

**PIMA COUNTY FORENSIC SCIENCE CENTER  
OFFICE OF THE MEDICAL EXAMINER**

**ANNUAL REPORT 2010**

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## **INTRODUCTION**

The Pima County Forensic Science Center (FSC) investigates any death in Pima County that is sudden, violent, unexpected, or in which the cause of death is unknown. Of the 8,163 total deaths in Pima County in 2010, 2,195 (27%) were reported to the FSC. This annual report consists of two main sections. The first is an overview of the activities and highlights of the office over the course of the report year. The second is a statistical review of the types of cases processed by the office over the last year.

### Annual Report Preparation

All the statistical information used to prepare this report was obtained from the FSC Vertiq database and the state vital statistics VSIMS database. This report was prepared by Gregory Hess, MD with technical assistance provided by Veena Singh, MD and Patti Nelson.

## **OVERVIEW**

### Reportable Deaths

Arizona statute 11-593 delineates the circumstances in which a death is reportable to the OME.

1. Death when not under the current care of a physician or nurse practitioner for a potentially fatal illness or when an attending physician or nurse practitioner is unavailable to sign the death certificate.
2. Death resulting from violence.
3. Death occurring suddenly when in apparent good health.
4. Death occurring in a prison.
5. Death of a prisoner.
6. Death occurring in a suspicious, unusual or unnatural manner.
7. Death from disease or accident believed to be related to the deceased's occupation or employment.
8. Death believed to present a public health hazard.
9. Death occurring during, in association with or as a result of anesthetic or surgical procedures.
10. Unidentifiable bodies.

### Investigations

Our 5 medical investigators processed 2195 reports of deaths from Pima County and 362 reports from 9 additional Arizona counties in 2010. Jurisdiction was declined in 457 of these cases. Six forensic field agents transported 1592 decedents to the FSC for examination or storage in 2010. Out of county agencies or funeral homes transported an additional 342 decedents.

### Examinations

Pima County forensic pathologists performed 1328 autopsies, 377 external examinations, and 166 death certifications and reviewed 5310 cremations in 2010.

Anthropology

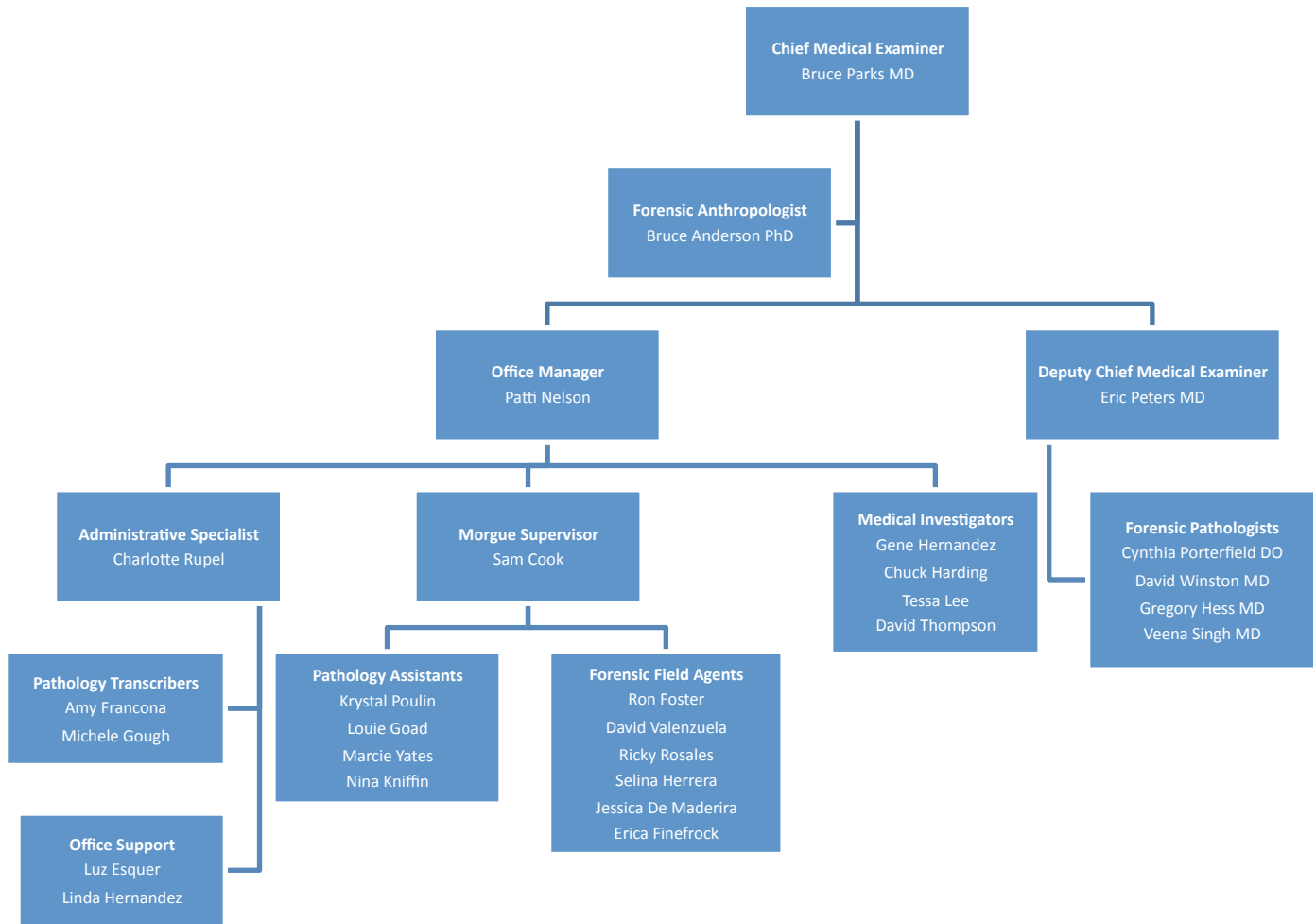
185 anthropologic examinations were performed in 2010.

Education and Training

- 1) *Medical Investigator Training*  
Four FSC personnel completed investigator training in New York City and St. Louis in 2010. Two Forensic Medical Investigators are currently certified by the American Board of Medicolegal Death Investigation. FSC Pathologists lecture to the Medical Investigators on varying topics every Wednesday.
  
- 2) *Community education, presentations and media interviews*  
The FSC receives numerous requests from various groups, organizations, individuals and schools for presentations regarding a host of forensic issues annually. Not all requests can be honored due to time and personnel constraints, but examples of educational activities in 2010 include but are not limited to: presentations at high school career fairs; lectures at the Pima County Attorney's Office Community Prosecutors Academy and Victim Services Division training programs; lectures to classes at the University of Arizona Law School, Veterinary School and Public Health School; and the teaching of a 3-credit-hour death investigation class at Pima Community College. The Chief Medical Examiner performed approximately 110 media interviews in 2010, many involving migrant issues.
  
- 3) *University of Arizona Medical School, Department of Pathology and Department of Anthropology*  
FSC Forensic Pathologists hold clinical appointments with the Department of Pathology at the University of Arizona School of Medicine, where they are involved with pathology resident teaching and medical student lectures. Three pathology residents rotated through the FSC for month-long rotations in 2010. Our Forensic Anthropologist also holds an academic appointment and six anthropology fellows spent an average of five months training at our facility.

Law Enforcement and Legal System

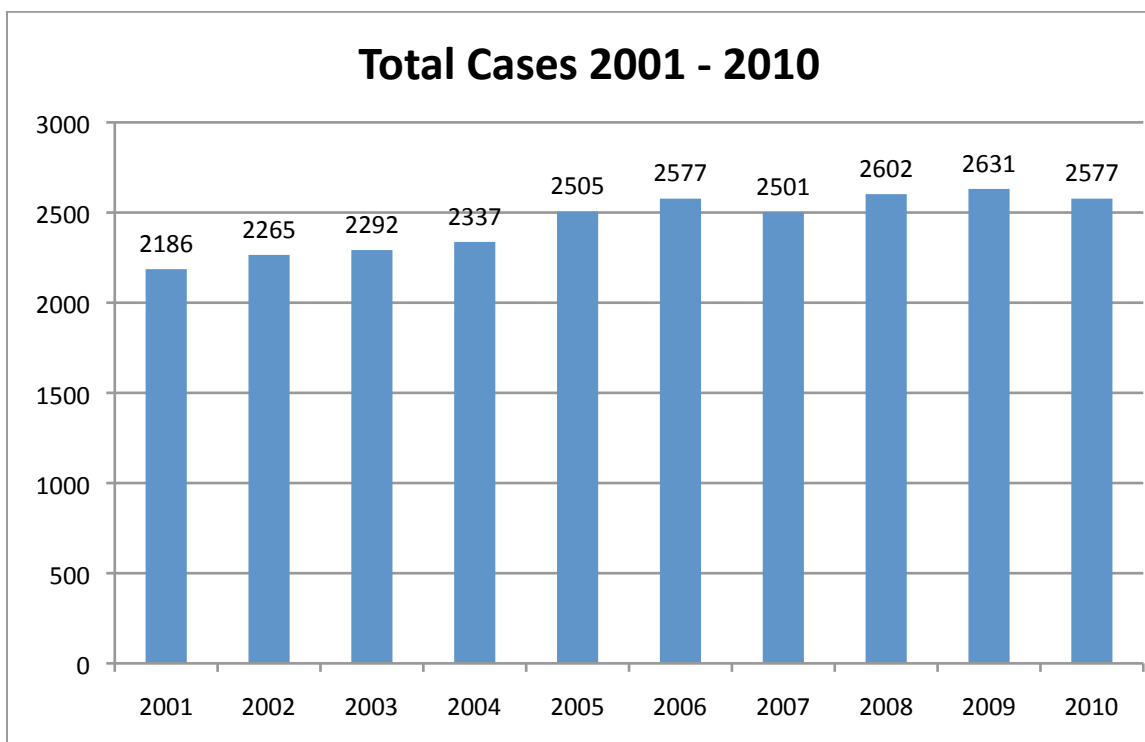
The availability of our pathologists to assist or advise law enforcement personnel in their investigations and the legal system in its proceedings is an important function of the FSC. Pima County law enforcement agencies requested the assistance of a pathologist in 47 scene investigations in 2010. Involvement of the FSC in the legal system generally consists of pretrial interviews, depositions and courtroom testimony. In 2010, the office's 6 forensic pathologists participated in approximately 60 pretrial interviews, 25 depositions and 50 jury trials.



