

2013 Report



Understanding Child Injury Deaths

from the
New York City Child Fatality Review Advisory Team

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NEW YORK CITY CHILD FATALITY REVIEW ADVISORY TEAM

City Agency Representatives

Department of Health and Mental Hygiene

Nancy Clark, MA, CIH, CSP (Acting Chair)

Staff: Ariel Spira-Cohen, PhD

Jennifer Marcum, DrPH, MS

Kacie Seil, MPH

Princess Fortin, MPH

Anna Caffarelli, MHS

Administration for Children’s Services

Noreen Mulvanerty

Department of Education

Cheryl Hall

Department of Homeless Services

Dova Marder, MD

Department of Transportation

Marjorie Marciano

Office of Chief Medical Examiner

Monica Smiddy, MD, MPH

Kristen Landi, MD

Leze Nicaj, MPH

New York City Police Department

Michael Osgood

Appointees

Gary Butts, MD — *Icahn School of Medicine at Mount Sinai*

Tosan Oruwariye, MD — *Morris Heights Health Center*

Mary Pulido, PhD — *The New York Society for the
Prevention of Cruelty to Children*

Lisa White, LMSW — *Bronx Lebanon Hospital Center*

Mark Woltman, MSW — *New Alternatives for Children*

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Joan M. Bush, MS, Lorraine Boyd, MD, Tracy Chu, PhD,
MPH, Arthur Cooper, MD, Gretchen Culp, MS, Lawrence
Fung, MPH, Danielle Greene, DrPH, MPH, Tamisha F.

Johnson, MD, MPH, Joseph Kennedy, MPH, Ann Madsen,
PhD, MPH, Catherine Stayton, DrPH, MPH

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Summary of Key Findings

Children and Youth Aged 0 to 17

In New York City (NYC), injury is the second leading cause of death among children and youth aged 0 to 17, following perinatal conditions, and the leading cause of death among children and youth aged 1 to 17.

- From 2002 through 2011, an annual average of 161 injury deaths occurred among children and youth aged 0 to 17.
- A total of 1,613 children and youth aged 0 to 17 died from an injury-related cause during this ten-year time period.
- Infants less than one year old and youth aged 15 to 17 bore the highest burden of injury deaths among children and youth aged 0 to 17 (50.3 deaths per 100,000 infants; 16.1 deaths per 100,000 youth).
- Though injury is the second leading cause of death among children and youth aged 0 to 17 in NYC, the City's child injury death rate is 39% lower than that of the United States (US) (8.9 deaths per 100,000 NYC children vs 14.6 deaths per 100,000 US children).

Infants

The majority of infant injury deaths in NYC were sleep-related, defined as deaths in which the infant was asleep when last seen alive (80%, n=386 out of 480 infant injury deaths, 2004 to 2011).

- Between 2004 and 2011, an average of 48 infants died every year from a sleep-related injury at a rate of 38.5 deaths per 100,000 live births.
- Infants between 28 days and 4 months old, black non-Hispanic infants, babies born pre-term, and babies born to adolescent mothers were at higher risk for sleep-related death than other infants.
- Common environmental factors found in sleep-related infant deaths included: sleeping in an adult bed, excessive bedding, sharing a bed with another sleeper, and sleep positions other than on the infant's back.
- Overall infant injury death rates were highest for black non-Hispanic infants, infants living in the Bronx, and infants living in very-high-poverty neighborhoods.

Children Aged 1 to 4

Fire/flame injury was the leading cause of injury death among NYC children aged 1 to 4. NYC's fire/flame injury death rate for children aged 1 to 4 was 23% lower than the national rate (1.0 vs 1.3 per 100,000).

- From 2002 through 2011, 40 NYC children aged 1 to 4 died from a fire/flame injury at a rate of 1.0 death per 100,000.
- Most of the child fire/flame deaths in this age group were among children 1 and 2 years old, and three-quarters (75%) of these deaths were unintentional.
- Ninety-three percent of fire/flame deaths among this age group from 2001 through 2010 occurred in the home of the child.
- In more than half of fire deaths in 2001-2010 (53%), a smoke detector was not present, or was present but was not operational.

- Overall child injury death rates in this age group were highest for boys, black non-Hispanic children, children living in Staten Island and Brooklyn, and children living in high- and very-high-poverty neighborhoods.

Children Aged 5 to 9

Motor vehicle-related injury was the leading cause of injury death among children aged 5 to 9 both nationally and in NYC. The rate for NYC was 64% lower than the national rate (0.9 vs 2.5 per 100,000).

- From 2002 through 2011, 44 NYC children aged 5 to 9 died from a motor vehicle-related injury, at a rate of 0.9 deaths per 100,000.
- Four out of every five (80%) NYC children fatally injured in a motor vehicle incident among this age group were pedestrians.
- Emerging from between parked vehicles was a key contributing factor in child pedestrian deaths.
- Overall child injury death rates in this age group were highest for boys, black non-Hispanic children, children living in Brooklyn, and children living in high- and very-high-poverty neighborhoods.

Children Aged 10 to 14

The leading cause of injury death among children aged 10 to 14 was motor vehicle-related injury both nationally and in NYC. The rate for NYC was 68% lower than the national rate (1.1 vs 3.4 per 100,000).

- From 2002 through 2011, 57 NYC children aged 10 to 14 died as a result of a motor vehicle-related injury.
- Two-thirds (68%) of NYC children fatally injured in a motor vehicle incident in this age group were pedestrians.
- Emerging from between parked vehicles and crossing against the light were key contributing factors to child pedestrian deaths among this age group.
- Overall injury death rates in this age group were highest for boys, black non-Hispanic children, children living in Brooklyn and Staten Island, and children living in very-high-poverty neighborhoods.

Youth Aged 15 to 17

Firearm-related injury was the leading cause of injury death among NYC youth aged 15 to 17; the NYC rate was 20% lower than the national rate (6.5 vs 8.1 per 100,000).

- From 2002 through 2011, 200 NYC youth aged 15 to 17 died from a firearm-related injury.
- Nine out of every ten firearm-related youth deaths in NYC (91%) were homicides, compared with 64% nationwide.
- The NYC youth firearm homicide rate was higher than the national rate (5.9 vs 5.2 deaths per 100,000 youth), but was less than half the average rate among other populous urban areas (5.9 vs 12.4 deaths per 100,000 youth).
- Overall injury death rates in this age group were highest for male youth, black non-Hispanic youth, youth living in the Bronx, and youth from very-high-poverty neighborhoods.

Glossary

Cause of death – The illness, disease or injury responsible for the death. Examples of natural causes include heart defects, asthma and cancer. Examples of injury-related causes include blunt impact, burns and drowning. In this report, cause of death is used interchangeably with “mechanism.”

Firearm-related death – Death caused by an injury resulting from the penetrating force of a bullet or other projectile shot from a powder-charged gun.

Fire/flame death – Death caused by injury from severe exposure to flames or heat that leads to tissue damage or from smoke inhalation to the upper airway, lower airway, or lungs.

Homicide – Death resulting from injuries inflicted by another person with the intent to cause fear, harm, or death.

Infant – A child younger than one year (from birth up to 12 months).

Intentional injury – Injury resulting from the intentional use of force or purposeful action against oneself or others. Intentional injuries include interpersonal acts of violence intended to cause harm, criminal negligence or neglect (eg, homicide), and self-directed behavior with an intent to kill oneself (eg, suicide).

Manner of death – The circumstances of the death as determined by postmortem examination, death scene investigation, police reports, medical records, or other reports. Manner of death categories include: natural, accident (eg, unintentional), homicide (eg, intentional), suicide (eg, intentional), therapeutic complication, and undetermined. In this report, manner is used interchangeably with “intent” or “type.”

Motor vehicle-related death – Death caused by injuries from a motor-vehicle incident, including injuries to motor vehicle occupant(s), pedestrian(s), pedal cyclist(s), or other person.

Sleep-related injury death – A unique grouping of infant injury deaths inclusive of select injury causes (unintentional suffocation in bed, unspecified threat to breathing, and undetermined causes) in which the infant was last known to be asleep when last seen alive (see Technical Appendix).

Suffocation death – Death resulting from inhalation, aspiration, or ingestion of food or other object that blocks the airway or causes suffocation; intentional or accidental mechanical suffocation, including hanging, strangulation or lack of air in a closed place.

Suicide – Death from intentional, self-directed behavior with an intent to die as a result of that behavior.

Undetermined – The classification of a death when all available information is insufficient to determine manner of death. In some cases, both cause and manner of death may remain undetermined.

Unintentional injury – Injury that occurred without intent to harm or cause death; an injury not intended to happen. Also called an “accident.”

Introduction

Injuries are a leading cause of death among children in New York City (NYC) and in the United States (US). Injuries are often inaccurately seen as a result of incidents that cannot be anticipated or avoided. However, most injuries follow patterns, many related to age, sex, and other factors, that can be predicted and prevented. Raising awareness of the patterns, educating communities about the risks, and enacting policies designed to protect children can influence the circumstances that lead to fatal injuries and reduce their occurrence.

The New York City Child Fatality Review Advisory Team (CFRAT) – a multidisciplinary committee of representatives from city agencies as well as child welfare and medical experts appointed by the Mayor, the City Council Speaker, and the Public Advocate – was formed in 2006 by Local Law 115 to review and report on injuries as preventable causes of death among NYC children under the age of 13.

This report presents data from a CFRAT ten-year retrospective review of fatal injuries among children and youth aged 0 through 17. It examines a broad age range in order to more fully describe the impact of fatal injuries on children and youth in New York City. The report describes unintentional (“accidental”) injuries, intentional injuries (homicide and suicide), and injuries of undetermined intent, and focuses on the injury mechanisms (or causes) that are most common in each age group, such as motor vehicle-related or fire-related injuries. For most of this report, the causes of injury are described regardless of intent. Many injuries can be prevented through environmental interventions that lower injury risk regardless of the intent of the incident. The report also offers recommendations to help prevent future child injuries.

Methods

Death certificates maintained by the NYC Department of Health and Mental Hygiene's (DOHMH's) Bureau of Vital Statistics were the primary data source used to identify and describe fatal injuries among children and youth aged 0 to 17 years. Deaths were identified using the International Classification of Disease Code, Version 10 (ICD-10), which divides natural and unnatural causes of death. This report uses the following overarching nomenclature to describe the intent of actions that lead to injury deaths:

- Unintentional – Injury death that occurred without intent to harm or cause death, also called “accident.”
- Homicide – Intentional injury death resulting from injuries sustained through an act of violence committed by another person with the intent to cause fear, harm, or death.
- Suicide – Intentional injury death resulting from self-directed behavior with an intent to die as a result of that behavior.
- Undetermined – Injury death of unknown intent.

Data were abstracted from the death certificates for New York City residents aged 0 to 17 who died from 2002 through 2011. To augment death certificate information for some leading causes of death, information from previously matched files from the NYC Office of Chief Medical Examiner (OCME) for similar time periods were also included: 2004-2011 for infant deaths and 2001-2010 for children aged 1 to 4. OCME files contain autopsy or external examination reports, toxicology and other postmortem special studies, and police reports. Abstraction, using a form adapted from the National Center for Child Death Review Case Report, and data analysis were conducted by members of DOHMH's Bureau of Environmental Disease and Injury Prevention. Infant sleep-related death information obtained from OCME files was abstracted by DOHMH's Bureau of Maternal, Infant and Reproductive Health for a subset of the years included in this report (2004-2011) and includes a small proportion of non-resident infants who died in NYC. Some OCME files could not be reviewed due to pending legal investigations and court cases. Data regarding contributing factors for child pedestrian deaths were obtained from the NYC Department of Transportation's (DOT's) Traffic Fatality Database.

Deaths due to therapeutic complications (death resulting from a medical or surgical intervention while treating disease) are excluded in the main section of the report, but are included in the Appendix of Supplemental Data. For all deaths, only de-identified narrative and aggregate data were presented and discussed at quarterly CFRAT meetings.

Lastly, the Technical Appendix contains more detailed information on terms and calculation methods used throughout this report, as well as ICD-10 codes for specific types of injuries.

