



PIMA COUNTY

OFFICE OF THE MEDICAL EXAMINER

Annual Report 2013



TABLE OF CONTENTS

INTRODUCTION		PAGE 4
OVERVIEW		PAGES 4-6
ORGANIZATIONAL CHART		PAGE 7
TOTAL CASES		PAGE 8
MEDICAL EXAMINER (ME) CASES		PAGE 8
ME CASES	PAGE 9	
ME CASES BY AGE	PAGE 9	
ME CASES BY MANNER	PAGE 10	
PIMA COUNTY ME CASES BY MANNER	PAGE 10	
HOMICIDE DEATHS		PAGE 11
HOMICIDE 2009-2013	PAGE 11	
HOMICIDE BY AGE	PAGE 11	
HOMICIDE BY GENDER	PAGE 12	
HOMICIDE BY CAUSE	PAGE 12	
ACCIDENT DEATHS		PAGE 13
ACCIDENT BY AGE	PAGE 13	
ACCIDENT BY GENDER	PAGE 13	
ACCIDENT BY CAUSE	PAGE 14	
ACCIDENT BY CAUSE 2011-2013	PAGE 14	
SUICIDE DEATHS		PAGE 15
SUICIDE BY AGE	PAGE 15	
SUICIDE BY GENDER	PAGE 15	
SUICIDE BY CAUSE	PAGE 16	
SUICIDE BY CAUSE 2011-2013	PAGE 16	
NATURAL DEATHS		PAGE 17
NATURAL BY AGE	PAGE 17	
NATURAL BY GENDER	PAGE 17	
NATURAL BY CAUSE	PAGE 18	
NATURAL BY CAUSE 2011-2013	PAGE 18	
UNDETERMINED MANNER OF DEATH		PAGE 19
UNDETERMINED MANNER BY AGE	PAGE 19	
UNDETERMINED MANNER BY GENDER	PAGE 19	
UNDETERMINED MANNER BY CAUSE	PAGE 20	

OVERDOSE DEATHS		PAGE 21
OVERDOSE DEATHS 2010-2013	PAGE 21	
OVERDOSE DEATHS BY AGE	PAGE 22	
OVERDOSE DEATHS BY GENDER	PAGE 22	
OVERDOSE DEATHS BY MANNER	PAGE 23	
SELECT DRUGS BY YEAR 2011-2013	PAGE 23	
OVERDOSE DEATHS BY DRUG	PAGE 24	
MOTOR VEHICLE RELATED FATALITIES		PAGE 25
MOTOR VEHICLE FATALITIES 2011-2013	PAGE 25	
MOTOR VEHICLE FATALITIES BY AGE	PAGE 25	
MOTOR VEHICLE FATALITIES BY GENDER	PAGE 26	
MOTOR VEHICLE FATALITIES BY TYPE	PAGE 26	
W.H. BIRKBY FORENSIC ANTHROPOLOGY LABORATORY		PAGE 27
FA EXAMS BY NUMBER 2007-2013	PAGE 27	
FA EXAMS BY CONDITION OF REMAINS	PAGE 28	
FA EXAMS BY TYPE	PAGE 28	
UNDOCUMENTED BORDER CROSSER (UBC) REMAINS		PAGE 29
UBC RECOVERIES 2001-2013	PAGE 30	
UBC RECOVERIES BY MONTH	PAGE 30	
UBC RECOVERIES BY AGE	PAGE 31	
CONDITION OF RECOVERED REMAINS	PAGE 31	
UBC RECOVERIES BY GENDER	PAGE 32	
UBC RECOVERIES BY CAUSE	PAGE 32	
UBC RECOVERIES BY NATIONALITY, 2013	PAGE 33	
UBC RECOVERIES BY NATIONALITY, 2001-2013	PAGE 33	
IDENTIFIED V. UNIDENTIFIED UBC RECOVERIES	PAGE 34	
DNA IDENTIFICATIONS 2001-2013	PAGE 34	

INTRODUCTION

The Pima County Office of the Medical Examiner (PCOME) investigates any death in Pima County that is sudden, violent, unexpected, or in which the cause of death is unknown. The PCOME also serves as the Medical Examiner for Cochise and Santa Cruz Counties and performs examinations as needed for 8 additional counties. In 2013 there were 9,433 deaths in Pima County; of these 2,611 (28%) were reported to the PCOME for investigation. This annual report consists of two main sections. The first is an overview of the activities and notable events 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 same time period.

OVERVIEW

The PCOME was fully accredited by the National Association of Medical Examiners (NAME) following a two day inspection in October 2011. This accreditation is effective October 24, 2011 through October 24, 2016 and requires annual accreditation verification. NAME accredited offices represent the highest quality of death investigation systems. There are 75 offices across the United States accredited by NAME. The PCOME has the distinction of being the sole accredited office in Arizona.

Reportable Deaths

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

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 11 medical investigators processed 2,611 reports of deaths from Pima County and 739 reports from 10 additional Arizona counties in 2013. Jurisdiction was declined in 837 of these cases. A total of 2,145 decedents were transported to the PCOME for examination or storage in 2013.

Examinations

Pima County forensic pathologists and anthropologists performed 1,491 autopsies, 474 external examinations, 368 death certifications, and 163 anthropologic examinations, and reviewed 5,346 cremations in 2013.

Education, Training and Activities

1) *Medicolegal Death Investigators*

Calendar year 2012 saw a transition from the term Forensic Medical Investigator (FMI) to Medicolegal Death Investigator (MDI) for our 11 MDIs in keeping with national norms. Seven MDIs, our MDI Supervisor, Morgue Supervisor and Office Manager are certified by the American Board of Medicolegal Death Investigators to provide competent medicolegal death investigations. PCOME Forensic Pathologists lecture to the MDIs on varying topics monthly. In accordance with our MDI quality assurance and performance improvement program, 10% of cases are pathologist reviewed monthly and 10% of cases are peer reviewed quarterly.

2) *Community education, presentations and media interviews*

The PCOME 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 include but are not limited to: presentations at local primary and secondary schools; lectures at various institutions and departments at the University of Arizona; presentations and tours for humanitarian organizations; and the teaching of a 3-credit-hour death investigation class at Pima Community College. The Chief Medical Examiner participated in 173 media interviews, emails and phone calls, many involving migrant death issues. Pima County's Forensic Anthropologist and Postdoctoral Fellow gave numerous platform and poster presentations to various organizations and at national anthropologic and forensic conferences.

3) *University of Arizona College of Medicine, Department of Pathology and School of Anthropology*

PCOME Forensic Pathologists hold clinical appointments with the Department of Pathology at the University of Arizona, College of Medicine, where they are involved with pathology resident and medical student teaching. Eight pathology residents, seven medical students and three pathology post-sophomore fellows rotated through the PCOME for month-long rotations in 2013. Our Forensic Anthropologist also holds an academic appointment at the University of Arizona and four anthropology interns trained at our facility in 2013.

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 PCOME. Involvement of the PCOME in the legal system generally consists of pretrial interviews, depositions and courtroom testimony. In 2013, the office's six forensic pathologists and two anthropologists participated in approximately 52 pretrial interviews, 60 depositions and 50 jury trials.

Pima County Office Of The Medical Examiner – Annual Report 2013

Organ and Tissue Donation

Pursuant to A.R.S §36-861, the PCOME refers death notifications to, and partners with Donor Network of Arizona (DNA) for the coordination and procurement of anatomic gifts. The importance of supporting the efforts of the organ and tissue transplant and research communities in Arizona cannot be understated. Anatomic gifts can be life saving for organ and tissue recipients and these gifts are always in short supply.

Organ Donations with PCOME Involvement 2013

Heart	Lungs	Liver	Kidneys	Pancreas	Sm. Intestine	Total
5	2	10	30	1	0	48

The total lives saved through organ donation involving deaths investigated by the PCOME in 2013 were 46 with 48 organs being transplanted. The authorization for the procurement of organs was granted in 100% of cases.

Cornea Donations with PCOME Involvement 2013

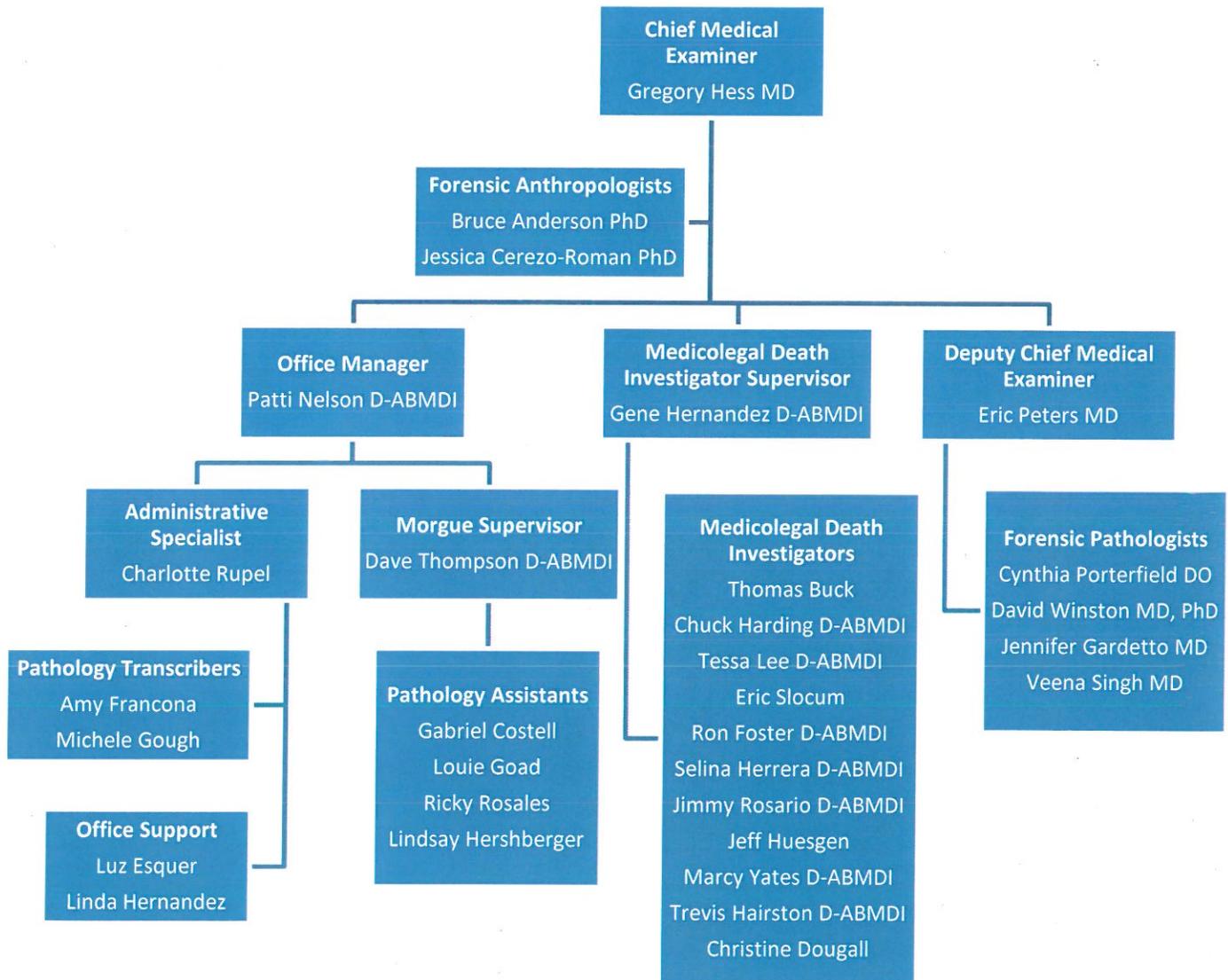
Corneas Recovered	Corneas Transplanted
268	192

There were 268 corneas recovered (15% of all corneas recovered in Arizona) and 192 transplanted in 2013 with PCOME involvement. The release of corneas was granted 97% of the time.

Tissue Donation with PCOME Involvement 2013

Bone	Skin	Vascular	Heart	Aortoiliac
84	90	24	33	8

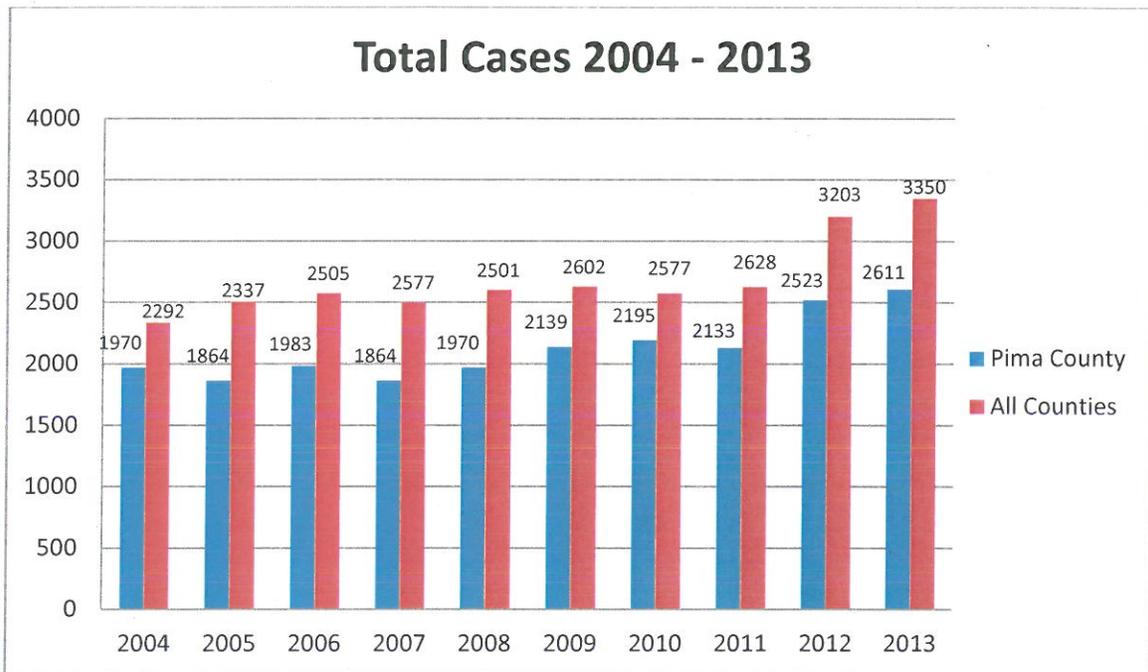
The PCOME was involved in 20% of all DNA tissue recoveries in 2013. The average release of tissue for procurement was granted 80% of the time across the state of Arizona in 2013. The release of tissues was granted 94% of the time by the PCOME, significantly above the state average.