**OFFICE OF THE MEDICAL EXAMINER  
ORGANIZATIONAL CHART AS OF DECEMBER 2010**

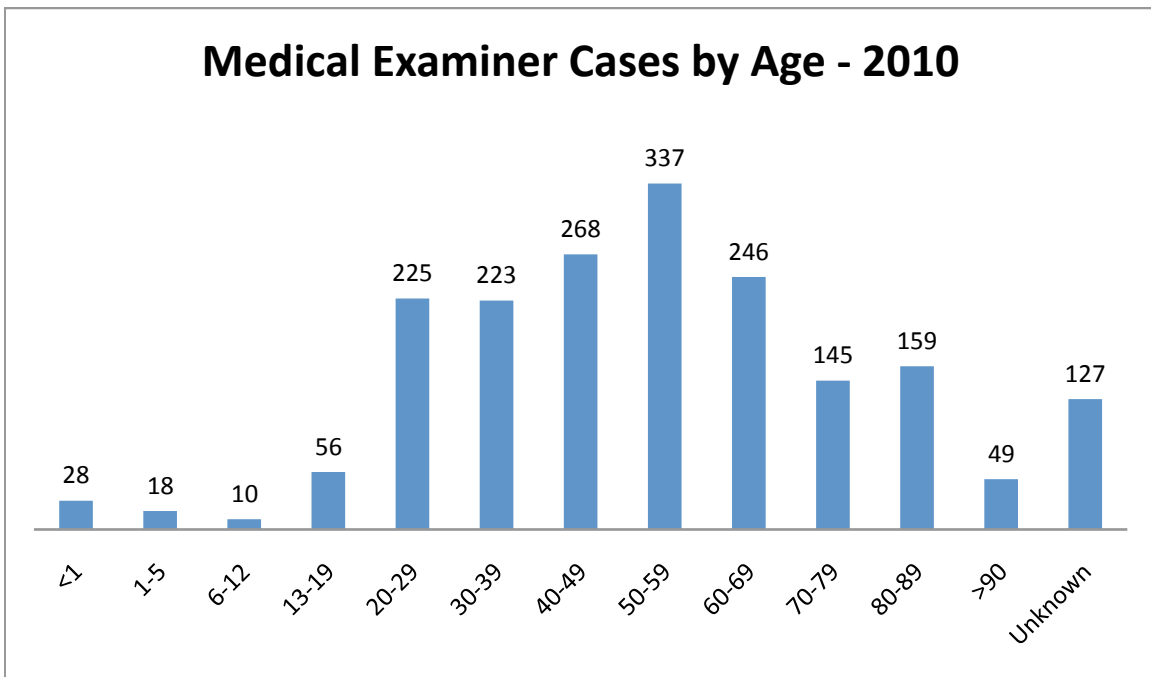
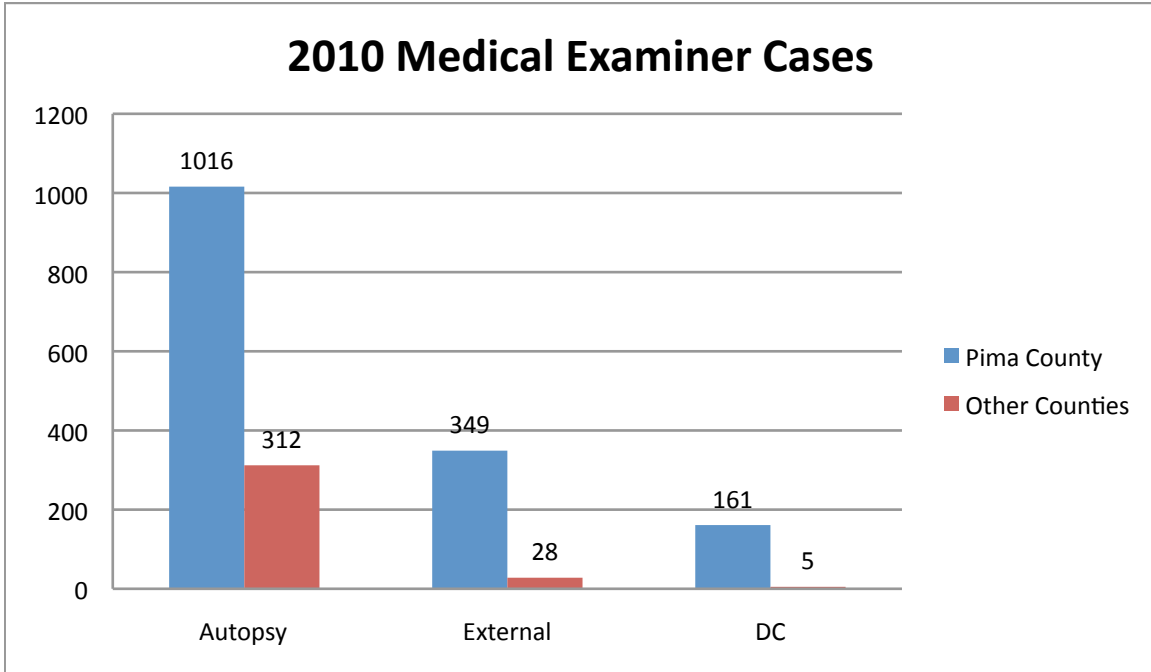
**TOTAL CASES**

The total cases handled by the FSC in a given year are the sum of the medical examiner (ME) cases (autopsies, external examinations, and death certificate cases), cases in which jurisdiction was declined, and the number of cases stored at our facility during the calendar year. These data include cases from Apache, Gila, Graham, Greenlee, La Paz, Navajo, Pima, Pinal, Santa Cruz and Yuma counties.



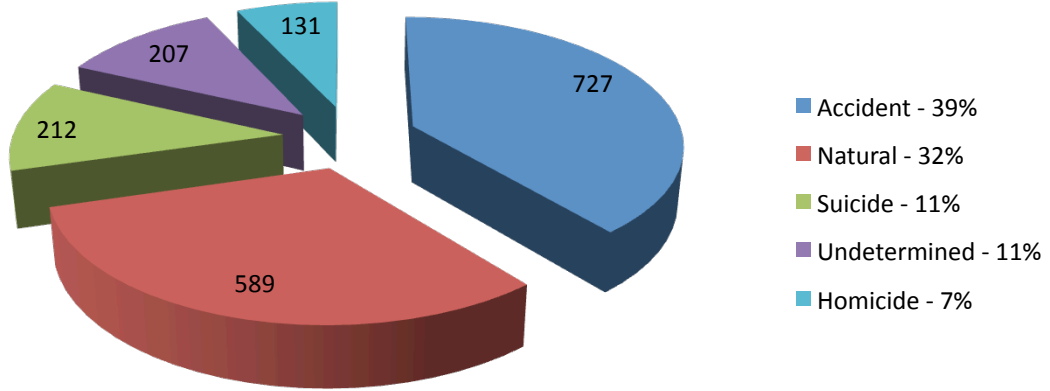
## MEDICAL EXAMINER CASES

The Pima County FSC considers all cases in which the cause and manner of death are determined by this office as “medical examiner cases.” Those cases include autopsies, external examinations and death certificate (DC) cases. Autopsies are examinations where a decedent is examined both externally and internally for evidence of injury or natural disease which may have caused or contributed to the individual’s death. External examinations consist of an external examination of the body only without the internal examination. A DC case involves review of the medical records, law enforcement reports and any other information that may be necessary to determine the cause and manner of death without physical examination of decedent. In 2010, for Pima and all other counties listed above, 1328 autopsies, 377 external examinations and 166 DC cases were performed at the FSC. Pima County alone accounted for 1016 autopsies, 349 external examinations and 161 DC cases.