Results

Children and Youth Aged 0 to 17

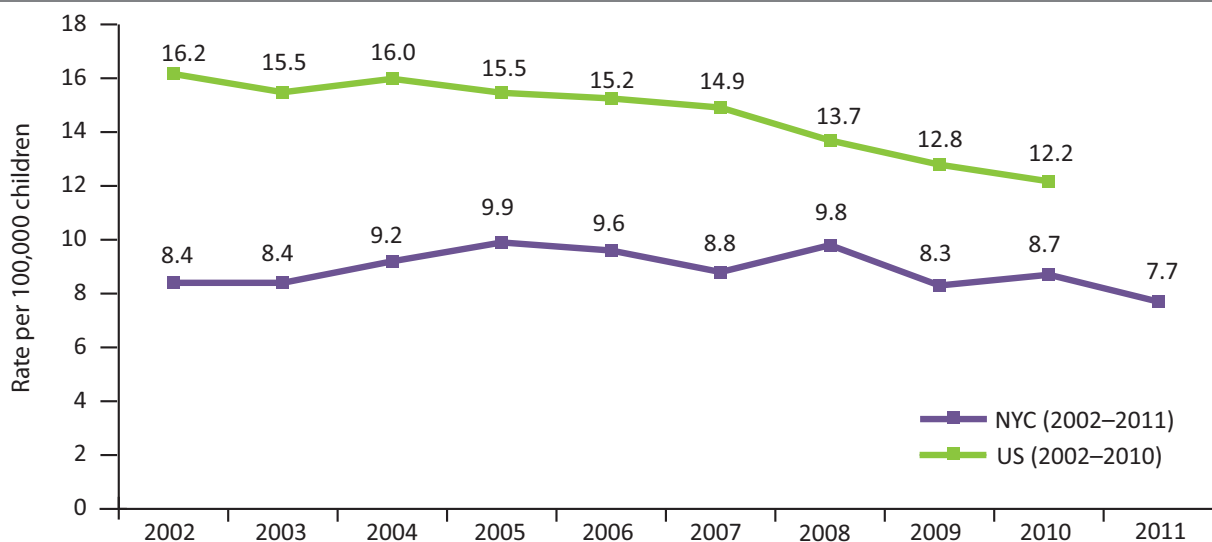
Injury Deaths Among Children and Youth Aged 0 to 17

From 2002 through 2011, a total of 9,007 deaths occurred among NYC children and youth aged 0 to 17. Of these, 18% (n=1,613) were due to injuries, including from incidents that were unintentional (“accidents”), intentional (suicide and homicide), and of undetermined intent. Among all the causes of death in children and youth, injury is the second leading cause among those aged 0 to 17, following perinatal conditions, and the leading cause among those aged 1 to 17. At both the city and national level, child injury death rates are higher than rates of other causes of death such as cancer, congenital malformations, influenza/pneumonia/chronic respiratory disease, and heart/cerebrovascular disease. The overall injury death rate in NYC for children and youth aged 0 to 17 is 39% lower than the national average (8.9 vs 14.6 deaths per 100,000). Most of this difference can be attributed to NYC’s lower rates of motor vehicle-related (1.19 vs 5.13 per 100,000 in NYC vs US), suffocation (1.19 vs 2.39 per 100,000 in NYC vs US), firearm (1.26 vs 1.94 per 100,000 in NYC vs US), and drowning (0.23 vs 1.33 per 100,000 in NYC vs US) fatal injuries.

Injury death over time

From 2002 through 2011, the average annual number of deaths due to injury among NYC children and youth aged 0 to 17 was 161 (8.9 deaths per 100,000). NYC’s annual injury death rates were consistently lower than US rates (Figure 1). Although NYC

Figure 1: Injury death rate among children and youth aged 0 to 17, by year, NYC vs US



Sources: NYC DOHMH’s Bureau of Vital Statistics and CDC’s WONDER

fatal injuries among children and youth show a relatively stable trend, overall fatal injury rates and cause-specific rates vary by age group. Differences by age and mechanism (cause) of fatal injury are discussed in the following sections. While NYC's child injury death rate remains relatively stable and lower than the decreasing national rate, it is of note that in 2011, NYC also experienced the lowest rate of child injury deaths during the ten-year period covered in this report.

Child injury deaths are declining

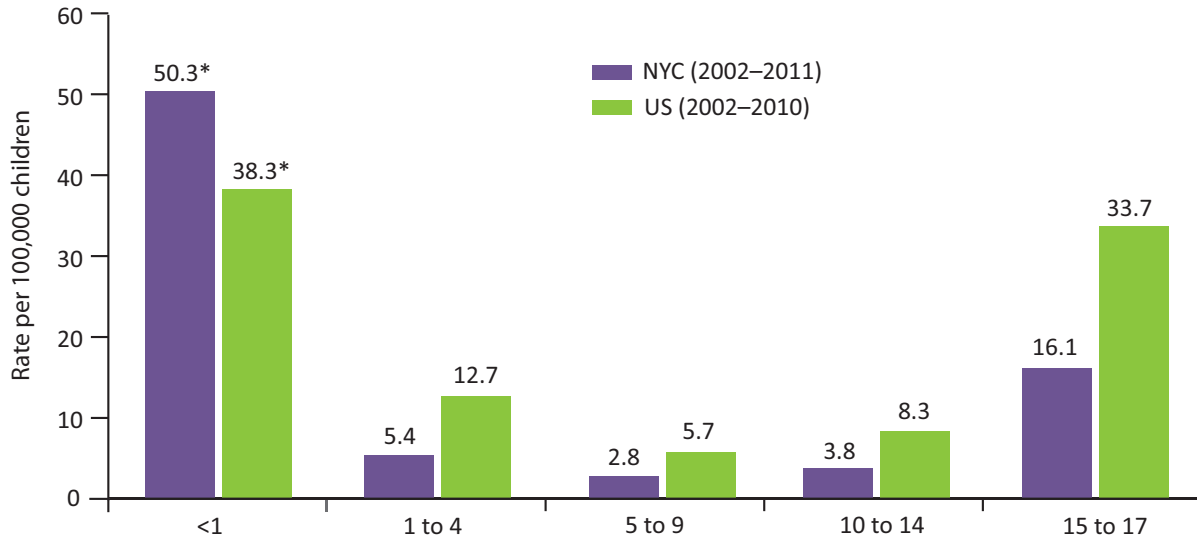
The injury death rate among US children and youth aged 0 to 17 steadily declined between 2002–2010. This trend is largely driven by a reduction in motor vehicle-related deaths, which make up a large proportion of US child injury deaths; approximately one in every four US child injury deaths is motor vehicle-related. The rate of motor vehicle-related deaths among US children and youth decreased 50% between 2002 (6.6 per 100,000) and 2010 (3.3 per 100,000). Similarly, the rate of motor vehicle-related deaths in NYC declined 56% between 2002 (1.6 per 100,000) and 2011 (0.7 per 100,000). This decrease is not apparent in the overall injury death trend as motor vehicle-related deaths are a small proportion of child injury deaths in NYC. Approximately one in ten child injury deaths in NYC is motor vehicle-related.

Injury deaths by age group

Rates of injury deaths among children vary by age group. Infants bore the highest burden of injury deaths among all NYC children aged 17 years and younger, with a total of 569 deaths during 2002-2011. The infant injury death rate in NYC was 30% higher than the national rate (50.3 vs 38.8 deaths per 100,000 infants). In NYC, 224 children aged 1 to 4; 134 children aged 5 to 9; 192 children aged 10 to 14; and 494 youth aged 15 to 17 died from an injury during 2002-2011. Rates of injury deaths nationally were at least double the NYC rate in each child age group, except among infants (Figure 2). Differences in infant injury death rates in NYC and nationally may be a function of how these deaths are classified (see Technical Appendix for how NYC classifies sudden infant deaths).

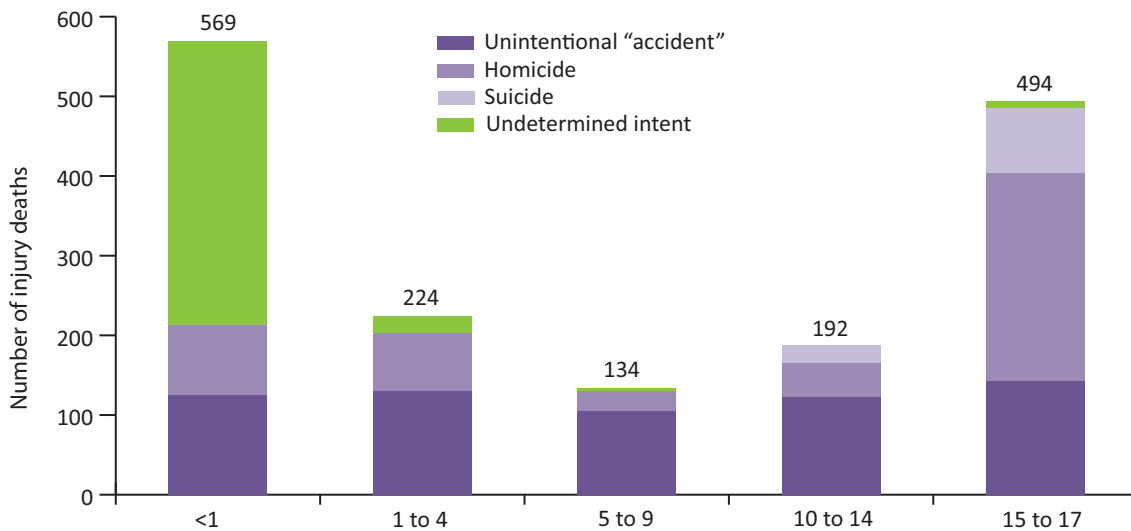
The distribution of type of NYC child injury death varies by age group. Nearly two-thirds (63%, n=356) of injury deaths among infants were of undetermined intent, whereas unintentional injury made up the larger portion of deaths for children between ages 1 and 14 years, ranging from 58% (n=130) to 78% (n=105) of injury deaths (Figure 3). Data also show that youth aged 15 to 17 experienced a higher burden of homicide deaths (53%, n=262) compared with other age groups.

Figure 2: Overall injury death rates (all intents) by age group, NYC vs US



*The overall NYC infant mortality rate (all causes) from 2002-2011 is 22% lower than the US infant mortality rate (2002-2010). The higher NYC infant injury death rate is likely a result of NYC's method for classifying sleep-related infant deaths with external cause codes. Nationally, a higher proportion of sudden unexplained infant deaths are classified using a code reflecting natural rather than external causes (i.e. Sudden Infant Death Syndrome) (see Technical Appendix for further information on sleep-related infant death classification).
 Sources: NYC DOHMH's Bureau of Vital Statistics and CDC's WISQARS

Figure 3: Deaths among children and youth aged 0 to 17 by age group and type of injury death, NYC, 2002-2011



Source: NYC DOHMH's Bureau of Vital Statistics

Homicide deaths among NYC's young children

Although homicide deaths make up a relatively small proportion (15%) of infant injury deaths, 88 NYC infants were intentionally killed during 2002-2011, and homicide deaths accounted for nearly one-third (32%, n=72) of injury deaths among children aged 1 to 4. Infant homicide deaths include deaths caused by blunt trauma, shaking, suffocation, drowning, and other causes (eg, starvation). Homicide deaths of children aged 1 to 4 include deaths caused by blunt trauma, fire/flame, suffocation, and other causes.

Leading causes of injury deaths by age group

Leading causes of injury death in NYC during 2002-2011 also varied by age group. In-depth case review of infant deaths shows that most of these deaths were sleep-related. Injury from fire/flame was the leading cause of death for children aged 1 to 4, followed closely by motor vehicle-related injury. Motor vehicle-related death ranked as the leading cause of injury death for children aged 5 to 9 and 10 to 14. Among 15- to 17-year-olds, firearm-related injury was the leading cause of injury death (Table 1). The next section discusses leading causes by age group in more detail.

Table 1: Leading causes of injury deaths by age group, NYC, 2002-2011, n=1,613

Rank	<1 (n=569)	1 to 4 (n=224)	5 to 9 (n=134)	10 to 14 (n=192)	15 to 17 (n=494)
1	Sleep-related deaths*	Fire/flame (n=40)	Motor vehicle-related (n=44)	Motor vehicle-related (n=57)	Firearm (n=200)
2		Motor vehicle-related (n=35)	Fire/flame (n=40)	Suffocation** (n=27)	Motor vehicle-related (n=80)
3		Unknown mechanism (n=32)	Suffocation** (n=12)	Fire/flame (n=21)	Stabbing (n=63)
4		Suffocation** (n=23)	Stabbing (n=7)	Firearm (n=19)	Suffocation** (n=35)
5		Fall (n=20)	Fall (n=7)	Stabbing (n=12)	Fall (n=33)

* Most infant injury cause of death categories, such as "unknown mechanism" and "not specified," are difficult to interpret. Further investigation of OCME reports shows that the majority of infant injury deaths are due to sleep-related injuries. See infant section for detailed information on sleep-related infant injury deaths.

