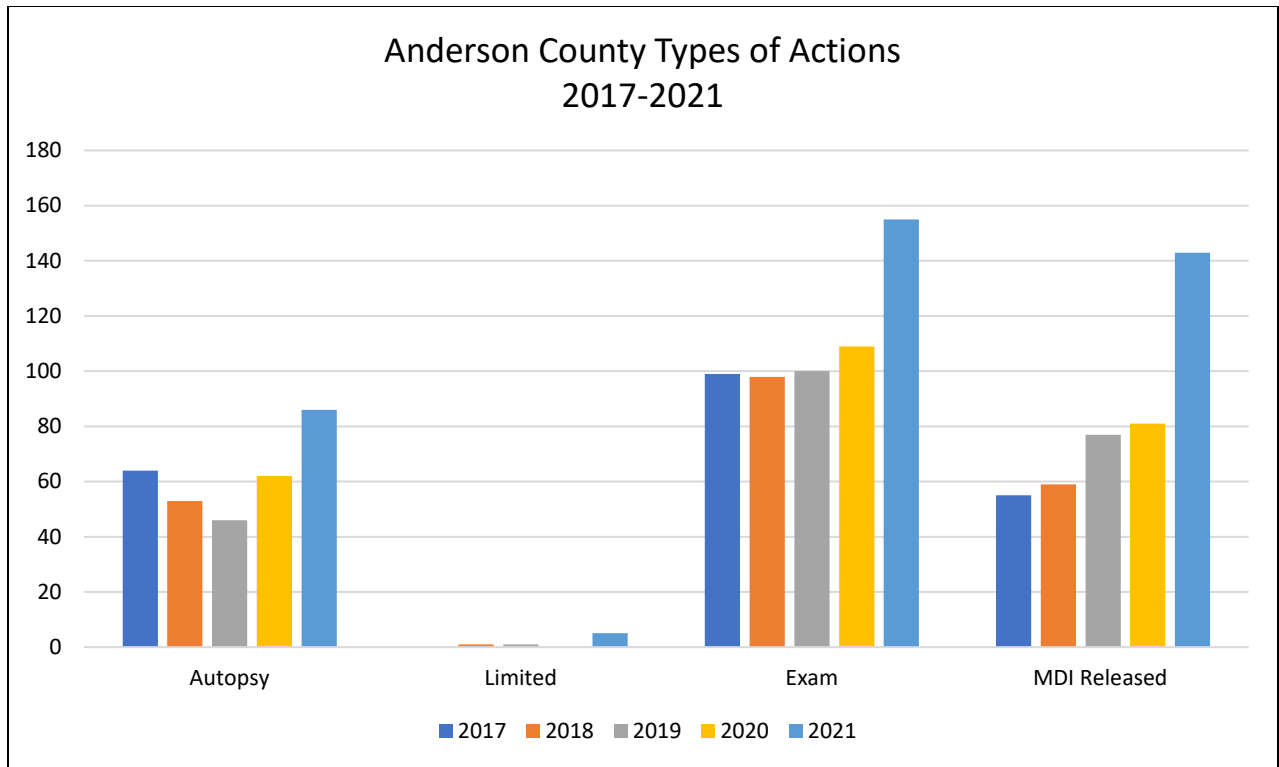
The number of deaths reported to the Regional Forensic Center is growing each year. The following graphics will illustrate the progression of that growth; it will also depict an increase in the number of procedures completed at the Regional Forensic Center. The data comprising the charts that follow represents a mix of jurisdictional and non-jurisdictional cases where Knox County provided autopsy or consulting services or completed work prior to a decedent being cremated. Note that a case can have more than one activity depicted in the charts.

## Number and Type of Actions Completed by the RFC Over 5 Years

These charts depict the amount and types of some of the activities handled by the RFC over a 5 year period.

Types of Activities	2017	2018	2019	2020	2021
Autopsy	1,003	1,054	1,019	1,258	1,584
Autopsy - Limited	17	8	5	9	23
Exam	855	850	943	1,102	1,237
Toxicology Only	3	3	2	0	0
MDI Released (Exam/No Exam)	1,948	2,003	1,987	2,344	3,391
<b>Total</b>	<b>3,826</b>	<b>3,918</b>	<b>3,956</b>	<b>4,713</b>	<b>6,235</b>

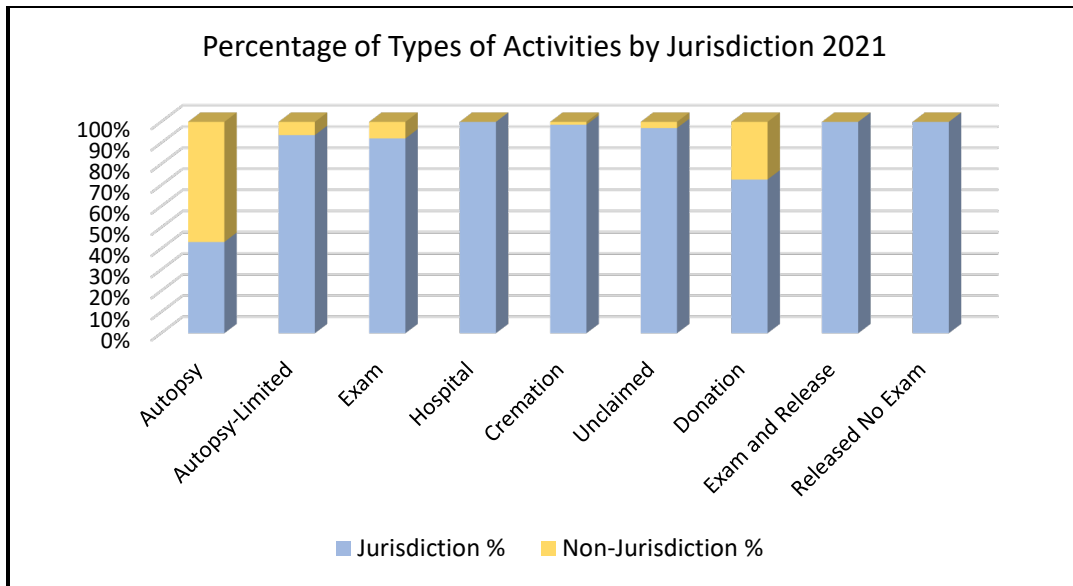




## Deaths Reported to the RFC

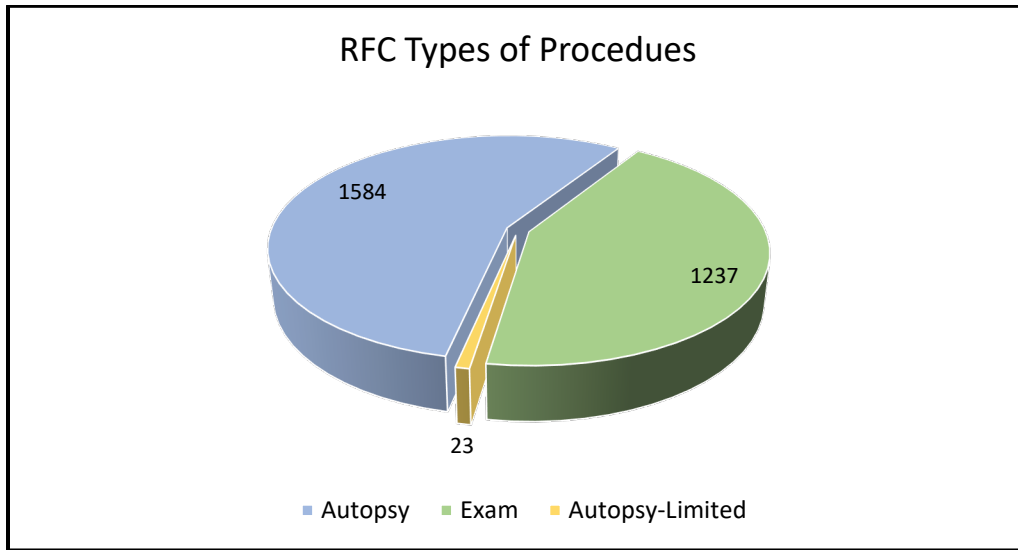
The chart and graph that follow depict the amount/percentage and types of cases handled by the RFC in 2021 and denote how each case was jurisdictionally classified.

Types of Activities	Jurisdiction	Non-Jurisdiction	Other	Total
Autopsy-Full	654	861	0	<b>1,515</b>
Autopsy - Limited	15	1	0	<b>16</b>
Exam	1,140	97	0	<b>1,237</b>
Hospital/Private Autopsy	0	0	76	<b>76</b>
Cremation Permits	4,949	67	0	<b>5,016</b>
Unclaimed/Public Fiduciary	66	2	0	<b>68</b>
Donation	8	3	0	<b>11</b>
Release to funeral homes	426	0	0	<b>426</b>
Declined cases	2,965	0	0	<b>2,965</b>
<b>Total</b>	<b>10,223</b>	<b>1,031</b>	<b>76</b>	<b>11,060</b>

