



# New York City Child Fatality Report

2009 Report from the  
Child Fatality Review Team

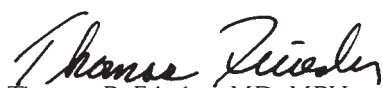
Dear Fellow New Yorker,

Unintentional injury is the leading cause of death, hospitalization and disability among children, and can occur from a range of causes. In New York City (NYC), the most common setting for fatal unintentional child injuries is the home.

In 2006, New York City established a multi-disciplinary Child Fatality Review Team (CFRT) to examine fatal injuries among children between one and 12 years old. This third annual report of the CFRT focuses on fatal unintentional injuries sustained in the home. Our findings show that fatal injuries vary by age, gender, race/ethnicity and socioeconomic status. Deaths are highest among younger children, boys, non-Hispanic Black children, and children from lower income neighborhoods. Fires, falls and asphyxia are the leading causes of unintentional child deaths in the home.

Fatal childhood injuries sustained in the home can be avoided when the events leading up to injury are foreseen. While many policies and efforts proven to reduce the burden of child injury are in place, further gains are needed. This report outlines additional steps to educate caregivers, implement home safety interventions, and advance research on risk and protective factors associated with unintentional injuries among NYC children. On behalf of the CFRT members, I hope this report becomes a tool in keeping our homes and our City's children safe.

Sincerely,



Thomas R. Frieden, MD, MPH

Commissioner

New York City Department of Health & Mental Hygiene

## Annual Report 2009

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## KEY FINDINGS

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**1. Between 2001 and 2007, the death rate for children ages one to 12 years old was 35% lower in New York City (NYC) than the national average. Most of this difference was due to fewer motor vehicle-related deaths and homicides among children in NYC.**

- Nationally, the overall death rate among children ages one to 12 years was 20 deaths per 100,000 children, compared to 15 deaths per 100,000 children in NYC.
- Motor vehicle-related death rates among children were more than two-and-a-half times higher nationally than in NYC (3.5 deaths per 100,000 compared to 1.3 deaths per 100,000).
- Homicide rates were 30% higher nationally than among NYC children (1.3 deaths per 100,000 vs. one death per 100,000 NYC children).

**2. Deaths from injury accounted for 28% of all child deaths in NYC between 2001 and 2007. Higher injury death rates were found among younger children, boys, black children and children living in Brooklyn.**

- In general, younger aged children had a higher injury death rate than older children (7 deaths per 100,000 one to three years olds vs. 3.3 deaths per 100,000 four to 12 year olds).
- Boys had a higher injury death rate (4.6 deaths per 100,000) than girls (3.8 deaths per 100,000).
- The injury death rate among non-Hispanic black children was 80% higher than among non-Hispanic white children and more than double that of Hispanic children.
- Brooklyn had the highest rate of child injury deaths (5.6 deaths per 100,000) and Manhattan had the lowest rate (2.6 deaths per 100,000).

**3. More than two thirds (68%) of all child injury deaths resulted from unintentional injuries, most of which (55%) occurred in the home. This report includes an in-depth investigation of unintentional injury deaths in the home environment.**

- Between 2001 and 2007, 147 fatal child injuries occurred in NYC homes.
- High poverty increases the risk of fatal unintentional injury; 39% of fatal unintentional injuries in the home occurred in high poverty community districts, though only 28% of NYC children live in these areas.

**4. Fatalities from unintentional injuries sustained in the home occurred from a variety of causes including fire or scald burns (51%), falling or being struck by a falling object (20%), asphyxia (15%), drowning (6%), poisoning (3%), injury from a weapon (2%), and other causes (3%).**

- Most (75%) fatal fires were the result of negligent human behavior; remaining deaths were due to faulty wiring, equipment or structural problems. One quarter (25%) of child fire deaths were caused by a child playing with matches or a lighter.
- Nearly half (45%) of fatal falls occurred from windows; most of these deaths were among children younger than four years old. Seven of the nine windows where falls occurred lacked a window guard or had an improperly installed window guard.
- Nine child deaths occurred as a result of being struck by a falling object, including seven deaths due to a child being struck by a falling television sitting on an unsteady surface.
- Nearly half (45%) of the 22 child asphyxia deaths resulted from choking on food or a foreign object.
- Eight of nine drowning deaths among children occurred in or near bathtubs or backyard pools; children were either unsupervised or entered the area undetected.

## GLOSSARY

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- Accident** – Fatal injury or poisoning that occurred without intent to harm or cause death, also called unintentional injury.
- Arson** – Arson is the intentional or reckless burning of a structure or motor vehicle.
- Asphyxia** – A condition characterized by a lack of oxygen to the brain that results in loss of consciousness or unnatural death. Asphyxia can be the result of obstruction of airway (i.e., choking or drowning), compression of chest or neck, smothering, suffocation or inhalation of gas.
- Blunt impact injury** – Refers to a type of injury caused by striking a body part with a blunt object causing physical trauma (i.e., bruises, abrasions and lacerations). Internal injuries from severe blunt force can result in death; motor vehicle crashes and falls are the most common causes of blunt impact injury deaths.
- Cause of death** – The illness, disease or injury responsible for the death. Examples of natural disease include: heart defects, asthma and cancer. Examples of injury include blunt impact, burns and drowning.
- Child Fatality Review Team** – A group of individuals representing a variety of agencies, organizations and disciplines who investigate preventable child deaths and make recommendations for prevention.
- Death certificate** – A legal document containing details of an individual's death. Cause and manner of death are provided as well as key demographic information.
- Drowning** – Death due to submersion in liquid, usually a large body of water, bathtub or pool.
- Fatal child abuse syndrome** – Refers to a collection of findings including chronic neglect, abuse and battering over time, all of which contribute to death.
- Fireplay** – The action of a child playing with an open flame, for example matches or a lighter.
- Homicide** – Death resulting from injuries sustained through an act of negligence or violence committed by another person aimed at causing fear, harm or death.
- Ignition** – The process of initiating combustion or catching fire; the act of setting something on fire.
- Intentional injury** – Injuries resulting from intentional use of force or purposeful action against oneself or others. Intentional injuries include self-inflicted and interpersonal acts of violence intended to cause harm.
- Manner of death** – Describes the circumstances of the death determined by postmortem examination, death scene investigation, police and fire marshal reports, medical records or other reports. Manner of death categories include: natural, accident, homicide, suicide, therapeutic complication and undetermined.
- Natural death** – Death due solely to illness or disease.
- Office of Chief Medical Examiner (OCME)** –The office that investigates suspicious, violent, unexpected and select natural deaths that occur in NYC. This office is responsible for postmortem examination, death scene investigation and final determination of cause and manner of death.
- Postmortem examination** – An external examination or autopsy used with other evidence to determine cause and manner of death.
- Scald** – A burn caused by contact with hot liquid or steam.
- Suicide** – Fatal injury or poisoning from an intentional, self-inflicted act to kill oneself.
- Structural fires** – Fires that occur in structures such as homes and commercial-use property.
- Therapeutic complication** – Death resulting from causes associated with a medical or surgical intervention used to treat an illness or disease.
- Thermal injury** – Fire or flame burns, or scald burns due to contact with hot liquids or steam, or burns from contact with a hot object (excluding burns from chemicals or radiation). Thermal burns can be classified according to skin depth and percentage of total body area burned.
- Undetermined** – Categorization of a death when all available information is insufficient to point to any one manner of death. In some cases, both cause and manner of death may remain undetermined.
- Unintentional injury** – Refers to injuries that were unplanned, that occurred without any intention of harm; an injury not intended to happen. Also called accidents.