** Most fatal suffocation injuries among children aged 1 to 4 and 5 to 9 are unintentional (eg, choking). For children aged 10 to 14 and youth aged 15 to 17, the majority of fatal suffocation injuries are suicide (eg, hanging).

Source: NYC DOHMH's Bureau of Vital Statistics

Injury Deaths by Age Group



Infants

Demographics of injury deaths among infants

Male infants were at a slightly higher risk of injury death than females (56.4 vs 43.8 per 100,000). Black non-Hispanic infants were at greatest risk of injury death: the rate for black non-Hispanic infants was more than triple the rate for infants of any other racial or ethnic group (127.6 vs 35.2, 26.0, and 16.6 per 100,000 among Hispanic, white non-Hispanic, and Asian and Pacific Islander infants, respectively). Risk of injury death was greatest for infants living in the Bronx (70.3 per 100,000), as well as for infants living in the highest poverty neighborhoods (72.4 per 100,000). The death rate among infants living in NYC neighborhoods with very-high-poverty ($\geq 30\%$ of the population below 100% of the Federal Poverty Level) was more than three times the rate among infants in NYC neighborhoods with low-poverty ($< 10\%$ of the population below 100% of the Federal Poverty Level). The rate of injury death among NYC infants increased with increasing neighborhood poverty level. (See Technical Appendix for neighborhood poverty definitions.)

Sleep-related infant injury deaths, 2004-2011

An in-depth case file review of OCME reports revealed that the majority (80%, $n=386$) of the 480 infant injury deaths occurring during 2004-2011 were due to injuries occurring in situations in which the infant was asleep when last seen alive. These sleep-related deaths included accidental suffocation deaths, or cases of undetermined cause and intent following exhaustive review by the medical examiner's office (see Technical Appendix for information on NYC's inclusion criteria for sleep-related infant injury deaths). During 2004-2011, the average annual number of sleep-related infant injury deaths in NYC was 48, translating to a rate of 38.5 deaths per 100,000 live births. By comparison, infant deaths due to other types of injury combined (eg, falling, drowning, poisoning) occurred at a rate of 10.8 deaths per 100,000 live births.

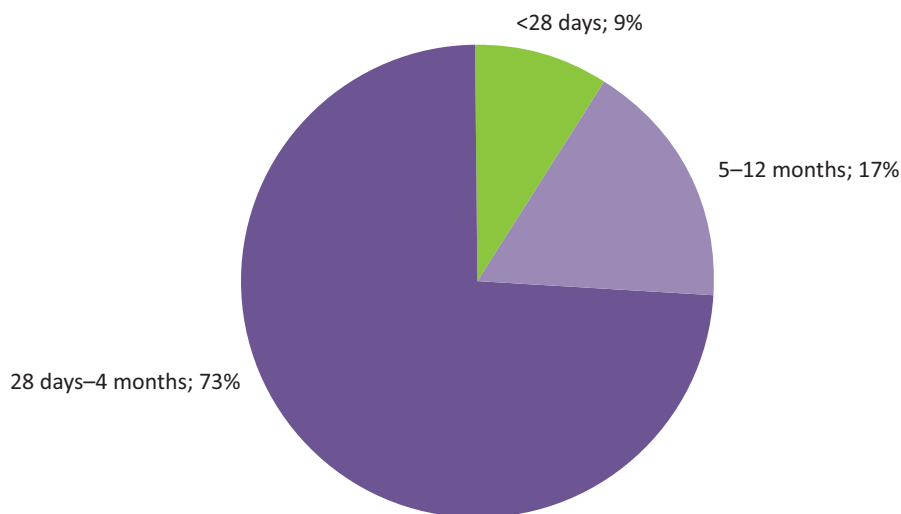
Demographics of sleep-related infant injury deaths

Almost three-quarters (73%, n=283) of sleep-related infant injury deaths occurring from 2004-2011 were among infants aged 28 days to 4 months (Figure 4). Death rates from sleep-related injury were highest among black non-Hispanic infants, followed by Hispanic, white non-Hispanic, and Asian and Pacific Islander infants (95.3, 28.9, 16.0, and 10.5 deaths per 100,000 live births, respectively). Infants who were delivered preterm (less than 37 weeks gestation) comprised 23% (n=89) of all sleep-related injury deaths while pre-term deliveries accounted for only 9.7% of all live births from 2004 through 2011. Infants born to adolescent mothers (less than 20 years old) were also disproportionately represented among the sleep-related infant injury deaths: 15% (n=58) of these infants were born to adolescent mothers, as compared with only 6.4% of all live births from 2004 through 2011. Selected demographic characteristics are presented in detail in Table 7 of the Appendix.

Sleep environment

Unsafe circumstances in which an infant died during sleep were revealed from the case file review of these deaths. Of the 386 infant sleep-related injury deaths occurring from 2004 through 2011 in NYC, less than one-third of these infants were found lying on their backs (31%, n=119), the recommended sleep position for infants (Figure 5).^{*†} More than half (56%, n=218) of the infants who died from a sleep-related injury were sharing a bed (or other sleep surface) with an adult or another

Figure 4: Sleep-related infant injury deaths by age, NYC, 2004-2011, n=386

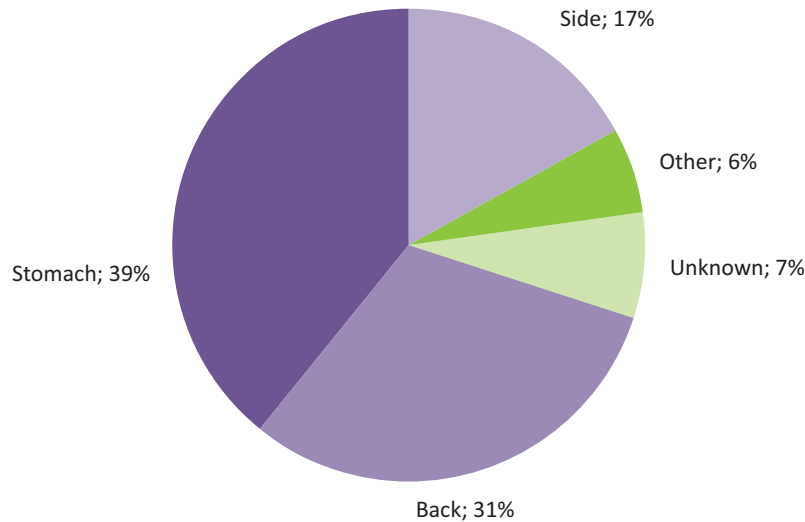


Source: NYC DOHMH's Bureau of Vital Statistics

* Information on infant's sleep position in the case file is based on reported information from the caregiver.

† Moon, R. Y. (2011). SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. *Pediatrics*, 128(5), e1341-e1367.

Figure 5: Sleep-related infant injury deaths by sleep position when found, NYC, 2004-2011, n=386



Source: NYC Office of Chief Medical Examiner

child or both, and almost three-quarters of sleep-related deaths were among infants found in a sleep location other than a crib, bassinet, or playpen (72%, n=280), with an adult bed being the most common location (59%, n=227) (Table 2). In more than half of the sleep-related infant injury deaths (59%, n=228) excessive bedding was found in the infant’s sleep environment. A combination of environmental factors was found in a large proportion of the sleep-related infant injury deaths. For example, among infants found sleeping in an adult bed, 84% (n=191) were sharing the bed with another sleeper and 70% (n=158) had excessive bedding.

Table 2: Environmental factors for sleep-related infant injury deaths, NYC, 2004-2011, n=386

Environmental Factor	n	%
Sleep Location		
Adult bed	227	59%
Crib/bassinet/playpen	104	27%
Couch/sofa	22	6%
Other	31	8%
Unknown	2	1%
Bed Sharing		
Yes	218	56%
No	168	44%
Excess Bedding*		
Yes	228	59%
No	67	17%
Unknown	91	24%

* The presence of excess bedding was defined as having more than one bed sheet and one blanket in the infant’s sleep environment. Examples of excess bedding include pillows, comforters, quilts, crib-bumpers, and towels.

Source: NYC Office of Chief Medical Examiner

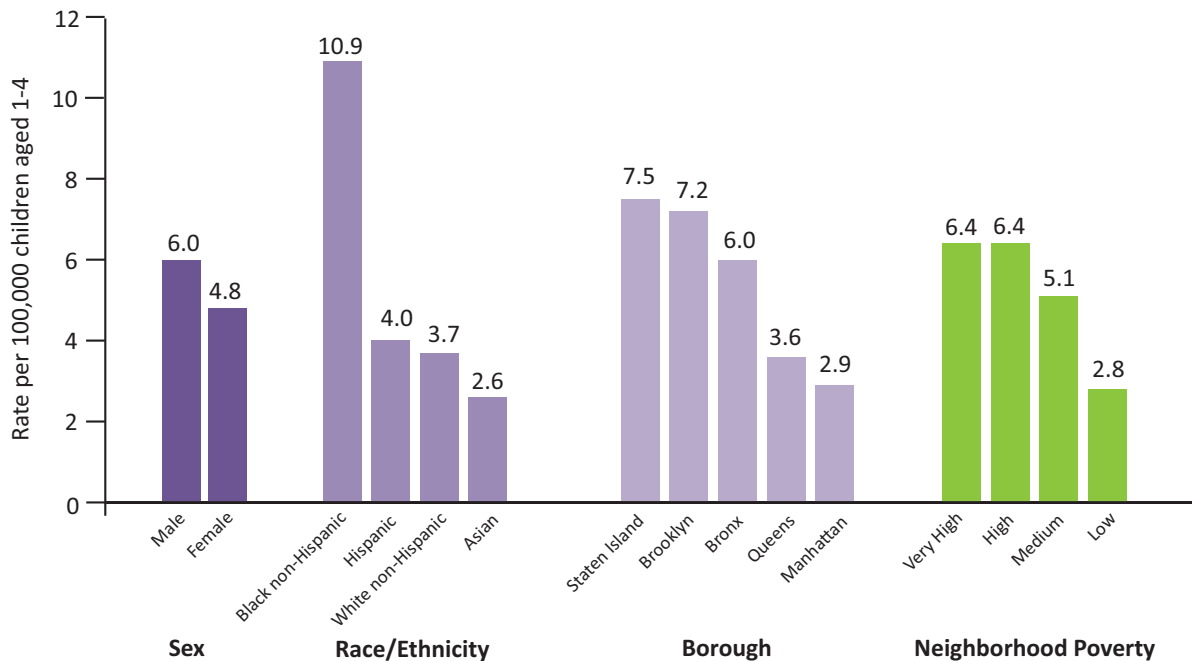


Children Aged 1 to 4

Demographics of injury deaths among children aged 1 to 4

Among children aged 1 to 4, black non-Hispanic children had the highest injury death rate compared to NYC children of other racial and ethnic groups (Figure 6). Boys were slightly more at risk for injury death than girls (6.0 vs 4.8 per 100,000). Children living in Staten Island and in Brooklyn were more at risk (7.5 and 7.2 per 100,000, respectively) than children living in other NYC boroughs. Approximately one-third (34%) of NYC’s children aged 1 to 4 live in Brooklyn, while Brooklyn residents comprise 45% (n=101) of injury deaths among NYC children in this age group. The injury death rate among children living in high- and very-high-poverty neighborhoods was more than double the rate among children living in low-poverty neighborhoods.

