San Diego County

Department of the Medical Examiner

2010 Annual Report

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OVERVIEW AND INTRODUCTION

This Annual Report is a summary of the activities of the San Diego County Medical Examiner for the calendar year 2010. It is designed to provide an overview of victim characteristics, frequency, cause and location of deaths in the county, using graphs, charts, maps, and tables. In addition, we highlight some of the many activities we participate in to give back to the community and to keep other agencies informed. A goal of this report is to describe in detail many aspects of our mandated day-to-day activities in order to shed some light on what is often misunderstood and shrouded in misperception: the functions and responsibilities of the San Diego County Medical Examiner.

The report is divided into three major sections: 1) and **introduction and overview**, 3) the **activities** of the Medical Examiner Department, and 3) the **data** describing the types of deaths in San Diego County.

DEDICATION, MISSION, AND VISION

DEDICATION

Although this report deals with numbers and statistics, we acknowledge that every case represents an individual's death, mourned by family and loved ones. This report and the work that is summarized are dedicated to those we serve: to the persons, living and deceased, who have passed through our doors, to their families, and to the people of the County of San Diego.

MISSION

Our mission is to promote safe and livable communities by certifying the cause and manner of death for all homicides, suicides, accidents and sudden/unexpected natural deaths in San Diego County. In addition, our mission is to provide related forensic services, assistance and education to families of the deceased, as well as to public and private agencies, in a professional and timely manner.

VISION

We are committed to working as a team to meet the needs and expectations of our customers by fulfilling our mandated mission in a professional, compassionate, ethical, and timely manner.

INTRODUCTION FROM DR. GLENN WAGNER

Welcome to the San Diego County Medical Examiner's Office report on its 2010 activities. The statistics and scope of activities reflect ever changing patterns of disease and trauma in public health and safety within our community. The scope of activities of the Medical Examiner's Office is largely based on Government Code 26491 which states that all unnatural deaths including homicides, suicides, accidents, deaths in custody are by definition coroner/medical examiner cases as well as infectious diseases reaching epidemic proportions, deaths in state institutions, and deaths believed to be natural but sudden and unexpected where the decedent has not seen their health care provider in the last 20 days of life. For San Diego County with a land mass of 4,200 square miles, 90 miles of border, 70 miles of coastline, and a diverse geography including deserts, mountains, forests, mesas and coastal areas and an equally diverse population of some 3.2 million with between 19,000-21,000 deaths recorded each year, the Medical Examiner's Office investigates some 10,000 cases annually or approximately 840 cases/month.

Not all of those cases are brought to its new 55,000 square foot facility in Kearny Mesa at the County's Operations Center. Approximately 7,400 cases reported and investigated by the Medical Examiner's Office are ultimately waived as sudden unexpected natural deaths. In these cases, the decedent's healthcare provider will sign the death certificate. Some 3,000 cases are brought to the facility for further evaluation with a relative constant proportion of cases. For 2010, we saw 36% natural deaths (heart attacks, cancer, diabetes, strokes, liver and kidney failure), 45% accidents (prescription drug, motor vehicle, industrial/agriculture, home based), 14% suicides, 3.3% homicides and 1.2% undetermined.

Largely based on its geographic position and diverse population, the Medical Examiner's Office investigates the deaths of some 200-300 John and Jane Does representing a population composed of illegal immigrants, homeless, individuals living under an alias, or simply dying without identification. Using photographs, fingerprints, dental records, general X-ray comparison, personal effects, and DNA testing, the nationally acclaimed John/Jane Doe Center identifies approximately 97% of its John and Jane Does. The Medical Examiner's Bereavement Center, also nationally acclaimed, brings together a large number of community resources to assist the families of decedents falling with the scope of the Medical Examiner's Office.

It is the intent of the Medical Examiner's Office to be more than the "County Morgue" by developing as much information on every case as resources permit and to study those cases in cohorts that reflect or are likely to reflect changing patterns important to public health and safety as well as risk factors for premature accessions.

The dead do have a story to tell – not only of death but life, and we, the living, have an obligation to listen to that story and perhaps, just perhaps, learn something about ourselves and our community.

Glenn N. Wagner, D.O.

Chief Medical Examiner

POPULATION AND GEOGRAPHY OF SAN DIEGO COUNTY

The County of San Diego is the fifth most populous in the United States, with a population greater than 20 of the 50 states. The total population of the county has grown at a rate between 1-1.5% per year. Nearly half of the more than 3 million people who live in the county reside within the city of San Diego, with the remainder in smaller cities and towns, reservations, or unincorporated areas. Most of the urban regions are concentrated along the coast and freeway corridors, while there are many rural areas and large expanses of undeveloped open terrain in the eastern portions of the county.

San Diego County is unique in its geographic diversity. Our area of 4,526 square miles includes 70 miles of coastline and 86 miles of the U.S.-Mexico international border. The county includes impressively diverse features such as forested mountains, deserts, beaches, bays, wetlands, rivers, lakes, canyons, and mesas. These natural features are, of course, an important part of understanding the variety and range of sudden and unexpected deaths in our community.

With such variety, the county has numerous microclimates. As a whole, we have an average annual high temperature of 70°F. While coastal areas have one of the mildest climates in the continental United States, inland areas experience more variety: in the summer, some areas may experience temperatures above 100°F, or, the winter may have temperatures falling well below freezing.

The San Diego County Medical Examiner deals with many deaths of the types expected in any jurisdiction with a large urban and rural population, such as those from motor vehicle accidents, natural causes, alcohol or drug-related causes, or homicidal violence. In addition, the great variety of terrain, microclimates, and geography result in an even wider range of cases seen at our office.

Temperature extremes, in combination with the rugged terrain of many inland areas, are strongly tied to the deaths of undocumented persons crossing the U.S.-Mexico Border. Elevated temperatures may lead to dehydration or hyperthermia; low temperatures may lead to hypothermia; and in any season, the terrain may lead to exhaustion or getting lost. Proximity to the international border also increases the numbers of cases of less-common infectious diseases, particularly tuberculosis.

Drownings may occur in our oceans, lakes, or rivers, as well as swimming pools. In addition to swimmers, drownings may involve scuba divers, persons trapped in flooding waters, or those involved in boating accidents. Because of our thriving seaport, the Medical Examiner may also have jurisdiction on deaths occurring on a boat or ship at sea when it makes port. Deaths involving attacks by marine life do occur, but are extremely rare, averaging less than one every 20 years.

Deaths due to falls may occur in urban areas from buildings, from our local bridges, or from mountain and beach cliffs. Cliff collapses have contributed to other deaths as well.

The variety presented by our unique environment is ever-growing and always challenging. The size of our jurisdiction, and its numerous remote areas, can be an obstacle for responding to a death scene and retrieving remains, much less providing a thorough death investigation. Nonetheless, your San Diego Medical Examiner's Office rises to that challenge.

DEATHS WE INVESTIGATE

Under California law (Government Code Section 27491 and the Health and Safety Code 102850) the Medical Examiner is both required and empowered to determine the cause and circumstance (manner) of certain deaths. In general, deaths of a sudden and unexpected nature and those related to any type of injury or intoxication must be investigated by our office. These include deaths that are obviously due to trauma (such as motor vehicle related fatalities) and deaths known or suspected to be due to drug or alcohol intoxication. In addition, if an injury or intoxication merely contributes to the death - even in a small way - or is suspected to have contributed to death, the death falls under our jurisdiction. This applies when an individual dies of complications of a prior injury, even if that injury occurred many years ago.

Each death is assigned a Medical Examiner Investigator, who will go to the location of the death, interview family and friends, and obtain medical records, providing a synopsis of the circumstances surround the death. A postmortem examination (autopsy) is conducted by a physician specializing in forensic pathology in order to determine the cause of death, and a death certificate will be completed. This examination normally occurs within three days of our receipt of the decedent's body. Our forensic pathologist staff will assess whether an autopsy and/or laboratory tests are required as part of the examination. Autopsies are required in approximately 75% of the cases we examine. In the others, an examination of only the external surfaces of the body is performed and the death can be certified by investigation and review of the medical history. If we do not require an autopsy for our official purposes, the legal next-of-kin may request that we perform one at his/her expense.

While we try to accommodate all the wishes of family members and the decedent, occasionally the circumstances of the death necessitate that an autopsy be performed despite the oppositions of the family or the decedent. Common reasons include the involvement of a law enforcement agency, mandates specified in California Law, and our legal obligation to investigate deaths under our jurisdiction.

HISTORY

The San Diego County Medical Examiner's Office was established as the County Coroner with the creation of the County in 1850. Initially led by San Diego's first coroner, John Brown, the office had 27 different coroners throughout its history until the County converted to a Medical Examiner system in 1990. The major difference between the two systems is that a Medical Examiner must be a physician, specifically a forensic pathologist, while a coroner can be a lay person and is traditionally elected. Despite being a stand-alone department within the County, we are an active partner with all of the law enforcement agencies serving the San Diego community, including the District Attorney, the San Diego Sheriff's Office, the San Diego Police Department, and the other law enforcement agencies in the County.

For the first hundred years of our existence, we performed the administrative aspects of the department in what was then the County courthouse and various offices downtown (including the Spreckels Building and the Land Title Building, which is now where the NBC Building stands) and performed examinations at various local mortuaries. All functions were consolidated under one roof on April 1, 1957 at the now nonexistent 3322 Congress Street in Old Town, close to the current Old Town Transit station. Our first toxicology laboratory was operational the following year.

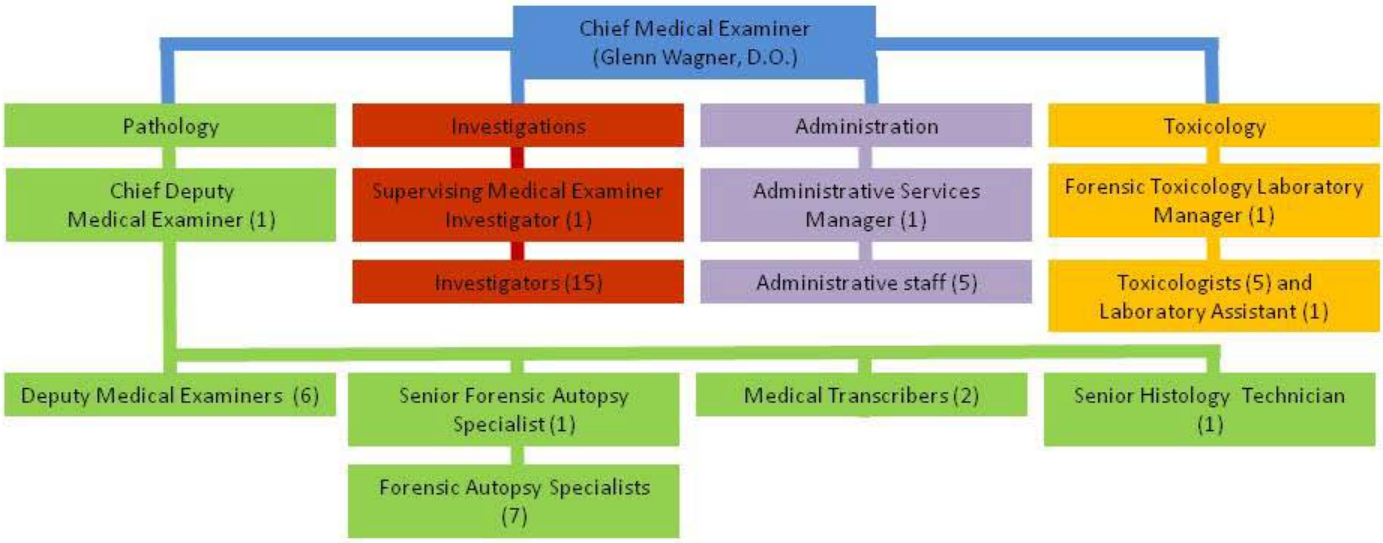
1963

2009

In October of 1963 we moved into Building 14 at the current County Operations Center (COC) in Kearny Mesa. We remained there for the next 46 years, undergoing several expansions.

In December 2009, we moved into our brand new, state-of-the-art facility at the COC, more than tripling our space and our capacity for future growth. Building 14 was demolished in early 2010 for a multi-story parking structure as part of a larger project of redesigning the entire COC.

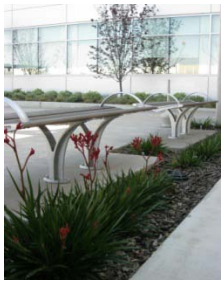
San Diego County Medical Examiner Organizational Chart



NEW BUILDING

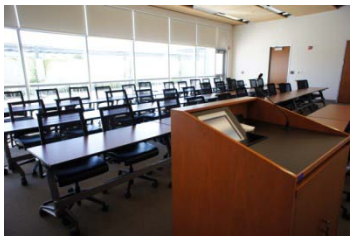
In December of 2009, we moved into our new, state-of-the-art facility at 5570 Overland Avenue, Suite 101 in Kearny Mesa. It is the third building which has housed all the operations of the Medical Examiner's Office since 1957.

Our newest building represents the first completed structure of the larger project of redesigning and updating the entire County Operations Center. It is a two-story building encompassing 83,000 square feet, tripling our office space and storage capacity, and giving us the capability to handle certain types of mass casualty incidents on site. Although we are the single largest tenant of the building, we share the building with Environmental Health Vector Control, the Hazardous Incident Response Team (HIRT) and the County Veterinarian.



We proudly achieved a LEED (Leadership in Energy and Environmental Design) Silver certification. This is a rating based on an evaluation of the environmental performance of the whole building over its life cycle and emphasizes the commitment the County has to the environment. Among the improvements is the use of natural light throughout the building, most notably in the examination areas where a bright, natural lit area is essential to detailed forensic procedures.

In addition to an upgraded work environment, we now have several shared conference rooms equipped with the latest audio-visual technology, advanced instrumentation in the toxicology laboratory allowing for additional methodologies, and a combination fluoroscope and digital X-ray system with 3-dimensional reconstruction and vascular imaging capability. These advances, among others, are part of the overall strategy to develop a viable regional forensic science complex that will have the capabilities to address the anticipated county needs for the next several decades.

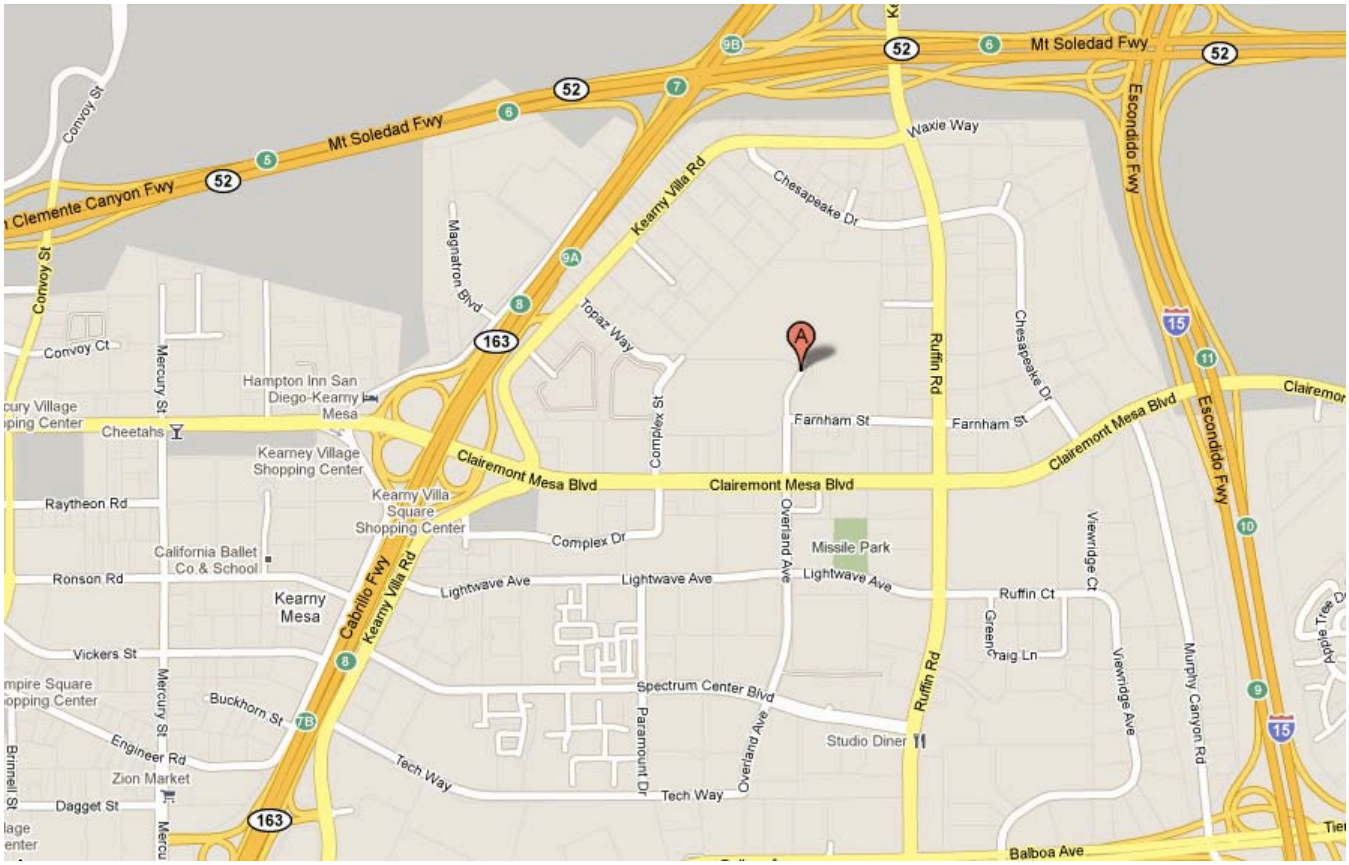


HOURS AND LOCATION

The Medical Examiners office is located at the County Operations Center in the Kearny Mesa neighborhood of San Diego. In December of 2009 we moved to our new address at:

5570 Overland Ave.
Suite 101
San Diego, CA 92123

leaving our 46 year old facility to make way for a multilevel parking structure.



We conduct operations year around, 24-hours a day, but are open to the public weekdays between the hours of 8:00 AM and 5:00 PM. Our main telephone line is 858-694-2895.

ACTIVITIES OF THE MEDICAL EXAMINER

In the "Activities" section of the report, we discuss the general process of death investigation from the examination of the death scene to the certification of death, as well as other non-mandated activities in which the CME is involved.

In addition to death investigation, the CME conducts or participates in numerous activities that support our own mission as well as that of other local, state, and federal agencies and institutions. Those activities include distributing reports, sharing data, teaching on multiple levels, working to identify unknown deceased, providing legal testimony, participating in research, and providing court testimony, among others. This section will discuss each of these activities and more to show the impressive span our office covers, especially for such a small department.

INVESTIGATIONS

Medico-legal investigations are completed in a professional, ethical and timely manner and they are geared to assist in the determination of the cause and manner of death. This is accomplished through the continued cooperation between the law enforcement agencies, health care professionals, and the public.

The initial phase of the process typically starts with a report of death. In 2010, Investigators processed 10,101 reports of death; Medical Examiner's Jurisdiction was invoked in 2,718 (27%) of those reports.

Investigators physically respond to the majority of the death scenes falling into the Medical Examiner Jurisdiction. In 2010, we responded to 1771 scenes (65%). An initial body and scene assessment is completed at the place of death, which can be virtually anywhere in the 4,261 square miles of San Diego County. Photographs are taken and relevant evidence is collected in order to assist in the investigation. The evidence may include weapons, biological specimens, medications, drugs, and drug paraphernalia. All the investigations are completed with a methodical and systematic approach and all the findings are documented in a comprehensive investigative report.

The Medical Examiner's investigators are the ones with the difficult task of notifying the next of kin of the death. The process starts with the identification of the decedent – arguably one of the most important duties of our office. Methods for identification may range from fingerprint and dental comparison to DNA comparison in some cases. This is a multidisciplinary approach which involves other county agencies. The process continues with a diligent search of the decedent's family, with which the Medical Examiner's Office has a high rate of success. (see John/Jane Doe Center for more information)

Those that die suddenly or unexpectedly often die with valuables – both monetary and sentimental – in their possession. The importance of ensuring that these items make their way to the next of kin cannot be underestimated. Often, the retention of the decedent's personal property is of the utmost importance to the next of kin. We take this responsibility seriously, accurately tracking and recording the chain of custody until the property is returned to the family.

When a death occurs at home, that person may leave behind many medications, many of which are often controlled substances. As part of our investigation we collect and inventory all of the decedent's prescription medications at the scene. This serves three functions. First, we can inventory the pills remaining and based on the dosage and dates gain an understanding as to

whether there was medication overuse or non-compliance. Second, medications can give clues to an individual's medical or social history, and provide names of prescribing physicians who may know critical information about the person's history. Lastly, we take the medications out of the home, eliminating the possibility of inappropriate use by other members of the household (especially children) as well as the possibility that the medications will become part of illegal trafficking. Disposal of the medications occurs at regular intervals after a period of secure storage.

Medical Examiner investigators discuss the circumstances of the death with the decedent's family; interviews are conducted at the scene; and additional statements are obtained from witnesses, the treating physician and responding emergency personnel. They offer the family free support through our Bereavement Center. Follow up investigations is required in many cases which involves review of medical records, police reports and traffic accident reports.

The Medical Examiner Investigators are the front line for our office – the eyes and ears of the Medical Examiner. Their caring attitude, compassion, professionalism, and objectivity allow our office to conduct thorough and accurate death investigations while at the same time help ease the difficult time the family will have during their time of grief.

AUTOPSIES

Nearly 2,000 autopsies are performed each year and serve as a critical component used by the Medical Examiner to determine a decedent's cause and manner of death. The autopsy consists of both an external and internal examination of the body. Externally, the condition of the body, evidence of medical intervention, scars, tattoos, injuries, and any other external marks are noted. Internally – through surgical incisions across the chest and abdomen and across the top of the head – the organs of the head, torso, and any other necessary aspects of the body are thoroughly examined individually, removed, sectioned, and a biopsy taken for possible further microscopic examination. During the examination, specimens for possible toxicological testing are collected, which may include blood, urine, liver, vitreous (eye) fluid, stomach contents, and other portions of body fluids or organs. Digital photographs may be taken at various points to document certain findings or lack of findings.

One of the main misconceptions is that the body is not suitable for viewing in a funeral after the procedure. This is far from true. In fact, the changes made during an autopsy are easily hidden by a mortuary so that the individual can be viewed by loved ones.

In 2010, 1851 of the 2718 individuals examined at the Medical Examiner's Office, had an autopsy performed. Of the 1851 autopsies, 152 were performed by pathology residents under the direct supervision of a board certified pathologist. The remaining 867 individuals had sufficient history and known circumstances to be certified without autopsy based on the investigation and external examination of the body alone.

Decedents who do not fall under the Medical Examiner Office's jurisdiction, or in whom an autopsy is not necessary to determine the cause of death, may have an autopsy requested and paid for by the decedent's next of kin. In 2010, the San Diego County Medical Examiner performed 23 family requested autopsies.

It has been said that the body is the only unbiased witness to the death. It is our office's responsibility to hear what that body is saying, speaking for the dead in a way, so that loved ones can receive closure, light can be shed on a criminal investigation, and vital statistics can be gathered for the community at large.

PATHOLOGY

The Pathology Division is composed of eight pathologists that include the Chief Medical Examiner (CME), Chief Deputy Medical Examiner (CDME), and six Deputy Medical Examiners (DME's). Each of the pathologists has received a medical degree, trained in anatomic pathology, and subsequently trained in the medical subspecialty forensic pathology. Some have also received training in clinical pathology and one has trained in neuropathology. All of the pathologists have been certified by the American Board of Pathology (ABP) in their respective areas of training, meaning that they have been deemed to be appropriately trained and have passed the corresponding nationally-administered examinations.

Training and education is an integral part of the pathology division. In doing so, medical students and pathology residents are trained and educated in autopsy pathology. The pathologists have faculty appointments with the Department of Pathology at the University of California, San Diego (UCSD) School of Medicine. Residents from both UCSD and the Balboa Naval Hospital rotate with and are trained by the pathologists.

Lastly, the Pathology division trains one forensic pathology fellow per year, while funding is available. The fellow is a pathologist who has completed training in anatomic or anatomic and clinical pathology, and wishes to sub-specialize in forensic pathology. Following the fellowship training, the fellow is expected to take the annual ABP administered forensic pathology examination along with the other fellows from around the country. A fully grant funded position will be available and has been filled for the two upcoming academic years of 2011-12 and 2012-13.

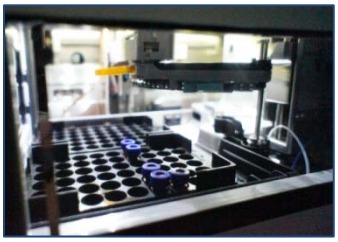
TOXICOLOGY LABORATORY REVIEW

Forensic toxicology provides a comprehensive drug testing service in medico-legal death investigation. The laboratory offers routine testing for alcohol and simple volatile compounds, drugs of abuse (cocaine, amphetamines, opioids, benzodiazepines, fentanyl and cannabinoids), as well as many therapeutic agents and poisons. This cases work translates into about 30,000 tests annually. Currently the laboratory is staffed by a laboratory manager, five toxicologists and a laboratory assistant.

2010 was the first year of operations in our new facility. The new laboratory together with the new instrumentation resulted in the need for some new approaches and new methodologies for our work in the forensic toxicology laboratory. Such developments will continue for the next several years.

MAJOR ACHIEVEMENTS

A mid-cycle review resulted in continued accreditation by the American Board of Forensic Toxicology (ABFT). The laboratory has now been fully accredited since 2005.



The introduction of new services for the routine biochemical testing for vitreous chemistries and electrolytes (glucose, urea, creatinine, sodium, chloride and potassium) was an immediate bonus for the laboratory. On average about 10-15 cases are now screened on a weekly basis for markers of untreated diabetes and electrolyte imbalances. These services were previously sent out to reference laboratories which were an added expense to the laboratory's already stretched budget.

A new method utilizing gas chromatography with headspace technology was also developed for volatile compounds. This technique has proven very useful in detecting compounds involved in inhalation, exposure and fire deaths.

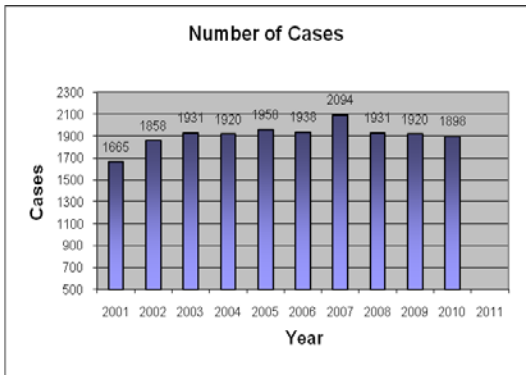
Analytical methods for alcohol and simple volatiles were also re-developed to utilize hydrogen gas in place of expensive bottled helium. The hydrogen gas is generated in the laboratory from purified water at essentially no cost to the laboratory. At the same time, the redeveloped procedure has proven to be faster, more sensitive and more accurate.

WORKLOAD DATA FOR 2010 IN COMPARISON TO PREVIOUS YEARS

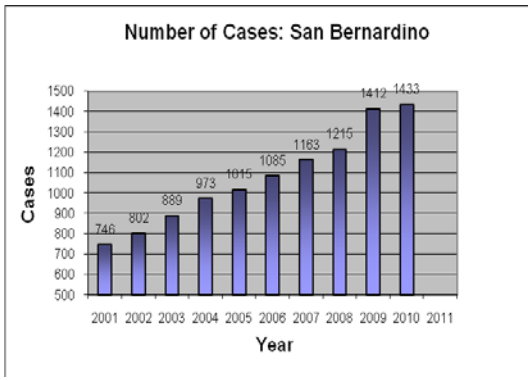
The forensic toxicology laboratory performs testing for the San Diego county Medical Examiner and, under contract, for the San Bernardino Coroner.

As the data illustrates below, the number cases examined were essentially the same compared to the previous year. A total of about 3,330 cases each year. However, there was an increased complexity of testing requested. There were increased requests for the monitoring of therapeutic drugs, vitreous chemistries and volatile screens in cases from both San Diego and San Bernardino.