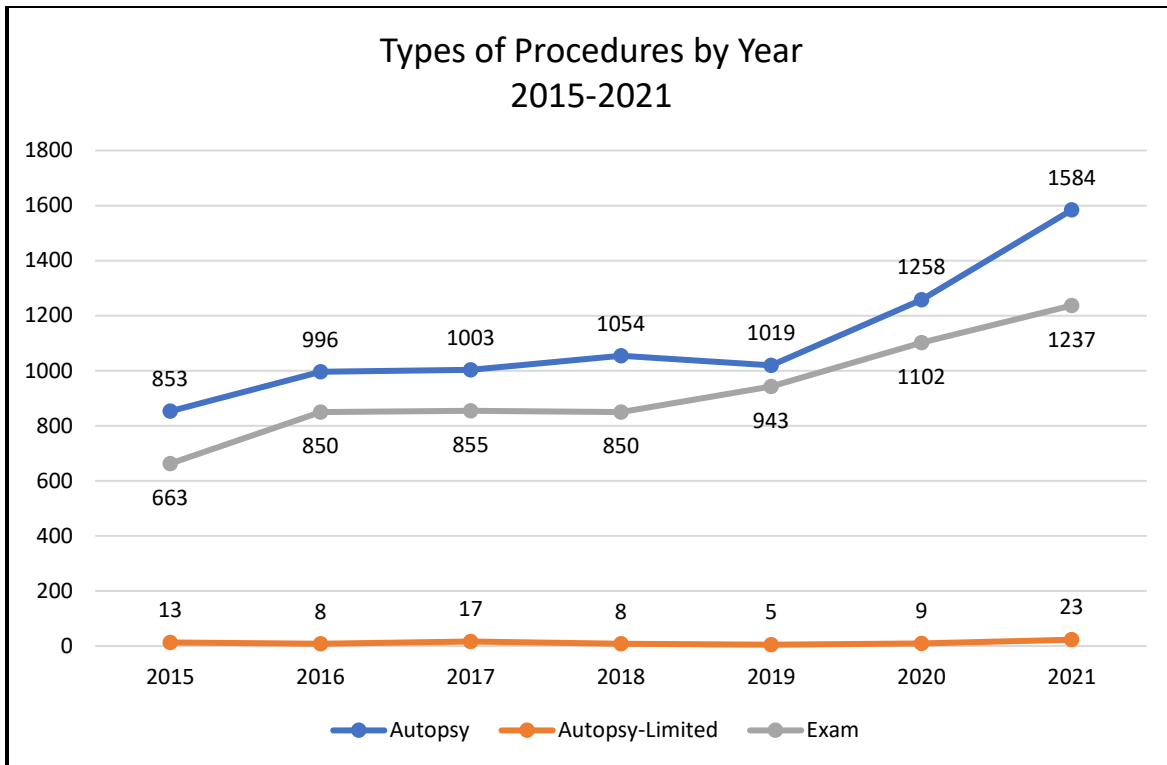


## Exam Types

The charts and graphs below depict the types of procedures completed by RFC Medical Examiners/Pathologists in 2021.



Procedure Type by Jurisdiction				
Procedure	Knox	Anderson	Non-Jurisdiction	Total
Autopsy-Full	637	86	861	<b>1,584</b>
Autopsy – Limited	17	5	1	<b>23</b>
Exam	985	155	97	<b>1,237</b>
<b>Total</b>	<b>1,639</b>	<b>246</b>	<b>959</b>	<b>2,844</b>



### Manner of Death Classification for Reported Cases

The charts that follow depict how the RFC classified Manner of Death for cases in 2021.

RFC Manner of Death All Cases 2017 – 2021					
Manner of Death	2017	2018	2019	2020	2021
Accident MVA	193	164	167	180	218
Accident - Non MVA	739	757	800	1,045	1,379
Suicide	185	189	200	203	210
Homicide	72	65	73	97	111
Natural	723	760	751	833	913
Undetermined	38	45	44	44	47
<b>Total</b>	<b>1,953</b>	<b>1,981</b>	<b>2,035</b>	<b>2,402</b>	<b>2,878</b>

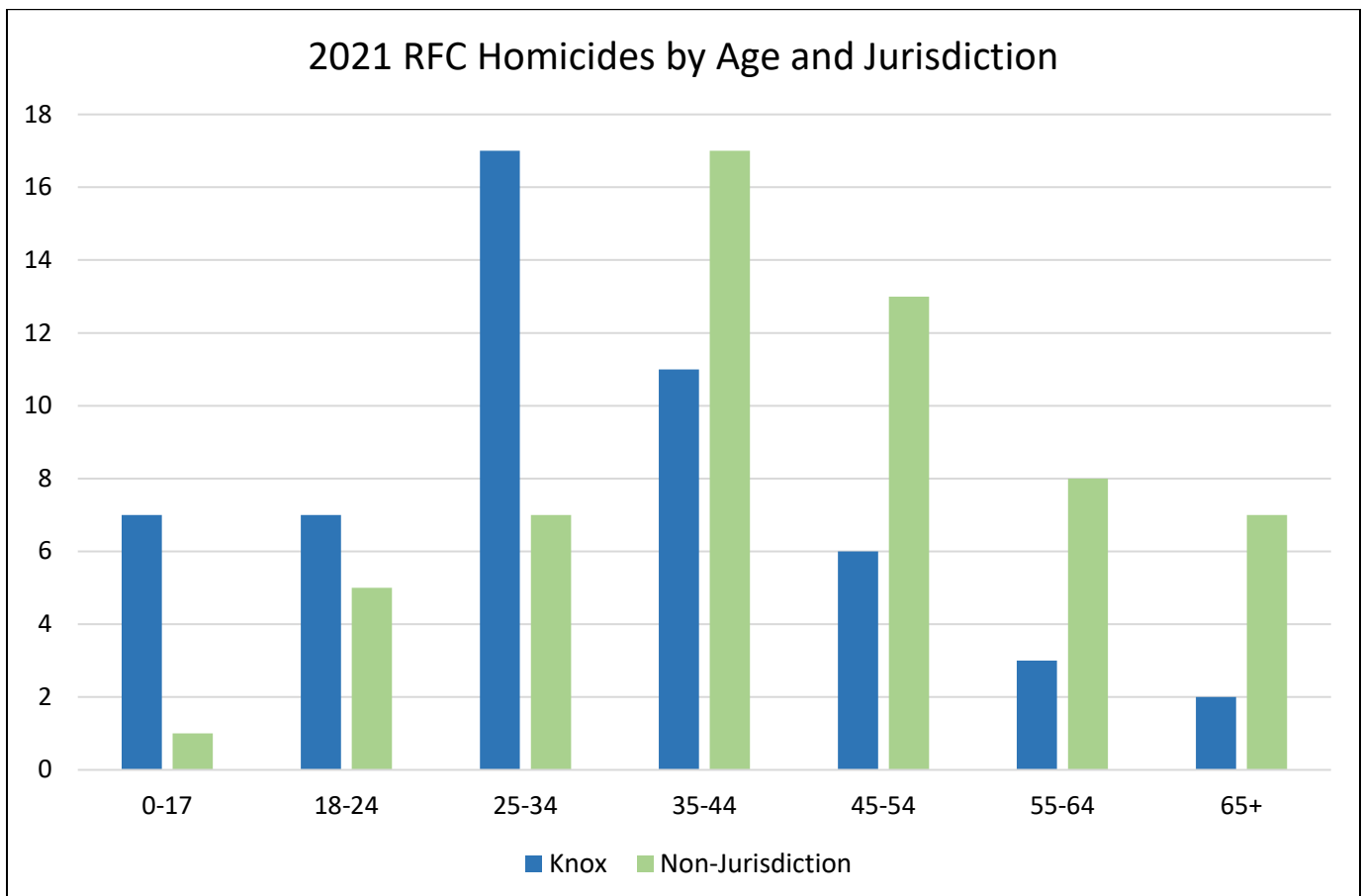
2021 Manner of Death Summary for All Counties by Jurisdiction				
Manner of Death	Knox	Anderson	Non-Jurisdiction	Total
Accident MVA	129	17	72	<b>218</b>
Accident - Non MVA	768	119	492	<b>1,379</b>
Suicide	88	19	103	<b>210</b>
Homicide	53	0	58	<b>111</b>
Natural	611	94	208	<b>913</b>
Undetermined	20	3	24	<b>47</b>
<b>Total</b>	<b>1,669</b>	<b>252</b>	<b>957</b>	<b>2,878</b>

## Homicides

Homicides in Knox County increased by 6 percent in 2021. Anderson County had a decrease of 100 percent in homicides in 2021 due to there not being a single homicide in Anderson County in 2021.

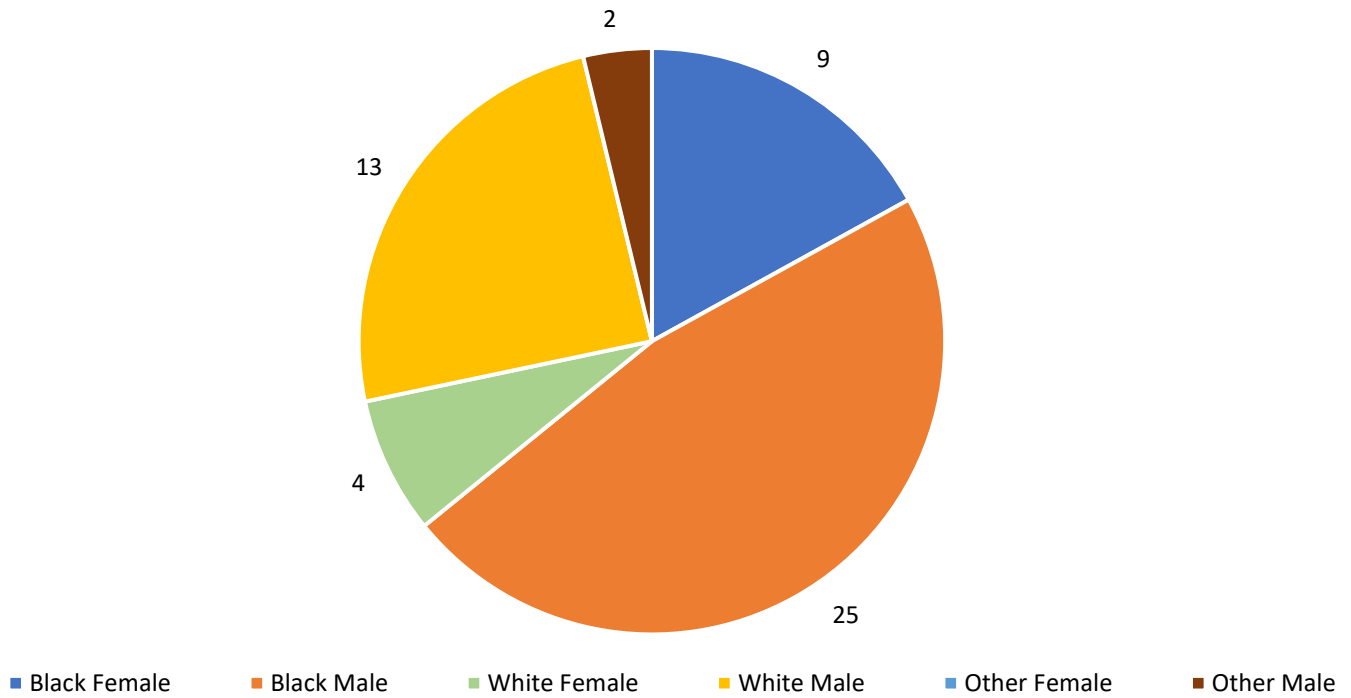
RFC Homicides Jurisdiction and Non-Jurisdiction 2017 – 2021					
	2017	2018	2019	2020	2021
Knox	39	34	29	50	53
Anderson	5	3	2	3	0
Non-Jurisdiction	28	30	42	44	58
<b>Total</b>	<b>72</b>	<b>67</b>	<b>73</b>	<b>97</b>	<b>111</b>