Figure 6: Overall injury death rates among children aged 1 to 4 by sex, race/ethnicity, borough, and neighborhood poverty, NYC, 2002-2011, n=224



Source: NYC DOHMH’s Bureau of Vital Statistics

Leading causes of injury deaths among children aged 1 to 4

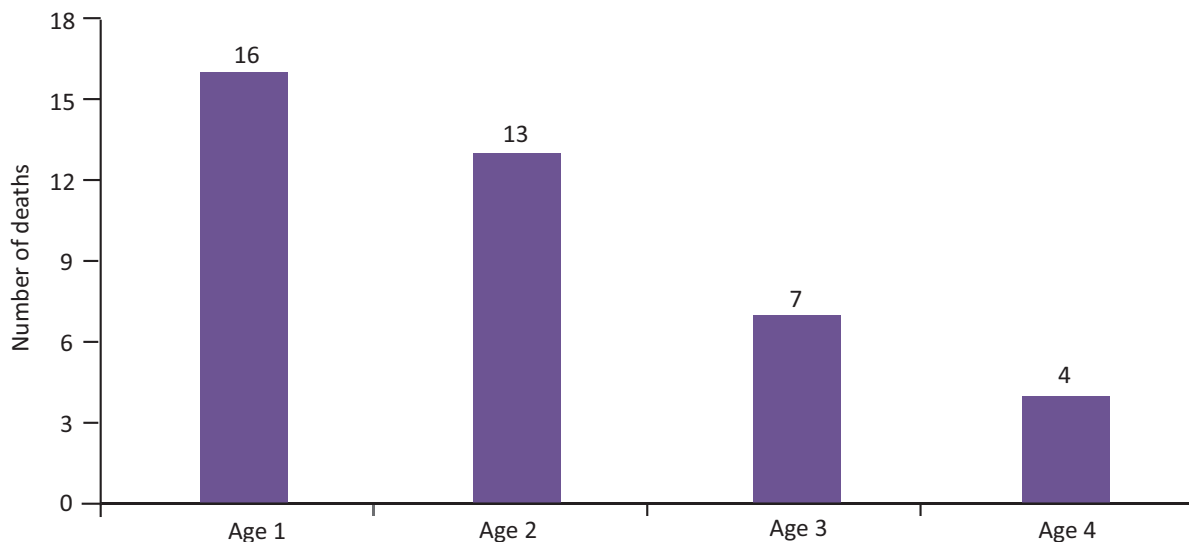
Injuries from fire/flame incidents and motor vehicle-related incidents were the leading causes of injury death among NYC children aged 1 to 4. From 2002 through 2011, there were 40 fire/flame deaths among NYC children aged 1 to 4, translating to a rate of 1.0 death per 100,000. NYC's death rate from fire/flame injuries was 23% lower than the national rate for this age group (1.0 vs 1.3 deaths per 100,000). Nationally, fire/flame deaths ranked third after drowning and motor vehicle-related deaths (3.0 and 2.8 deaths per 100,000, respectively).

From 2002 through 2011, there were 35 motor vehicle-related injury deaths resulting in a rate of 0.8 deaths per 100,000 children aged 1 to 4. The rate of motor vehicle-related death in NYC among those aged 1 to 4 was 71% lower than the national rate (0.8 vs 2.8 deaths per 100,000).

Fire/flame deaths

Children 1 to 2 years old were at greatest risk of death caused by injuries from fire or flame, and represented nearly three-quarters (73%, n=29) of all fire/flame deaths among NYC children aged 1 to 4 during 2002-2011 (Figure 7). Three-quarters (75%, n=30) of deaths caused by fire/flame injuries among NYC children aged 1 to 4 were unintentional.

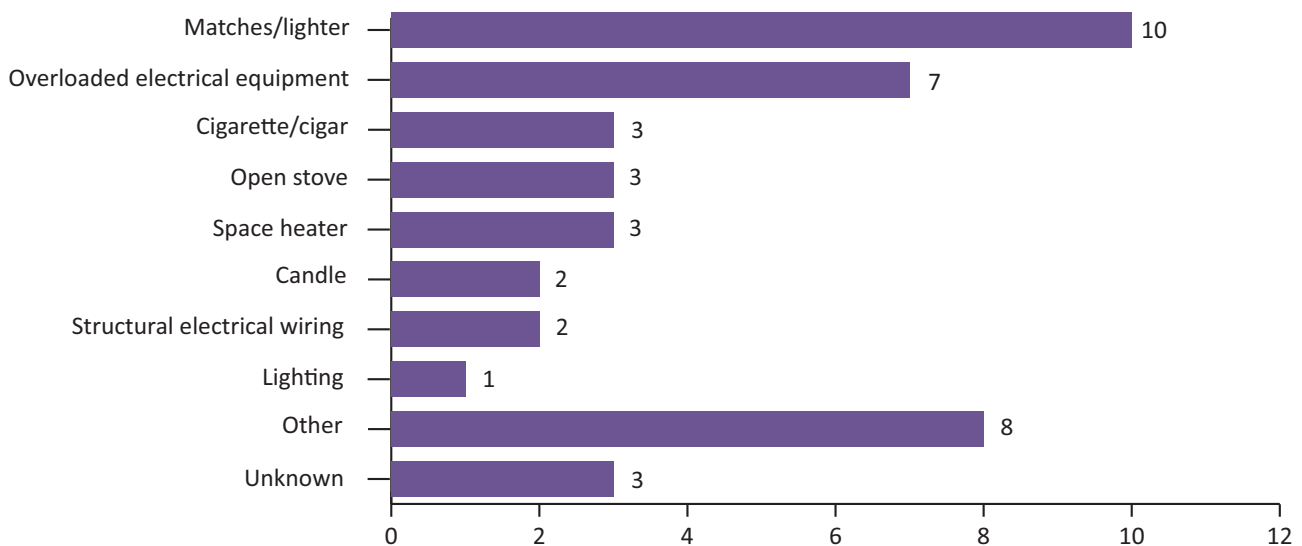
Figure 7: Fire deaths among children aged 1 to 4 by age, NYC, 2002-2011, n=40



Source: NYC DOHMH's Bureau of Vital Statistics

An in-depth OCME file review of fire/flame child deaths during 2001-2010 (n=43) found that the majority of fire/flame deaths among children aged 1 to 4 occurred in the home of the child (93%, n=40). A child playing with matches or a lighter was the top ignition source of these fatal fires and accounted for 23% (n=10) of the fire/flame deaths (Figure 8). Smoke detectors were documented as present and operational in only 16% (n=7) of these cases. In more than half of the fire deaths (53%, n=23), a smoke detector was not present (n=15) or was present but was not operational (n=8). Smoke detector presence was unknown in 28% of the fire deaths (n=12).

Figure 8: Ignition source in fire deaths among children aged 1 to 4, NYC 2001-2010, n=42*



* Ignition source information was missing for one fire/flame death. Total n=43.
Source: NYC Office of Chief Medical Examiner

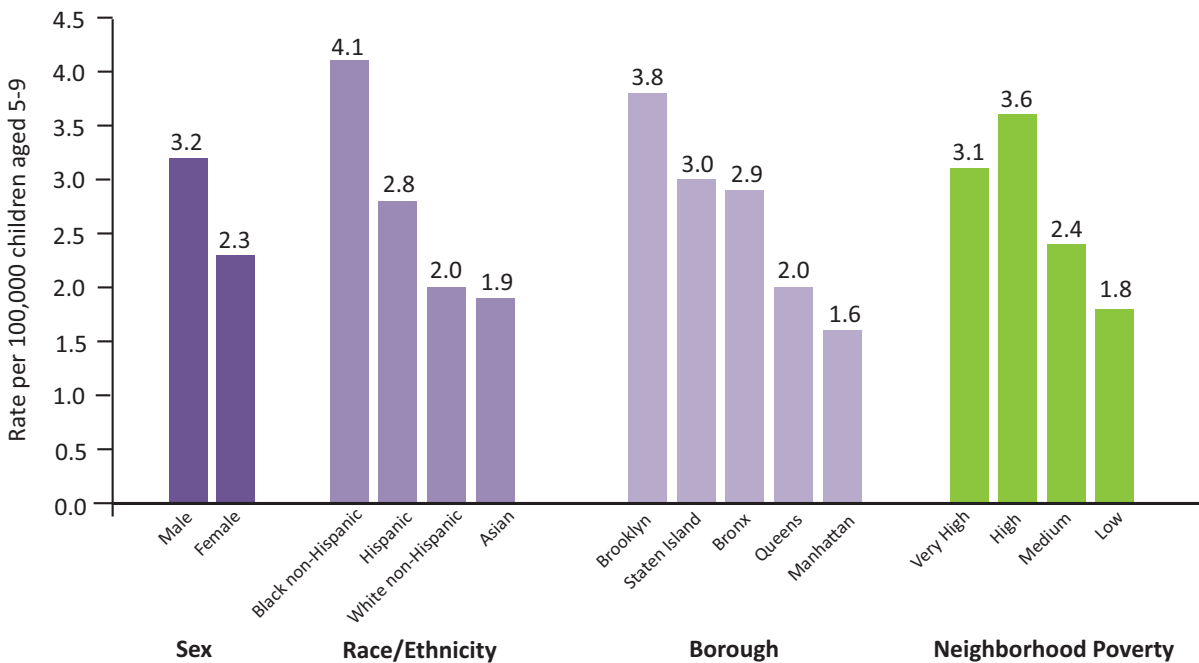


Children Aged 5 to 9

Demographics of injury deaths among children aged 5 to 9

Among children aged 5 to 9, boys were more at risk of injury death than girls (3.2 vs 2.3 per 100,000, respectively). Black non-Hispanic children had the highest rate of injury death in this age group (4.1 per 100,000), followed by white non-Hispanic (2.8 per 100,000), Hispanic (2.0 per 100,000), and Asian or Pacific Islander (1.9 per 100,000) children (Figure 9). Children living in Brooklyn were at higher risk (3.8 per 100,000) than children living in other NYC boroughs. The injury death rate among children living in NYC's high- and very-high-poverty neighborhoods was higher than among children from medium- and low-poverty neighborhoods.

Figure 9: Overall injury death rates among children aged 5 to 9 by sex, race/ethnicity, borough, and neighborhood poverty, NYC, 2002-2011, n=134



Source: NYC DOHMH's Bureau of Vital Statistics

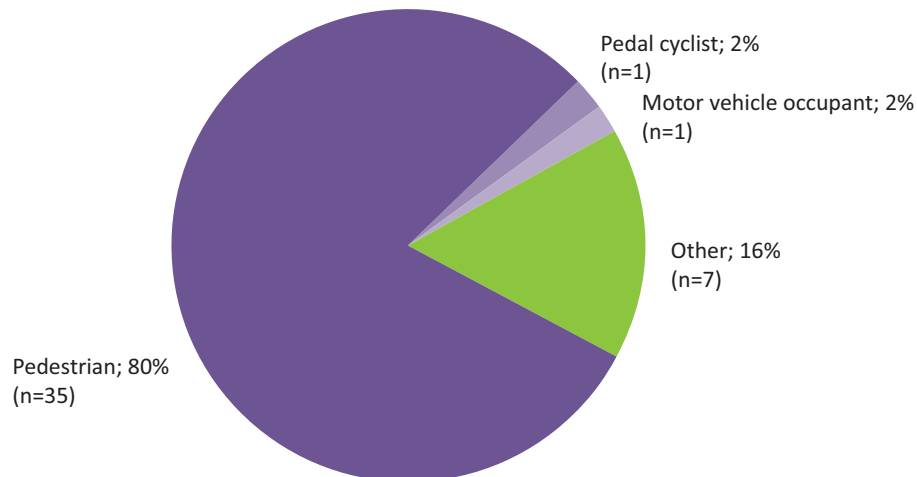
Leading causes of injury deaths among children aged 5 to 9

From 2002 through 2011, motor vehicle-related injury was the leading cause of injury death among children aged 5 to 9 nationally and in NYC. The NYC rate (0.9 deaths per 100,000) was 64% lower than the national rate (2.5 per 100,000). Injury death caused by a fire/flame ranked second among NYC children aged 5 to 9 (0.8 per 100,000), and was similar to the national rate (0.7 per 100,000). During 2002-2011, motor vehicle-related deaths accounted for a total of 44 deaths of NYC children aged 5 to 9, and fire/flame incidents caused 40 deaths among NYC children of the same age.

Motor vehicle-related deaths

During 2002-2011, four out of every five NYC children aged 5 to 9 fatally injured in a motor vehicle incident were pedestrians (80%, n=35, Figure 10). A review of motor vehicle-related injury deaths from the NYC DOT's Traffic Fatality Database from 2002 through 2011 revealed that a key contributing factor to child pedestrian deaths was children emerging from between parked vehicles. Few children of this age died as a motor vehicle occupant or pedal cyclist (n=2).