## INTRODUCTION

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Injuries are the leading causes of death and disability among children in the United States. Unfortunately injuries are also among the most under-recognized public health problems among children, even though many are preventable through proven measures. Injury-related deaths can be unintentional, such as accidental deaths caused by a motor vehicle-related accident or a fall, or intentional, such as deaths caused by injuries from child abuse.

The New York City Child Fatality Review Team (CFRT), created in early 2006 as mandated by Local Law 115, annually reviews preventable causes of death among New York City children ages one to 12 years old. The goal of reviewing injury deaths is to inform policies, laws, regulations, and prevention activities in order to prevent future deaths.

The CFRT published its first annual report in 2007. It included an aggregate review of child unintentional and intentional injury deaths and an in-depth case review of all child deaths related to motor vehicle accidents, the leading cause of child injury deaths among children in New York City. The 2008 report focused on fire- and burn-related deaths, the City's second leading cause of unintentional injury-related deaths among children in this age group.

This 2009 report builds on findings from the past two years and includes the most recent data available. Aggregate patterns of all injury deaths among children one to 12 years of age, from 2001 to 2007, are presented. This year, committee members selected fatal unintentional child injuries in the home environment for in-depth review, as homes represent the most common setting for fatal childhood injuries.

Many unintentional deaths among children follow predictable patterns and are associated with certain risk factors. In order to implement effective prevention strategies tailored to the unique urban environment of New York City, factors that precipitate these deaths need to be better understood. Based on findings from this Child Fatality Report, CFRT committee members present recommendations for health care and social service providers, city agencies, educators, and parents to help prevent unnecessary child deaths in the home.

## BACKGROUND

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### **New York City's Child Fatality Review Team**

The CFRT is a multi-disciplinary review committee made up of representatives from several city agencies including:

- Administration for Children's Services
- Department of Education
- Department of Health and Mental Hygiene
- New York City Police Department
- Office of Chief Medical Examiner
- Experts in child welfare and pediatrics as appointed by the Mayor, City Council Speaker and Public Advocate.

The CFRT meets quarterly to review aggregate data and identify trends and risk factors for injury-related deaths among NYC children ages one to 12 years.

For the 2009 review of unintentional injury deaths in the home, the committee invited representatives from the following city agencies to participate in quarterly meetings:

- Department of Buildings
- Department of Homeless Services
- Consumer and Product Safety Commission
- Fire Department of New York

The CFRT is chaired by the New York City Department of Health and Mental Hygiene (DOHMH). The goals of the committee are to:

- Examine significant social, economic, cultural, safety and health-systems factors associated with child fatality to help identify preventable risk factors for child deaths, and
- Develop policy and program recommendations to address these associated risk factors.

## METHODS

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### Injury Deaths

To identify injury-related deaths among NYC children ages one to 12 for years 2001 through 2007, death certificates maintained by the NYC Office of Vital Statistics were reviewed. Deaths were included if the Cause of Death listed an International Classification of Disease Code (ICD) consistent with either an unintentional or intentional injury (*for a listing of these codes please see the Appendix*). World Trade Center-related deaths were excluded from the report.

In addition to cause, deaths were classified by the manner, or circumstances by which they occurred. Manner of death was determined by information listed in postmortem examination files by the Office of Chief Medical Examiner (OCME), death scene investigation, police and fire marshal reports, medical records and other reports. Manner of death was classified as follows:

- Accident – Fatal injury or poisoning that occurred without intent to harm or cause death. Also called unintentional.
- Homicide – Death resulting from injuries sustained through an act of negligence or violence committed by another person aimed at causing fear, harm or death.
- Suicide – Fatal injury or poisoning from an intentional, self-inflicted act committed to do self-harm or kill one’s self.
- Undetermined – Deaths are categorized as undetermined when all available information is insufficient to point to one manner of death. In some cases, both cause and manner of death may remain undetermined.
- Therapeutic complication – Death associated with a medical or surgical intervention to treat an illness or disease (i.e., allergic reaction following antibiotic use for an infection, or wound infection after surgical repair of a heart defect).
- Natural – Deaths due solely, or nearly totally, to disease and/or the aging process. Deaths of a natural manner were not included in this report.

### In-Depth Case Review of Fatal Unintentional Injuries in the Home

The home environment represents an important setting for unintentional child injuries. From 2001 to 2007, there were 147 deaths due to unintentional injuries sustained in the home among children ages one to 12 years. These fatal injuries were defined as occurring inside a home dwelling (private residence, or non-institutional home setting), including yards, hallways, stairwells, rooftops balconies, backyards, or porches (excluding driveways). Locations included the child’s primary residence, the home of a caretaker or babysitter, or the home of a relative, friend, or other person. Types of injuries in the home vary widely and included fire and burn deaths, falls, suffocation, drowning, or unintentional poisoning, gun or stab wounds. The CFRT performed extensive case reviews of these deaths and abstracted data from:

- OCME files containing autopsy or external examination reports, police reports, toxicology and other postmortem special studies. DOHMH staff abstracted information using a form adapted from the National Center for Child Death Review Case Report.
- FDNY Bureau of Fire Investigation Reports containing an incident face sheet, 10–45 report for fire-related injuries, and investigation interview sheet(s) were reviewed for incident information, including cause and origin of fire.
- NYC Department of Health and Mental Hygiene Window Falls Prevention Program inspection reports generated through follow-up on all referral and complaints received related to window guard safety.
- NYC Department of Buildings Information System (BIS) database for building classifications.
- NYC Department of City Planning PLUTO dataset for building characteristics.
- New York State Department of Health Statewide Planning and Research Cooperative System (SPARCS), injury hospitalization data prepared by NYC DOHMH.
- Consumer Product Safety Commission Incident Investigation Reports, which include epidemiologic investigation, accident or complaint information and product information associated with child injury.

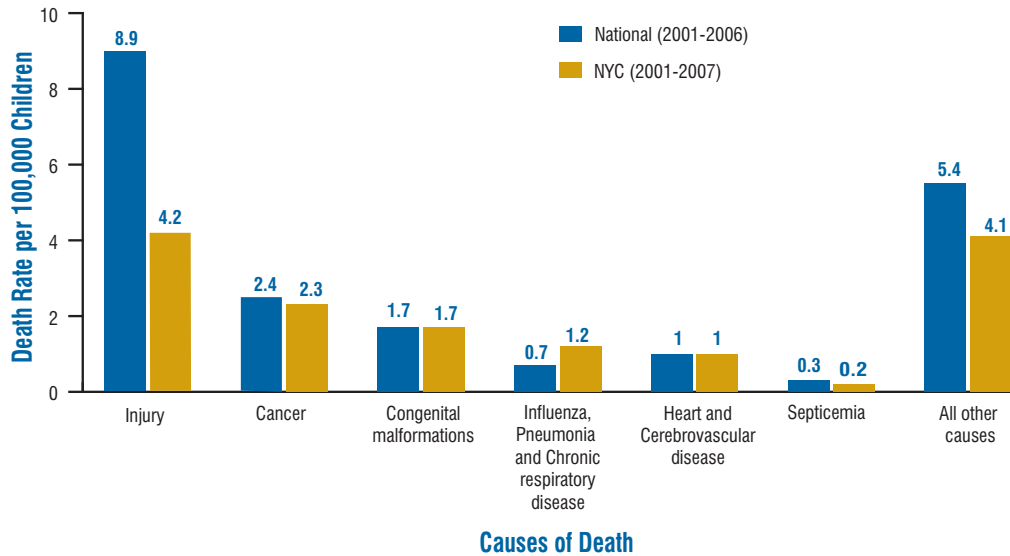
Aggregate information and de-identified individual cases were shared and discussed with CFRT members at quarterly meetings. Analyses were refined based on members’ suggestions.