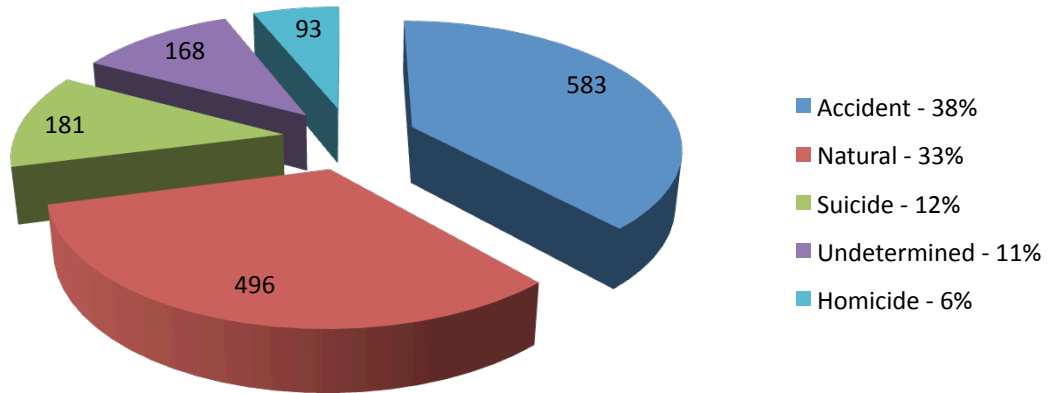




### ME Cases by Manner of Death - 2010



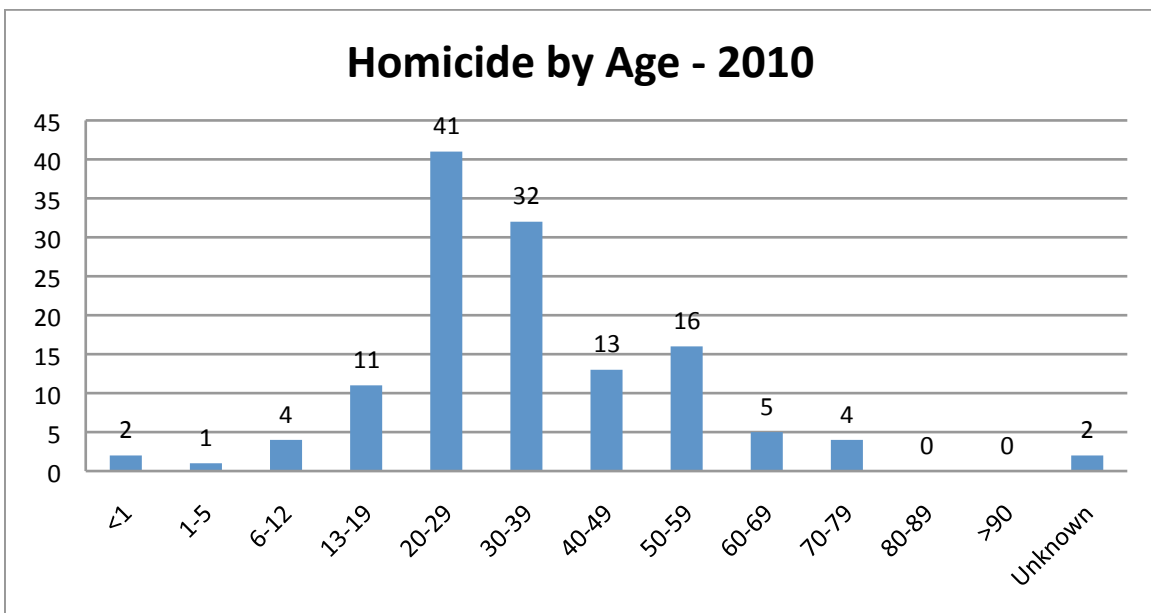
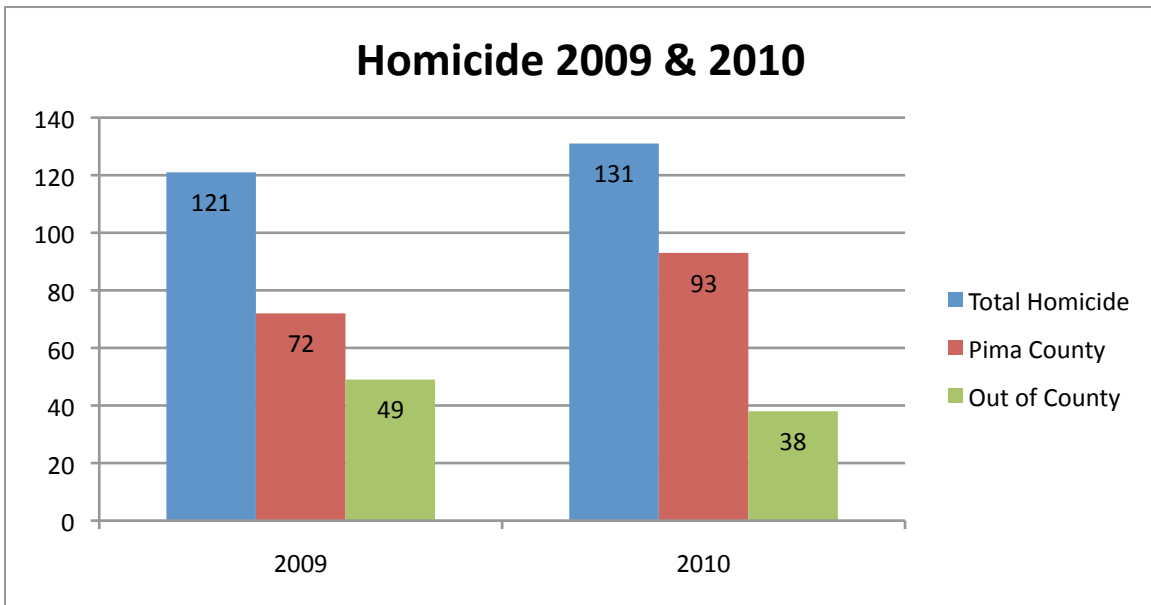
### Pima County ME Cases by Manner of Death - 2010



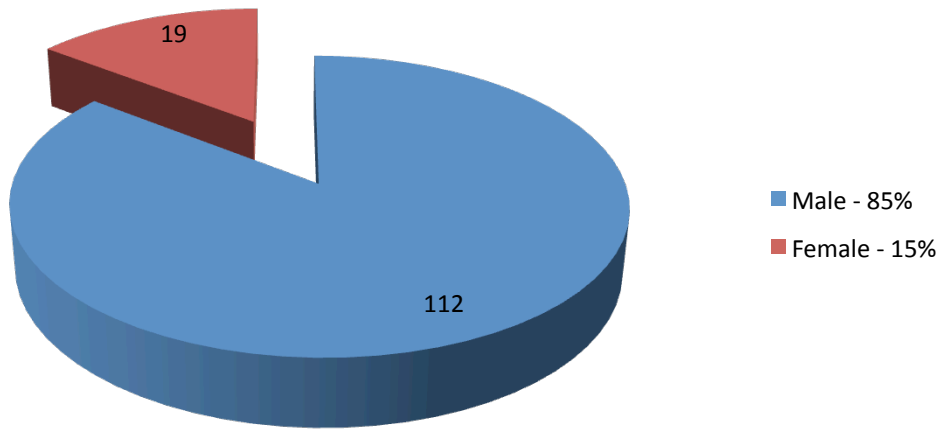
## HOMICIDE DEATHS

This office examined 131 homicides in 2010, 93 from Pima County and 38 from other counties. In 2009 there were 121 homicides, 72 from Pima County and 49 from other counties.

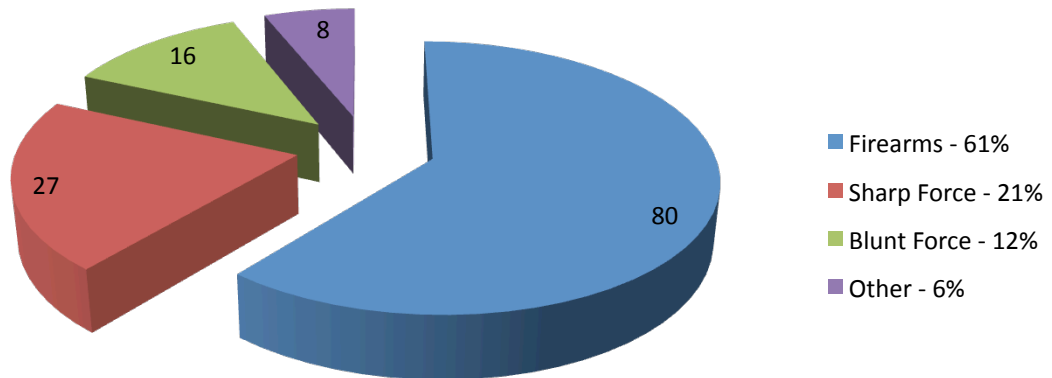
Homicide deaths from all counties increased by 8% from 2009 to 2010, although homicide deaths in Pima County alone increased by 23% from 2009 to 2010. Homicide victims were most frequently male (85%), between 20-29 years of age (31%) and died as the result of firearms (61%).