Figure 10: Person injured in fatal motor vehicle incident among children aged 5 to 9, NYC, 2002-2011, n=44



Source: NYC DOHMH's Bureau of Vital Statistics

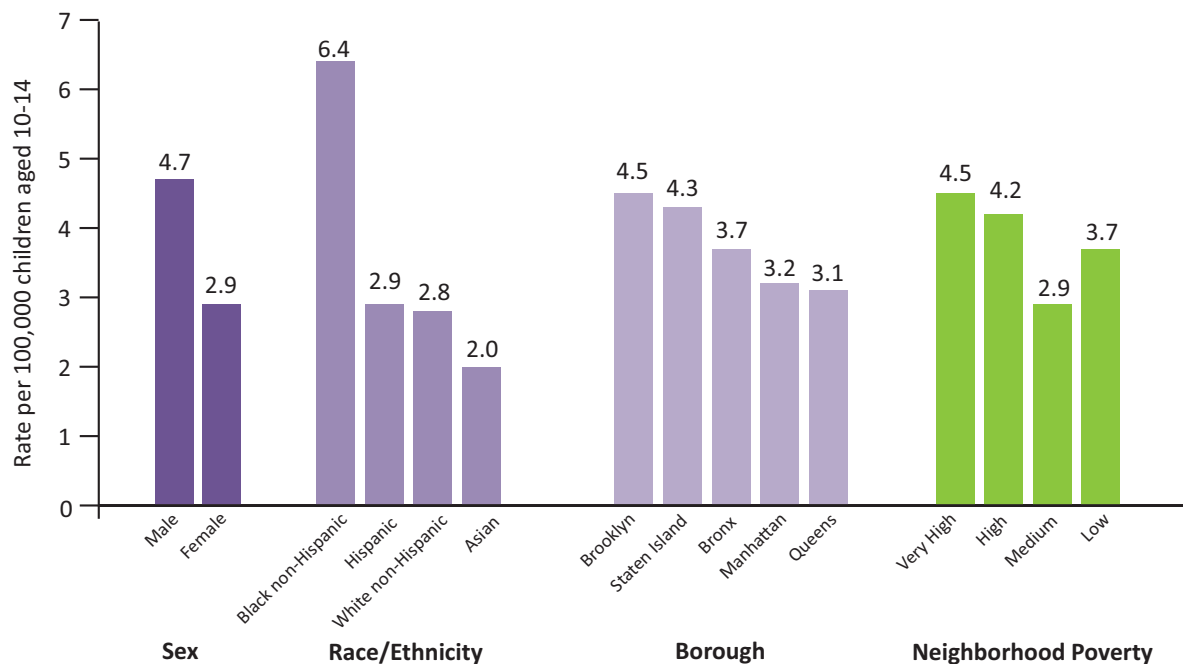


Children Aged 10 to 14

Demographics of injury deaths among children aged 10 to 14

From 2002 through 2011, the risk of injury death for boys aged 10 to 14 was nearly two-thirds higher than the risk for girls (4.7 vs 2.9 per 100,000) of the same age. The highest injury death rate was among black non-Hispanic children (6.4 per 100,000), and was more than double the rate for any other racial or ethnic group (Figure 11). Children living in Brooklyn had the highest rate of injury death (4.5 per 100,000) as compared with children living in other NYC boroughs. The injury death rate among children living in high- and very-high-poverty neighborhoods was higher than among children living in medium- and low-poverty neighborhoods.

Figure 11: Overall injury death rates among children aged 10 to 14 by sex, race/ethnicity, borough, and neighborhood poverty, NYC, 2002-2011, n=192



Source: NYC DOHMH's Bureau of Vital Statistics

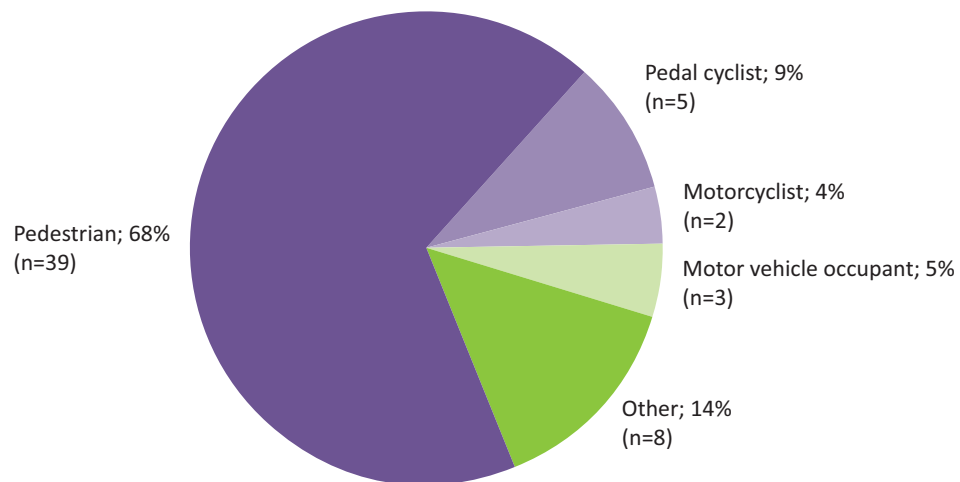
Leading causes of injury deaths among children aged 10 to 14

From 2002 through 2011, motor vehicle-related injury was the leading cause of injury death among children aged 10 to 14 nationally and in NYC. The rate in NYC was 68% lower than the national rate (1.1 vs 3.4 per 100,000). During 2002-2011, motor vehicle-related deaths accounted for 57 deaths of NYC children aged 10 to 14. The second leading cause of injury death among this age group in NYC was suffocation (n=27; most suffocation deaths were suicide by hanging), and NYC's rate was 58% lower than the national rate (0.5 vs 1.2 per 100,000). Nationally, firearm injury was the second leading cause of injury death among this age group.

Motor vehicle-related deaths

Similar to children aged 5-9, the majority of the motor vehicle-related deaths were among child pedestrians (68%, n=39, Figure 12). A review of motor vehicle-related injury deaths from the NYC DOT's Traffic Fatality Database from 2002 to 2011 revealed that key contributing factors to child pedestrian deaths in this age group were children emerging from between parked vehicles and children crossing against the light.

Figure 12: Person injured in fatal motor vehicle incident among children aged 10 to 14, NYC, 2002-2011, n=57



Source: NYC DOHMH's Bureau of Vital Statistics

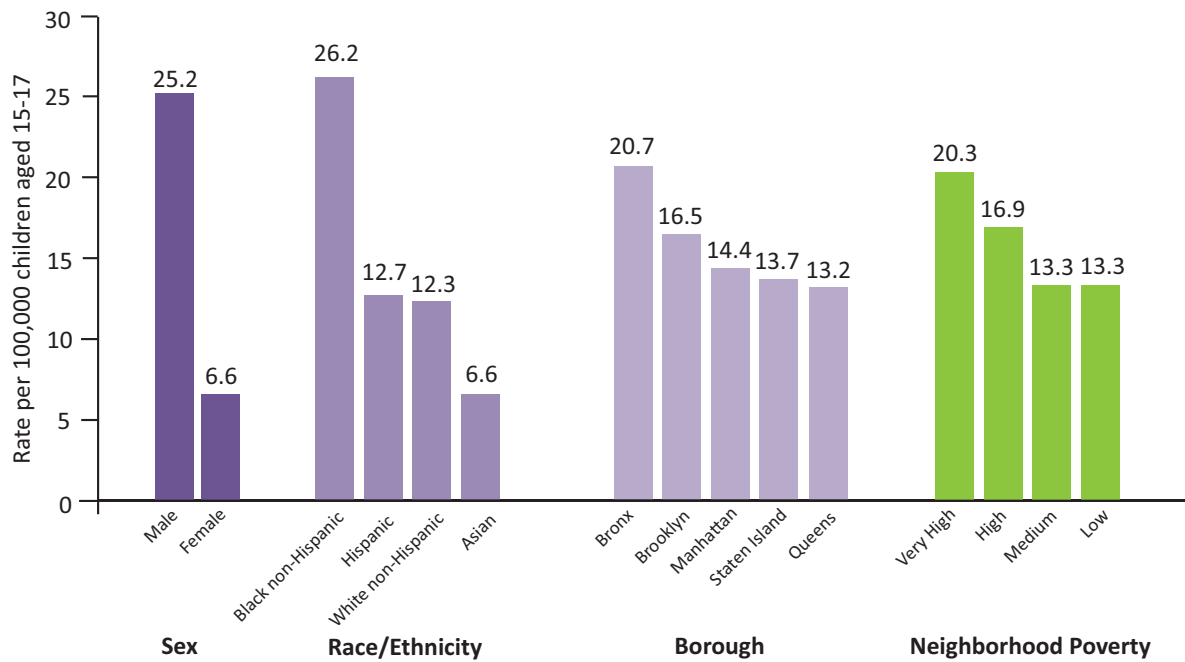


Youth Aged 15 to 17

Demographics of injury deaths among youth aged 15 to 17

From 2002 through 2011, males represented 80% of all injury deaths among youth aged 15 to 17. Black non-Hispanic youth had the highest injury death rate (26.2 per 100,000) among NYC youth, followed by Hispanic (12.7 per 100,000), white non-Hispanic (12.3 per 100,000), and Asian and Pacific Islander youth (6.6 per 100,000) (Figure 13). Youth living in the Bronx and Brooklyn had higher rates of injury death compared with youth living in other NYC boroughs. Youth living in NYC’s high- and very-high-poverty neighborhoods had higher rates of injury death than youth living in medium- and low-poverty neighborhoods.

Figure 13: Overall injury death rates among youth aged 15 to 17 by sex, race/ethnicity, borough, and neighborhood poverty, NYC, 2002-2011, n=494



Source: NYC DOHMH's Bureau of Vital Statistics

Leading causes of injury deaths among youth aged 15 to 17

From 2002 through 2011, firearm-related injury was the leading cause of injury death among NYC youth aged 15 to 17, resulting in the death of 200 youths. The rate of firearm deaths among NYC youth was 20% lower than the national rate (6.5 vs 8.1 per 100,000), where it was the second leading cause of injury death. In this age group, nearly one-third (30%) of the US firearm-related deaths were due to suicide, while only 9% of NYC firearm-related deaths were due to suicide. In NYC, motor vehicle-related injury was the second leading cause of injury death (n=80) among this age group. The NYC motor vehicle-related death rate was approximately six times lower than the national rate (2.6 vs 15.6 per 100,000), where it was the leading cause of injury death in this age group.

Firearm-related deaths

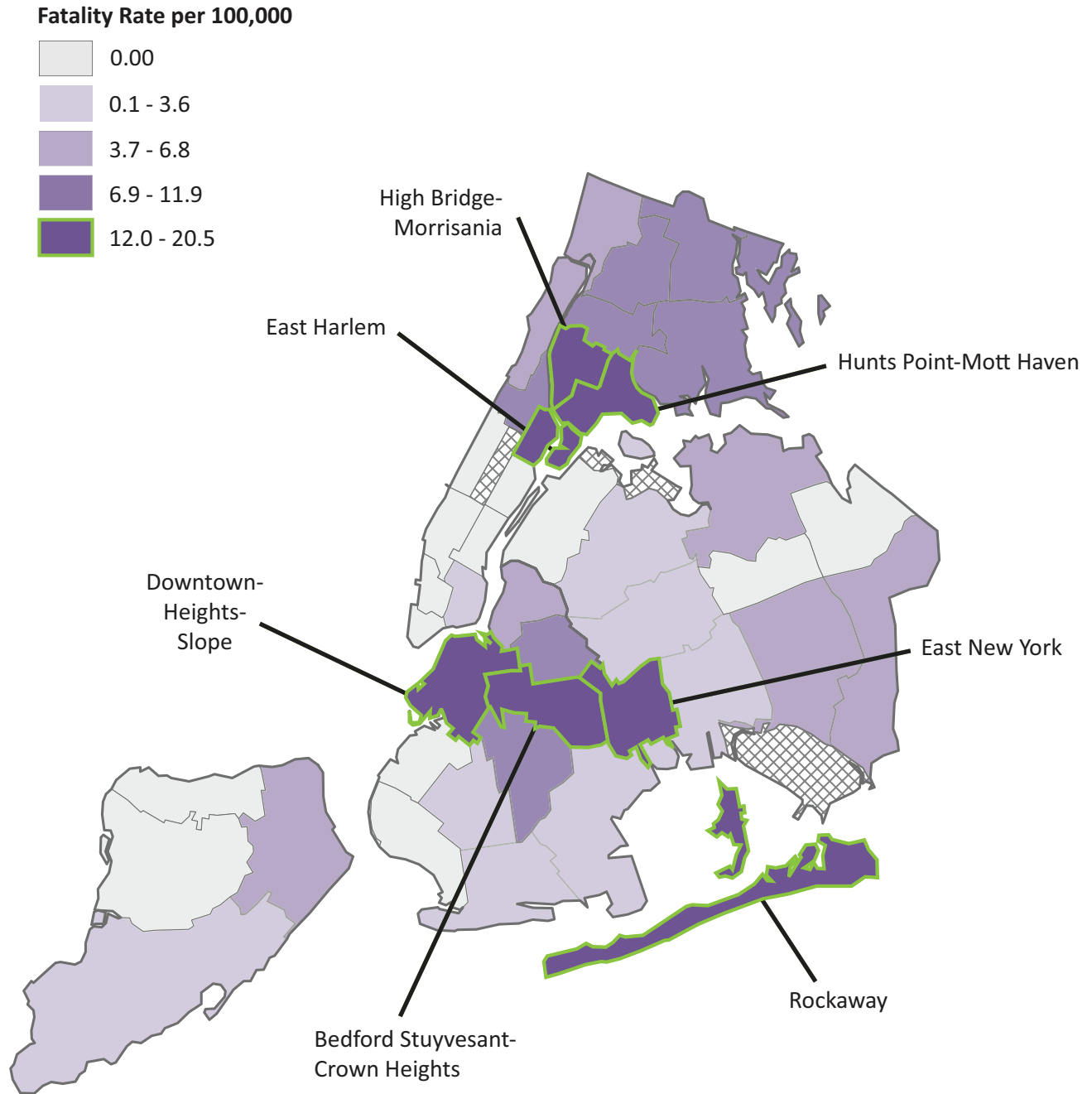
The rate of all firearm-related deaths among NYC youth aged 15 to 17 varied by NYC neighborhood (Figure 14 and Table 8). From 2002 through 2011, the highest rate of firearm-related deaths (20.5 per 100,000 youth) among youth aged 15 to 17 was among residents of Brooklyn's Bedford Stuyvesant-Crown Heights neighborhood. Other NYC neighborhoods with high rates of youth killed by firearms were East Harlem in Manhattan, East New York in Brooklyn, High Bridge-Morrisania in the Bronx, Downtown-Heights-Slope in Brooklyn, Hunts Point-Mott Haven in the Bronx, and Rockaway in Queens. Although rates were lower in the Crotona-Tremont (Bronx) and East Flatbush-Flatbush (Brooklyn) neighborhoods, more than a dozen firearm-related deaths were of youth living in these neighborhoods during 2002-2011. Residents of thirteen NYC neighborhoods experienced no deaths by firearms among youth aged 15 to 17 during this time period.

