Kent County
Medical Examiner

2007
Annual Report

Office of the Medical Examiner
700 Fuller N.E.
Grand Rapids, Michigan 49503

2007 Kent County Medical Examiner Annual Report

To the Kent County Board of Commissioners,
and to the Citizens of Kent County:

The responsibility of determining the cause and manner of unexpected deaths in Kent County is one that the Medical Examiner staff takes very seriously. The results of these investigations provide valuable information which is used by public health personnel, the criminal justice system, families of the deceased, and other concerned parties.

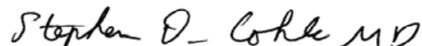
While many regard the Medical Examiner Program as being primarily concerned with the circumstances surrounding the end of life, Medical Examiners are equally concerned with the preservations of life. The Medical Examiner personnel continues to spend many hours with the Child Death Review Team to examine all types of data related to the deaths of children under 18 years of age in our community.

In 2007, there were 4,845 deaths in Kent County. The Medical Examiner's Office was contacted regarding 1,341 of these deaths of which 391 required autopsies.

However, while the high standards to which we adhere provide the foundation for quality investigative practices, it is the practitioners – the Deputy Chief Medical Examiner and Medical Examiner Investigators - who ultimately yield results. Within the frame-work of investigative protocols, the Deputy Chief Medical Examiner and Medical Examiner Investigators must have latitude for judgment and the discretion to exercise it accordingly. I have always sought to direct our Medical Examiner program in a manner that takes full advantage of the professional trainings and experience of the Kent County Deputy Chief Medical Examiner and Medical Examiner Investigators, and continue to be an advocate for their expertise as a critical component of a quality program.

On behalf of the Medical Examiner's Office of Kent County, I would like to thank the Board of Commissioners for their continued support of this program which enables the Medical Examiner staff to provide this valuable and necessary service for the citizens of Kent County. I also wish to express my deepest gratitude to the excellent staff of the Kent County Medical Examiner program – the Deputy Chief Medical Examiner, Medical Examiner Investigators, and the administrative support staff – who keep this program running smoothly. It is my pleasure to present the Kent County Medical Examiner's 2007 Annual Report.

Respectively submitted,



Stephen D. Cohle, MD
Chief Medical Examiner

Office of the Kent County Medical Examiner

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Medical Examiner Personnel

Stephen D. Cohle, MD
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David A. Start, MD
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Jason S. Chatman
Medical Examiner Investigator

John T. Connolly
Medical Examiner Investigator

Paul R. Davison, F-ABMDI
Medical Examiner Investigator

Cynthia L. Debiak, RN
Medical Examiner Investigator

Peter J. Noble
Medical Examiner Investigator

Theodore E. Oostendorp
Medical Examiner Investigator

Richard Washburn
Kent County Conveyance Specialist and
Scene Investigator

Amy L. M. Kjaer (resigned 8/31/07)
Medical Examiner Support Staff

Dolly M. Olthoff
Medical Examiner Support Staff

Carmen M. Perez
Medical Examiner Support Staff and
Child Death Review Coordinator

Board Certification
The American Board of Medicolegal Death Investigators (ABMDI) sets quality and process standards for death investigators. Medical examiners who pass the certification requirements of the ABMDI are designated as registered Diplomats (D-ABMDI). Medical examiners with continued time in investigation and who pass required tests are designated as certified Fellows (F-ABMDI).

Medical Examiner Program Expenditures, 2006 and 2007

	2006		2007	
	Amount	Percentage	Amount	Percentage
Medical examiner (compensation)	$169,793	14.3%	$182,592	14.3%
Autopsies	806,571	68.0%	880,579	69.1%
Cadaver transportation	77,292	6.5%	84,448	6.6%
Support services	46,958	4.0%	42,325	3.3%
Administration	85,000	7.2%	85,000	6.7%
Total	$1,185,614	100.0%	$1,274,944	100.0%
Average cost per case investigated	$1,219		$1,277	

Medical Examiner Reportable Deaths and Autopsy

The Michigan County Medical Examiners Law, P.A. 181 of 1953, as amended, and the Michigan Public Health Code, P.A. 368 of 1978, as amended, mandates that specific types of deaths (listed below, left) be referred to the medical examiner for investigation. Medical examiner investigation of a death may also be ordered by the county's prosecuting attorney, the Michigan Attorney General or, upon the filing of a petition, signed by six (6) electors of a county. Not all deaths referred to the medical examiner for investigation necessarily result in an autopsy; however, an autopsy is generally ordered in certain circumstances (listed below, right), to determine more accurately the cause and manner of death.

Types of Deaths Reportable to the Medical Examiner, P.A. 368 of 1978

1. Sudden deaths and unexpected deaths (all deaths occurring in operating room, in recovery room, anesthesia related, natural death but not expected, occupational related deaths, subdural hematoma, intracerebral hemorrhage, etc.)*

2. Accidental deaths (motor vehicle, burns, drowning, falls, broken bones, drug overdose, drug toxicity, subdural hematoma, recent or past trauma, etc.)

3. Violent deaths (homicide, gunshot, stabbing, suicide, subdural hematoma, etc.)*

4. Suspicious circumstances surrounding a death.*

5. Deaths occurring as a result of an abortion.

6. Upon written order of the prosecuting attorney or the attorney general or upon the filing of a petition signed by six (6) electors of a county.

7. Death of a prisoner in any county or city jail who dies while so imprisoned.

8. If a fetal death occurs without medical attendance at or after the delivery.

In terms of a physician attendance: for the purposes of the medical examiner program, we consider that an investigation is required when:

A. The deceased was last seen by a physician more than **ten (10) days before his or her death, if the cause of death appears to be other than the illness or condition for which the deceased was being treated.
B. The attending physician cannot accurately determine the cause of death.
C. When the deceased has not received any medical attention during the ***48 hours prior to the hour of death unless the attending physician, if any, is able to accurately determine the cause of death.

* All trauma related deaths no matter when the trauma occurred.
** The ten (10) day requirement relates solely to physician attendance.
*** The 48 hour requirement triggers an investigation when there has been no medical attendance of any kind (i.e., nursing care, etc.)

Types of Medical Examiner Cases for which Autopsy is Generally Ordered

1. Sudden deaths and unexpected deaths only when in the medical examiner's judgment, sufficient medical history is not available to determine cause and manner of death.

2. Accidental deaths such as motor vehicle, burns, drowning, etc. If an individual has been hospitalized for a length of time, it is the medical examiner's decision to order an autopsy.

3. Violent deaths such as homicide, suicide, gunshot, stabbing, etc.

4. Suspicious circumstances surrounding death, including unidentified bodies.

5. Death related to an abortion.

6. Sudden infant deaths (SIDS) and deaths of children 18 and under without significant medical history.

7. Death of a prisoner imprisoned at any county or city jail.

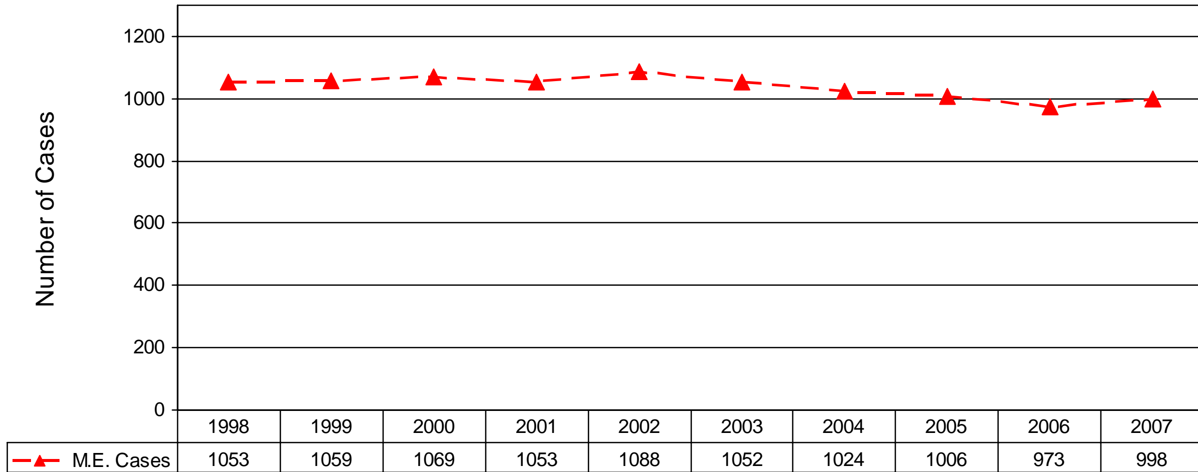
8. In a fetal death occurring without medical attendance at or after delivery.