San Diego Medical Examiner:

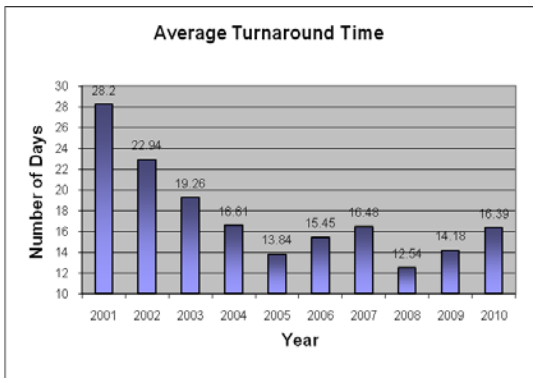


Contracted services for the San Bernardino Coroner:



The average turnaround times (shown below) for the completion of cases increased slightly. The average turnaround time increased from 14.18 to 16.39 days (15% increase) for the San Diego Medical Examiner, and from 16.12 to 18.02 days (12% increase) for the San Bernardino coroner. This is most likely a result of the greater complexity of tesing requested, and the loss of a toxicologist position during the year.

San Diego Medical Examiner:



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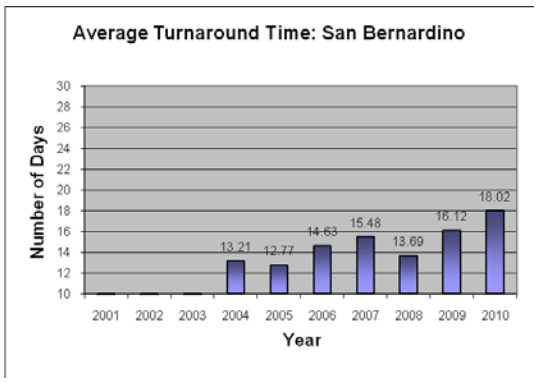


PUBLICATIONS

Cantrell, F.L., Nordt, S., McIntyre, I.M. and Schneir, A. "Death on the Doorstep of a Border Community- Intentional Self-Poisoning with Veterinary Pentobarbital." Clinical Toxicology, 48 849-850, 2010.

"County toxicology lab stands out"
by Morgan Cook of the North County Times-The Californian

http://www.nctimes.com/news/local/sdcounty/article_8ffcd5d7-47ca-5c39-afc1-ef1ad2ae83c6.html

"County improves disease screening: Toxicology lab hones test for diabetes, kidney failure"
by Morgan Cook of the North County Times-The Californian

http://www.nctimes.com/news/local/sdcounty/article_4a2b3053-ca9d-5f8e-b558-2f91a00f3d91.html

DEATH CERTIFICATION

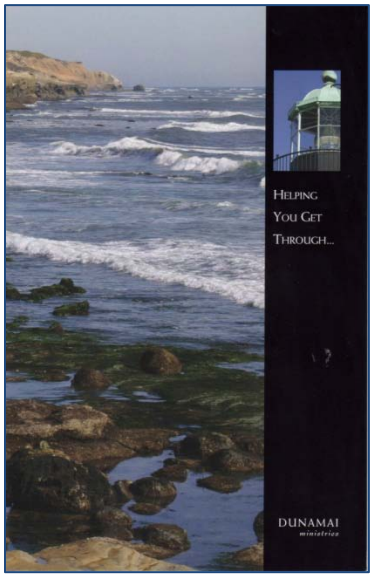
Death certification consists of determining a cause and manner of death for those cases that fall under jurisdiction of the Medical Examiner's Office and completing a California Death Certificate for the individual. The *cause* of death can be summarized as the disease or injury that initiates the sequence of events that ultimately results in the person's death. The *manner* of death is classified into one of the following five categories: natural, accident, suicide, homicide or undetermined. Once a determination is made following an examination, the cause and manner of death are entered into the office's internal electronic data system, followed by entry into the California Electronic Death Registration System (EDRS) and an electronic signature.

The Medical Examiner is able to issue a cause and manner of death shortly after the initial examination in approximately two-thirds of all deaths. However, many deaths require additional investigation and/or testing to determine the cause and/or manner of death. When this is the case, the certificate of death will be temporarily listed as "Pending." The certificate will then be amended following further investigation or examination. In a small percentage of cases, neither a cause nor a manner of death may be determined even after completion of the autopsy, further investigation, and/or extensive toxicological testing.

BEREAVEMENT CENTER

The San Diego County Medical Examiner's Bereavement Center offers a host of services to those who are going through the grieving process following the sudden, traumatic, and unexpected loss of a loved one. Started in July 2007, the Bereavement Center offers grief counseling, personal assistance, and volunteer chaplains from an array of religions to those who have lost a loved one. The Center is run by a volunteer chaplain who facilitates counseling services to thousands of clients each year.

The 3,000 deaths investigated by the Medical Examiner each year are often sudden, unexpected, and traumatic. Families experiencing this event are in a period of high vulnerability. It has been documented that death from unnatural causes directly influences the nature and course of bereavement. For individuals bereaved through unnatural causes the suddenness and lack of anticipation adversely influences their internal world and coping abilities, thus constituting trauma. There is also evidence that unnatural dying presents a greater incidence of symptoms of posttraumatic stress, victimization, and intrusive thoughts than in populations surviving death by a natural cause. Additionally, increased alcohol consumption, smoking, and use of tranquilizers and other medicines are well documented among the bereaved, especially among people who had used these substances prior to the loss. Thus, it is apparent that the bereavement state can adversely affect health and can exacerbate and precipitate health-compromising behaviors.



Prior to the inception of the Bereavement Center, families enduring the bereavement process were an un-served population. Given the aforementioned mental and physical problems that grieving can pose, the Medical Examiner's Office recognized the need to establish a set of much needed services. As a result, the Bereavement Center was established to fill this gap in services and help mitigate the adverse affects that an untimely death can pose. As steward of the Bereavement Center, the chaplain provides an array of services to families who recently lost a loved one, including counseling services, cremation assistance, and a 27-page grief resource booklet titled "Helping You Get Through…" Families who encounter the loss of a loved one are plagued with many questions. "What should I expect next?" "What resources are available?" "How do I deal

with insurance companies?" These are some of the typical questions raised by families going through the grieving process.

At each death notification the booklet is provided to each next of kin by a Medical Examiner Investigator along with the contact number for the Center for Grief Care and Education at San Diego Hospice and Palliative Care. The booklet contains an array of subjects, including available support groups, how to help children during a time of loss, the first steps after death (a five page checklist), a funeral checklist, and much more.

The Bereavement Center also offers grief counseling services at no cost through the Center for Grief Care and Education at San Diego Hospice and Palliative Care. The Bereavement Center and DUNAMAI Ministries also partner to provide cremation assistance for certain qualified families. DUNAMAI Ministries receives private donations to help pay for cremation costs for families that cannot afford to do so.

The results of the Bereavement Center are remarkable. Most of the successes of the Bereavement Center's work are not quantifiable. The degree to which the Bereavement Center provides comfort to grieving families is immeasurable. However, there are a few quantifiable measures of success. Through December 2010 over 9,750 grief resource booklets had been provided to grieving families.

In the first 16 months of operation the Center has provided free counseling services and care to 227 families. Through December 2010, 126 cremations had been paid for. The Bereavement Center also offers clergy support for funeral arrangements. And perhaps the most touching, is that the Bereavement Center's chaplain follows-up on every local case with a phone call to the family to offer condolences and answer any questions they may have.

EMBALMING

Embalming is the process used to disinfect and preserve human remains so they can be safely viewed by loved ones. Although most embalming procedures are performed by mortuaries or cremation establishments, the Medical Examiner's Office offers these services at a competitive rate. All eight Forensic Autopsy Specialists on staff are California licensed embalmers, and all have worked in mortuaries prior to working for the County. These employees, with their familiarity of the funeral processes, understand the needs of the mortuaries and are sensitive to the needs of the families.

Thirteen bodies were embalmed in 2010. Given the high quality service we can provide at a competitive rate, we intend on continuing and hopefully expanding this service to the families we serve.

CASE REPORT REQUESTS AND DATA SHARING

We work hard to investigate deaths throughout the county, and it is critical that we communicate to those that need it the details of our investigation, our findings, and our conclusions as to cause and manner of death. Our most important documents are the autopsy, toxicology, and investigative reports we generate, and it is essential that we distribute these reports in a timely fashion to those who request them after the completion of our investigations.

According to California Law, the reports we generate are public record. We receive between 3,500-4,000 requests for reports per year from a wide variety of people and agencies, including family members, friends, hospitals, law firms, insurance companies, and government agencies. Our clerical department completes this task in a timely fashion, while also handling phone calls and emails, helping visitors and mortuaries, and performing innumerable other duties throughout the day. We charge a nominal $0.20 per page to all except family members. Historically, we have filled 95% of these requests in 7 days or less. 2010 saw an increase in the amount of time to fill report requests, with 86% of the requests being filled within 7 days. The loss of student workers due to budget constraints was likely the major factor in our not meeting this performance measure in 2010.

In addition to examining individual deaths, we also examine each death as part of a larger group over months or years to identify trends, patterns and specific details in the types of deaths that can shed light on emerging public health concerns. We receive queries from media, government agencies, federal and local law enforcement agencies, and the general public on a regular basis regarding a variety of subjects. Threading our information with other agencies and law enforcement can produce a more complete understanding of public health issues and potentially lead to intervention or policy changes to address them.

DEATH REVIEW TEAMS

As part of its greater role in promoting safe and livable communities, employees of the San Diego County Medical Examiner (primarily Deputy Medical Examiners and some Medical Examiner Investigators) are members of various multidisciplinary death review committees, participate in county-wide trauma review meetings, and sit on various local task forces. We are a valuable component of these activities and contribute to the greater goal of reducing fatalities in the children and elderly; reducing deaths related to domestic violence, prescription drugs, or methamphetamine; and improving the trauma system.

CHILD FATALITY REVIEW COMMITTEE

This group is comprised of representatives from the Medical Examiner's Office, the clinical medical community, law enforcement, prosecution, child welfare services, emergency medical personnel, probation, county counsel, and the local Child Abuse Prevention Committee. The committee meets monthly to review all sudden unexpected deaths of children that fall under the jurisdiction of the Medical Examiner to identify factors and circumstances contributing to child deaths. The goal is to prevent future occurrences, as well as to improve coordination and effectiveness of child protection, investigation and legal processes. The San Diego Child Fatality Review Committee was established in 1982 and was only the second child fatality committee established in the country. During its first 15 years, it reviewed the deaths of children newborn through age 6, but that was expanded to children through age 12 in 1998 and through age 17 in July 2005. From 2006 to 2010, the committee reviewed 526 child deaths.

DOMESTIC VIOLENCE FATALITY REVIEW TEAM

The County of San Diego Board of Supervisors established the Domestic Violence Fatality Review Team (DVFRT) in October 1996. The team is made up of dedicated individuals including representatives from the Medical Examiner, the District Attorney's Office, law enforcement, Health and Human Services Agency, and local hospitals who work tirelessly to support individuals and families affected by domestic violence. The DVFRT was created to prevent deaths attributable to intimate partner violence through an in-depth, cross-disciplinary review process focused on improving the systems and services that provide protection and support to those affected by intimate partner violence. Over the past 10 years, the team has met monthly and completed in-depth reviews of over 90 domestic violence fatality cases.

During recent years greater attention has also been given during the review process to the children and teens that have been affected by the violence and fatalities reflected in the findings of the DVFRT report. Critical lethality factors are also highlighted, from both the individual level and the relationship level. This is a particularly important section of the DVFRT report for all who provide services to individuals and families experiencing domestic violence, and should be used to inform and educate those at risk as well as the community at large.

ELDER AND DEPENDENT ADULT DEATH REVIEW TEAM

The Elder and Dependent Adult Death Review Team is a County-wide group with a core membership from the District Attorney's Office, Medical Examiner's Office, San Diego Sheriff's Office, and Aging and Independence Services. Its task is to review elder and dependent adult deaths in San Diego County with the goal of reducing the number of deaths related to physical abuse, neglect, or self-neglect. The County's Elder Death Review Team was established in 2003 and expanded to include dependent adults in 2011. The San Diego County team was one of the first elder death review teams in the country and has been a model for other jurisdictions.

The team promotes policy changes in government and private agencies, identifies gaps and barriers to service for victims prior to death, increases public awareness, and has a positive impact on the safety and health of San Diego County residents. The team also participates in a number of other projects, such as an annual review of elder suicides, cross-reference efforts between the Medical Examiner and Adult Protective Services databases, and research studies.

DIVER DEATH REVIEW COMMITTEE

With miles of coastline, beautiful kelp beds, and a number of shipwrecks, San Diego is a haven for scuba divers. In order to improve the safety of San Diego's scuba divers and to ensure thorough investigation of all diving-related deaths, a multidisciplinary diver death review committee was formed in 2009, including members from San Diego Lifeguards, San Diego Police Department, UCSD's Undersea and Hyperbaric Medicine section, Scripps Oceanographic Institute, the United States Coast Guard, the local dive community, and a Deputy Medical Examiner with expertise in scuba diving and diving medicine. Each diving-related death (with 3 occurring in 2010) was thoroughly reviewed and discussed by the committee. In addition to making recommendations for further investigation and certification of the cause and manner of death, the committee has generated a list of recommendations that will be released to the diving community as a whole in 2011 to further the goal of improving diver safety.

OTHER PARTICIPATION

Our office also participates in several local Trauma meetings as well as a County wide trauma monitoring system:

Rady Children's Hospital Trauma Mortality and Morbidity (M&M) Conference
Sharp Memorial Hospital Trauma M&M Conference
MAC (Medical Audit Committee) meeting of Trauma Centers (County-wide)

We also are part of the San Diego County Methamphetamine Strike Force, the Prescription Drug Task Force, and sit on the California SIDS Advisory Council.

FORENSIC PATHOLOGY FELLOWSHIP

A fellowship is a period of subspecialty training for physicians, undertaken after completion of a specialty residency. The San Diego County Medical Examiner is one of only 37 sites in the country that provide a one-year accredited training program in the medical subspecialty of forensic pathology, and has trained 13 fellows over the last 19 years.

Our program has been fully and continuously accredited by the Accreditation Council for Graduate Medical Education (ACGME) and is approved for two positions, although historically we have only had adequate funding for one. Due to budget constraints, we have not been able to offer the position since July of 2009. However, after the acquisition of grant funds this year through the National Institutes of Justice we will be fully funding one fellow each year for the 2011/12 and 2012/13 academic years.

San Diego County is uniquely positioned to provide a fellow exposure to sudden, unexpected deaths in a variety of manners not encountered in many, more populous jurisdictions: our population, our proximity to an international border, the ocean and our waterways, our blend of well-developed modern urban areas and remote unpopulated urban areas, and our remarkable variety of inland geography. The Medical Examiner's team of fully board-certified forensic pathologists comes from diverse training backgrounds, which provide the fellow a wide breadth of knowledge, experience and perspective from which to learn. In addition, we require our fellows to participate in death scene response and to provide court testimony. Combine all of this with the fact that we have one of the highest faculty-to-fellow ratios in the country, and it is clear that the San Diego Medical Examiner is well-positioned to successfully train fellows to become proficient in the field of forensic pathology and instill the confidence, skills and knowledge they need to practice in any setting.

TEACHING AND RESEARCH

TEACHING

Pathology Residents: In addition to formal instruction of the Forensic Pathology Fellow, the Medical Examiner Office provides critical teaching rotations for Pathology Residents from both the UCSD School of Medicine and Naval Medical Center Balboa. Residents receive in-depth training in forensic and autopsy pathology under the direct supervision of Medical Examiner Office pathologists – training that is required for them to be eligible for Pathology board examinations. In 2010, 11 residents spent rotations ranging from two to six weeks at the Medical Examiner Office, performing a total of 142 cases under direct supervision, providing invaluable learning opportunities.

Additional instruction of Pathology Residents included ten formal lectures by our Deputy Medical Examiners (forensic pathologists) at UCSD Hillcrest's Department of Pathology on topics including gunshot wounds, sharp and blunt force injuries, asphyxia, electrical and thermal injuries, scuba and ocean deaths, medication/drug/poison-related deaths, and pregnancy-related deaths among others. These lectures have been part of the annual UCSD Pathology curriculum for many years, and will continue to be so in the years to come.

Teaching for the greater community: Medical Examiner Office staff including pathologists, investigators, and others gave 106 other presentations through 2010, with 179 hours of total teaching time split among topics and audiences such as safety stand-downs/drinking and driving for military personnel (United States Marine Corps Battalions, United States Navy (USN) Helicopter Squadrons, and USN submarine crews); awareness lectures for juvenile and adult Probationers; courses about the Medical Examiner Office for Probation Officers; forensic pathology topics for Cal Western Law School, University of San Diego, and Grossmont College; forensic pathology as a career for high school students; as well as many others. These presentations were given either at the new Medical Examiner facility or at the group locations throughout the county. They were intended to educate, inform, and minimize misconceptions about our function.

The Medical Examiner Office were able to allow 33 groups, including nursing students, law students, police cadets, paramedic students, and crime laboratory interns the opportunity to view an actual autopsy with narration and teaching by a pathologist as an invaluable educational opportunity. Student feedback from such opportunities was universally positive and appreciative, as they noted that viewing an autopsy showed them anatomy, function and appreciation of the body, and forensic medicine in a way that simply cannot be taught in any

other manner. Unfortunately, opportunities for approved groups to view an autopsy have been sharply curtailed for 2011 as budget and time constraints restrict what non-mission-critical activities the Medical Examiner Office is able to conduct.

RESEARCH INVOLVEMENT

Through the course of 2010, the Medical Examiner Office was involved in many different research opportunities. One of these involved our ongoing collaboration with research doctors and scientists at Rady Children's Hospital to provide research specimens to study associations and possible causes of Sudden Infant Death Syndrome (SIDS), a multiyear project that has become one of the greatest contributors to the body of knowledge of this tragic issue.

Other research involvement has included donation of human brains, only in cases with full consent from families. In 2010 we sent human brains to the University of California, Irvine, for programs involving study of schizophrenia, bipolar disorder, and depression; the Allen Institute for Brain Science for the Human Brain Atlas project; the Veterans Administration Hospital for the Human Brain and Spinal Fluid Resource Center (http://www.loni.ucla.edu/uclabrainbank/); and UCSD Medical Center for research on methamphetamine addiction.

JOHN/JANE DOE CENTER

The identification of a decedent is one of the most critical functions of the Medical Examiner's Office and must be made by official and verifiable means. The misidentification of an individual is not an option and, conversely, if a person is not identified, we know nothing of their medical or psychiatric history or how they came to be in the situation in which they were found. The majority of decedents are identified by family members or through government identification (such as a driver's license). However, when a decedent carries no identification, no family is present to make identification, or the condition of the body is such that a visual identification is not possible, he or she becomes a Doe and the identification process begins.

Most decedents become identified quickly, often within a day or two, through fingerprints or tattoos. Some decedents are identified by a family member who views a photograph and then provides supporting identifying documentation. Scientific identification can be made by a dental comparison using our forensic odontologist, through radiographic comparison, or through surgical history and identifying anatomic features. When identification cannot be made by these means, DNA profile comparison is attempted. Very rarely, we will use a circumstantial identification based on physical characteristics, morphology, and known activities and location at the time of death.

When necessary, we make every effort to obtain an artist's sketch, through the assistance of a Medical Examiner's Office volunteer. We release the sketch, any identifiable information and the decedent's physical characteristics to all of San Diego's media outlets in hopes of learning an identity or contacting possible family.

When a decedent remains unidentified and we have no leads for a possible identity, several legal mandates go into effect. Those legal mandates include an entry of the decedent's information, known physical characteristics and full forensic dental examination into NCIC (National Crime Information Center) in order to perform a comparison of the decedent against reported missing persons. Often a full anthropology examination is conducted to provide information such as race/ethnicity, age, height, and skeletal anomalies. We also provide a DNA sample to the California Department of Justice (DOJ) DNA Laboratory, so that the decedent's genetic profile can be entered into CODIS (Combined DNA Index System) for a possible match against someone missing or wanted, whose profile is already in CODIS.

In 2010, 130 of our 2718 cases (4.7% percent) came to the Medical Examiner's Office as a John or Jane Doe. As of 06/02/2011, we have identified 121 of the 130, an identification rate of 93.1%.

ABANDONED BODIES

State law (California Health & Safety Code Sections 7100-7104) requires San Diego County to handle the disposition of decedents who have been declared indigent, whose body is abandoned by the legal next of kin, or when next of kin is unable to be located. The disposition is the final state of the body after death: *identified* abandoned bodies are always cremated, while *unidentified* abandoned bodies are always buried to allow for possible identification in the future.

A family that is unable to take care of the disposition of their loved one due to financial reasons can apply for Indigent Assistance through the Public Administrator's Office. Provided they meet the financial criteria, the Public Administrator will assist the family in selecting a cremation service and will pay for the cremation.

If the family cannot be located, fails to act, or does not apply for or qualify for Indigent Assistance, a decedent's body may be declared "Abandoned" after 30 days have passed since the death. The Medical Examiner's Office handles abandoned bodies over which we have taken jurisdiction, as well as those abandoned at a hospital or mortuary.

On a rotating basis, county mortuaries and cremation service providers have agreed to take part in this process for a specific reimbursement amount. As the funding falls under the budget of the Public Administrator/Public Guardian (PA/PG), the PA/PG is involved in the disposition of every abandoned body and every Indigent body.

In 2010 the Abandoned Body Investigator was involved in 178 cases. Of those:

140 (79%)	Family failed to act.
38 (21%)	Family was not located.
91 (51%)	Were Medical Examiner cases
8 (4%)	Abandoned infants who were referred to the Garden of Innocence for burial
9 (5%)	Veterans whose ashes were inurned at Ft. Rosecrans National Cemetery
1	John Doe buried at La Vista Memorial Park

LEGAL TESTIMONY

Legal matters are a prime directive of the Medical Examiner Office, so a significant part of our duties involve legal testimony. Pathologists, investigators, and toxicologists are called to testify most commonly in homicide cases, but also in motor vehicle accidents (particularly those involving driving under the influence of alcohol, drugs, or medications) or other cases. Forensic Autopsy Specialists who assist with autopsies may sometimes be called to testify as witnesses as well.

Investigators, who conduct scene investigations and interviews, may be called to describe their findings. Toxicologists may be called to discuss their methods for conducting toxicology studies to prove their validity; the Toxicology Laboratory Manager may also serve as an expert witness with insight as to interpretation of drug or medication levels. In 2010, Toxicology staff testified in 6 jury trials (both criminal and civil).

Pathologists provide testimony regarding their autopsy findings, including evidence of both trauma and natural disease. Their expertise in evaluation of trauma can shed valuable insight on critical aspects of legal issues. In 2010, pathologists testified in 14 preliminary hearings and 38 jury trials, with a total of 70 hours of testimony.

In addition to criminal matters, Medical Examiner staff is often subpoenaed for testimony in civil matters, most commonly by deposition. In this situation, the County bills attorneys for the time of any witnesses called. Toxicologists were involved in 7 depositions in 2010 and pathologists in 13 depositions.

ORGAN AND TISSUE DONATION

Organ and tissue transplantation is an ever-growing field of medicine, and with new techniques, medications, and technology, the need for lifesaving organ and tissue donation continues to increase. When a death occurs, organs such as the heart, lungs, liver, or kidneys can be transplanted to replace damaged or diseased organs in a recipient. Tissues, such as skin, bone, or cartilage, may be used for grafts in burn victims or reconstruction in trauma patients or those with degenerative disease.

A large number of the suitable organ and tissue donors fall under medical examiner jurisdiction. With an ever-growing need for organs and tissues for transplantation, the Medical Examiner recognizes the need to permit organ and tissue recovery whenever possible and *only when there is next-of-kin or prior consent***,** while balancing its statutory requirements to ensure the integrity of the body to allow determination of cause and manner of death, collection of evidence, and documentation of injuries and natural disease.

To those ends, we work closely with Lifesharing, the County's only organ and tissue procurement organization, and the San Diego Eye Bank in order to give consent for organ and tissue recovery prior to and following autopsy while at the same time ensuring that all necessary documentation is made. A culture of bi-directional communication between the Medical Examiner and procurement organizations allows maximization of donation, which benefits not only the recipients of organs and tissues, but also grieving families who may find some solace in the knowledge that even with the loss of a loved one, they were able to improve, or even save, the life of one or more recipients.

Tissue donation: During 2010, 603 donors were recovered in the Lifesharing Operating Suite at the Medical Examiner Facility. Because a single tissue donor can help up to 50 people, this represents a significant impact in terms of enhancing lives. 44% of Lifesharing's tissue donors were Medical Examiner cases; 125 donors were direct Medical Examiner referrals. Of the remaining cases, consent for donation was not permitted for medicolegal reasons, the patient had not pre-registered to be a donor and the family did not give consent for donation, or other factors prevented donation.

Organ donation: Last year was a record year for Lifesharing in terms of donors. Of Lifesharing's 108 donors for 2010, 53% were Medical Examiner cases resulting in the procurement of 195 organs with 167 of those being transplanted.

Eye/cornea donation: In 2010, the San Diego Eye Bank recovered corneas from 148 donors at the Medical Examiner.

The above statistics highlight the importance of the Medical Examiner's close working relationships with Lifesharing and the Eye Bank: our office not only assists the families of our cases, but is also a part of the chain that allows donation of organs and tissues to those in need.

BEYOND THE MEDICAL EXAMINER'S OFFICE

In addition to the tasks that further our mission and support those of other agencies and institutions in the County of San Diego, our activities may also extend beyond the borders of our jurisdiction. As noted elsewhere, the Medical Examiner's Toxicology Laboratory runs testing not only for San Diego County cases but also those from the Riverside County Coroner's Bureau. Our Chief Deputy Medical Examiner, as a board-certified neuropathologist, conducts forensic neuropathologic consultation for that office as well.

MASS DISASTER PREPARATION

Mass disasters or mass fatalities may take many different forms, including disease epidemics or pandemics, natural disasters such as earthquakes or wildfires, accidents such as aircraft crashes or industrial/nuclear incidents, or even terrorist attacks. Whether these fatalities involve natural or human causes, the Medical Examiner Office must be ready to respond as part of the greater community of essential emergency services. Our role in such preparations for 2010 included participation in multiagency "tabletop" drills for pandemics and aircraft crashes as well as in meetings, and discussions regarding such scenarios. Our office has given multiple presentations to various groups including the Red Cross, San Diego City Schools, and various hospital agencies on the Medical Examiner's role in mass disaster fatality response. We have a representative involved in the continual planning and training for the Metropolitan Medical Strike Team – a multiagency group involved with organizing and facilitating disaster training. We are also involved in the planning stages for a full-scale, multiagency mass disaster exercise in 2011.

MULTIDISCIPLINARY DIVE TEAM

One of our Deputy Medical Examiners has been a member of the San Diego Multidisciplinary Dive Team since 2009 and continues to participate in team trainings and operations. The Dive Team uses scuba gear and underwater search techniques in a rescue capacity for possible drownings, boating accidents, scuba diving accidents, or other situations, as well as for recovery situations in which a person is believed to be missing in the water. The team includes personnel from San Diego Lifeguards, San Diego Police, and San Diego Lake Rangers. Having a team member from the Medical Examiner's Office allows for underwater investigation and recovery of remains, as well as strengthens scene documentation and chain of evidence.

DMORT

Three CME Investigators and one Deputy Medical Examiner are members of the National Disaster Medical System (NDMS) Region IX Disaster Mortuary Operational Response Team (DMORT), a federally funded and operated team that may deploy within the United States or internationally to provide mortuary assistance (investigation, identification, pathology, and disposition of remains) for mass fatality incidents. In 2010, two of our investigators were deployed to Haiti to assist with recovery of American nationals who died in the earthquake that year. One of those investigators also worked at a family assistance center in Miami, Florida to provide support for the same efforts.

2010 DATA SECTION

We are clearly mandated to determine the cause and manner of death for each person that falls under the Medical Examiner. However, another critical function of the Office is to identify patterns and trends of various types of deaths, allowing other agencies to identify issues that need additional resources or to confirm that the hard interventional work that has been done in the past is accomplishing its goal.

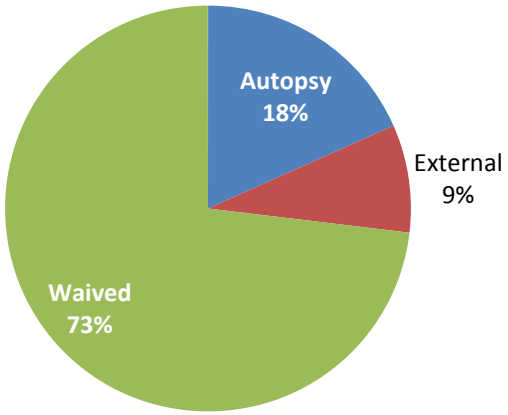
This section is designed to provide data in an easy-to-understand format so that the reader, including regional agencies and groups, can easily use the information to make decisions and stay informed. Most of the data is designed to speak for itself, but where applicable a narrative or explanatory caption will be provided to further explain the data, point out caveats, and give background and context. In some areas, a 10-year perspective is given to demonstrate trends over time and show how 2010 compares to previous years.