**OFFICE OF THE MEDICAL EXAMINER
ORGANIZATIONAL CHART AS OF DECEMBER 2013**

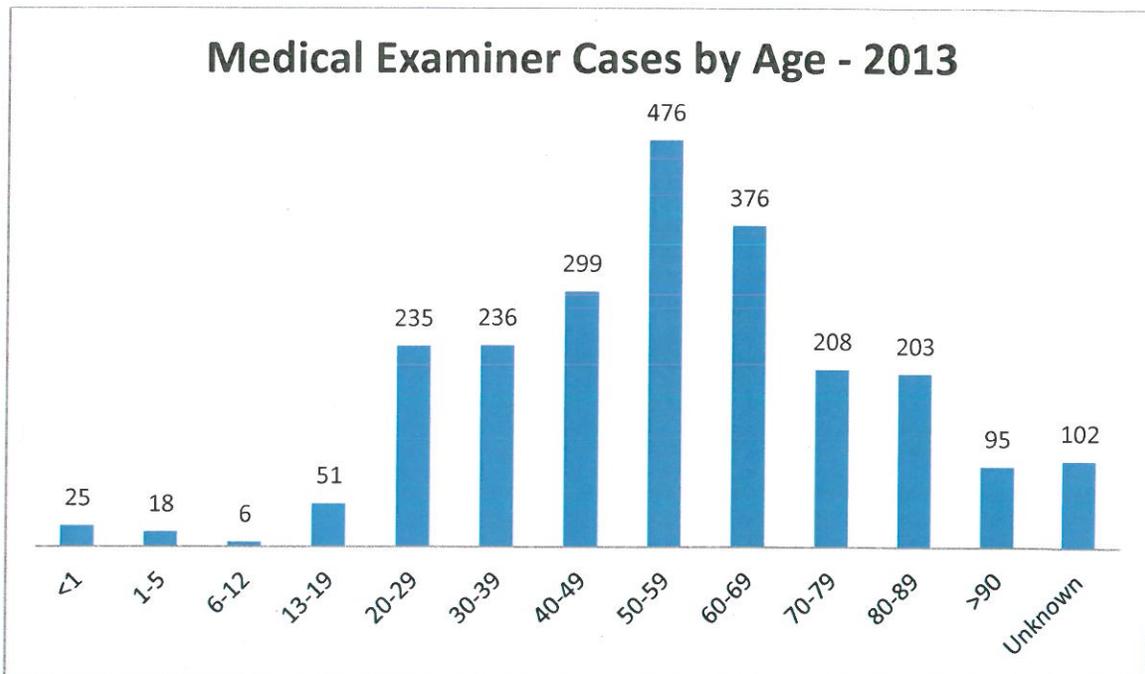
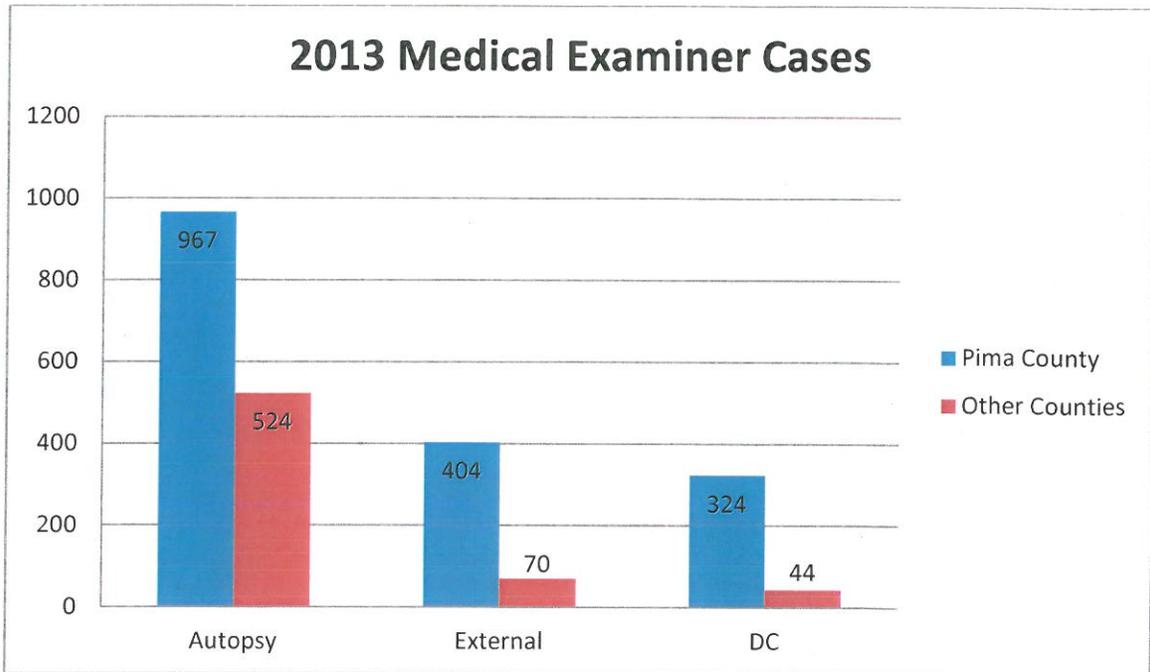
TOTAL CASES

The total cases handled by the PCOME 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 (storage cases). ‘All Counties’ includes cases examined at the PCOME from Apache, Cochise (effective 7/1/12), Gila, Graham, Greenlee, La Paz, Navajo, Pinal, Santa Cruz and Yuma counties in addition to Pima County.

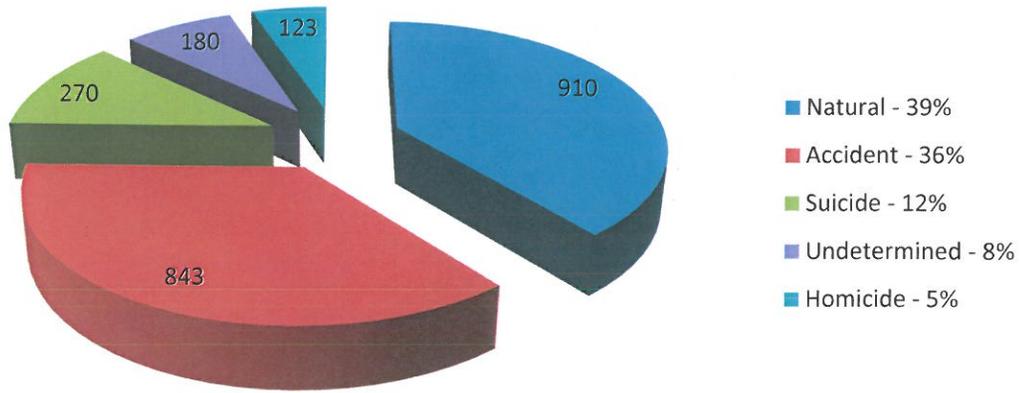


MEDICAL EXAMINER CASES

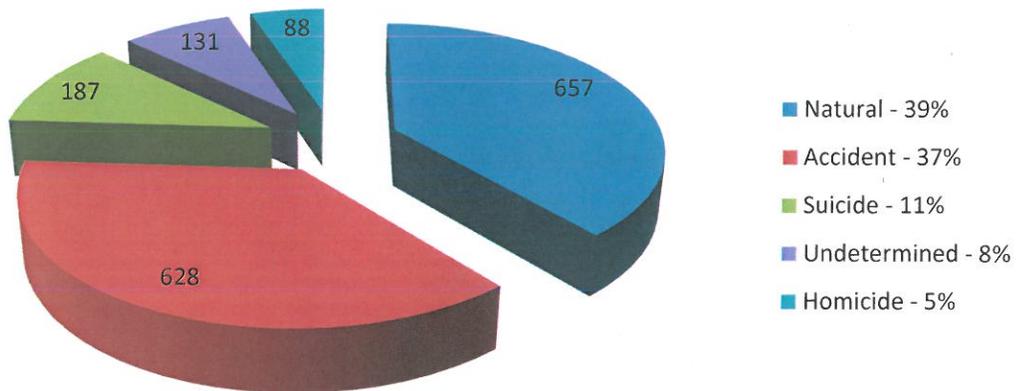
The PCOME considers all cases in which the cause and manner of death are determined by this office as “medical examiner cases.” Those cases include autopsies, external examinations and death certificate (DC) cases. Autopsies are examinations where a decedent is examined both externally and internally 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 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 the decedent. In 2013, for Pima and all other counties listed above, 1491 autopsies, 474 external examinations and 368 DC cases were performed at the PCOME. Pima County alone accounted for 967 autopsies, 404 external examinations and 324 DC cases.



ME Cases (all counties) by Manner of Death - 2013

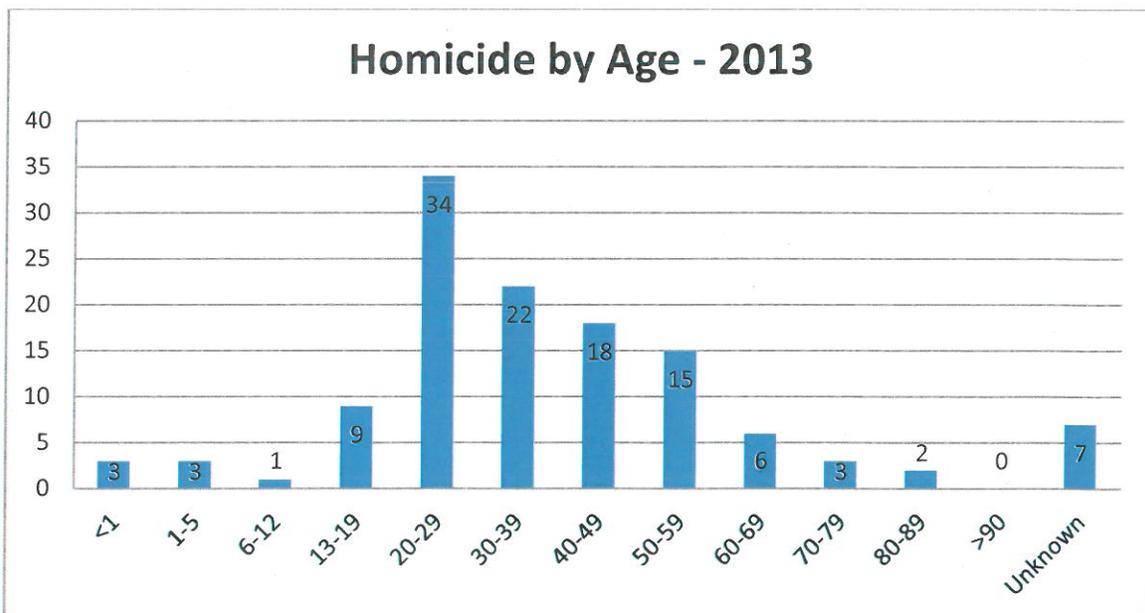
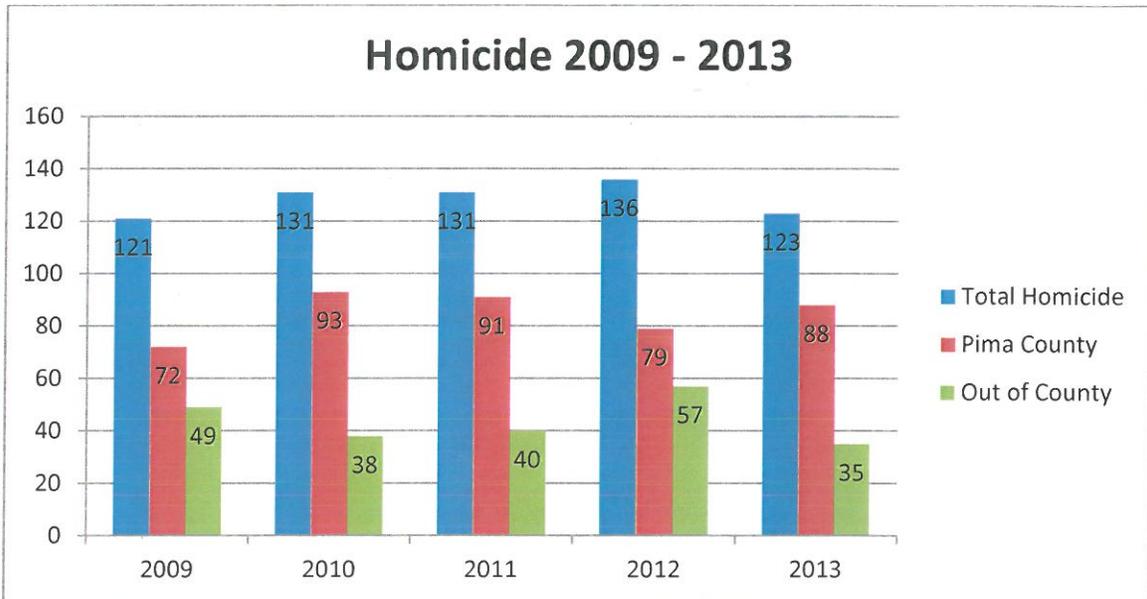


ME Cases (Pima only) by Manner of Death - 2013

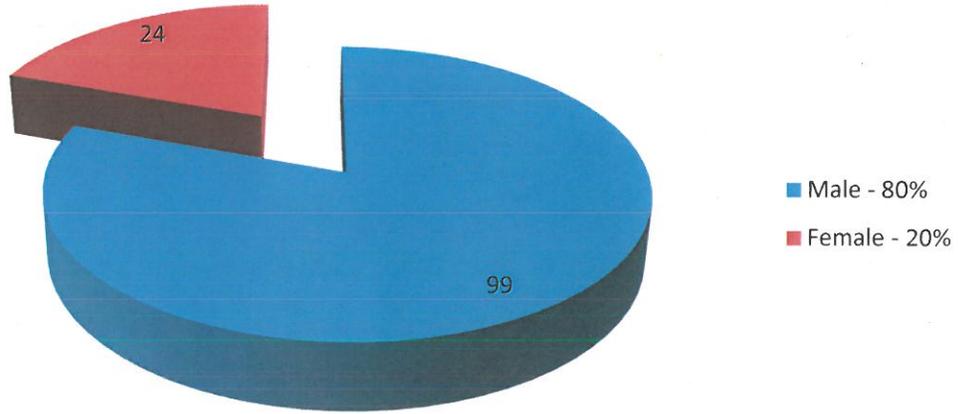


HOMICIDE DEATHS

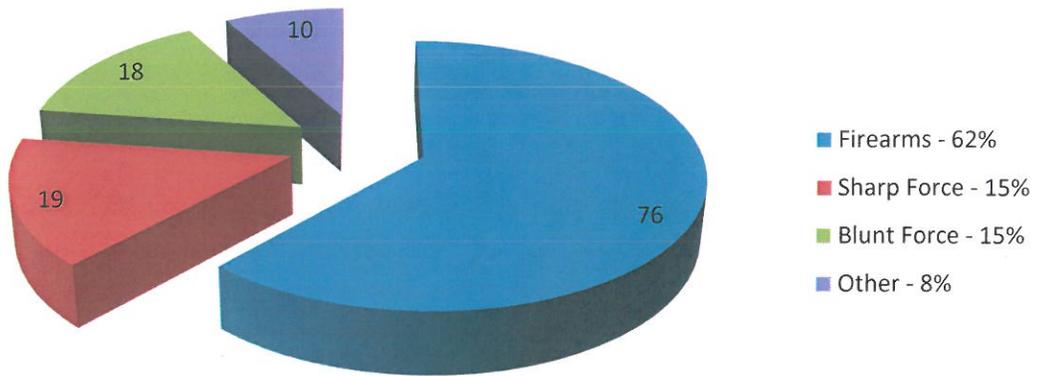
The PCOME examined 123 homicides in 2013, 88 from Pima County and 35 from other counties. Homicide totals from 2009 – 2013 are compared below. Homicide victims were most frequently male (80%), between 20-29 years of age (28%) and died as the result of firearms (62%).