9. An autopsy may be ordered at the discretion of the medical examiner if the cause of death appears to be other than the illness or condition for which the deceased was being treated, or if the attending physician cannot accurately determine the cause of death.

10. Anesthesia-related and unexpected deaths of patient in health care institutions.

2007 Medical Examiner Caseload

Figure 1: Accepted Kent County Medical Examiner Cases, 1998-2007



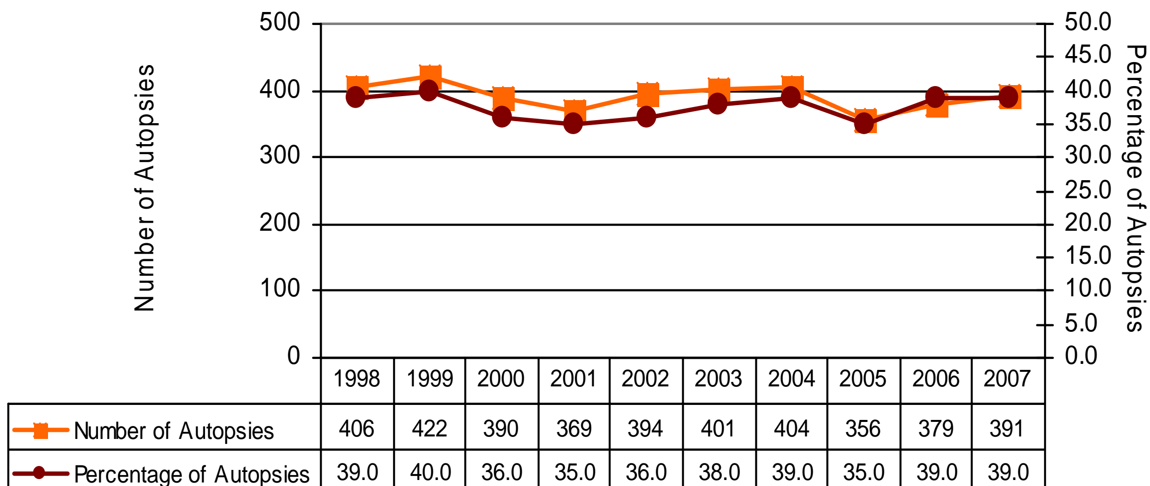
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
M.E. Cases	1053	1059	1069	1053	1088	1052	1024	1006	973	998

Total Referred Medical Examiner Cases in 2007: 1,341

Accepted	998	74.4%
Declined	343	25.6%

In 2007, there were 4,845 deaths in Kent County. The medical examiner was contacted regarding 1,341 of these deaths. Only 998 cases were accepted for investigation, while 343 were declined and did not fall within the requirements for investigation by the Medical Examiner's Office.

Figure 2: Medical Examiner Cases with Autopsy, 1998-2007

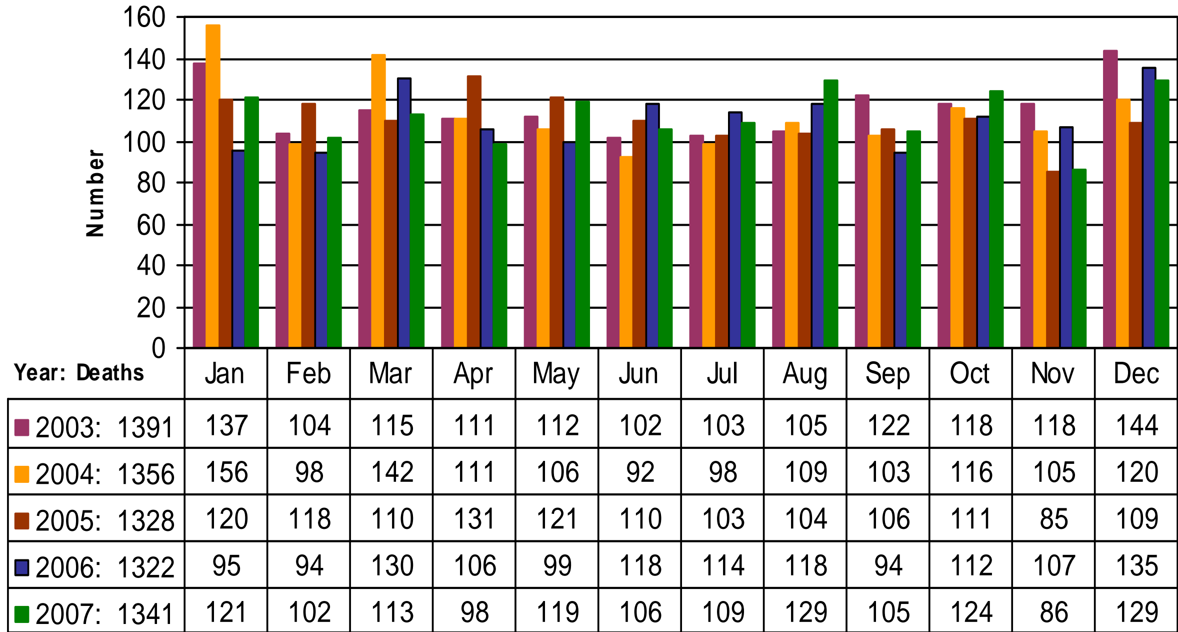


	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Autopsies	406	422	390	369	394	401	404	356	379	391
Percentage of Autopsies	39.0	40.0	36.0	35.0	36.0	38.0	39.0	35.0	39.0	39.0

Of the 391 autopsies performed, 366 were charged to Kent County. The remaining 25 autopsies were performed either by a request from the family or another county.

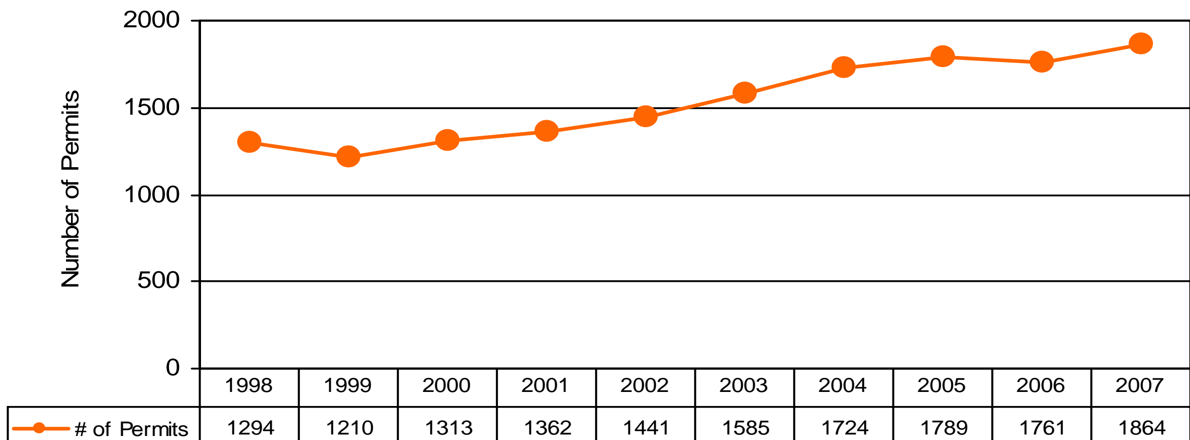
2007 Medical Examiner Caseload

Figure 3: Referred Medical Examiner Caseload by Month, 2003-2007



Year: Deaths	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003: 1391	137	104	115	111	112	102	103	105	122	118	118	144
2004: 1356	156	98	142	111	106	92	98	109	103	116	105	120
2005: 1328	120	118	110	131	121	110	103	104	106	111	85	109
2006: 1322	95	94	130	106	99	118	114	118	94	112	107	135
2007: 1341	121	102	113	98	119	106	109	129	105	124	86	129