Firearm homicides and suicides

Nine out of every ten (91%) firearm-related youth deaths in NYC during 2002-2011 were homicides. While NYC's firearm homicide rate among youth aged 15 to 17 was higher than the national rate (5.9 vs 5.2 deaths per 100,000 youth), it was lower than other populous urban areas (Figure 15). Seven out of eight other US populous urban areas had higher firearm homicide rates than NYC (Table 3). The average rate among other populous urban areas was more than double NYC's rate (12.4 vs 5.9 deaths per 100,000 youth).

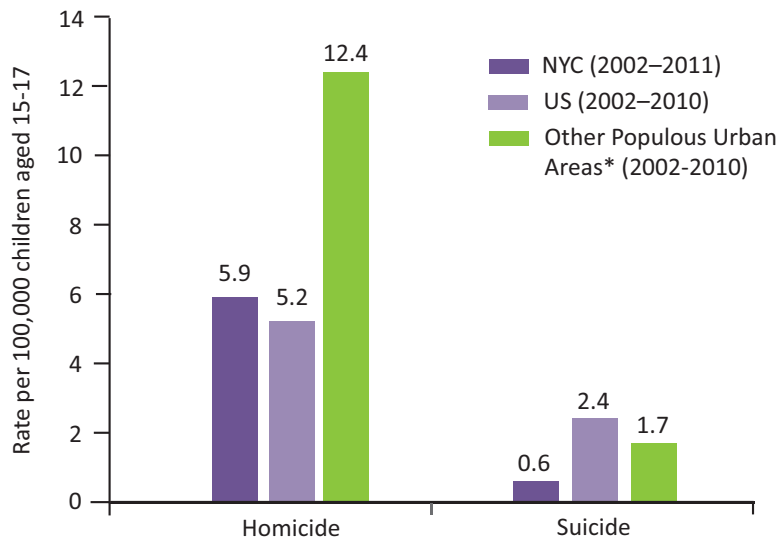
Firearm suicides accounted for 9% of firearm-related deaths among NYC's youth aged 15 to 17 (n=17) from 2002 through 2011. NYC's rate of firearm suicide was nearly one-third the rate of other populous urban areas and one-quarter the national rate (0.6 vs 1.7 and 2.4 deaths per 100,000 youth).

Figure 14: Firearm-related deaths, by neighborhood of residence, youth aged 15 to 17, NYC, 2002-2011, n=200



Sources: NYC DOHMH's Bureau of Vital Statistics and United Hospital Fund

Figure 15: Firearm-related deaths by intent among youth aged 15 to 17 in NYC (2002-2011), US (2002-2010) and other populous urban areas (2002-2010)



*Average of US counties containing cities with more than one million residents (see Technical Appendix)
Sources: NYC DOHMH's Bureau of Vital Statistics and CDC's WONDER

Table 3: Firearm deaths among youth aged 15 to 17 by populous urban area, 2002-2010

City/County	All Intents	Homicide	Suicide
Philadelphia, PA (Philadelphia)	22.8	21.1	--
Chicago, IL (Cook)	20.3	19.1	1.0
Los Angeles, CA (Los Angeles)	16.0	14.9	0.7
Phoenix, AZ (Maricopa)	12.9	7.9	4.1
Houston, TX (Harris)	11.9	8.9	3.8
San Antonio, TX (Bexar)	11.6	7.0	4.7
Dallas, TX (Dallas)	10.5	8.1	2.3
NYC (5 Counties)	6.7	5.9	0.6
<i>Bronx County</i>	10.6	9.4	1.1
<i>Kings County</i>	7.8	7.4	0.5
<i>New York County</i>	5.6	5.3	0.3
<i>Queens County</i>	3.2	2.7	0.4
<i>Richmond County</i>	1.5	1.0	0.5
San Diego, CA (San Diego)	6.4	5.0	--

Sources: NYC DOHMH's Bureau of Vital Statistics and CDC's WONDER

Recommendations

For parents and caregivers

- Always place a baby on his or her back to sleep, for naps and at night. Keep all objects, including toys and loose bedding, out of a baby's sleep area, especially for infants under 6 months old.
- Babies are safest sleeping alone, on a firm mattress, in a safety-approved crib. Sleeping with another person puts a baby at risk of being suffocated.
- Teach children to cross the street at crosswalks or at the corner instead of in mid-block. Also teach children to observe pedestrian and traffic signals and other traffic signs, to look both ways and listen before crossing the street, and to keep looking as they cross.
- Drive safely: pay attention while driving, obey the speed limit, never drink and drive, text and drive, or talk on a cell phone while driving; be aware of children that may emerge from between parked cars.
- Keep matches and lighters out of the reach of children. Check your smoke alarms once a month and change batteries every spring and fall when you change your clocks for daylight savings time.
- Seek medical and mental health counseling for youth who appear depressed or express thoughts of suicide. 1-800-LIFENET is available 24 hours a day for assistance.
- Do not keep firearms in the home. If there must be a gun or any kind of weapon in your home, put it where children cannot touch it. Keep guns unloaded and locked away.
- Teach children nonviolent approaches to conflict resolution and that the consequences of violence can be severe; become familiar with anti-violence activities in your community and your child's school.

For health care providers

- Counsel expectant and new parents on infant safe-sleep practices and utilize every opportunity to visually demonstrate safe-sleep practices for parents and other caregivers. Some families may qualify for free cribs through the Cribs for Kids program. Direct parents to call 311 for more information.
- Counsel parents about the need for appropriate supervision based on child's age, development, and exposure to possible hazards. Provide information on choosing appropriate caregivers.

- Discuss traffic and fire safety with parents. Counsel parents to teach children about traffic rules and to maintain a working smoke alarm in the home.
- Ask youth about their emotional/psychological health. Conduct a brief mental health screening and make referrals for counseling and services where appropriate.
- Counsel parents not to keep firearms in the home or, if they do, to store them safely.
- Direct parents to resources on teaching children nonviolent approaches to conflict resolution.

For community-based organizations and schools

- Counsel expectant and new parents on infant safe-sleep practices and utilize every opportunity to visually demonstrate safe-sleep practices for parents and other care givers, such as siblings and grandparents.
- Distribute traffic and fire safety information to families. Incorporate traffic and fire safety workshops or lessons into existing programs for children and families.
- Advocate for infrastructure and engineering improvements that promote safer streets. Measures may include pedestrian islands, bicycle lanes, or new traffic patterns.
- Offer programs that keep youth engaged in positive activities and away from potentially violent situations.

For policy-makers

- Promote proposals focused on increasing infant safety, such as asking hospitals to provide education to new parents on infant safe-sleep, prohibiting the sale of crib bumpers, and helping parents obtain resources, such as providing cribs to families in need.
- Implement infrastructure and engineering efforts that promote safer streets and advocate for state legislation authorizing the expanded use of speed-enforcement cameras and red-light enforcement cameras.
- Maintain and expand proven violence prevention programs and other youth development services into high-violence communities in NYC.
- Endorse, develop, and implement policy efforts to reduce access to illegal guns such as improving background checks and closing purchasing loopholes, to better prevent crime and violence caused by illegal guns.

Appendix of Supplemental Data

Demographic Information for All Injury Deaths, NYC, 2002-2011

Table 4: Age, sex, race/ethnicity, borough of residence, and neighborhood poverty by intent among 0- to 17-year-olds†

0 to 17 years	Unintentional			Suicide			Homicide			Undetermined			Total		
	n	Rate*	%	n	Rate*	%	n	Rate*	%	n	Rate*	%	n	Rate*	%
Age															
<1	125	11.0	20%	--	--	--	88	7.8	18%	356	31.4	91%	569	50.3	35%
1 to 4	130	3.1	21%	--	--	--	72	1.7	15%	22	0.5	6%	224	5.4	14%
5 to 9	105	2.2	17%	1	0.0	1%	25	0.5	5%	3	0.1	1%	134	2.8	8%
10 to 14	122	2.4	20%	26	0.5	24%	43	0.9	9%	1	0.0	0%	192	3.8	12%
15 to 17	142	4.6	23%	81	2.6	75%	262	8.5	53%	9	0.3	2%	494	16.1	31%
Sex															
Male	401	4.3	64%	73	0.8	68%	353	3.8	72%	222	2.4	57%	1,049	11.3	65%
Female	223	2.5	36%	35	0.4	32%	137	1.5	28%	169	1.9	43%	564	6.3	35%
Race/ethnicity															
White non-Hispanic	156	3.5	25%	32	0.7	30%	29	0.6	6%	63	1.4	16%	280	6.2	18%
Black non-Hispanic	251	5.1	41%	32	0.7	30%	304	6.2	63%	218	4.4	57%	805	16.4	51%
Hispanic	168	2.6	27%	33	0.5	31%	133	2.1	28%	81	1.3	21%	415	6.5	26%
Asian/PI	37	1.9	6%	9	0.5	8%	11	0.6	2%	20	1.0	5%	77	3.9	5%
Other	6	1.5	1%	2	0.5	2%	4	1.0	1%	2	0.5	1%	14	3.4	1%
Borough															
Bronx	135	3.6	22%	30	0.8	28%	138	3.7	28%	102	2.7	26%	405	10.7	25%
Brooklyn	242	3.9	39%	31	0.5	29%	191	3.1	39%	145	2.4	37%	609	9.9	38%
Manhattan	56	2.3	9%	14	0.6	13%	57	2.3	12%	54	2.2	14%	181	7.4	11%
Queens	145	3.1	23%	24	0.5	22%	80	1.7	16%	74	1.6	19%	323	6.9	20%
Staten Island	46	4.2	7%	9	0.8	8%	24	2.2	5%	16	1.5	4%	95	8.6	6%
Neighborhood poverty															
Low	97	3.3	16%	21	0.7	19%	23	0.8	5%	29	1.0	7%	170	5.9	11%
Medium	187	3.2	30%	37	0.6	34%	116	2.0	24%	94	1.6	24%	434	7.4	27%
High	154	3.4	25%	29	0.6	27%	153	3.4	31%	124	2.7	32%	460	10.1	29%
Very High	184	3.8	30%	21	0.4	19%	198	4.1	40%	144	3.0	37%	547	11.2	34%
TOTAL	624	3.4	39%	108	0.6	7%	490	2.7	30%	391	2.2	24%	1,613	8.9	100%

* Rate per 100,000

† Not every category will sum to total due to missing data

Source: NYC DOHMH's Bureau of Vital Statistics

Table 5: Sex, race/ethnicity, borough of residence, and neighborhood poverty by intent and age group