Homicide by Gender - 2013

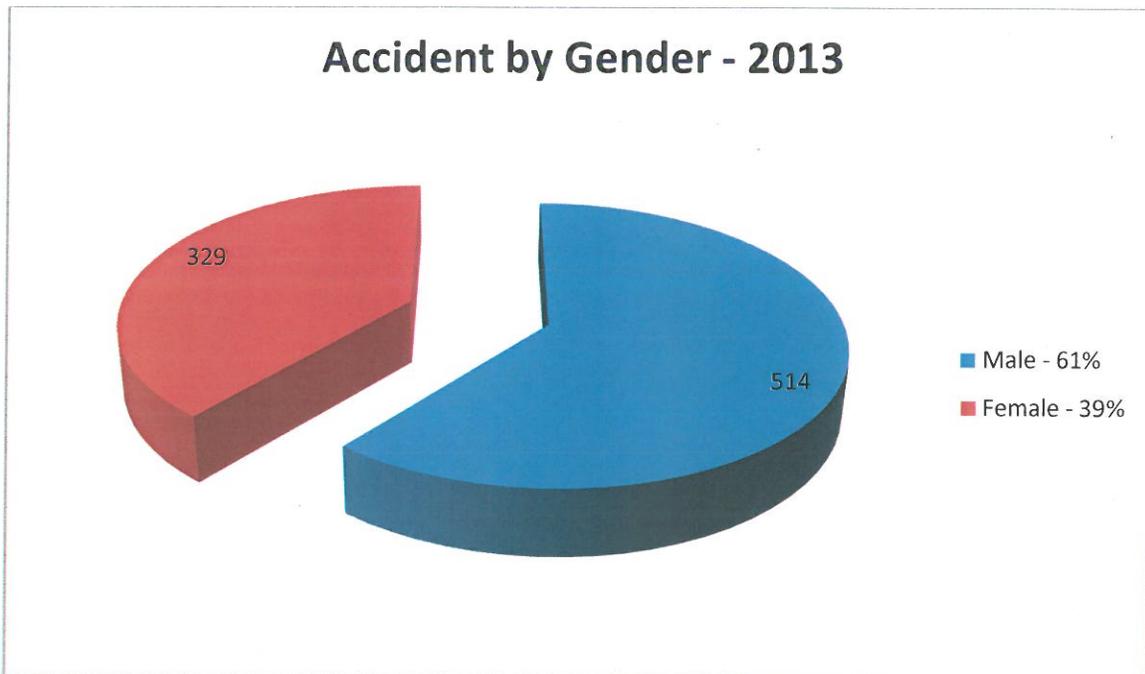
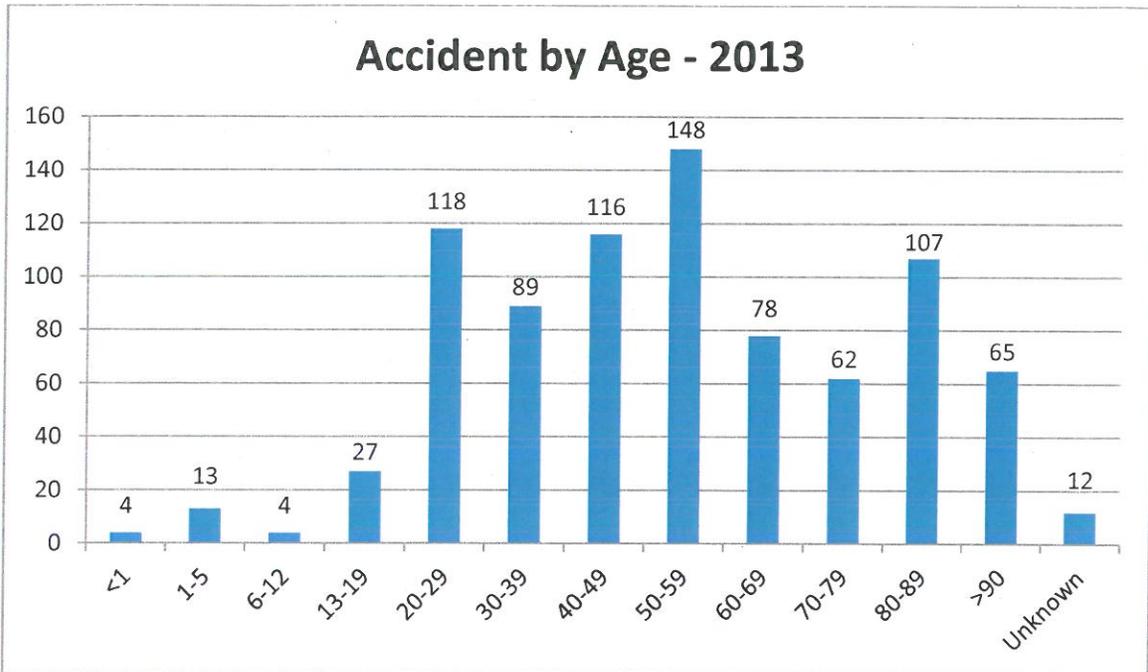


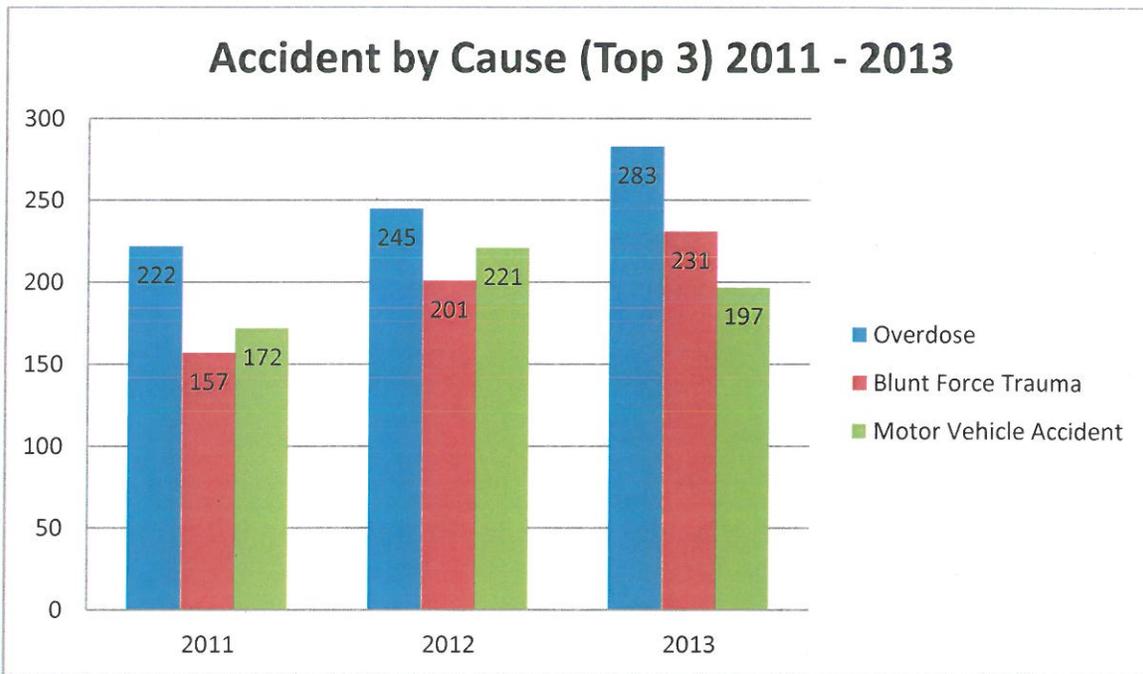
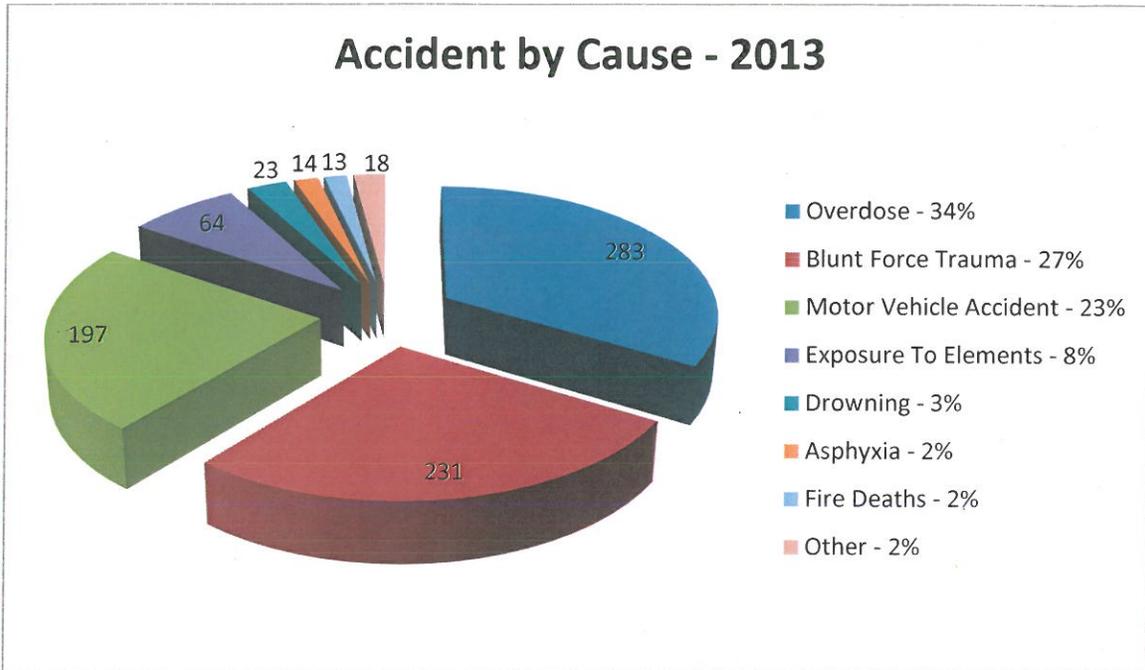
Homicide by Cause - 2013