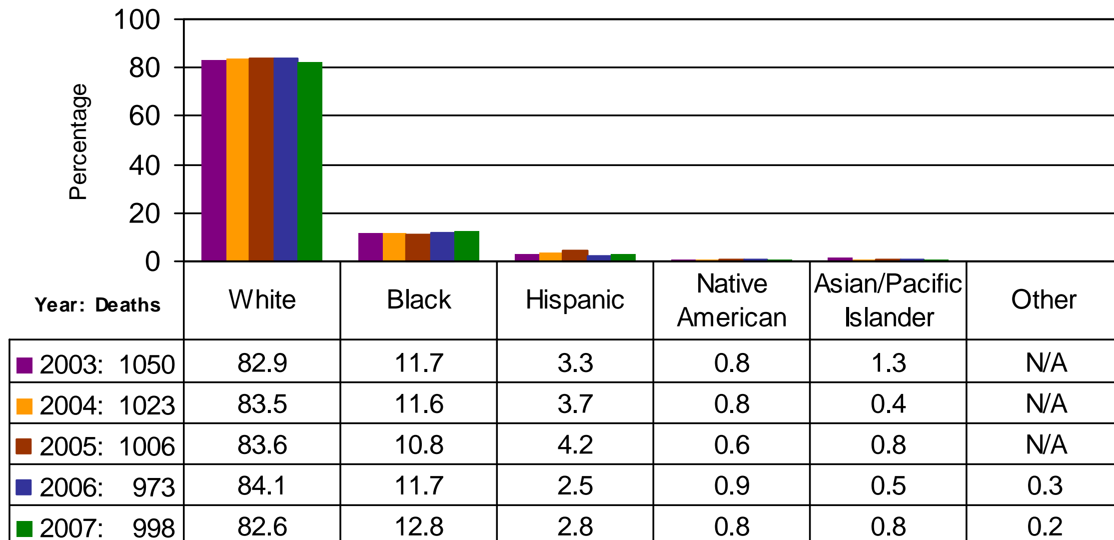
Figure 4: Cremation Permits Issued, 1998-2007



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
# of Permits	1294	1210	1313	1362	1441	1585	1724	1789	1761	1864

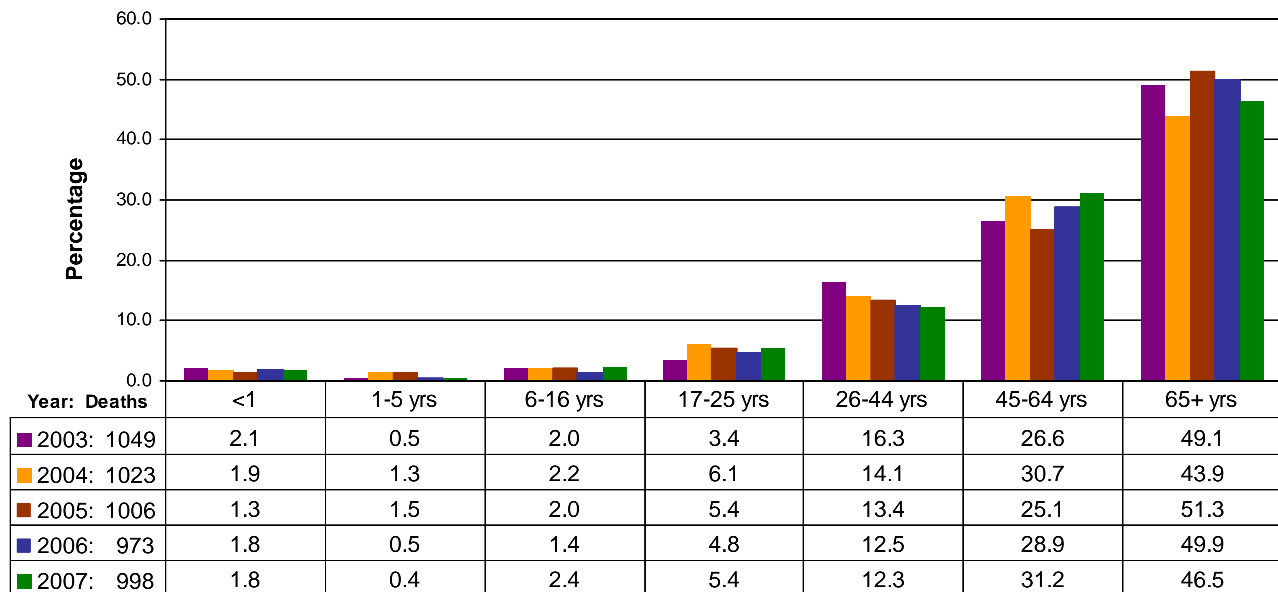
Demographics of Medical Examiner Cases

Figure 5: Medical Examiner Cases by Race/Ethnicity, 2003-2007



Year: Deaths	White	Black	Hispanic	Native American	Asian/Pacific Islander	Other
2003: 1050	82.9	11.7	3.3	0.8	1.3	N/A
2004: 1023	83.5	11.6	3.7	0.8	0.4	N/A
2005: 1006	83.6	10.8	4.2	0.6	0.8	N/A
2006: 973	84.1	11.7	2.5	0.9	0.5	0.3
2007: 998	82.6	12.8	2.8	0.8	0.8	0.2

Figure 6: Medical Examiner Cases by Age at Death, 2003-2007



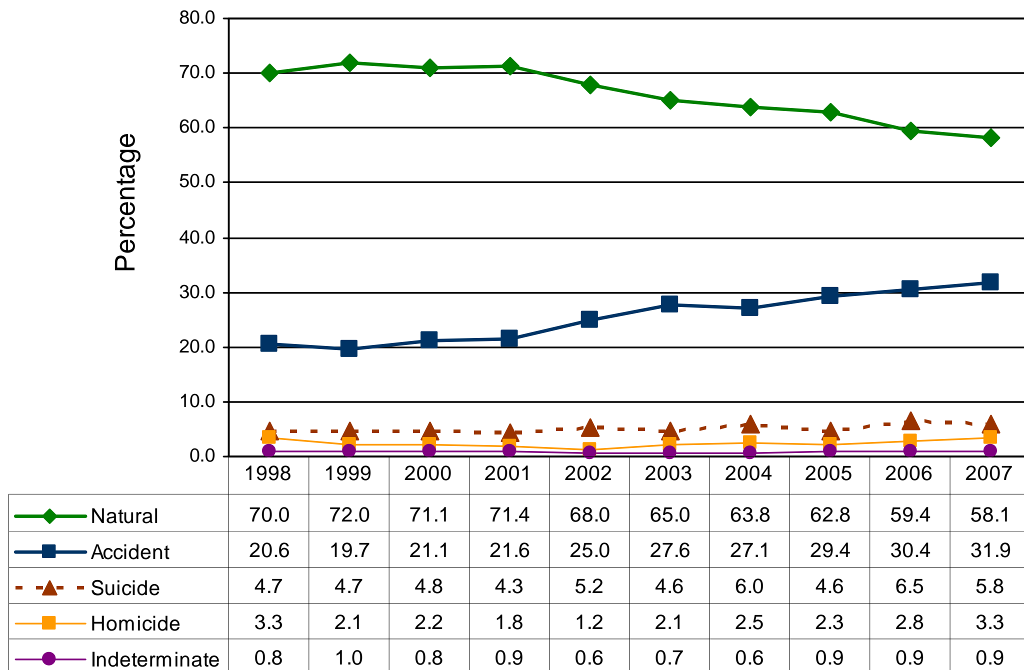
Year: Deaths	<1	1-5 yrs	6-16 yrs	17-25 yrs	26-44 yrs	45-64 yrs	65+ yrs
2003: 1049	2.1	0.5	2.0	3.4	16.3	26.6	49.1
2004: 1023	1.9	1.3	2.2	6.1	14.1	30.7	43.9
2005: 1006	1.3	1.5	2.0	5.4	13.4	25.1	51.3
2006: 973	1.8	0.5	1.4	4.8	12.5	28.9	49.9
2007: 998	1.8	0.4	2.4	5.4	12.3	31.2	46.5

