OFFICE

OF THE

MEDICAL EXAMINER

ANNUAL REPORT

2006

INTRODUCTION

The Office of the Medical Examiner is a division of the Erie County Department of Health, under the direction of the Commissioner of Health. The office is organized into three sections: Pathology, Field Investigation and Laboratory, the last of which encompasses Forensic Toxicology and Histology. The office is headed by three board certified forensic pathologists, the Chief and two Associate Chief Medical Examiners, and an Administrative Coordinator. Our Medical Investigator System is comprised of two Medical Investigators and six scene investigators, staffing the office on a continuous basis. An accredited Forensic Toxicology laboratory is affiliated with and located within the Office of the Medical Examiner and is staffed by a Chief County Toxicologist and six toxicologists. Staff also includes one Laboratory Assistant (Histologist), three Pathological Lab Workers (Autopsy Technicians) and two administrative/clerical personnel.

As mandated by law, the Office of the Medical Examiner is responsible for investigating the death of any person who dies within Erie County as a result of "criminal violence, or neglect, or by casualty or by suicide, or suddenly when in apparent health, or when unattended by a physician, or a person confined in a public institution other than a hospital, infirmary or nursing home, or in any suspicious or unusual manner."[1] It is the responsibility of the office to generate death certificates as to cause and manner of death. Cause of death is anything that results in the cessation of life functions in an individual. Manner of death refers to the way death occurs and is classified as natural, accident, homicide, suicide or undetermined. Full forensic autopsies routinely include an initial investigation, external and internal examination, toxicology and histology. At times, partial directed autopsies or inspections (external examinations) with or without toxicology are performed. The office has entered into agreements with Niagara, Chautauqua and Cattaraugus Counties for forensic autopsy services, and Chautauqua, Cattaraugus and Jefferson Counties for forensic toxicology assistance.

The office participates in training programs for multiple health and human services programs within the area colleges and universities. SUNY at Buffalo medical residents, third and fourth year medical students, fourth year dental students and undergraduates in related fields of study spend from weeks to months training in-house. Buffalo State Forensic Chemistry students, Hilbert College Forensic Science and Criminal Justice students, and EMT students also train at our facility.

The information collected during each death investigation, is archived in the medical examiner data system, Justice Trax R PathAssist ™. This data is used to generate statistics to study death trends for Erie County residents and compare our community to the general population.

[1] McKinney's Consolidated Laws of New York Annotated County Law, Chapter 11 of the Consolidated Laws, Article 17-A-Coroner, Coroner's Physician and Medical Examiner, NY County § 673.

EXPLANATION OF DATA ACQUISITION

In 2006, there were approximately 9500 deaths in Erie County. In the same year, 2659 cases[2] were reported to the Office of the Medical Examiner. Deaths were certified by private physicians in 1330 persons; in 6 of these cases, the death certificate was co-signed by our office. Our office assumed jurisdiction either by county law or contract in 1397 of the cases reported, of which a full autopsy was performed in1303 persons (93%) and an external examination with or without toxicology was performed in 94 cases (7%) of which 8 were non-human bones.

For this report, we analyzed the data by *manner of death, age, gender, race, and month of the year*.

The manner of death was classified as follows: natural, accident, homicide, suicide and undetermined. Manner of death classification followed "A Guide for Manner of Death Classification" issued by the National Association of Medical Examiners (NAME) in 2002.[3] The following definitions are verbatim from that document:

- Natural deaths are due solely or nearly totally to disease and/or the aging process.
- Accident applies when an injury or poisoning causes death and there is little or no evidence that injury or poisoning occurred with intent to harm or cause death. In essence, the fatal outcome was unintentional.
- Suicide results from an injury or poisoning as a result of an intentional, self-inflicted act, committed to do self harm or cause the death of one's self.
- Homicide occurs when death results from a volitional act committed by another person to cause fear, harm, or death.
- Undetermined or "could not be determined" is a classification used when the information pointing to one manner of death is no more compelling than one or more other competing manners of death in thorough consideration of all available information.

[2] Out of county cases (265), storage cases (91) and Toxicology-only cases (105) were included in this total. All out of county cases received a full autopsy. Comparisons of the manner of death and manner of death by gender among counties are presented in a separate report.

[3] Hanzlick, Randy, MD, Hunsaker III, John C., MD, JD, Davis, Gregory J., MD, "A Guide For Manner of Death Classification," First Edition, National Association of Medical Examiners ®

Natural causes of death are subclassified as cardiovascular, pulmonary, liver, neurological, gastrointestinal, genito-urinary, infectious, cancer, metabolic, autoimmune, genetic and deaths in infancy.

The methods of accidental deaths are subclassified as transportation (motor vehicle collisions [MVC]), falls, gunshot wounds, asphyxia, drugs, drowning, fire/carbon monoxide (CO), environmental, surgical misadventures and other. Transportation is further subdivided into auto, pedestrian, motorcycle and other. Falls are further subdivided into 'from a height' and ground level. Asphyxial deaths are further subdivided into auto-erotic, mechanical/chemical, child (overlay/co-sleeping) and food-related (e.g. choking).

The methods of suicidal deaths are subclassified as asphyxia, drugs, gunshot wounds, blunt force injury, sharp force injury and thermal injury. Asphyxial deaths are further subdivided into hanging, carbon monoxide, drowning and other gas. Blunt force injury is further subdivided into jumps from motor vehicles or a height.

The methods of homicidal deaths are subclassified as gunshot wounds, blunt force injury, sharp force injury, strangulation, multiple (combination of above) and other.

The bulk of cases in the undetermined category include deaths due to advanced decomposition and drug overdose where circumstances surrounding death are often minimal. As the term implies, this category includes cases that defy placement in one or another manner of death category.

Selected aggregate statistical information is provided in the tables that follow.

GENERAL OVERVIEW

Figure 1 shows that for those persons falling within the Erie County Medical Examiner's Office jurisdiction in 2006, deaths were natural in 50%, accidental in 22%, homicidal in 10%, suicidal in 7% and in 11% the manner of death was undetermined. Thus, half of the deaths were of natural causes and there were almost as many accidental deaths as the other three categories combined. Homicides outnumbered suicides. The large percentage (11%) of undetermined deaths stems from the inclusion of drug overdoses in this category (see figure 9a). While some counties classify deaths due to drug overdose as accidental, our policy is to classify them as undetermined in that the intent of the drug user is typically unknown.

Figure 2 shows a breakdown of death by manner and gender. Males outnumber females in our caseload by over two times (data not shown). In all categories male deaths outnumber female deaths. This is strikingly so except in the undetermined category (see undetermined death overview).

Figure 3a shows a breakdown of death by manner and race. Whites outnumber blacks in our caseload by approximately 3-1/4 times (data not shown). Figures 3b and 3c present another view of these data for white and black populations only. Homicidal deaths are most frequent in blacks. For all other manners, whites outnumber other races. The latter reflects the demographics of Erie County where the approximate percentages of the population are Whites 81%, Blacks 13%, Hispanic 3%, Asian 1% and Other 2 %[4]. Our data agree with the national trend that more whites die by their own hands (suicide) and blacks die at the hands of another (homicide). A disproportionate number of blacks also die of natural deaths [ratio of 40% black: white versus 16% black: white in the Erie County *population* demographics]. While no direct conclusions can be drawn from these ratio disparities and the causes are undoubtedly multifactorial, it can be noted that the poverty levels in the city of Buffalo are some of the highest in the nation[5]. Within the county, the city of Buffalo has the highest black population (see city demographics and reference below)[6].

Figure 4 shows a breakdown of death by manner and age. The majority of our cases were drawn from the middle-aged population ranging from 36-65 years. The high numbers of persons over age 66 included in our caseload may represent the negative population growth in our area. Homicide was the most common manner of death in those < 35 years of age – particularly so in those aged 0-24 years. In contrast, persons over age 35 most often died of natural diseases. Accidental deaths spike in three age brackets – over 76 years, 56-65 years and less than 25 years. As the graph reflects, most persons over the age of 65 years died either naturally or by accident. While falls are very common in the elderly, lack of health care (no insurance, no primary care physician) and/or isolation (unattended deaths) might contribute to the number of persons referred to our office that we subsequently determine to have died naturally.

Figure 5 shows a breakdown of death by manner and month of the year. In 2006, the peak number of deaths occurred in October, coinciding with the greatest number of natural deaths. There were more deaths in the latter 6 months of the year than in the first 6 months. In our county, suicidal deaths were at their lowest in February, but they also ebbed in December. Accidental deaths were highest in July and August, and there was a slight trend for homicidal deaths to increase in the summer months.

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[4] www.muninetguide.com/states/New-York/Erie.php
[5] http://www.census.gov/prod/2008pubs/acs-09.pdf
[6] (Whites 51.8%, Blacks 37.2%, Hispanic 7.5%, Asian 1.4% and Other 1.3%) www.muninetguide.com/states/New-York/municipality/buffalo.php