### Homicide by Gender - 2010

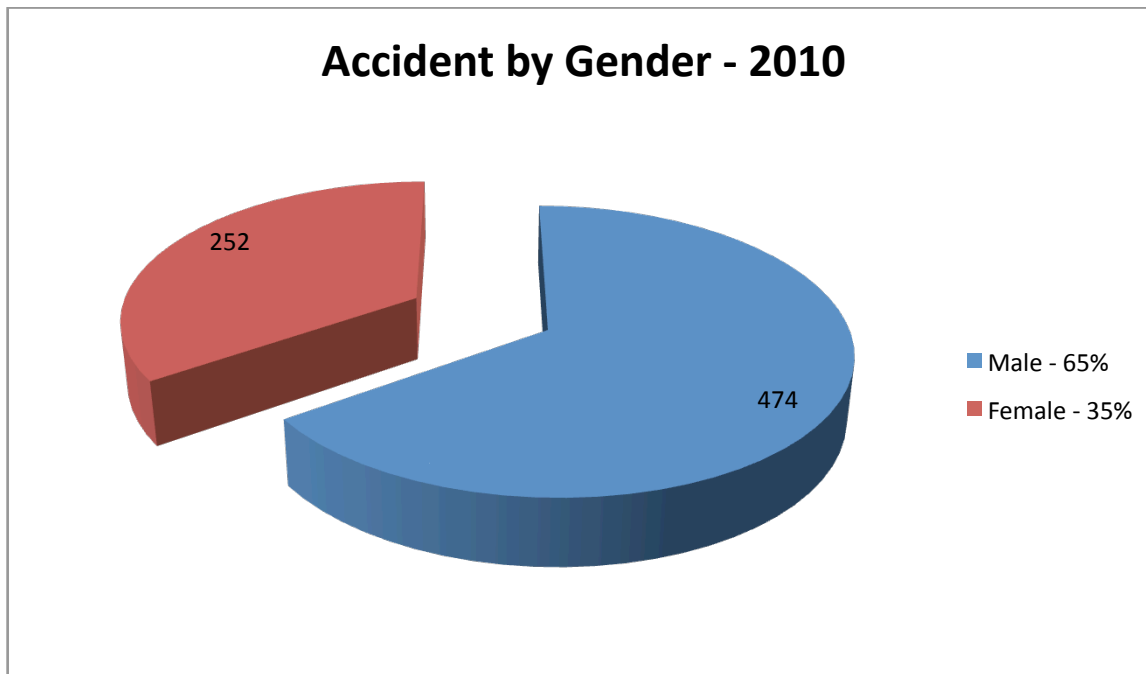
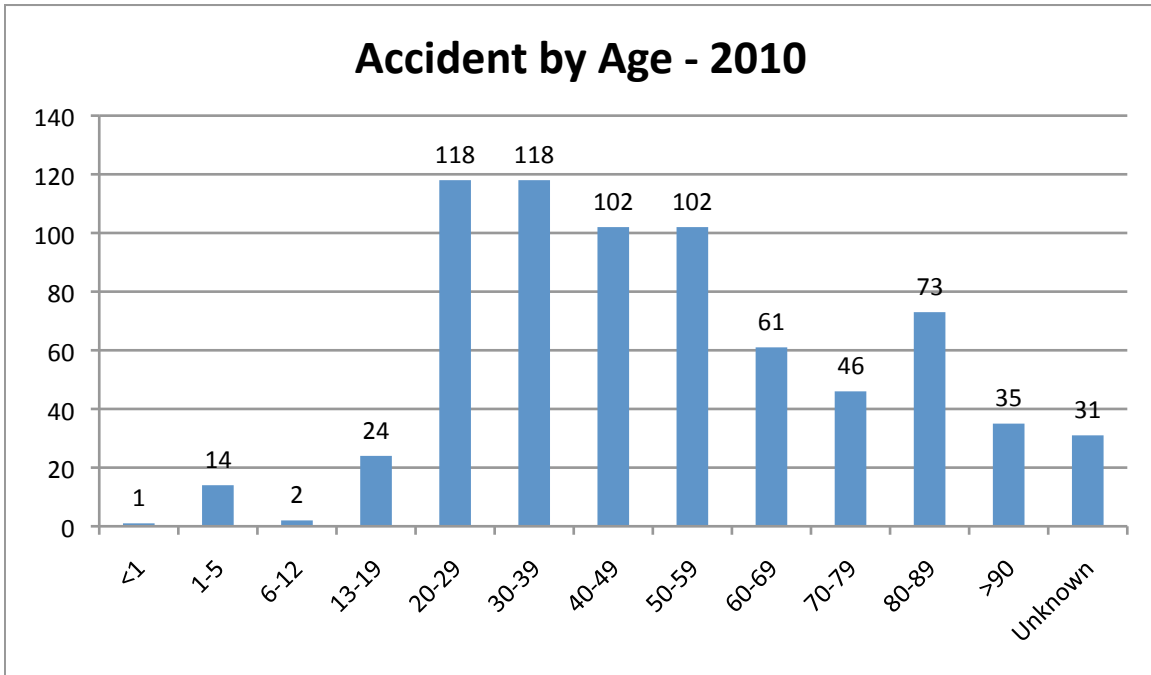


### Homicide by Cause - 2010

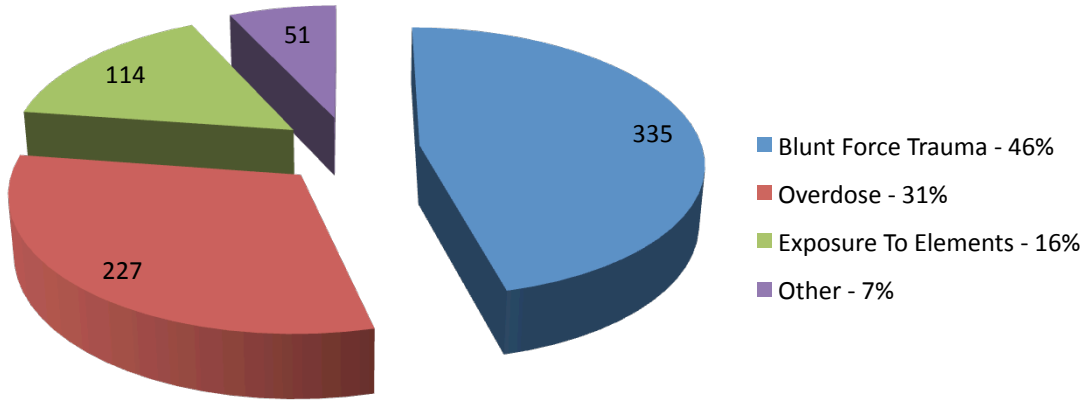


## ACCIDENTAL DEATHS

Accidental deaths accounted for 39% of the ME deaths investigated by the FSC in 2010. Accident victims were most frequently males (65%), between 20-39 years of age (32%) and died as the result of blunt force trauma (46%).

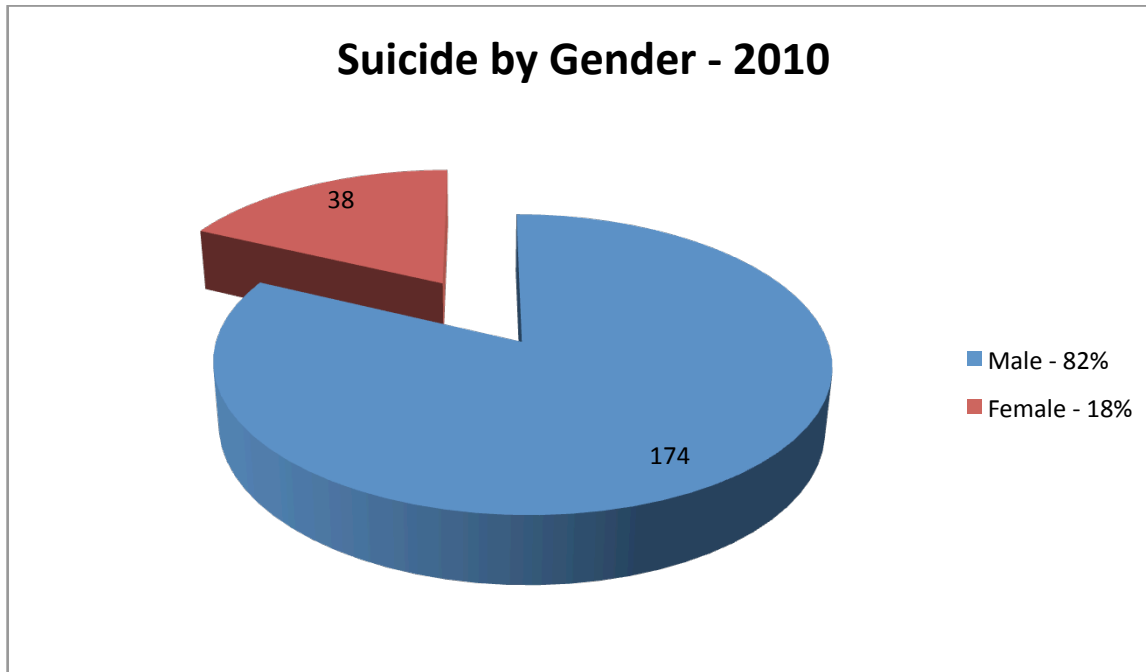
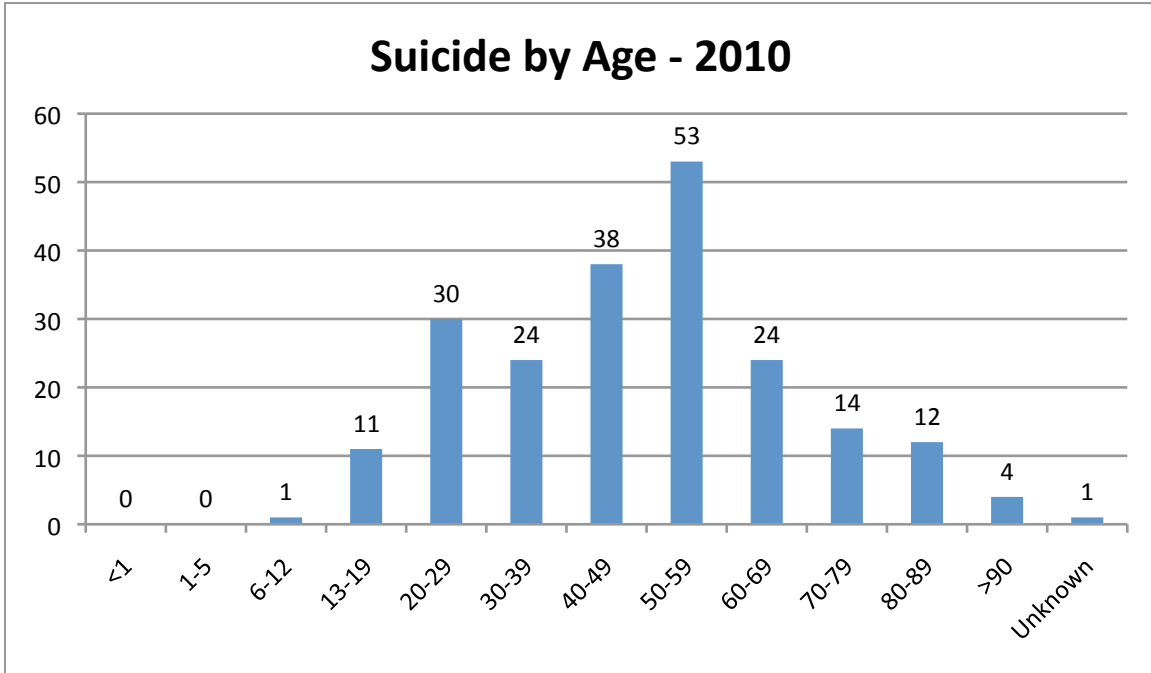