# RESULTS

## What Do Children Die From?

Compared to the national rate, NYC reports 35% fewer deaths among children ages one to 12 years. Nationwide, approximately 20 per 100,000 children die each year, compared to about 15 per 100,000 in NYC. Most of this difference is due to fewer injury deaths in NYC (4.2 injury deaths per 100,000 NYC children compared to 8.9 per 100,000 children nationally). For most other leading causes of death, the NYC and national death rates among children are comparable.

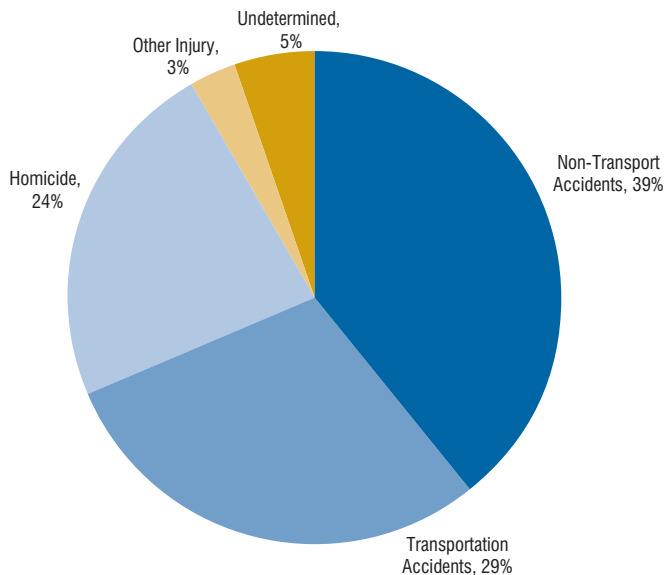
### Causes of Death Among Children (1-12 years), National vs. NYC



Source: Bureau of Vital Statistics, NYC DOHMH; WISQARS

While lower than the national average, injuries are still the leading cause of death for children ages one to 12 years in NYC. From 2001 to 2007, more than a quarter (28%) of all child deaths in NYC resulted from injuries, most of which (68%) were unintentional (both transportation and non-transportation-related).

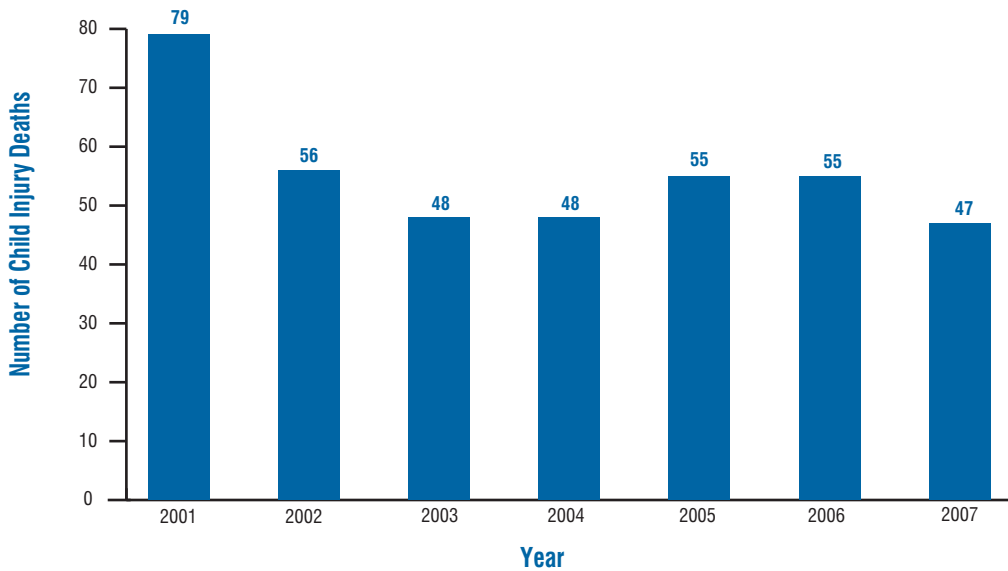
### Injury Deaths Among Children (1-12 years) by Manner, NYC 2001-2007



Source: Bureau of Vital Statistics, NYC DOHMH

Overall, demographic patterns of child injury deaths from 2001 to 2007 in NYC remained similar to those described in previous CFRT reports. During this time, the trend in child injury deaths was largely stable, ranging from 48 to 79 deaths per year, for a total of 388 injury deaths among NYC children ages one to 12 years old.

### Injury Deaths Among Children (1-12 years) by Year, NYC 2001-2007, n=388



Note: 18 deaths due to a plane crash in Queens contributed to the higher number of child injury deaths in 2001. World Trade Center-related deaths were excluded.

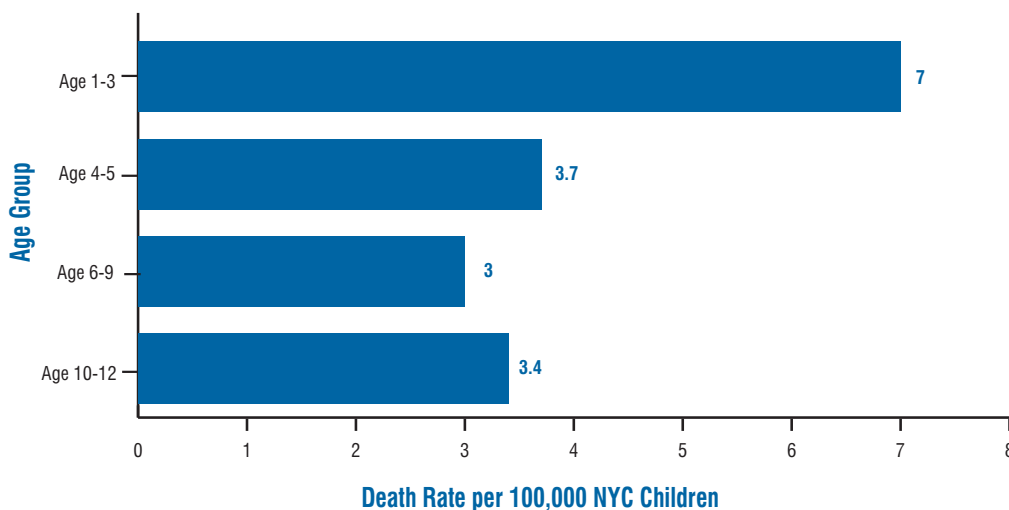
Source: Bureau of Vital Statistics, NYC DOHMH

### Demographic Characteristics of Child Injury Deaths

#### Age

In general, younger children had the highest injury death rates. Children, one to three years of age, had a significantly higher burden of injury deaths compared to older children (7 deaths per 100,000 one to three years old vs. 3.3 deaths per 100,000 four to 12 year olds). The disparity among age groups is due to the higher number of unintentional injury deaths and homicides among children ages one to three compared to other age groups.

### Injury Death Rates Among Children (1-12 years) by Age Group 2001-2007, n=388

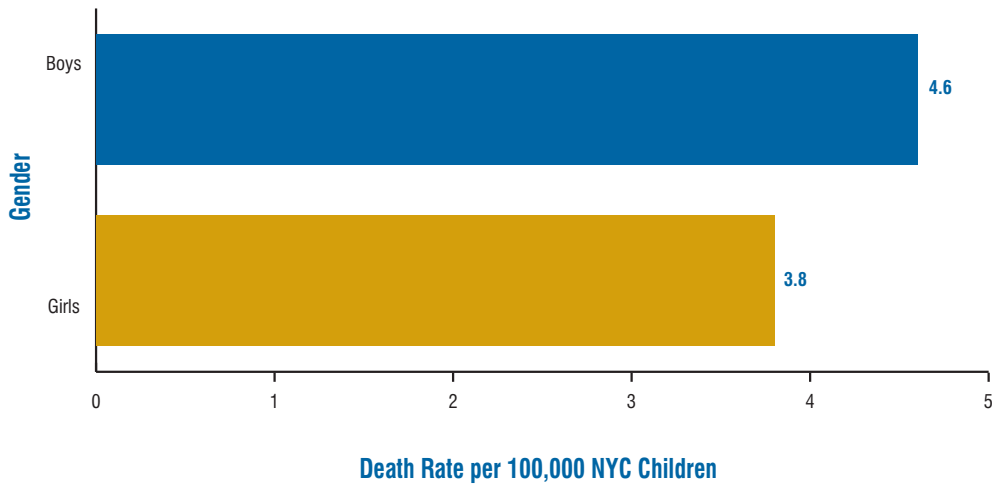


Source: Bureau of Vital Statistics, NYC DOHMH

## Gender

From 2001 to 2007, 218 boys and 170 girls died as a result of an injury. Deaths among NYC boys occurred at a rate of 4.6 per 100,000, 21% higher than the rate among girls (3.8 deaths per 100,000). Most of the gender disparity was due to higher rates of unintentional injury deaths among boys.