Figure 1

All 2006 Deaths in Erie County

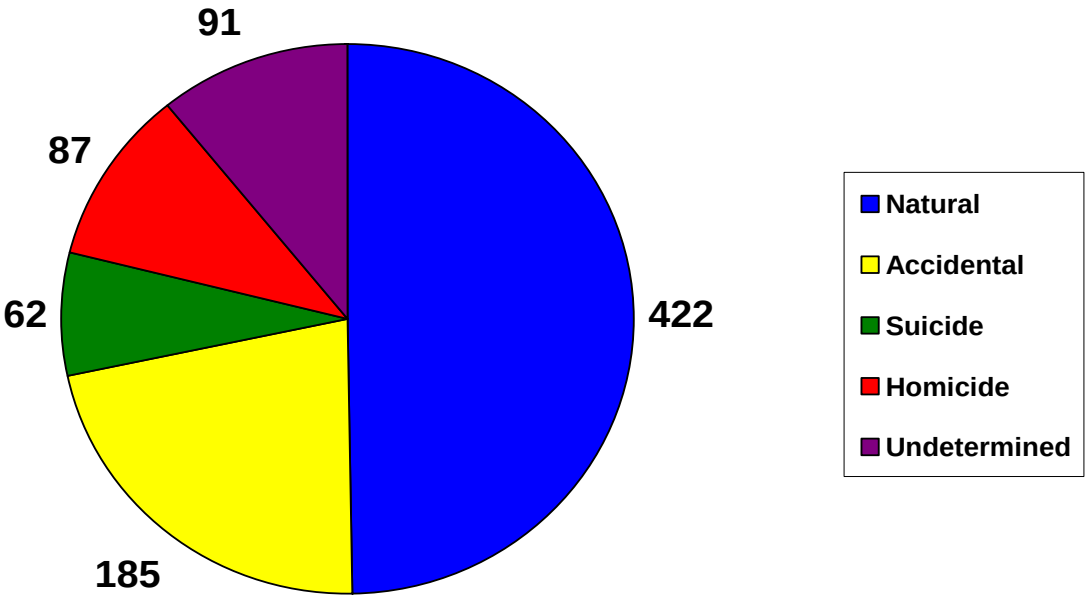


Figure 2

2006 Manners of Death by Gender in Erie County

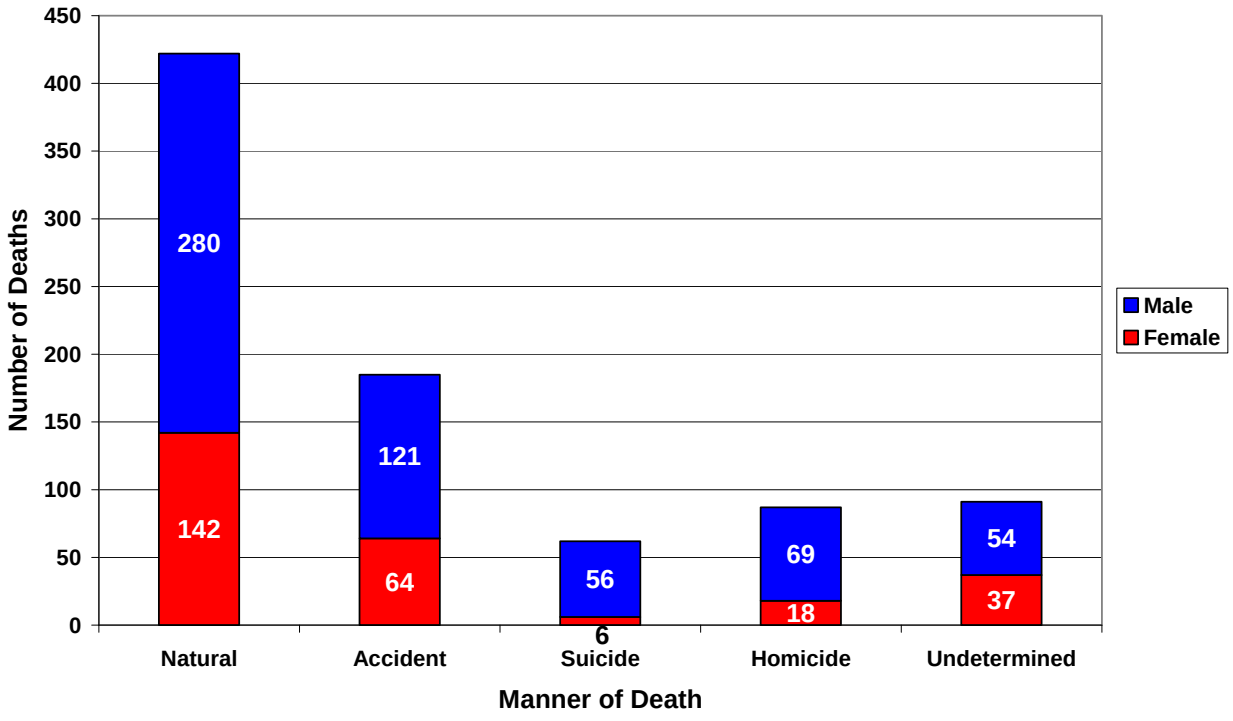


Figure 3a

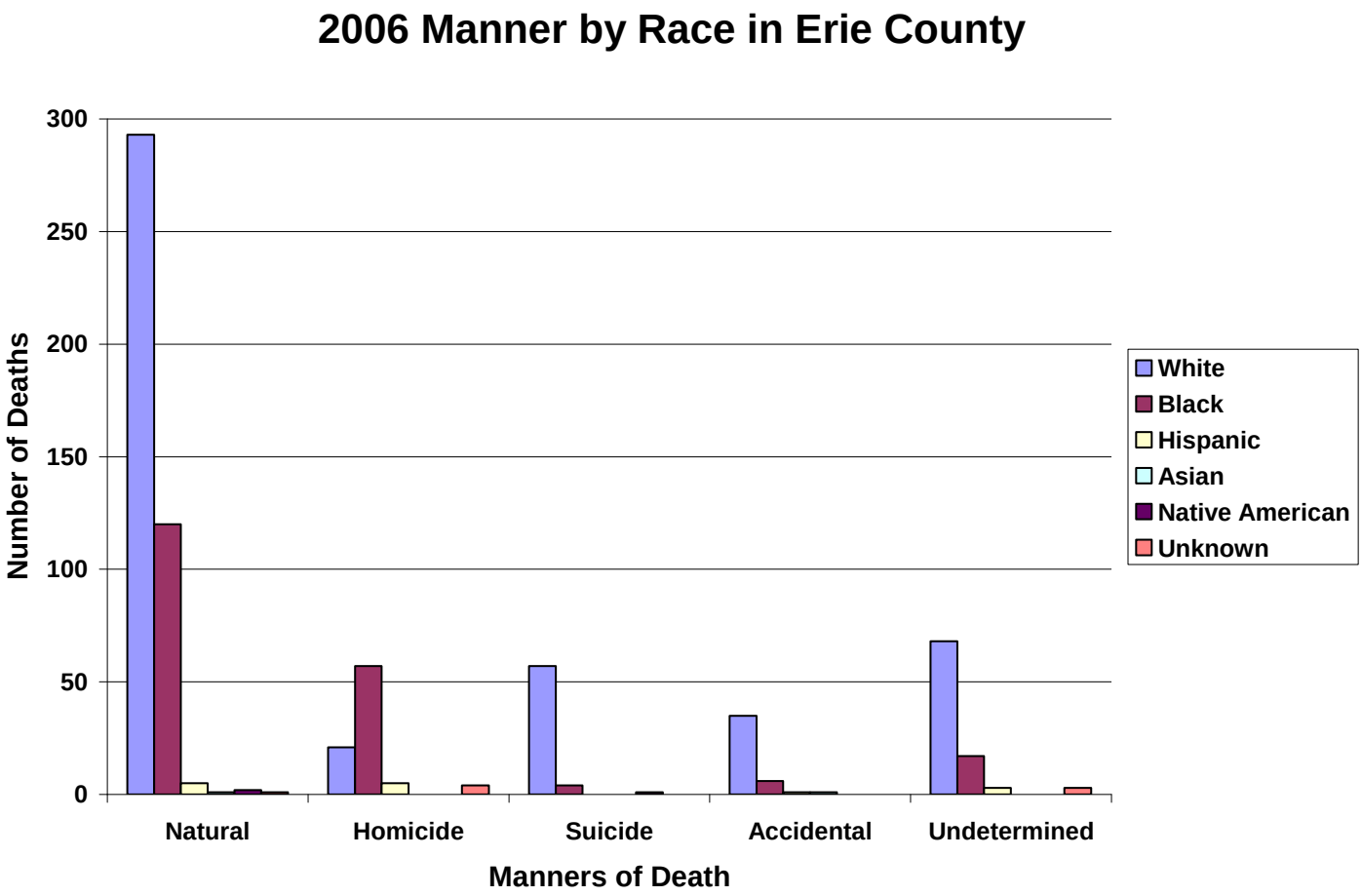

2006 Manner by Race in Erie County
300
250
200
150
100
50
0
Number of Deaths
Natural
Homicide
Suicide
Accidental
Undetermined
Manners of Death
White
Black
Hispanic
Asian
Native American
Unknown