2021 Homicides by Cause and Jurisdiction				
Cause of Death	Knox	Anderson	Non-Jurisdiction	Total
Asphyxia	0	0	2	2
Blunt Force	1	0	5	6
Gun	52	0	49	101
Sharp Instrument	0	0	1	1
MVC	0	0	1	1
<b>Total</b>	<b>53</b>	<b>0</b>	<b>58</b>	<b>111</b>

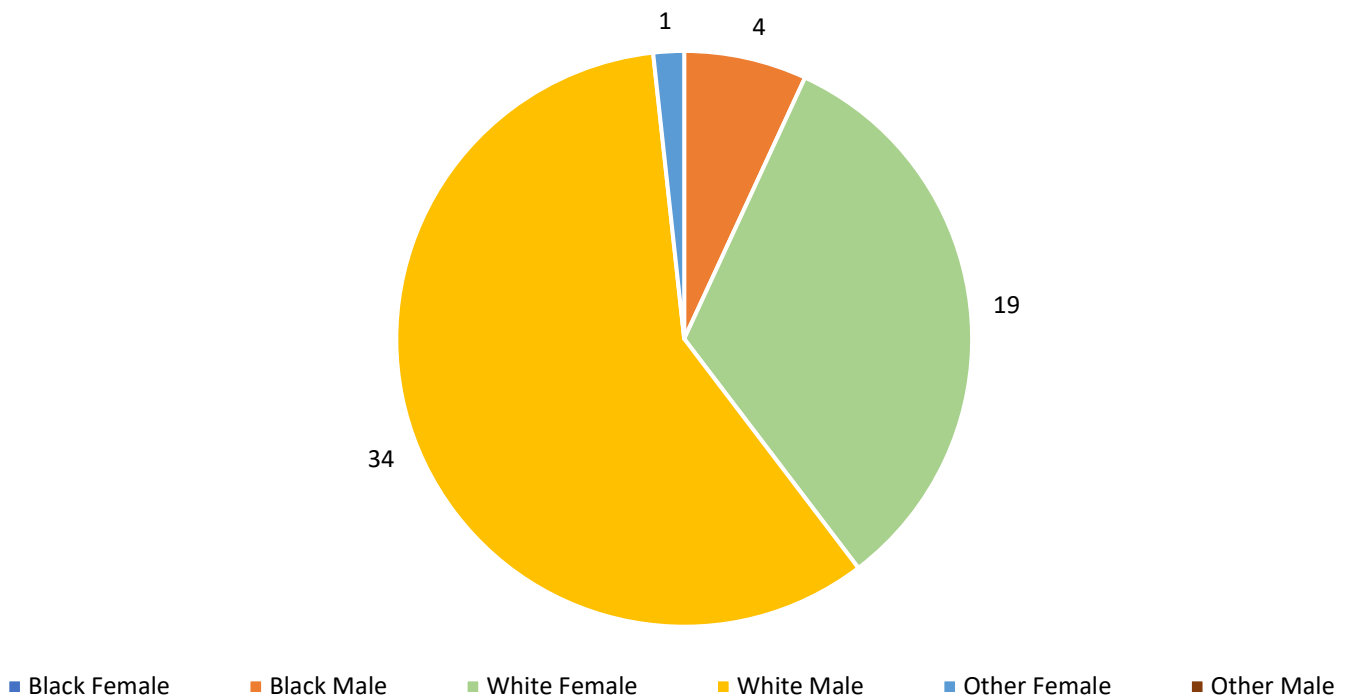


Note: Anderson County had no homicide deaths in 2021

### 2021 RFC Knox County Homicides by Race and Sex

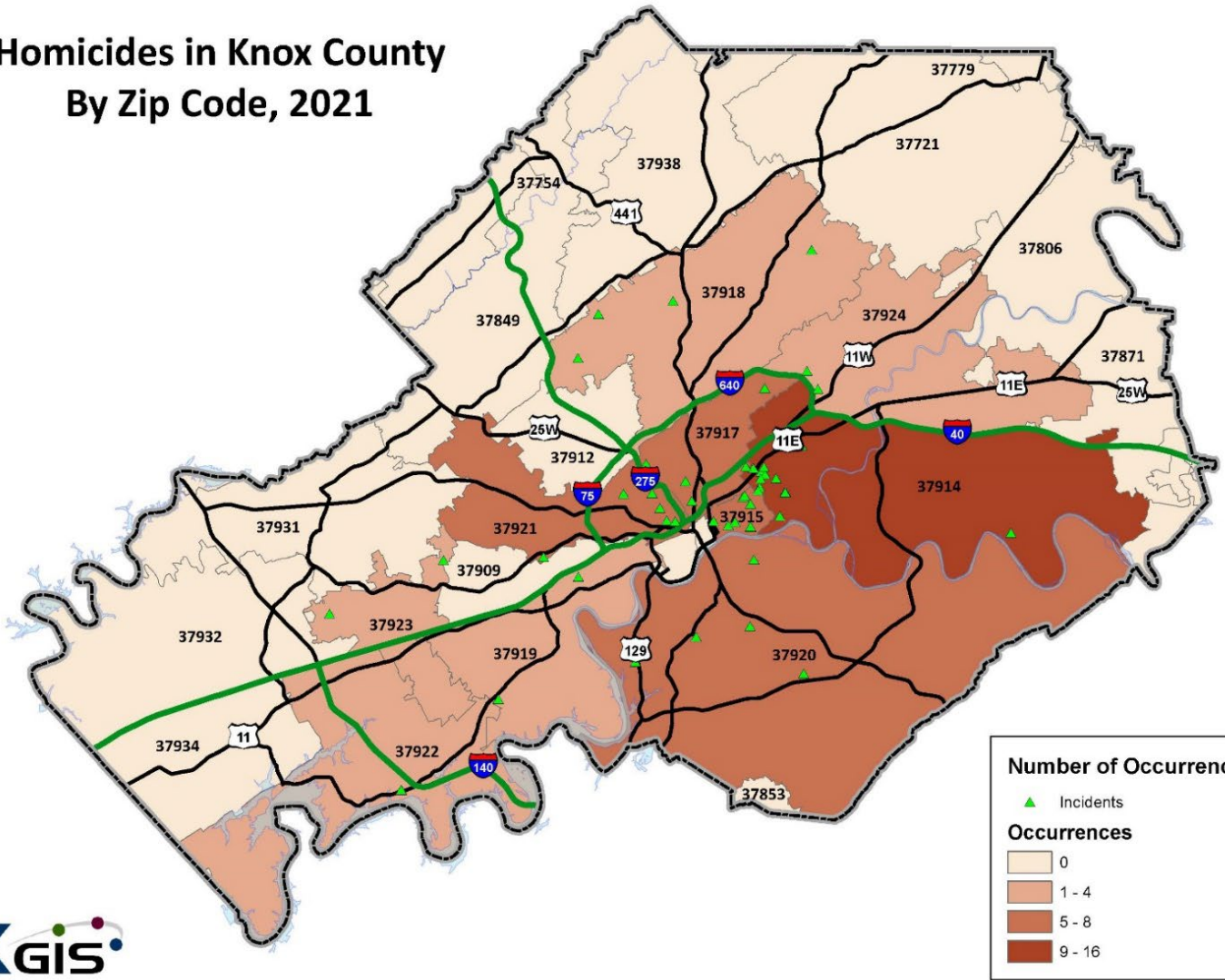


### 2021 RFC Non-Jurisdiction Homicides by Race and Sex





# Homicides in Knox County By Zip Code, 2021

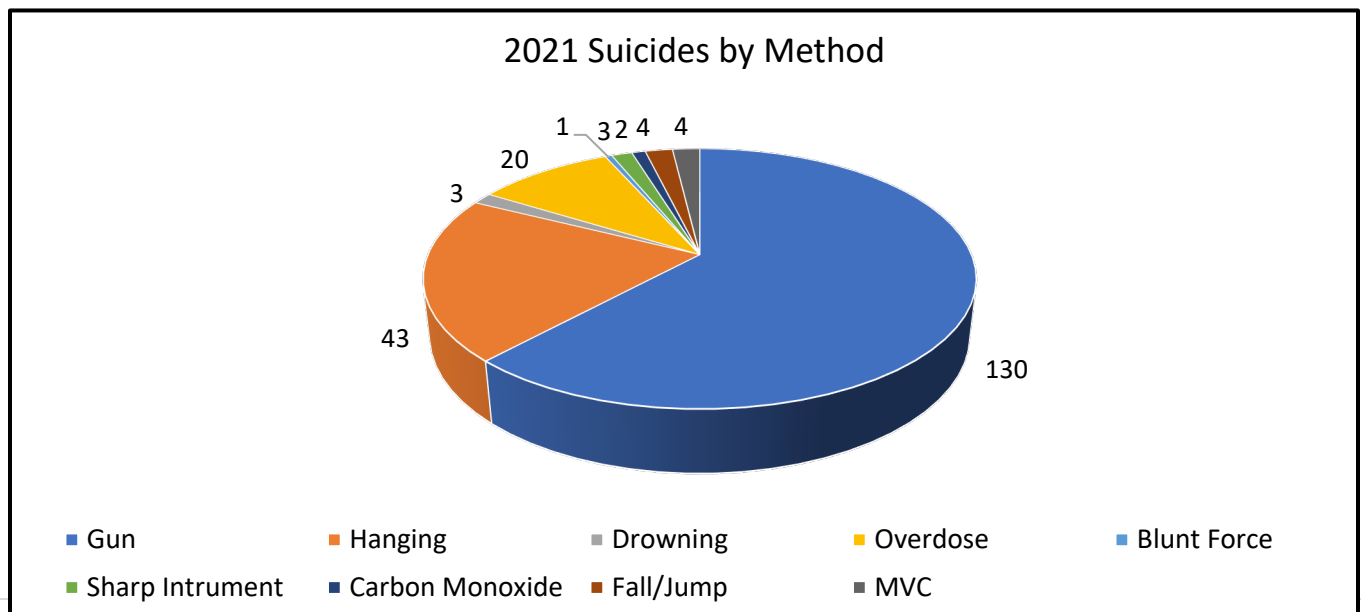


## Suicides

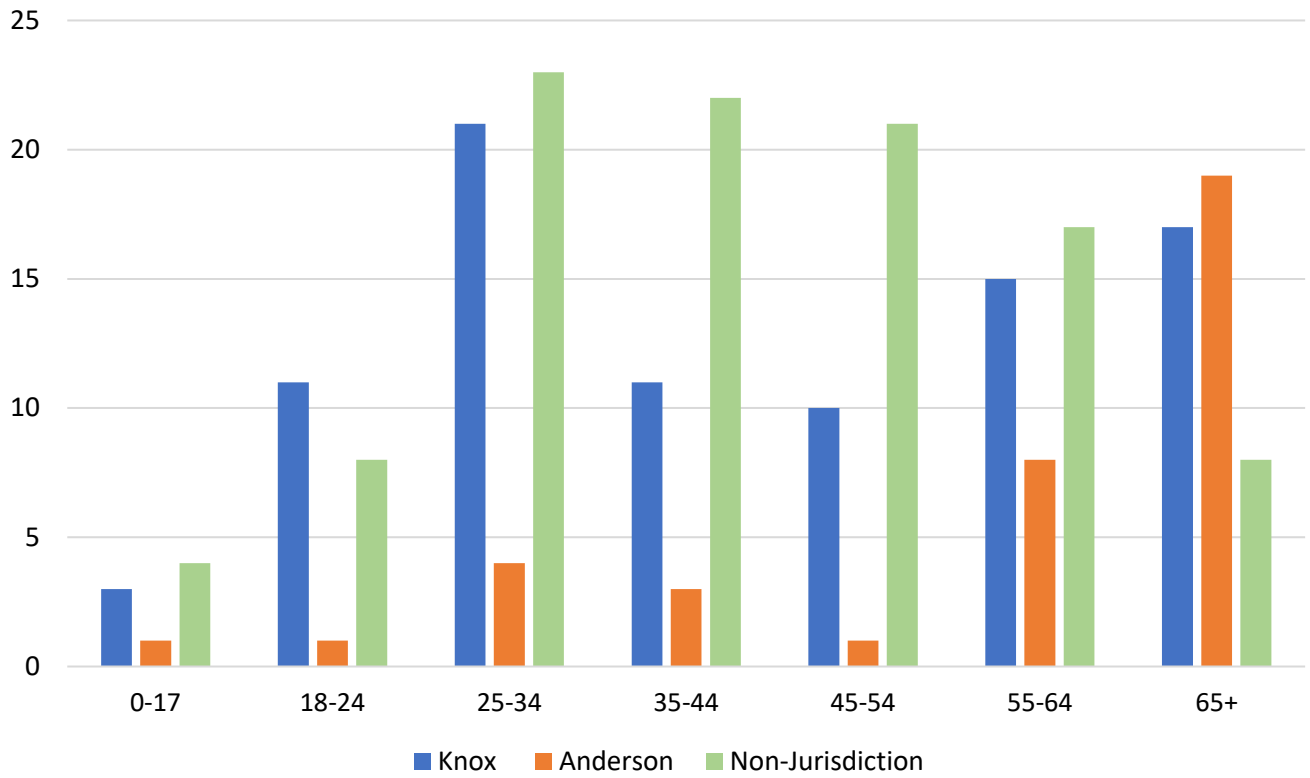
Knox County suicides dropped by 7 percent in 2021. Suicides in Anderson County increased by 73 percent in 2021.