### Injury Death Rates Among Children (1-12 years) by Gender, 2001-2007, n=388



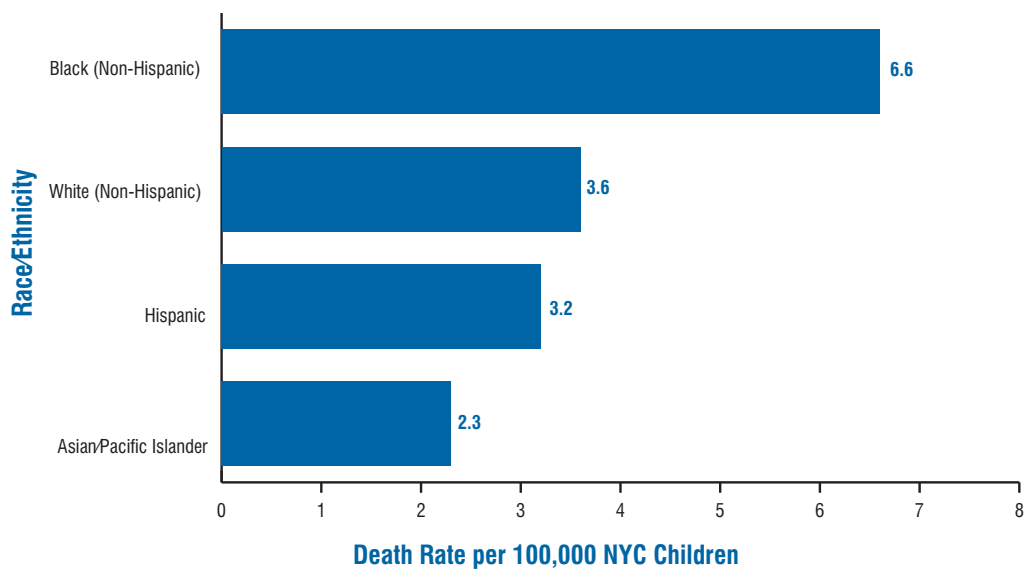
Source: Bureau of Vital Statistics, NYC DOHMH

## Race/Ethnicity

From 2001 to 2007, non-Hispanic black children experienced a disproportionately large burden of injury deaths (6.6 deaths per 100,000, or 47% of all child injury deaths). This rate was approximately 80% higher than the rate among non-Hispanic white children (3.6 per 100,000) and more than two times the rate of Hispanic children (3.2 deaths per 100,000). Deaths from injury were lowest among Asian and Pacific Islander children.

Racial/ethnic disparities were consistent from 2001 to 2007. During this period, non-Hispanic black children also experienced a significantly higher death rate due to unintentional injury and homicide deaths than other racial and ethnic groups.

### Injury Death Rates Among Children (1-12 years) by Race/Ethnicity, 2001-2007, n=388

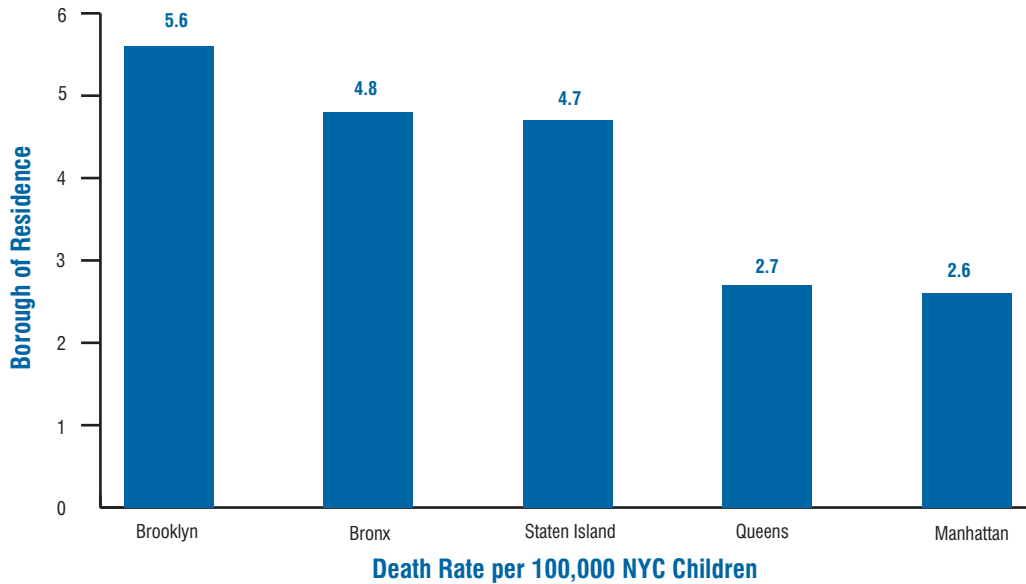


Source: Bureau of Vital Statistics, NYC DOHMH

## Injury Deaths by Borough of Residence

When taking into account the population distribution of children in each borough, Brooklyn and the Bronx had a significantly higher rate of child injury deaths than Queens and Manhattan. This is due to Brooklyn experiencing a significantly higher burden of unintentional injury deaths than most other boroughs, and the Bronx showing a slightly higher rate of homicide.