Table 1: Medical Examiner Cases by Gender, 2003-2007

	2003	2004	2005	2006	2007
Female	39.5%	38.5%	39.7%	39.5%	38.6% (385 cases)
Male	60.5%	61.5%	60.5%	60.5%	61.3% (612 cases)
Unknown (fetus)					0.1% (1 case)

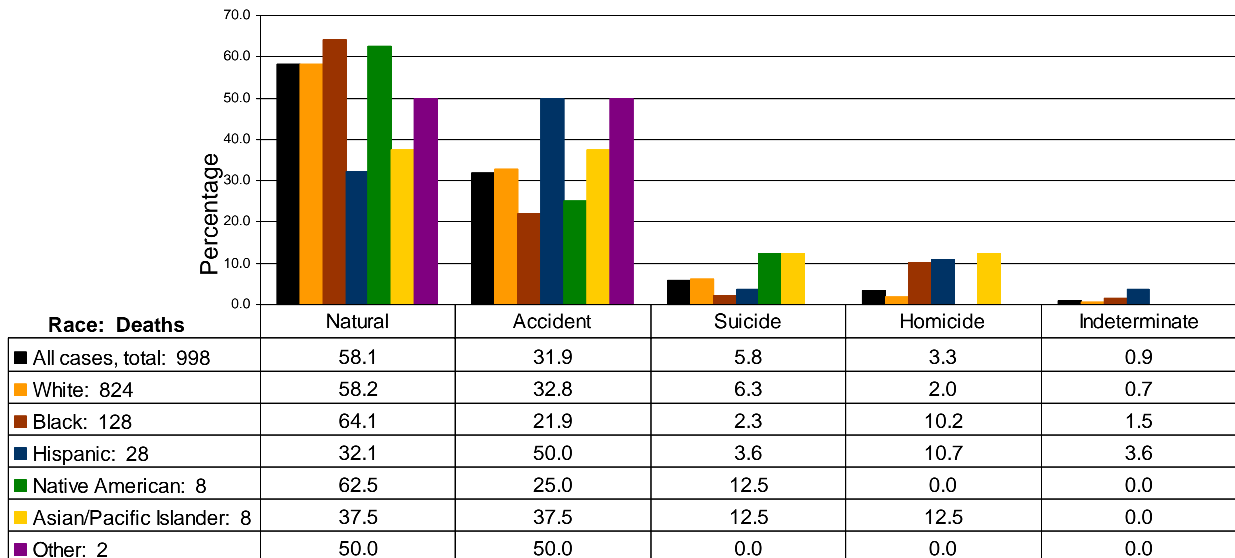
Manner of Death

Figure 7: Medical Examiner Cases by Manner of Death, 1998-2007



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Natural	70.0	72.0	71.1	71.4	68.0	65.0	63.8	62.8	59.4	58.1
Accident	20.6	19.7	21.1	21.6	25.0	27.6	27.1	29.4	30.4	31.9
Suicide	4.7	4.7	4.8	4.3	5.2	4.6	6.0	4.6	6.5	5.8
Homicide	3.3	2.1	2.2	1.8	1.2	2.1	2.5	2.3	2.8	3.3
Indeterminate	0.8	1.0	0.8	0.9	0.6	0.7	0.6	0.9	0.9	0.9

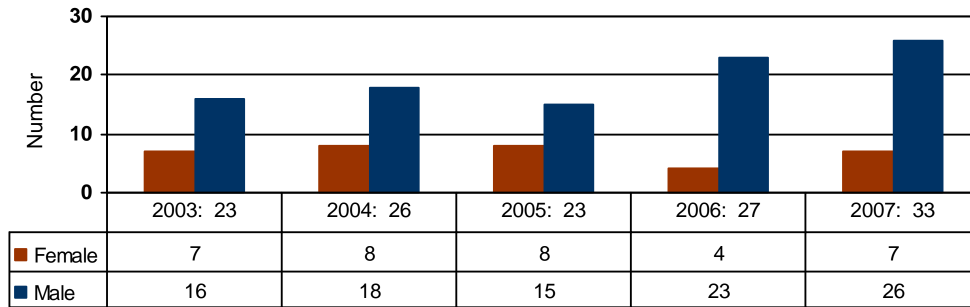
Figure 8: Manner of Death by Race/Ethnicity, 2007



Race: Deaths	Natural	Accident	Suicide	Homicide	Indeterminate
All cases, total: 998	58.1	31.9	5.8	3.3	0.9
White: 824	58.2	32.8	6.3	2.0	0.7
Black: 128	64.1	21.9	2.3	10.2	1.5
Hispanic: 28	32.1	50.0	3.6	10.7	3.6
Native American: 8	62.5	25.0	12.5	0.0	0.0
Asian/Pacific Islander: 8	37.5	37.5	12.5	12.5	0.0
Other: 2	50.0	50.0	0.0	0.0	0.0

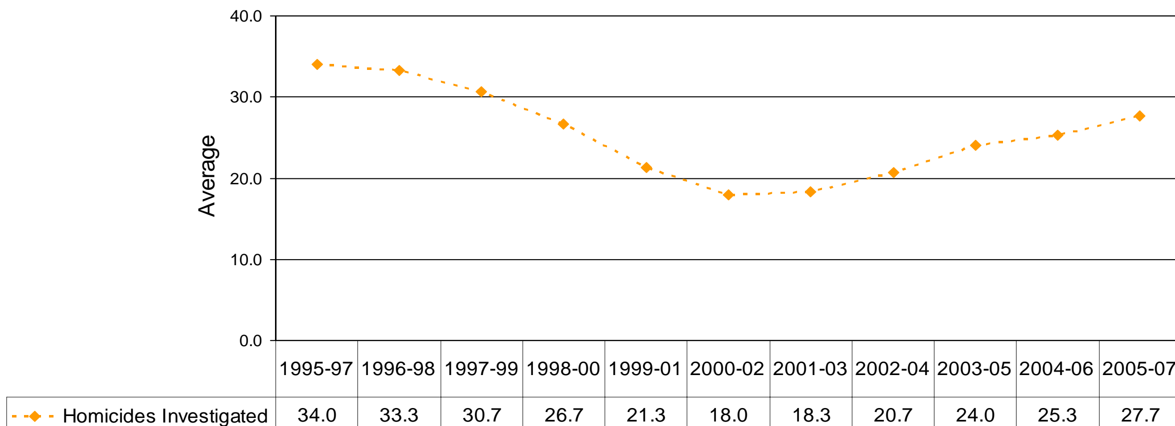
Manner of Death

Figure 9: Kent County Homicides by Gender, 2003-2007



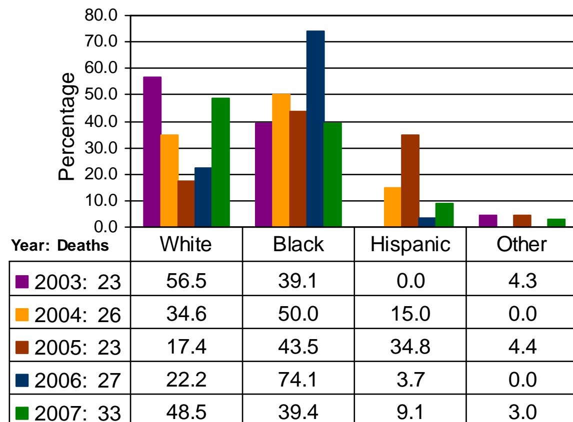
	2003: 23	2004: 26	2005: 23	2006: 27	2007: 33
Female	7	8	8	4	7
Male	16	18	15	23	26