RFC Suicides Jurisdiction and Non-Jurisdiction 2017 – 2021					
	2017	2018	2019	2020	2021
Knox	86	95	83	95	88
Anderson	11	14	24	11	19
Non-Jurisdiction	87	80	93	97	103
<b>Total</b>	<b>184</b>	<b>189</b>	<b>200</b>	<b>203</b>	<b>210</b>

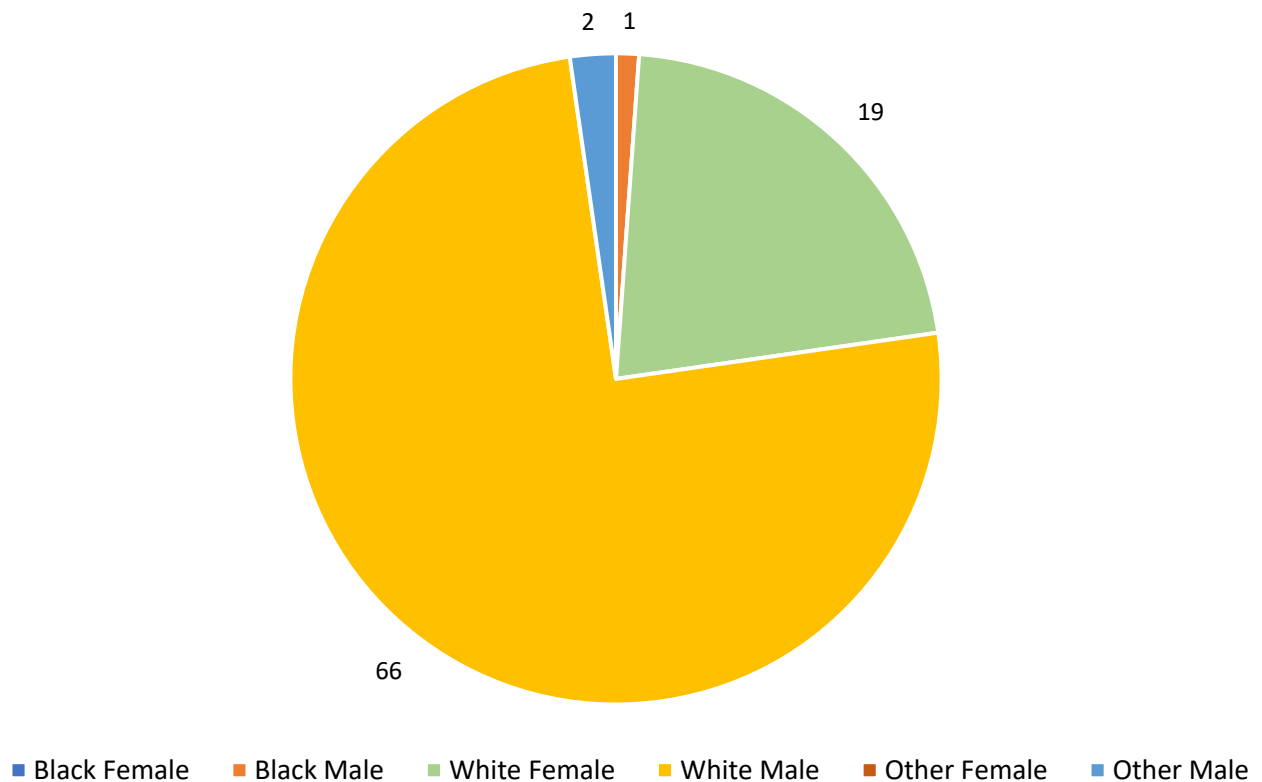
2021 Suicides by Cause and Jurisdiction				
Cause of Death	Knox	Anderson	Non-Jurisdiction	Total
Hanging	14	4	25	43
Carbon Monoxide	1	0	1	2
Blunt Force	1	0	0	1
Drowning	1	1	1	3
Gun	55	12	63	130
Overdose	1	1	7	20
Sharp Instrument	1	0	2	3
MVC	1	0	3	4
Fall/Jump	2	1	1	4
<b>Total</b>	<b>88</b>	<b>19</b>	<b>102</b>	<b>210</b>



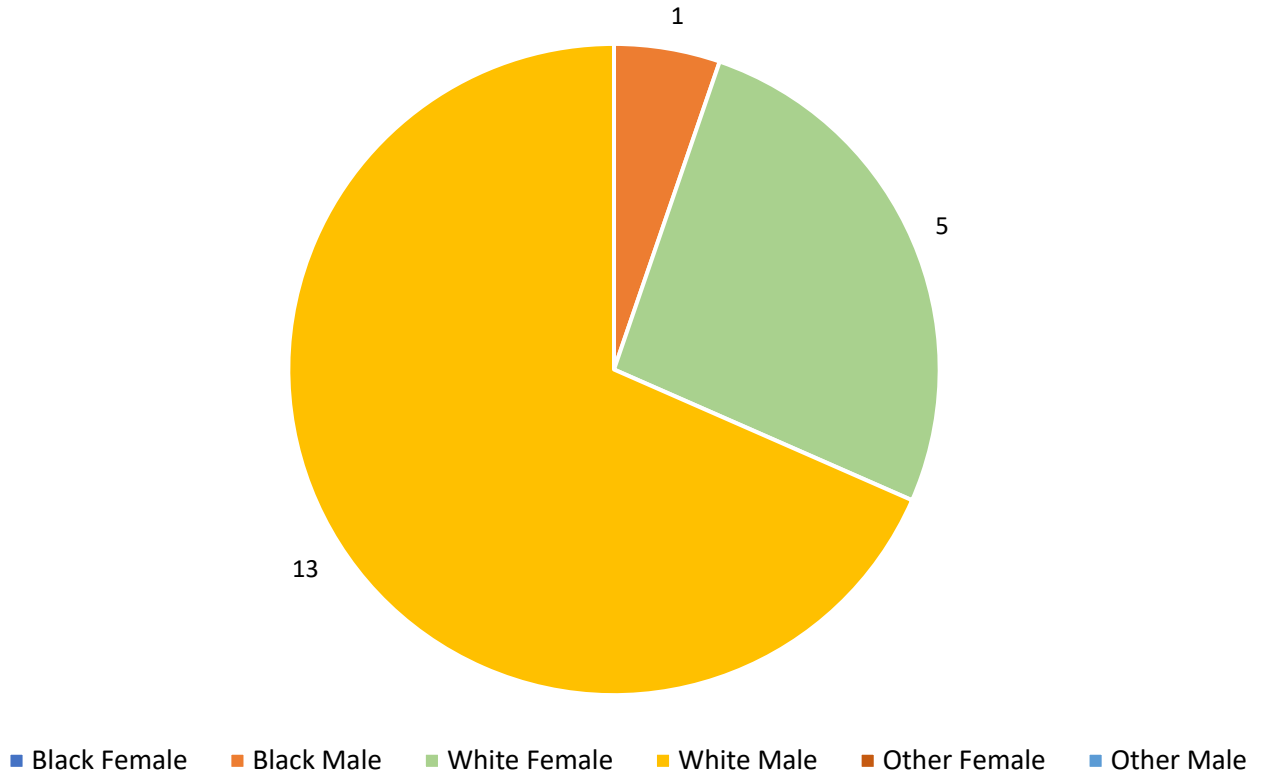
### 2021 RFC Suicides by Age and Jurisdiction