### Injury Death Rates Among Children (1-12 years) by Borough of Residence, 2001-2007, n=388

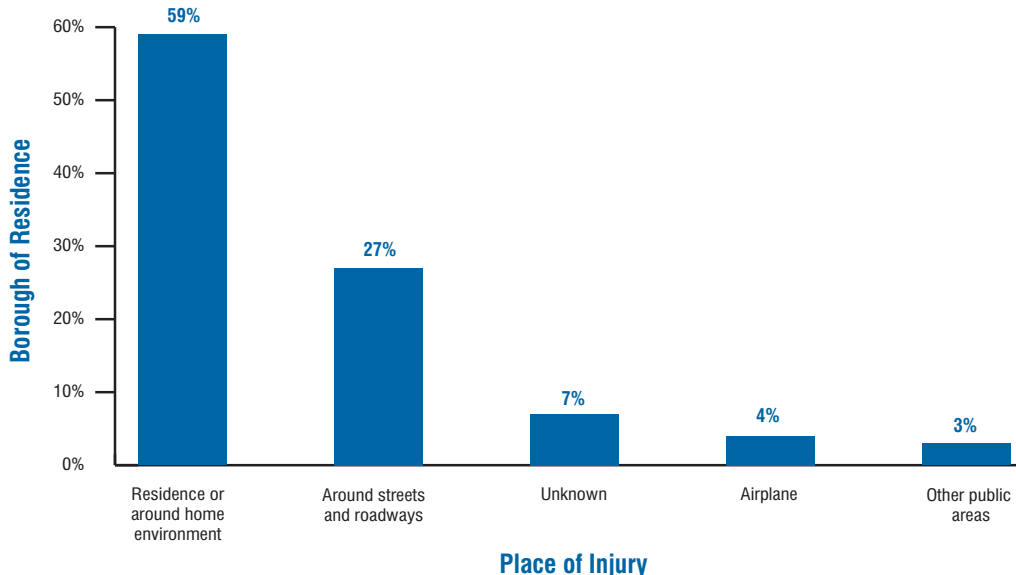


Source: Bureau of Vital Statistics, NYC DOHMH

## Place of Fatal Injury

Place of injury is important to take into account when considering prevention efforts. More than half (59%) of all fatal injuries among children ages one to 12 years occurred within a residence or home environment, such as inside a house, apartment or apartment building (i.e., elevators and stairwells), in a caregiver's residence, on a building roof, in a courtyard, or a backyard pool. Next, more than one quarter (27%) of fatal injuries occurred on or around streets, intersections, roadways, shoulder of roads, or sidewalks. Four percent (4%) occurred in an airplane crash, and 3% in other public areas such as a hospital, park, public pool, school, nursing home, department store, motel, parking lot, or pier. Place of injury was unknown for 7% of deaths. These data show that the majority of fatal child injuries among children occur in the home environment, an important area of focus for prevention efforts.

### Injury Deaths Among Children (1-12 years) by Place of Injury, NYC 2001-2007, n=388



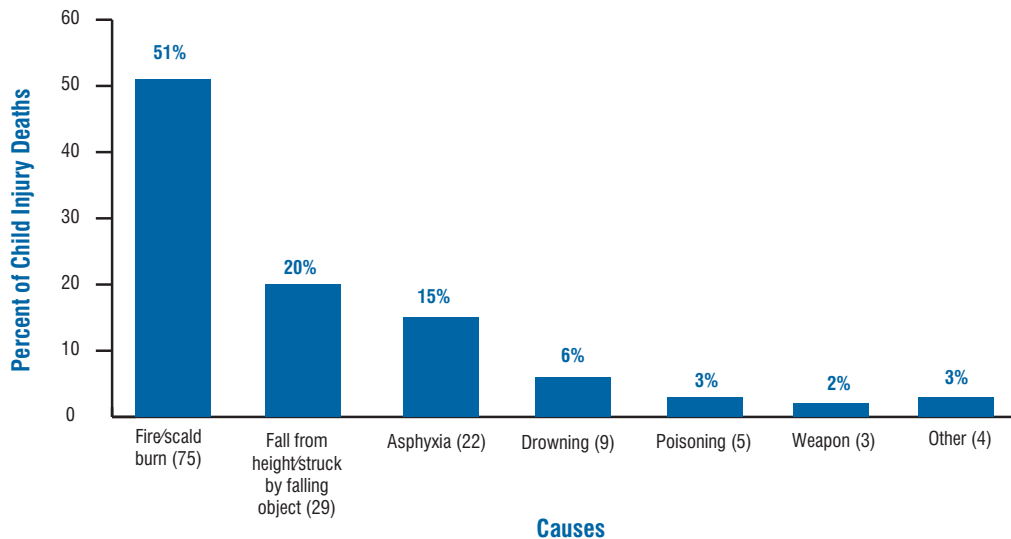
Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner

## Case Review – Fatal Unintentional Injuries in the Home

Most fatal unintentional injuries among children occurred in the home. As children naturally spend a great deal of time at home, specific characteristics of the home environment may also increase the likelihood that an injurious event will occur. The next section of this report presents findings from an in-depth review of all fatal unintentional injuries sustained in the home among children from 2001 to 2007. We identify common risk factors and present NYC-specific recommendations to prevent future child injuries and deaths.

From 2001 to 2007, 147 fatal unintentional injuries among NYC children ages one to 12 years occurred in the home environment. Fire and scald burn-related injuries were the leading causes of fatal unintentional injuries in the home (51% of deaths), followed by falls (20% of deaths), and asphyxia (15% of deaths). Deaths due to drowning, poisoning, and wounds inflicted by a weapon had smaller percentages.

### Causes of Fatal Unintentional Injuries Among Children (1-12 years) in the Home 2001-2007, n=147

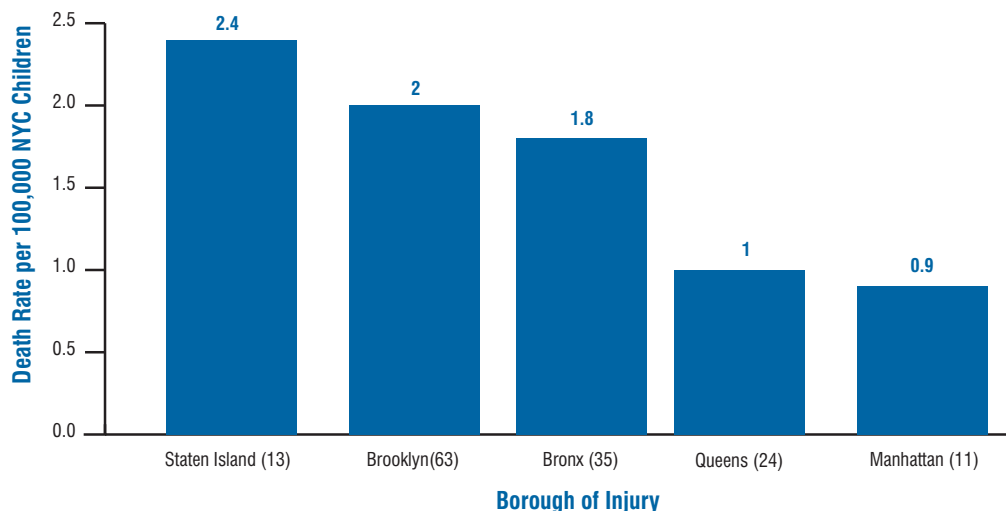


Source: Bureau of Vital Statistics, NYC DOHMH

### Borough Location of Fatal Unintentional Injuries in the Home

Although not significantly different, Staten Island experienced the highest rate of fatal child injuries with 2.4 deaths per 100,000 children, followed by Brooklyn with two deaths per 100,000 children, and the Bronx with 1.8 deaths per 100,000 children. The lowest rate of child deaths occurred in Manhattan.