Keep in mind that this report represents investigation of only a certain subset of deaths in the county – approximately 13.5% (2,718) of the approximately 20,000 deaths in 2010. These are the deaths in which we chose to or were required to take jurisdiction (see Deaths We Investigate for more information) and include ALL deaths due to non-natural causes (injury, drugs/alcohol, homicides, suicides, etc.) and a small group of natural deaths (4% of all natural deaths) in the county.

OVERVIEW OF ALL CASES

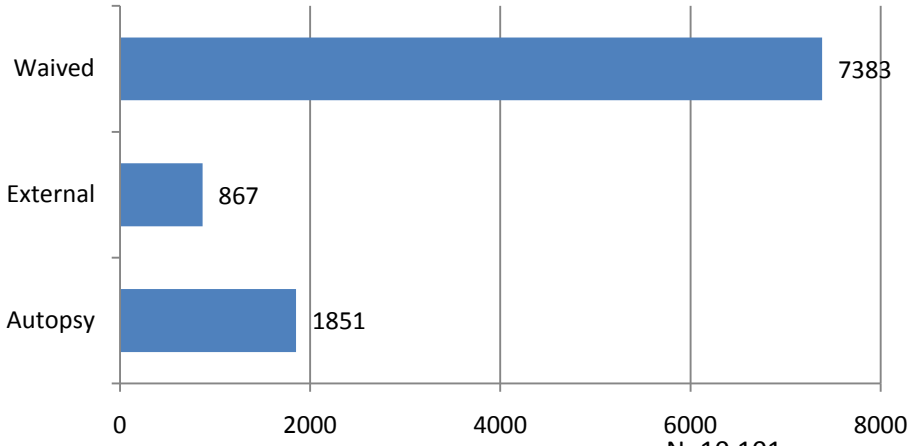
In 2010, 10,101 deaths were reported to the San Diego County Medical Examiner's office. Jurisdiction was waived on 73% of these (7,381), with 18% (1,851) receiving autopsies and 9% (867) having external examinations performed.

ALL DEATHS REPORTED TO M.E, 2010



Source: County of San Diego Medical Examiner's Database

N=10,101

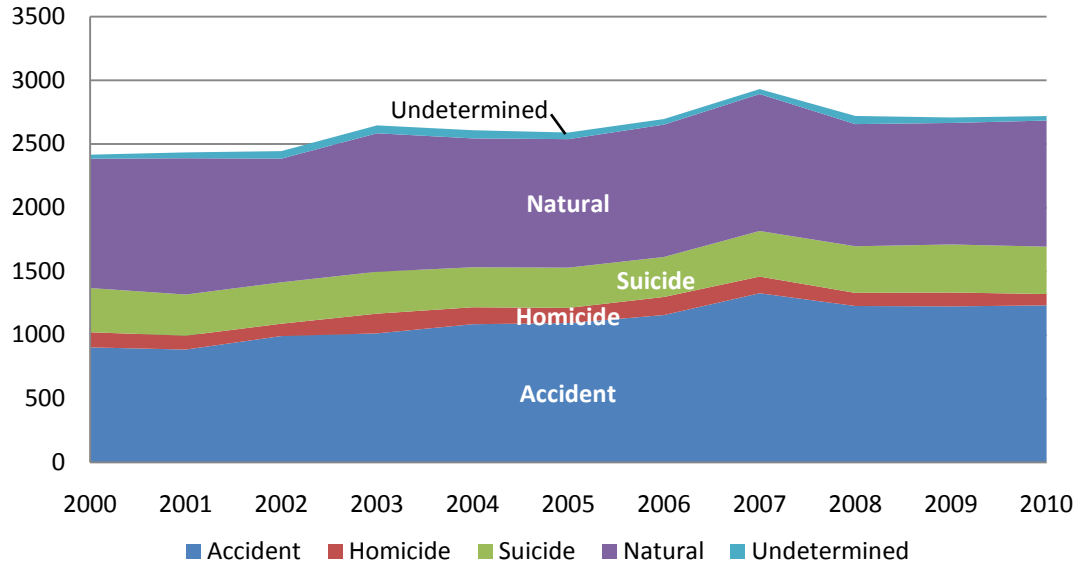


Source: County of San Diego Medical Examiner's Database

N=10,101

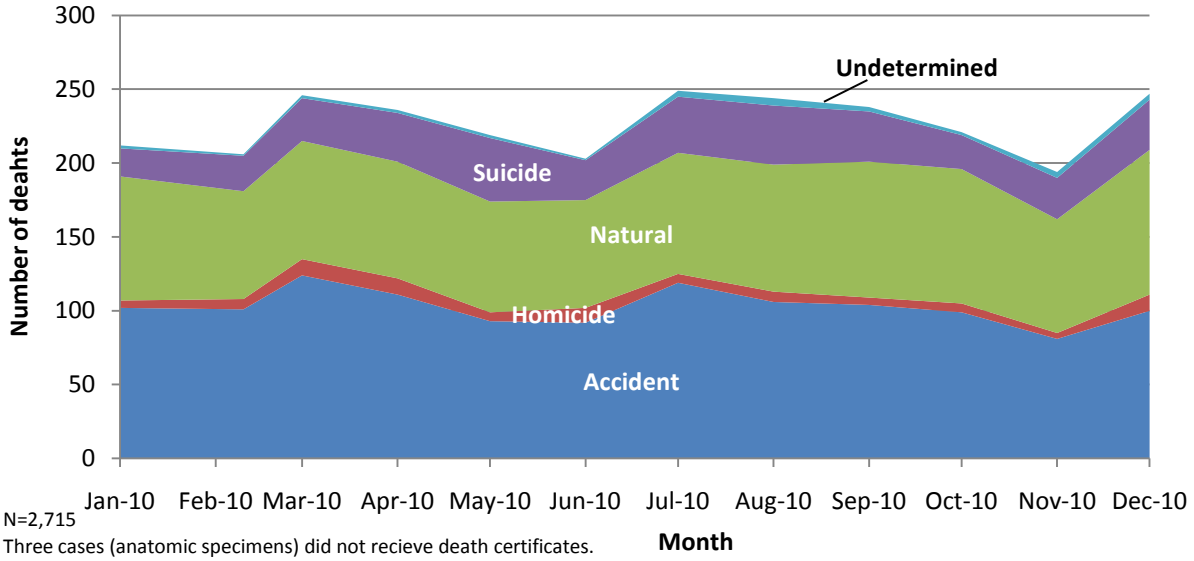
The San Diego County ME's office performs an average of five full autopsies per day, and 2.4 external examinations. In 2010, 45% of investigations were for unintentional (accident) manners of death, followed by natural causes (36%), suicides (14%), and homicides (3%). The manner of death was undetermined for 1% of deaths for which investigations were performed.

MANNER OF DEATH BY YEAR, 2000 - 2010



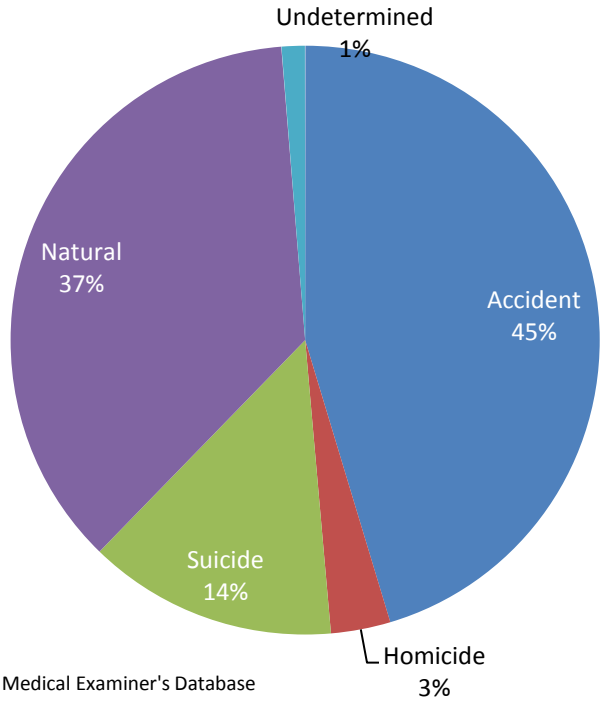
N=28,901
Source: County of San Diego Medical Examiner's Database

MANNER OF DEATH BY MONTH: 2010



N=2,715
Three cases (anatomic specimens) did not recieve death certificates.
Source: County of San Diego Medical Examiner's Database

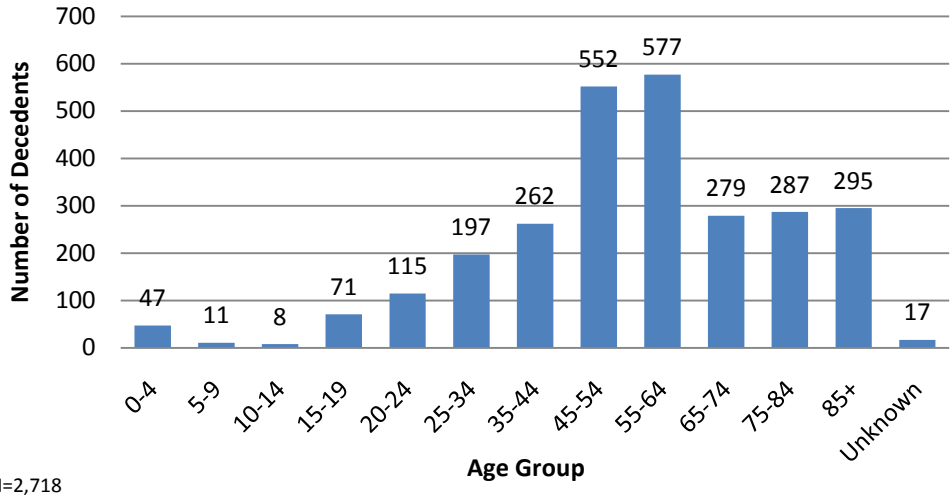
MANNER OF DEATH, 2010



N=2,718

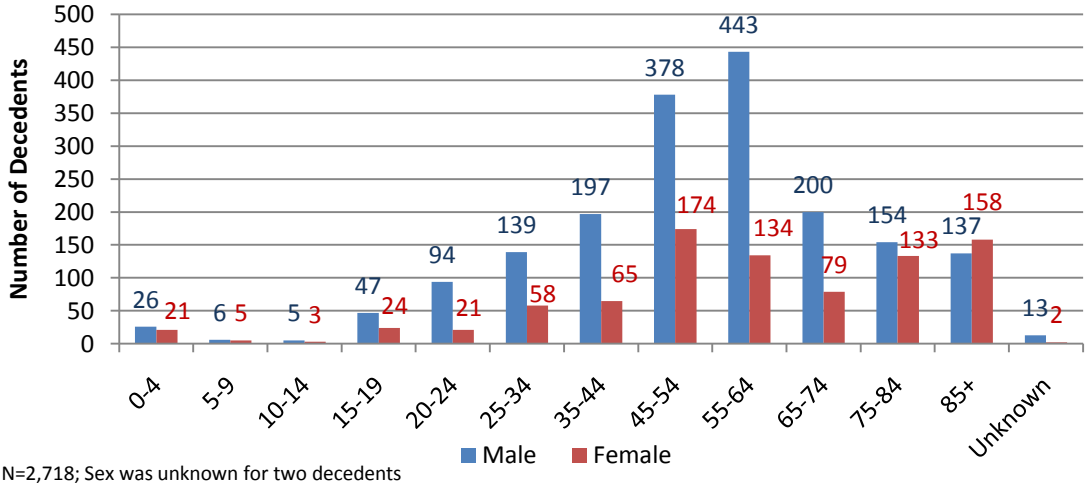
Source: County of San Diego Medical Examiner's Database

AGE DISTRIBUTION OF DECEDENTS, 2010



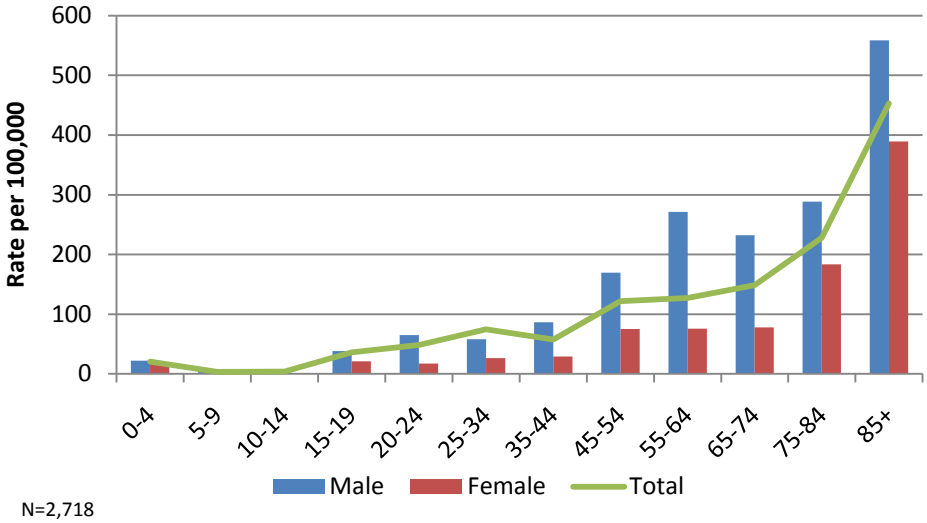
N=2,718
Source: County of San Diego Medical Examiner's Database
Note: This chart includes only closed cases reported to County of San Diego Emergency medical Services

NUMBER OF DECEDENTS BY AGE AND SEX, 2010



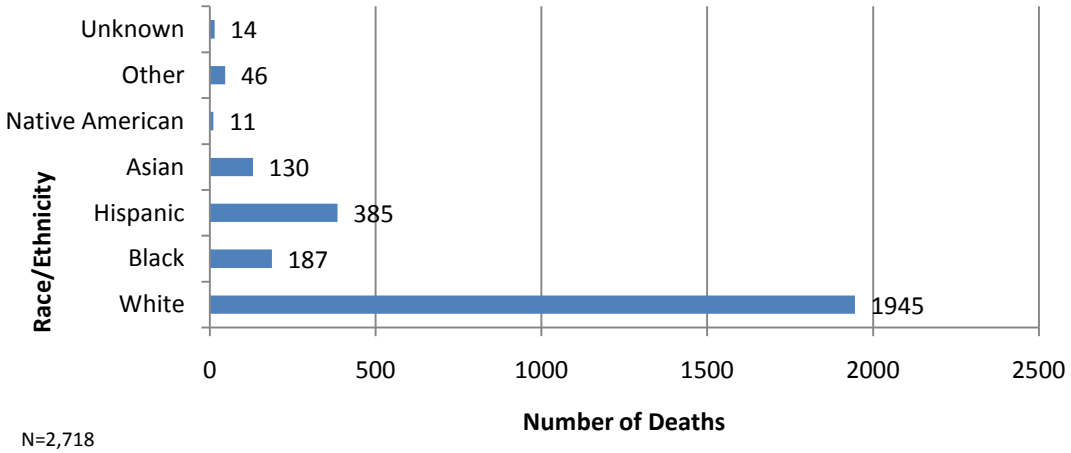
N=2,718; Sex was unknown for two decedents
Source: County of San Diego Medical Examiner's Database

RATE PER 100,000 OF INVESTIGATIONS BY AGE AND SEX, 2010



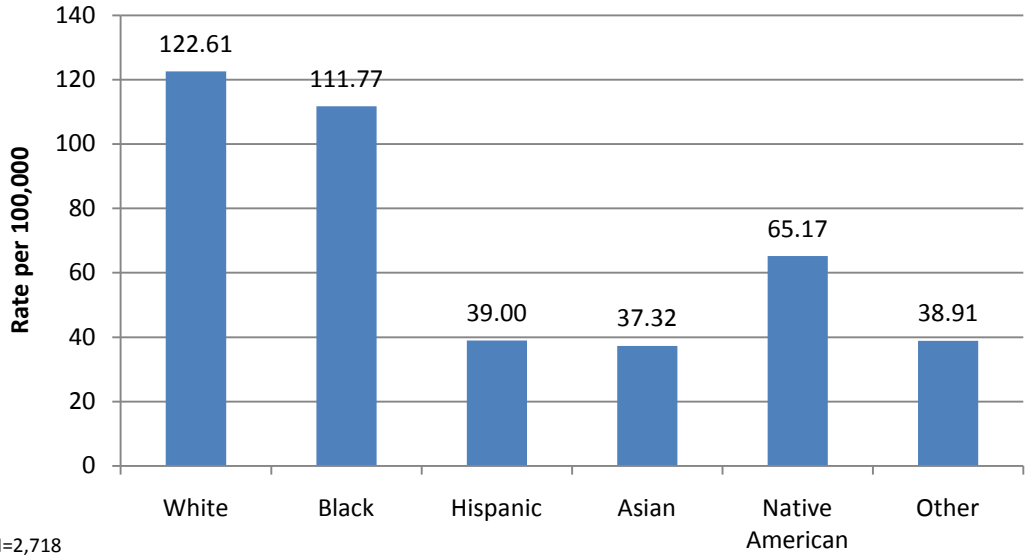
N=2,718
Source: County of San Diego Medical Examiner's Database

DEATHS BY RACE/ETHNICITY, 2010



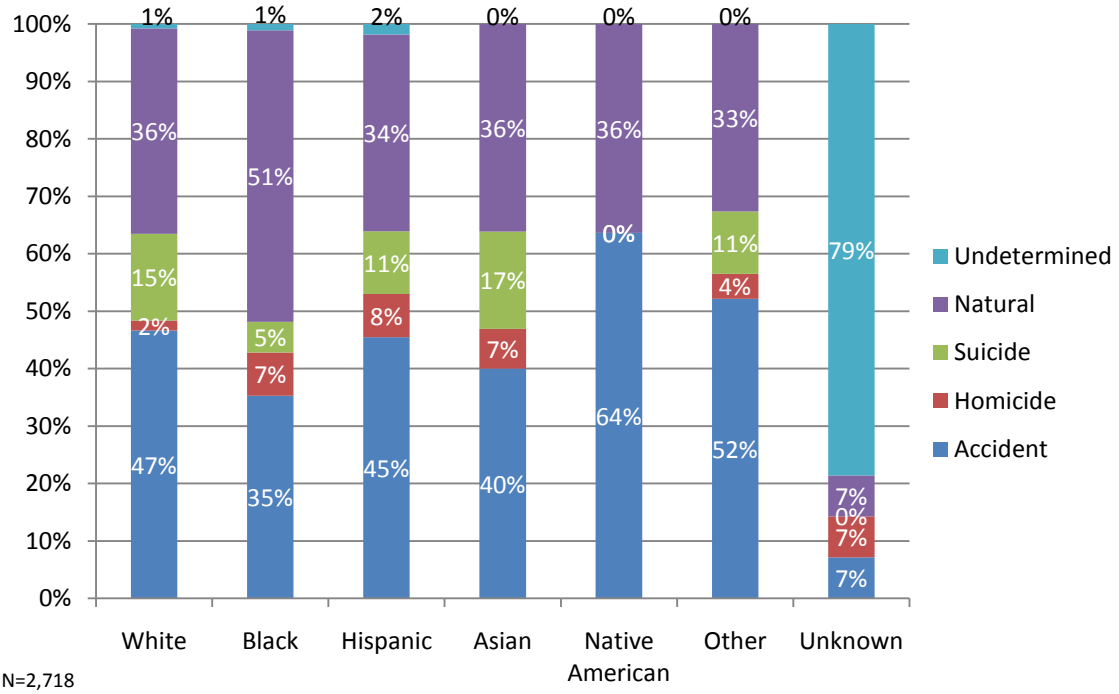
N=2,718
Source: County of San Diego Medical Examiner's Database

RATE PER 100,000 OF DEATHS BY RACE/ETHNICITY, 2010



N=2,718
Source: County of San Diego Medical Examiner's Database

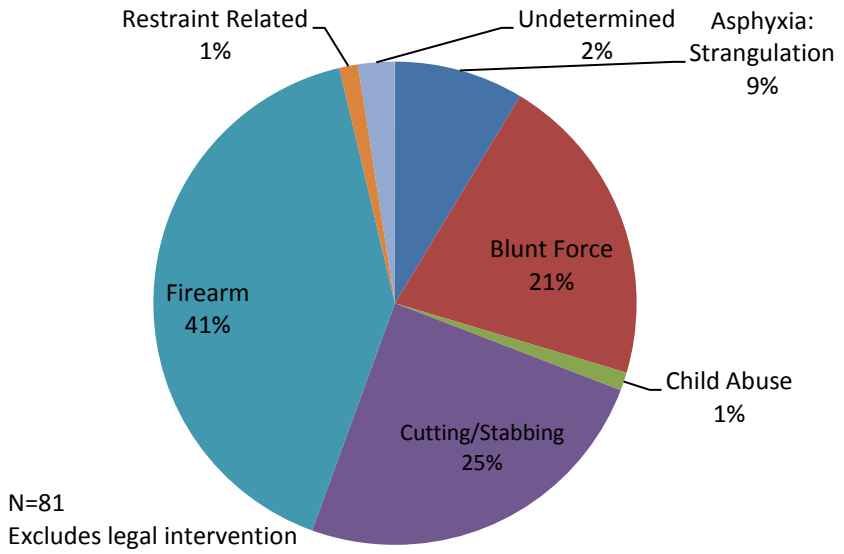
MANNER OF DEATH BY RACE/ETHNICITY, 2010



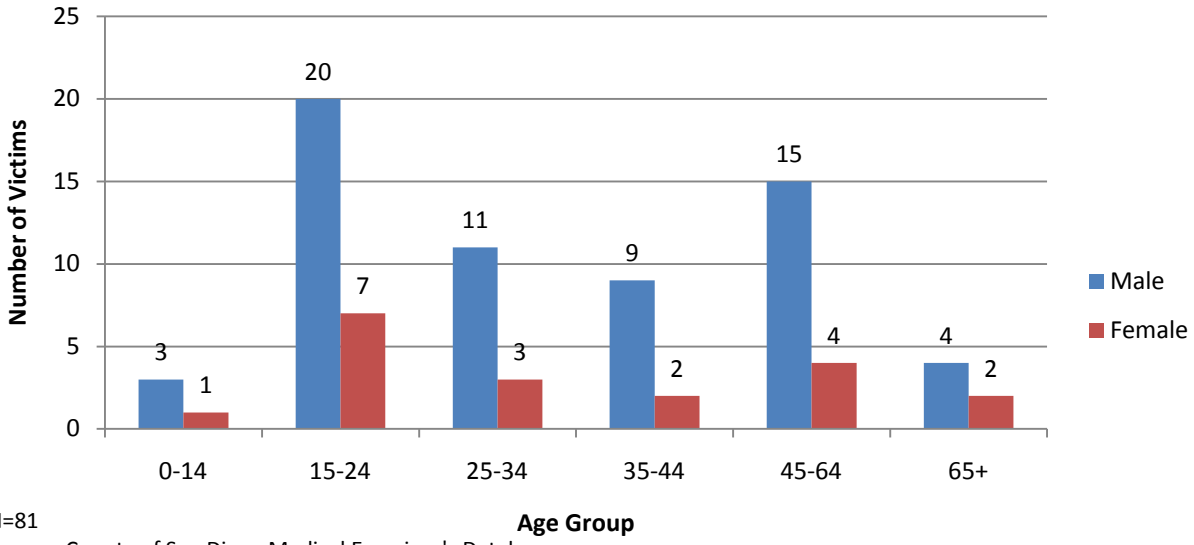
N=2,718
Source: County of San Diego Medical Examiner's Database

HOMICIDE

HOMICIDE METHODS: 2010

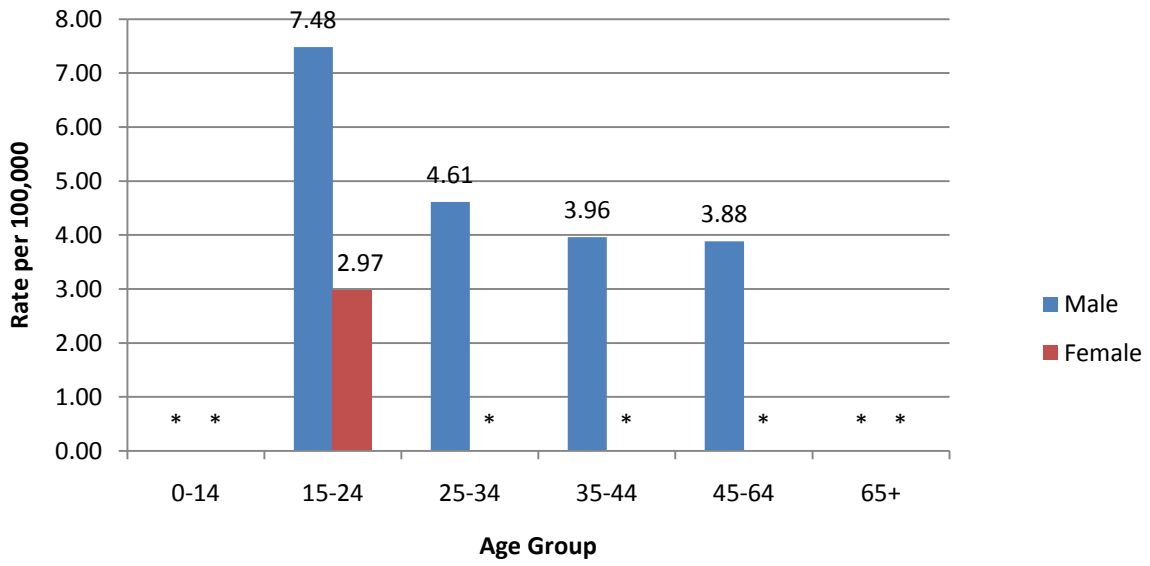


NUMBER OF HOMICIDE VICTIMS BY AGE AND GENDER, 2010



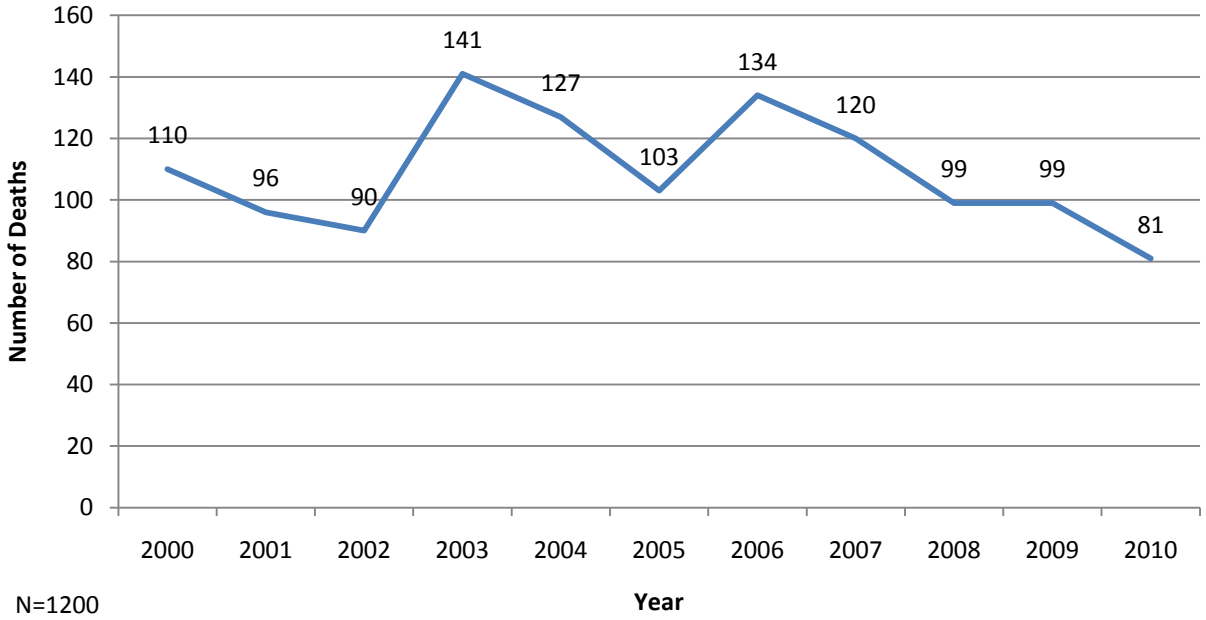
N=81
Source: County of San Diego Medical Examiner's Database
Excludes legal intervention