ACCIDENTAL DEATHS

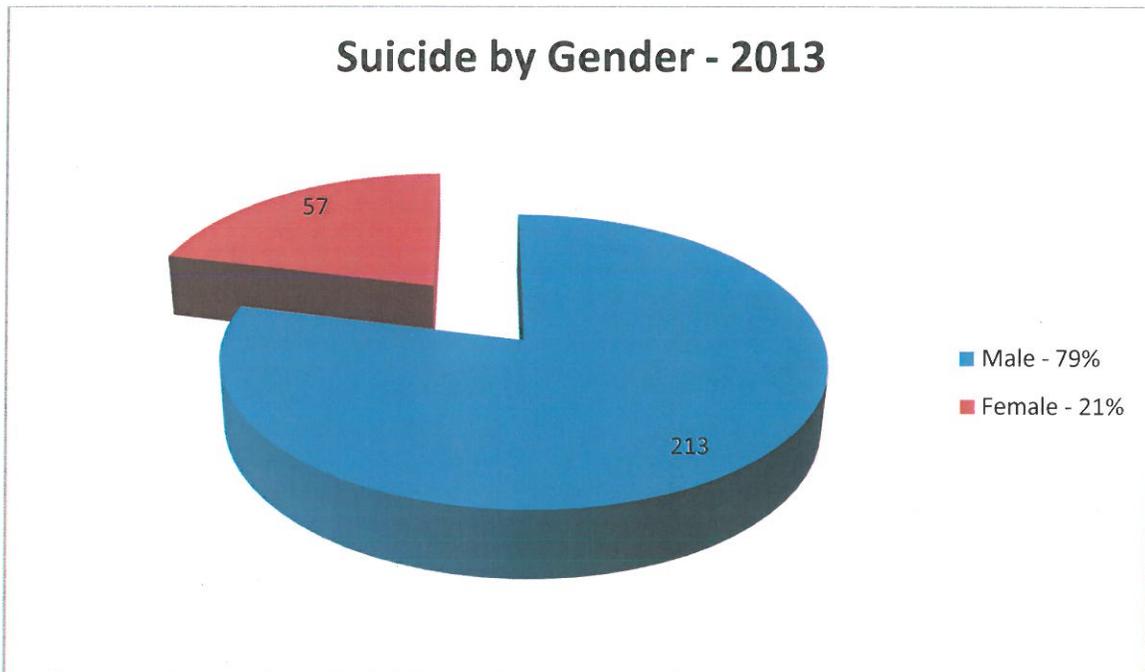
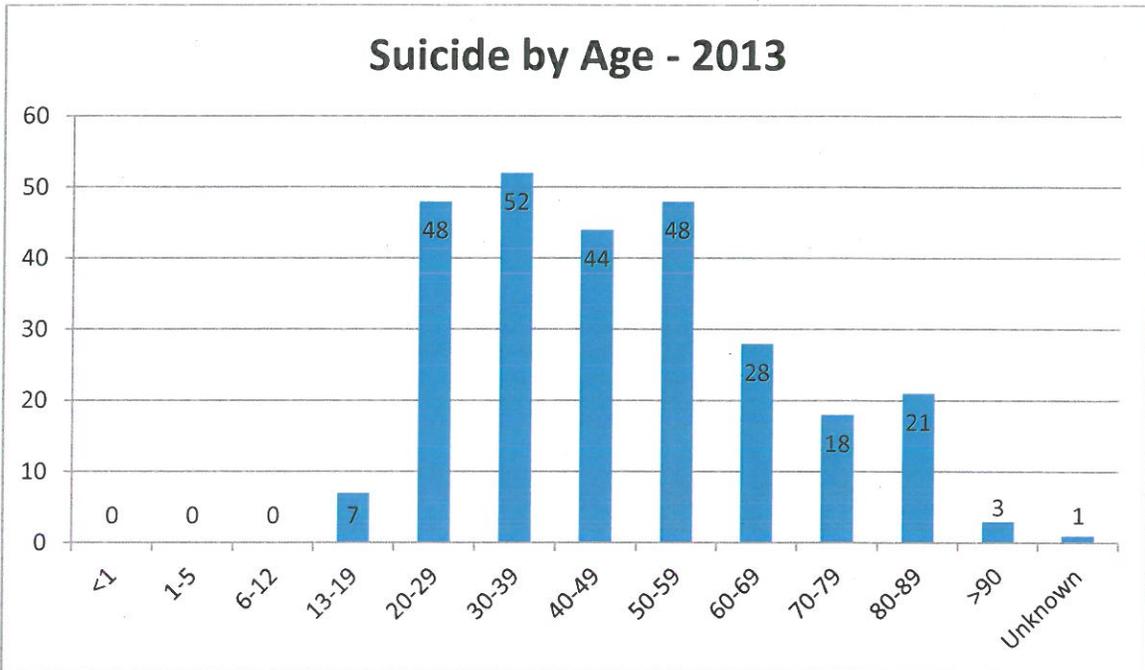
Deaths due to accidents accounted for 36% of the ME deaths investigated by the PCOME in 2013. Accident victims were most frequently males (61%), between 50-59 years of age (18%) and died as the result of a drug or medication overdose (34%).

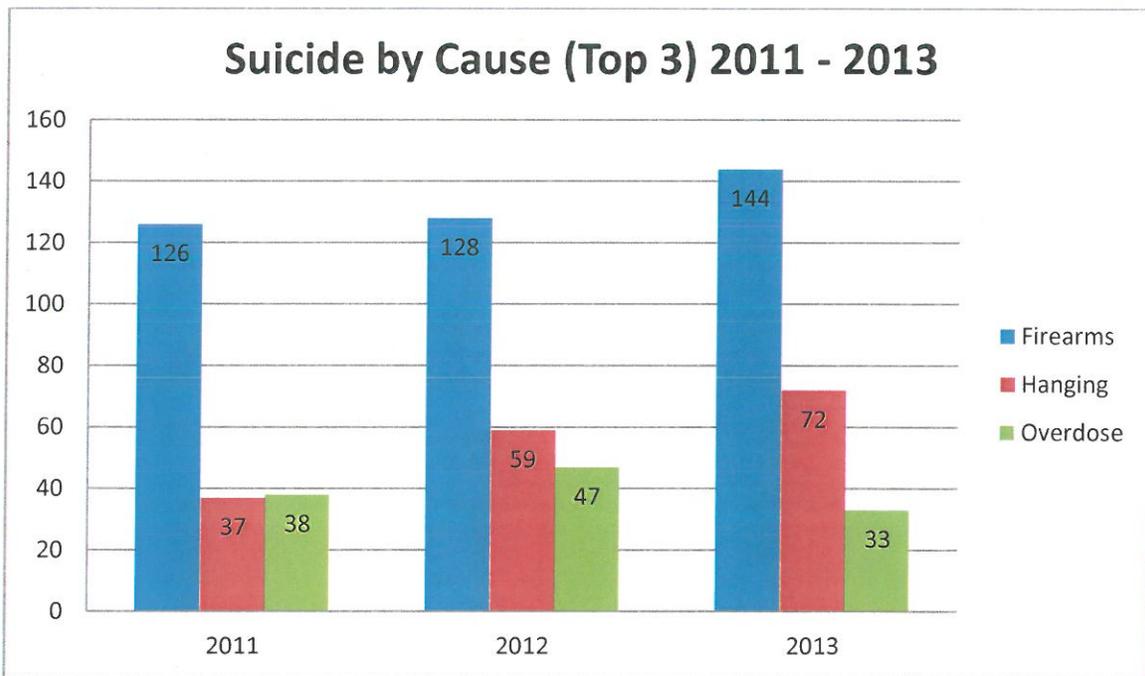
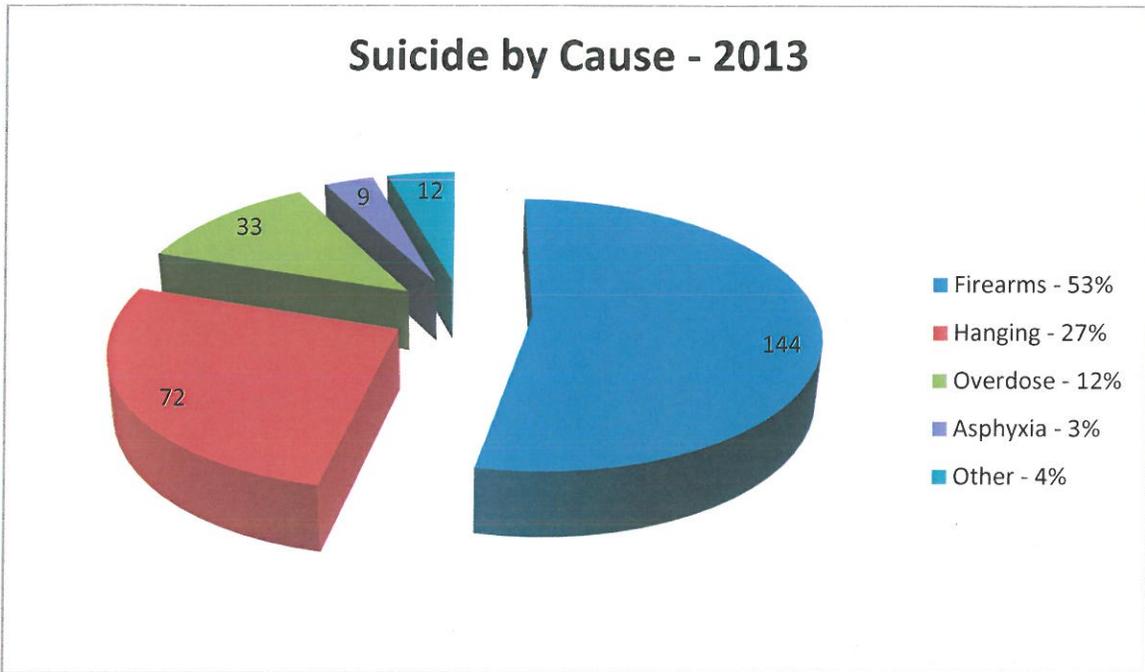




SUICIDE DEATHS

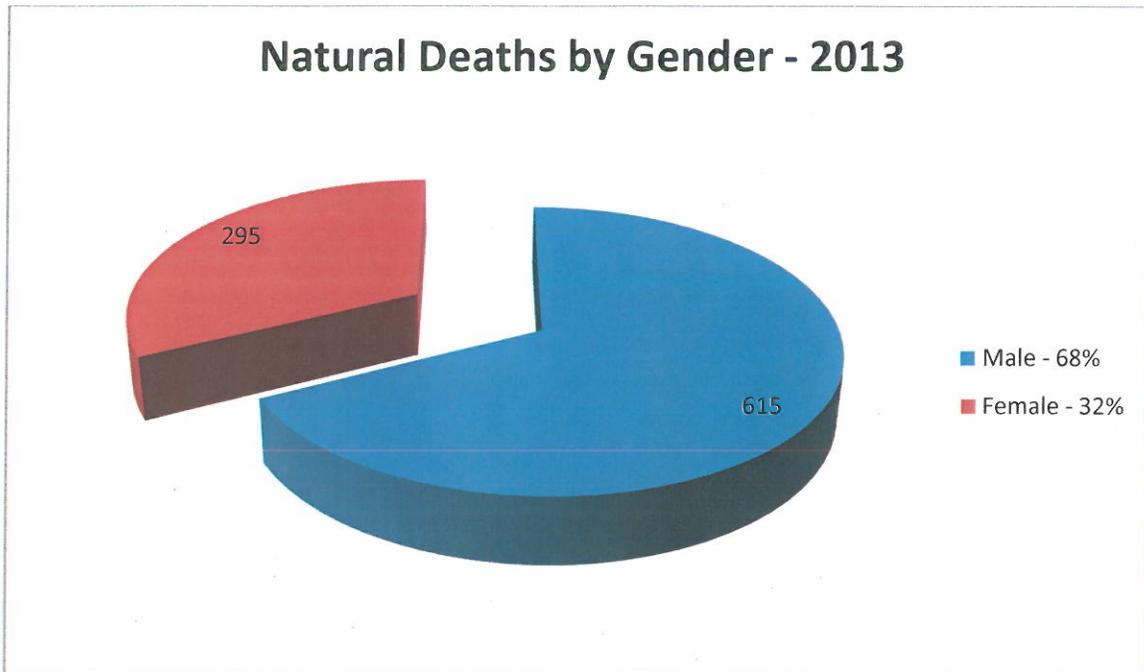
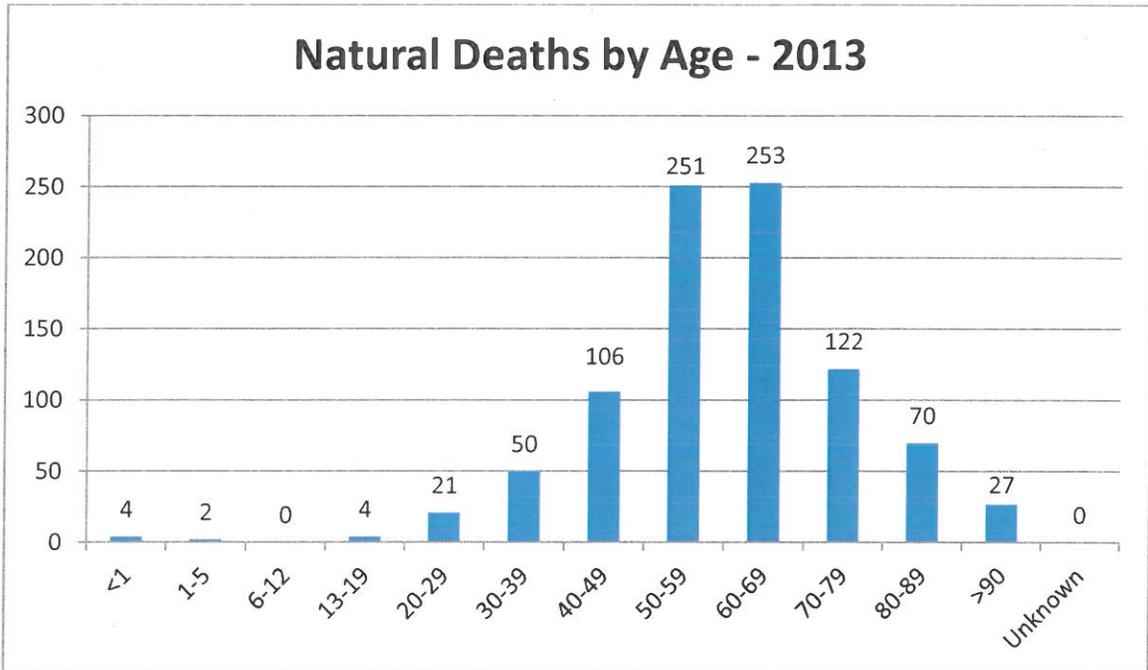
Suicide deaths accounted for 12% of the ME deaths investigated by the PCOME in 2013. Suicide victims were most frequently males (79%), between 30-39 years of age (19%) and died as the result of firearms (53%).