Figure 3b

Race (White) by Manner in 2006

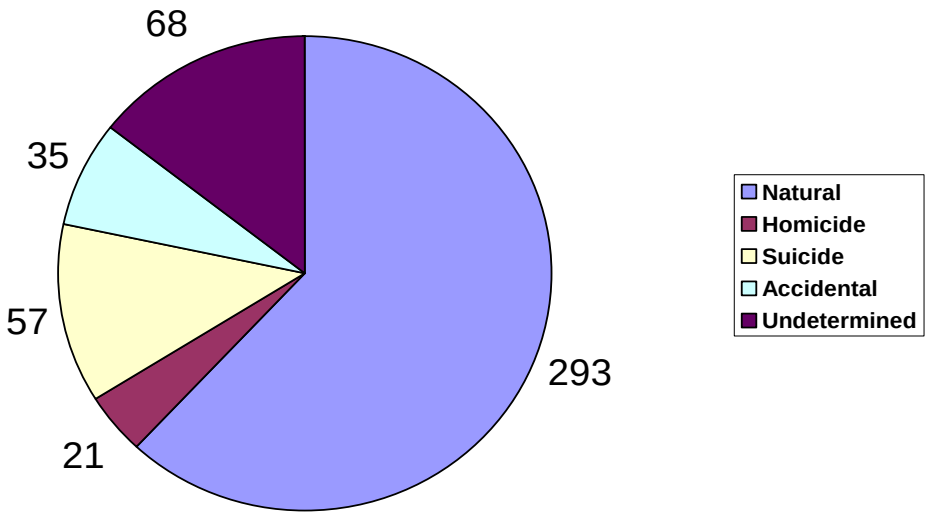


Figure 3c

Race (Black) by Manner in 2006

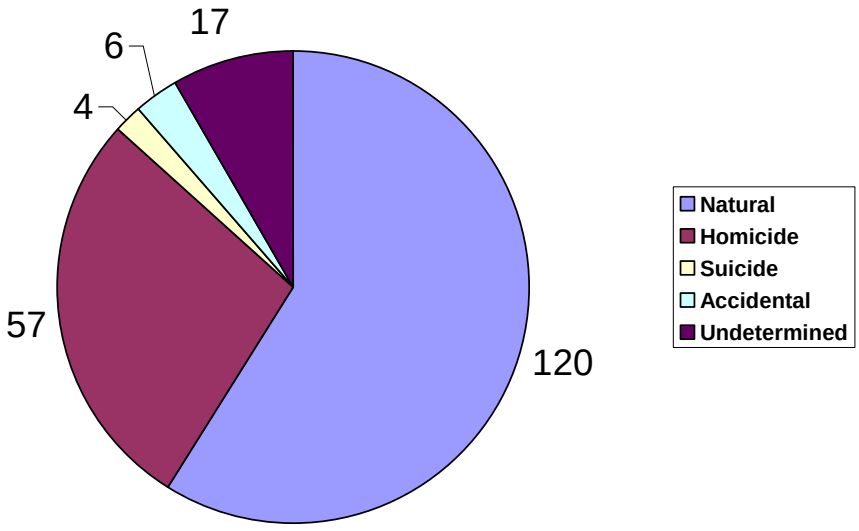


Figure 4

2006 Deaths in Erie County by Manner and Age

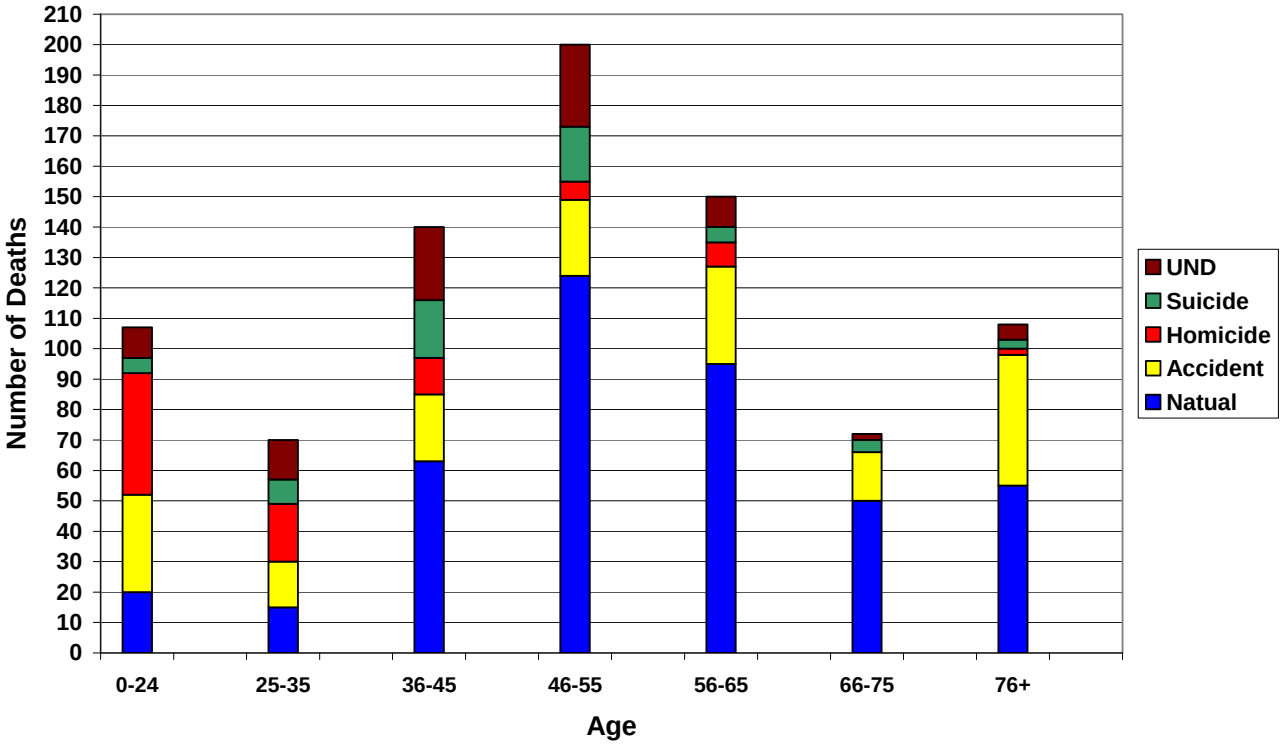
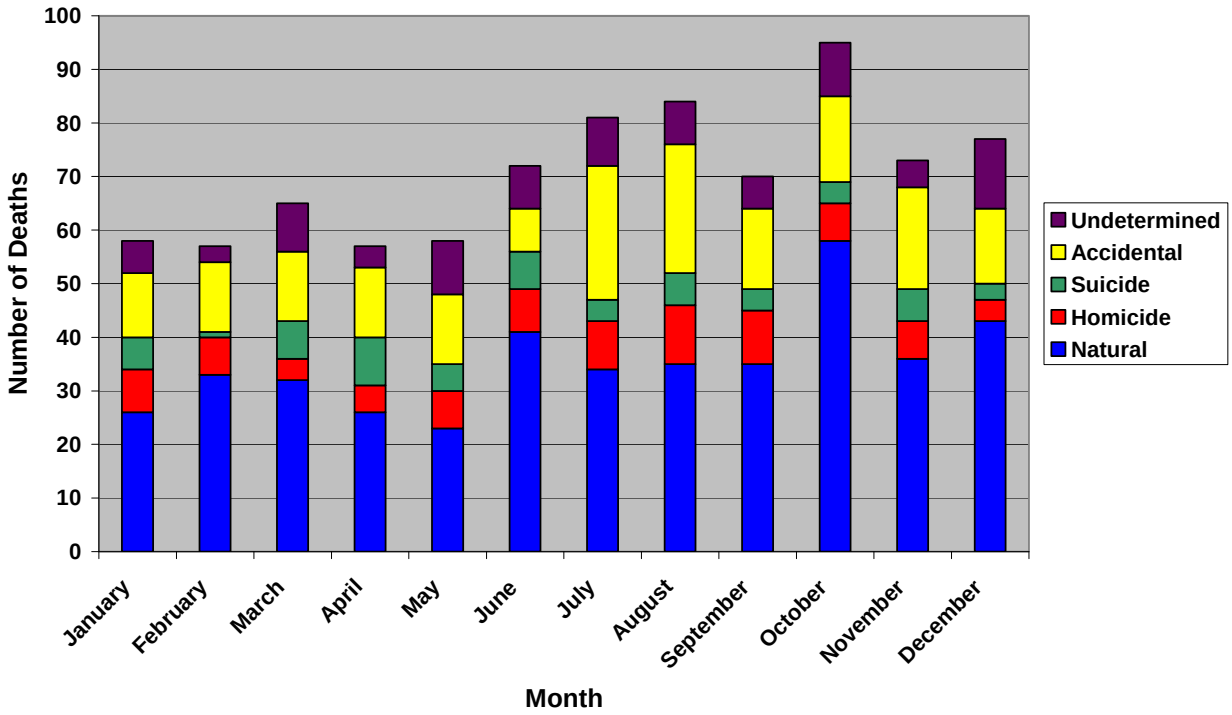


Figure 5

2006 Manner of Deaths in Erie County by Month



NATURAL DEATH OVERVIEW

The statistics generated by our office are not representative of all natural deaths occurring in Erie County because of the bias inherent in the types of cases referred to our office. Thus, natural deaths investigated by our office are those that are sudden, unexpected, unexplained or unattended. Often these persons were not under the care of a primary physician, had not seen a physician in over a year or the physician could not give a reasonable cause of death.

The compilation of data in figures 6a-6c gives an overview of natural deaths categorized by disease type/organ system, age and gender. Cardiovascular disease is the major underlying natural cause of death in our population regardless of sex or age > 25 years. As shown in 6a about ten times more persons died of cardiovascular disease than either of the next most common disease categories (neurological and pulmonary). Liver disease affected males and females primarily between the ages of 36-65 years. Infectious causes of death were present in low numbers in almost all age groups. Similarly, except under the age of 24, cancer deaths occurred in all age categories. In contrast to our older population, cancer is more likely to be diagnosed at the time of death in children or young adults, thus excluding them from our caseload. Even though diagnosed with terminal cancer, autopsy is mandatory in the prison population who make up a large percentage of cases within this category. Pulmonary deaths occurred fairly frequently in the 56 to 75 year brackets. Of course, Sudden Infant Death Syndrome (SIDS) and related deaths were confined to our lowest age bracket; further analyses of these data will be provided in subsequent annual reports.

Our gender analyses show males outnumbering or about equaling females in all categories of natural death except SIDS.