HOMICIDE RATE BY AGE AND GENDER, 2010



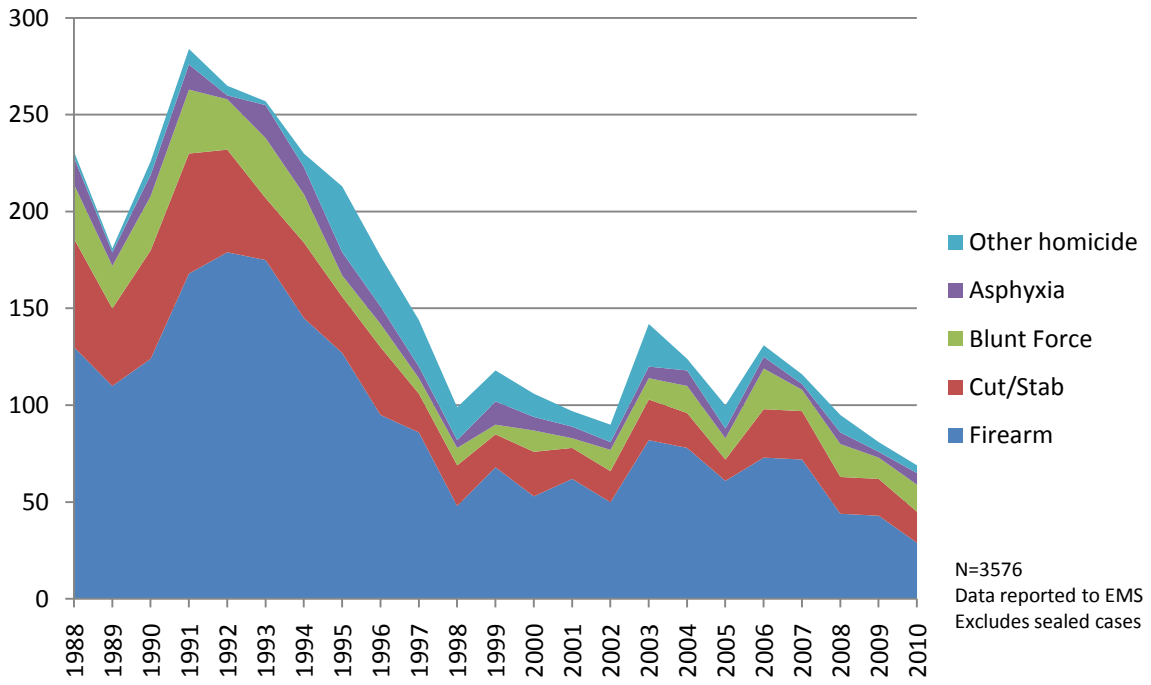
N=81
Source: County of San Diego Medical Examiner's Database
Excludes legal intervention
*Rates not calculated on fewer than five incidents

HOMICIDE BY YEAR, 2000 - 2010

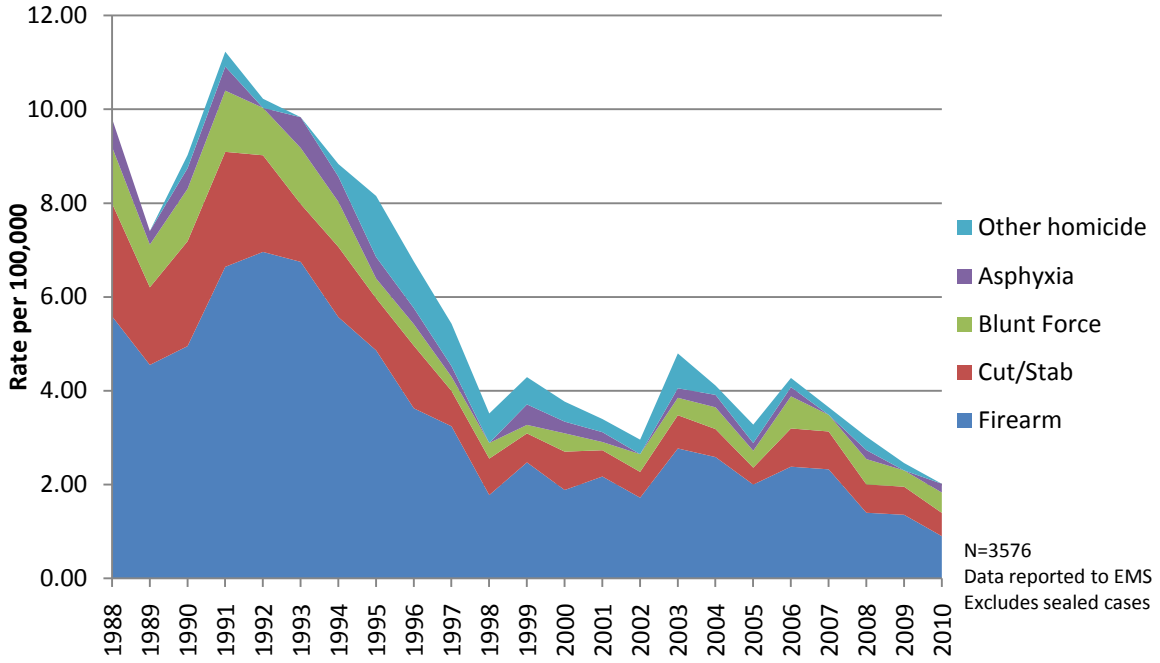


N=1200
Source: County of San Diego Medical Examiner's Database
Excludes legal intervention

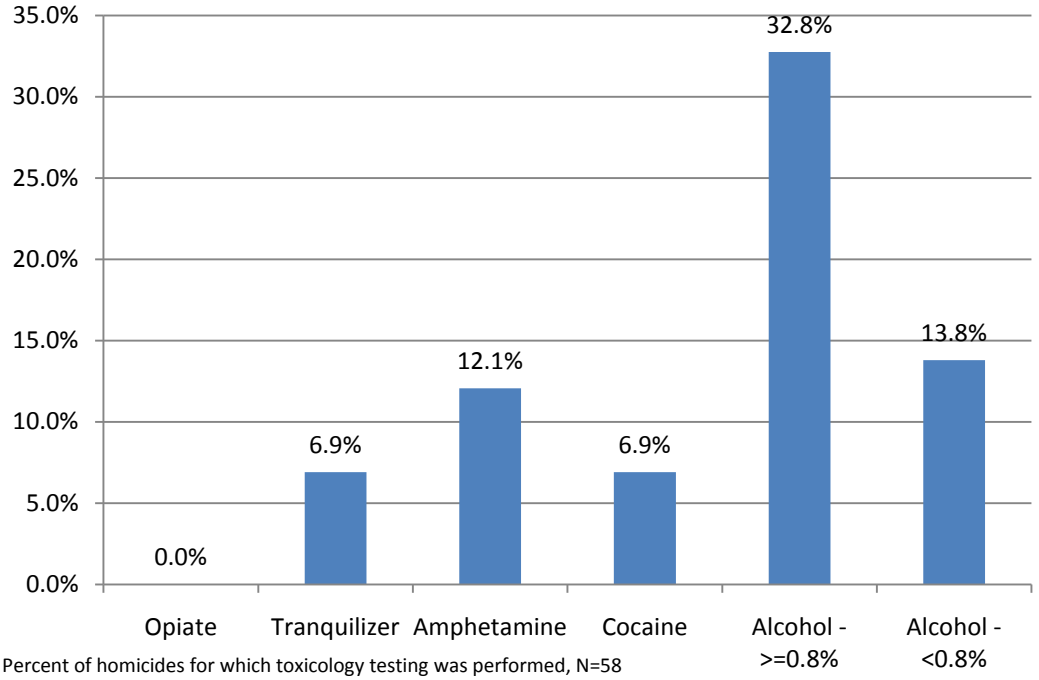
HOMICIDE METHOD BY YEAR: 1988 - 2010



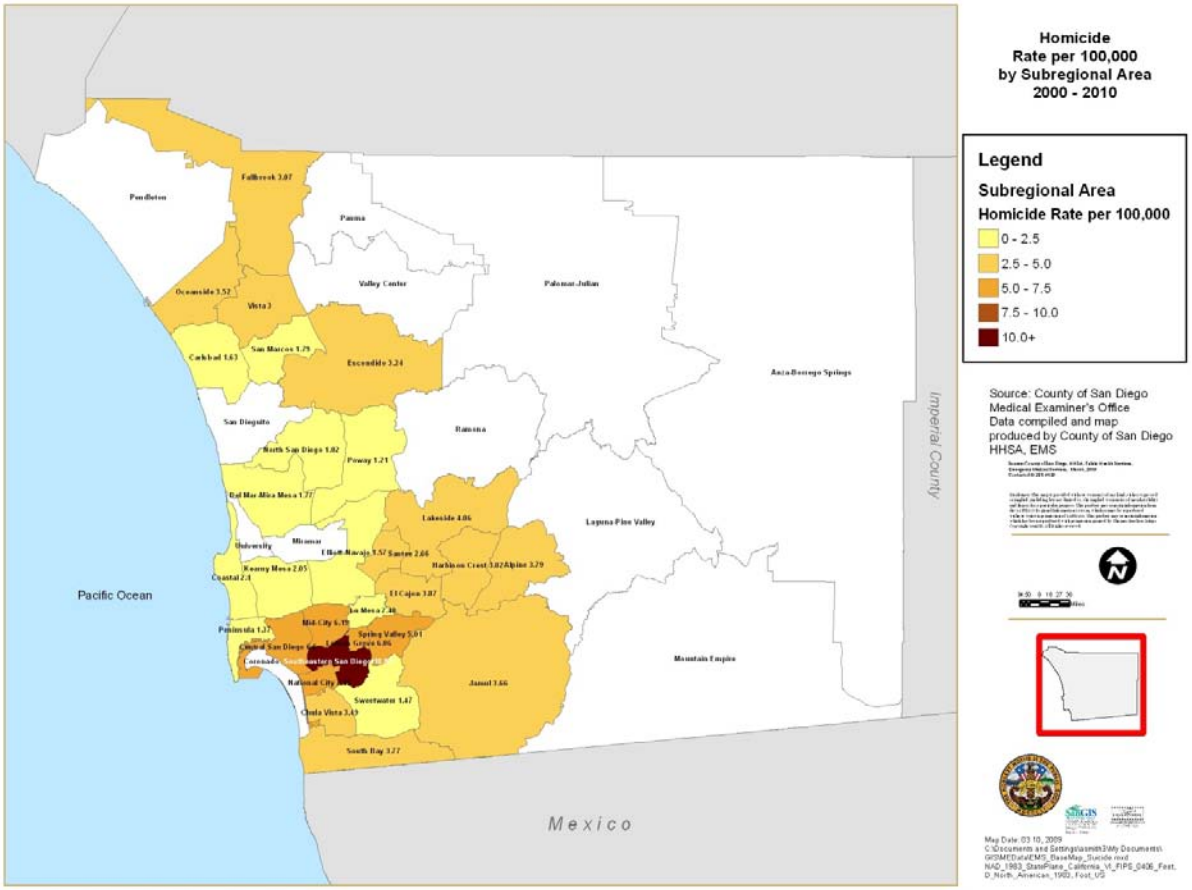
RATE OF HOMICIDE BY METHOD AND YEAR: 1988 - 2010



TOXICOLOGY RESULTS - PERCENT OF HOMICIDE: 2010

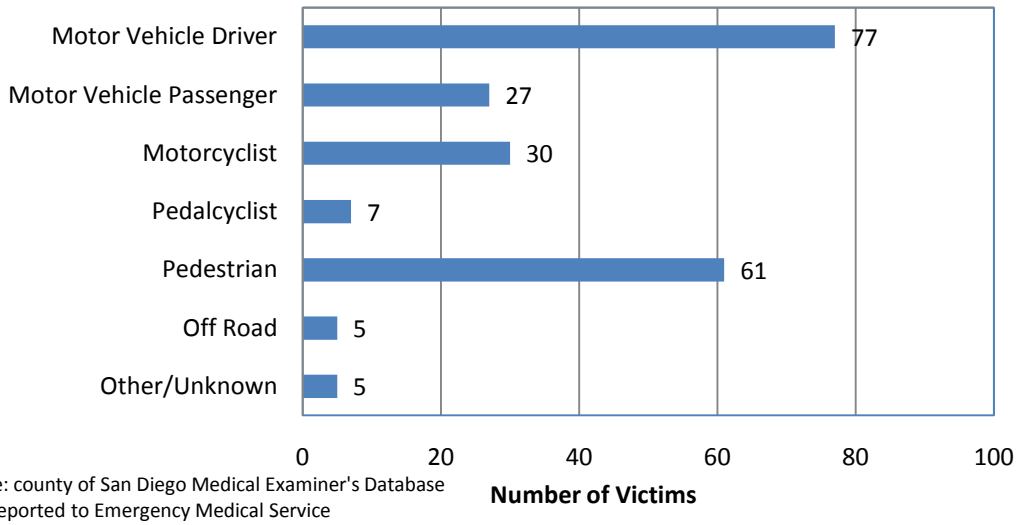


Percent of homicides for which toxicology testing was performed, N=58
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Services



MOTOR VEHICLE FATALITIES

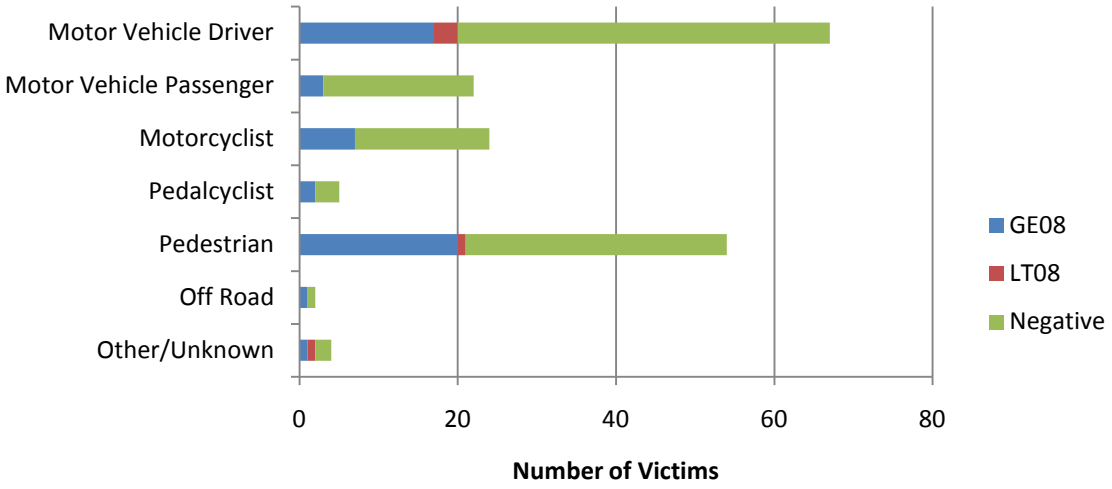
MOTOR VEHICLE RELATED FATALITIES BY VICTIM TYPE: 2010



N=212
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Service

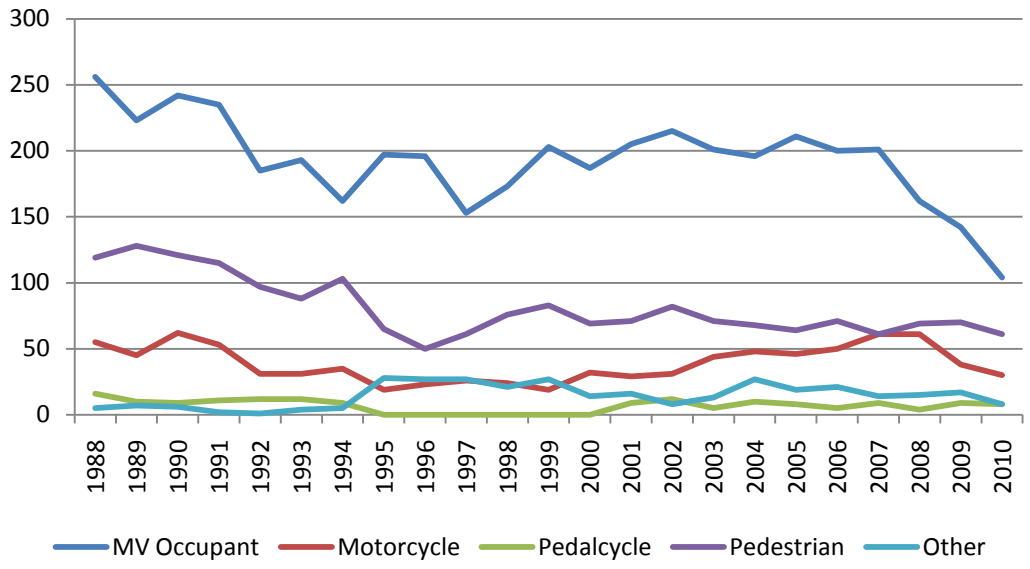
Alcohol is a major factor in fatal motor vehicle crashes. In 2009, 42% of drivers killed had blood alcohol levels in excess of 0.08%.

ALCOHOL TOXICOLOGY BY MOTOR VEHICLE VICTIM TYPE: 2010

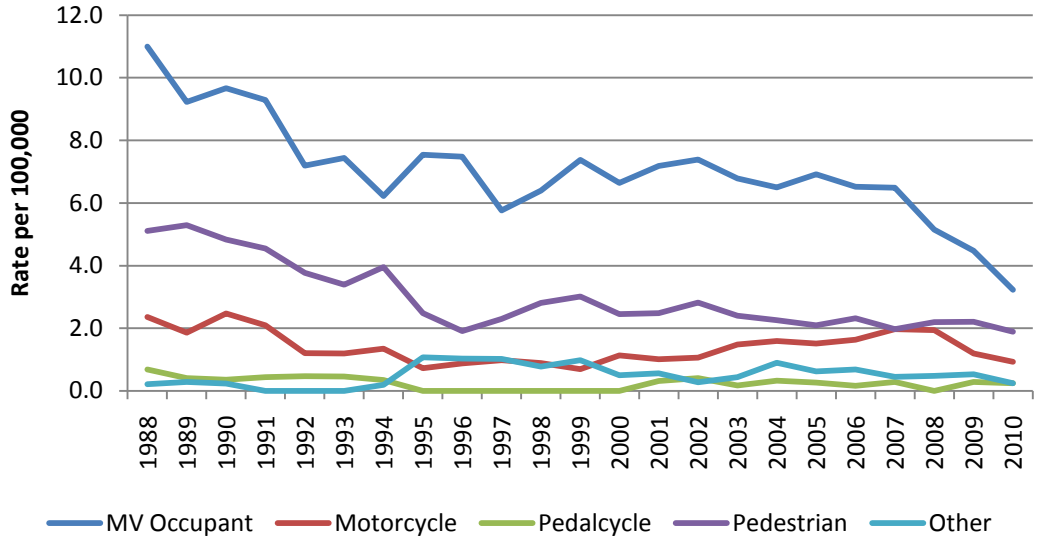


N=179; Toxicology testing was not performed on 32 decedents
Source: county of San Diego Medical Examiner's Database. Data reported to Emergency Medical Services

TRAFFIC-RELATED FATALITIES BY YEAR, 1988 - 2010

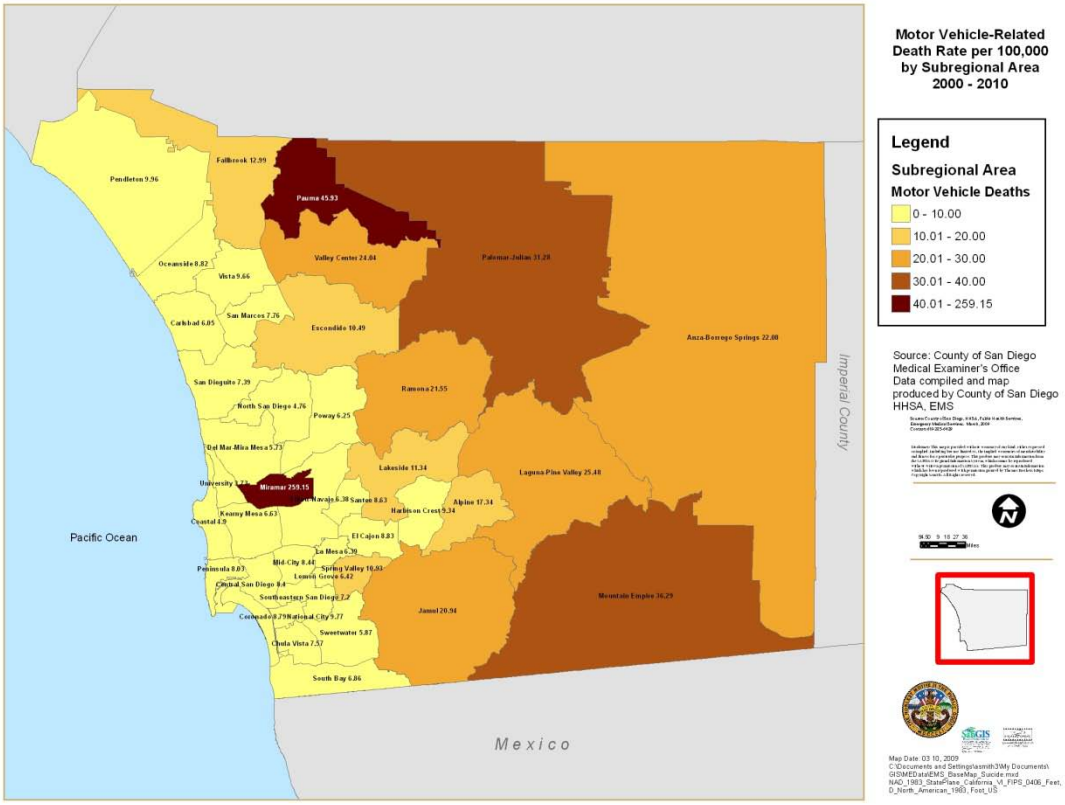


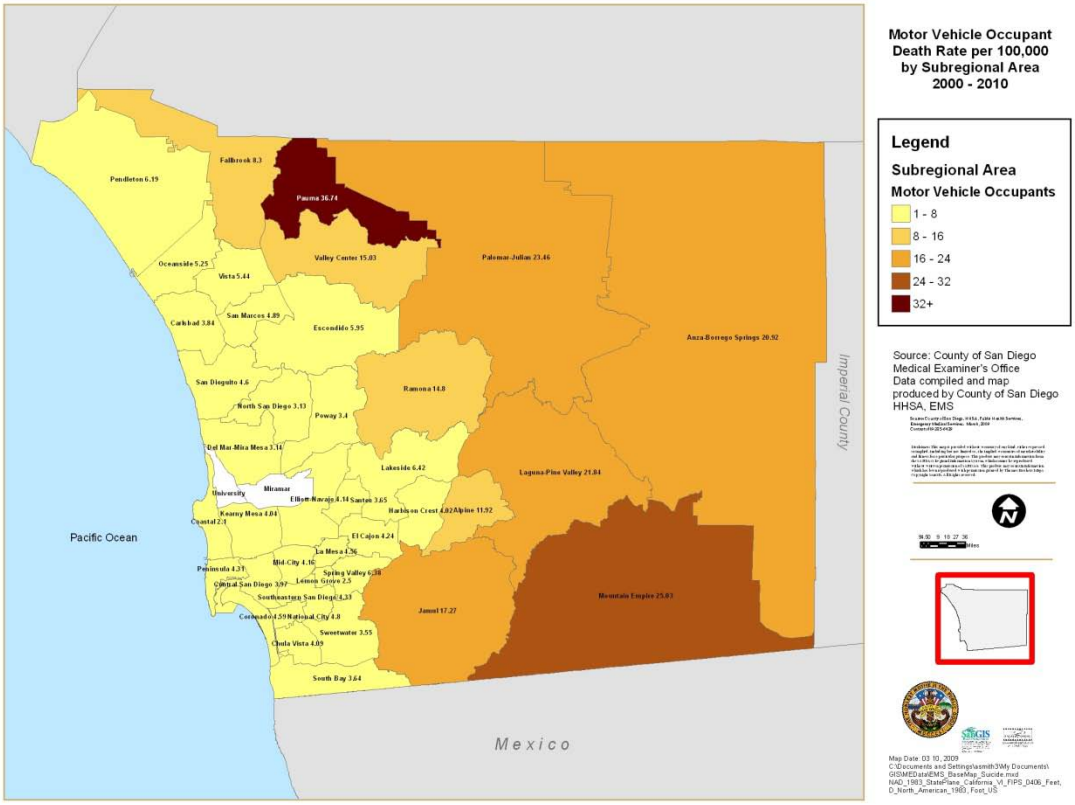
TRAFFIC-RELATED FATALITY RATE BY YEAR, 1988 - 2010

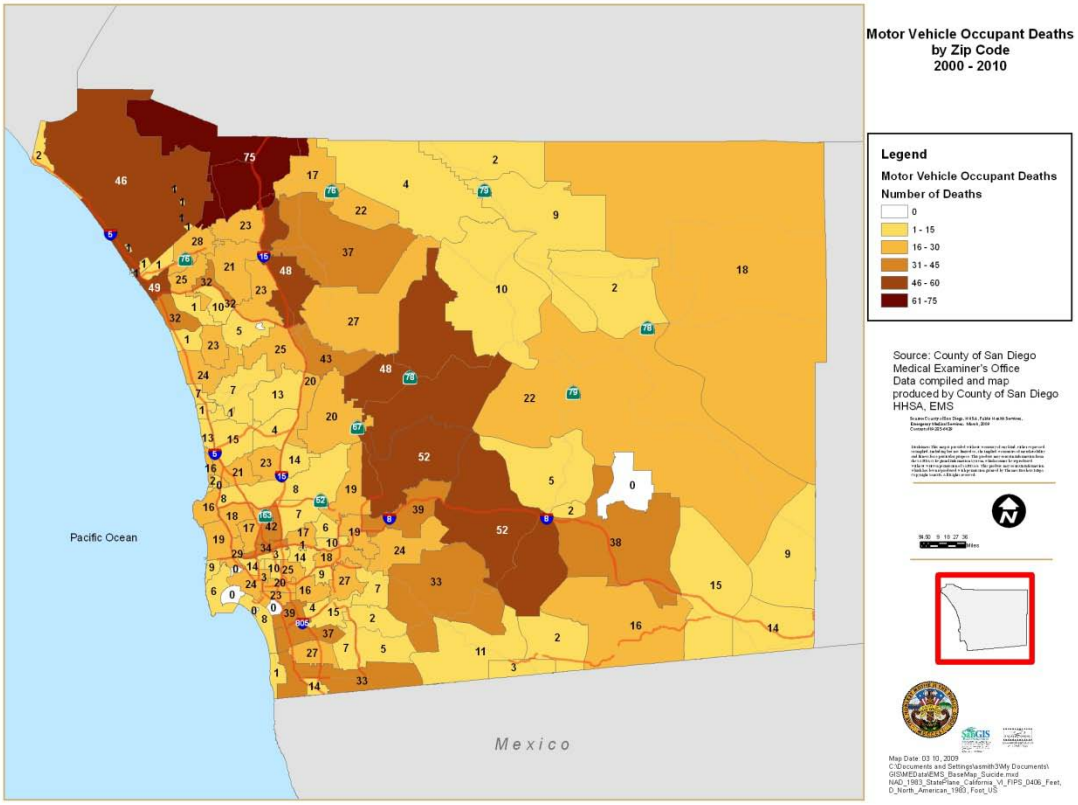


Motor vehicle occupant and pedestrian death rates have both dropped by more than half from the late 1980's to 2009.