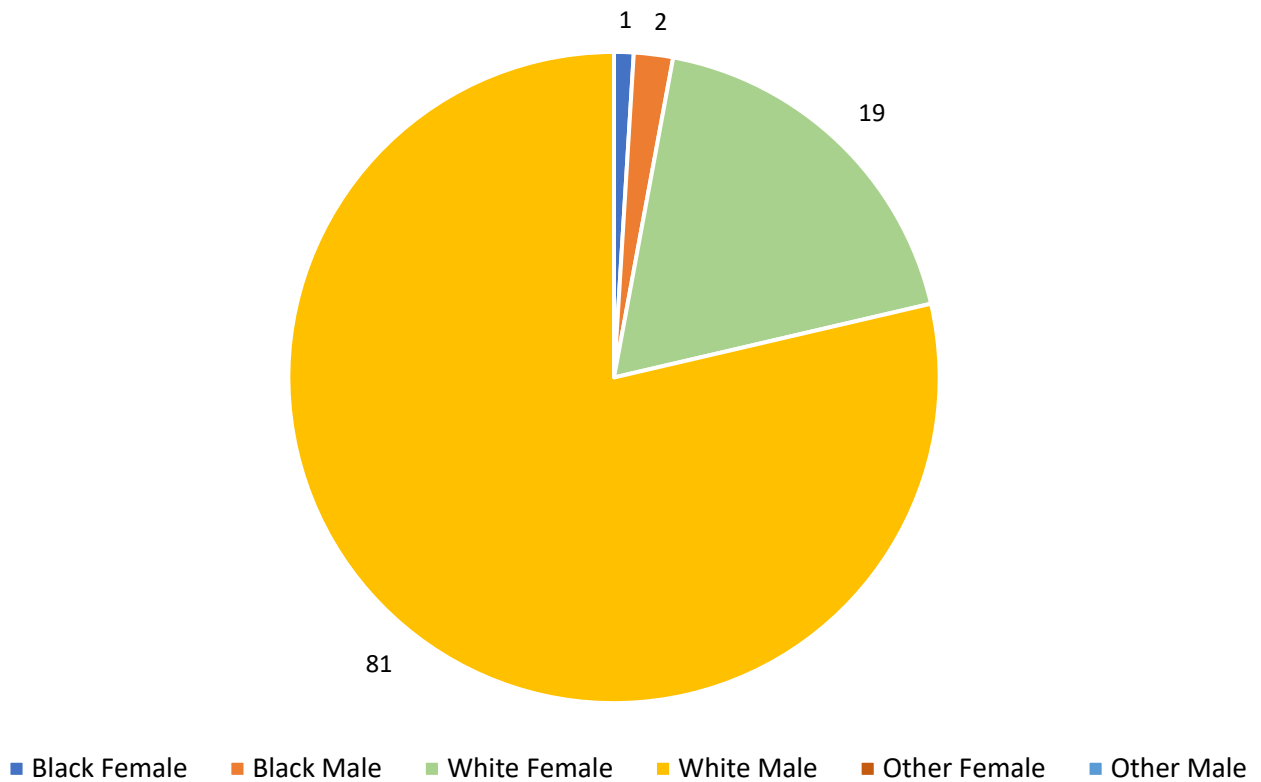
### 2021 RFC Knox County Suicides by Race and Sex



## 2021 RFC Anderson County Suicides by Race and Sex



## 2021 RFC Non-Jurisdiction Suicides by Race and Sex



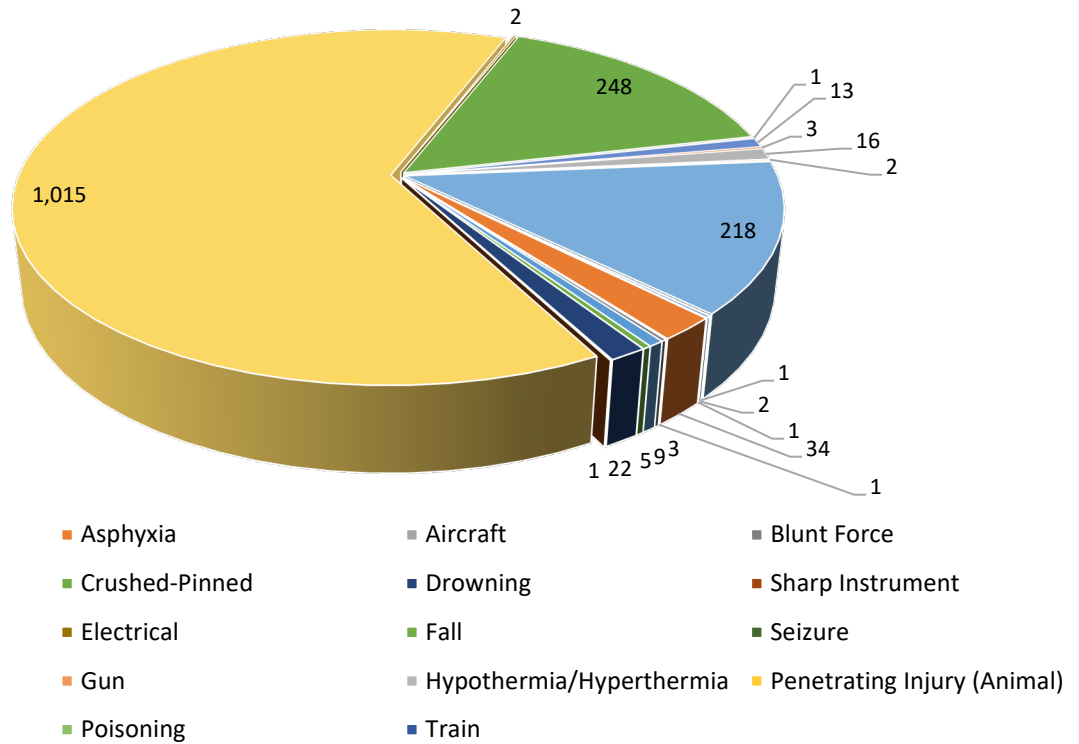
## Accidental Deaths

Accidental Deaths in Knox County had an increase of 27 percent in 2021. Anderson County accidental deaths increased by 84 percent in 2021.

RFC Accidental Deaths Jurisdiction and Non-Jurisdiction 2017 – 2021					
	2017	2018	2019	2020	2021
Knox	465	506	597	706	897
Anderson	70	57	60	74	136
Non-Jurisdiction	347	354	309	436	564
<b>Total</b>	<b>882</b>	<b>917</b>	<b>966</b>	<b>1216</b>	<b>1597</b>

2021 Accidental Deaths by Cause and Jurisdiction				
Cause of Death	Knox	Anderson	Non-Jurisdiction	Total
Asphyxia	11	3	20	34
Blunt Force	1	1	1	3
Carbon Monoxide	2	0	7	9
Crushed-Pinned	3	0	2	5
Drowning	5	2	15	22
Drugs	523	84	408	1,015
Electrical	0	1	1	2
Fall – Under 65	31	4	6	41
Fall – 65+	174	22	11	207
Fire	3	0	10	13
Gun	3	0	0	3
Hypothermia/Hyperthermia	9	2	5	16
MVA	129	17	72	218
Penetrating Injury (Animal)	0	0	2	2
Poisoning	0	0	1	1
Seizure	1	0	0	1
Sharp Instrument	1	0	0	1
Aircraft	0	0	1	1
Boat	0	0	1	1
Train	1	0	1	2
<b>Total</b>	<b>897</b>	<b>136</b>	<b>564</b>	<b>1,597</b>