### Accident by Cause - 2010

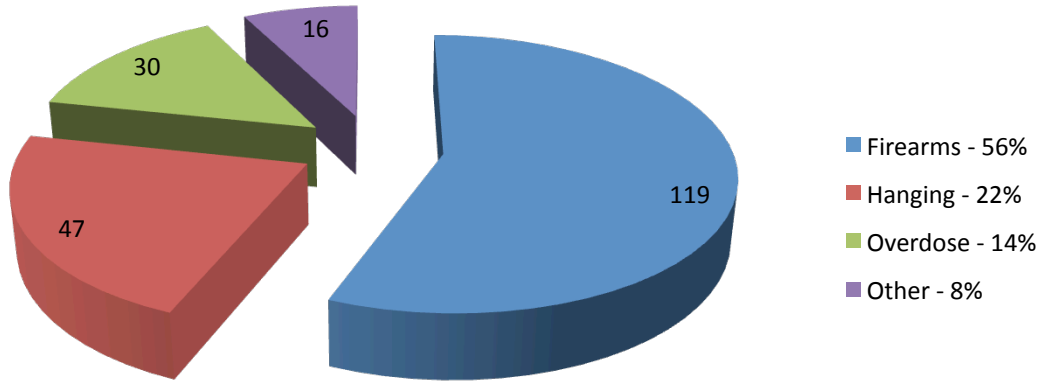


## SUICIDE DEATHS

Suicide deaths accounted for 11% of the ME deaths investigated by the FSC in 2010. Suicide victims were most frequently males (82%), between 50-59 years of age (25%) and died as the result of firearms (56%).

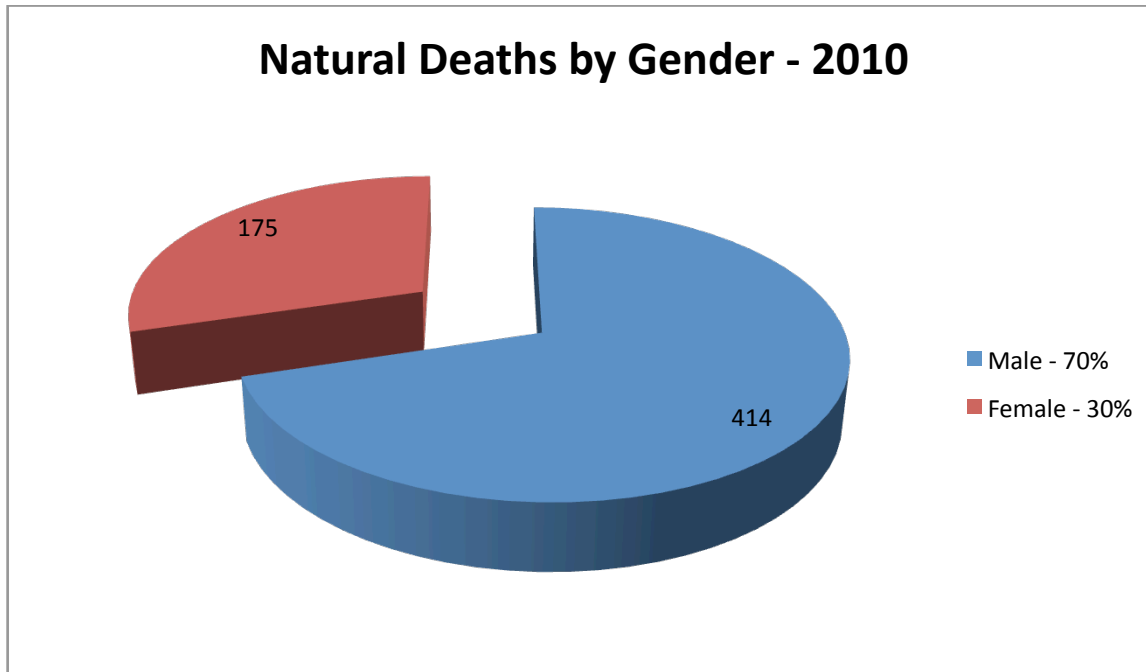
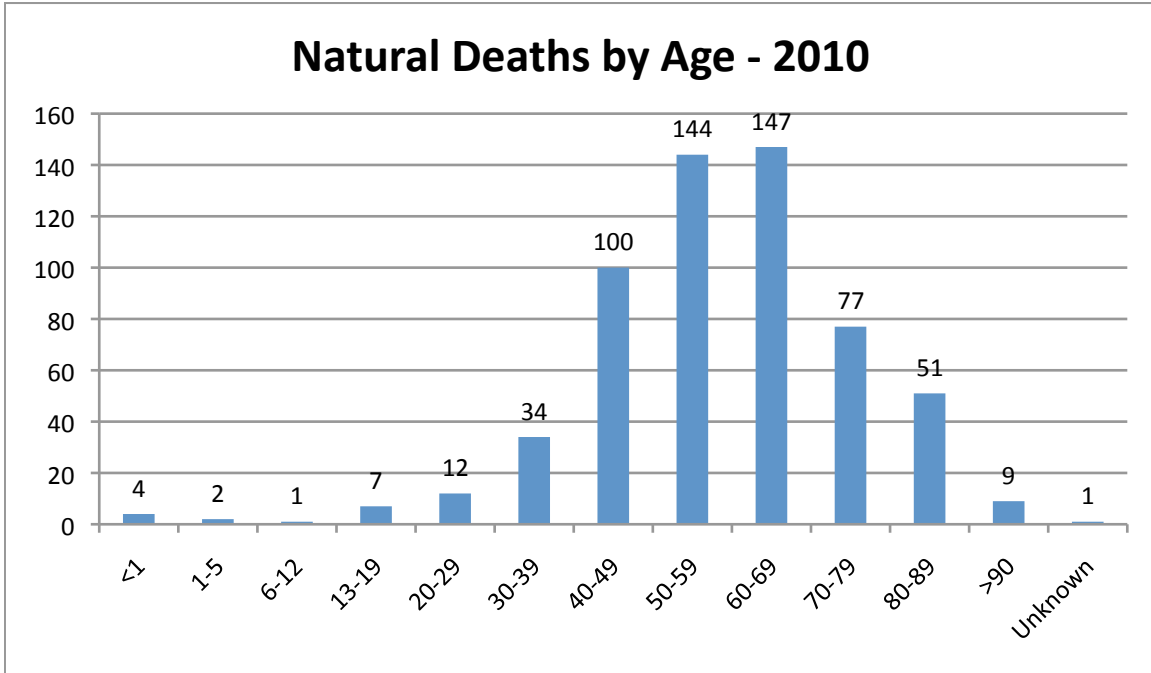


### Suicide by Cause - 2010



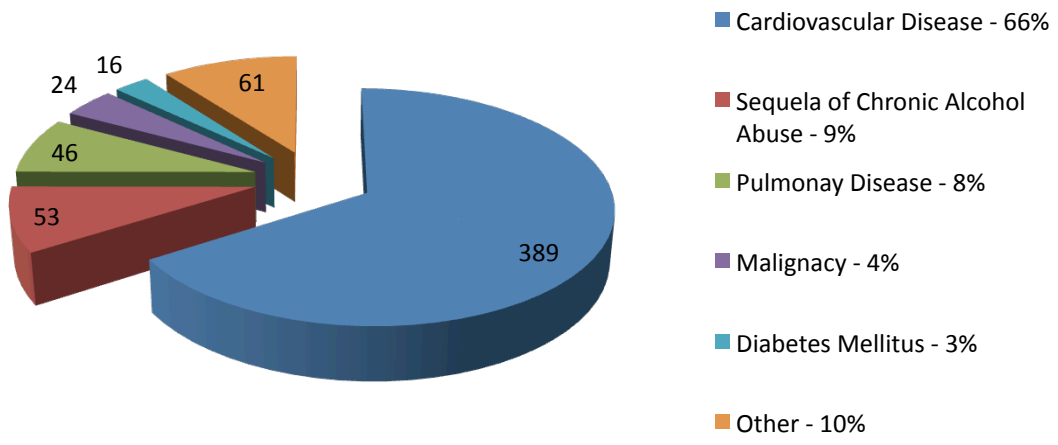
## NATURAL DEATHS

Natural deaths accounted for 32% of the ME deaths investigated by the FSC in 2010. Individuals who died from natural causes were most frequently males (70%), between 60-69 years of age (25%) and died as the result of cardiovascular disease (66%).