### Fatal Unintentional Injuries Among Children (1-12 years) in the Home by Borough of Injury 2001-2007, n=147

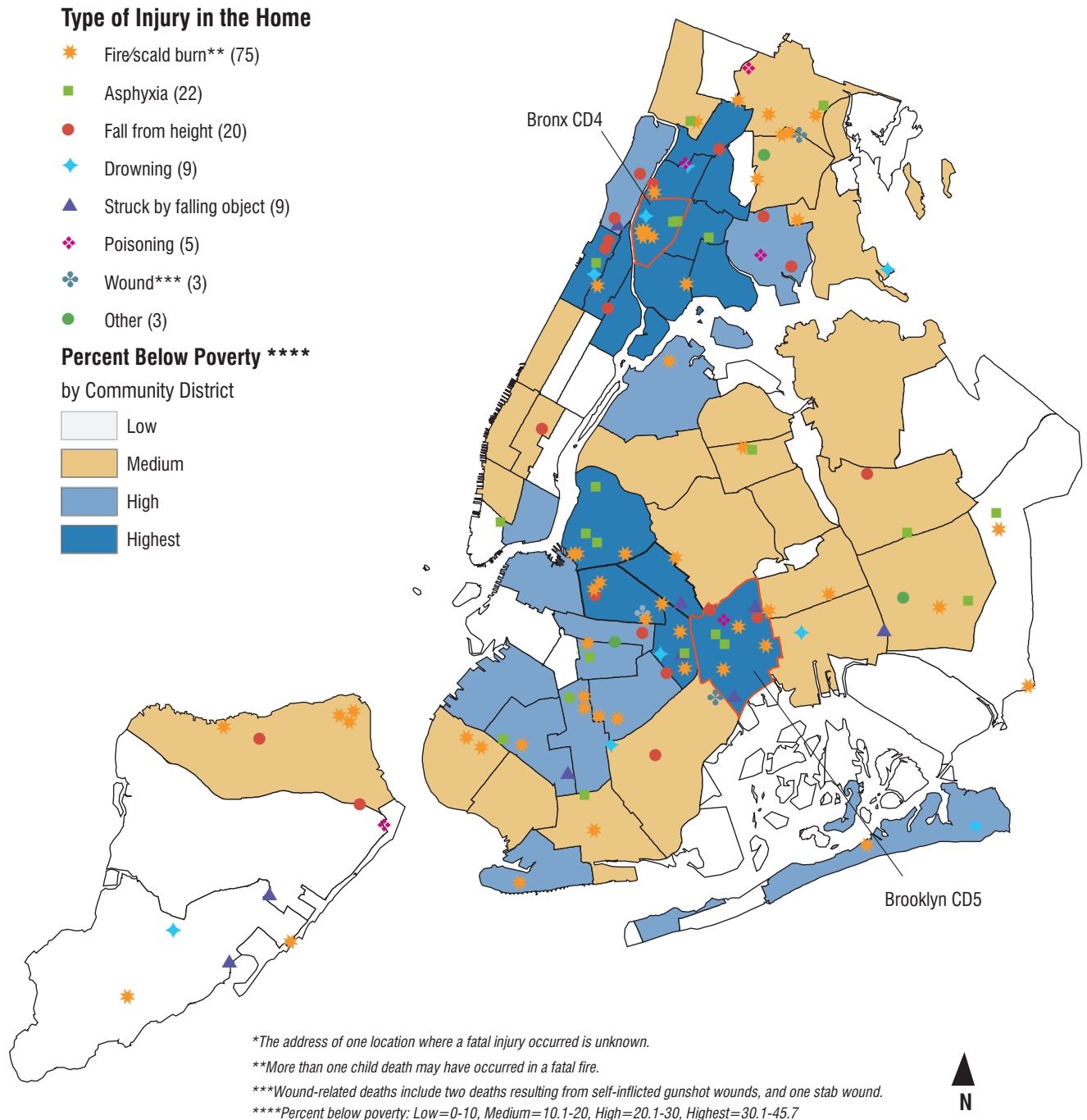


Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner

Citywide, it appears that risk of unintentional injury deaths among children is associated with excess poverty. The map below shows the distribution of poverty among all NYC residents and the location of the 117 homes where 147 fatal unintentional injuries occurred among children from 2001 to 2007. Though fatal injuries were dispersed throughout NYC, 39%, (57 deaths) occurred in high poverty community districts (CD), even though only 28% of NYC children live in these areas.

Bronx CD 4 and Brooklyn CD 5 had the highest number of fatal unintentional injuries in the home with 10 child deaths in each area. In Bronx CD 4, a single fire led to seven child deaths, which contributed to the high number.

**Location of Fatal Unintentional Injuries Among Children (1-12 years) in the Home, NYC 2001-2007, n=147\***



Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner

## Building Characteristics of Fatal Unintentional Injuries in the Home

The CFRT reviewed characteristics of the homes where each of the fatal unintentional injuries occurred and found that they occurred disproportionately in multi-family homes. While 53% of child deaths occurred in these settings only 16% of NYC buildings are multi-family homes.

### Type of Home Where Fatal Unintentional Injuries Occurred, NYC 2001-2007

Type of Building	Number of Deaths	Percent of Child Deaths	Distribution of Building Types, NYC*
1 and 2 family homes	59	40%	65%
<b>Multi family walk-up or elevator building (including 3 family homes)</b>	<b>77</b>	<b>53%</b>	<b>16%</b>
Mixed residential/commercial	10	7%	6%

\* The remaining 13% of NYC land use includes commercial and office buildings, industrial and manufacturing buildings, public facilities and institutions, transportation, recreation and parking facilities, utility and vacant buildings.

Source: BIS database, NYC Department of Buildings; PLUTO database, NYC Department of City Planning

## Cause of Fatal Unintentional Injuries in the Home

### Fire and Scald Burn Deaths

In 2008, the CFRT published its second annual report which presented an in-depth review of child deaths due to fires and burns from 2001 to 2006. This year's case review of fatal injuries in the home provides an opportunity to briefly update that summary with 2007 data.

Nationally and in NYC, fires were the leading cause of death among children in the home from 2001 to 2007. In fact, more than half (51%) of fatal unintentional injuries among children in the home were from fires and burns. During this period, 73 children ages one to 12 died in 46 unintentionally set residential fires, and two died as a result of unintentional scald burns. If all ages are included, these 46 fires resulted in a total of 103 deaths (children and adults).

#### Demographics

From 2001 to 2007, fire-related deaths occurred at a slightly higher rate among younger children, with children younger than six years of age accounting for 60% of fire deaths.

More than half (51%, 37 deaths) of child fire deaths in NYC were among non-Hispanic black children. The fire death rate among non-Hispanic black children was nearly twice that of non-Hispanic whites (1.4 deaths per 100,000 black children compared to 0.8 deaths per 100,000 white children) and more than three times that of Hispanic children (0.4 deaths per 100,000 Hispanic children). The second highest rate of fire deaths, nearly one per 100,000, occurred among Asian/Pacific Islander children.

#### Location of Fatal Fire

Accounting for borough population size, unintentional fire death rates were comparable across boroughs with the exception of Manhattan. Of the 73 fire deaths, 45% percent (33 deaths) occurred in Brooklyn, followed by the Bronx (19 deaths) and Queens (14 deaths). Six fire-related deaths occurred in Staten Island. Only one fire-related death occurred in Manhattan in the seven-year time period.

#### Ignition Source

A child playing with matches or a lighter was the leading ignition source for fires that resulted in child fatalities for years 2001 to 2007, causing 18 (25%) fire-related deaths. The overloading of outlets, extension cords, and power strips was the second leading ignition source, causing 17 (24%) child fire deaths. Other sources included: faulty structural electrical wiring, candles left unattended, improper discard of cigarette or other smoking materials, or faulty appliance wiring or cords.

When grouped together, faulty structural wiring and electrical equipment malfunctions resulted in nearly one quarter of child fire deaths, the remaining 75% resulted from human behavior.

## Unintentional Fire-Related Deaths Among Children (1-12 years) in the Home by Ignition Source, NYC 2001-2007, n=73

Ignition source	# of child fatalities	%
Matches or lighter	18	25
Overloaded outlet, extension cord or power strip	17	24
Structural electrical wiring	9	12
Candle	9	12
Cigarette/cigar	5	7
Faulty appliance wiring or cord	5	7
Hot cooking oil	4	5
Space heater	3	4
Open stove	1	1
Unknown	2	3
<b>Total</b>	<b>73</b>	<b>100</b>

Source: Bureau of Fire Investigation, FDNY; Office of Chief Medical Examiner

### Materials First Ignited

Forty-two percent (42%) of child fire deaths resulted from bedding or a mattress catching on fire. This finding is similar to national data which shows that mattresses, bedding, clothing (not currently being worn), or other “soft materials” are the primary materials first ignited in fires that caused deaths. Upholstery was also a common material ignited in fires, leading to 15% of deaths.

### Smoke Detectors

Research shows that proper placement of smoke detectors in the home can prevent fire-related injuries and deaths. Of the 46 residences where fatal fires occurred, one in four (24%) had a working smoke detector. A smoke detector was present but not working in 19% of homes, and not present in 33%. The presence of a smoke detector could not be determined in 24% of cases. The single most important factor in preventing fire-related deaths among children is having a working smoke detector in the home.