Figure 6a

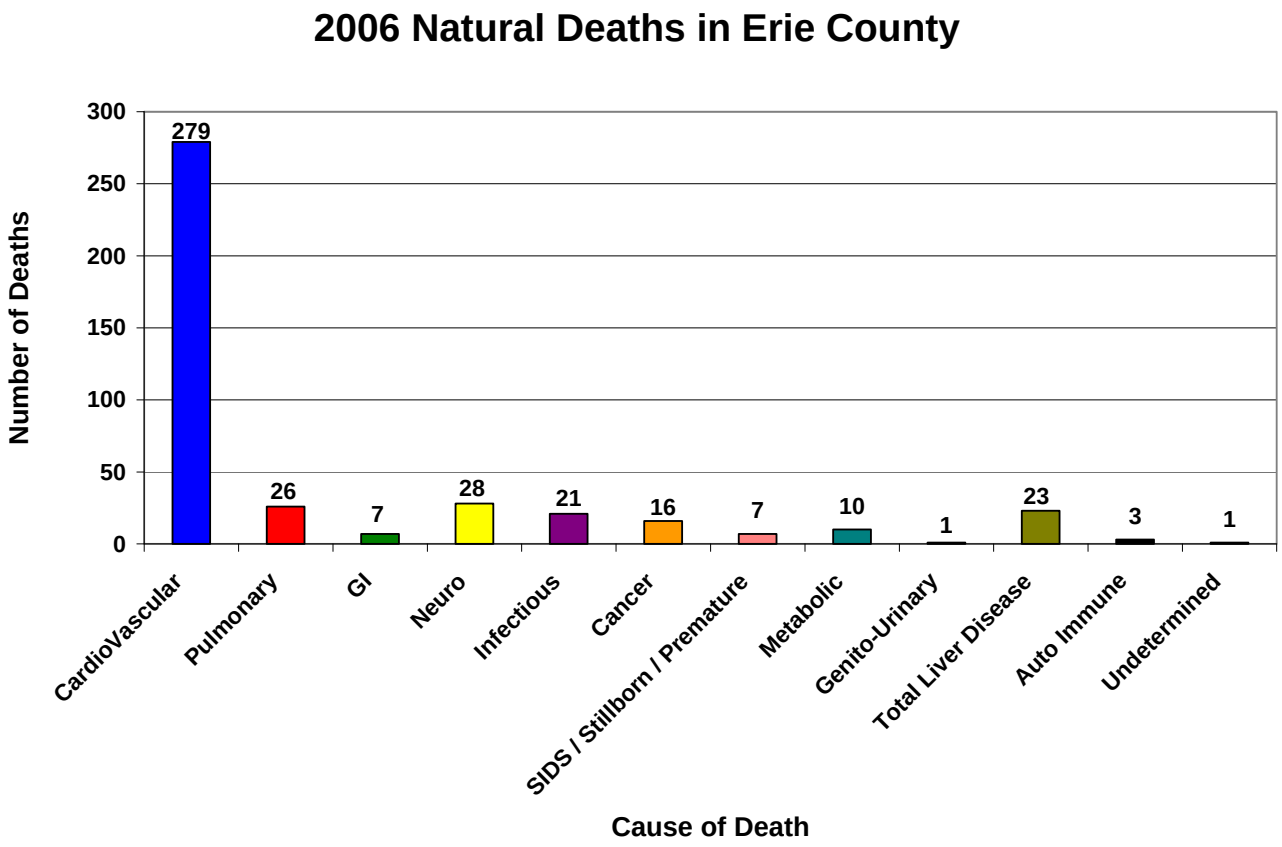


Figure 6b

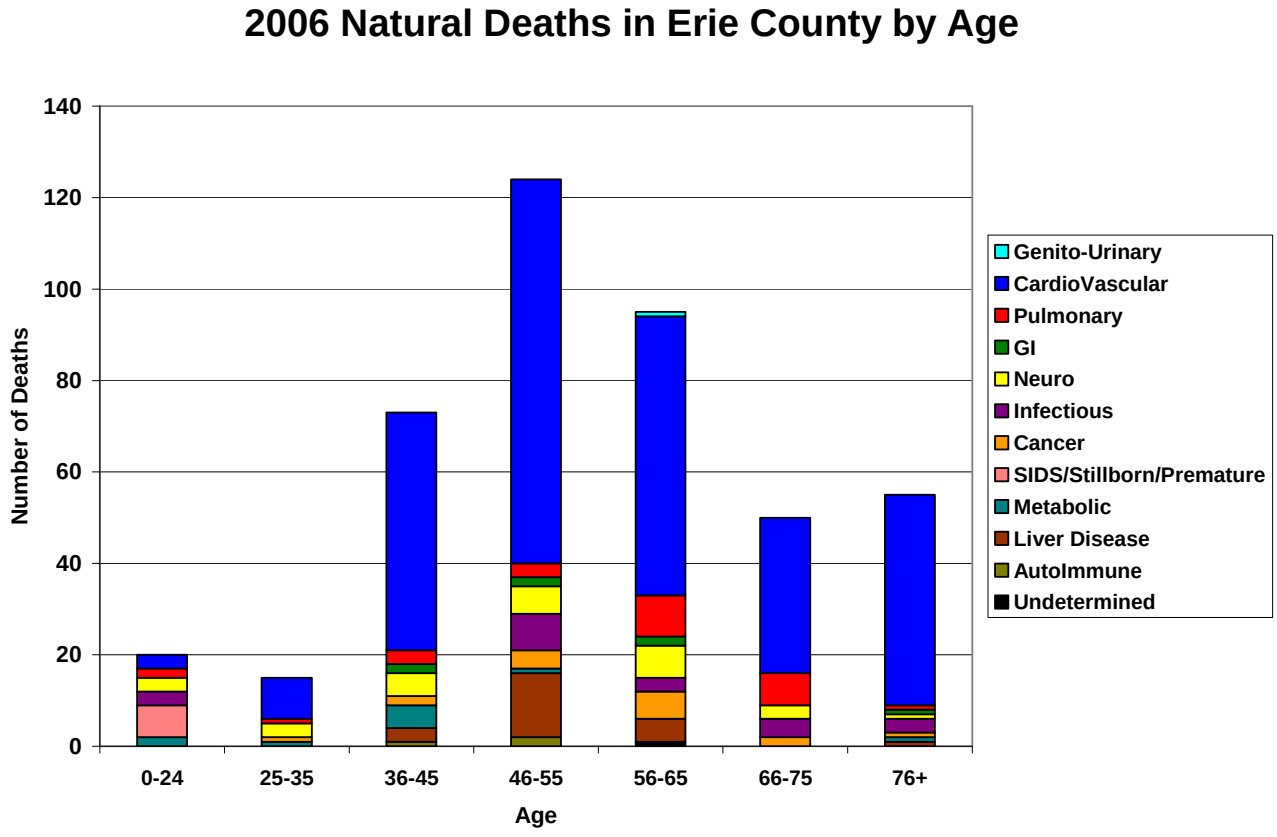
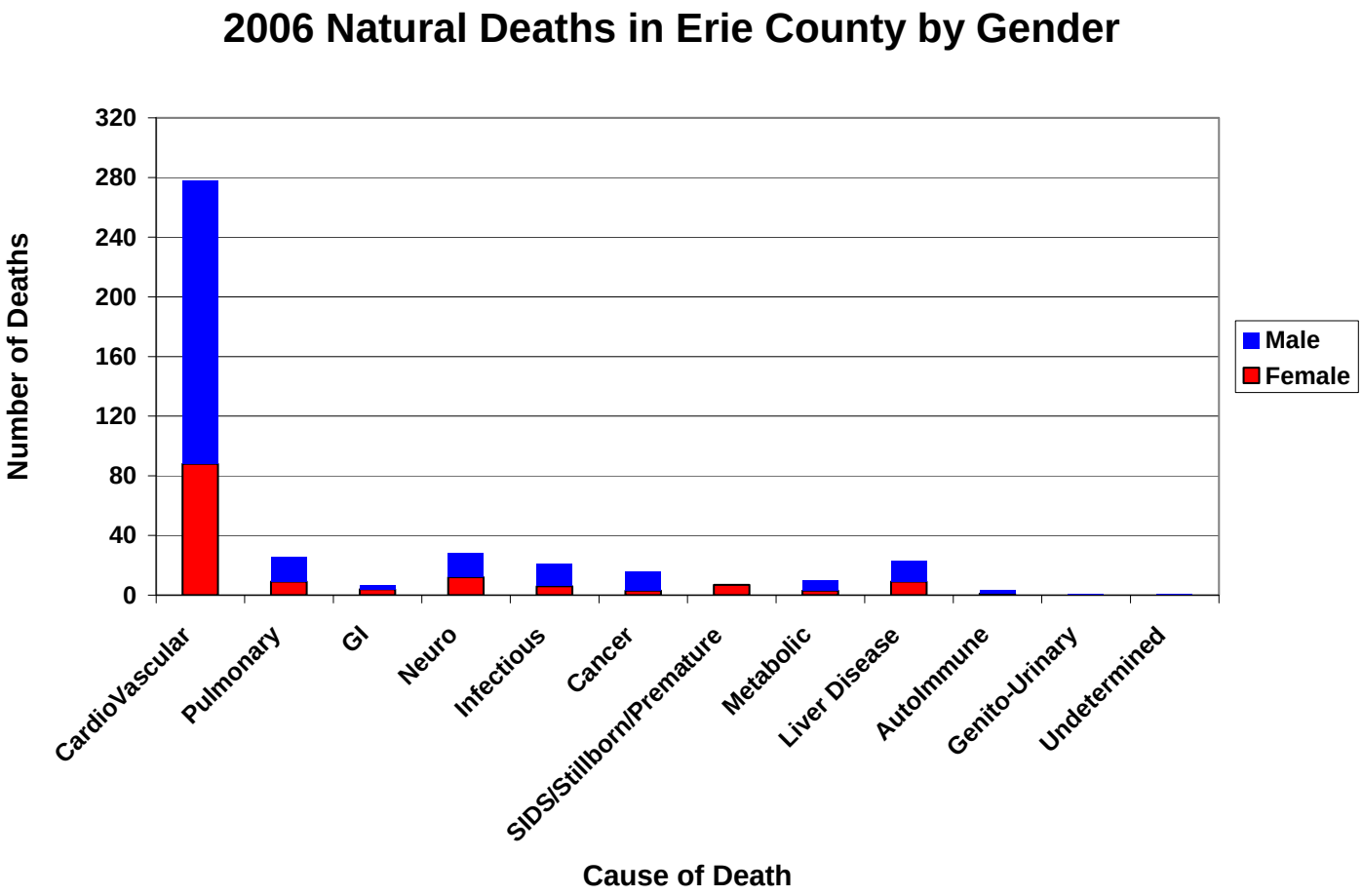


Figure 6c


2006 Natural Deaths in Erie County by Gender
Number of Deaths
320
280
240
200
160
120
80
40
0
Male
Female
CardioVascular
Pulmonary
GI
Neuro
Infectious
Cancer
SIDS/Stillborn/Premature
Metabolic
Liver Disease
Autolmmune
Genito-Urinary
Undetermined
Cause of Death

ACCIDENTAL DEATH OVERVIEW

The compilation of data in figures 7a-7c gives an overview of accidental deaths categorized by type, age and gender. The most common accidental manner of death resulted from 'motor vehicle collisions'. These include pedestrian deaths as well as all other types of transportation deaths. Total falls comprised the second most common accidental cause of death – only 40% fewer than the total MVC category. Asphyxial deaths, if taken together to include not only autoerotic, mechanical, chemical, positional, co-sleeping and choking (total asphyxia) but also drowning and carbon monoxide intoxication would make up the next largest overall category of accidental death.

As shown in figure 4 and further illustrated in figure 7b accidental deaths peaked in three age brackets – the over 76 years, 56-65 years and the less than 25 year age groups. Motor vehicle deaths contributed significantly to the spike in the youngest age group, while falls contributed to the spike in the oldest age group. Falls and transportation deaths were approximately equal in the 56-65 year olds. In the year 2006, motor vehicle crashes reached a low in the 66-75 year category, but remained about constant for other groups over age 24. Accidental drug deaths did not occur in persons over the age of 65. No deaths resulted from accidental gunshot wounds in the year 2006.

As shown by our data in figure 7c, except for notable exceptions, deaths due to accidents were more common in men than women. Accidental drug deaths and surgical mishaps were more common in women.