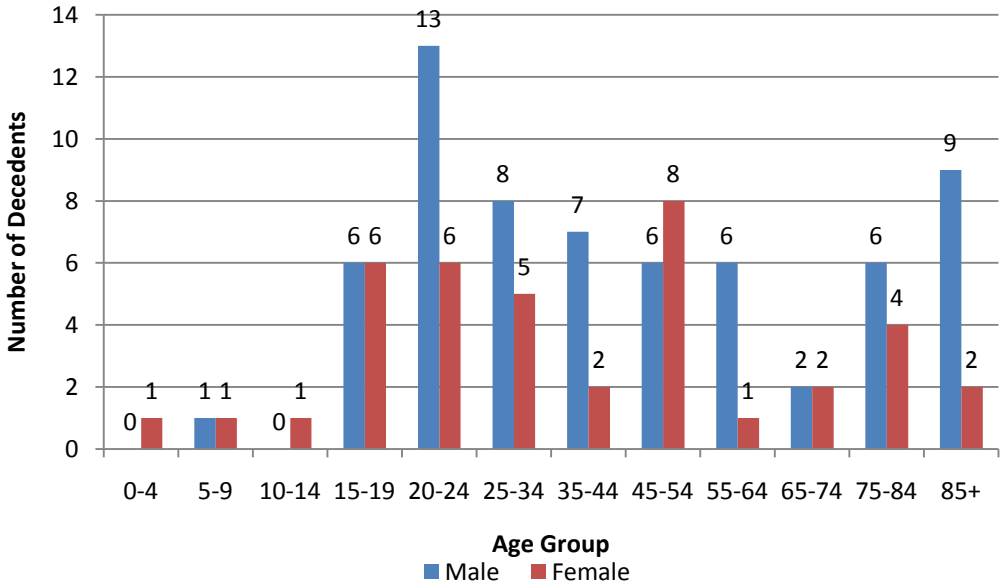
Deaths to motorcyclists also saw a sharp decline from 1988 to the late 1990's, coinciding with the implementation of California's mandatory helmet law for all motorcyclists. Motorcyclist death rates have been rising since the year 2000 as motorcycles have experienced an increase in popularity.


Motor Vehicle-Related Death Rate per 100,000 by Subregional Area 2000 - 2010
Legend
Subregional Area
Motor Vehicle Deaths
0 - 10.00
10.01 - 20.00
20.01 - 30.00
30.01 - 40.00
40.01 - 259.15
Source: County of San Diego Medical Examiner's Office Data compiled and map produced by County of San Diego HHSA, EMS
Pendleton 9.96
Fallbrook 12.99
Pauma 45.93
Valley Center 24.04
Palomar-Julian 31.28
Oceanside 8.82
Vista 9.66
Carlsbad 6.05
San Marcos 7.76
Escondido 10.49
Anza-Borrego Springs 22.08
San Dieguito 7.39
Ramona 21.55
North San Diego 4.76
Poway 6.25
Del Mar-Mira Mesa 5.73
Lakeside 11.34
Laguna-Pine Valley 25.48
Miramar 259.15
Santee 8.63
Alpine 17.34
Harbison Crest 9.34
Kearny Mesa 6.63
Coastal 4.9
El Cajon 8.83
La Mesa 6.39
Mid-City 8.44
Spring Valley 10.03
Lemon Grove 6.42
Peninsula 8.07
Central San Diego 8.4
Southeastern San Diego 7.2
Mountain Empire 36.29
Jamul 20.94
Coronado 8.79
National City 9.77
Sweetwater 5.87
Chula Vista 7.57
South Bay 6.86
Imperial County
Pacific Ocean
Mexico
Map Date: 03 10, 2009


Motor Vehicle Occupant Death Rate per 100,000 by Subregional Area 2000 - 2010
Legend
Subregional Area
Motor Vehicle Occupants
1 - 8
8 - 16
16 - 24
24 - 32
32+
Source: County of San Diego Medical Examiner's Office Data compiled and map produced by County of San Diego HHSA, EMS
Pendleton 6.19
Fallbrook 8.3
Pauma 36.74
Valley Center 15.03
Palomar-Julian 23.46
Oceanside 5.25
Vista 5.44
Carlsbad 3.84
San Marcos 4.89
Escondido 5.95
Anza-Borrego Springs 20.92
San Dieguito 4.6
Ramona 14.8
North San Diego 3.13
Poway 3.4
Del Mar-Mira Mesa 3.14
Lakeside 6.42
Laguna-Pine Valley 21.84
Miramar
University
Santee 3.65
Alpine 11.92
Kearny Mesa 4.04
Coastal 2.1
El Cajon 4.24
La Mesa 4.36
Mid-City 4.16
Peninsula 4.31
Spring Valley 6.38
Central San Diego 3.97
Lemon Grove 2.5
Southeastern San Diego 4.33
Mountain Empire 25.03
Jamul 17.27
Coronado 4.59
National City 4.8
Sweetwater 3.55
Chula Vista 4.09
South Bay 3.64
Imperial County
Pacific Ocean
Mexico
Map Date: 03 10, 2009

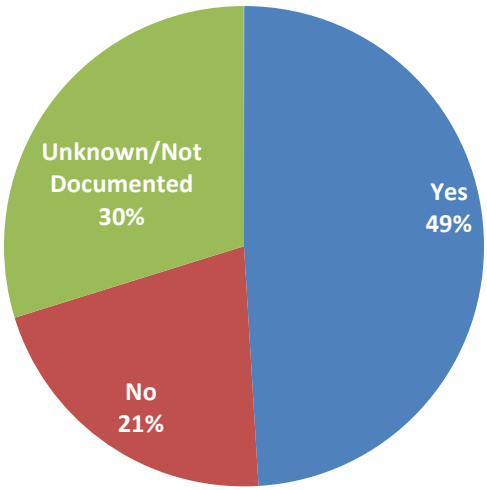


NUMBER OF MOTOR VEHICLE OCCUPANTS DEATHS BY AGE AND SEX, 2010



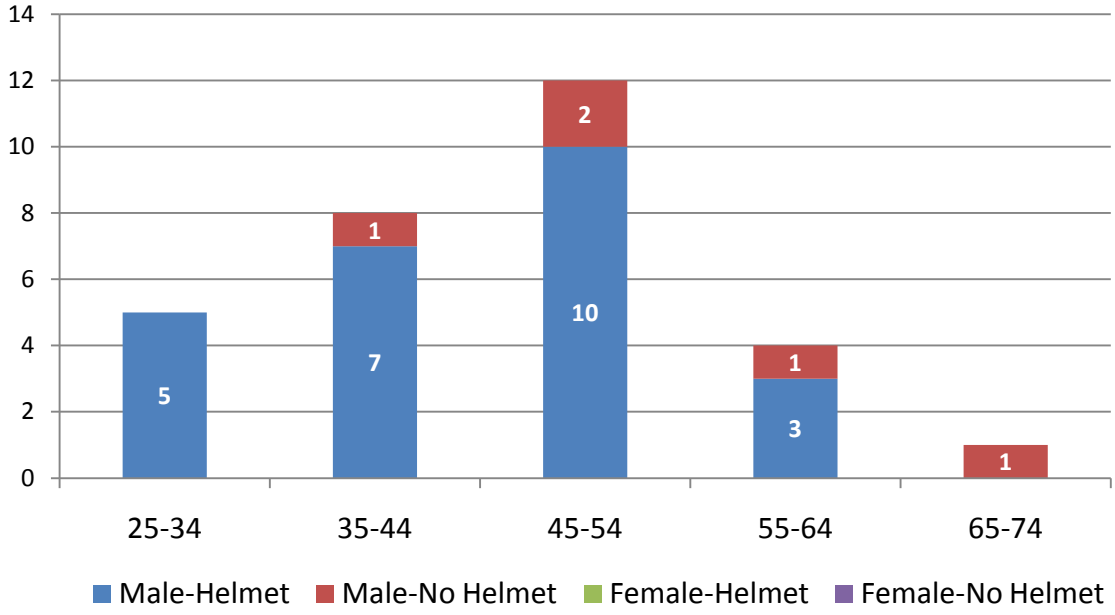
N=104
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Services

SEAT BELT USE: MOTOR VEHICLE OCCUPANTS, 2010



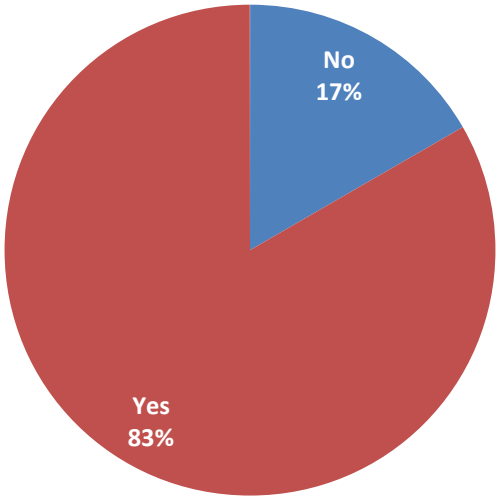
N=104
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Services

MOTORCYCLIST DEATHS BY AGE AND HELMET USE

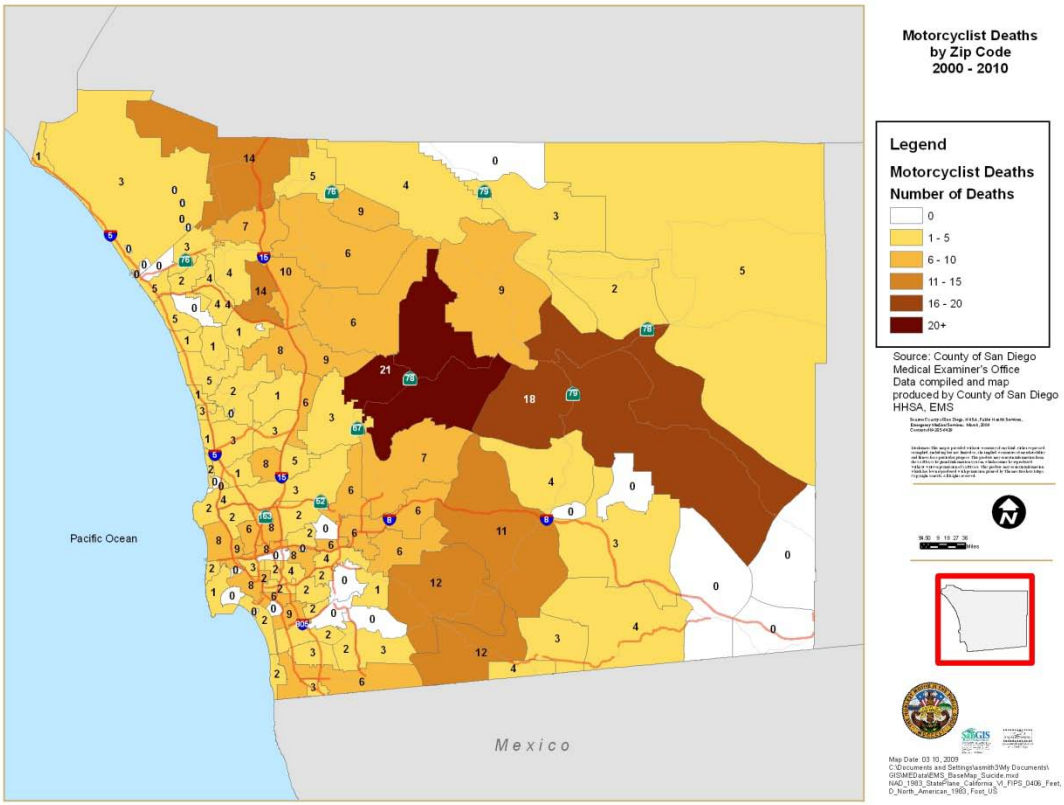


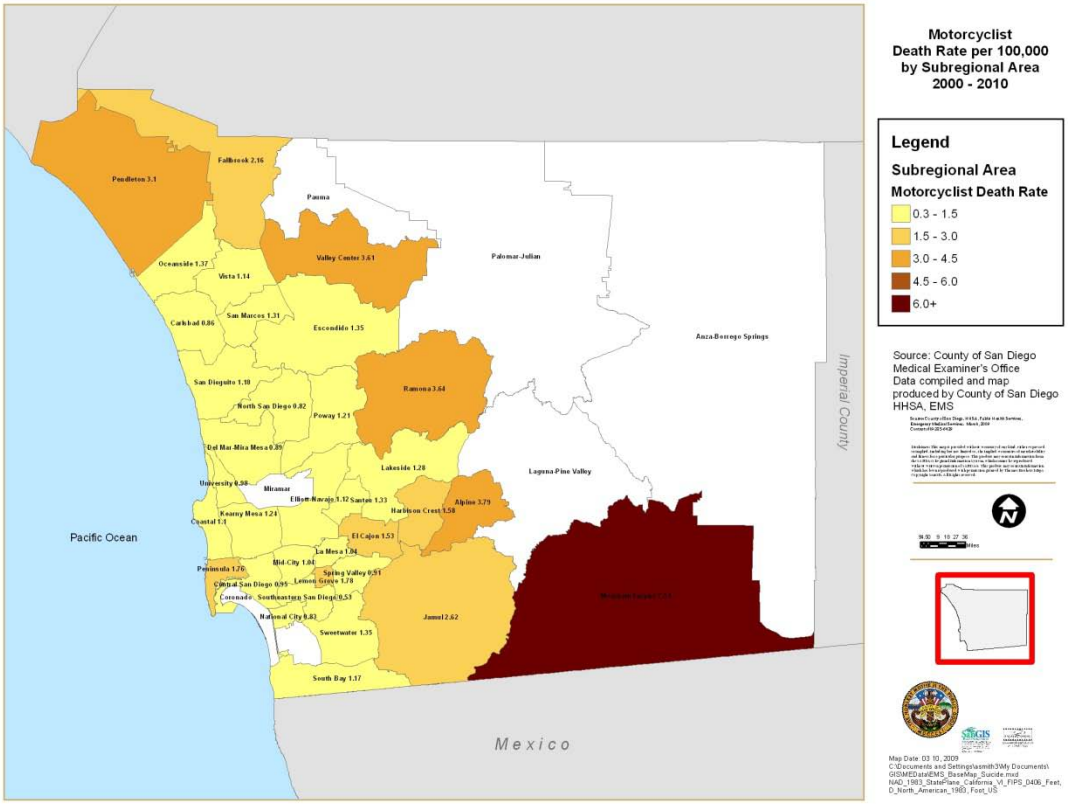
N=30
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Service

HELMET USE: MOTORCYCLISTS, 2010

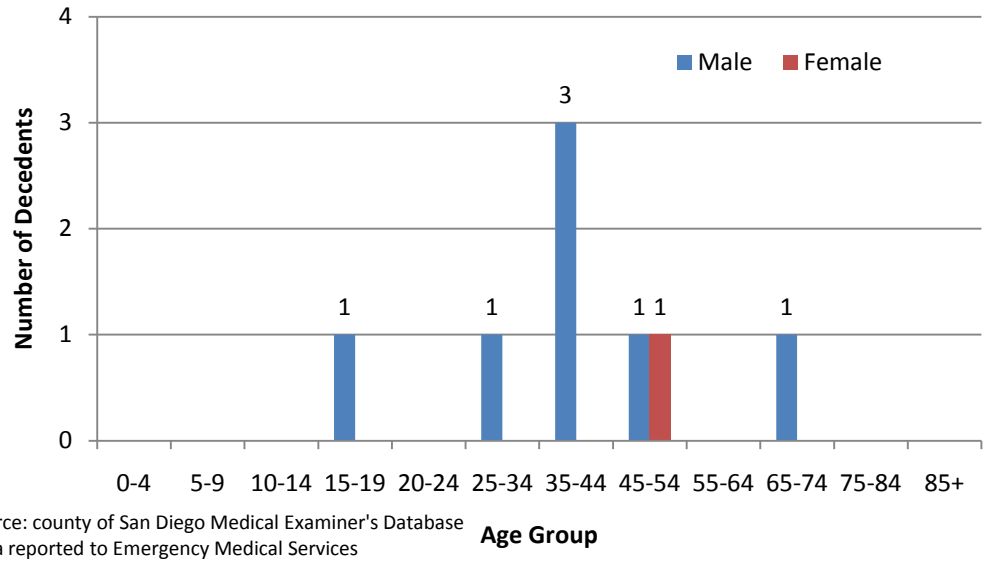


N=30
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Services



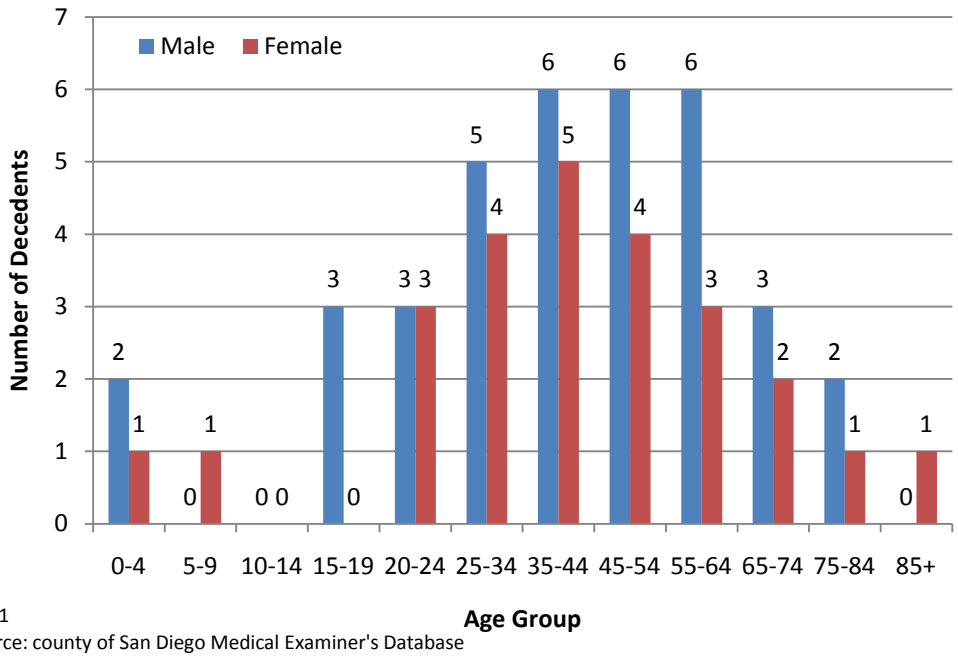


PEDALCYCLIST DEATHS BY AGE AND SEX, 2010

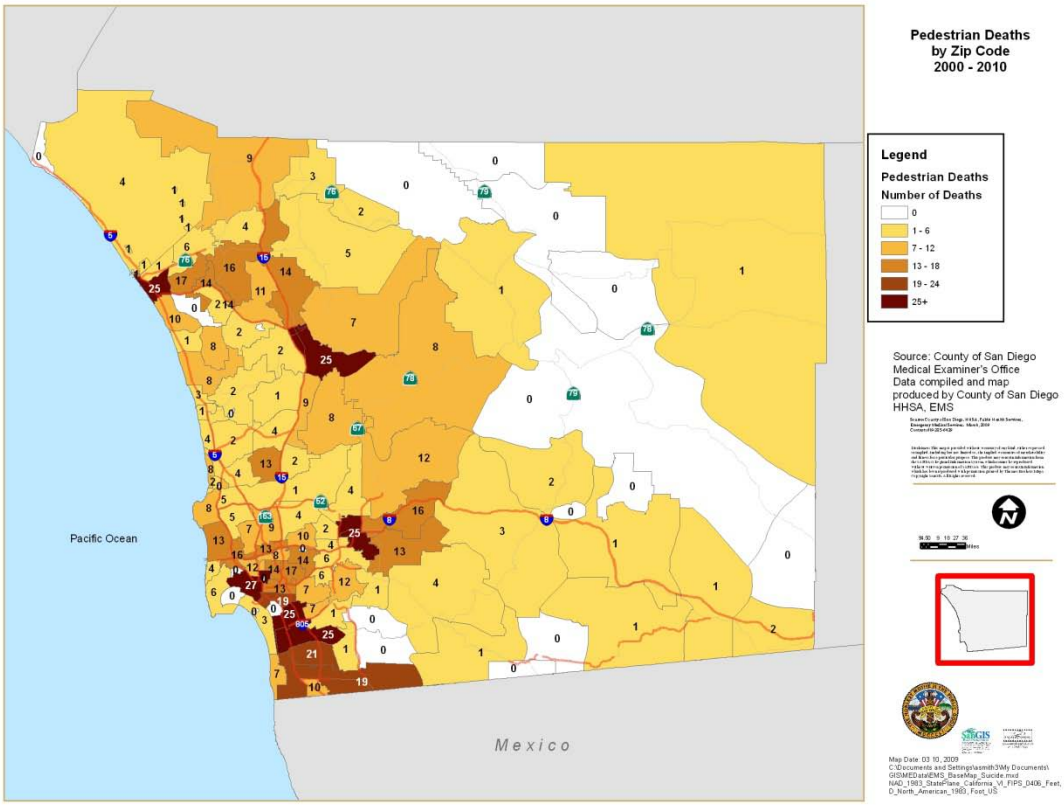


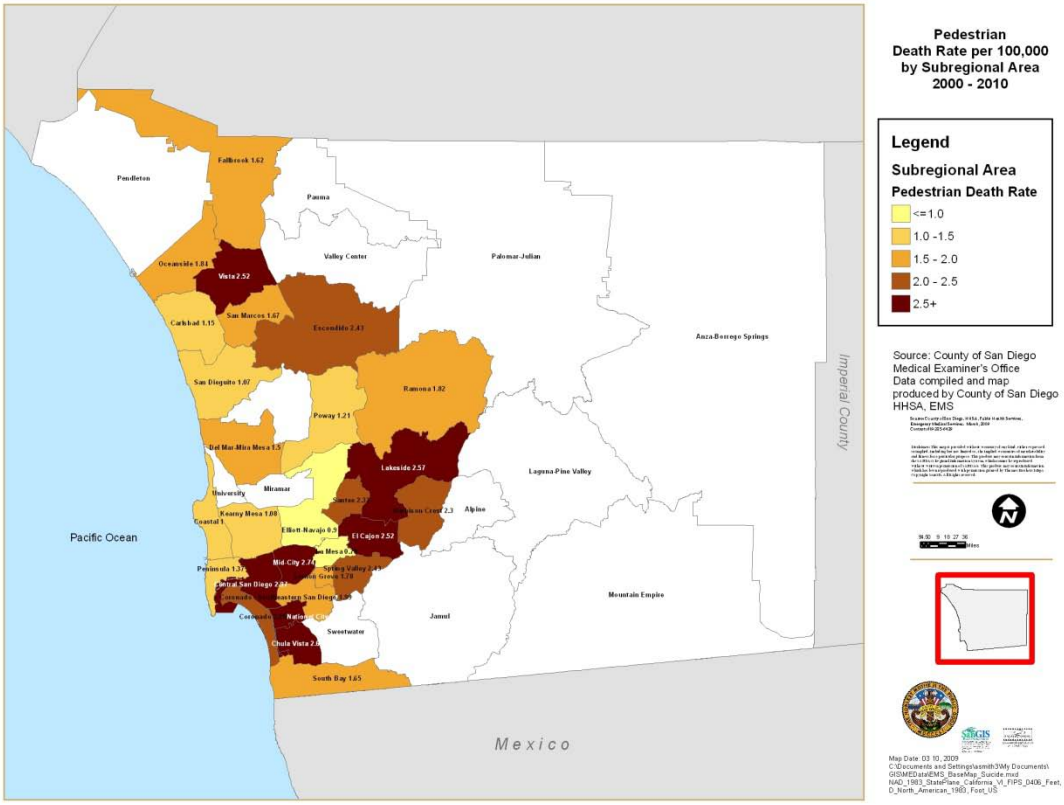
N=8
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Services

NUMBER OF PEDESTRIAN DEATHS BY AGE AND SEX, 2010



N=61
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Services




Pedestrian
Death Rate per 100,000
by Subregional Area
2000 - 2010
Legend
Subregional Area
Pedestrian Death Rate
<=1.0
1.0 -1.5
1.5 - 2.0
2.0 - 2.5
2.5+
Source: County of San Diego
Medical Examiner's Office
Data compiled and map
produced by County of San Diego
HHSA, EMS
Pacific Ocean
Mexico
Imperial County
Pendleton
Fallbrook 1.62
Pauma
Valley Center
Palomar-Julian
Oceanside 1.81
Vista 2.52
San Marcos 1.67
Carlsbad 1.15
Escondido 2.43
Anza-Borrego Springs
San Dieguito 1.07
Ramona 1.82
Poway 1.21
Del Mar-Mira Mesa 1.5
Lakeside 2.57
Laguna-Pine Valley
University
Miramar
Kearny Mesa 1.08
Coastal 1
Santee 2.32
Alpine
Elliott-Navajo 0.3
El Cajon 2.52
Mid-City 2.74
Peninsula 1.32
Central San Diego 2.07
Downtown San Diego 0.97
Coronado
National City
Sweetwater
Chula Vista 2.0
Jamul
Mountain Empire
South Bay 1.65

UNINTENTIONAL DEATHS DUE TO MEDICATIONS, ALCOHOL, AND ILLICIT DRUGS

The following graphs represent medications, alcohol, and prescription drugs that were either alone or in combination responsible for being the primary cause of death or contributing to the death. In other words, these substances were on the death certificate as having played a role in the death. In this publication, the word "drug" refers to illicit drugs and the word "medication" refers to medications.

In some cases, the intoxication contributed to the circumstances of the death and were required for an explanation of those circumstances, such as drowning in a bathtub while intoxicated (neurologically intact, sober adults should not drown in a bathtub unless they are unwilling or unable to sit up). However, in other cases – such as motor vehicle fatalities – although the crash may have been made more likely to occur because of the intoxication, by convention we do not include intoxications as part of the cause of death in these circumstances. The deaths were due to the physical injuries.

Where numbers of deaths related to a particular drug or medication are provided, one should not add the different values to reach a total. This is because several medications may be involved in one case. In other words, the same case may be represented multiple times by different drugs or medications.

Unless otherwise specified, this data is based on occurrence of the drug or medication on the death certificate. In other words, this represents substances that were the primary cause of death or contributed to the death.

Some notable trends:

1. 2010 continued the steady increase in drug/medication related deaths seen over the last 5 or 6 years, the main drivers being narcotics (opiates and their derivatives) and hypnotic and sedatives.

2. Heroin continued its third year of playing an increasing role in deaths – particularly those under 25, including 6 in their teens in 2010.

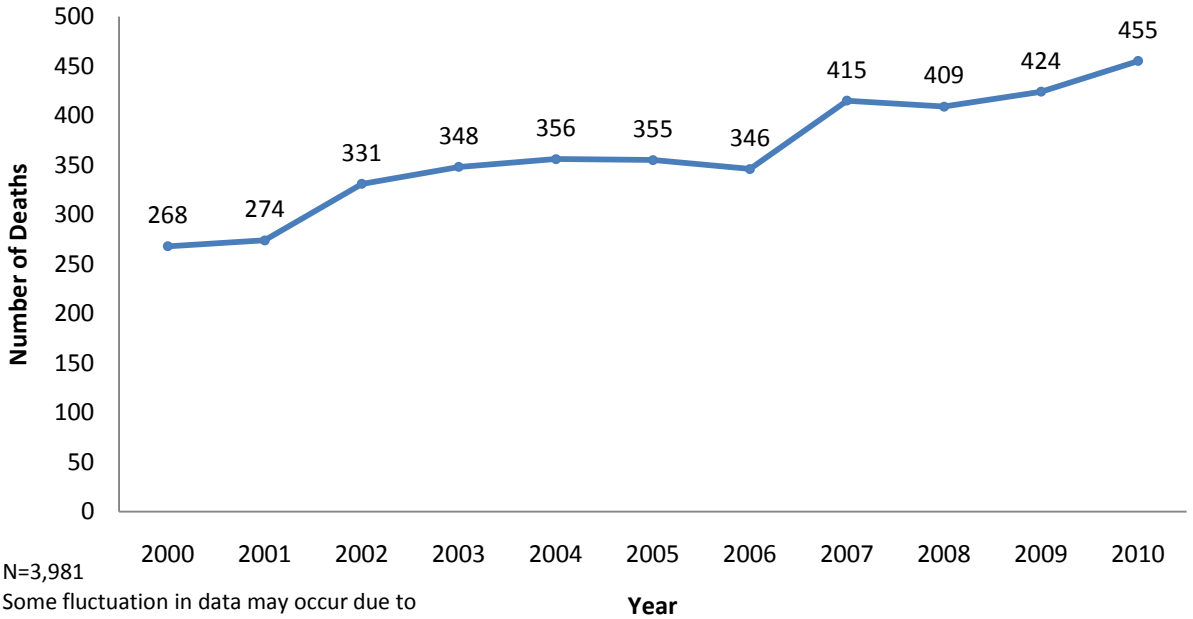
3. Heroin was the number one cause of drug/medication related deaths for those under 30 years of age. This included 6 teenagers in 2010 (there was one other that died of heroin withdrawals). 2010 saw as many teenage heroin deaths as the last 10 years combined.