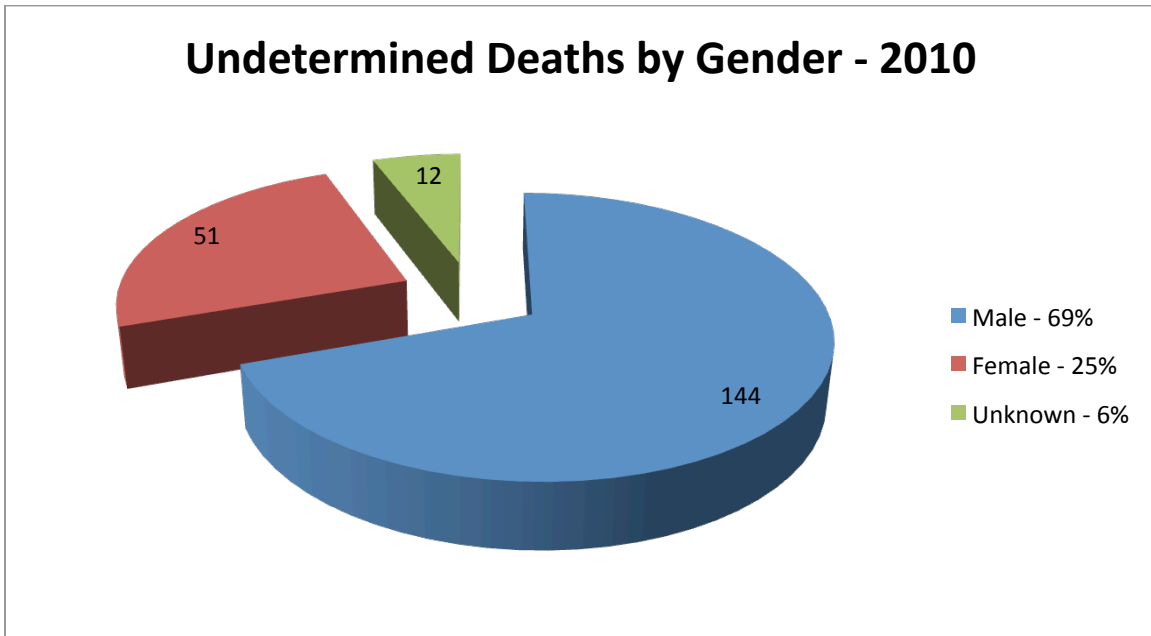
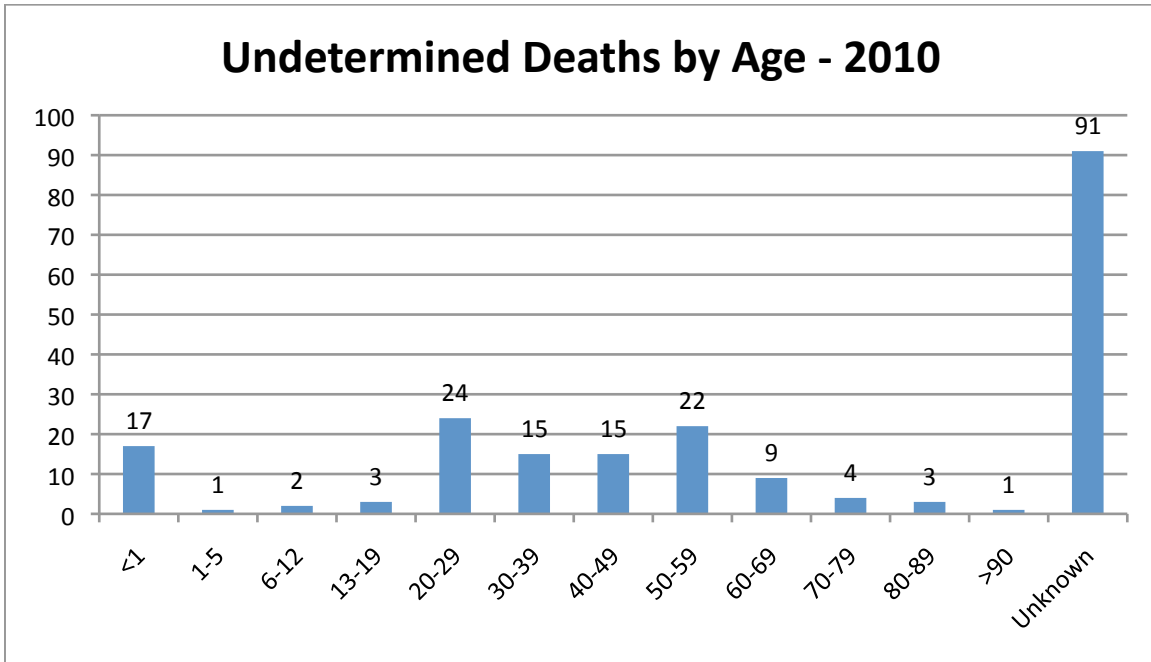


### Natural Deaths by Cause - 2010

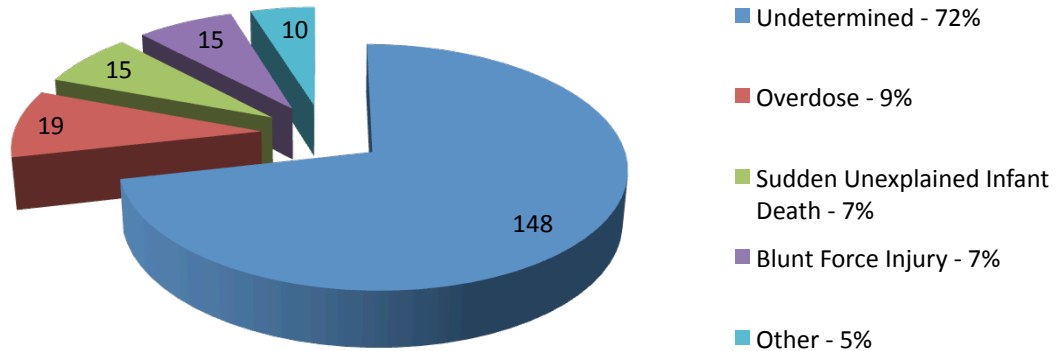


## UNDETERMINED DEATHS

Undetermined deaths accounted for 11% of the ME deaths investigated by the FSC in 2010. Individuals who died from undetermined causes were most frequently males (69%), of unknown age (54%) and died from undetermined causes (72%). Many of these deaths represent skeletal remains, in which the circumstances of death are unknown and examination of the remains is inconclusive.