Figure 7a

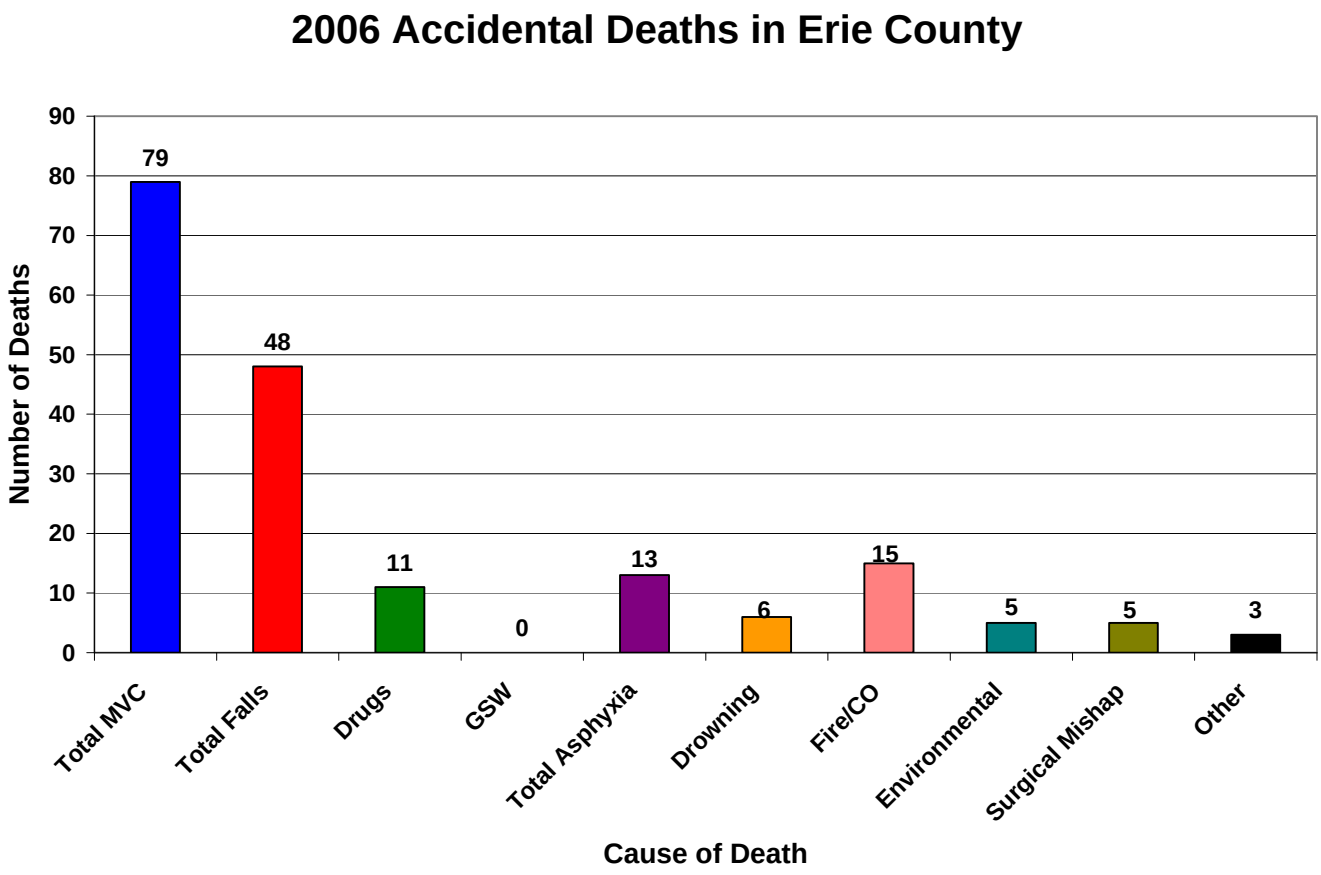


Figure 7b

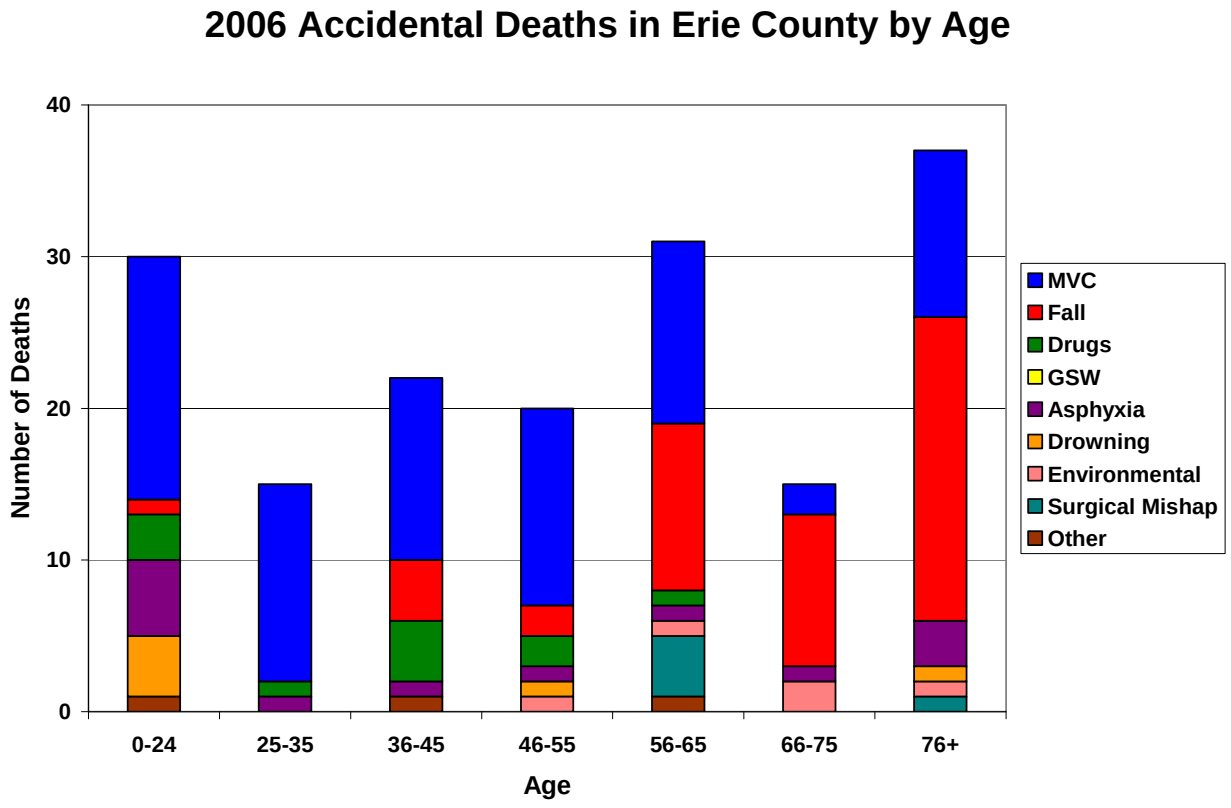
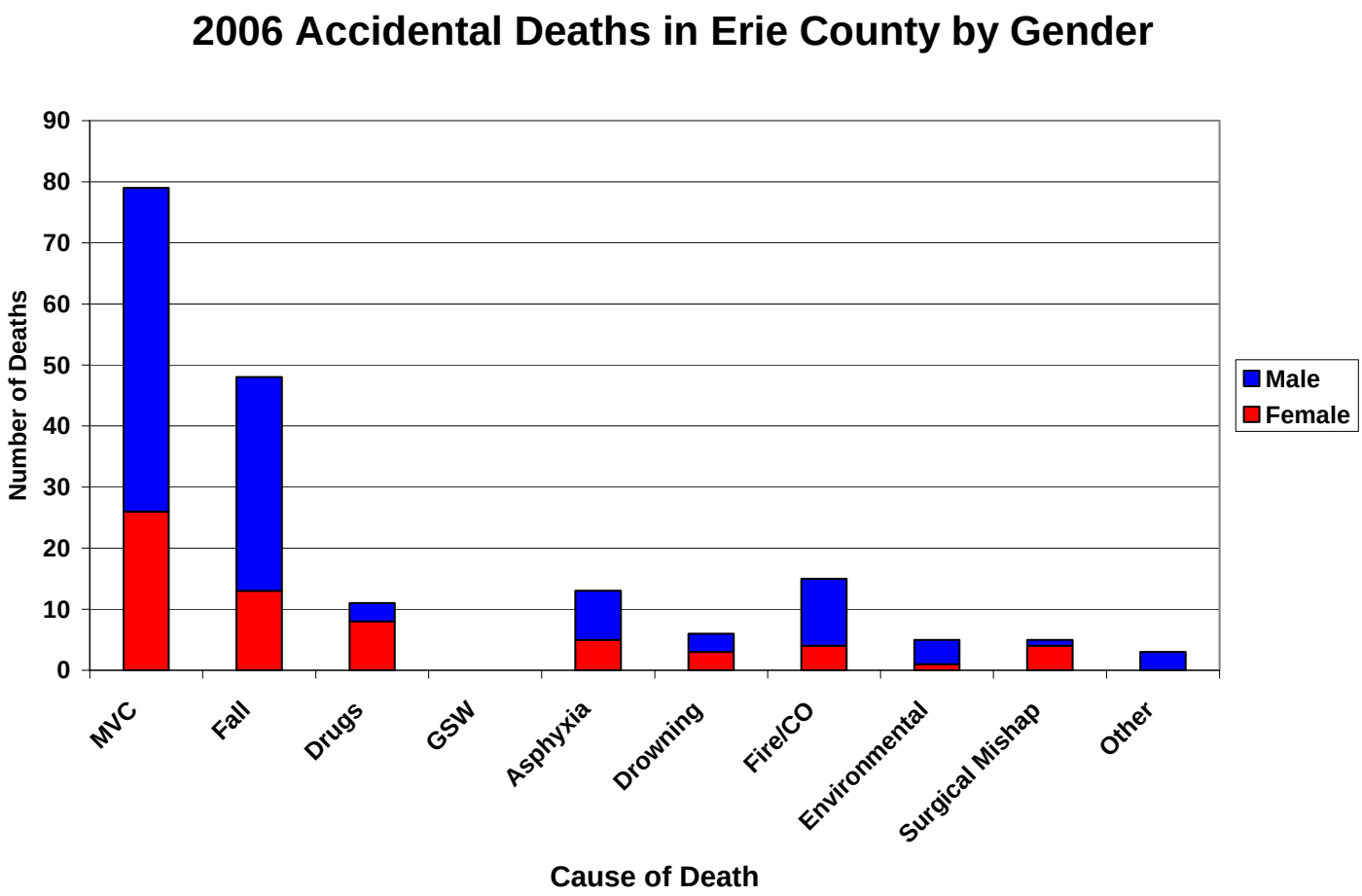


Figure 7c


2006 Accidental Deaths in Erie County by Gender
Number of Deaths
90
80
70
60
50
40
30
20
10
0
MVC
Fall
Drugs
GSW
Asphyxia
Drowning
Fire/CO
Environmental
Surgical Mishap
Other
Cause of Death
Male
Female

SUICIDAL DEATH OVERVIEW

The compilation of data in figures 8a-8c gives an overview of suicidal deaths categorized by type, age and gender. Figure 8a shows that there are three main ways that people took their own lives, namely, by self-inflicted gunshot wounds, hanging (asphyxia) and drug overdoses. Deaths by more active brutal means (gunshot wounds or hangings) were each at least three times more common than the more passive action of taking drugs. Gunshot wound and hanging deaths almost equaled each other.

As seen in figure 8b, the greatest number of suicides occurred in the 36-55 year age brackets (see also figure 4). Gunshot wounds or hanging were equally common means of suicide in those less than 25 years of age. Deaths due to drugs were not seen in those over 55 years. Gunshot wounds occurred across all age groups, peaking in the 36-55 year age brackets; this was the only means of suicide in those aged 66-75. With the latter exception, asphyxial deaths also occurred in all other age groups, peaking in ages 36-55 years.

In considering suicidal deaths by gender (figure 8c), men outnumbered women for all means of suicide – particularly for gun shot and asphyxial deaths.