AGE GROUP (years)	Unintentional			Suicide			Homicide			Undetermined			Total		
	n	Rate*	%	n	Rate*	%	n	Rate*	%	n	Rate*	%	n	Rate*	%
<1															
Sex															
Male	72	12.4	58%	--	--	--	52	9.0	59%	203	35.0	57%	327	56.4	57%
Female	53	9.6	42%	--	--	--	36	6.5	41%	153	27.7	43%	242	43.8	43%
Race/ethnicity															
White non-Hispanic	23	6.9	18%	--	--	--	10	3.0	12%	54	16.1	15%	87	26.0	16%
Black non-Hispanic	57	23.3	46%	--	--	--	51	20.9	59%	204	83.4	58%	312	127.6	66%
Hispanic	40	10.3	32%	--	--	--	21	5.4	24%	75	19.4	21%	136	35.2	24%
Asian/PI	4	3.0	3%	--	--	--	3	2.3	3%	15	11.3	4%	22	16.6	4%
Other	1	3.0	1%	--	--	--	1	3.0	1%	2	6.0	1%	4	12.0	1%
Borough															
Bronx	35	16.1	28%	--	--	--	24	11.0	27%	94	43.2	26%	153	70.3	27%
Brooklyn	42	11.0	34%	--	--	--	25	6.5	28%	131	34.2	37%	198	51.7	35%
Manhattan	18	9.6	14%	--	--	--	9	4.8	10%	49	26.0	14%	76	40.3	13%
Queens	26	9.1	21%	--	--	--	21	7.3	24%	67	23.3	19%	114	39.7	20%
Staten Island	4	7.1	3%	--	--	--	9	16.0	10%	15	26.7	4%	28	49.8	5%
Neighborhood poverty															
Low	11	5.8	9%	--	--	--	6	3.2	7%	27	14.2	8%	44	23.1	8%
Medium	37	9.9	30%	--	--	--	30	8.1	34%	81	21.7	23%	148	39.7	26%
High	33	11.8	27%	--	--	--	21	7.5	24%	112	40.1	31%	166	59.4	29%
Very High	43	14.8	35%	--	--	--	31	10.7	35%	136	46.9	38%	210	72.4	37%
TOTAL	125	11.0	22%	--	--	--	88	7.8	15%	356	31.4	63%	569	50.3	100%

Table 5 continued

AGE GROUP (years)	Unintentional			Suicide			Homicide			Undetermined			Total		
1 to 4	n	Rate*	%	n	Rate*	%	n	Rate*	%	n	Rate*	%	n	Rate*	%
Sex															
Male	79	3.7	61%	--	--	--	37	1.8	51%	11	0.5	50%	127	6.0	57%
Female	51	2.5	39%	--	--	--	35	1.7	49%	11	0.5	50%	97	4.8	43%
Race/ethnicity															
White non-Hispanic	31	2.7	24%	--	--	--	2	0.2	3%	9	0.8	43%	42	3.7	19%
Black non-Hispanic	54	5.5	42%	--	--	--	46	4.7	65%	8	0.8	38%	108	10.9	60%
Hispanic	35	2.5	27%	--	--	--	21	1.5	30%	1	0.1	5%	57	4.0	26%
Asian/PI	8	1.8	6%	--	--	--	1	0.2	1%	3	0.7	14%	12	2.6	5%
Other	1	0.9	1%	--	--	--	1	0.9	1%	0	0.0	0%	2	1.8	1%
Borough															
Bronx	25	3.0	19%	--	--	--	18	2.2	25%	7	0.8	32%	50	6.0	22%
Brooklyn	58	4.2	45%	--	--	--	34	2.4	47%	9	0.6	41%	101	7.2	45%
Manhattan	13	2.1	10%	--	--	--	3	0.5	4%	2	0.3	9%	18	2.9	8%
Queens	24	2.2	18%	--	--	--	11	1.0	15%	3	0.3	14%	38	3.6	17%
Staten Island	10	4.4	8%	--	--	--	6	2.6	8%	1	0.4	5%	17	7.5	8%
Neighborhood poverty															
Low	15	2.2	12%	--	--	--	3	0.4	4%	1	0.1	5%	19	2.8	8%
Medium	44	3.3	34%	--	--	--	16	1.2	22%	9	0.7	41%	69	5.1	31%
High	30	2.9	23%	--	--	--	30	2.9	42%	6	0.6	27%	66	6.4	29%
Very High	41	3.8	32%	--	--	--	23	2.1	32%	6	0.6	27%	70	6.4	31%
TOTAL	130	3.1	58%	--	--	--	72	1.7	32%	22	0.5	10%	224	5.4	100%
5 to 9															
Sex															
Male	68	2.8	65%	1	0.0	100%	9	0.4	36%	1	0.0	33%	79	3.2	59%
Female	37	1.6	35%	0	0.0	0%	16	0.7	64%	2	0.1	67%	55	2.3	41%
Race/ethnicity															
White non-Hispanic	31	2.6	30%	0	0.0	0%	2	0.2	8%	0	0.0	0%	33	2.8	25%
Black non-Hispanic	39	3.0	38%	0	0.0	0%	13	1.0	52%	1	0.1	33%	53	4.1	54%
Hispanic	23	1.4	22%	1	0.1	100%	8	0.5	32%	1	0.1	33%	33	2.0	25%
Asian/PI	7	1.3	7%	0	0.0	0%	2	0.4	8%	1	0.2	33%	10	1.9	8%
Other	3	2.8	3%	0	0.0	0%	0	0.0	0%	0	0.0	0%	3	2.8	2%
Borough															
Bronx	23	2.3	22%	0	0.0	0%	6	0.6	24%	0	0.0	0%	29	2.9	22%
Brooklyn	48	3.0	46%	1	0.1	100%	11	0.7	44%	2	0.1	67%	62	3.8	46%
Manhattan	5	0.8	5%	0	0.0	0%	5	0.8	20%	0	0.0	0%	10	1.6	7%
Queens	21	1.7	20%	0	0.0	0%	2	0.2	8%	1	0.1	33%	24	2.0	18%
Staten Island	8	2.7	8%	0	0.0	0%	1	0.3	4%	0	0.0	0%	9	3.0	7%
Neighborhood poverty															
Low	14	1.8	13%	0	0.0	0%	0	0.0	0%	0	0.0	0%	14	1.8	10%
Medium	27	1.8	26%	1	0.1	100%	7	0.5	28%	1	0.1	33%	36	2.4	27%
High	27	2.3	26%	0	0.0	0%	14	1.2	56%	2	0.2	67%	43	3.6	32%
Very High	37	2.8	35%	0	0.0	0%	4	0.3	16%	0	0.0	0%	41	3.1	31%
TOTAL	105	2.2	78%	1	0.0	1%	25	0.5	19%	3	0.1	2%	134	2.8	100%
10 to 14															
Sex															
Male	82	3.2	67%	13	0.5	50%	26	1.0	60%	0	0.0	0%	121	4.7	63%
Female	40	1.6	33%	13	0.5	50%	17	0.7	40%	1	0.0	100%	71	2.9	37%
Race/ethnicity															
White non-Hispanic	25	2.2	21%	6	0.5	23%	1	0.1	2%	0	0.0	0%	32	2.8	17%
Black non-Hispanic	55	3.7	45%	10	0.7	38%	28	1.9	67%	1	0.1	100%	94	6.4	59%
Hispanic	34	1.9	28%	8	0.4	31%	10	0.6	24%	0	0.0	0%	52	2.9	27%
Asian/PI	7	1.3	6%	2	0.4	8%	2	0.4	5%	0	0.0	0%	11	2.0	6%
Other	0	0.0	0%	0	0.0	0%	1	1.0	2%	0	0.0	0%	1	1.0	1%
Borough															
Bronx	26	2.4	21%	6	0.6	23%	8	0.7	19%	0	0.0	0%	40	3.7	21%
Brooklyn	49	2.9	40%	9	0.5	35%	18	1.1	42%	1	0.1	100%	77	4.5	40%
Manhattan	11	1.7	9%	3	0.5	12%	7	1.1	16%	0	0.0	0%	21	3.2	11%
Queens	30	2.3	25%	3	0.2	12%	7	0.5	16%	0	0.0	0%	40	3.1	21%
Staten Island	6	1.9	5%	5	1.6	19%	3	0.9	7%	0	0.0	0%	14	4.3	7%
Neighborhood poverty															
Low	20	2.5	17%	5	0.6	19%	4	0.5	9%	0	0.0	0%	29	3.7	15%
Medium	35	2.2	29%	5	0.3	19%	7	0.4	16%	0	0.0	0%	47	2.9	25%
High	30	2.4	25%	7	0.6	27%	15	1.2	35%	1	0.1	100%	53	4.2	28%
Very High	36	2.6	30%	9	0.7	35%	17	1.2	40%	0	0.0	0%	62	4.5	32%
TOTAL	122	2.4	64%	26	0.5	14%	43	0.9	22%	1	0.0	1%	192	3.8	100%

Table 5 continued

AGE GROUP (years)	Unintentional			Suicide			Homicide			Undetermined			Total		
	n	Rate*	%	n	Rate*	%	n	Rate*	%	n	Rate*	%	n	Rate*	%
Sex															
Male	100	6.4	70%	59	3.8	73%	229	14.6	87%	7	0.4	78%	395	25.2	80%
Female	42	2.8	30%	22	1.5	27%	33	2.2	13%	2	0.1	22%	99	6.6	20%
Race/ethnicity															
White non-Hispanic	46	6.6	33%	26	3.7	32%	14	2.0	5%	0	0.0	0%	86	12.3	18%
Black non-Hispanic	46	5.1	33%	22	2.4	27%	166	18.3	65%	4	0.4	44%	238	26.2	59%
Hispanic	36	3.3	26%	24	2.2	30%	73	6.8	28%	4	0.4	44%	137	12.7	28%
Asian/PI	11	3.3	8%	7	2.1	9%	3	0.9	1%	1	0.3	11%	22	6.6	5%
Other	1	1.8	1%	2	3.6	2%	1	1.8	0%	0	0.0	0%	4	7.2	1%
Borough															
Bronx	26	4.0	18%	24	3.7	30%	82	12.8	31%	1	0.2	11%	133	20.7	27%
Brooklyn	45	4.4	32%	21	2.0	26%	103	10.0	39%	2	0.2	22%	171	16.5	35%
Manhattan	9	2.3	6%	11	2.8	14%	33	8.5	13%	3	0.8	33%	56	14.4	11%
Queens	44	5.4	31%	21	2.6	26%	39	4.8	15%	3	0.4	33%	107	13.2	22%
Staten Island	18	9.2	13%	4	2.0	5%	5	2.5	2%	0	0.0	0%	27	13.7	5%
Neighborhood poverty															
Low	37	7.7	26%	16	3.3	20%	10	2.1	4%	1	0.2	11%	64	13.3	13%
Medium	44	4.4	31%	31	3.1	38%	56	5.6	21%	3	0.3	33%	134	13.3	27%
High	34	4.4	24%	22	2.8	27%	73	9.4	28%	3	0.4	33%	132	16.9	27%
Very High	27	3.3	19%	12	1.5	15%	123	15.2	47%	2	0.2	22%	164	20.3	33%
TOTAL	142	4.6	29%	81	2.6	16%	262	8.5	53%	9	0.3	2%	494	16.1	100%

* Rate per 100,000
 Source: NYC DOHMH's Bureau of Vital Statistics

Table 6: Leading causes of injury deaths by age group, US vs NYC (Rate per 100,000)

	US (2002-2010)		NYC (2002-2011)	
	Cause	Rate	Cause	Rate
Infants <1 year*				
1 to 4	Drowning	3.0	Fire/flare	1.0
	Motor vehicle-related	2.8	Motor vehicle- related	0.8
	Fire/flare	1.3	Other	0.8
	Other	1.2	Suffocation**	0.6
	Suffocation**	1.0	Fall	0.5
5 to 9	Motor vehicle-related	2.5	Motor vehicle-related	0.9
	Drowning	0.7	Fire/flare	0.8
	Fire/flare	0.7	Suffocation	0.3
	Firearm	0.3	Stabbing**	0.1
	Suffocation**	0.3	Fall	0.1
10 to 14	Motor vehicle-related	3.4	Motor vehicle-related	1.1
	Firearm	1.2	Suffocation**	0.5
	Suffocation**	1.2	Fire/flare	0.4
	Drowning	0.6	Firearm	0.4
	Fire/flare	0.4	Stabbing	0.2
15 to 17	Motor vehicle-related	16.0	Firearm	6.5
	Firearm	8.1	Motor vehicle-related	2.6
	Suffocation**	3.0	Stabbing	2.0
	Poisoning	2.2	Suffocation**	1.1
	Drowning	1.3	Fall	1.1