Figure 10: Kent County Homicides, Three-Year Moving Averages, 1995-2007



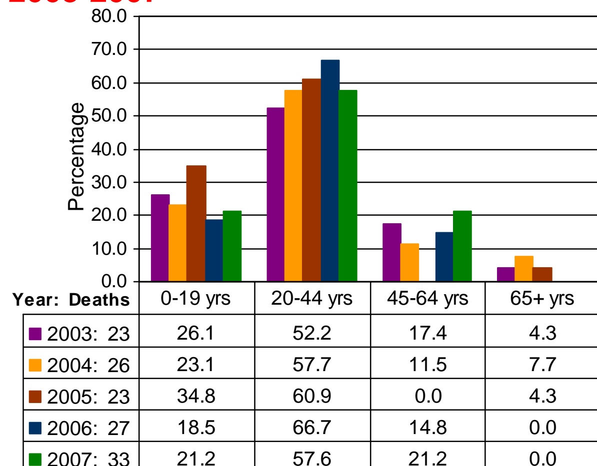
	1995-97	1996-98	1997-99	1998-00	1999-01	2000-02	2001-03	2002-04	2003-05	2004-06	2005-07
Homicides Investigated	34.0	33.3	30.7	26.7	21.3	18.0	18.3	20.7	24.0	25.3	27.7

Figure 11: Homicides by Race, 2003-2007



Year: Deaths	White	Black	Hispanic	Other
2003: 23	56.5	39.1	0.0	4.3
2004: 26	34.6	50.0	15.0	0.0
2005: 23	17.4	43.5	34.8	4.4
2006: 27	22.2	74.1	3.7	0.0
2007: 33	48.5	39.4	9.1	3.0

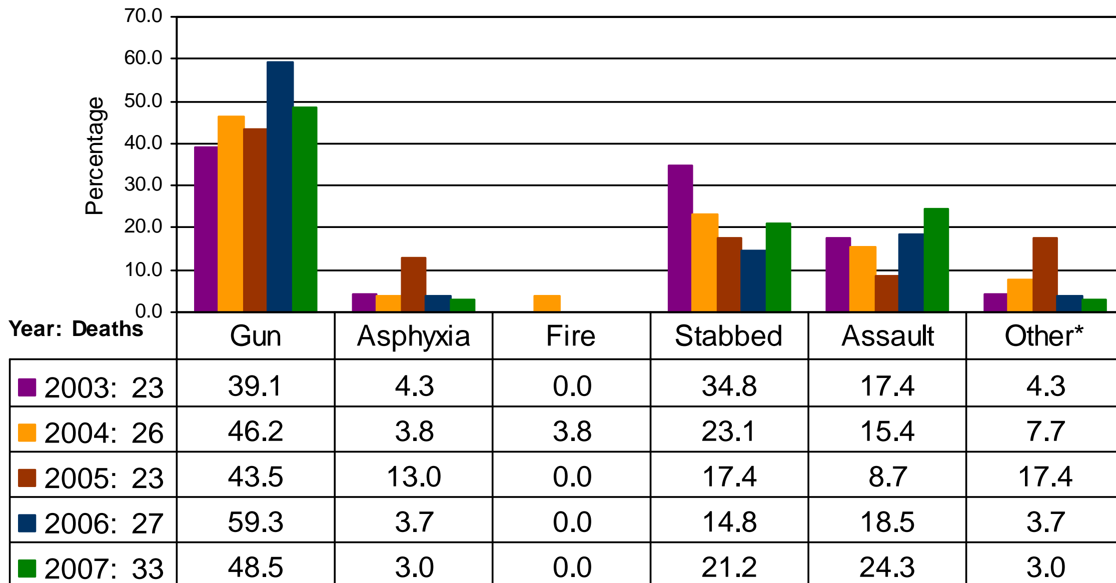
Figure 12: Homicides by Age, 2003-2007



Year: Deaths	0-19 yrs	20-44 yrs	45-64 yrs	65+ yrs
2003: 23	26.1	52.2	17.4	4.3
2004: 26	23.1	57.7	11.5	7.7
2005: 23	34.8	60.9	0.0	4.3
2006: 27	18.5	66.7	14.8	0.0
2007: 33	21.2	57.6	21.2	0.0

Manner of Death

Figure 13: Homicide Cases by Method Used, 2003-2007



Year: Deaths	Gun	Asphyxia	Fire	Stabbed	Assault	Other*
2003: 23	39.1	4.3	0.0	34.8	17.4	4.3
2004: 26	46.2	3.8	3.8	23.1	15.4	7.7
2005: 23	43.5	13.0	0.0	17.4	8.7	17.4
2006: 27	59.3	3.7	0.0	14.8	18.5	3.7
2007: 33	48.5	3.0	0.0	21.2	24.3	3.0

*For 2007, there was 1 homicide where the cause of death was due to shaken baby.

Table 2: Gun Homicides by Age, 2003-2007

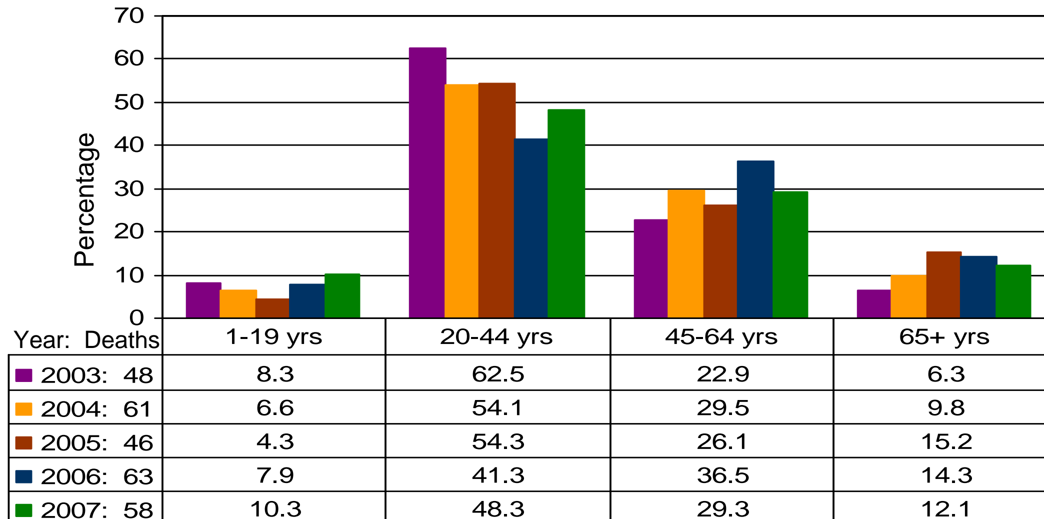
	AGE			
Year: Deaths	0-19 yrs	20-29 yrs	30-39 yrs	40+ yrs
2003: 9	2	4	1	2
2004: 12	2	5	3	2
2005: 10	2	5	3	0
2006: 16	3	7	2	4
2007: 16	4	8	2	2

Table 3: Suicide Cases by Race, 2003-2007

	White	Black	Hispanic	Native American	Asian
2003: 48	85.4%	10.4%	0.0%	2.1%	2.1%
2004: 61	83.6%	3.3%	8.2%	0.0%	4.9%
2005: 46	82.6%	6.5%	8.7%	0.0%	1.0%
2006: 63	92.1%	4.8%	3.2%	0.0%	0.0%
2007: 58	89.7%	5.2%	1.7%	1.7%	1.7%