Figure 8a

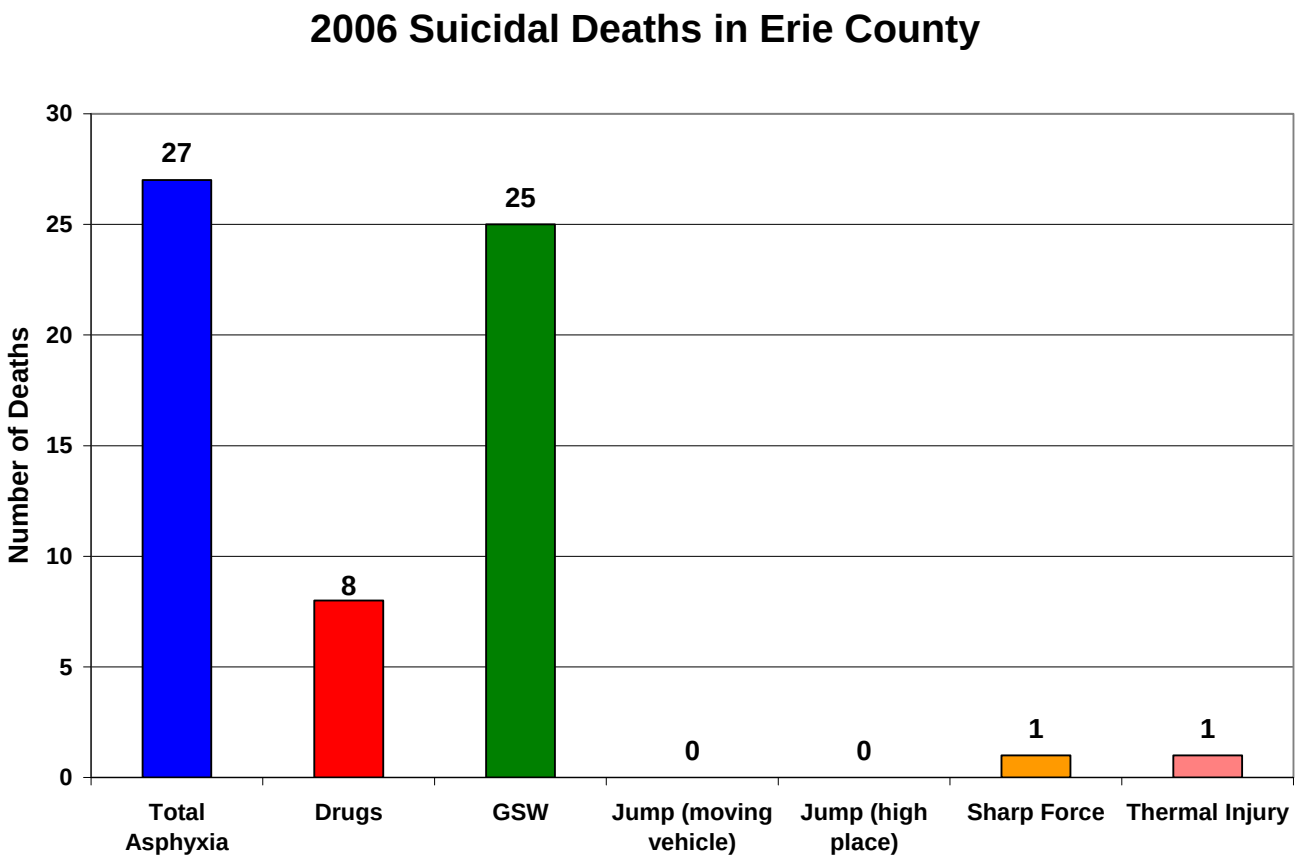


Figure 8b

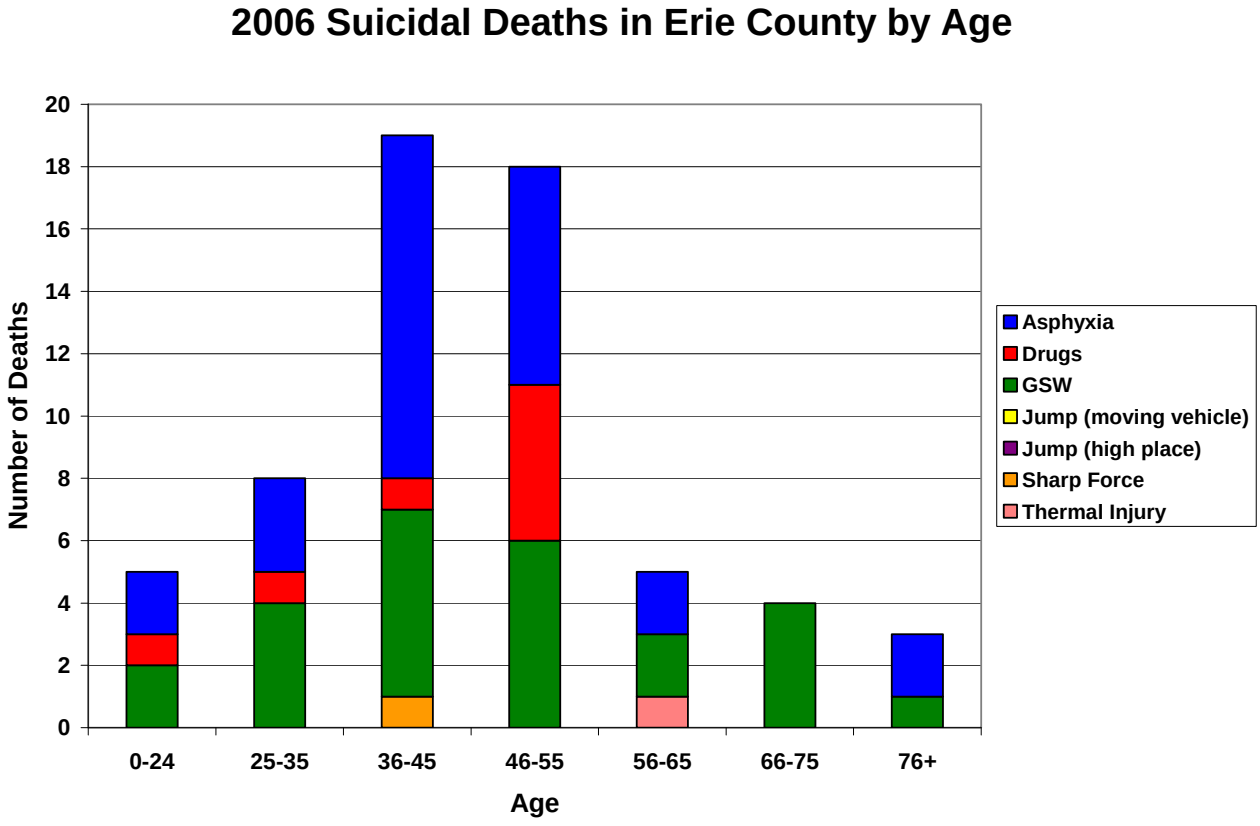
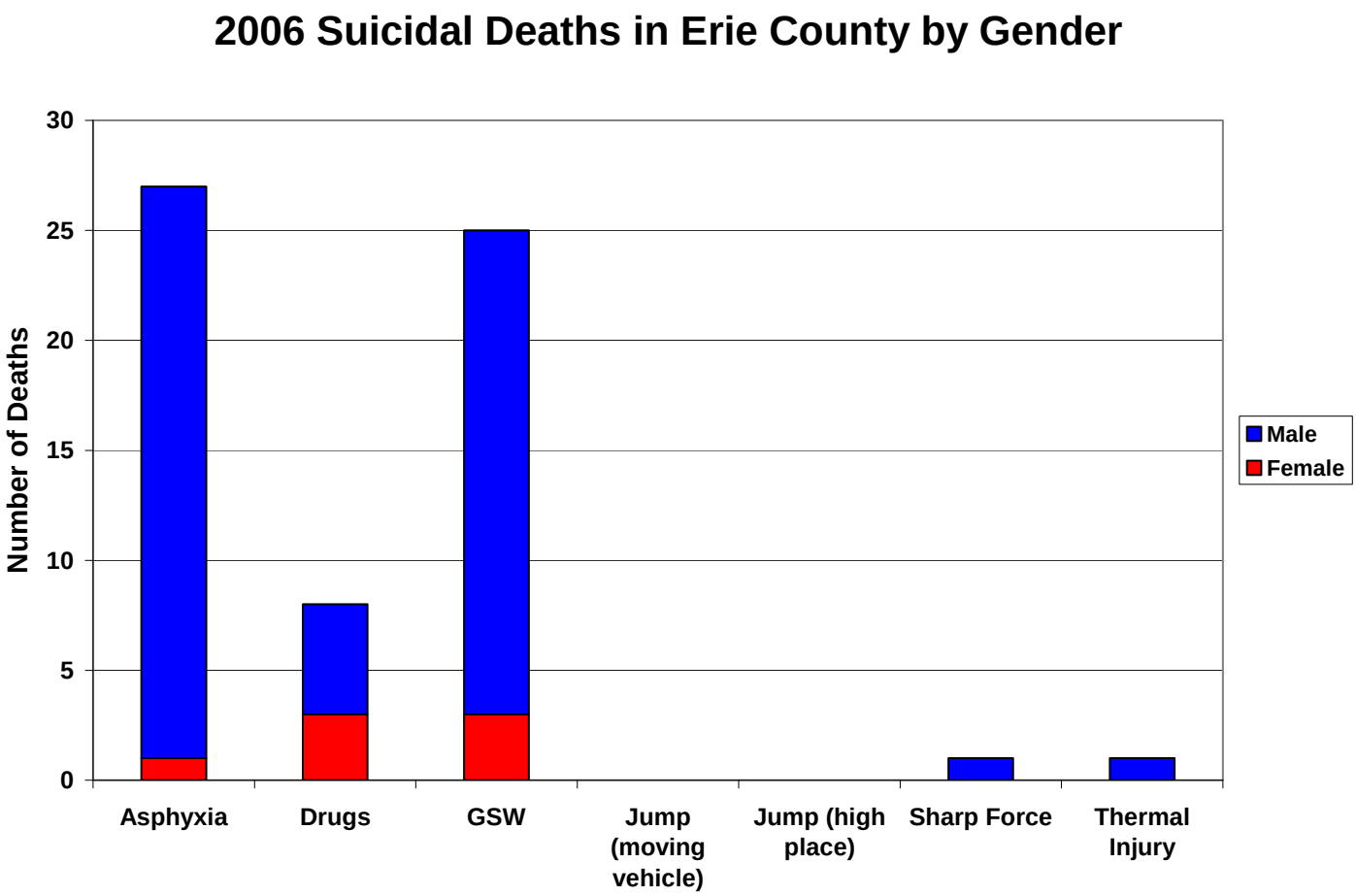


Figure 8c


2006 Suicidal Deaths in Erie County by Gender
Number of Deaths
30
25
20
15
10
5
0
Asphyxia
Drugs
GSW
Jump (moving vehicle)
Jump (high place)
Sharp Force
Thermal Injury
Male
Female

HOMICIDAL DEATH OVERVIEW

The compilation of data in figures 9a-9c gives an overview of homicidal deaths categorized by type, age and gender. As shown in figure 9a, gunshot wounds were the most common homicidal cause of death, occurring at least six times more often than any other means. Homicidal deaths due to blunt force injuries did not far exceed those deaths due to sharp force injuries or strangulation.

In those 45 years and younger, homicides were most commonly a result of gunshot wounds; for those 56-65 years, homicides were more frequently perpetrated by means of blunt force. Strangulation deaths only occurred in the ages ranging from 25-65. In 2006 no homicides occurred in those aged 66-75.

The data in figure 9c show overall that men were more likely than women to die at the hands of another. More women than men were strangled and many more men than women were shot to death.