4. Methamphetamine was still the number one cause of drug/medication related deaths for the population as a whole, saw a spike back up to 2005 levels this year, and is the number one cause in those between 40 and 60 years of age.

5. Since the sharp increase in deaths related to oxycodone in 2008, the number of deaths has remained relatively stable and was surpassed by the number of methadone deaths in 2010.

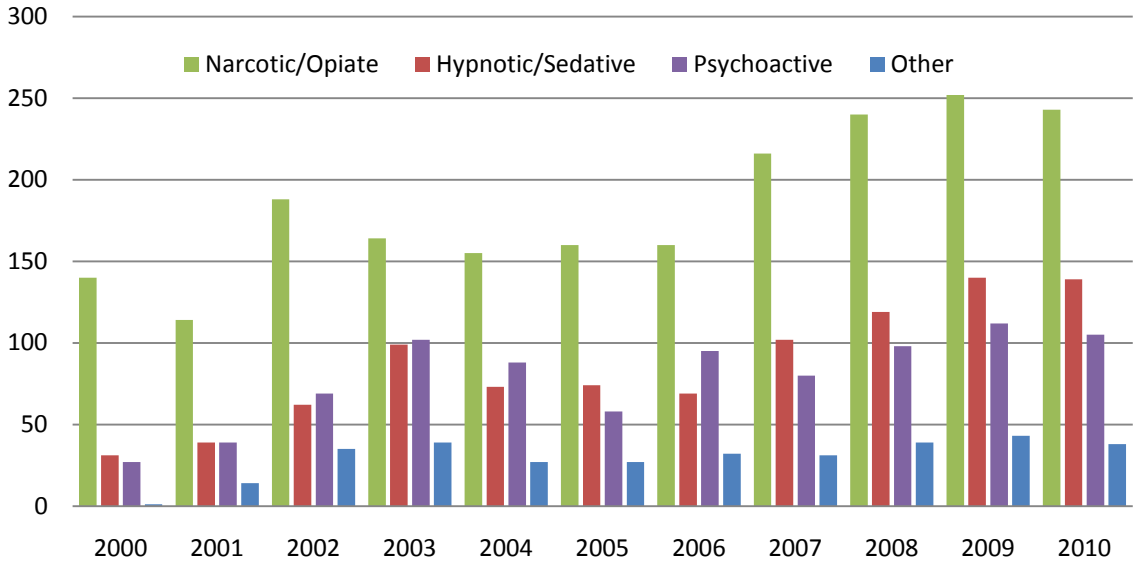
6. Cocaine remains low in frequency since its drop in 2008 compared to methamphetamine and heroin deaths.

UNINTENTIONAL DEATHS DUE TO DRUGS, MEDICATIONS, AND ALCOHOL, 2000 – 2010



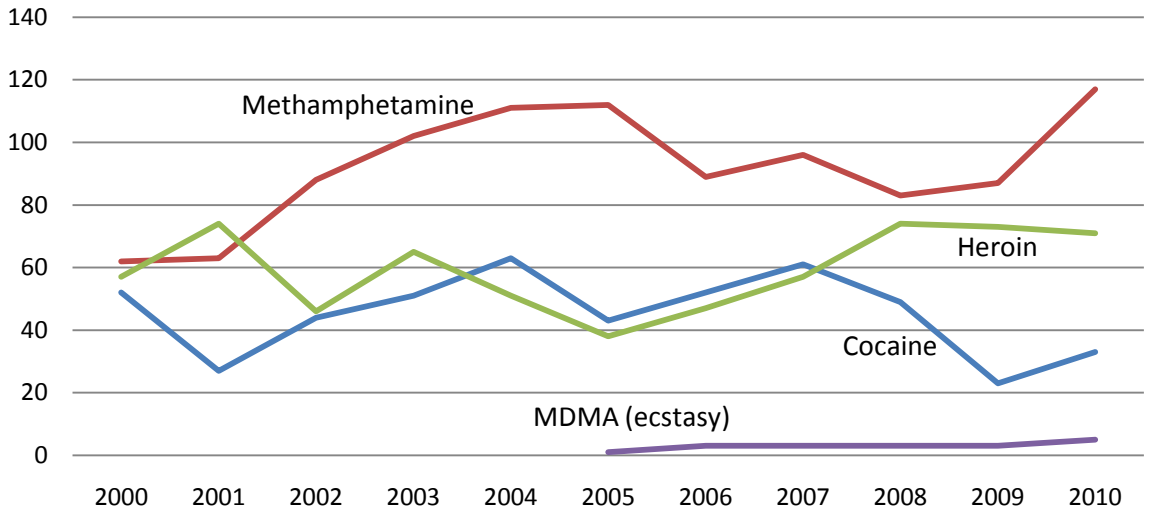
N=3,981
Some fluctuation in data may occur due to variations in death certification practices.

UNINTENTIONAL DEATHS DUE TO PRESCRIPTION MEDICATIONS BY TYPE, 2000 – 2010



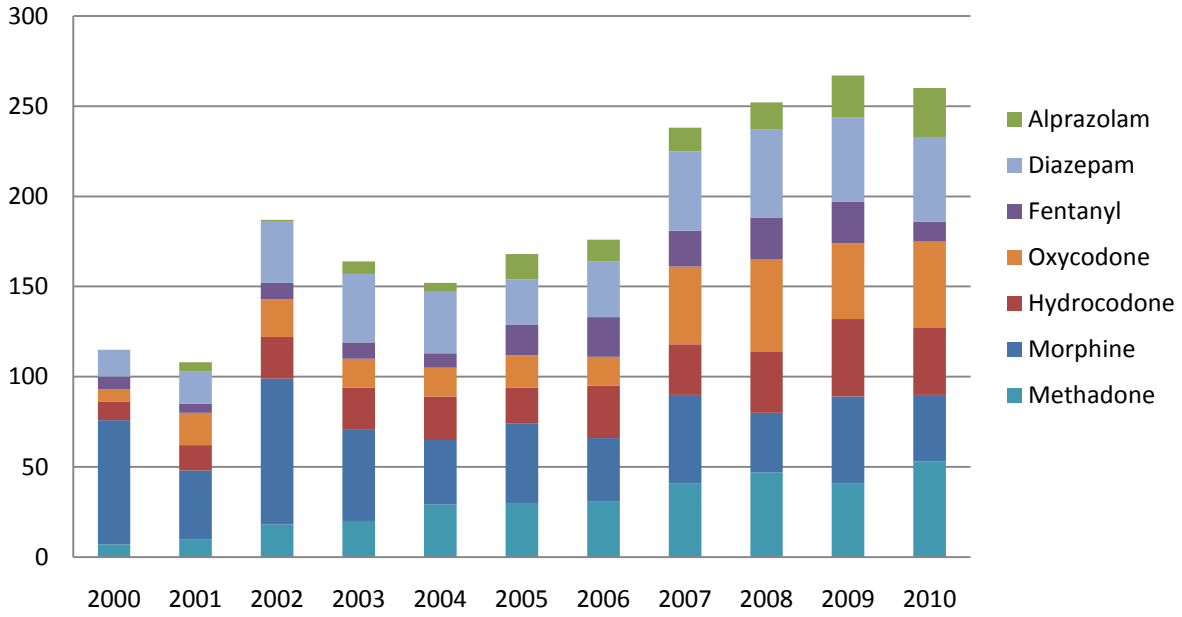
Note: Because an individual case may be due to a combination of medications, the medications are not mutually exclusive.

UNINTENTIONAL DEATHS RELATED TO ILLICIT DRUGS, 2000 – 2010



Note: Because an individual case may be due to a combination of medications, the medications are not mutually exclusive.

UNINTENTIONAL DEATHS RELATED TO SELECTED MEDICATIONS, 2000 – 2010

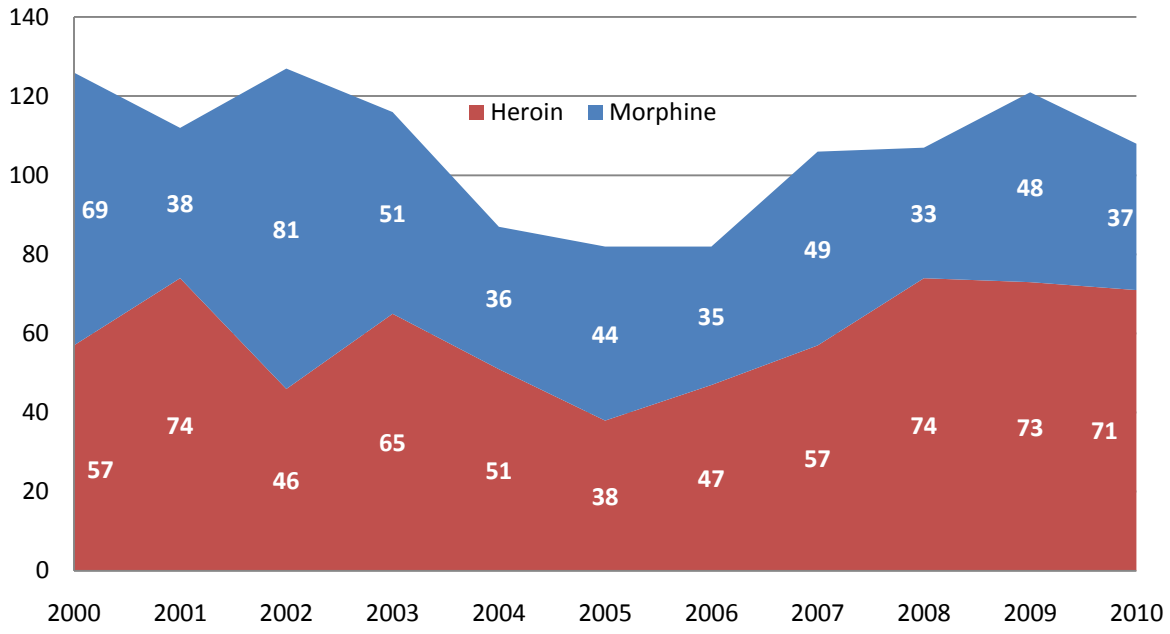


Note: Because an individual case may be due to a combination of medications, the medications are not mutually exclusive.

UNINTENTIONAL DEATHS RELATED TO SELECTED DRUGS & MEDICATIONS, 2000 – 2010

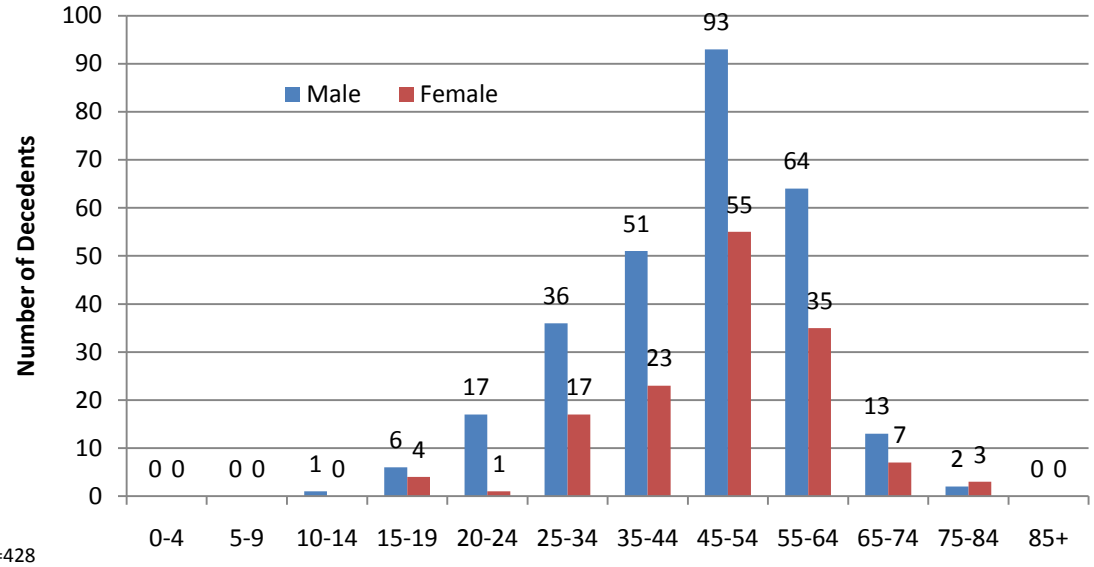
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alcohol	**64**	**80**	**62**	**45**	**58**	**64**	**78**	**83**	**95**	**127**	**132**
Morphine	**69**	**38**	**81**	**51**	**36**	**44**	**35**	**49**	**33**	**48**	**37**
Hydrocodone	**10**	**14**	**23**	**23**	**24**	**20**	**29**	**28**	**34**	**43**	**37**
Alprazolam		**5**	**1**	**7**	**5**	**14**	**12**	**13**	**15**	**23**	**27**
Fentanyl	**7**	**5**	**9**	**9**	**8**	**17**	**22**	**20**	**23**	**23**	**11**
Methadone	**7**	**10**	**18**	**20**	**29**	**30**	**31**	**41**	**47**	**41**	**53**
Oxycodone	**7**	**18**	**21**	**16**	**16**	**18**	**16**	**43**	**51**	**42**	**48**
Diazepam	**15**	**18**	**34**	**38**	**34**	**25**	**31**	**44**	**49**	**47**	**47**
Cocaine	**52**	**27**	**44**	**51**	**63**	**43**	**52**	**61**	**49**	**23**	**33**
Methamphetamine	**62**	**63**	**88**	**102**	**111**	**112**	**89**	**96**	**83**	**87**	**117**
Heroin	**57**	**74**	**46**	**65**	**51**	**38**	**47**	**57**	**74**	**73**	**71**
MDMA (ecstasy)	**1**			**1**		**1**	**3**	**3**	**3**	**3**	**5**

UNINTENTIONAL DEATHS RELATED TO HEROIN OR MORPINE, 2000 – 2010



Heroin and morphine are reported here exclusively, without overlap. Because heroin is rapidly metabolized to morphine, when morphine alone is detected, its source – whether from the medication morphine or from the breakdown of heroin – cannot be distinguished. Cases in which heroin (or 6-monoacetylemorphine) was detected or the circumstances strongly suggest heroin was used are included in the heroin numbers.

NUMBER OF DRUG/ALCOHOL OVERDOSE DEATHS BY AGE AND SEX, 2010



N=428
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Services

2010 UNINTENTIONAL DRUG/MED/ALCOHOL DEATHS BY COMBINATION

Prescription	141
Illicit	140
Alcohol	69
Prescription and Alcohol	34
Prescription and Illicit	30
Illicit and Alcohol	19
Prescription, Illicit and alcohol	9
Prescription and OTC	9
Other	3
Prescription, alcohol and OTC	1

Note: includes all medication/alcohol/drug-related deaths whether the substance(s) were the primary cause of death or contributory to the death. Numbers may differ from online stats. Illicit – heroin, cocaine, ecstasy, methamphetamine. Prescription – medications normally obtained by prescription. OTC – over the counter medications.

RELATIVE FREQUENCY OF DRUG/MEDICATIONS IN CAUSE OF DEATH BY AGE, 2010

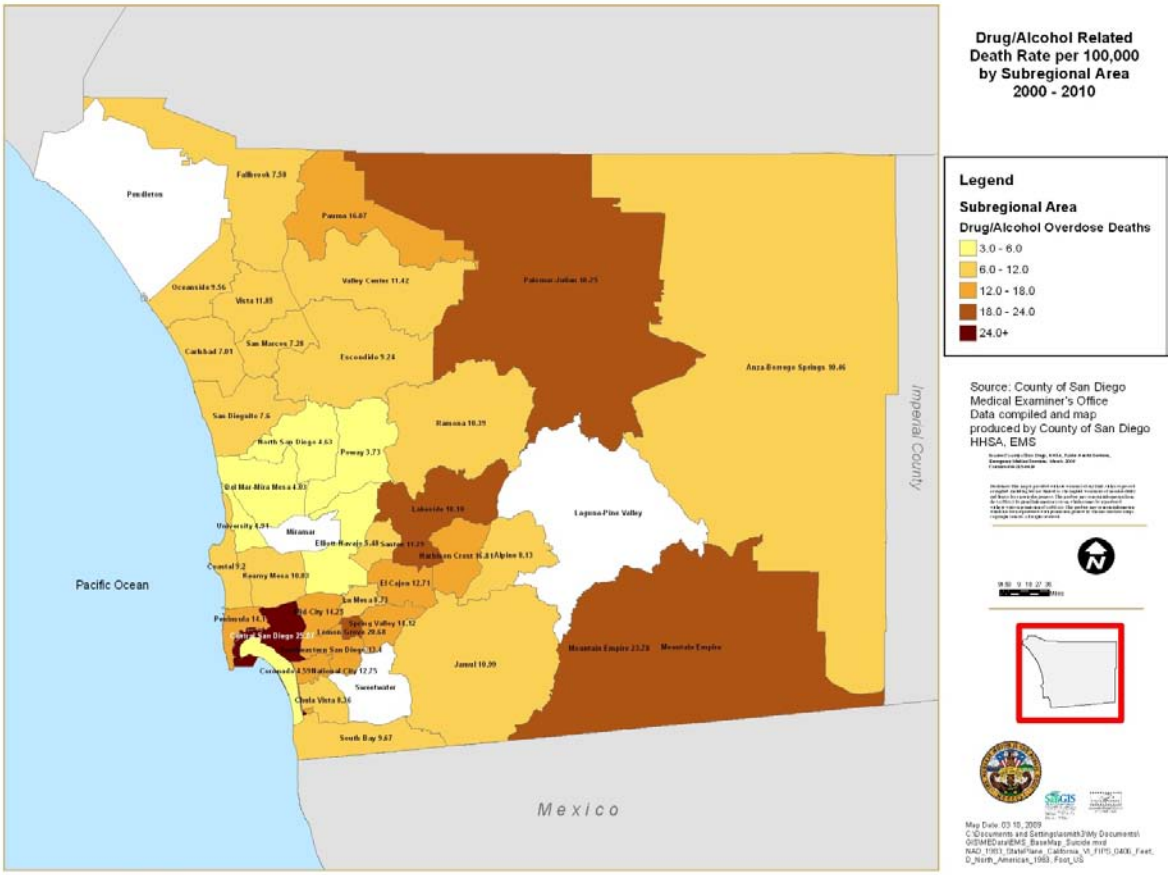
Rank	10-19	20-29	30-39	40-49	50-59	60-69
1	Heroin	Heroin	Methadone	Metham-phetamine	Metham-phetamine	Oxycodone
2	Metham-phetamine*	Metham-phetamine	Heroin	Heroin	Methadone	Metham-phetamine
3	Alprazolam*	Oxycodone Methadone	Diazepam	Diazepam Morphine	Diazepam	Temazepam* Zolpidem*
4		Cocaine* Morphine*	Cocaine Hydrocodone	Methadone	Hydrocodone	Methadone* Morphine*
5			Metham-phetamine	Oxycodone	Oxycodone	
6			Oxycodone	Diphen-hydramine	Heroin	

*Five or fewer cases

SELECTED DRUG/MEDICATION UNINTENTIONAL DEATHS BY AGE, 2010

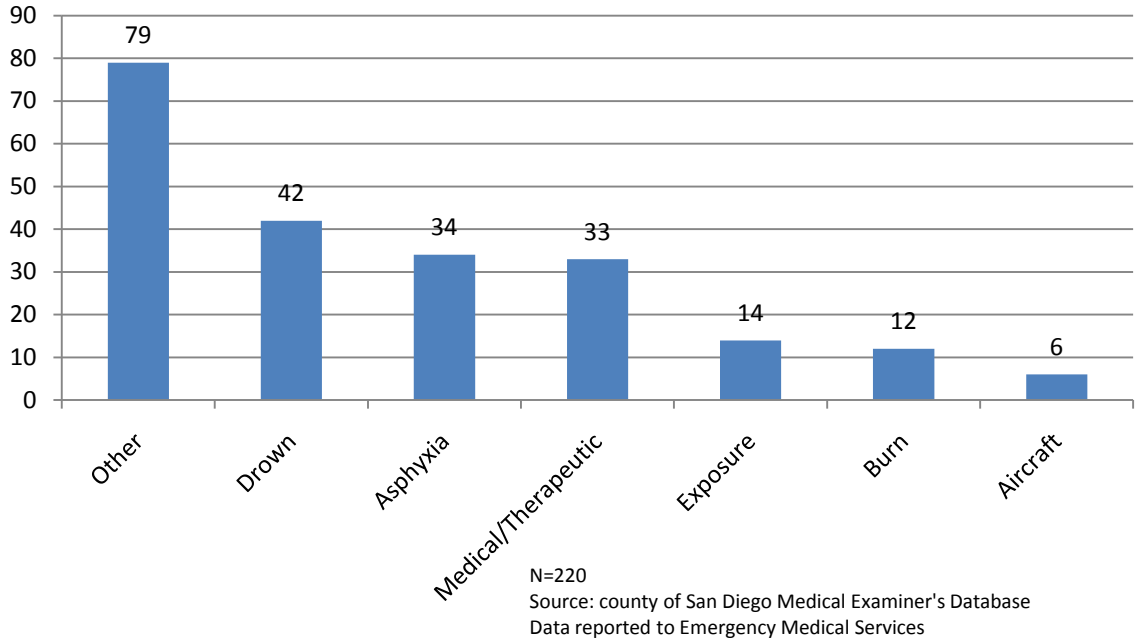
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	Total
Morphine		**5**	**3**	**15**	**10**	**4**		**37**
Alprazolam	**2**	**4**	**4**	**7**	**6**	**4**		**27**
Cocaine	**1**	**5**	**9**	**6**	**10**	**2**		**33**
Diphenhydramine			**2**	**8**	**10**			**20**
Fentanyl		**1**	**2**	**2**	**2**	**3**	**1**	**11**
Heroin	**6**	**17**	**16**	**18**	**11**	**3**		**71**
Hydrocodone	**1**	**1**	**9**	**7**	**16**	**3**		**37**
Methadone	**1**	**8**	**8**	**13**	**18**	**4**	**1**	**53**
Methamphetamine	**3**	**11**	**18**	**40**	**38**	**6**	**1**	**117**
Oxycodone	**1**	**8**	**7**	**9**	**14**	**8**	**1**	**48**

Note: Because an individual case may be due to a combination of medications, the medications are not mutually exclusive.

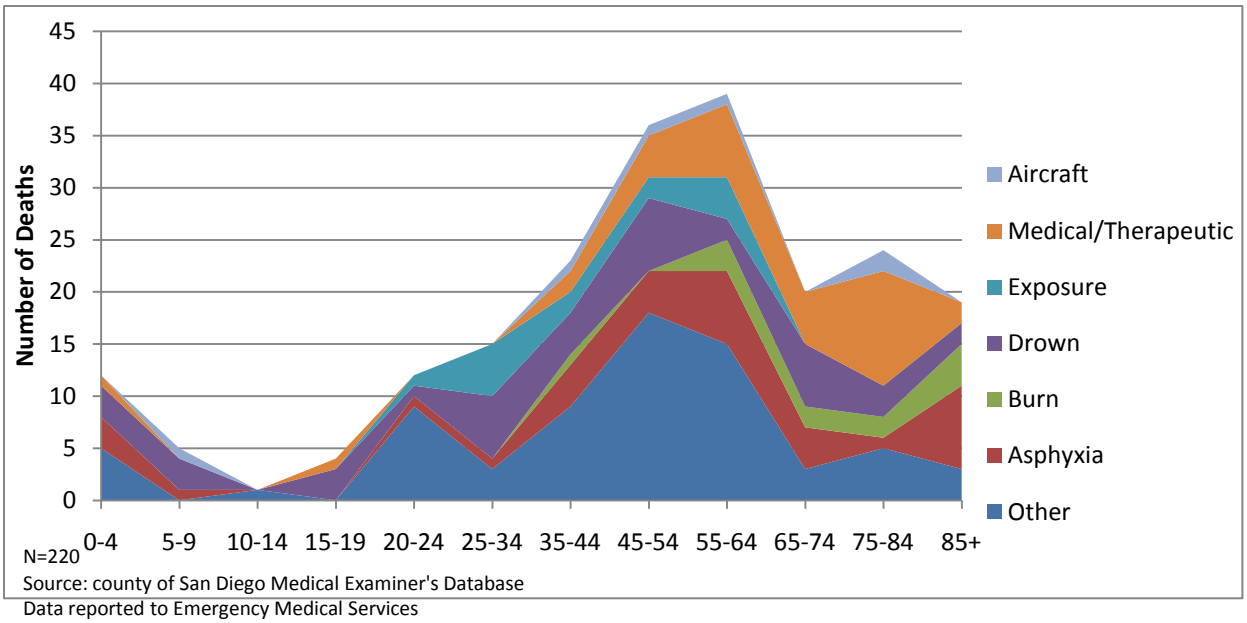

Drug/Alcohol Related
Death Rate per 100,000
by Subregional Area
2000 - 2010
Legend
Subregional Area
Drug/Alcohol Overdose Deaths
3.0 - 6.0
6.0 - 12.0
12.0 - 18.0
18.0 - 24.0
24.0+
Source: County of San Diego
Medical Examiner's Office
Data compiled and map
produced by County of San Diego
HHSA, EMS
Pacific Ocean
Mexico
Imperial County
Pendleton
Fallbrook 7.58
Pauma 16.87
Valley Center 11.42
Palomar-Julian 18.25
Oceanside 9.56
Vista 11.85
Carlsbad 7.01
San Marcos 7.28
Escondido 9.24
Anza-Borrego Springs 10.46
San Dieguito 7.6
Ramona 10.39
North San Diego 4.63
Poway 3.73
Del Mar-Mira Mesa 4.83
Lakeside 10.10
Laguna-Pine Valley
University 4.94
Miramar
Ellijay-Navajo 5.48
Santee 11.29
Rancho Cuyamaca 8.13
Coastal 9.2
Kearny Mesa 10.83
El Cajon 12.71
La Mesa 8.71
Peninsula 14.13
Old City 14.25
Sierra Valley 11.12
Downtown San Diego 33.4
Jamul 10.39
Mountain Empire 23.28
Mountain Empire
Coronado 4.55
National City 12.75
Sweetwater
Otay-Otay 8.36
South Bay 9.67