### Undetermined Deaths by Cause - 2010

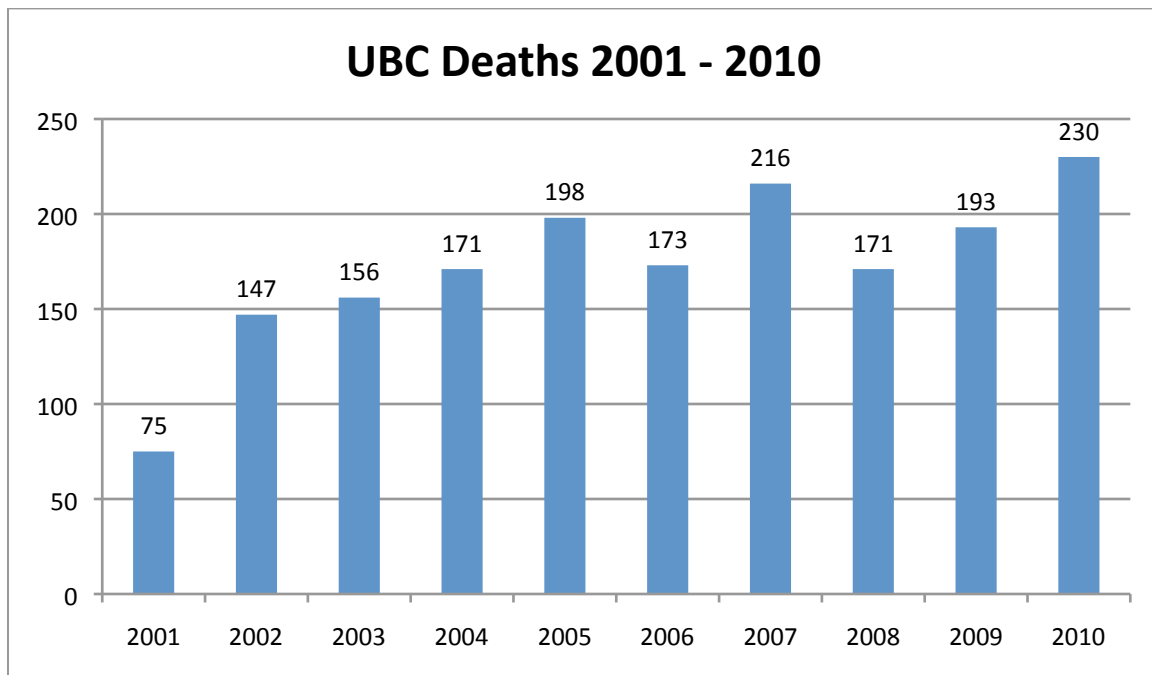


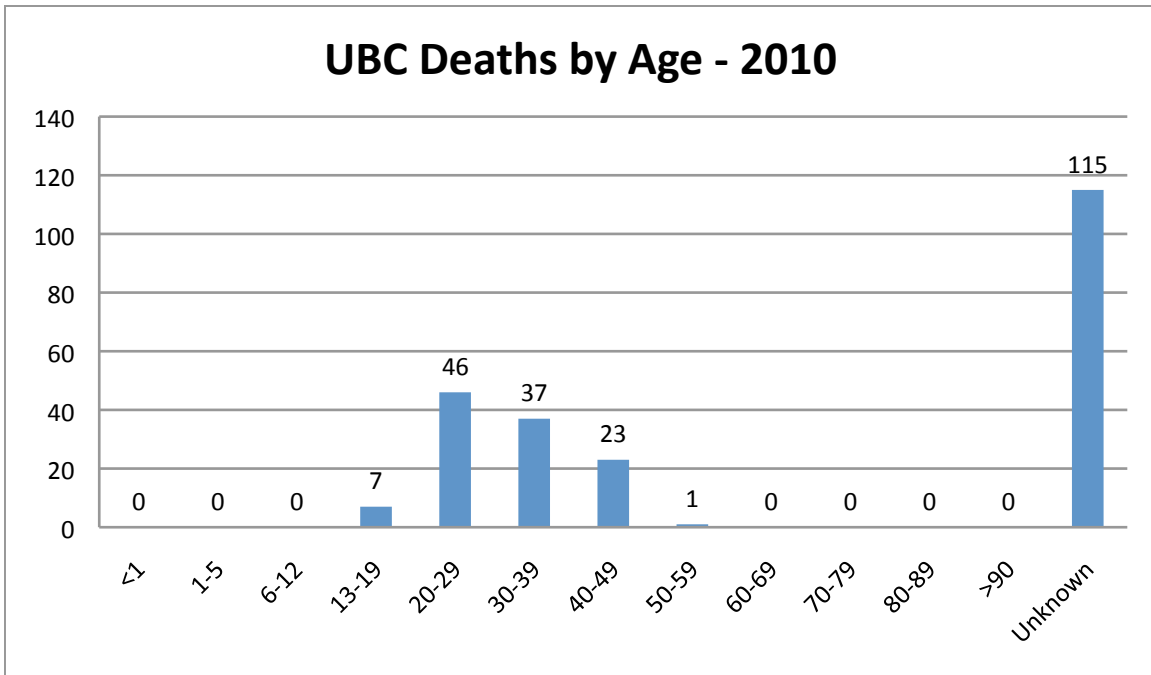
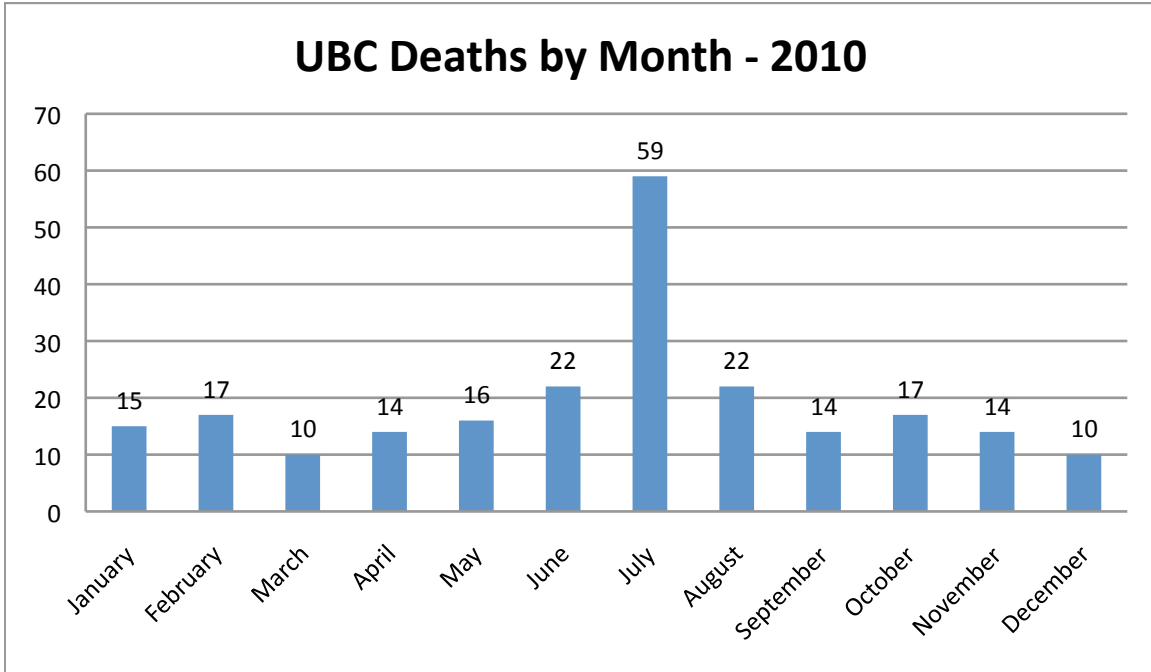
## UNDOCUMENTED BORDER CROSSERS

Undocumented Border Crossers (UBC) are defined as migrants from foreign nations who die attempting to cross the southern Arizona deserts. 2010 saw the highest number of UBC deaths (230) recorded at the FSC.

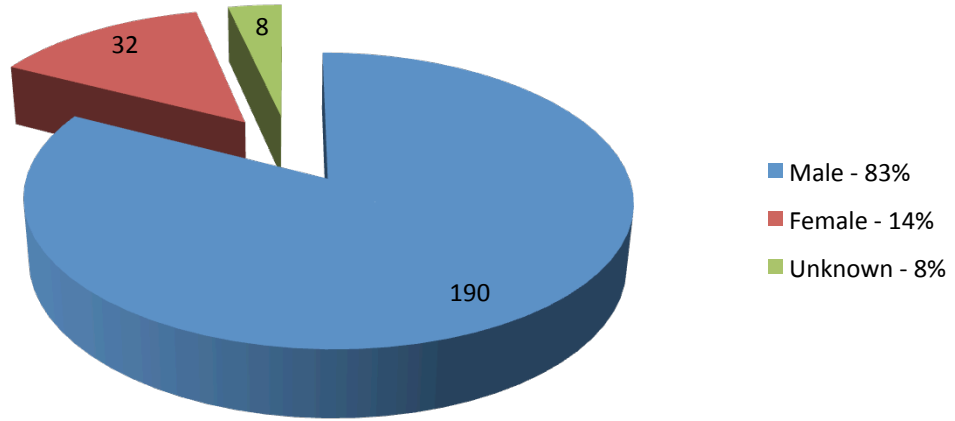
Migrant deaths peaked in July 2010 with 59 deaths (26%); there were 22 deaths both in June and August of 2010. Many of the remains are not identifiable due to postmortem changes and efforts by the migrants to obscure their identities. Of the decedents who were identified, 20% (48 deaths) were between 20-29 years of age. Skeletal remains accounted for 103 (45%) of the 230 UBC cases in 2010. While gender is quite reliably determined on most skeletal remains (83% of remains were male in 2010), age is difficult to estimate accurately (50% unknown age).

The cause of death was undetermined in 49% of cases, primarily due to limitations of examination of decomposed and skeletal remains. Of the remainder, environmental exposure to high heat, cold and dehydration comprised 43% of deaths. Other causes of death comprised 8% of cases and included blunt force injuries from falls or motor vehicle accidents (6 cases), drowning (3 cases), gunshot wound homicides (3 cases), homicidal blunt force injury (1 case), suicidal hanging (1 case), perforated gastric or duodenal ulcers (2 cases), coronary artery disease (1 case), cirrhosis of the liver (1 case) and envenomation due to bee stings (1 case).