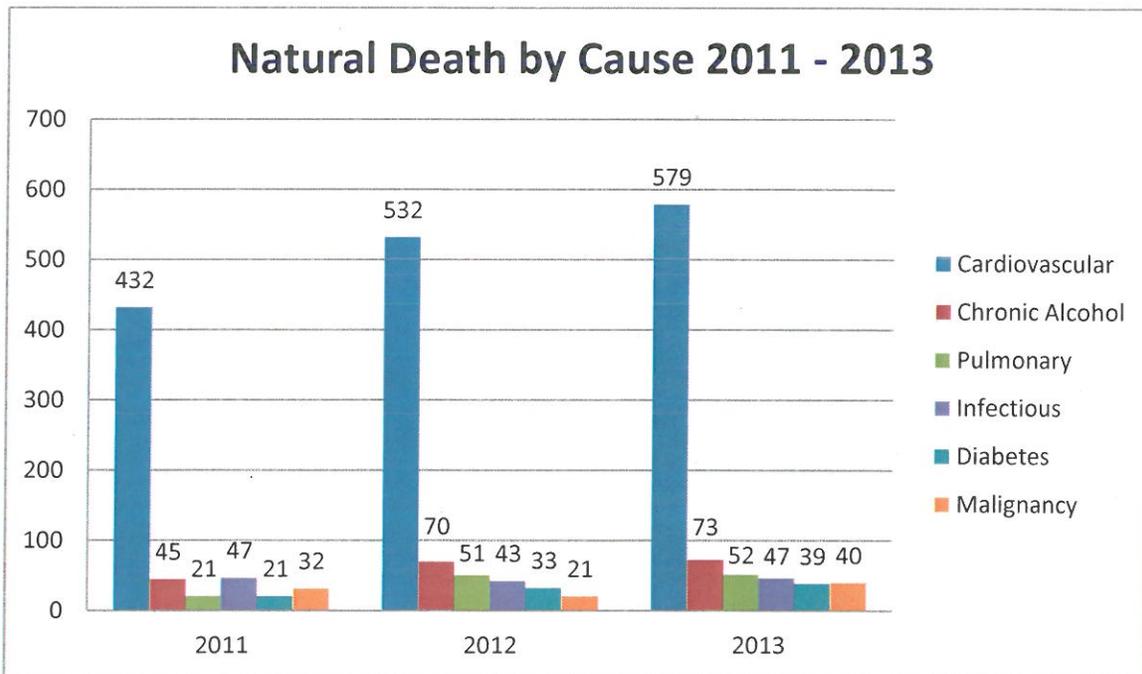
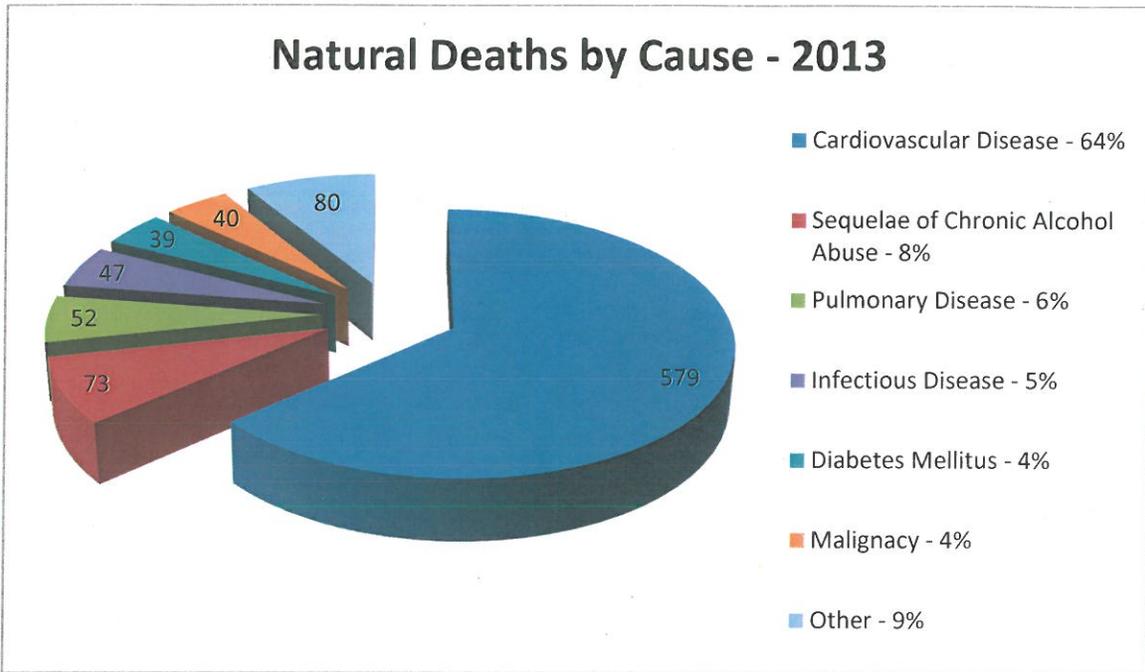




NATURAL DEATHS

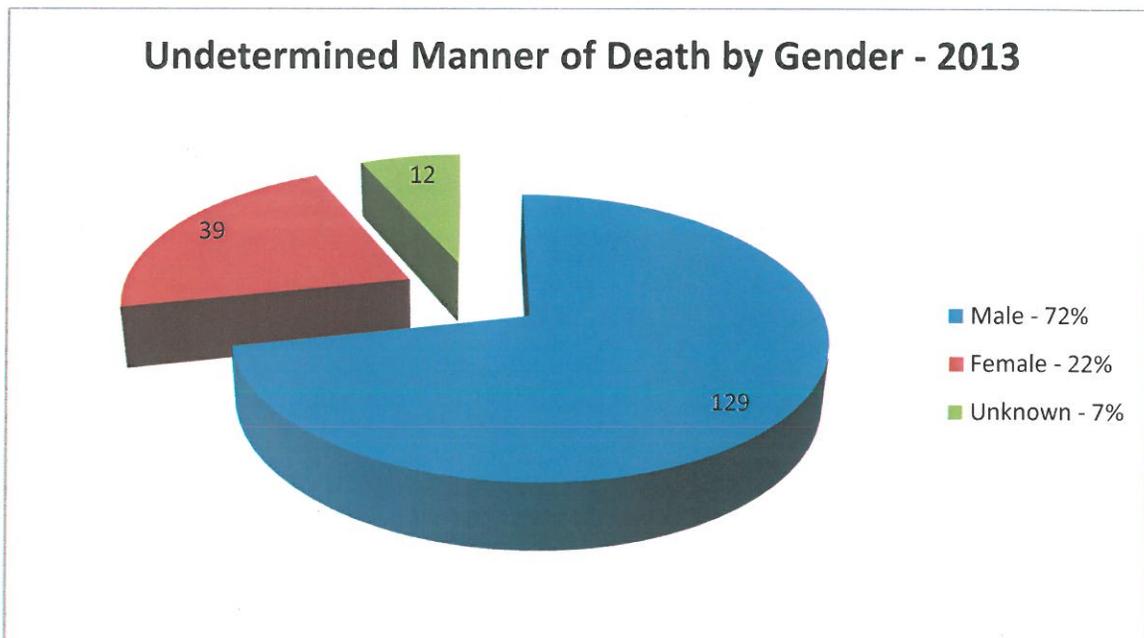
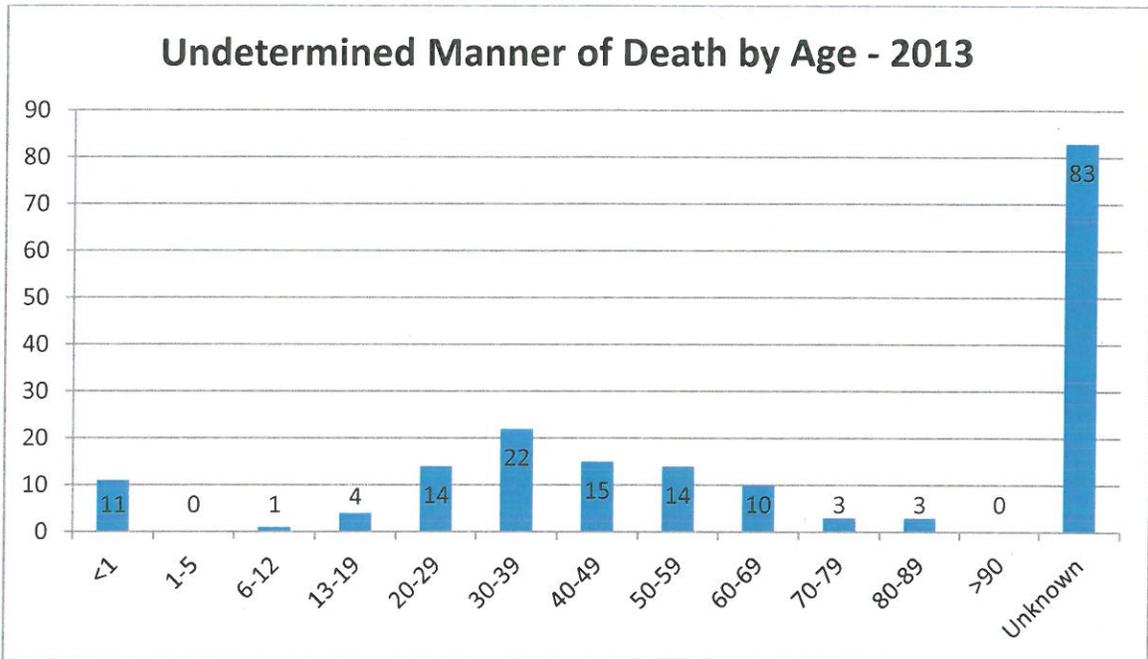
Natural deaths accounted for 39% of the ME deaths investigated by the PCOME in 2013. Individuals who died from natural causes were most frequently males (68%), between 60-69 years of age (28%) and died as the result of cardiovascular disease (64%).



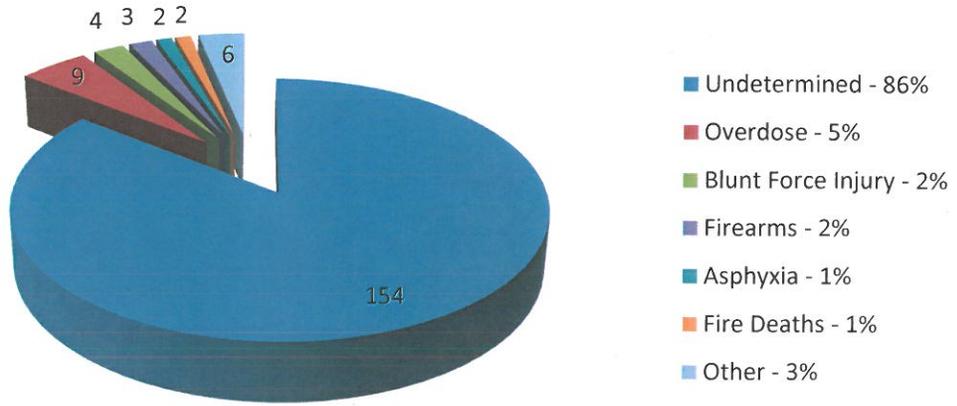


UNDETERMINED MANNER OF DEATH

Deaths in which the manner of death was undetermined accounted for 8% of the ME deaths investigated by the PCOME in 2013. Individuals who died with an undetermined manner were most frequently males (72%), of unknown age (46%) and died from undetermined causes (86%). Many of these deaths represent skeletal remains of undocumented border crossers who died in the deserts of southern Arizona.



Undetermined Manner of Death by Cause - 2013



OVERDOSE DEATHS

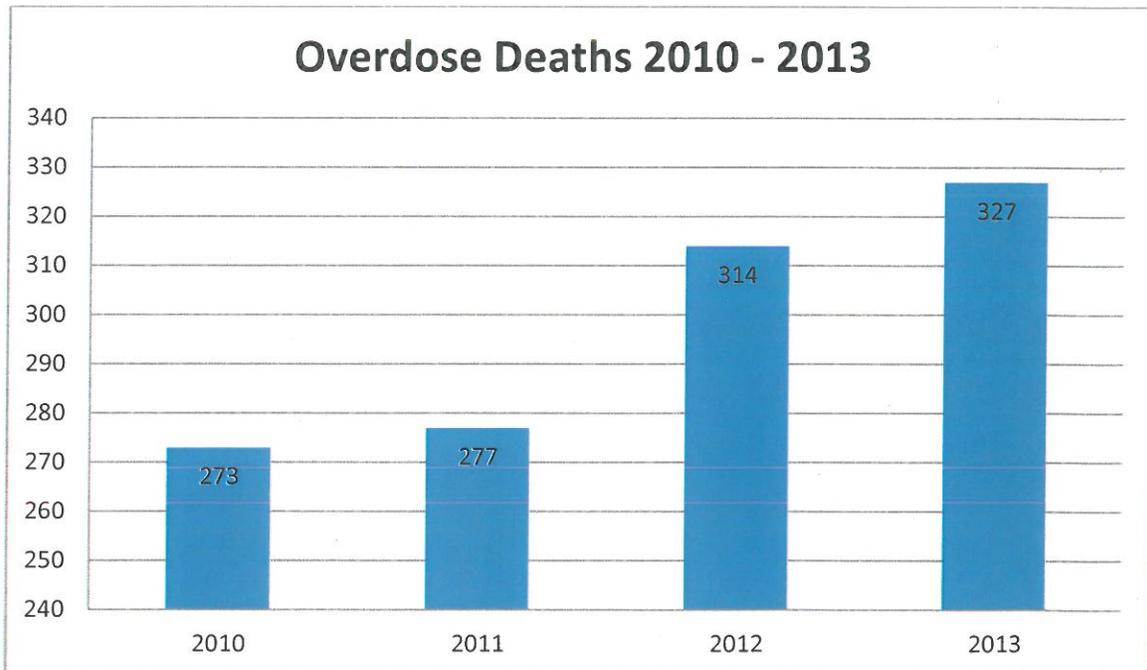
There were 327 deaths attributed to an overdose of either a single drug (165 deaths, 50%) or a combination of drugs (162 deaths, 50%) in 2013. Overdose deaths commonly involved males (58%) between the ages of 50-59 (26%). The majority of these deaths were classified as accidents (87%).