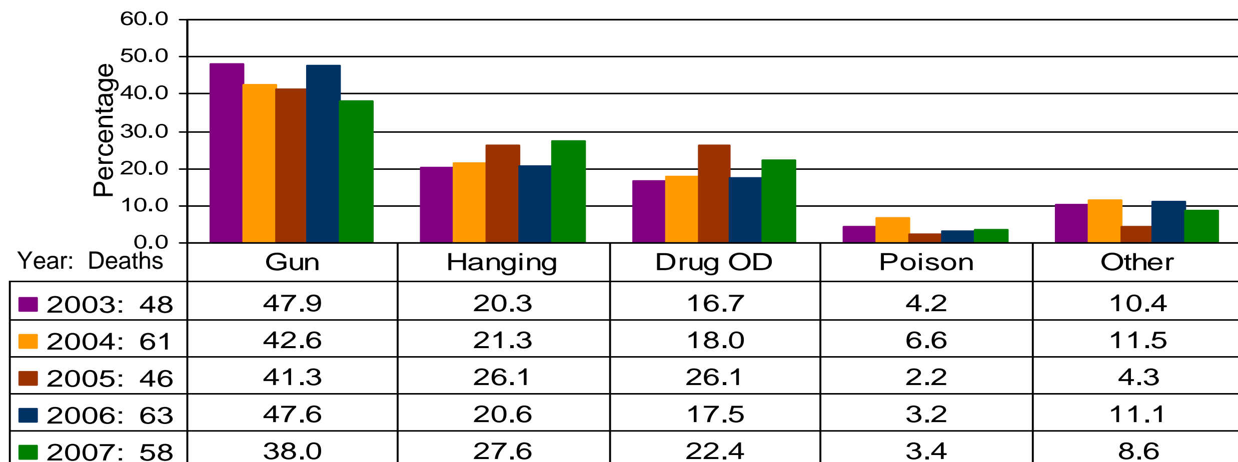
Manner of Death

Figure 14: Suicide Cases by Age, 2003-2007



Year: Deaths	1-19 yrs	20-44 yrs	45-64 yrs	65+ yrs
2003: 48	8.3	62.5	22.9	6.3
2004: 61	6.6	54.1	29.5	9.8
2005: 46	4.3	54.3	26.1	15.2
2006: 63	7.9	41.3	36.5	14.3
2007: 58	10.3	48.3	29.3	12.1

Figure 15: Suicide Cases by Method Used, 2003-2007



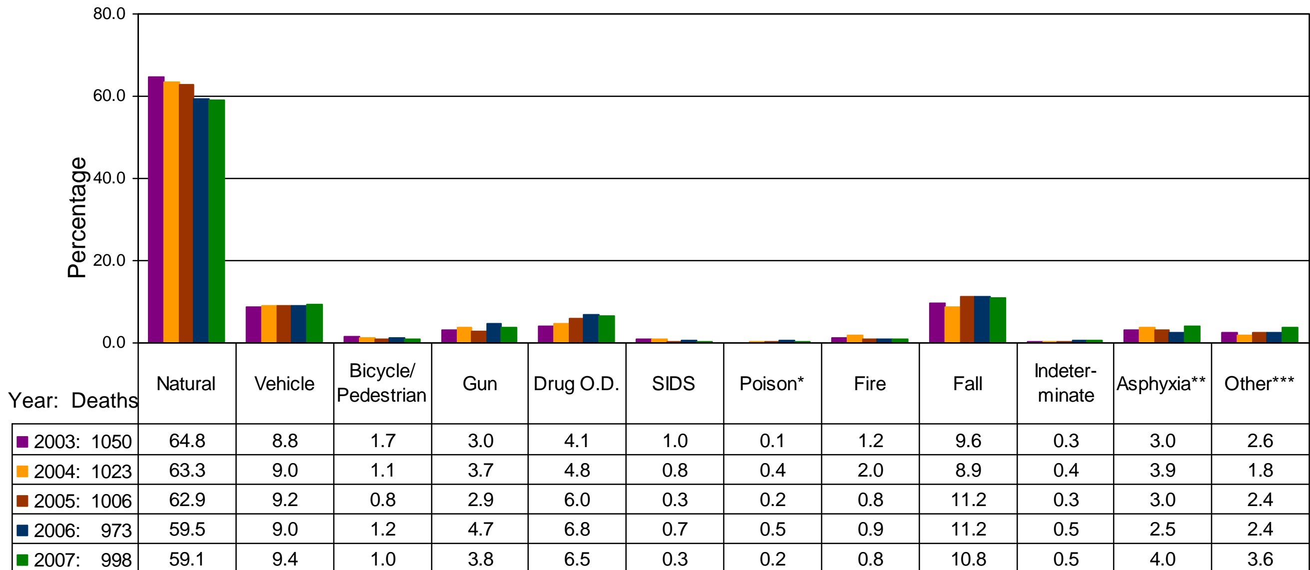
Year: Deaths	Gun	Hanging	Drug OD	Poison	Other
2003: 48	47.9	20.3	16.7	4.2	10.4
2004: 61	42.6	21.3	18.0	6.6	11.5
2005: 46	41.3	26.1	26.1	2.2	4.3
2006: 63	47.6	20.6	17.5	3.2	11.1
2007: 58	38.0	27.6	22.4	3.4	8.6

In 2007, Poison is carbon monoxide poisoning, while Other consists of asphyxia (1; 20.0%), incised wounds of arms (1; 20.0%), stabbing (2; 40.0%) and fall (1; 20.0%).

Of the 58 suicide deaths for 2007, females accounted for 14 (24.1%) deaths, while males accounted for 44 (75.9%).

Cause of Death

Figure 16: Medical Examiner Cases by Cause of Death, 2003-2007



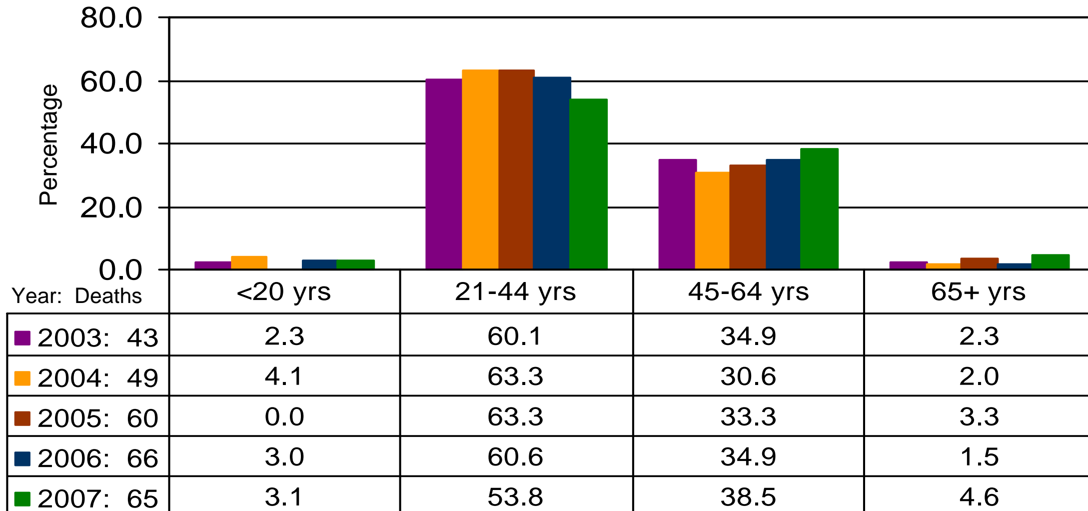
Year: Deaths	Natural	Vehicle	Bicycle/ Pedestrian	Gun	Drug O.D.	SIDS	Poison*	Fire	Fall	Indeter-minate	Asphyxia**	Other***
2003: 1050	64.8	8.8	1.7	3.0	4.1	1.0	0.1	1.2	9.6	0.3	3.0	2.6
2004: 1023	63.3	9.0	1.1	3.7	4.8	0.8	0.4	2.0	8.9	0.4	3.9	1.8
2005: 1006	62.9	9.2	0.8	2.9	6.0	0.3	0.2	0.8	11.2	0.3	3.0	2.4
2006: 973	59.5	9.0	1.2	4.7	6.8	0.7	0.5	0.9	11.2	0.5	2.5	2.4
2007: 998	59.1	9.4	1.0	3.8	6.5	0.3	0.2	0.8	10.8	0.5	4.0	3.6

*Poison includes carbon monoxide poisoning (2; 100%).

**Asphyxia includes deaths from choking on food (3; 7.7%), drowning (9; 23.0%), hanging (16; 41.0%), strangulation (1; 2.6%), suffocation (6; 15.4%), self extubation (1; 2.6%), inhalation of helium (1; 2.6%), and traumatic asphyxia (2; 5.1%).

***Other is comprised of deaths from anoxic encephalopathy d/t choking on food (2; 6.0%), assault (8; 22.2%), hypothermia (3; 8.4%), maternal cocaine abuse (1; 3.0%), hypoxic encephalopathy d/t choking on food (1; 3.0%), arterial gas embolus (1; 3.0%), medical procedure (1; 3.0%), incised wounds of arms (1; 3.0%), post traumatic epilepsy (1; 3.0%), shaken baby (1; 3.0%), ingestion of hydrogen peroxide (1; 3.0%), crushing (3; 8.4%), struck by objects (3; 6.0%), and stabbings (9; 25.0%).