* Most infant injury cause of death categories, such as "unknown mechanism" and "not specified," are difficult to interpret. See infant section for detailed information on sleep-related infant injury deaths in NYC.
 **Most fatal suffocation injuries among 1- to 4- and 5- to 9-year-olds are unintentional. For 10- to 14- and 15- to 17-year-olds, the majority of fatal suffocation injuries are suicide.
 Sources: NYC DOHMH's Bureau of Vital Statistics and CDC's WONDER

Table 7: Demographics for sleep-related infant injury deaths, NYC, 2004-2011, n=386

		n*	%	Rate†
Age at death	< 28 days	36	9.3	--
	28 days to 4 months	283	73.3	--
	5 to 12 months	67	17.4	--
Gestational age	< 37 weeks (pre-term)	89	23.1	91.3
	≥ 37 weeks (term)	286	74.1	31.6
Gender	Male	215	55.7	41.8
	Female	171	44.3	34.7
Race/ethnicity of infant	Black non-Hispanic	214	55.4	95.3
	Hispanic	92	23.8	28.9
	White non-Hispanic	49	12.7	16.0
	Asian/Pacific Islander	15	3.9	10.5
Infant borough of residence ^d	Brooklyn	131	33.9	40.2
	Bronx	99	25.6	58.3
	Queens	73	18.9	33.3
	Manhattan	55	14.2	34.3
	Staten Island	16	4.1	35.1
Maternal age	Under 20 years	58	15.0	89.8
	≥ 20 years	323	83.7	34.4
Maternal nativity	US-born	276	71.5	56.9
	Foreign-born	87	22.5	16.8
Maternal education	Less than high school	156	40.4	68.6
	High school or more	214	55.4	27.7

* Missing/unknown/other excluded from count and percent categories.

† Rates per 100,000 live births in the selected population.

^d Excluded are a small proportion (3%, n=12) of sleep-related injury deaths in NYC, which occurred among infants residing outside of NYC.

Sources: NYC DOHMH's Bureau of Vital Statistics and NYC Office of Chief Medical Examiner

Table 8: Firearm-related deaths by neighborhood of residence, youth aged 15 to 17, NYC, 2002-2011, n=200

Neighborhood	Rate*	n	Neighborhood	Rate*	n
Bronx			Union Square-Lower East Side	2.2	7
High Bridge-Morrisania	15.0	16	Chelsea-Clinton	0.0	0
Hunts Point-Mott Haven	13.9	11	Gramercy Park-Murray Hill	0.0	0
Crotona-Tremont	11.9	13	Greenwich Village-Soho	0.0	0
Fordham-Bronx Park	9.5	11	Lower Manhattan	0.0	0
Pelham-Throgs Neck	7.9	10	Upper East Side	0.0	0
Northeast Bronx	7.2	6	Upper West Side	0.0	0
Kingsbridge-Riverdale	6.8	2			
Brooklyn			Queens		
Bedford Stuyvesant-Crown Heights	20.5	31	Rockaway	13.8	7
East New York	16.2	16	Southeast Queens	4.8	4
Downtown-Heights-Slope	14.1	8	Jamaica	4.0	5
East Flatbush-Flatbush	9.6	13	Flushing-Clearview	3.8	3
Williamsburg-Bushwick	7.3	7	Southwest Queens	3.6	4
Greenpoint	4.3	2	Ridgewood-Forest Hills	2.6	2
Canarsie-Flatlands	3.4	3	West Queens	0.6	1
Coney Island-Sheepshead Bay	0.9	1	Bayside-Little Neck	0.0	0
Borough Park	0.7	1	Fresh Meadows	0.0	0
Bensonhurst-Bay Ridge	0.0	0	Long Island City-Astoria	0.0	0
Sunset Park	0.0	0			
Manhattan			Staten Island		
East Harlem	18.2	9	Stapleton-St.George	4.0	2
Central Harlem-Morningside Heights	9.7	6	South Beach-Tottenville	1.3	1
Washington Heights-Inwood	5.9	6	Port Richmond	0.0	0
			Willowbrook	0.0	0

* Rate per 100,000 youth

Sources: NYC DOHMH's Bureau of Vital Statistics and United Hospital Fund

Table 9: Unnatural deaths due to therapeutic complication

Age group, years	US (2002-2010)		NYC (2002-2011)	
	n	Rate*	n	Rate*
<1	173	0.5	9	0.8
1 to 4	169	0.1	1	0.0
5 to 9	85	0.0	0	0.0
10 to 14	82	0.0	1	0.0
15 to 17	82	0.1	5	0.2

* Rate per 100,000

Sources: NYC DOHMH's Bureau of Vital Statistics and CDC's WONDER

Technical Appendix

Injury deaths. Death certificates of all persons who died in NYC are collected and maintained by the NYC DOHMH's Bureau of Vital Statistics (BVS). For the years 2002 through 2011, injury deaths of NYC residents aged 0 to 17 were identified by underlying cause of death with International Classification of Disease codes, Version 10 (ICD-10; <http://www.who.int/classifications/icd/en/>). DOHMH staff abstracted demographic, accident, and injury information from death certificates among children and youth aged 0 to 17 for the purpose of aggregate data analysis. To categorize injury intent and mechanism, we followed the National Center for Health Statistics ICD-10 external cause of injury matrix (except injuries caused by legal intervention were excluded) available at: /nchs/injury/injury_matrices.htm. Deaths due to injuries with a known intent were identified using the following definitions and ICD-10 codes:

Unintentional injury. Injury or poisoning death that occurred without intent to harm or cause death, also called accident. Unintentional injury deaths were identified using ICD-10 codes V01-X59.

Homicide. Intentional injury death resulting from injuries sustained through an act of violence committed by another person aimed at causing fear, harm, or death. Homicide deaths were identified using ICD-10 codes X85-Y09. Deaths from legal intervention are excluded from homicide counts. The New York Police Department (NYPD) monitors homicides as well, with different reporting definitions and regulations. As a result, homicide counts may differ between agencies. For more information on homicide designation by both agencies, please see Appendix B, page 10, of the NYC DOHMH Summary of Vital Statistics, 2011 Report at: <http://www.nyc.gov/html/doh/downloads/pdf/vs/vs-appendix-b-2011.pdf>.

Suicide. Intentional injury death resulting from self-directed behavior with an intent to die as a result of the behavior. Suicides were identified using ICD-10 codes X60-X84.

Undetermined injury death. Injury death in which information is insufficient to determine manner of death. Undetermined injury deaths were identified using ICD-10 codes Y10-Y34.

Classification of infant sleep-related deaths

NYC: In NYC, all sudden unexpected infant deaths are certified using a standard protocol developed by OCME in 2000. According to these certification guidelines, if unsafe environmental factors are present at the time of death, the death is classified as:

- (1) suffocation or asphyxia with an accidental or intentional manner of death, if sufficient evidence is present;
- (2) suffocation with an undetermined manner of death, if insufficient evidence on the manner of death is present; or
- (3) undetermined cause and manner, if there are no findings from the autopsy or post mortem studies that point to a cause of death, but the death scene investigation reveals an environment that may have caused an injury like suffocation.

Sleep-related injury deaths in this report were derived by reviewing all cases with ICD-10 codes of W75, W84 (suffocation injuries) and Y33, Y34 (injuries of undetermined cause and intent). An injury was considered to be sleep-related if the infant was last known to be asleep when last seen alive.

US: National data are based on vital statistics from local jurisdictions. Local jurisdictions may or may not have protocols in place for certifying sudden unexpected infant deaths, and local resources may vary. Factors that impact infant death certification include death scene investigation by trained medico-legal investigators and local law enforcement, comprehensive infant autopsy protocol with the availability of post-mortem studies, and final death certification by a forensic pathologist or medical examiner. Thus, there may be differences in cause and manner of death certification of infant fatalities depending upon the jurisdiction. US data show that half of sudden unexpected infant deaths are attributed to natural causes (ie, Sudden Infant Death Syndrome (SIDS)),* while NYC data show a much lower proportion of SIDS deaths among all sleep-related infant deaths.†

* Centers for Disease Control and Prevention. Sudden Unexpected Infant Death (SUID) <http://www.cdc.gov/SIDS/>. Accessed 11/29/2013.

† Fortin P, Stayton C, DiGrande L, Yau R, Hackett M, and New York City Child Fatality Review Team. Report from the New York City Child Fatality Review Team: Understanding Child Injury Deaths. New York City Department of Health and Mental Hygiene: June 2011.

Other causes of death. Per the CFRAT mandate, non-injury causes of death were excluded from descriptive analyses, except when placing injury deaths in the context of other leading causes of death among children. These comprise natural causes (ICD-10 codes A00-R99), legal intervention (ICD-10 codes Y35-Y36), complications of medical and surgical care (ICD-10 codes Y40-Y84), and sequelae of external causes (ICD 10 codes Y85-Y89).

Medical Examiner files. Based on a unique identifier found on the death certificate, NYC OCME files were matched and reviewed using a standardized data abstraction form. Documents examined in OCME records included autopsy, external examination, toxicology and other post-mortem studies, and investigative, police, and hospital reports. Cases that were subjects of any investigation/criminal/family court proceedings were restricted from case review as per Local Law 115.

US comparison data. National data come from the CDC's Wide-ranging Online Data for Epidemiologic Research (WONDER) detailed mortality files and the CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS). Data were accessed Sept 2013 at: <http://wonder.cdc.gov/> and <http://www.cdc.gov/injury/wisqars/index.html>. Data through 2010 were available at the time of data access.

US urban area comparison data. No comparable city-level homicide data for youth aged 15 to 17 were available. Comparison areas chosen in the analysis were the eight US counties containing cities with populations greater than 1 million, excluding NYC. City population size was assessed based on US Census Bureau data, which were accessed September 2013 at: <http://www.census.gov/popest/data/index.html>. Comparison data come from the CDC's WONDER detailed mortality files.

Neighborhood poverty definitions. Neighborhood poverty level is defined in this report as percent of residents (based on zip code) with incomes below 100% of the Federal Poverty Level. Levels of neighborhood poverty were defined as: Low neighborhood poverty (<10% below poverty), Medium neighborhood poverty (10 to <20%), High neighborhood poverty (20 to <30%), and Very high neighborhood poverty (>=30%).

Motor vehicle-related deaths. Data regarding contributing factors for child pedestrian deaths were obtained from the NYC Department of Transportation's (DOT) Traffic Fatality Database. Data are compiled from MV-104AN reports prepared by NYPD precincts, the Collision Investigation Squad of the NYPD (eg, police reports), and DOT's investigation/analysis team reports.

Data analysis and mapping. Rate calculations were conducted using intercensal population estimates provided by the NYC DOHMH Bureau of Epidemiology Services. Population denominators used for age-specific rate calculations were produced by NYC DOHMH based on US Census Bureau Population Estimate Program and housing unit data from the NYC Department of City Planning. Analyses were performed with SAS 9.2. Analyses of sleep-related infant deaths were performed using Excel 2010 and SPSS v18 and v20. Mapping of firearm-related deaths was performed with ArcGIS 10.1, and data were classed by quartiles.

Limitations of the data. This CFRAT report has some important limitations. The limited number of injury-related deaths in NYC's children and youth, while encouraging and lower than the national average, reduced our ability to examine their commonalities and trends in detail. Small numbers also reduced our ability to make statements about statistically significant differences or inferences concerning causal associations. Several descriptive variables of child injury deaths are collected by witness- or caregiver-report. Factors such as child sleep position and child pedestrian behavior prior to a death may be subject to reporting bias. In addition, several characteristics that may influence injury risk are not formally captured by death certificates or information contained in OCME files (including other agency data sources, eg, DOT, police). These characteristics may include level of parental or guardian supervision, use of safety devices, certain environmental hazards, family conditions or stressors, history of depression or mental health conditions, and so on. These factors may play a critical role in mitigating injury outcomes. Understanding homicide injury deaths is further limited by lack of information on the perpetrator.

CFRAT meetings. Meetings are closed to the public. All team members must sign a confidentiality statement before participating in the review process. The confidentiality statement specifically defines the conditions of participation and assures that members will not divulge information discussed in team meetings. To further maintain confidentiality, identifying information in data and research reports has been omitted.