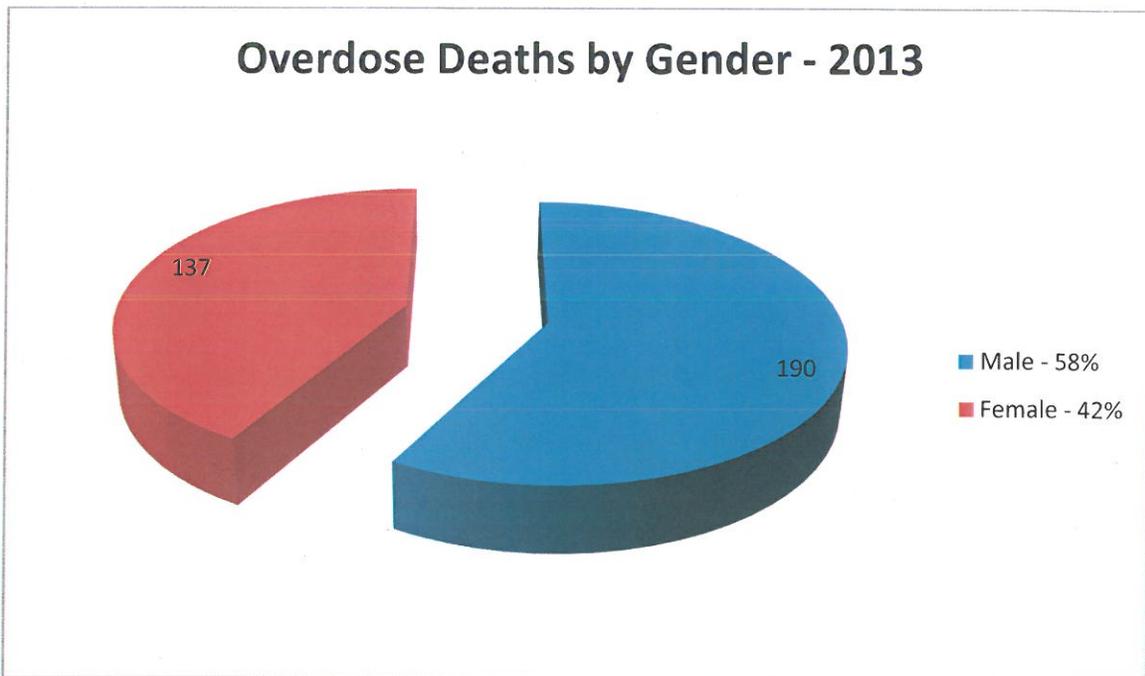
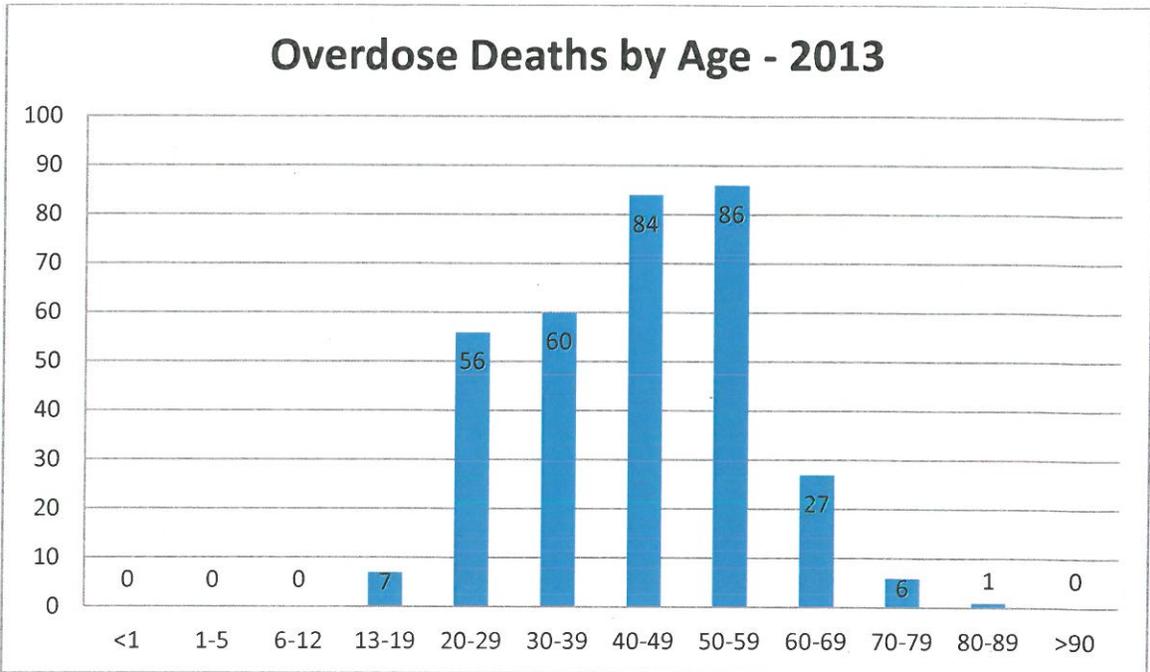
Opiate drugs (heroin, oxycodone, methadone, hydrocodone, morphine, oxymorphone, hydromorphone, tramadol, opiate unspecified) and fentanyl (a synthetic opioid narcotic) accounted for the majority (195) of overdose deaths, either as a single drug or a component of a poly-drug overdose. Methamphetamine was the most commonly abused illicit drug contributing to death in 2013 followed by heroin; both significantly increased in comparison to 2012.

The number of heroin 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.

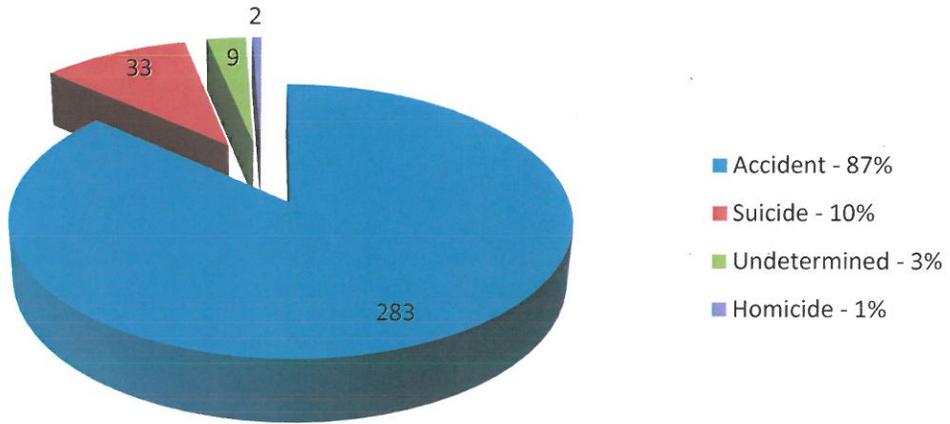
Acute alcohol intoxication alone, not as component of a poly-drug overdose, accounted for 22 overdose (7%) deaths in 2013.

There were two judicial executions by injection of pentobarbital and/or phenobarbital examined at the PCOME in 2013.

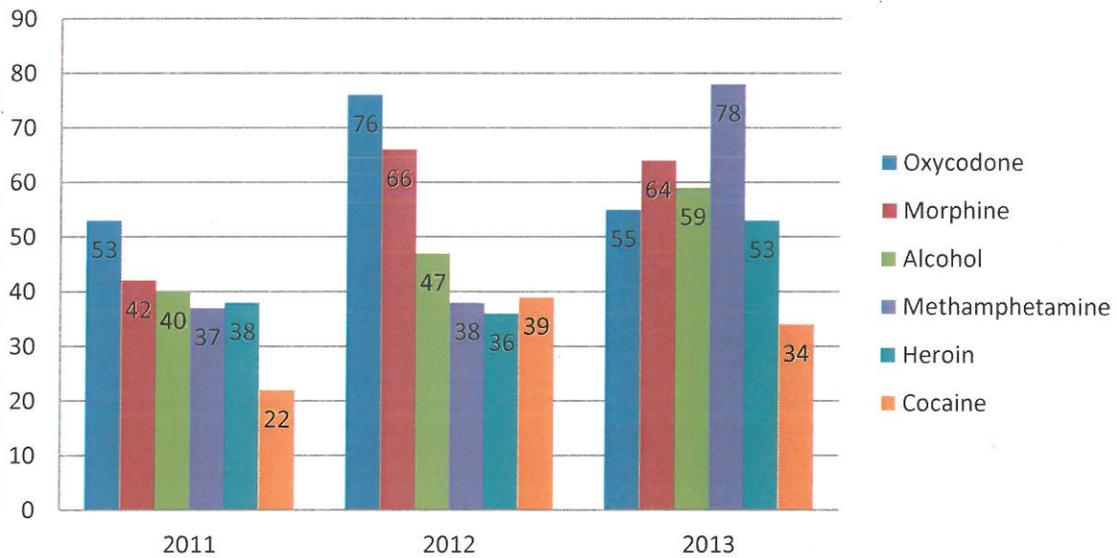


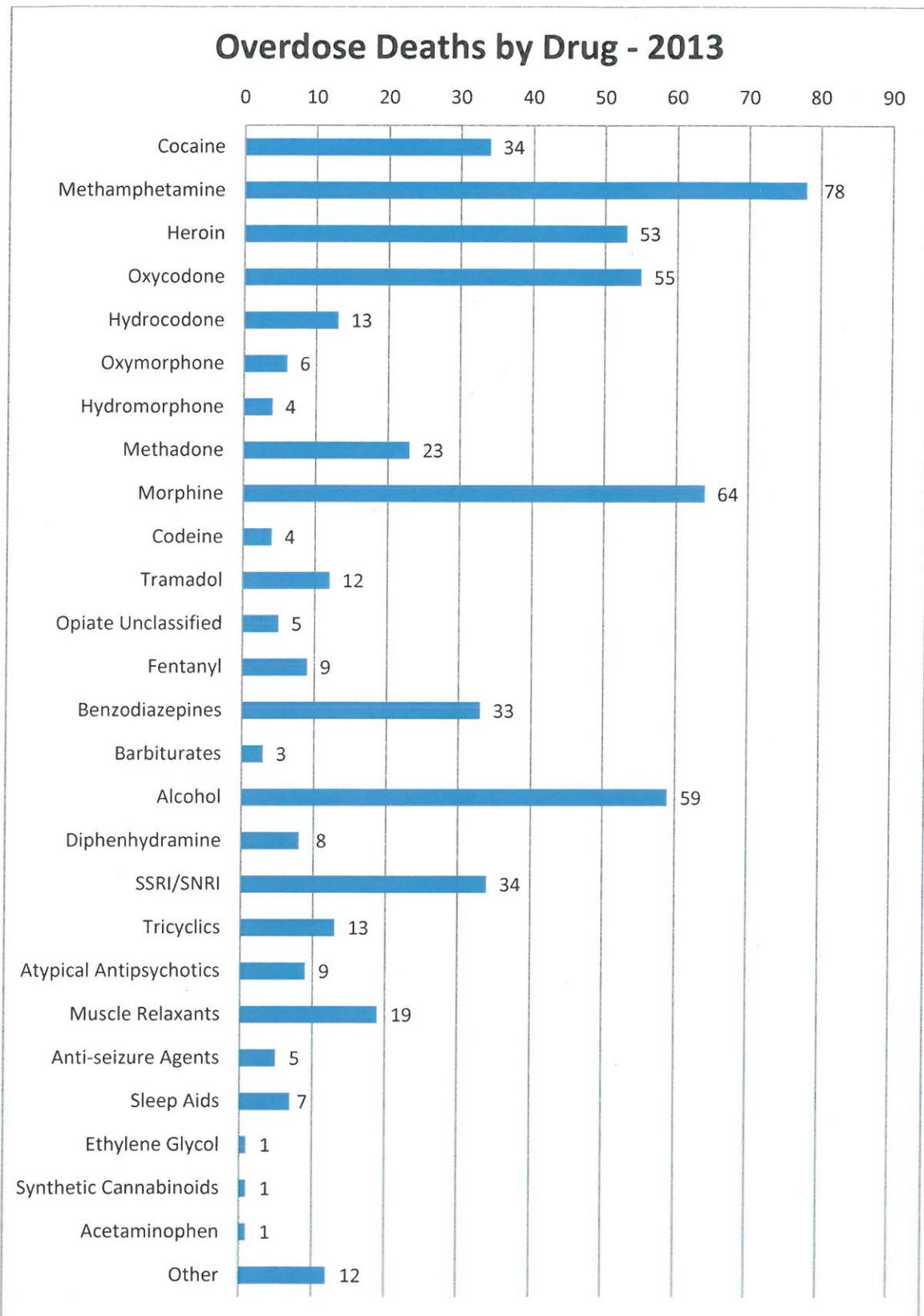


Overdose Deaths by Manner - 2013



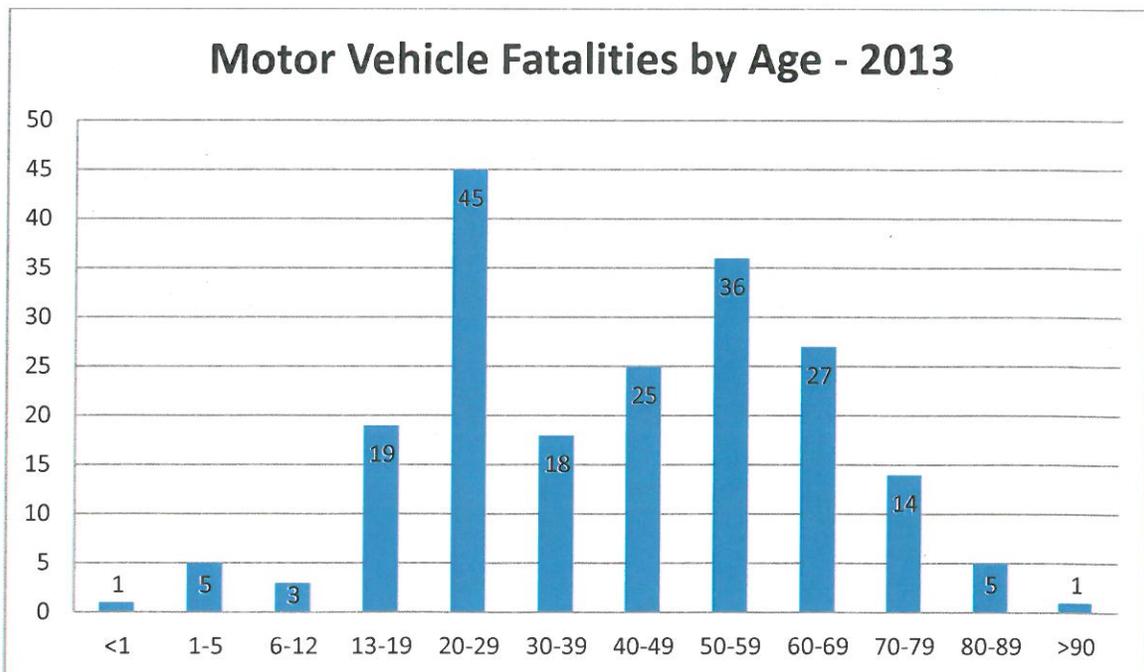
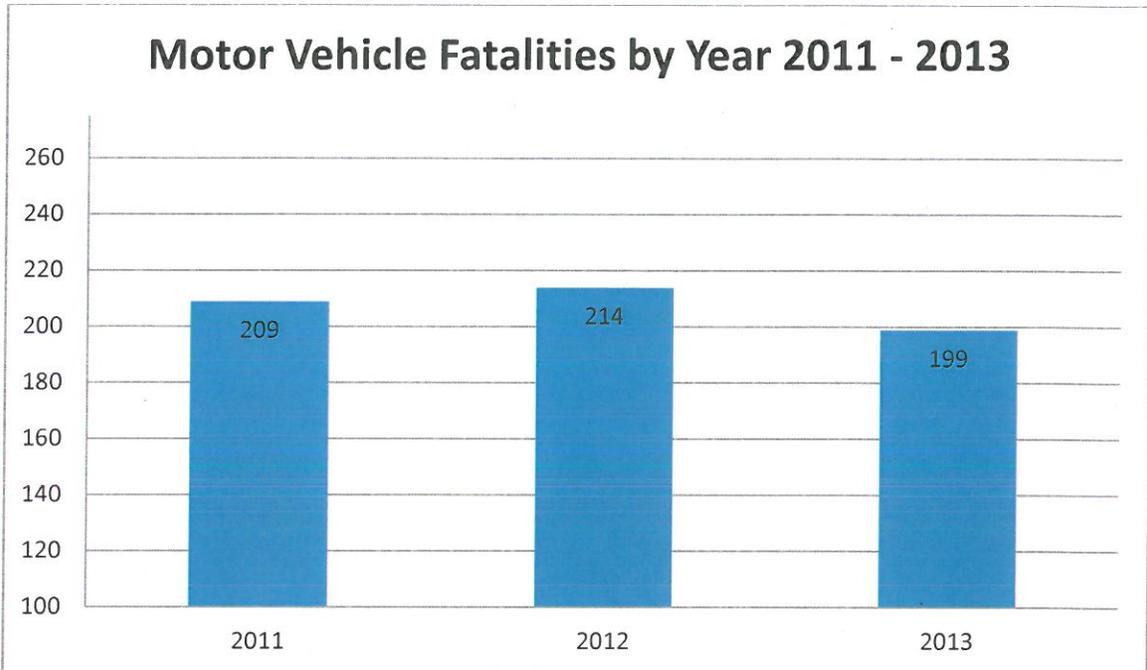
Select Drugs by Year 2011 - 2013