Figure 9a

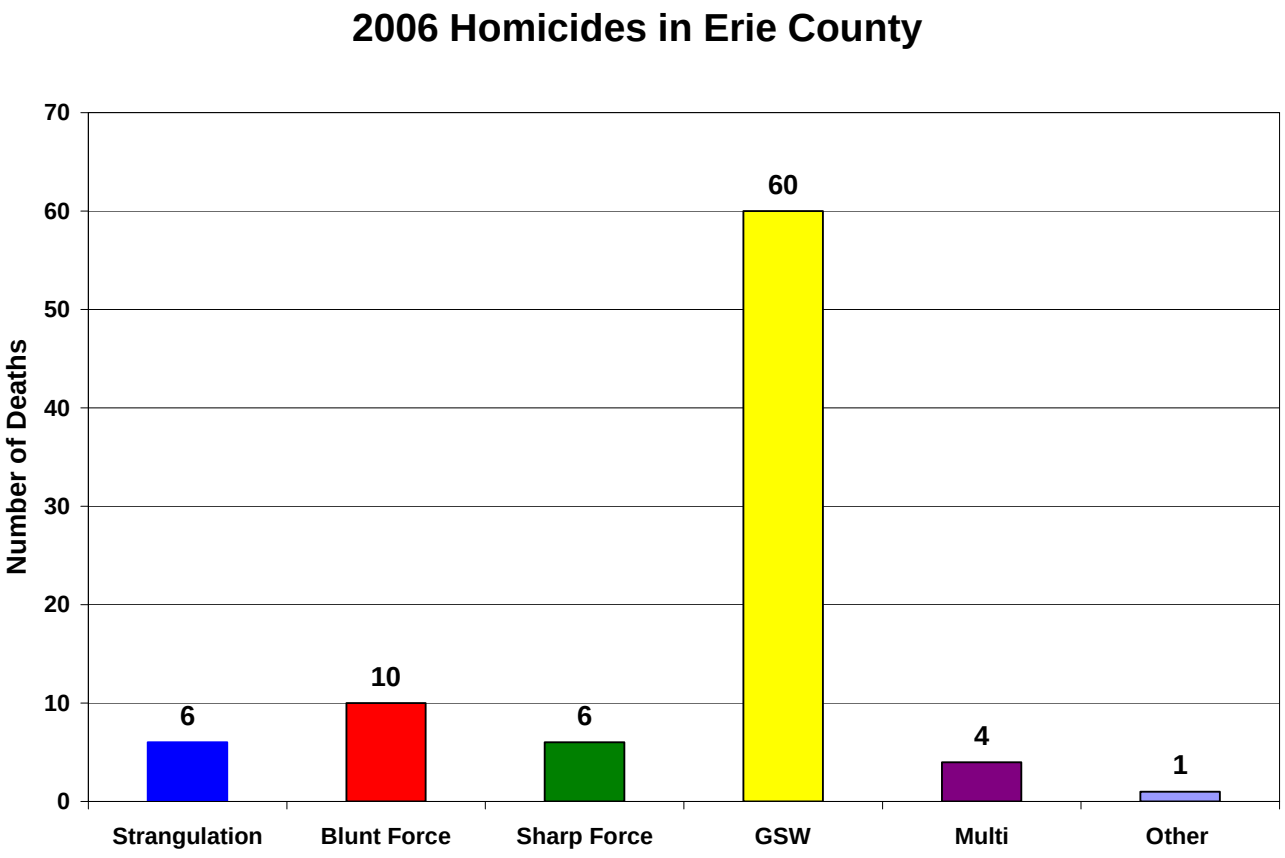


Figure 9b

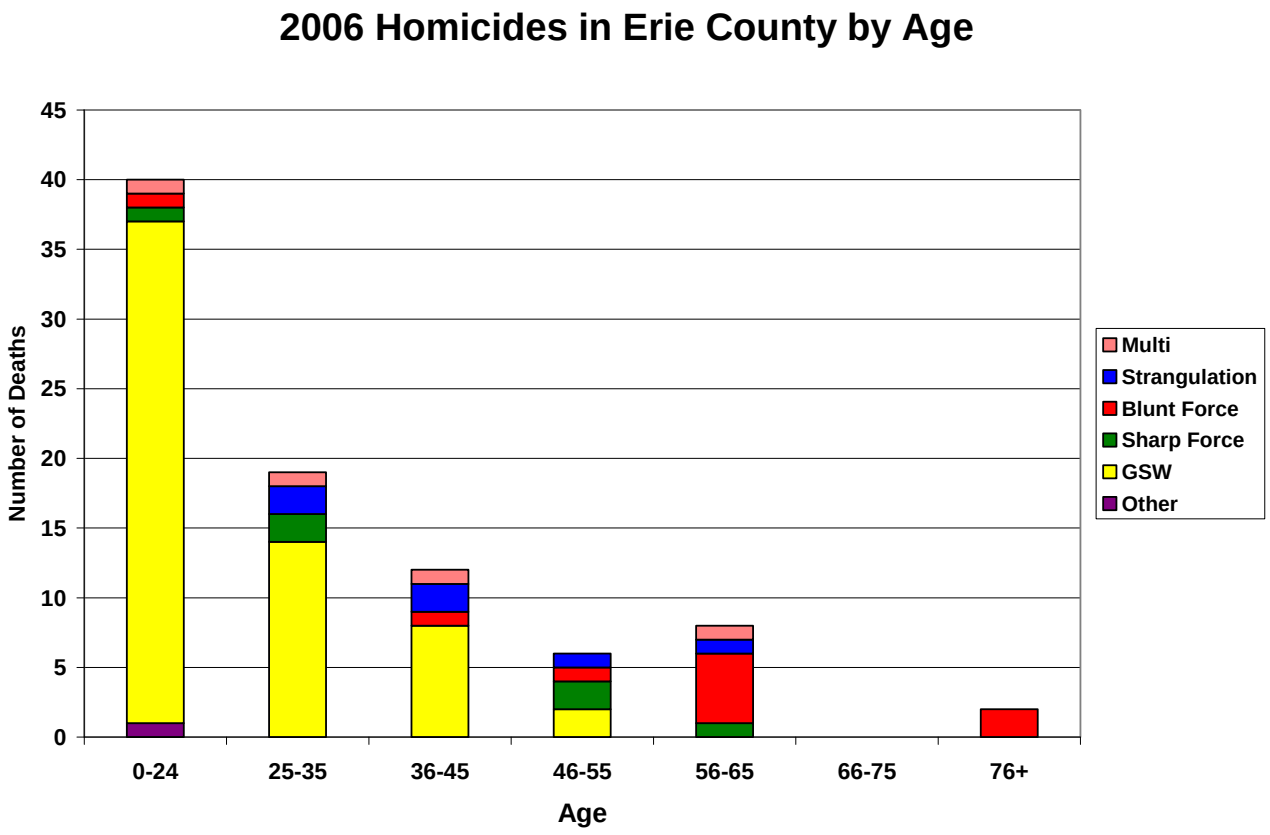
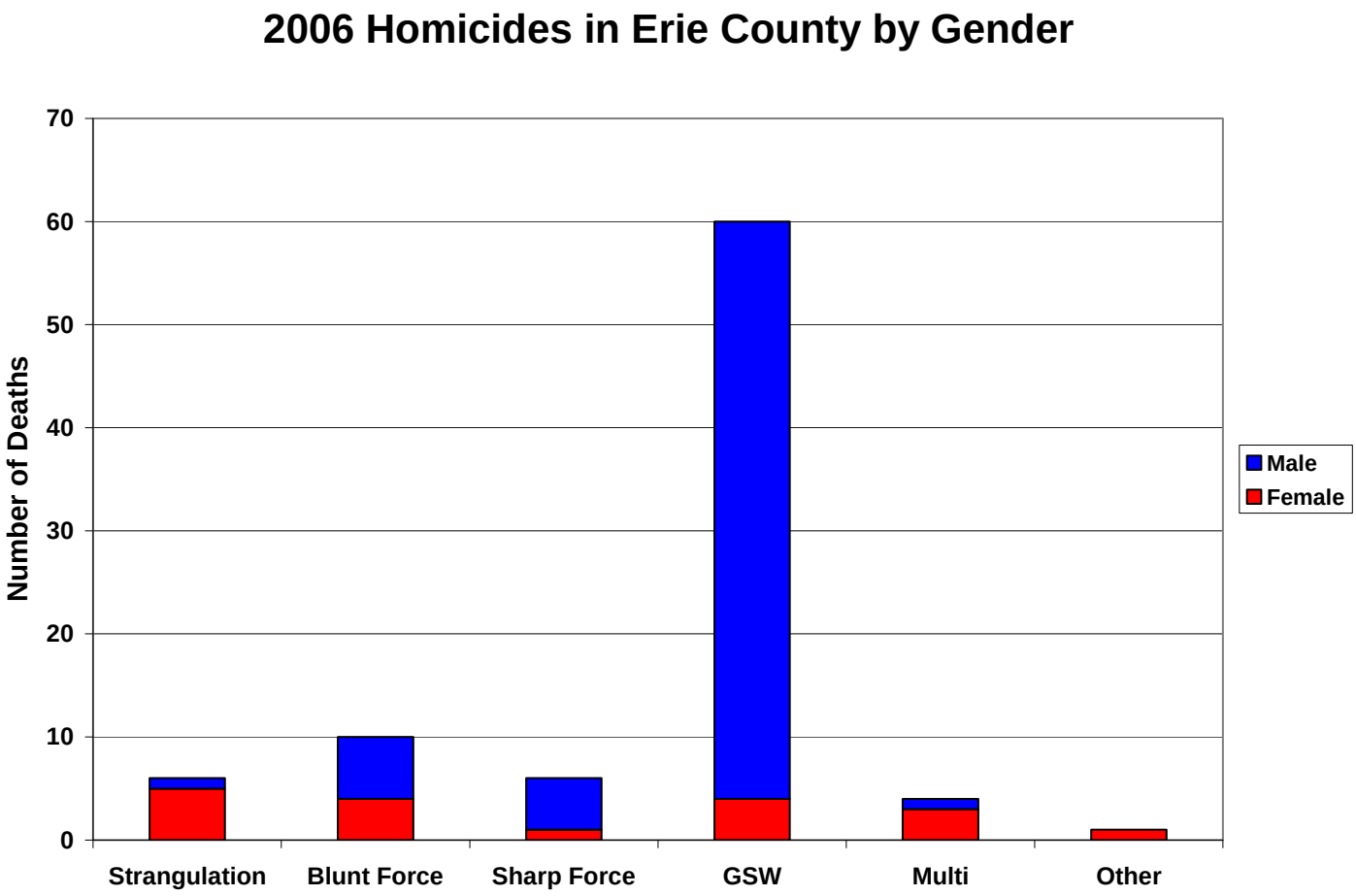


Figure 9c


2006 Homicides in Erie County by Gender
Number of Deaths
70
60
50
40
30
20
10
0
Strangulation
Blunt Force
Sharp Force
GSW
Multi
Other
Male
Female

UNDETERMINED DEATH OVERVIEW

The compilation of data in figures 10a-10c gives an overview of undetermined deaths categorized by type, age and gender. The far most common undetermined death as seen in figure 9a was due to drug overdose, where males outnumbered females (figure 10c). As stated elsewhere in this report, it is the policy of this office to classify deaths as undetermined when drugs are taken in excess - in that the intention of the decedent is not known. If the intent is known, it would be classified as accidental, suicidal or homicidal.

Figure 10b shows that the highest number of drug deaths occurred in the 36-45 age bracket, closely followed by the 46-55 age group (see also figure 4). In 2006, no undetermined drug deaths occurred in those aged 66-75. The data also show that advanced decomposition was only seen in those aged 36 and above, possibly reflecting social distancing in the older compared to younger age groups.