## 2021 Accidental Deaths by Cause

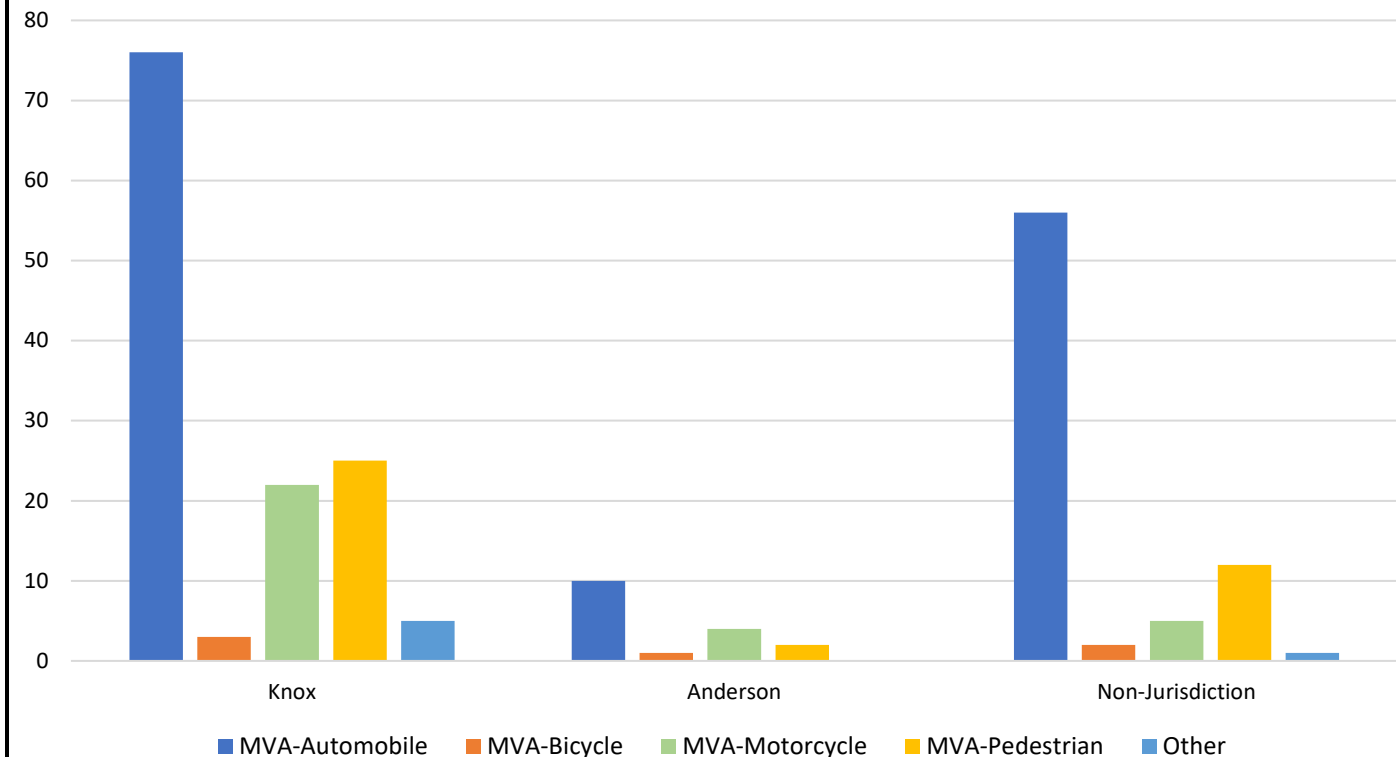


## Motor Vehicle Deaths

Motor vehicle deaths increased in Knox County in 2021 by 30 percent. In 2021 motor vehicle deaths increased by 31 percent in Anderson County.

RFC Motor Vehicle Deaths Jurisdiction and Non-Jurisdiction 2018 – 2021				
	2018	2019	2020	2021
Knox	121	104	99	129
Anderson	7	10	13	17
Non-Jurisdiction	36	53	71	72
<b>Total</b>	<b>164</b>	<b>167</b>	<b>183</b>	<b>218</b>

### 2021 MVA by Type and Jurisdiction



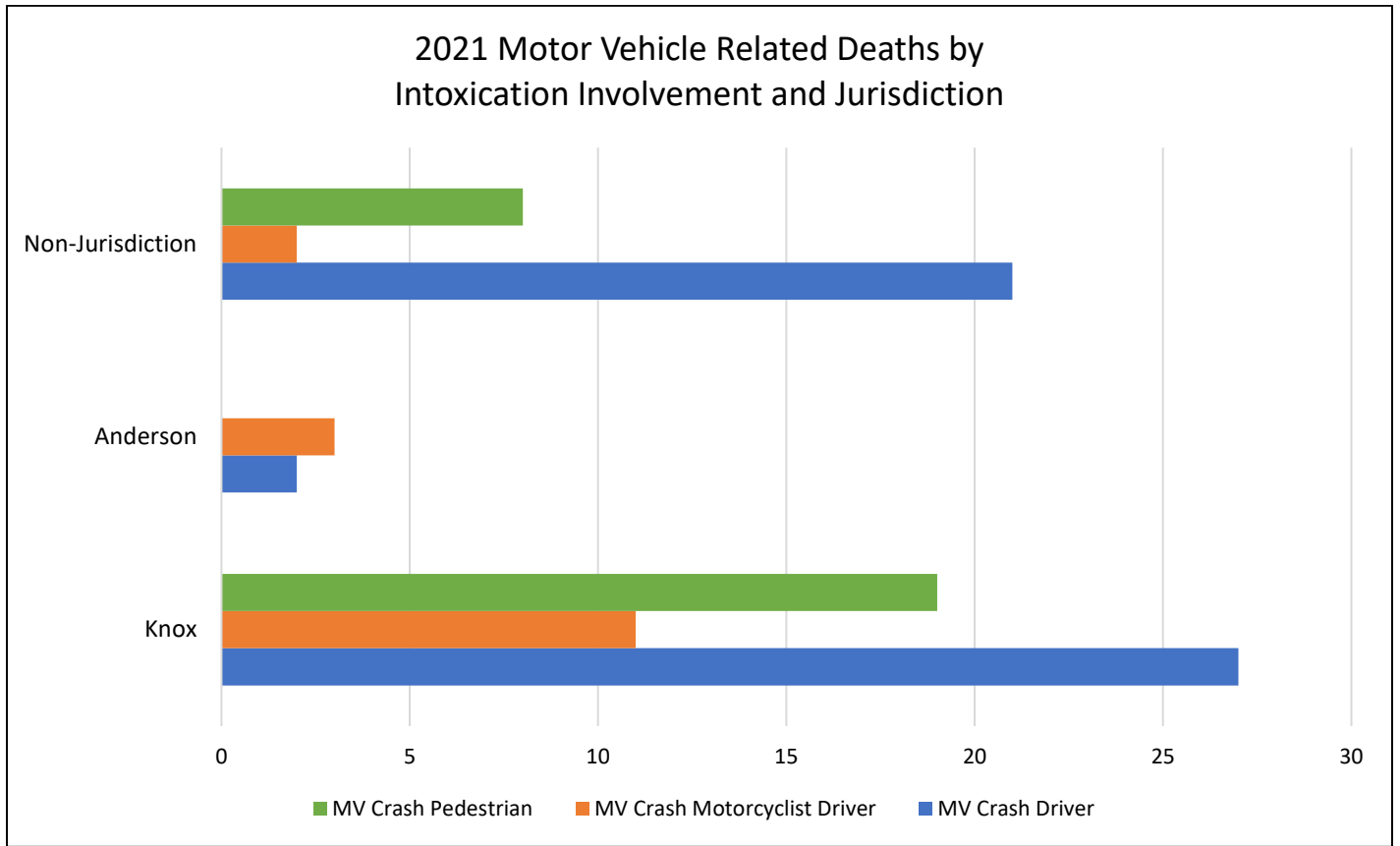
### 2021 Motor Vehicle Related Deaths by Decedent Location and Jurisdiction

Decedent Location	Knox	Anderson	Non-Jurisdiction	Total
MV Crash-Driver	54	6	37	97
MV Crash-Occupant	22	4	19	45
MV Crash-Motorcyclist Driver	18	4	5	27
MV Crash-Motorcyclist Rider	4	0	0	4
MV Crash-ATV/Offroad	5	0	1	6
MV Crash-Bicyclist	3	1	2	6
MV Crash-Pedestrian	25	2	12	39
<b>Total</b>	<b>131</b>	<b>17</b>	<b>75</b>	<b>224</b>

### 2021 Motor Vehicle Deaths by Manner of Death and Jurisdiction

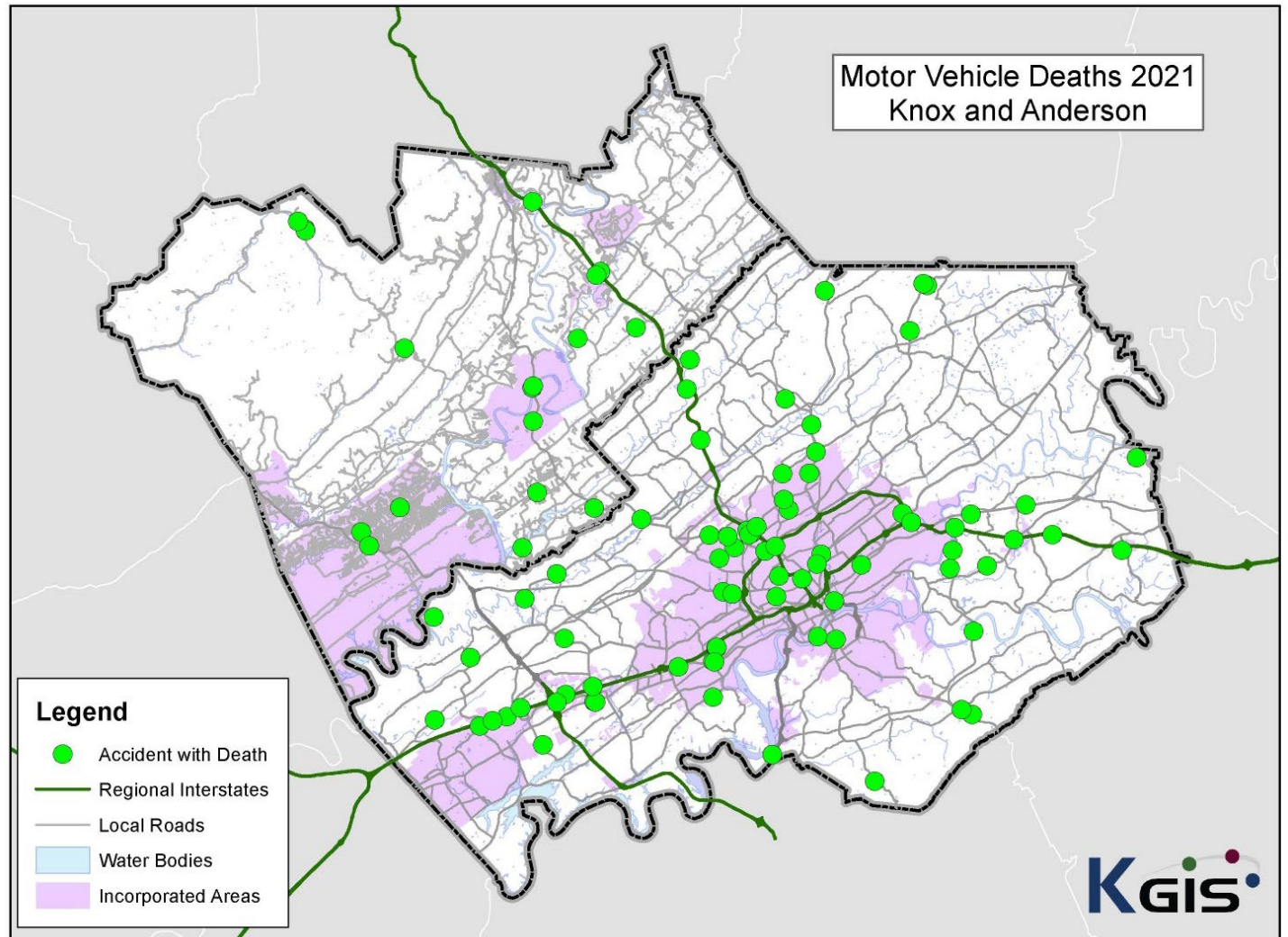
Manner of Death	Knox	Anderson	Non-Jurisdiction	Total
Accident	129	17	72	218
Homicide	0	0	1	1
Suicide	1	0	3	4
Undetermined	1	0	0	1
<b>Total</b>	<b>131</b>	<b>17</b>	<b>76</b>	<b>224</b>

The graphs below show the motor vehicle related deaths where the operator or pedestrian had positive toxicology results for drugs, alcohol, or both.