UNINTENTIONAL DEATHS, OTHERS

OTHER ACCIDENTAL MANNERS OF DEATH, 2010

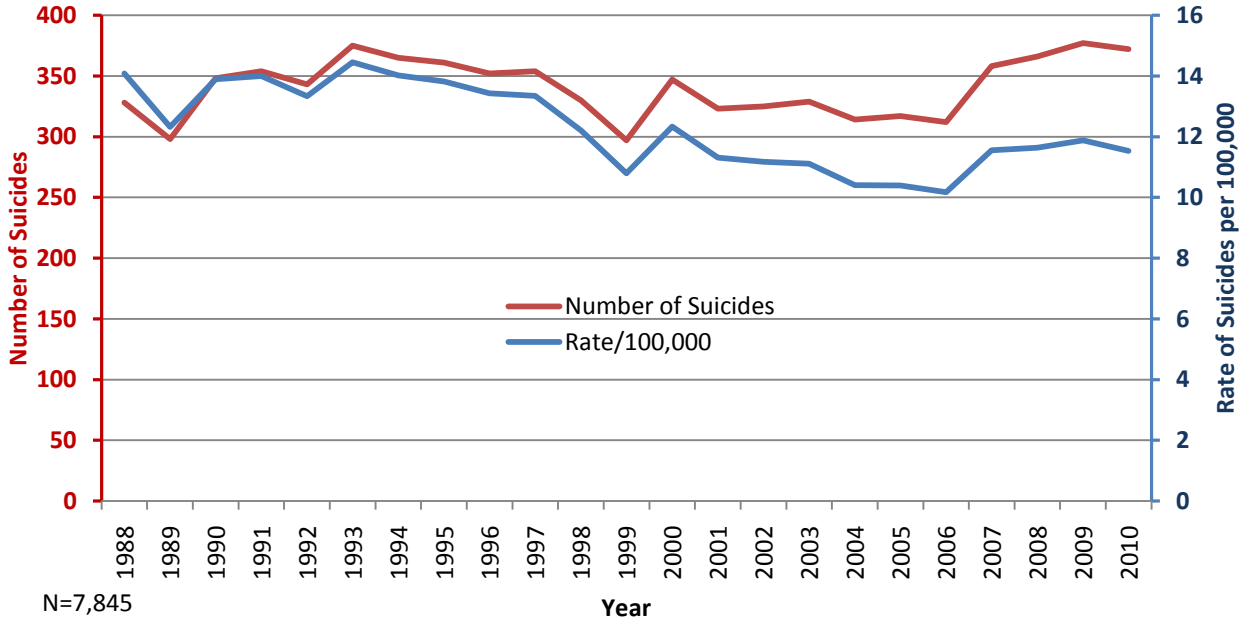


OTHER MECHANISMS OF ACCIDENTAL DEATH: AGE GROUP BY MECHANISM, 2010

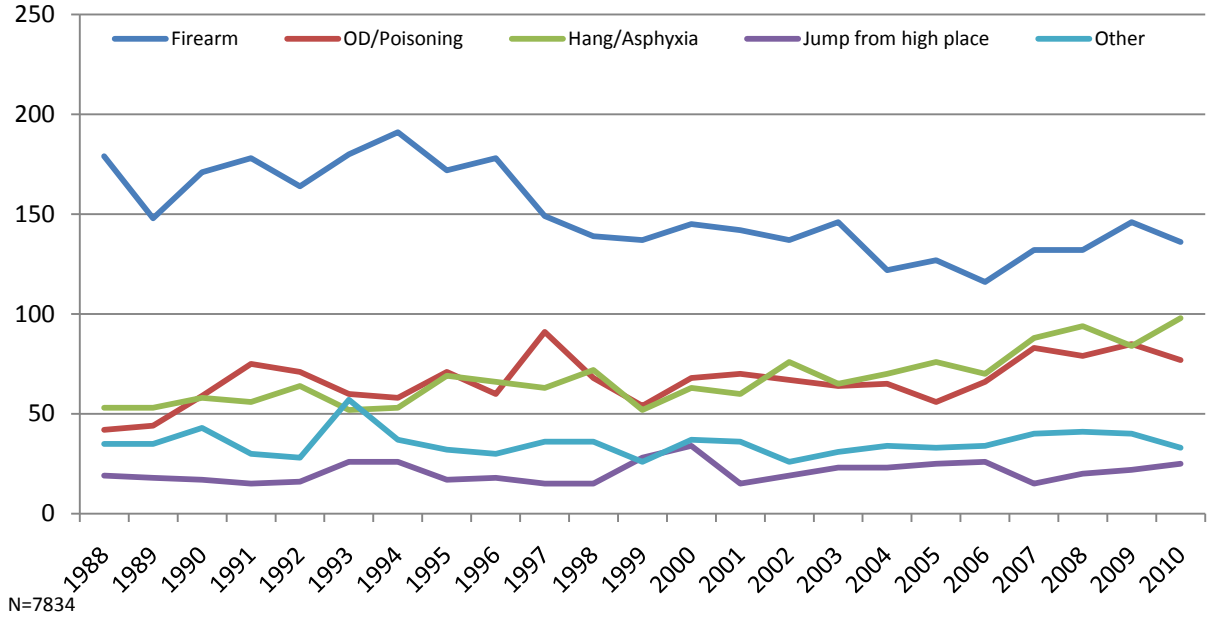


SUICIDES

SUICIDES BY YEAR, 1988 - 2010

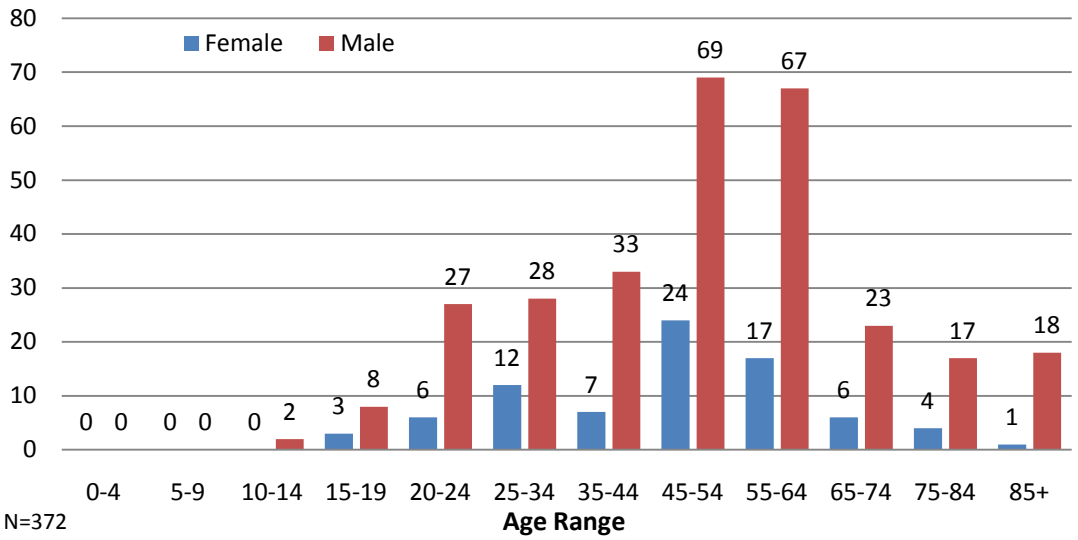


SUICIDE METHOD BY YEAR: 1988 - 2010



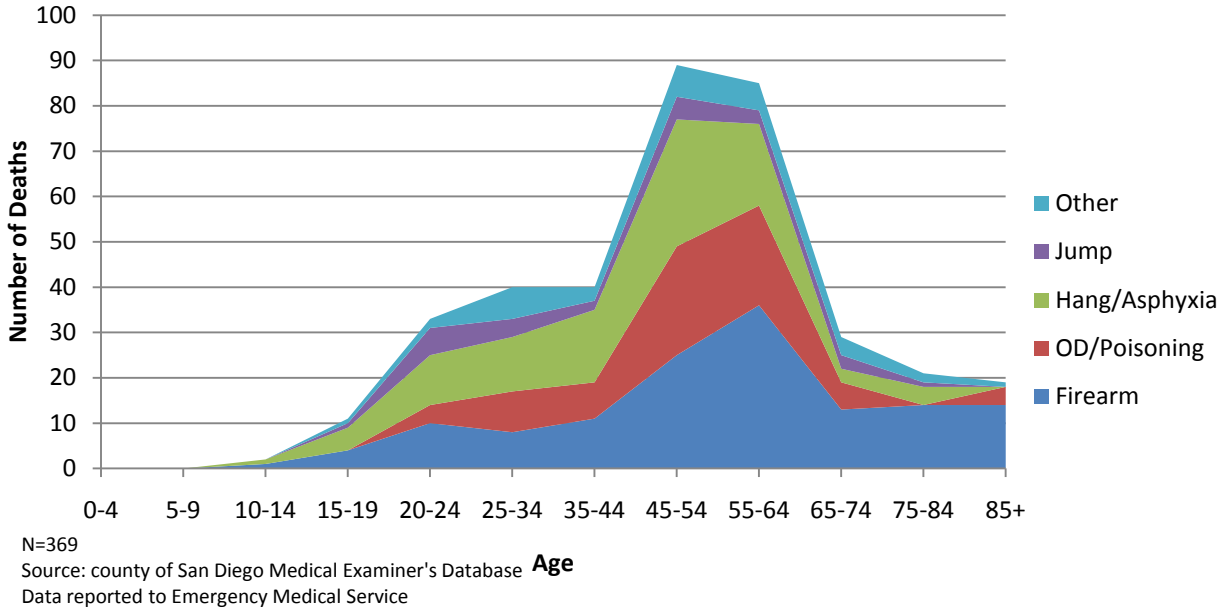
Source: county of San Diego Medical Examiner's Database. Data reported to Emergency Medical Services

NUMBER OF SUICIDES INVESTIGATED BY AGE AND SEX, 2010

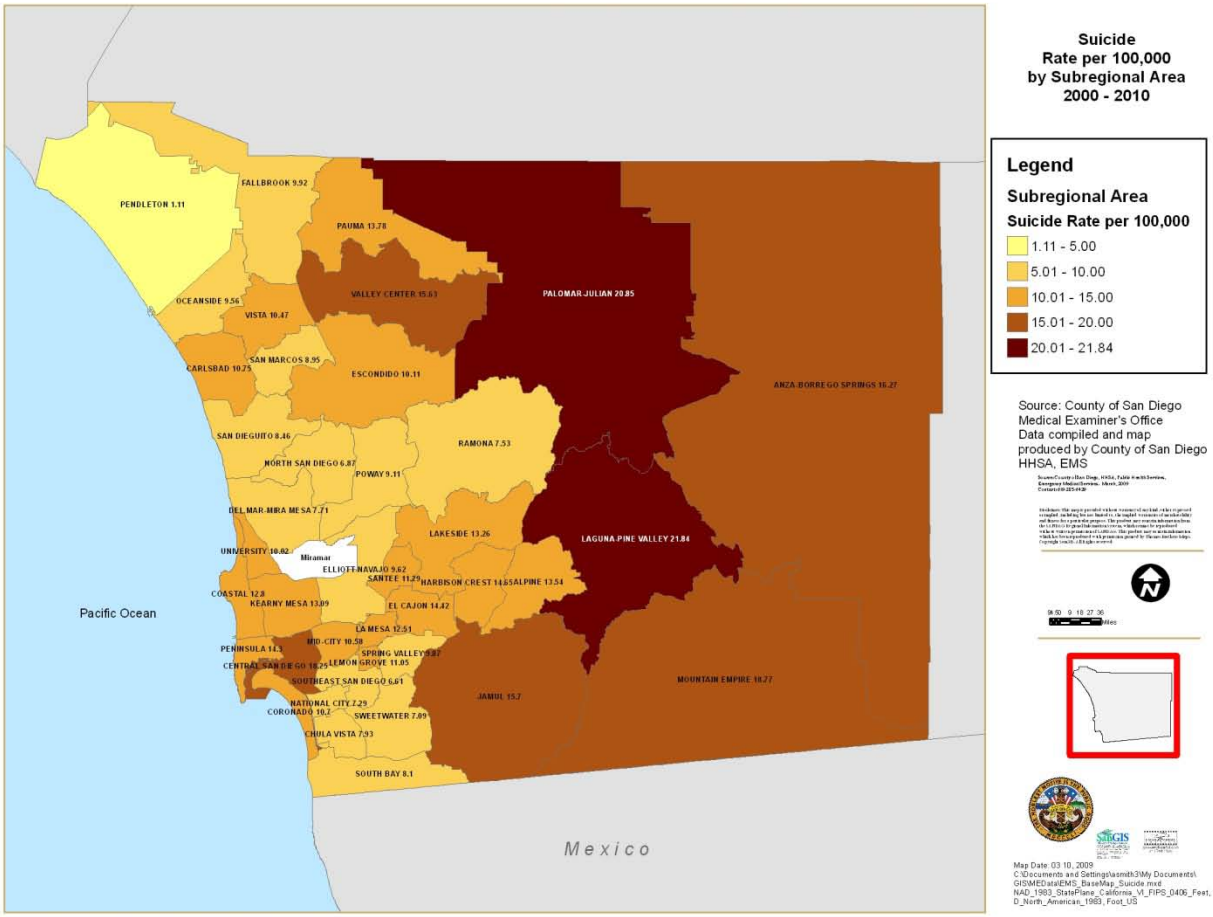


N=372
Source: county of San Diego Medical Examiner's Database

SUICIDE DEATHS BY AGE AND MECHANISM, 2010

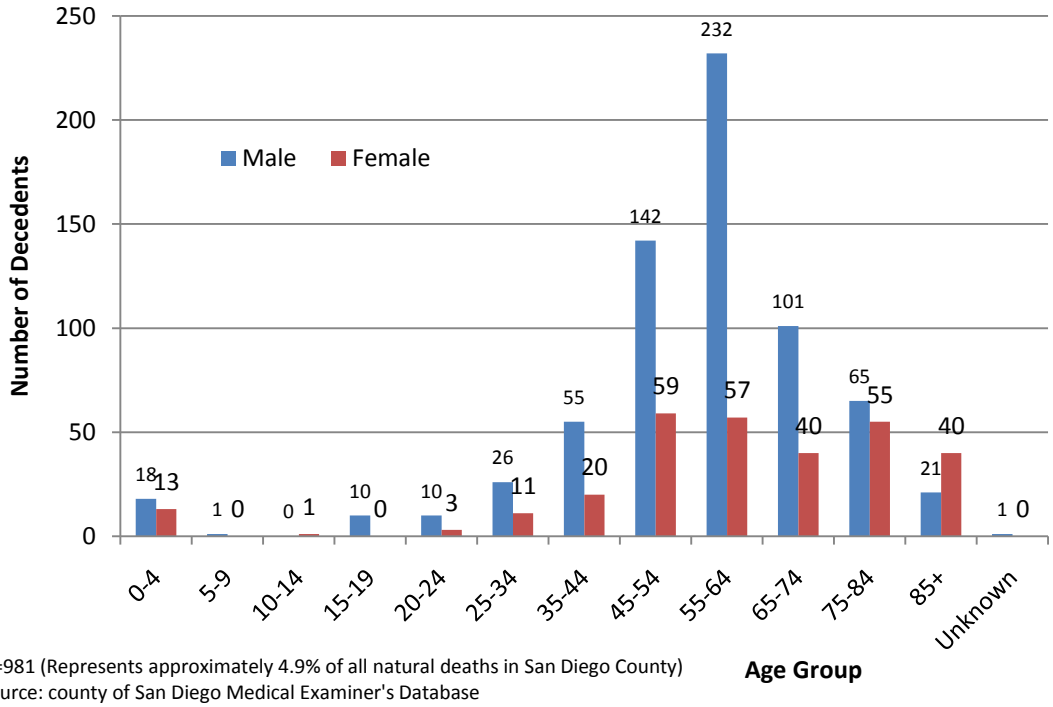


N=369
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Service


Suicide
Rate per 100,000
by Subregional Area
2000 - 2010
Legend
Subregional Area
Suicide Rate per 100,000
1.11 - 5.00
5.01 - 10.00
10.01 - 15.00
15.01 - 20.00
20.01 - 21.84
Source: County of San Diego Medical Examiner's Office Data compiled and map produced by County of San Diego HHSA, EMS
PENDLETON 1.11
FALLBROOK 9.92
PAUMA 13.78
VALLEY CENTER 15.63
PALOMAR-JULIAN 20.85
OCEANSIDE 9.56
VISTA 10.47
SAN MARCOS 8.95
CARLSBAD 10.75
ESCONDIDO 10.11
ANZA-BORREGO SPRINGS 16.27
SAN DIEGUITO 8.46
RAMONA 7.53
NORTH SAN DIEGO 6.87
POWAY 9.11
DEL MAR-MIRA MESA 7.71
LAKESIDE 13.26
LAGUNA-PINE VALLEY 21.84
UNIVERSITY 10.62
Miramar
ELLIOTT-NAVAJO 9.62
SANTEE 11.29
HARBISON CREST 14.65
ALPINE 13.54
COASTAL 12.8
KEARNY MESA 13.09
EL CAJON 14.42
Pacific Ocean
LA MESA 12.51
MID-CITY 10.58
PENINSULA 11.3
SPRING VALLEY 9.87
CENTRAL SAN DIEGO 10.25
LEMON GROVE 11.85
SOUTHEAST SAN DIEGO 6.61
MOUNTAIN EMPIRE 18.77
JAMUL 15.7
NATIONAL CITY 7.29
CORONADO 10.7
SWEETWATER 7.89
CHULA VISTA 7.93
SOUTH BAY 8.1
Mexico
Map Date: 03 10, 2009
C:\Documents and Settings\asmith3\My Documents\GIS\MEData\EMS_BaseMap_Suicide.mxd
NAD_1983_StatePlane_California_VI_FIPS_0406_Feet, D_North_American_1983, Foot_US

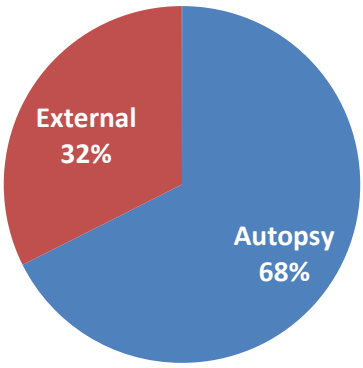
NATURAL DEATHS

DEATHS FROM NATURAL CAUSES BY AGE AND SEX, 2010



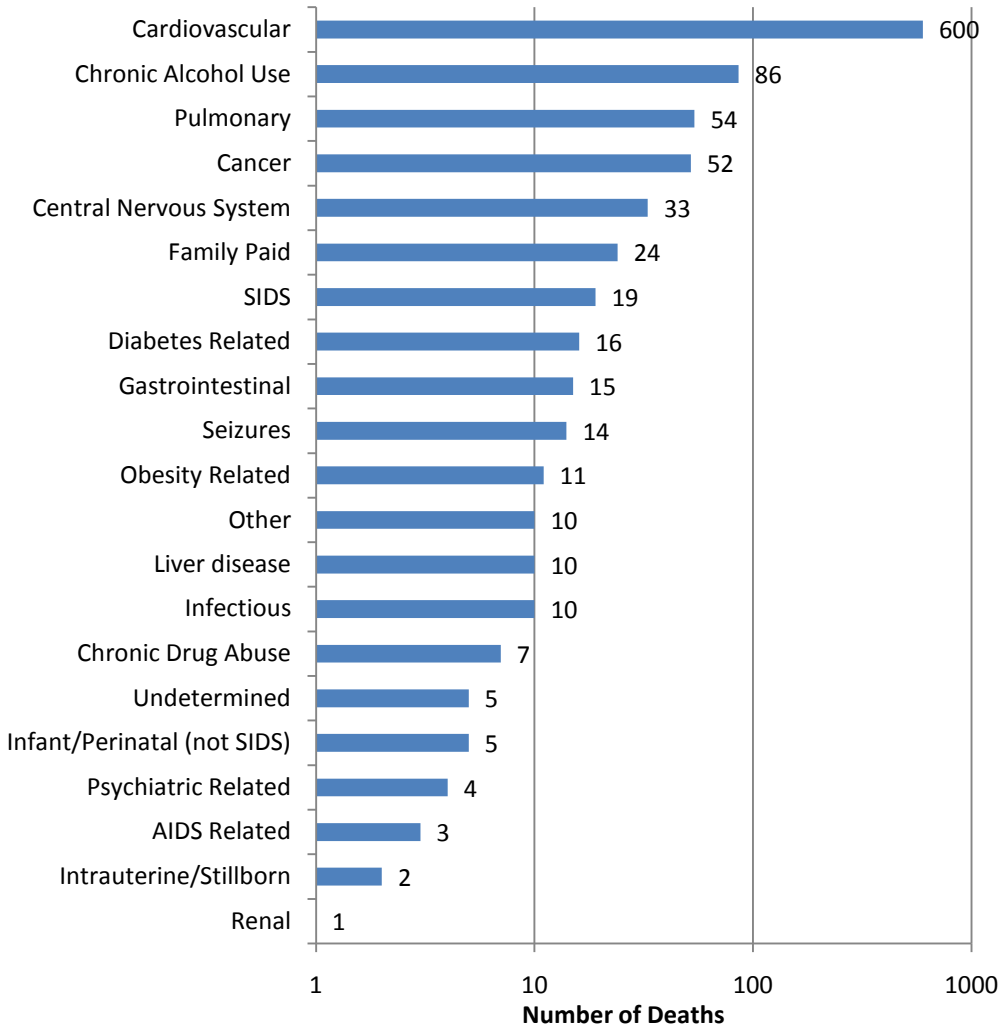
N=981 (Represents approximately 4.9% of all natural deaths in San Diego County)
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Service.
Excludes waived cases

EXAM TYPE: DEATHS FROM NATURAL CAUSES, 2010



N=990
Source: County of San Diego Medical Examiner's Database

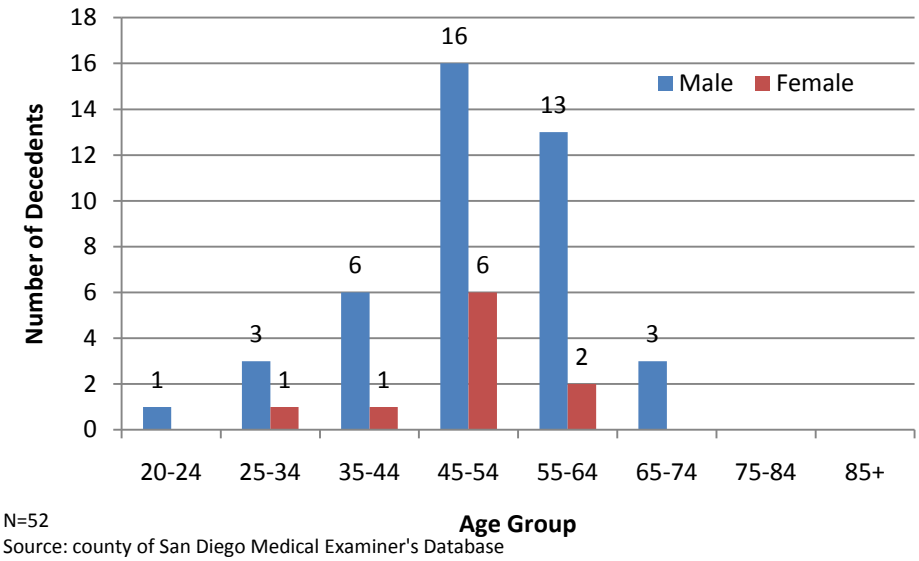
DEATHS FROM NATURAL CAUSES BY TYPE, 2010



N=981 (Represents approximately 4.9% of all natural deaths in San Diego County)
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Service
Excludes waived cases

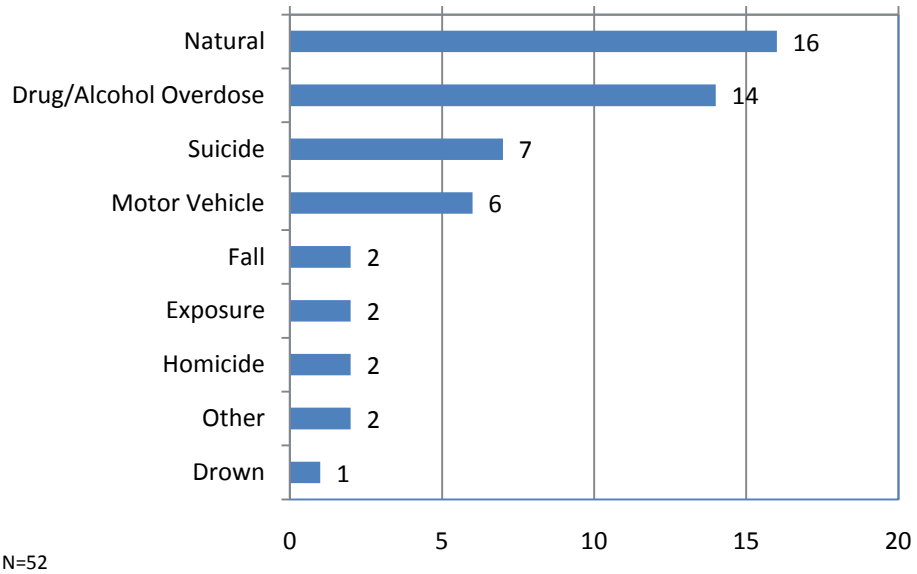
HOMELESS

DEATHS IN THE HOMELESS BY AGE AND SEX, 2010



N=52
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Service

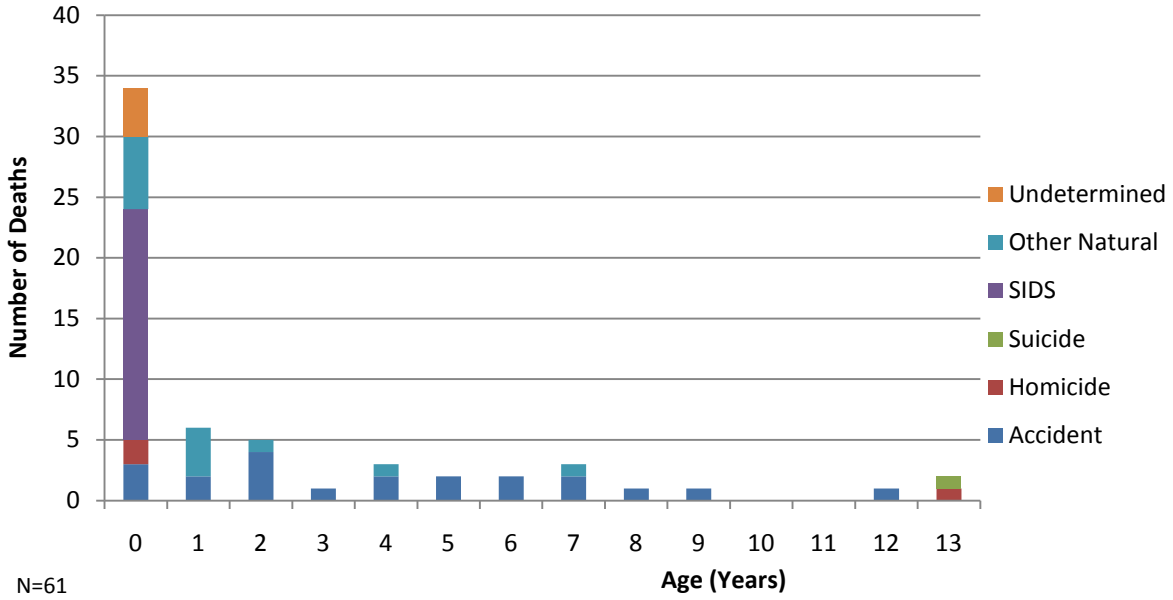
DEATHS IN THE HOMELESS, 2010



N=52
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Service

PEDIATRIC DEATHS & SIDS

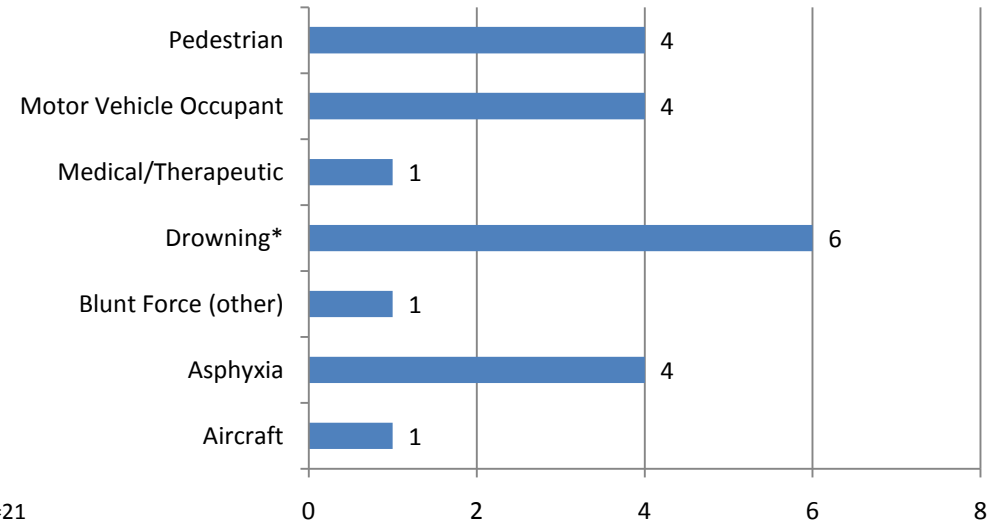
PEDIATRIC DEATHS BY AGE AND MANNER OF DEATH, 2010



N=61

Source: County of San Diego Medical Examiner's Database. Data reported to Emerency Medical Services