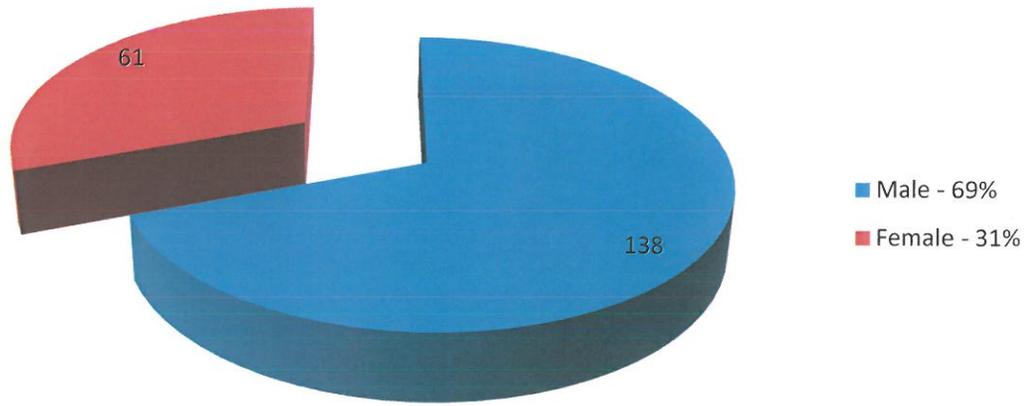


MOTOR VEHICLE RELATED FATALITIES

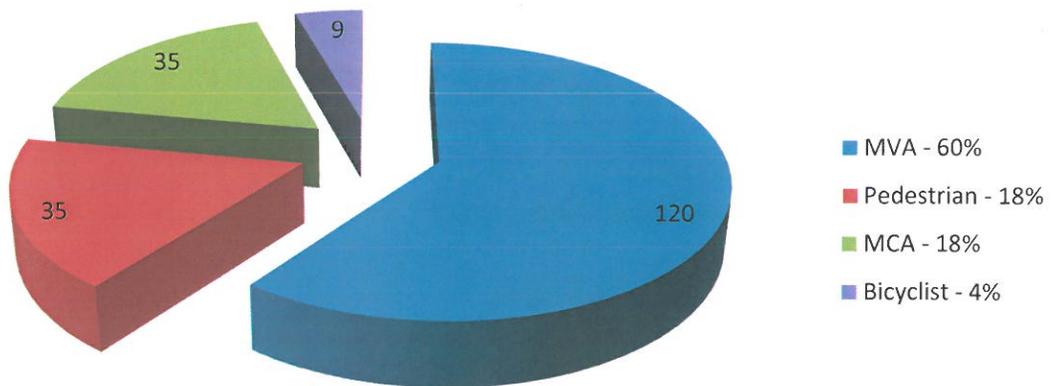
Motor vehicle related fatalities accounted for 199 total deaths in 2013. The majority, 120 deaths, were occupants of a motor vehicle involved in an accident (MVA). Of the remaining, 35 were motorcycle accidents (MCA), and 44 were pedestrians or bicyclists struck by vehicles. Individuals who died from motor vehicle related fatalities were most frequently males (69%) and between 20-29 years of age (23%).



Motor Vehicle Fatalities by Gender - 2013



Motor Vehicle Fatalities by Type - 2013



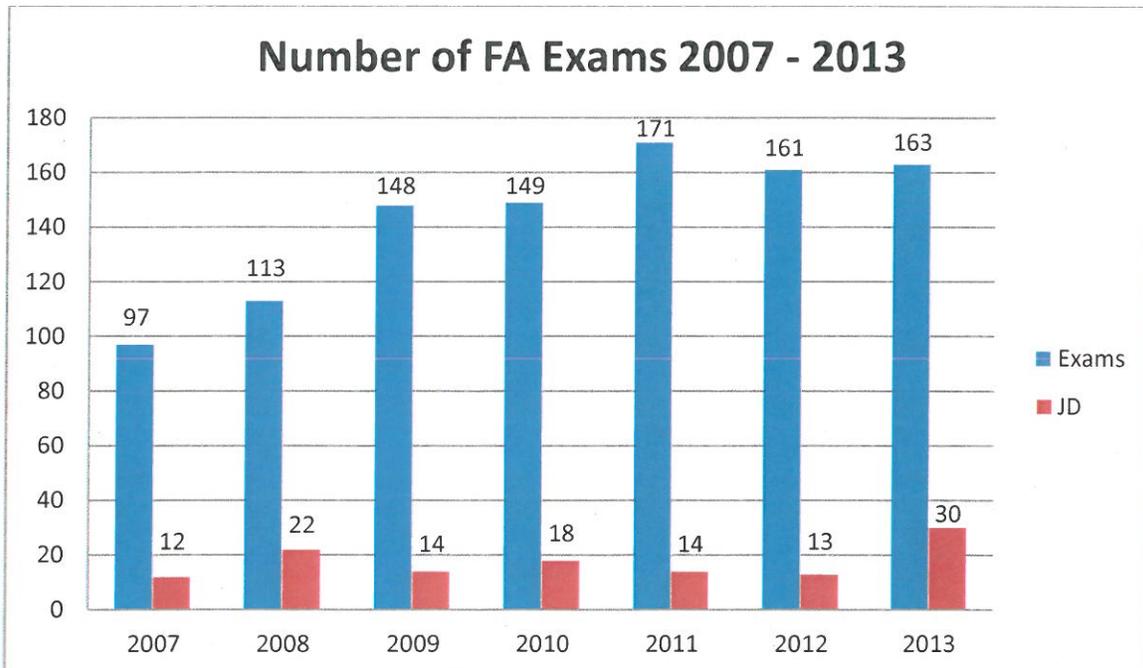


W.H. BIRKBY FORENSIC ANTHROPOLOGY LABORATORY

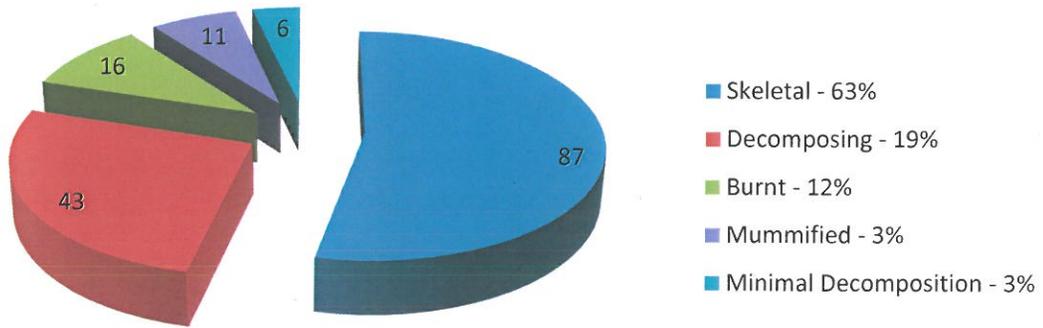
Forensic Anthropologists at the W.H. Birkby Forensic Anthropology Laboratory within the PCOME performed 163 examinations (biological profiles, trauma evaluations, dental examinations and examinations for identification) in 2013 on human remains of forensic significance. An additional 30 examinations were performed on remains ultimately deemed non-human, prehistoric or otherwise not forensically significant and jurisdiction of the remains was declined (JD) in those cases.

The extent of postmortem decomposition of a particular set of remains is important when performing a Forensic Anthropology (FA) examination. Remains examined by Forensic Anthropologists were categorized as minimally decomposed, decomposing, mummified, skeletal or burnt. In 2013, skeletal remains comprised 63% of FA examinations. Four main types of exams are performed; biologic profiles, dental, trauma and identification examinations.

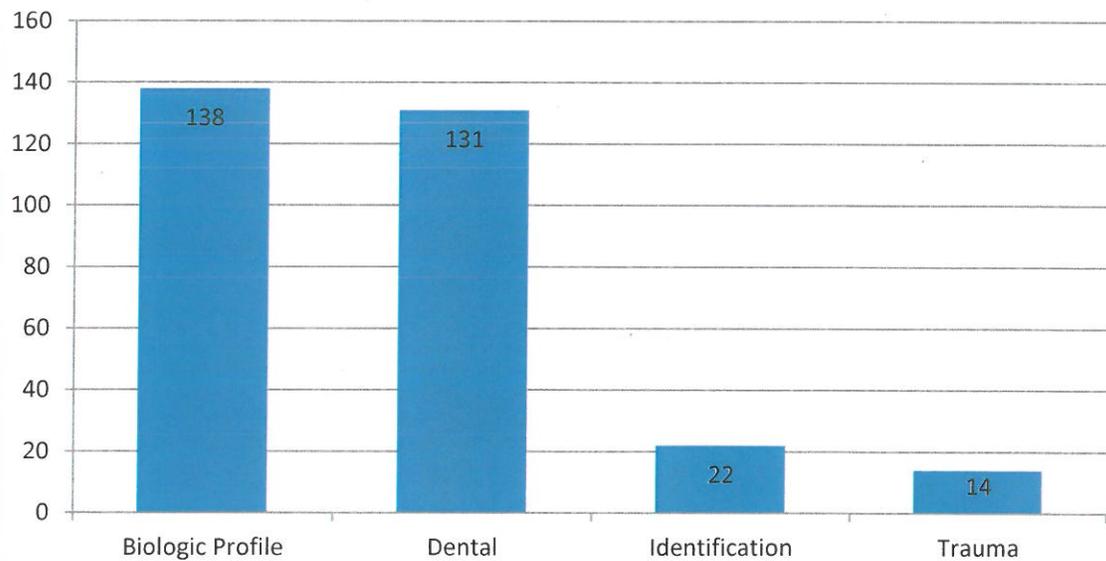
Biological profiles refer to charting, measurements, descriptions, radiographs and photographs taken to estimate sex, age, ancestry, stature and postmortem interval of a set of remains. Dental and identification examinations entail charting, descriptions, radiographs and photographs in an effort to identify an unknown individual or confirm a suspected identity. Trauma examinations entail charting, measurements, descriptions, radiographs and photographs to characterize the nature of an injury, implement used to cause injury to the bone, age of injury, etc. It is common for a particular set of remains to receive more than one type of examination. Most (83%) FA exams include a biological profile with dental examination (79%) when applicable. Less common are examinations for identification (13%) or trauma (8%) with or without biological profiles and dental examinations.