2021 Percentage of Motor Vehicle Deaths Involving Intoxication by Decedent Location and Jurisdiction			
Decedent Location	Knox	Anderson	Non-Jurisdiction
MV Crash- Driver	50%	33%	57%
MV Crash-Motorcyclist Driver	61%	75%	40%
MV Crash-Pedestrian	72%	0%	67%





## Undetermined Deaths

Undetermined deaths are when the forensic pathologist is unable to determine a specific manner of death due to a number of circumstances.

<b>RFC Undetermined Deaths Jurisdiction and Non-Jurisdiction 2017 – 2021</b>					
	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Knox	20	23	14	15	20
Anderson	5	3	1	4	3
Non-Jurisdiction	20	19	30	25	24
<b>Total</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>44</b>	<b>47</b>

## Natural Deaths

Natural deaths that were certified by an RFC forensic pathologist rose by 3 percent in Knox County in 2021. In Anderson County, natural deaths certified by an RFC forensic pathologist rose by 7 percent in 2021.

<b>RFC Natural Deaths Jurisdiction and Non-Jurisdiction 2017 – 2021</b>					
	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Knox	434	470	496	595	611
Anderson	78	88	74	88	94
Non-Jurisdiction	208	198	174	153	208
<b>Total</b>	<b>720</b>	<b>756</b>	<b>744</b>	<b>836</b>	<b>913</b>

<b>2021 Natural Deaths by Cause and Jurisdiction</b>				
<b>Cause of Death</b>	<b>Knox</b>	<b>Anderson</b>	<b>Non-Jurisdiction</b>	<b>Total</b>
Anaphylaxis	2	0	0	<b>2</b>
Aneurysm	1	2	3	<b>6</b>
Aorta Dissection	0	0	2	<b>2</b>
Autoimmune Disease	1	1	0	<b>2</b>
Cardiac	315	55	102	<b>472</b>
Chronic Alcoholism	57	9	22	<b>88</b>
Cirrhosis	3	0	3	<b>6</b>
Dementia/Alzheimer's	2	0	0	<b>2</b>
Diabetes	22	1	6	<b>29</b>
Drug Death-Chronic Abuse	4	1	2	<b>7</b>
Endocrine Disease	0	0	1	<b>1</b>
GI Tract Disease	6	1	4	<b>11</b>
GI-Obstruction	0	0	1	<b>1</b>
Hematologic Disorder	0	0	1	<b>1</b>
Hepatic/Liver Failure	1	0	0	<b>1</b>
Hepatobiliary Disease	3	0	0	<b>3</b>
Infection	32	3	10	<b>45</b>
Infection-COVID-19	43	6	5	<b>54</b>
Infection-HIV-AIDS	2	0	0	<b>2</b>
Neoplasm	13	4	4	<b>21</b>
Nervous System	22	1	7	<b>30</b>
Nonspecific Natural	4	1	1	<b>6</b>
Obesity	12	1	5	<b>18</b>
Pancreatitis	1	0	0	<b>1</b>
Prematurity	2	0	3	<b>5</b>
Pulmonary	36	4	11	<b>51</b>
Renal Disease	4	0	0	<b>4</b>
Seizure Disorder	6	1	8	<b>15</b>
SUDI	1	0	0	<b>1</b>
Stillbirth	2	0	2	<b>4</b>
Thromboembolism	6	0	5	<b>11</b>
Treatment Complication	2	0	0	<b>2</b>
Undetermined/Other	6	3	0	<b>9</b>
<b>Total</b>	<b>611</b>	<b>94</b>	<b>208</b>	<b>913</b>

Note: These numbers only reflect the natural deaths that were certified by an RFC forensic pathologist.

## Infant Deaths

The charts below are the Knox, Anderson, and Non-Jurisdictional counties' infant deaths in 2021. An infant death is from live birth to one year in age.

Knox County Regional Forensic Center				
Reported	Autopsy	Exam	Released-No Exam	Total
Knox	20	0	90	110
Anderson	3	0	6	9
Non-Jurisdiction	26	1	0	27
<b>Total</b>	<b>49</b>	<b>1</b>	<b>96</b>	<b>146</b>

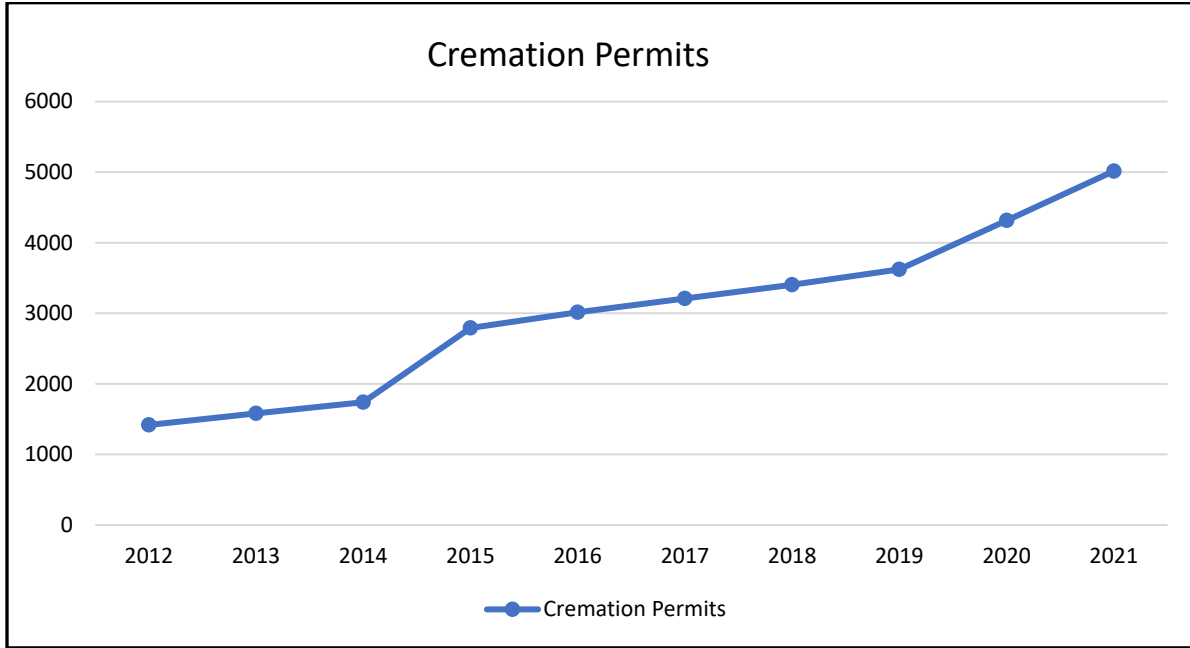
Knox County Regional Forensic Center					
Manner	Accident	Homicide	Natural	Undetermined	Total
Knox	9	0	6	5	20
Anderson	3	0	0	0	3
Non-Jurisdiction	18	0	4	5	27
<b>Total</b>	<b>30</b>	<b>0</b>	<b>10</b>	<b>10</b>	<b>50</b>

Knox County Regional Forensic Center				
Cause	Knox	Anderson	Non-Jurisdictional	Total
Asphyxia	8	2	15	25
Drowning	0	1	0	1
Drug	1	0	0	1
MVC	0	0	2	2
Penetrating Injury (Animal)	0	0	1	1
Prematurity	1	0	3	4
SUDI	1	0	0	1
Still Birth	5	0	2	7
Undetermined/Other	4	0	4	8
<b>Total</b>	<b>20</b>	<b>3</b>	<b>27</b>	<b>50</b>

## Cremation Authorizations in 2021

The Medical Examiner has statutory responsibility to review and sign cremation authorizations prior to a decedent being cremated which also includes the review of the cremation authorization forms, sometimes medical records, and death certificates of each decedent by a Medical Examiner.

In 2021, RFC Medical Examiners authorized 5,016 cremations. The following chart depicts the 10-year history of cremation authorizations completed.