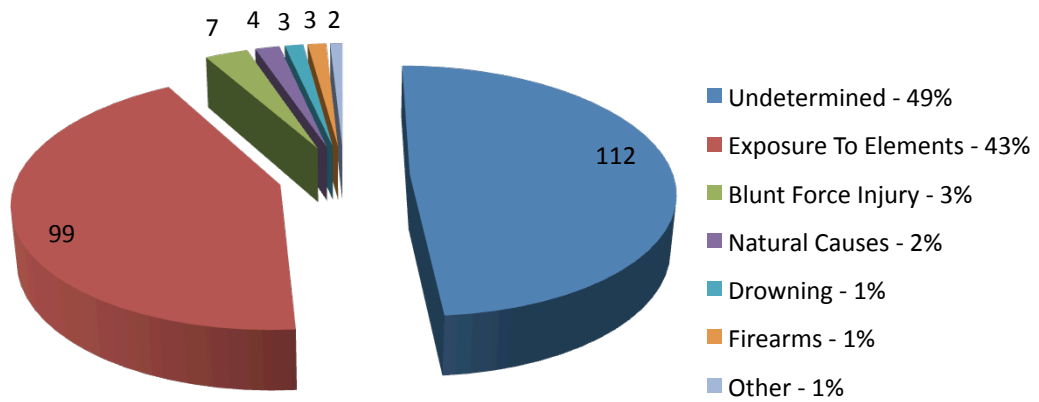




### UBC Deaths by Gender - 2010



### UBC Deaths by Cause - 2010



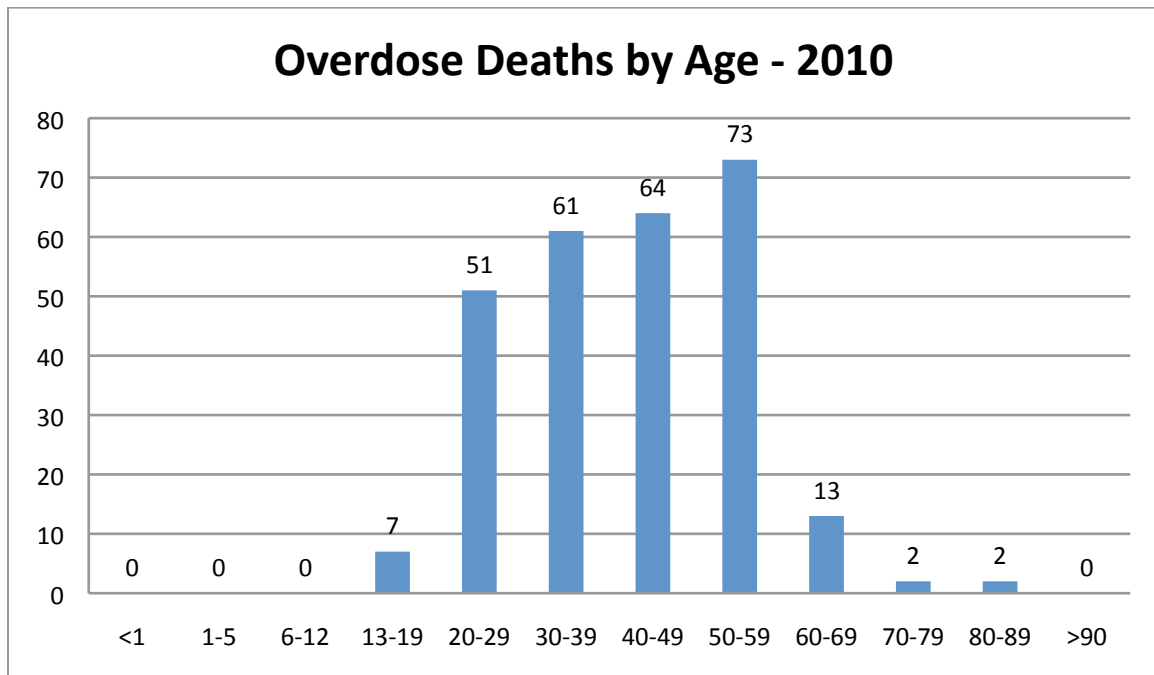
## OVERDOSE DEATHS

There were 273 deaths attributed to an overdose of either a single drug (127 deaths, 47%) or a combination of drugs (146, 53%) in 2010. Overdose deaths commonly involved males (59%) between the ages of 50-59 (27%). The majority of these deaths were classified as accidents (83%) involving prescription medications (69%).

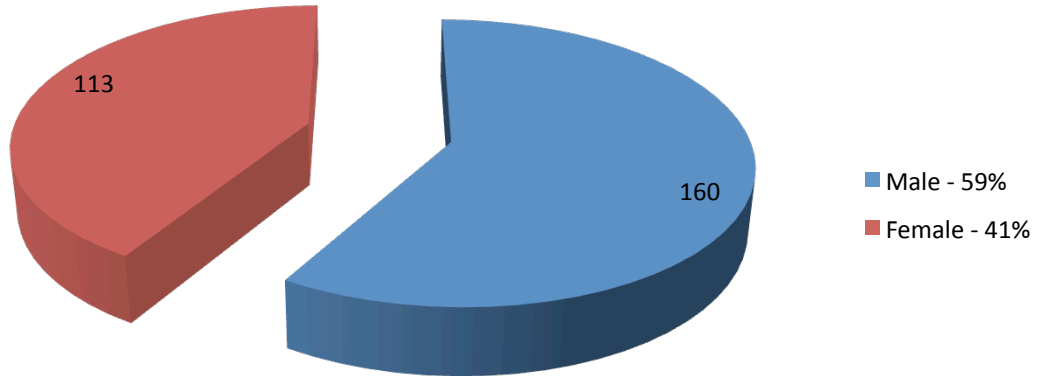
Illicit drugs (cocaine, methamphetamine or heroin) were found in 26% of deaths. Many of the deaths involving an illicit drug represent mixed or poly-drug overdoses, some in combination with multiple illicit drugs, prescription medications, and/or alcohol. The number of illicit drug deaths is likely underreported as heroin is rapidly metabolized to morphine by the body and if the parent compound indicative for heroin (6-monoacetylmorphine) is not present on the toxicology report these deaths may be classified as either morphine intoxication or “opiate” intoxication.

Prescription drugs were involved in 69% of overdose deaths. Opiate prescription drugs (oxycodone, methadone, hydrocodone, morphine, opiate unspecified) and fentanyl (a synthetic opioid narcotic) accounted for the majority of these deaths, either as a single drug or a component of a poly-drug overdose. The most common class of drugs found as a component of poly-drug overdoses are benzodiazepines followed by alcohol.

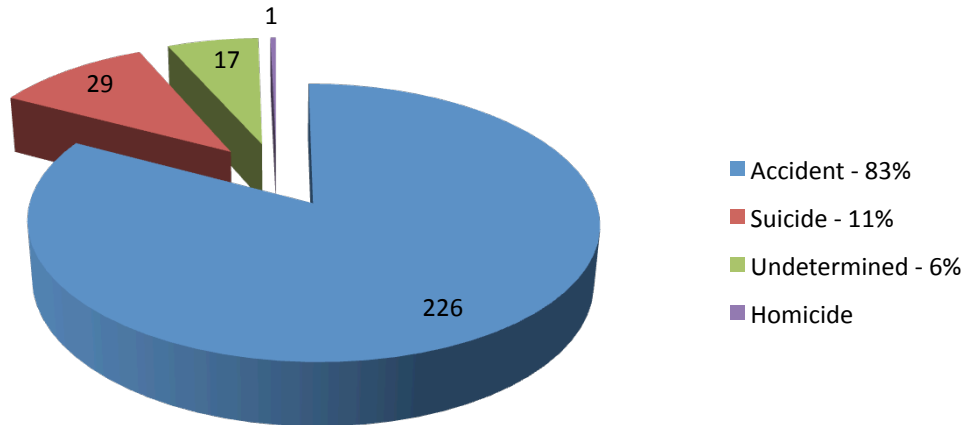
Alcohol intoxication alone accounted for 13 (5%) deaths in 2010.



### Overdose Deaths by Gender - 2010

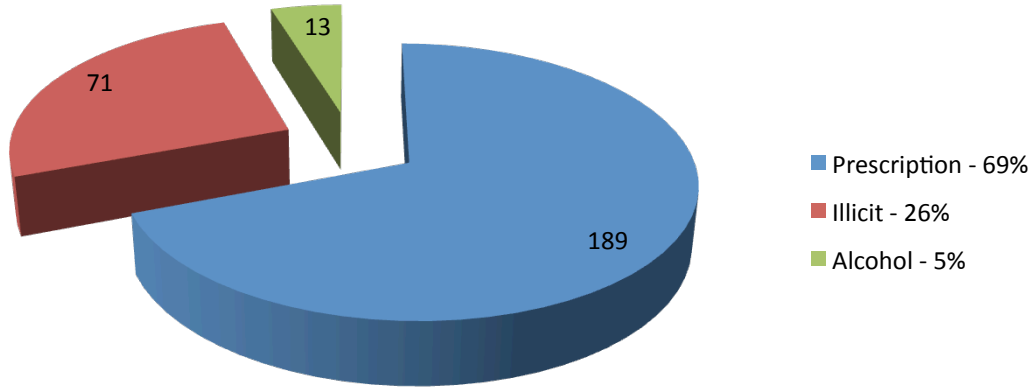


### Overdose Deaths by Manner - 2010

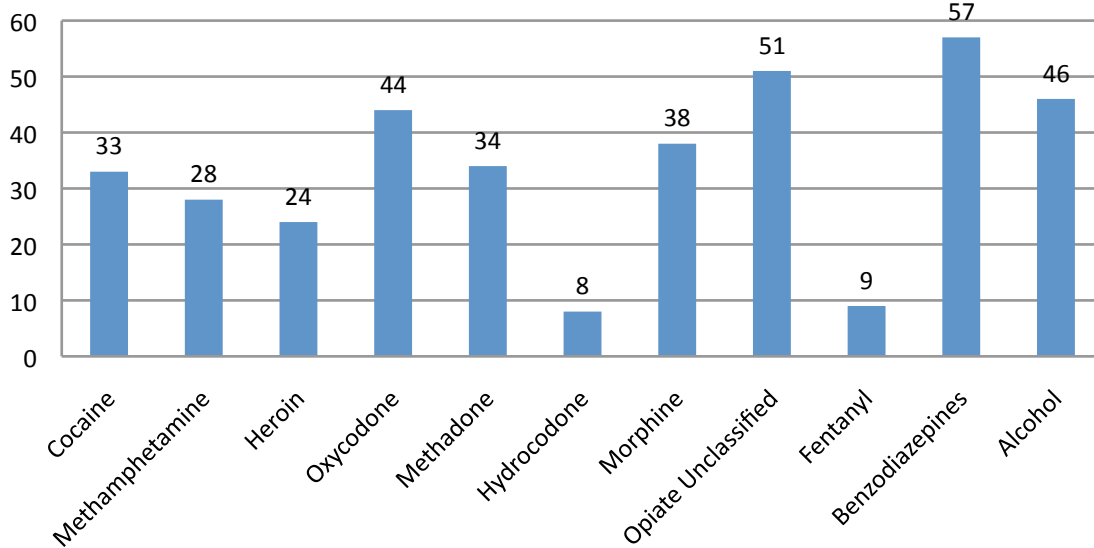




### Overdose Deaths by Class of Drug - 2010



### Overdose Deaths by Drug - 2010



## UNCLAIMED DECEDENTS

A significant number of individuals who die in Pima County are unclaimed, indigent or unidentified and require referral to the Pima County Public Fiduciary (PF) Office for burial or cremation. In 2010, 292 decedents were referred to the PF and 271 decedents were released for burial or cremation. On January 1, 2011 131 unclaimed decedents referred to the PF remained in storage at the FSC.