Figure 10a

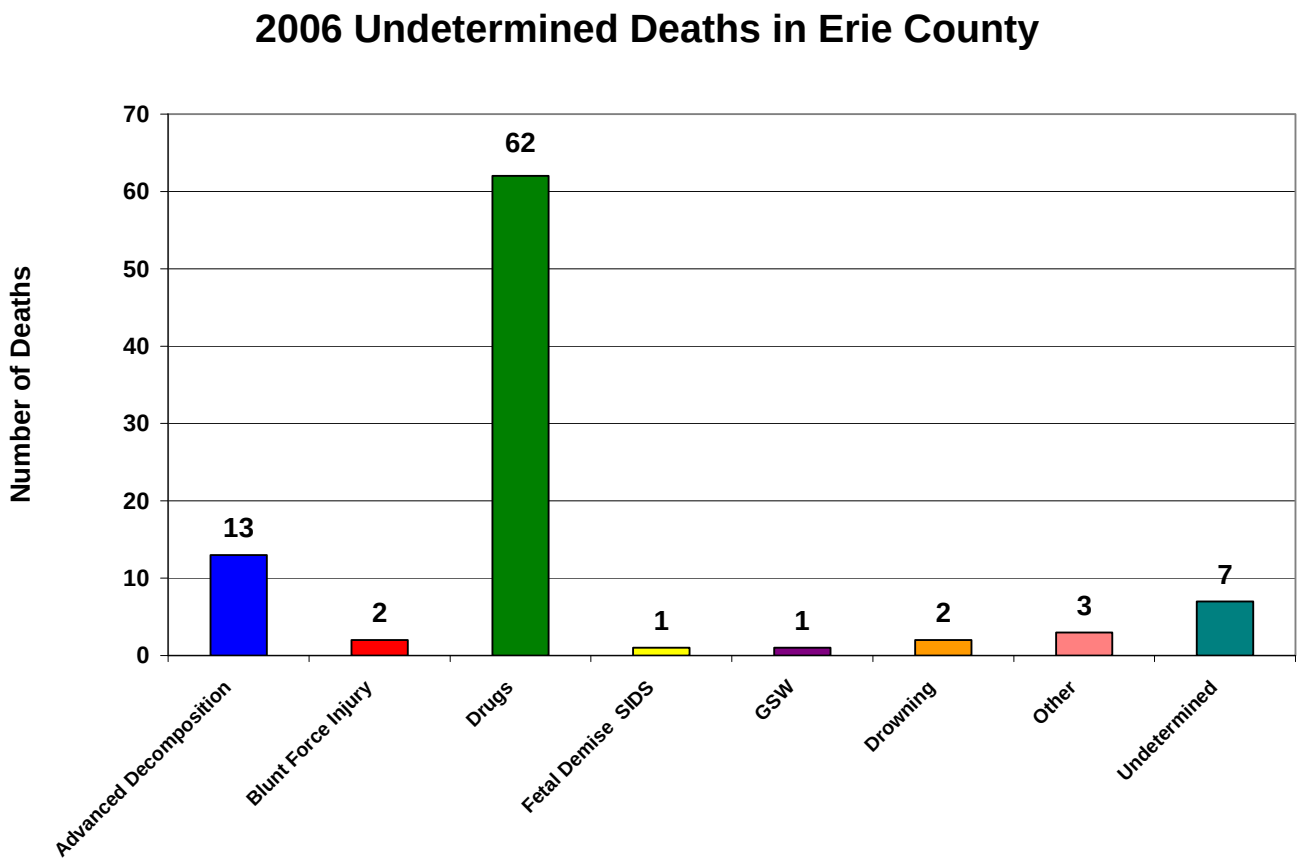


Figure 10b

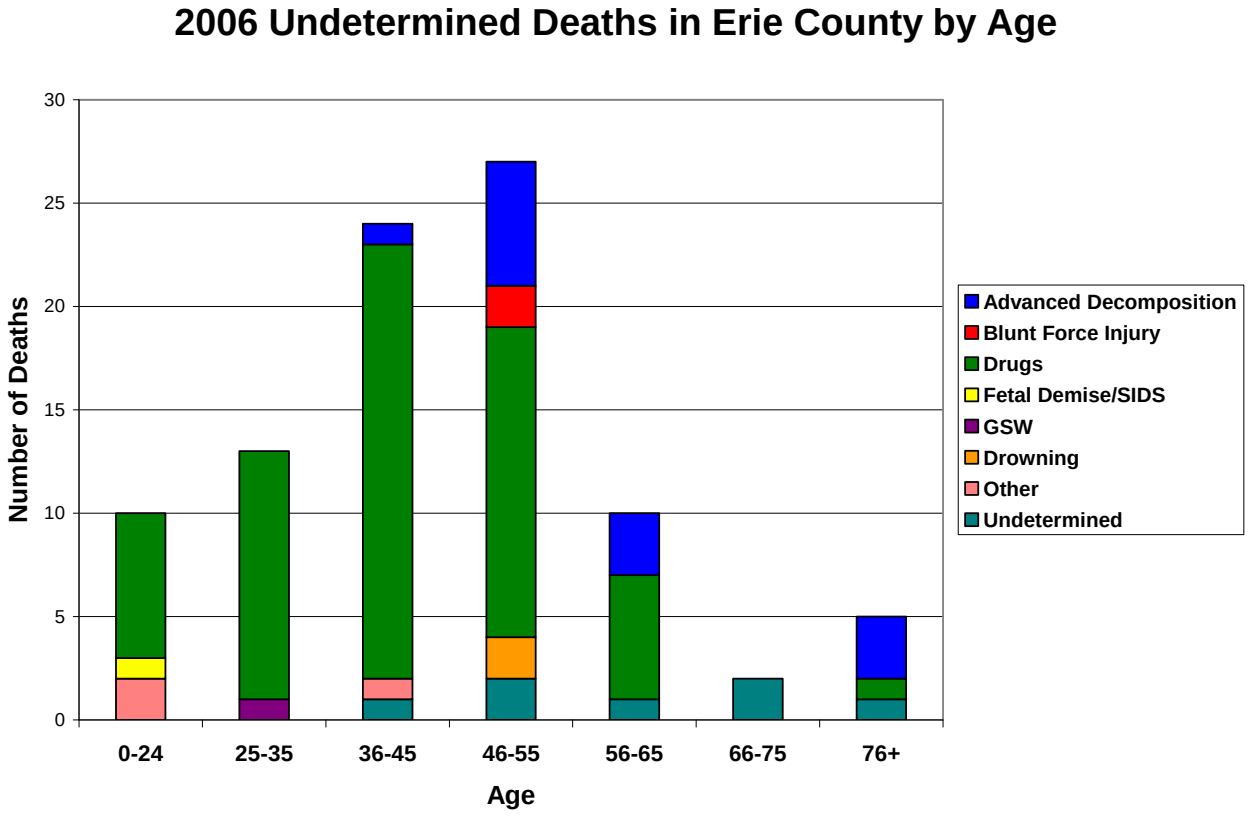
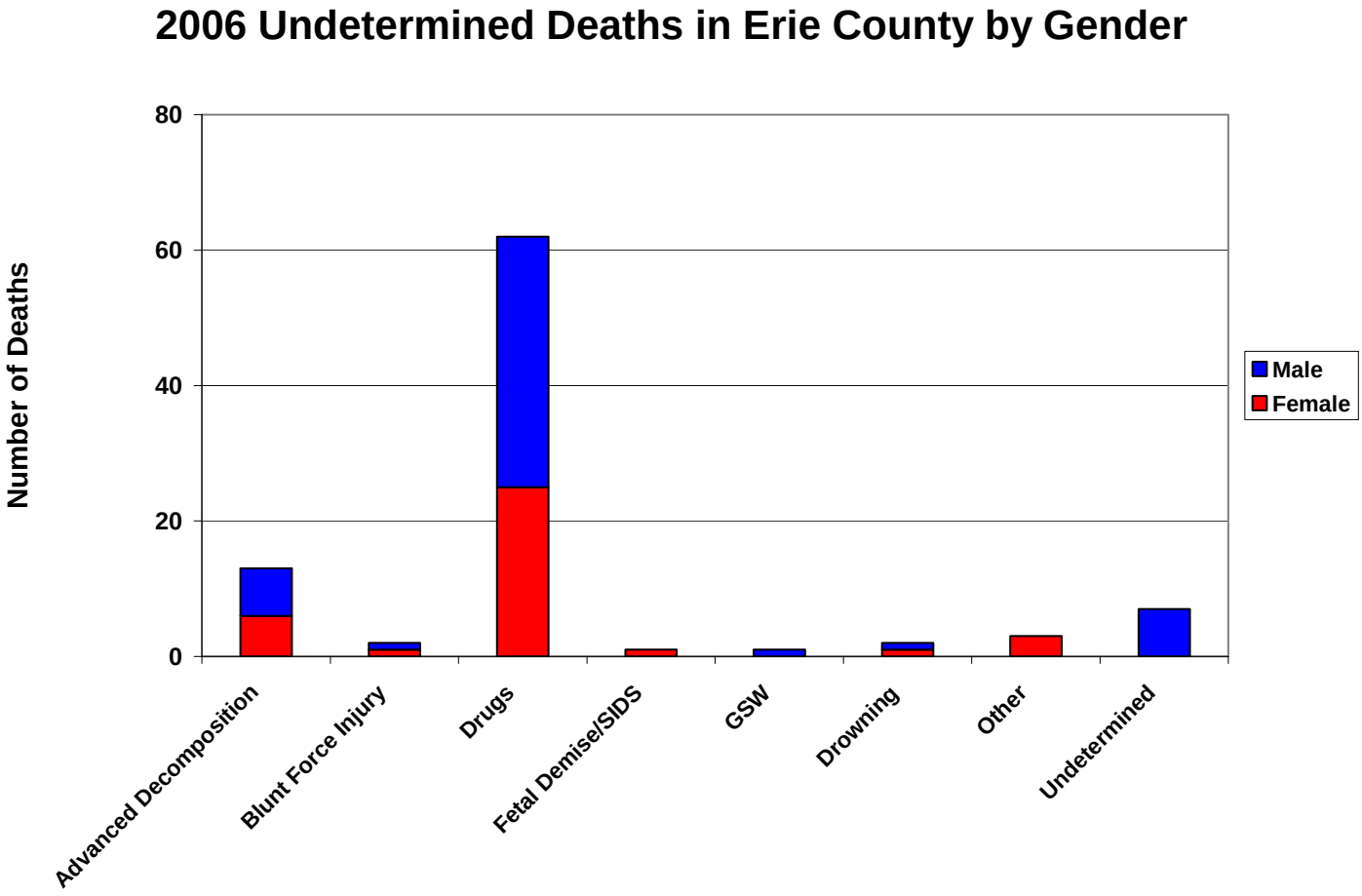


Figure 10c


2006 Undetermined Deaths in Erie County by Gender
Number of Deaths
80
60
40
20
0
Male
Female
Advanced Decomposition
Blunt Force Injury
Drugs
Fetal Demise/SIDS
GSW
Drowning
Other
Undetermined

ANNUAL TRENDS

According to Erie County statistics, there was a considerable drop in the death rate from the year 2005 to 2006. The fall in the death rate may reflect the overall decrease in population of our Western New York community. Approximately the same number of cases was reported to our office in 2006 as the previous year, but the overall autopsy rate fell as death certification was more often completed by non-medical-examiner physicians. In contrast, cases being referred from outside counties increased from 2005 to 2006. The ratio of autopsies to external examinations has remained constant from 2005 to 2006, with the inspections accounting for fewer than 10%.

On the whole, our caseload has remained fairly constant since our first annual report, being composed largely of middle aged (36 – 65 years of age) white males most of whom died of cardiovascular disease. The overall stratification of natural and accidental deaths showed no significant trends from 2005 to 2006. Homicides increased to the extent that the proportion of homicides to suicides from one year to the next was reversed. More young people died in 2006 from gun shot wounds than in 2005. The trend for more women than men to die of homicidal strangulation continued from 2005 to 2006. In contrast to 2005, in 2006 overall more males than females died of drug overdoses.