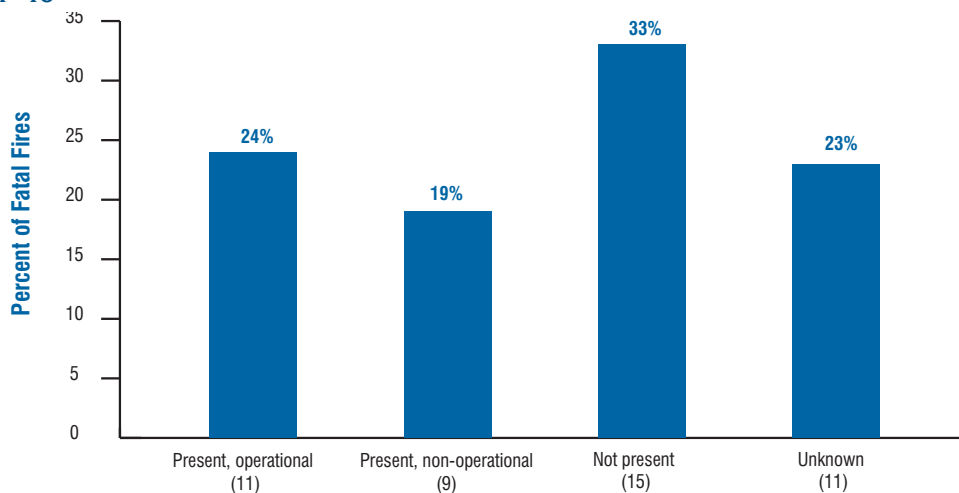
### Violations

A review of violations issued by the NYC Department of Buildings showed that of the 46 buildings where fatal fires occurred, 15 (33%) had been charged with illegal conversion of space or illegal occupancy violations issued before or immediately following the fire. The conversion of space for illegal occupancy introduced hazards that contributed to the fatal fires.

### Scald Burn Deaths

From 2001 to 2007, two deaths from unintentional scald burn injuries occurred among one-year-old children. In one case, a girl was fatally burned from a sudden increase in water temperature while her 11-year-old brother gave her a bath. In the other case, a boy suffered fatal burns after accidentally knocking over a pot filled with hot cooking oil.

## Presence of a Smoke Detector in Fatal Unintentional Fires Involving Children (1-12 years) in the Home, NYC 2001-2007, n=46



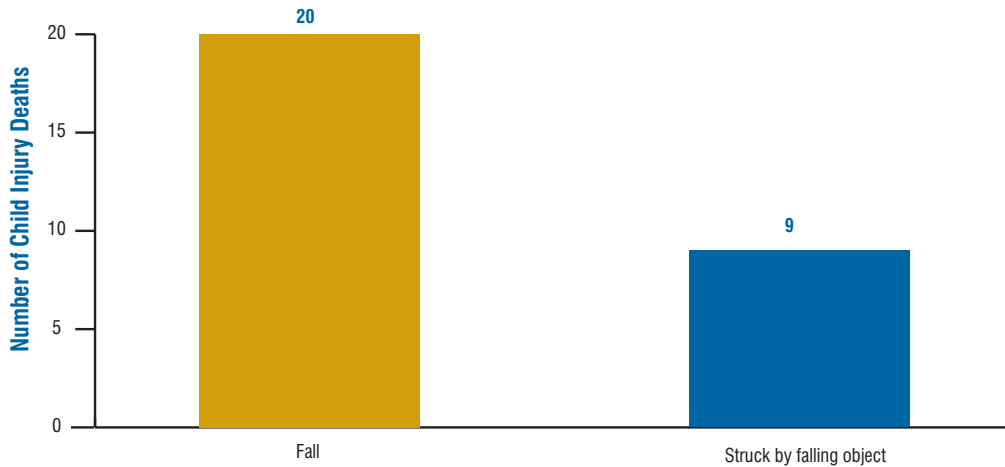
Source: Bureau of Fire Investigation, FDNY; Office of Chief Medical Examiner

## Fall and Struck by Falling Object Deaths

Falls, including being struck by a falling object, are a common cause of child injury. Fatalities occur primarily when children fall from great heights (two or more stories, such as from windows, roofs, and balconies), or when the head of a child hits a hard surface.

From 2001 to 2007, one in five (20%) fatal unintentional injuries (29 deaths) among children in the home resulted from a fall (20 deaths) or being struck by a falling object (9 deaths).

### Fatal Unintentional Fall and Struck Injuries Among Children (1-12 years) in the Home, NYC 2001-2007, n=29



Source: Bureau of Vital Statistics NYC DOHMH, Office of Chief Medical Examiner

### Demographics

The greatest proportion (35%) of fall-related child deaths were among children ages one to three years. Almost one in three of all fall deaths (30%) were among younger aged children falling out of windows.

### Fatal Unintentional Falls Among Children (1-12 years) in the Home by Type and Age, NYC 2001-2007, n=20

	Falls						Total	
	Window fall	Roof	Balcony /terrace	Stairs	Elevator	Other	n	%
<b>Age</b>	<b>n</b>	<b>n</b>	<b>n</b>	<b>n</b>	<b>n</b>	<b>n</b>	<b>n</b>	<b>%</b>
1-3	6	—	—	1	—	—	7	35
4-5	1	1	1	—	—	—	3	15
6-9	1	1	1	1	—	—	4	20
10-12	1	1	—	—	2	2	6	30
<b>Total</b>							<b>20</b>	<b>100</b>

Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner; Window Fall Prevention Program, NYC DOHMH

For struck deaths, more than two thirds (67%) were among children ages one to three years. These findings reveal a greater risk of window fall and struck deaths among younger children.

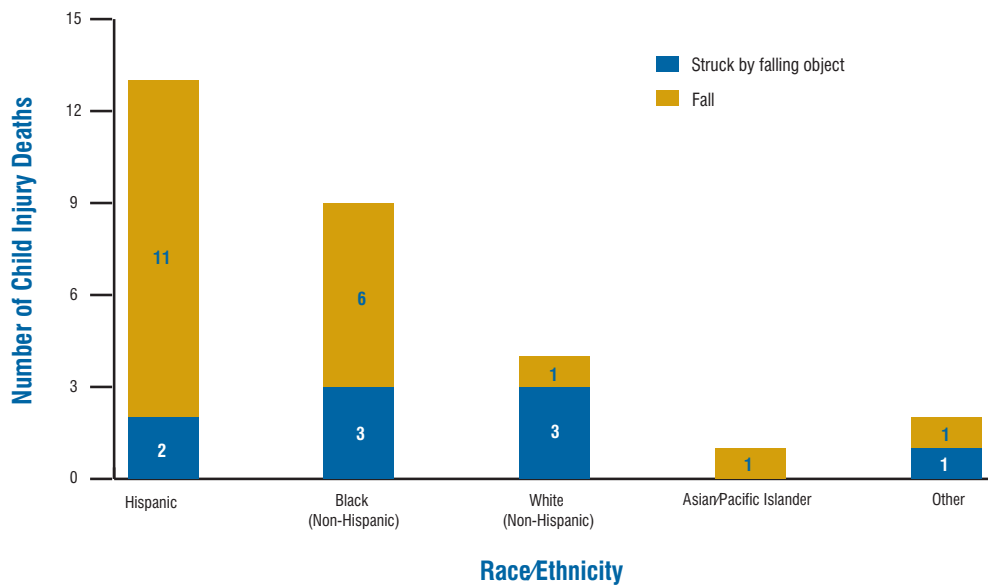
**Fatal Unintentional Struck Injuries Among Children (1-12 years) in the Home by Type and Age, NYC 2001-2007, n=9**

	Struck by Falling Object			
	TV	Other	Total	
Age	n	n	n	%
1-3	5	1	6	67
4-5	1	—	1	11
6-9	1	1	2	22
10-12	—	—	—	—
Total	—	—	9	100

Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner; Consumer Product Safety Commission

Stratification by gender showed that boys had a greater burden of fall and struck deaths compared to girls; more than three quarters (76%) of fatal unintentional fall and struck injuries occurred among boys. Also, no statistically significant racial/ethnic difference in fall and struck deaths among children were observed.