Figure 17: Drug Deaths by Age, 2003-2007



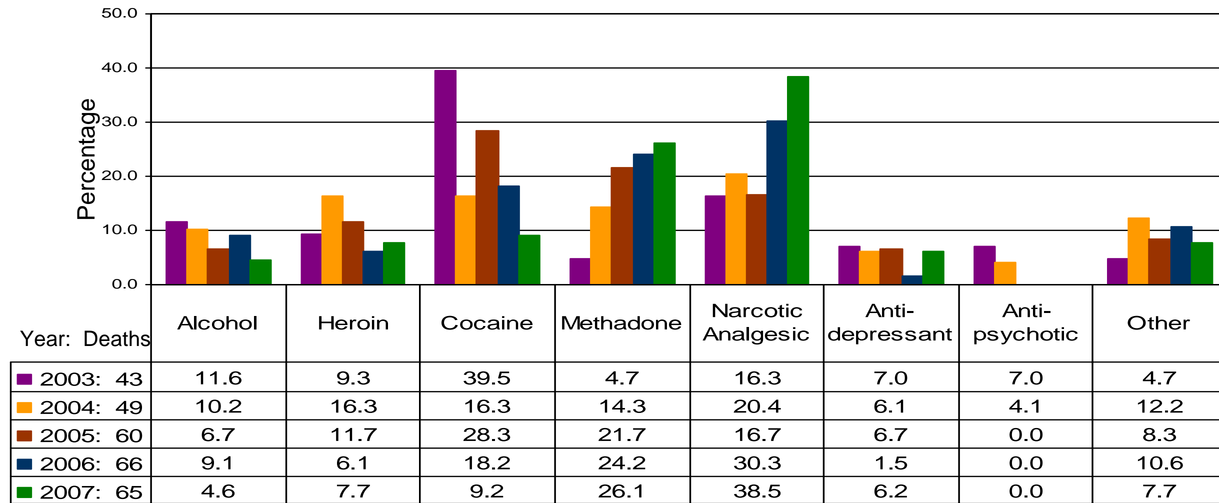
Year: Deaths	<20 yrs	21-44 yrs	45-64 yrs	65+ yrs
2003: 43	2.3	60.1	34.9	2.3
2004: 49	4.1	63.3	30.6	2.0
2005: 60	0.0	63.3	33.3	3.3
2006: 66	3.0	60.6	34.9	1.5
2007: 65	3.1	53.8	38.5	4.6

Table 4: Drug Deaths by Gender, 2007

	Female (20)	Male (45)
Accident	13	36
Suicide	7	6
Indeterminate	0	3

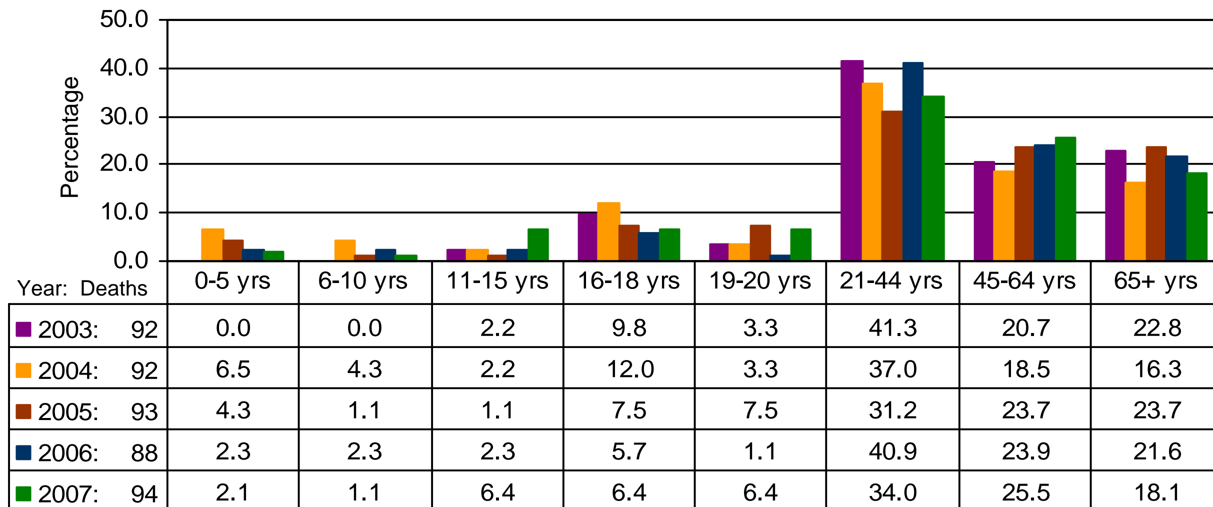
Cause of Death

Figure 18: Drug Deaths by Drug of First Mention, 2003-2007



Year: Deaths	Alcohol	Heroin	Cocaine	Methadone	Narcotic Analgesic	Anti-depressant	Anti-psychotic	Other
2003: 43	11.6	9.3	39.5	4.7	16.3	7.0	7.0	4.7
2004: 49	10.2	16.3	16.3	14.3	20.4	6.1	4.1	12.2
2005: 60	6.7	11.7	28.3	21.7	16.7	6.7	0.0	8.3
2006: 66	9.1	6.1	18.2	24.2	30.3	1.5	0.0	10.6
2007: 65	4.6	7.7	9.2	26.1	38.5	6.2	0.0	7.7

Figure 19: Vehicular Deaths by Age, 2003-2007



Year: Deaths	0-5 yrs	6-10 yrs	11-15 yrs	16-18 yrs	19-20 yrs	21-44 yrs	45-64 yrs	65+ yrs
2003: 92	0.0	0.0	2.2	9.8	3.3	41.3	20.7	22.8
2004: 92	6.5	4.3	2.2	12.0	3.3	37.0	18.5	16.3
2005: 93	4.3	1.1	1.1	7.5	7.5	31.2	23.7	23.7
2006: 88	2.3	2.3	2.3	5.7	1.1	40.9	23.9	21.6
2007: 94	2.1	1.1	6.4	6.4	6.4	34.0	25.5	18.1

Table 5: Vehicular Deaths by Gender, 2003-2007

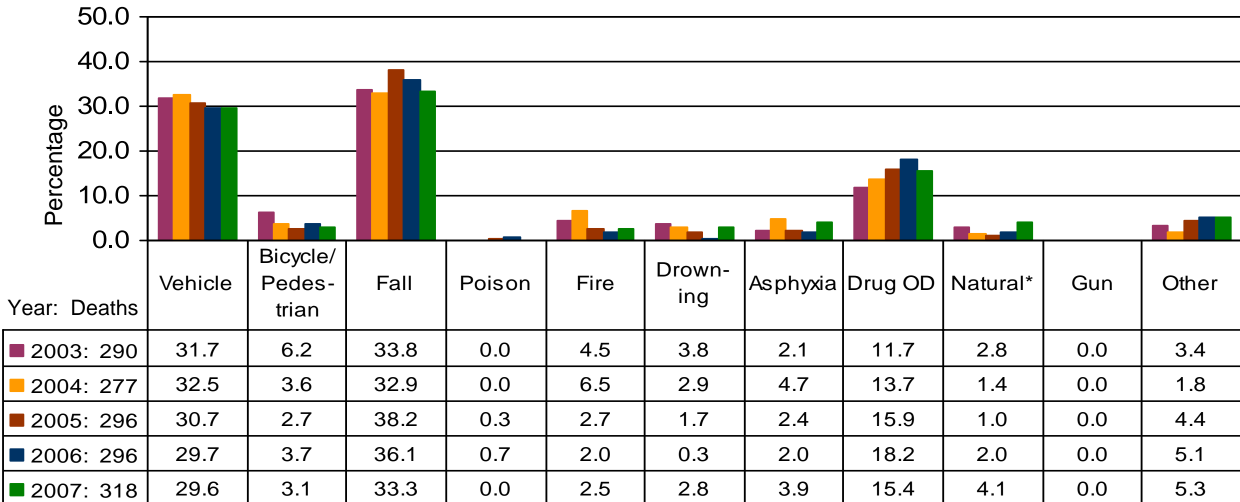
Year: Deaths	Female	Male
2003: 92	42.4% (39)	57.6% (53)
2004: 92	34.8% (32)	65.2% (60)
2005: 93	31.2% (29)	68.8% (64)
2006: 88	28.4% (25)	71.6% (63)
2007: 94	28.7% (27)	71.3% (67)