ACCIDENTAL DEATHS AGE 0 TO 13 BY MECHANISM, 2010



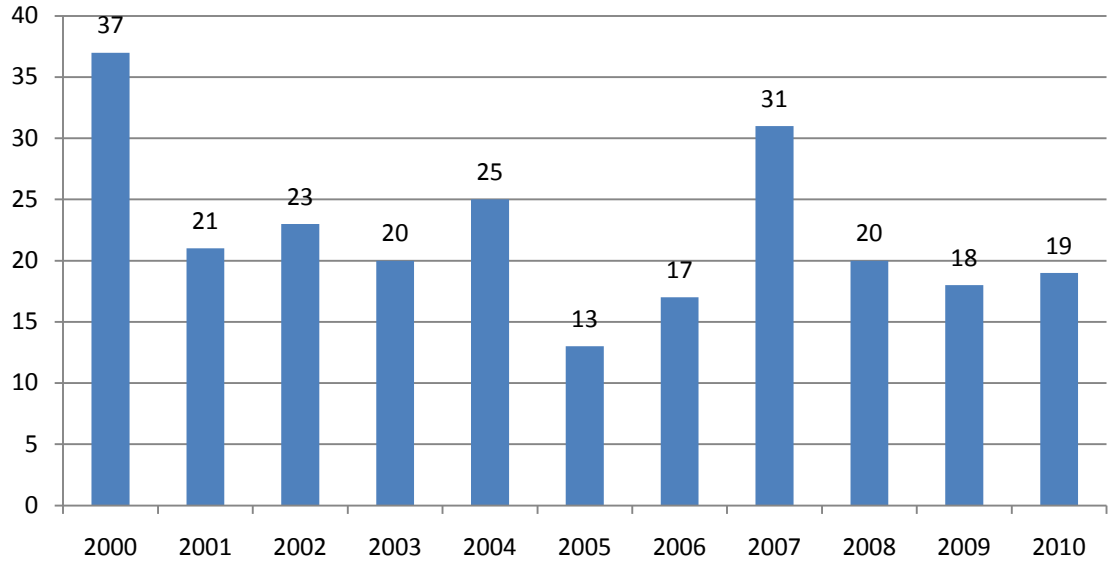
N=21

Source: County of San Diego Medical Examiner's Database

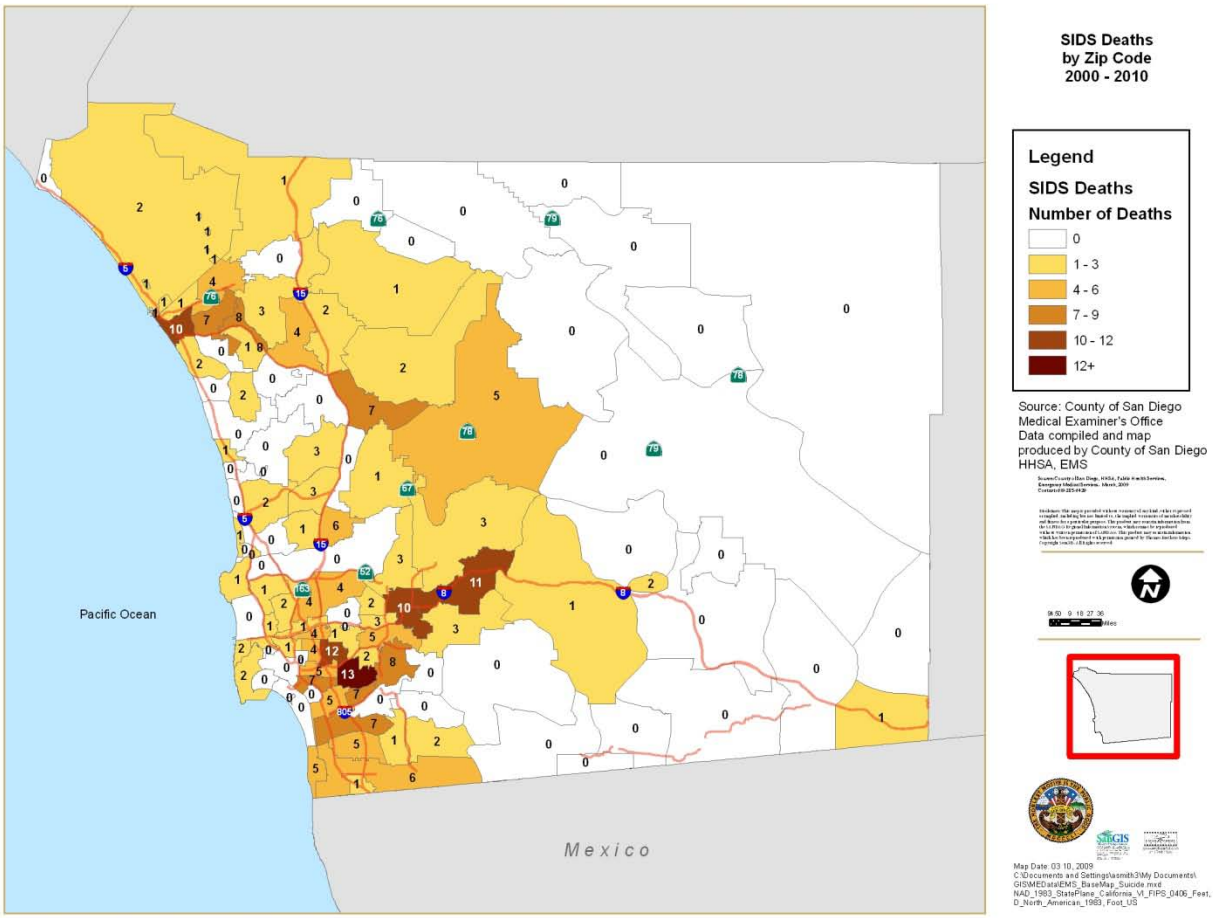
Data reported to Emerency Medical Services

*2 drowning deaths resulted from motor vehicle accidents

SIDS DEATHS BY YEAR, 2000 - 2010

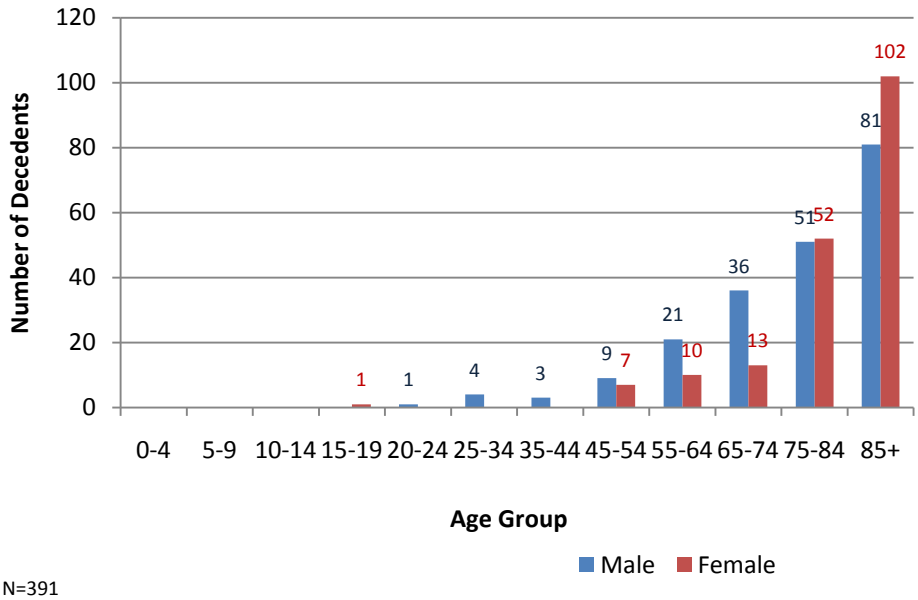


N=244
Source: County of San Diego Medical Examiner's Database



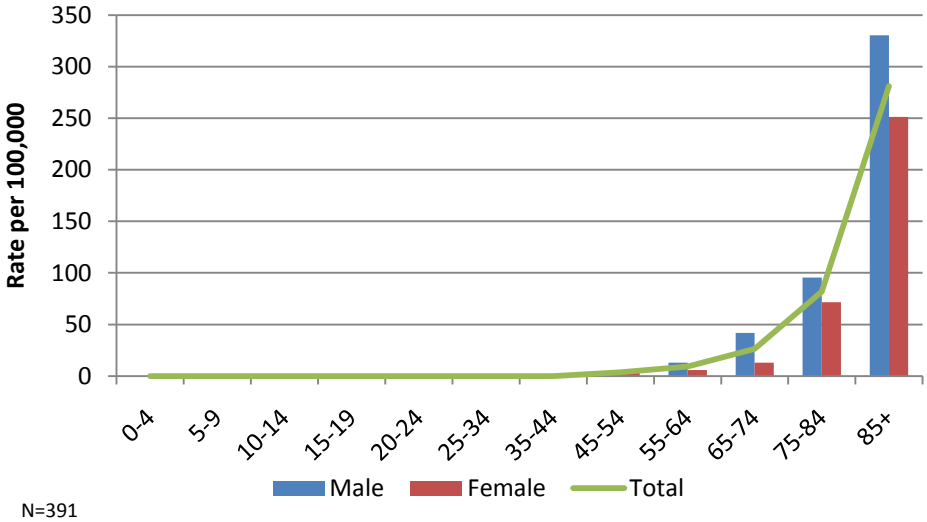
FALL-RELATED DEATHS

DEATHS FROM FALLS BY AGE AND SEX, 2010

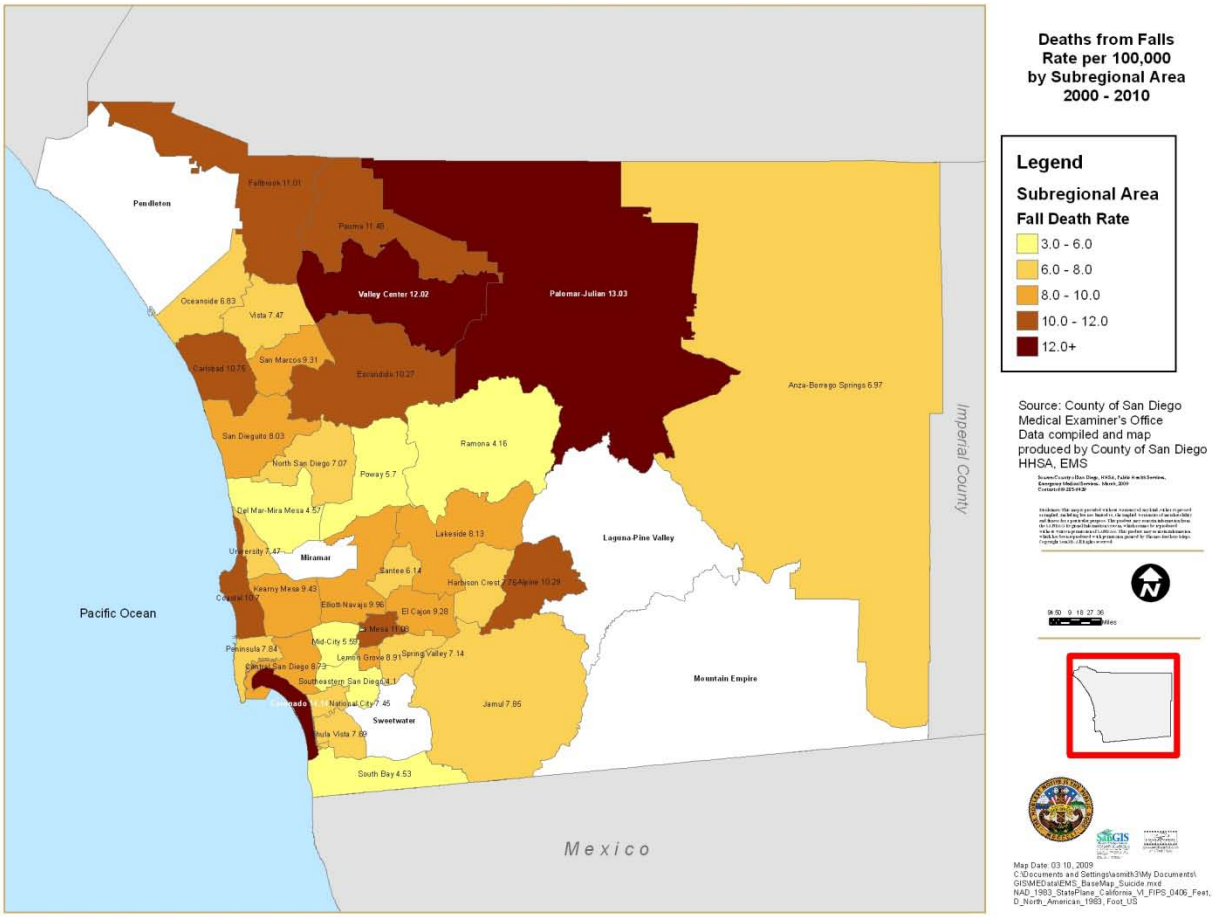


N=391
Source: county of San Diego Medical Examiner's Database
Data reported to Emergency Medical Servics

FALL-RELATED DEATH RATE BY AGE AND SEX, 2010

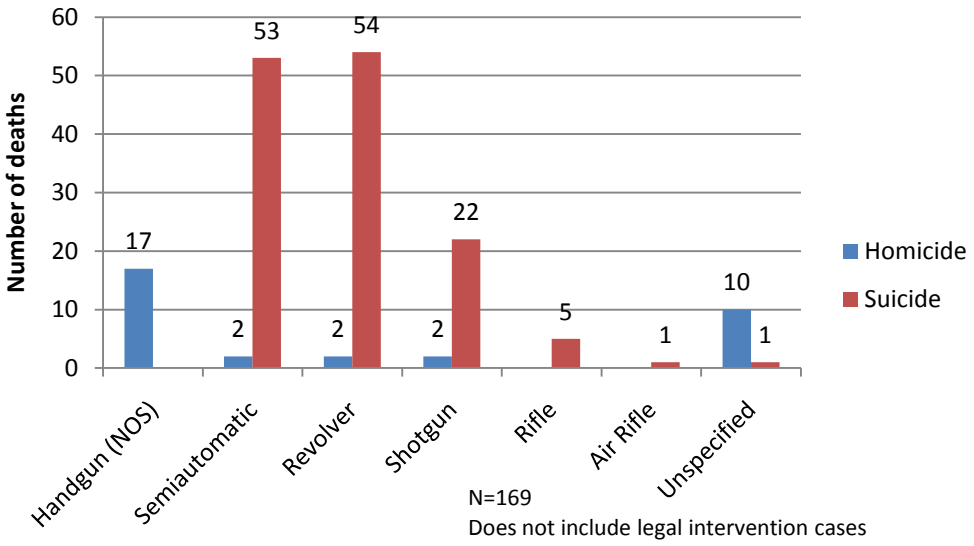


N=391
Source: County of San Diego Medical Examiner's Database

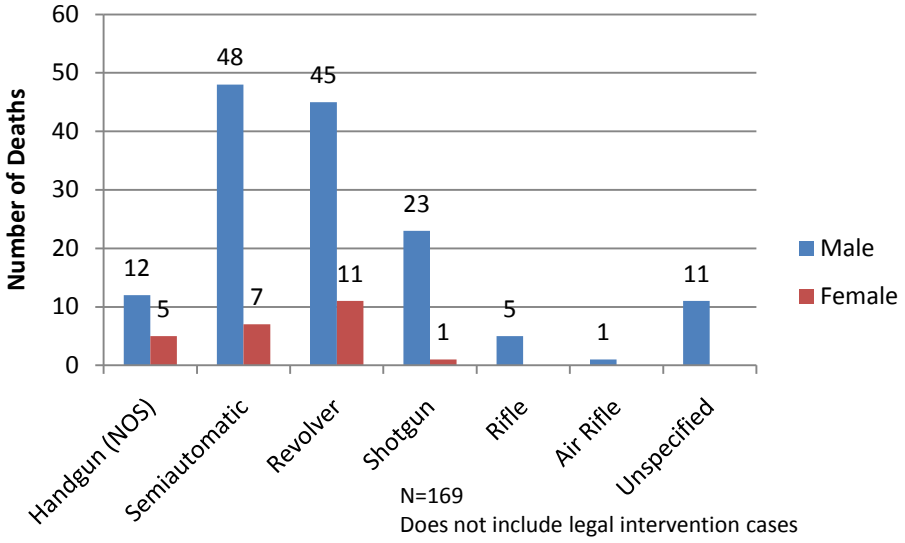

Deaths from Falls
Rate per 100,000
by Subregional Area
2000 - 2010
Legend
Subregional Area
Fall Death Rate
3.0 - 6.0
6.0 - 8.0
8.0 - 10.0
10.0 - 12.0
12.0+
Source: County of San Diego
Medical Examiner's Office
Data compiled and map
produced by County of San Diego
HHSA, EMS
Pendleton
Fallbrook 11.01
Palomar 11.49
Valley Center 12.02
Palomar-Julian 13.03
Oceanside 6.83
Vista 7.47
San Marcos 9.31
Carlsbad 10.79
Escondido 10.27
Anza-Borrego Springs 6.97
San Dieguito 8.03
Ramona 4.16
North San Diego 7.07
Poway 5.7
Del Mar-Mira Mesa 4.57
Lakeside 8.13
Laguna-Pine Valley
University 7.47
Miramar
Santee 6.14
Harbison Crest 7.76
Alpine 10.29
Kearny Mesa 9.43
Coronado 10.7
Elliott-Navajo 9.96
El Cajon 9.28
Pacific Ocean
Imperial County
Mesa 11.08
Mid-City 5.59
Peninsula 7.84
Lemon Grove 8.91
Spring Valley 7.14
Central San Diego 8.73
Southeastern San Diego 4.1
Mountain Empire
National City 7.45
Sweetwater
Jamul 7.85
Chula Vista 7.89
South Bay 4.53
Mexico

FIREARM RELATED DEATHS

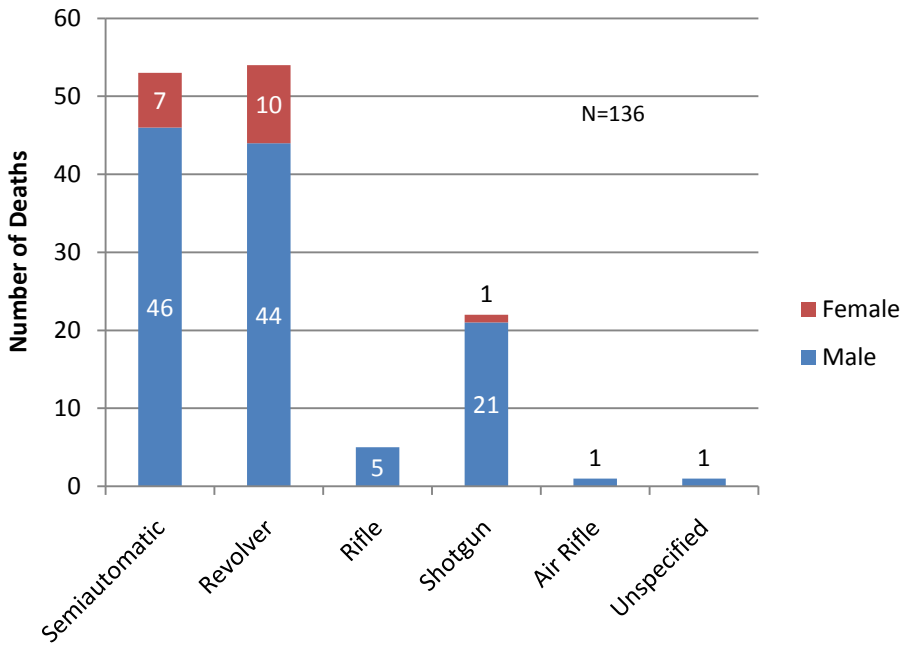
WEAPON TYPE BY MANNER (ALL MANNERS), 2010



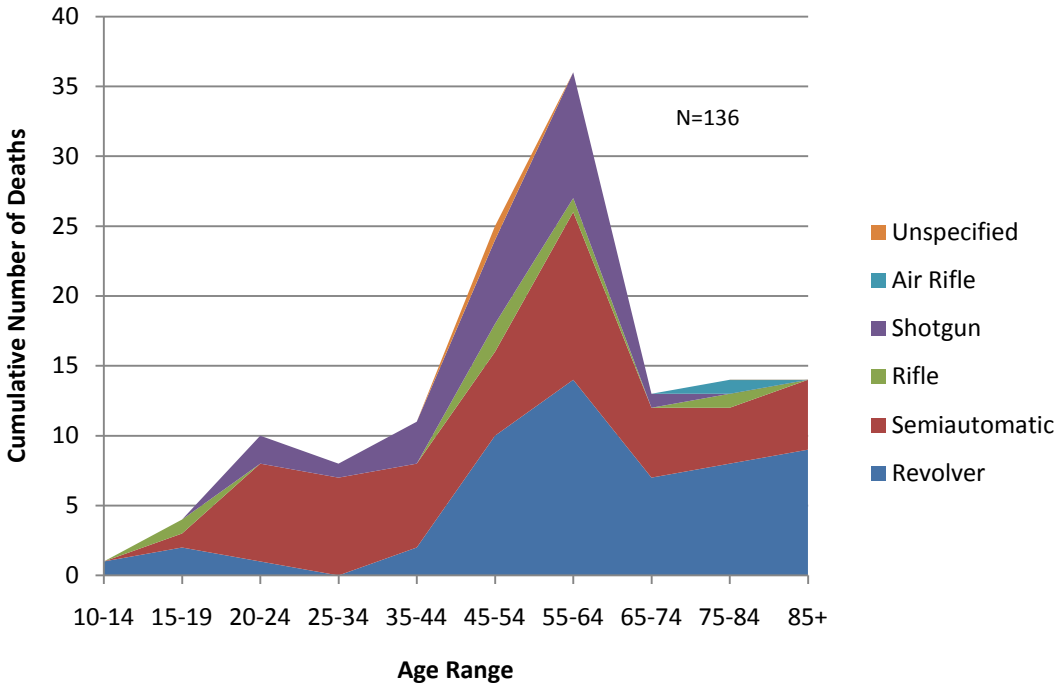
WEAPON TYPE BY GENDER (ALL MANNERS), 2010



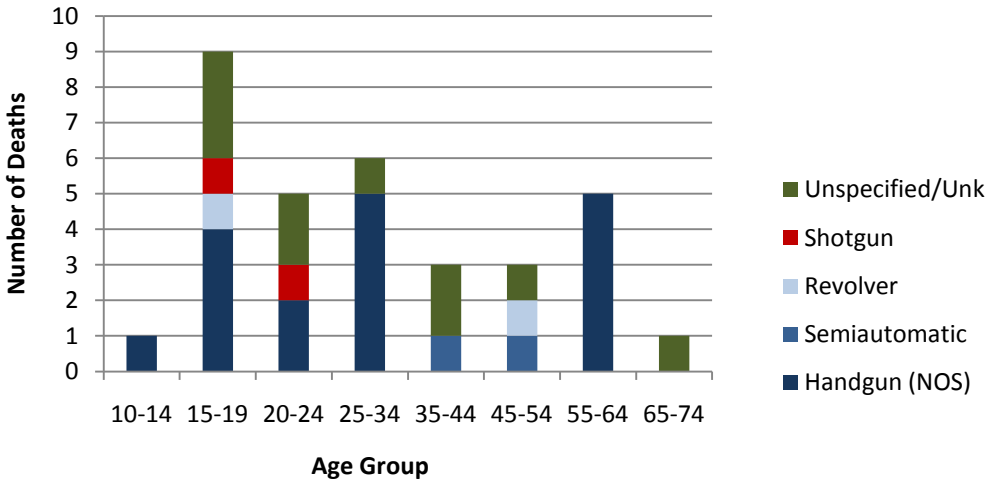
SUICIDE WEAPON TYPE BY GENDER, 2010



SUICIDE WEAPON TYPE BY AGE RANGE, 2010

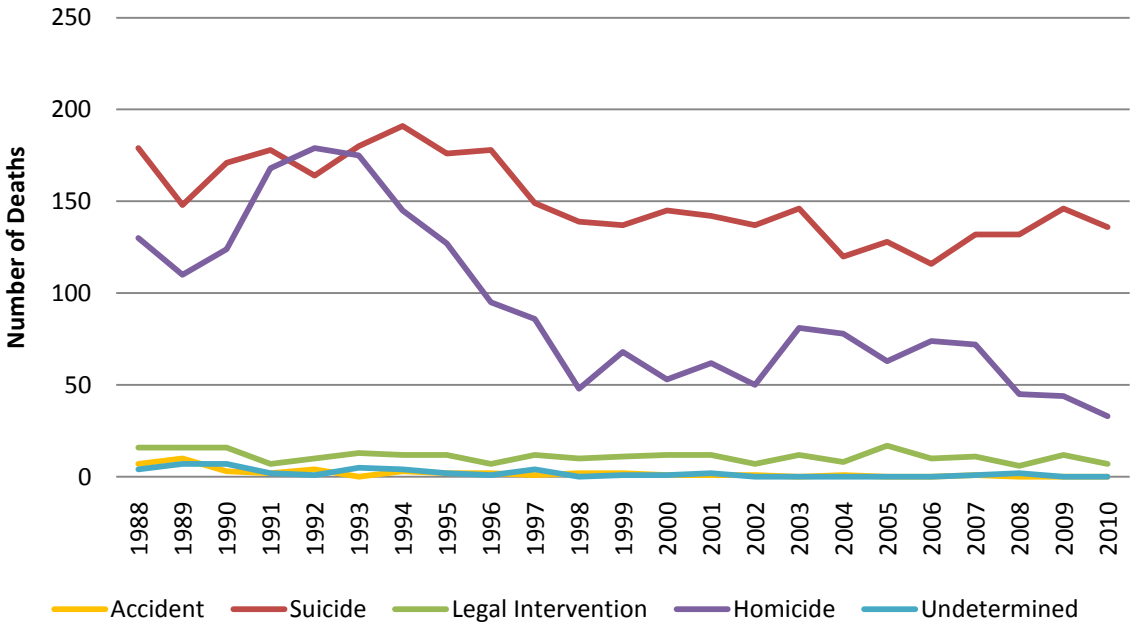


HOMICIDES BY WEAPON TYPE AND AGE GROUP, 2010

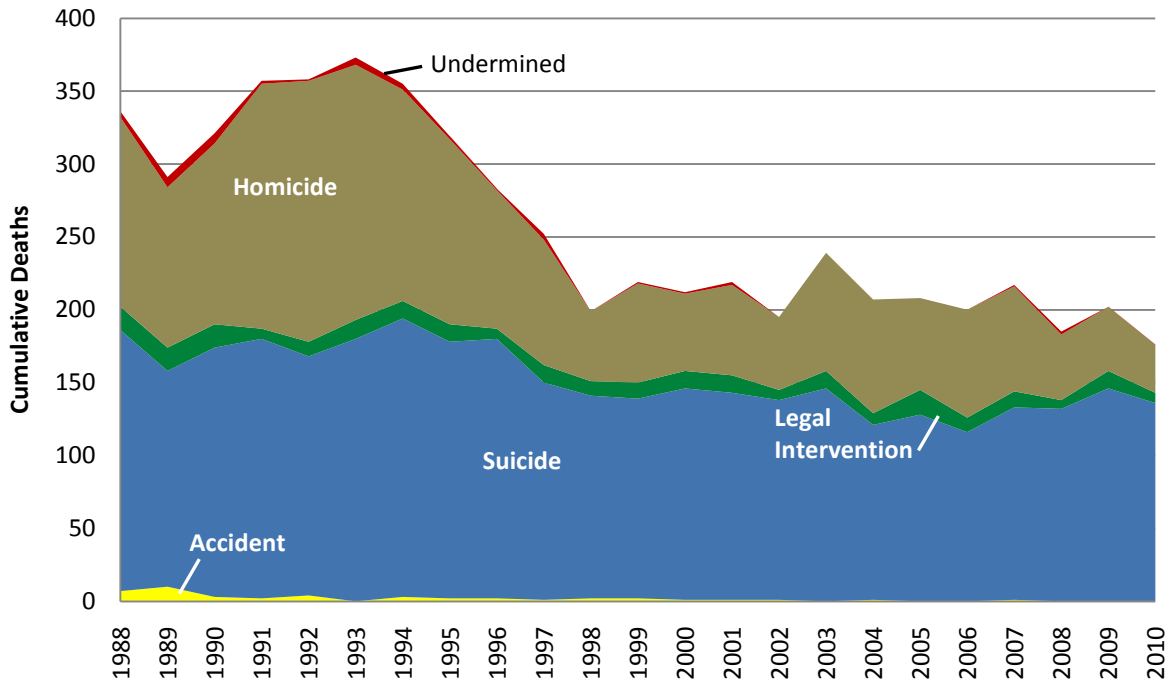


N=33
Excludes Legal Intervention Cases

ALL FIREARM DEATHS BY MANNER, 1988 – 2010



CUMULATIVE FIREARM DEATHS BY MANNER, 1988-2010



Firearm deaths of all types reached a low in 2010 since 1988 (as far back as available data is available) and has been following a general decline since the mid-1990's. The decline in the number of homicides in recent years has been a major driver for this.

ACKNOWLEDGEMENTS

Because this was the first comprehensive annual report produced by this office in many years, it was built from the ground up. It could not have been done without the valuable contributions of the following individuals:

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Gretchen Geary
Stephen Hannum
Jonathan Lucas, M.D.
Iain McIntyre, Ph.D.
Othon Mena, M.D.
Craig Nelson, M.D.
Ebony Polk
Alan Smith, Ph.D., M.P.H.
Glenn Wagner, D.O.