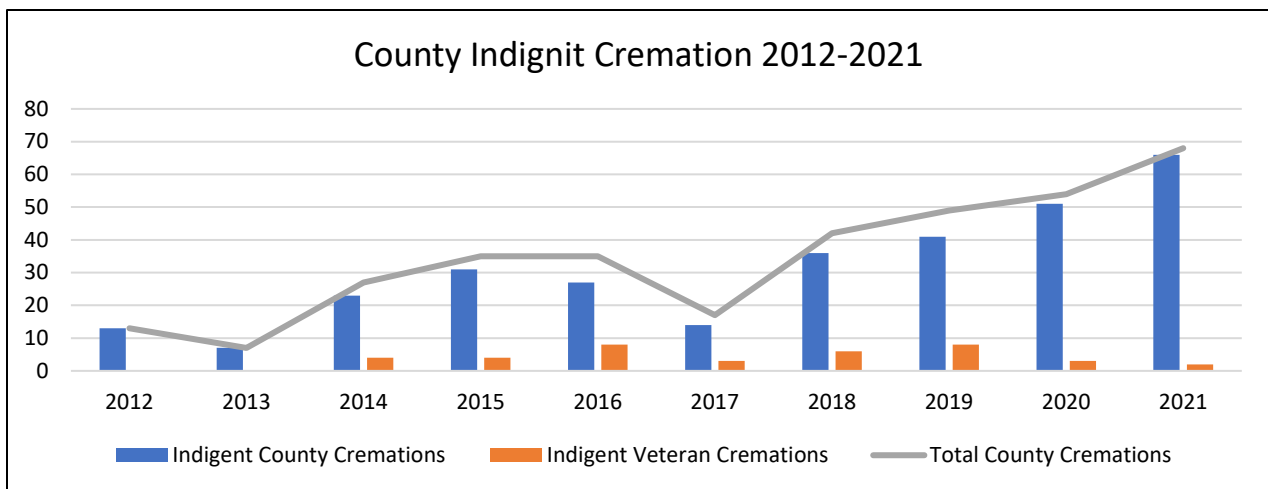


## Indigent Cremation

When a decedent from the Medical Examiner’s jurisdiction goes unclaimed, the decedent is declared indigent. In these circumstances, the RFC will cremate and inter the unclaimed decedent in Knox County’s mausoleum. This is done only for Medical Examiner’s cases. Unidentified individuals are defleshed and permanently retained until identified.

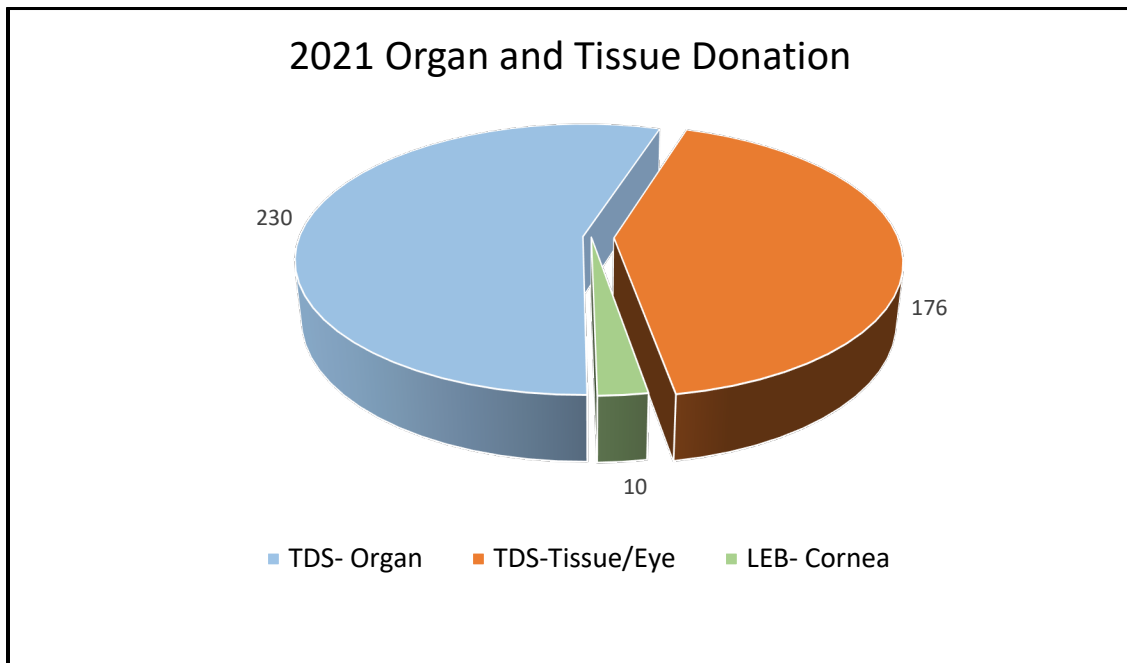
Before moving forward with indigent cremation and internment, the RFC also completes a check for veteran’s status. If the individual is determined to have veteran’s status, the RFC works with the local Homeless Veteran’s Burial Program to provide a proper military burial.

The following chart demonstrates the 10-year history of indigent cremations processed by the RFC.



## Organ and Tissue Donations

The Knox County RFC has statutory responsibility to review cases for tissue and organ donation prior to donation; it must also coordinate with organ donation groups within the Medical Examiner's jurisdiction. The chart below depicts data provided by Tennessee Donor Services and East Tennessee Lion's Eye Bank and depicts the number of tissue and organ donations completed in 2021.



## Staff-Specific Data

### Forensic Pathologists

Below are tables depicting the average turnaround time for case completion by each physician in 2021 and case completion rate by days, number of cases, and percentage of complete cases.

2021	# of Cases	%
Incomplete	0	0%
Cases Over 90 Days	691	24.29%
Cases Over 60 Days	779	27.07%
Cases Between 30-60 Days	823	28.93%
Cases Under 30 Days	560	19.69%
<b>Total</b>	<b>2,844</b>	<b>100%</b>

Pathologist Activities Performed								
Pathologist	Exams	Autopsies	Hospital	Limited	Declined Cases	Releases	Cremation Permits	Total
Dr. Danielsen	177	266	7	8	489	62	573	<b>1,942</b>
Dr. Havrilla	258	308	8	4	660	92	739	<b>2,485</b>
Dr. Lochmuller	257	309	19	2	569	89	1,088	<b>2,676</b>
Dr. Mileusnic	194	224	5	5	452	47	1,716	<b>2,933</b>
Dr. Oliver	92	124	5	1	210	40	49	<b>573</b>
Dr. Rollins	259	308	10	3	582	99	777	<b>2,442</b>
<b>Total</b>	<b>1,237</b>	<b>1,530</b>	<b>54</b>	<b>23</b>	<b>2,962</b>	<b>429</b>	<b>4,942</b>	<b>13,051</b>

Pathologist Average Turn Around Time in Days 2021					
Pathologist	Exams	Autopsies	Hospital	Limited	Total
Dr. Danielsen	34	45	43	46	<b>42</b>
Dr. Havrilla	24	91	103	48	<b>67</b>
Dr. Lochmuller	53	87	89	152	<b>70</b>
Dr. Mileusnic	33	127	114	64	<b>85</b>
Dr. Oliver	57	72	83	41	<b>63</b>
Dr. Rollins	44	85	100	52	<b>70</b>
<b>Total</b>	<b>41</b>	<b>68</b>	<b>89</b>	<b>51</b>	<b>66</b>

<b>Pathologist</b>	<b>Autopsy Equivalent</b>
Dr. Danielsen	321
Dr. Havrilla	383
Dr. Lochmuller	384
Dr. Mileusnic	280
Dr. Oliver	153
Dr. Rollins	384
<b>Total</b>	<b>1,905</b>
<b>Average Equivalent per Pathologist</b>	<b>363</b>

### Medicolegal death investigations (MDI)

The charts below depict the types of actions completed by MDIs.

<b>Case by Disposition Category in 2021</b>						
<b>Case Administration - Investigator</b>	<b>Jurisdiction Declined- Autopsy</b>	<b>Jurisdiction Declined - No Autopsy</b>	<b>Cremation Permit Only</b>	<b>Released to Funeral Home</b>	<b>Sent to Autopsy Facility</b>	<b>Total</b>
Morgan Maples (Manager)	3	92	3	2	57	<b>157</b>
Christine Hawley	7	175	15	32	255	<b>484</b>
Amanda Eiriksson (left)	5	127	27	16	109	<b>284</b>
Megan Sharpe	11	414	58	85	356	<b>924</b>
Karissa Fulton	4	481	138	46	392	<b>1,061</b>
Lisa Taylor	12	384	121	74	317	<b>908</b>
Phil Verso (Left)	12	418	15	46	382	<b>873</b>
Corey Coppola	9	377	21	58	322	<b>787</b>
Heather Cooke	9	318	3	41	311	<b>682</b>
Katie Dziendziel (Left)	2	104	9	13	79	<b>207</b>
Laura Leonard	0	58	13	1	36	<b>108</b>
Brooke Grunenwald	2	10	4	10	22	<b>48</b>
Ashley Taylor	0	7	0	2	5	<b>14</b>
Other	0	0	1,747	0	131	<b>1,878</b>
<b>Total by Disposition</b>	<b>76</b>	<b>2,965</b>	<b>2,147</b>	<b>426</b>	<b>2,775</b>	<b>8,416</b>



<b>2021 On-Scene Investigator Visits</b>	
<b>Investigator</b>	<b>Number</b>
Morgan Maples (Manager)	8
Christine Hawley	134
Amanda Eiriksson (Left)	60
Megan Sharpe	278
Karissa Fulton	206
Lisa Taylor	221
Phil Verso (Left)	219
Corey Coppola	174
Heather Cooke	195
Katie Dziendziel (Left)	49
Brooke Grunenwald	22
Laura Leonard	15
Ashley Taylor	5
<b>Total</b>	<b>1,586</b>

### Autopsy Technicians

The chart below reports the types of actions completed by the Autopsy Technicians and how quickly autopsy or external examinations were completed once the decedent arrived at the RFC—which impacts how quickly the RFC can release the decedent to the funeral home for final disposition.

<b>2021 Days and Percentage of Cases Where an Autopsy/Exam was Performed from Time of Arrival at RFC</b>		
Within 48 Hours	2,825	99.29%
Within 72 Hours	2,837	99.71%
<b>Total</b>	<b>2,845</b>	

Histology was ordered on a total of 1,048 cases, X-Rays were taken on a total of 1,440 decedents, and 489 test were ordered through LabCorp in 2021.

The chart that follows shows how many toxicology tests were performed at the Regional Forensic Center and where they went for testing.

<b>2021 Toxicology Locations</b>		
<b>Location Sent</b>	<b>Number</b>	<b>%</b>
NMS	2,332	97%
DEA Tox	82	3%
<b>Total</b>	<b>2,414</b>	<b>100%</b>

Special thanks to Executive Administrative Assistant, Anna Hoekstra for the creation of this report.