FA Exam by Condition of Remains - 2013



FA Examination by Type - 2013



UNDOCUMENTED BORDER CROSSER (UBC) REMAINS

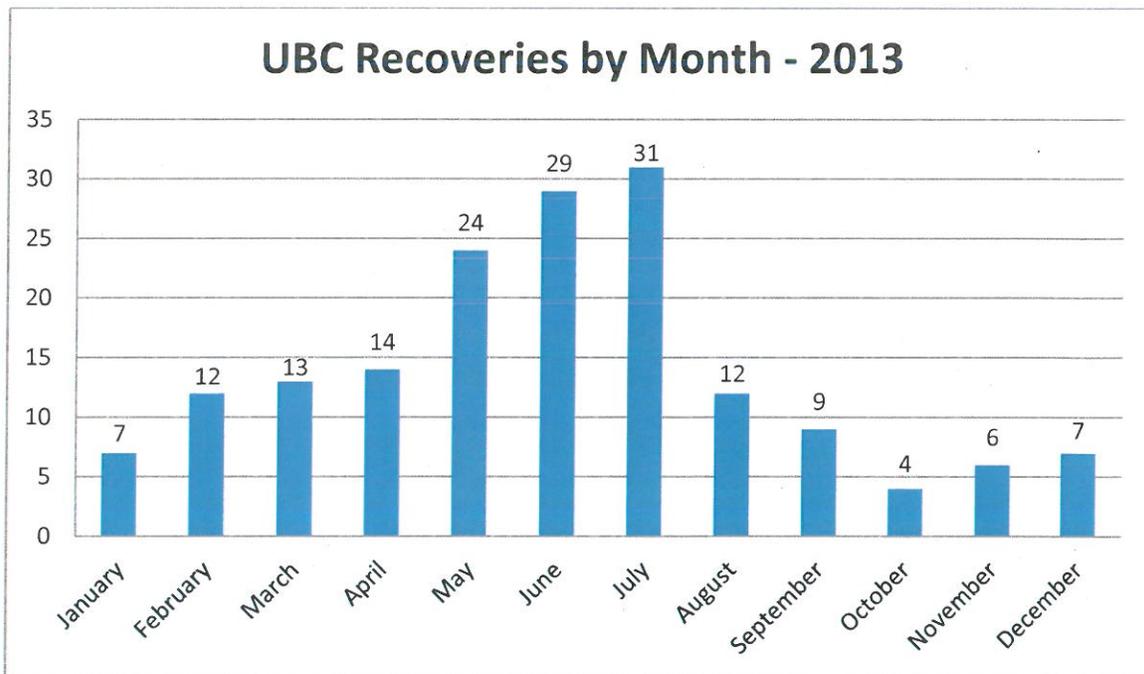
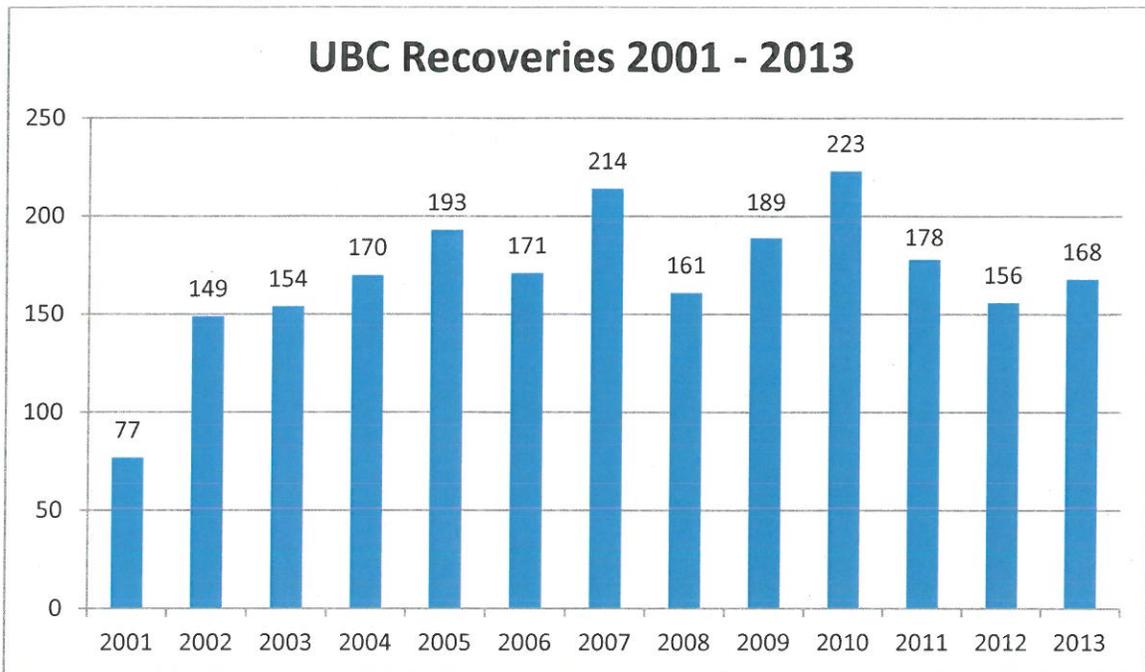
The term ‘UBC’ refers to foreign nationals who die attempting to cross the southern Arizona desert without permission from the United States government. Calendar year 2010 saw the highest number of UBC recoveries (223) recorded at the PCOME as compared to the annual average (177 recoveries per year on average from 2002 - 2013). The PCOME has received 2,203 recovered remains of suspected UBCs since 2001. The recoveries per year are adjusted annually to account for identification of remains initially thought to be those of a UBC that are not, and association of remains found months or years apart later discovered to be that of the same individual.

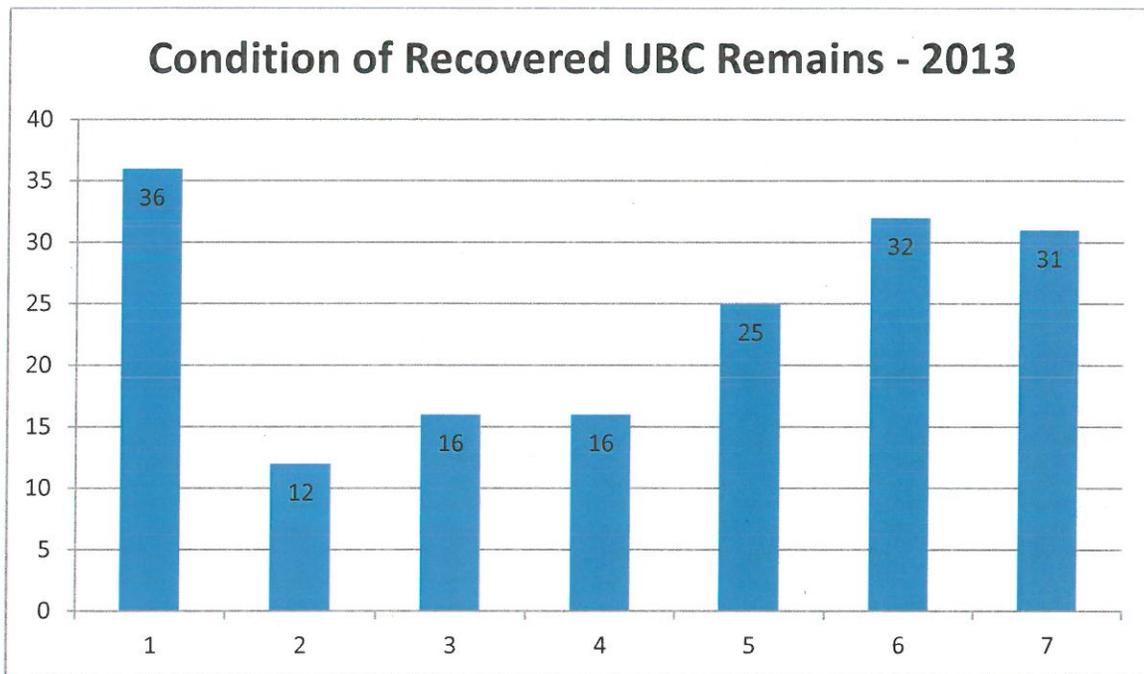
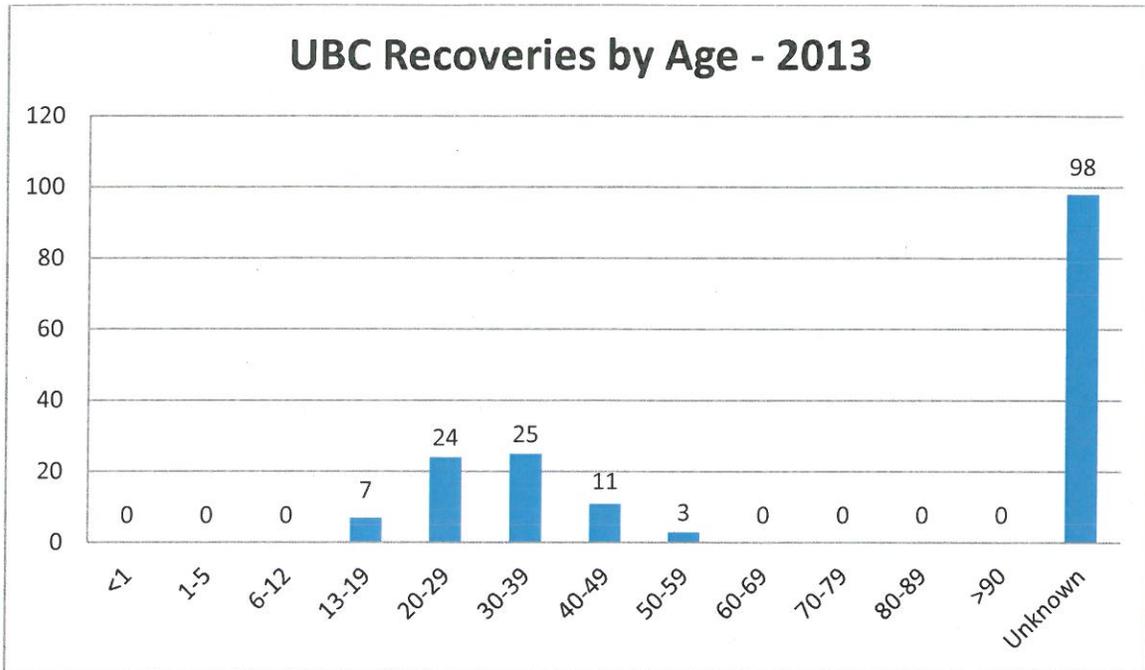
There were 168 UBC recoveries in calendar year 2013. As is the historic norm, UBC recoveries peaked during the summer months (May – August) with 96 recoveries (57% of total for year) in 2013. Many remains are not identifiable due to postmortem changes and efforts by UBCs to obscure their identities. Of the decedents who were identified, 67% (49 deaths) were between 20-39 years of age and 84% (141) were males.

Since the exact date and time of death of found remains are often unknown, PCOME staff determine a ‘postmortem interval (PMI)’, which is an assessment of what period of time elapsed from death to recovery of the remains. A 1-7 body condition scale was developed in 2013 to provide a more objective measure of the PMI. The PMI is an estimate and therefore subject to error. The PMIs for the body condition categories are listed following the Condition of Recovered UBC Remains table on page 31 of this report. In 2013, 36 remains (condition 1) were found within less than a day of death (21%), 44 remains (conditions 2-4) were found with a few days up to a few weeks from death (26%), and skeletal remains (body conditions 5-7) accounted for 88 (52%) of the recovered remains.

The cause of death was undetermined in 63% of cases, primarily due to limitations of examination of decomposed and skeletal remains. Of the remainder, environmental exposure to extremes in heat or cold combined with dehydration comprised 27% of deaths. Other, less frequent, causes of death included gunshot wound injuries (5 cases), blunt force injuries from falls or motor vehicle accidents (7), drowning (1) and a natural death (1).

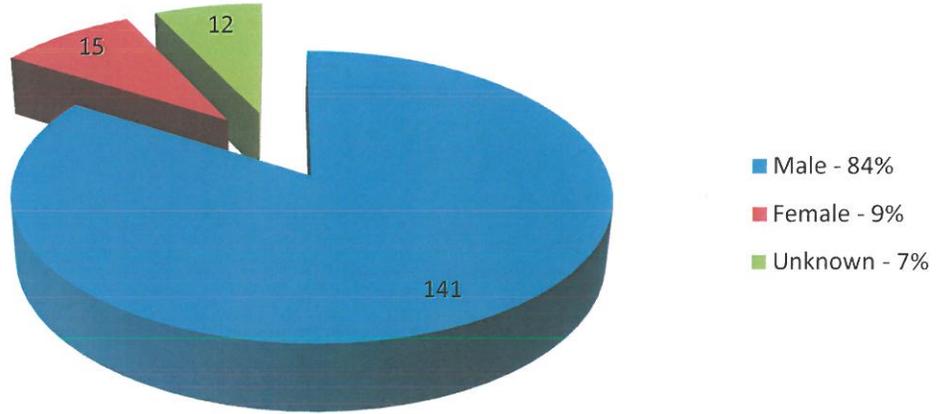
In 2013, 61 (85%) of identified UBCs were of Mexican nationality, followed by Guatemalans (7, 9%), identified decedents of uncertain nationality (3, 4%) and one Colombian. Since 2001, identified UBCs of Mexican nationality have been the most numerous (1,248, 85%), followed by Guatemalans (105, 7%) and Salvadorans (39, 3%). Of the 2,203 decedents since 2001, 1,463 (66%) have been identified, 281 (13%) by DNA comparison to a family or law enforcement reference sample. As of December 31, 2013, 740 decedents remain unidentified.



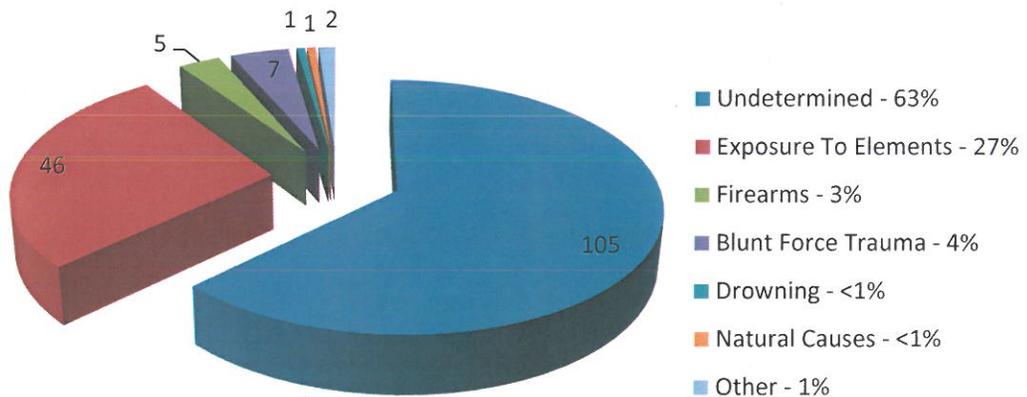


- 1 – Fully fleshed (PMI < 1 day)
- 2 – Decomposed (PMI < week)
- 3 – Decomposition with focal skeletonization (PMI < 3 weeks)
- 4 – Mummification with skeletonization (PMI < 5 weeks)
- 5 – Skeletonization with articulation/ligamentous attachments (PMI < 3 months)
- 6 – Complete skeletonization with disarticulation (PMI < 6-8 months)
- 7 – Complete skeletonization with bone degradation (PMI > 6-8 months)

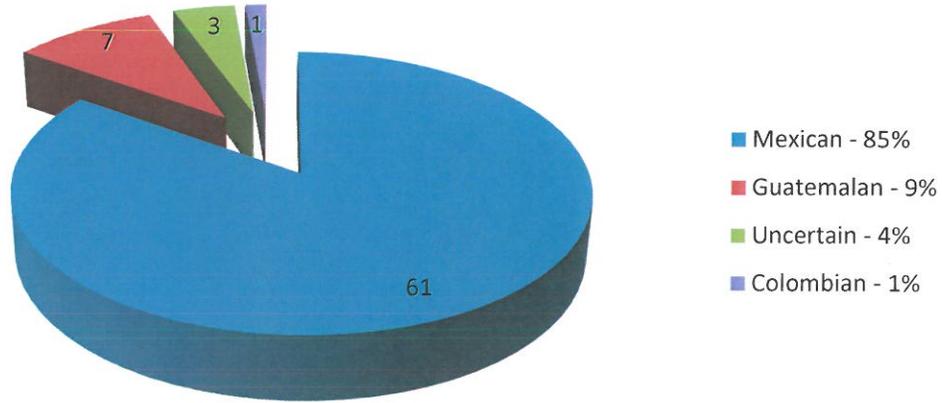
UBC Recoveries by Gender - 2013



UBC Recoveries by Cause - 2013



Identified UBC Recoveries by Nationality - 2013



Identified UBC Recoveries by Nationality 2001 - 2013