Table 6: Bicycle/Pedestrian Deaths by Age, 2003-2007

Year:	Deaths	<20 yrs	21-44 yrs	45-64 yrs	65+ yrs
2003:	18	4	8	3	3
2004:	11	2	5	2	2
2005:	8	3	3	0	2
2006:	11	0	4	5	2
2007:	10	4	2	3	1

Cause of Death

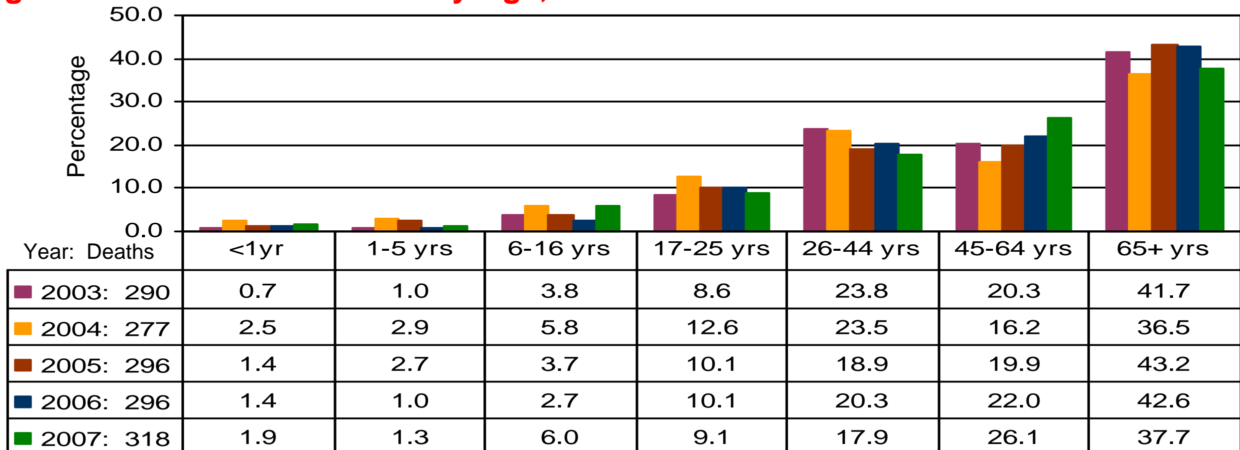
Figure 20: Accidental Deaths by Cause, 2003-2007



Year: Deaths	Vehicle	Bicycle/ Pedes-trian	Fall	Poison	Fire	Drown-ing	Asphyxia	Drug OD	Natural*	Gun	Other
2003: 290	31.7	6.2	33.8	0.0	4.5	3.8	2.1	11.7	2.8	0.0	3.4
2004: 277	32.5	3.6	32.9	0.0	6.5	2.9	4.7	13.7	1.4	0.0	1.8
2005: 296	30.7	2.7	38.2	0.3	2.7	1.7	2.4	15.9	1.0	0.0	4.4
2006: 296	29.7	3.7	36.1	0.7	2.0	0.3	2.0	18.2	2.0	0.0	5.1
2007: 318	29.6	3.1	33.3	0.0	2.5	2.8	3.9	15.4	4.1	0.0	5.3

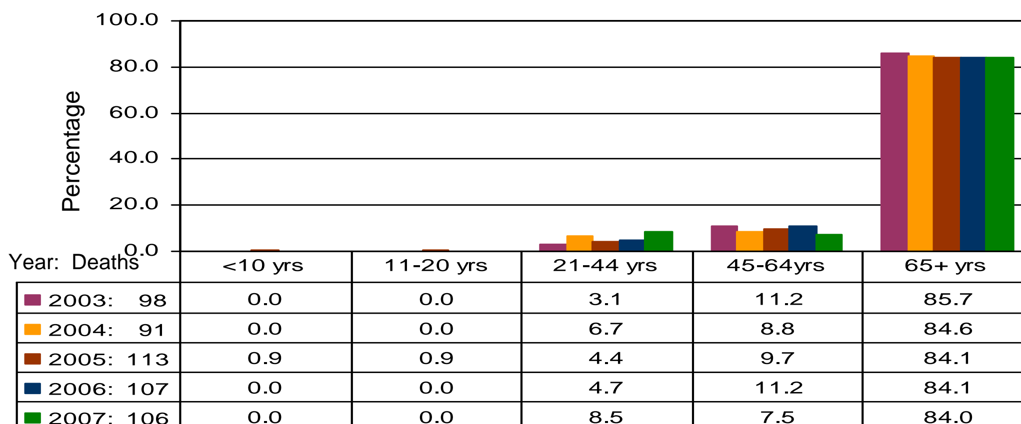
*A natural cause of death can have a contributing factor that determines the death to be accidental. There were 13 deaths that fell into this category in 2007, 10 from drug toxicity, 1 from a fire, 1 from a fall and 1 from a vehicle accident.

Figure 21: Accidental Deaths by Age, 2003-2007



Year: Deaths	<1yr	1-5 yrs	6-16 yrs	17-25 yrs	26-44 yrs	45-64 yrs	65+ yrs
2003: 290	0.7	1.0	3.8	8.6	23.8	20.3	41.7
2004: 277	2.5	2.9	5.8	12.6	23.5	16.2	36.5
2005: 296	1.4	2.7	3.7	10.1	18.9	19.9	43.2
2006: 296	1.4	1.0	2.7	10.1	20.3	22.0	42.6
2007: 318	1.9	1.3	6.0	9.1	17.9	26.1	37.7

Figure 22: Deaths Resulting from Falls by Age, 2003-2007



Year: Deaths	<10 yrs	11-20 yrs	21-44 yrs	45-64yrs	65+ yrs
2003: 98	0.0	0.0	3.1	11.2	85.7
2004: 91	0.0	0.0	6.7	8.8	84.6
2005: 113	0.9	0.9	4.4	9.7	84.1
2006: 107	0.0	0.0	4.7	11.2	84.1
2007: 106	0.0	0.0	8.5	7.5	84.0

2007 Child Death Review Meetings

The Child Death Review Team reviews the deaths of those in Kent County who are 18 and younger. In 2007, there were 40 child death cases reviewed. Of these cases, 7 were deaths from 2006, and 33 were deaths from 2007.

Natural Deaths – 9

- SIDS – 5
  - Black – 0
  - Hispanic – 3
  - White – 2
- Other - 4
  - Total anomalous pulmonary venous return (TAPVR)
  - Aortic stenosis due to dysplastic aortic valve
  - Leukoencephalopathy of unknown origin
  - Diffuse granulomatous vasculitis of the central nervous system

Accidental Deaths – 21

- Vehicular Accidents – 10
  - Driver – 3
  - Passenger – 5
  - Pedestrian – 1
  - Bicyclist – 1
- Drowning – 1
  - Pool
- Suffocations – 3
- Asphyxia – 1
- Electrocution – 1
- Craniocerebral trauma – 2
  - Hit by softball
  - Caught in carwash equipment
- Other – 3
  - Medical complications of anoxic encephalopathy
  - Medical complications of maternal cocaine abuse
  - Mixed drug toxicity (oxycodone & hydrocodone)

Suicides – 4

- Asphyxia by CO poisoning – 1
- Hanging – 2
- Stabbing – 1

Homicides – 5

- Gun – 4
- Traumatic brain injury – 1

Indeterminate – 1

Child Death Cases Reviewed by Year

	2003	2004	2005	2006	2007
Natural	13	16	11	9	9
Vehicular Accidents	4	8	11	4	10
Accidental	4	16	10	4	11
Suicides	3	1	2	3	4
Homicides	3	1	6	2	5
Indeterminate	2	1	1	3	1
Total Cases	29	43	41	25	40

Kent County Medical Examiner 2007 Annual Report

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