**Fatal Unintentional Fall and Struck Injuries Among Children (1-12 years) in the Home by Race/Ethnicity, NYC 2001-2007, n=29**



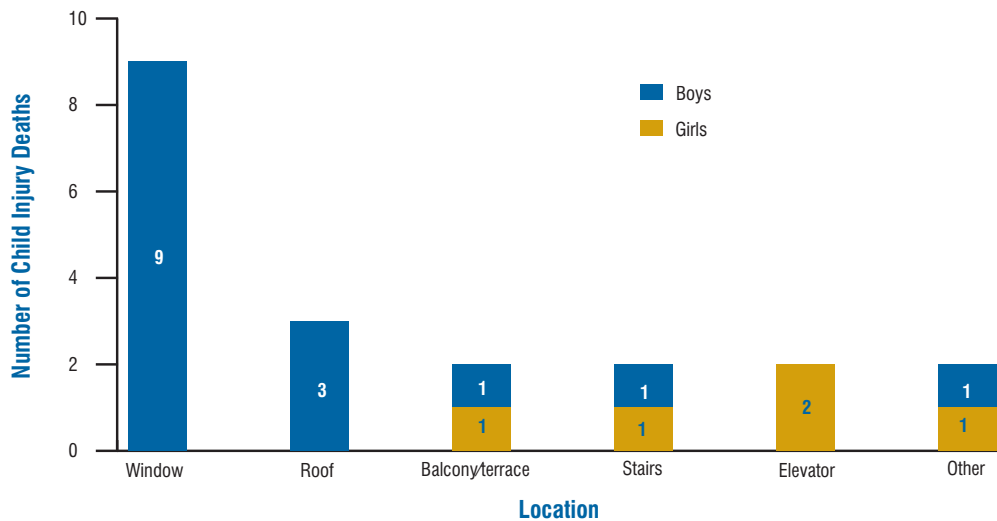
Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner

*Location of Fatal Falls*

Of the 20 fatal falls that occurred in the home, 80% (16 deaths) were from large heights, characterized as two stories (20 feet) or more. Nine deaths were the result of a fall from a window (including one fire escape) and three falls occurred from a building rooftop. In all three rooftop cases, the victims were playing with friends on the roof of an apartment building when the accidental fall occurred. This includes one instance in which a nine-year-old boy was said to have been “roof jumping” from one roof to the roof on an adjacent building. Two other deaths resulted from falls from a balcony or terrace. In both cases, the children climbed onto a chair and accidentally fell over the railing. Two deaths resulted from falling down the elevator shaft of malfunctioning elevators.

Another four deaths were from falls from smaller heights, including two children who fell down a flight of stairs. The other two fall deaths were to a child that fell approximately five feet off a porch, and another child who fell and suffered a head injury while running in her home.

## Fatal Unintentional Falls Among Children (1-12 years) in the Home by Location, NYC 2001-2007, n=20



Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner

### *Window Falls*

All nine window falls occurred in multiple family residences. These residences ranged from three to nine stories, with anywhere from six to 91 units per building. Further investigation showed that four of the windows lacked a window guard, three had an unsecured guard, and one window had a secure window guard (the child fell over the guard). The presence of a window guard was unknown in one case. Case investigations showed that at least five of the nine residences had multiple windows without window guards.

### *Struck by a Falling Objects*

Nine child deaths occurred as a result of being struck by a falling object. Seven of the nine cases were due to children being struck by a falling television, often positioned on top of an unsteady surface, for example a metal cart, a three-drawer dresser or an undersized end table. In at least three cases, the child was known to have attempted to climb up an entertainment/TV stand to access the TV, VCR, or DVD player. The two remaining non-TV deaths were from a metal beam in the backyard falling on top of the child in one case, and a person accidentally falling on top of a one-year-old child in the other.

## **Asphyxia Deaths**

Asphyxia, which includes choking, suffocation, strangulation, compression or confinement in a tight space, led to 15% (22) of fatal unintentional injuries in the home among NYC children.

### *Demographics*

More than half (59%) of children who died from asphyxia were boys, from ages one to 10 years. Asphyxia deaths also occurred more frequently (55%) among non-Hispanic black children than other racial/ethnic groups.

### *Cause of Asphyxia Deaths*

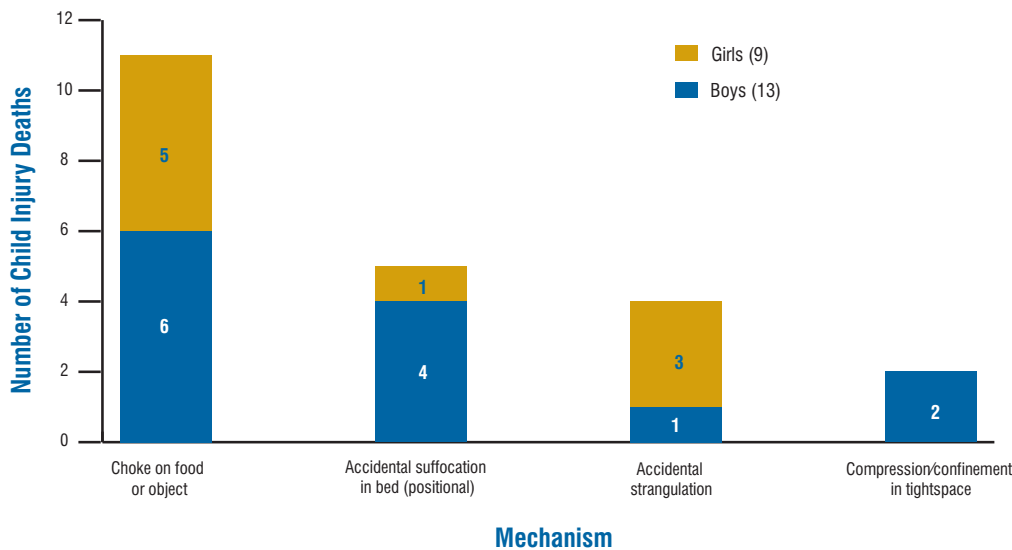
Nearly half (45%, 10 deaths) of all unintentional asphyxia deaths were the result of choking on food or a foreign object. Five children between two and 10 years of age choked on food including a grape, cheese, a peppermint candy ball, or a seed from a fruit. Ingesting foreign objects also contributed to five deaths of children ages three to nine years. Materials ingested included a piece of a rubber glove, adult pain reliever or supplement, and a tooth. One severely disabled child choked on his own gastric contents.

Five positional asphyxia or suffocation deaths occurred among NYC children. Two positional asphyxia deaths occurred as a result of bed-sharing, where in both cases a one-year-old child was found wedged between the bed and a wall. Three positional asphyxia deaths occurred among children with chronic physical disability; all three were found lying face down in bedding.

Four children died of unintentional strangulations, with no consistent pattern among them. In one case, a girl's necklace became entangled on her high chair. In another, a nine-year-old girl was found in a bathtub suspended by her neck from shower tubing. In the other two cases, a five-year-old girl who unintentionally hanged herself while playing with a jump rope with one end of the rope tied to a door, and a 10-year-old boy also accidentally hanged himself with a belt tied to a window grate while playing.

The remaining two asphyxia deaths included a seven-year-old boy whose neck was unintentionally compressed between a window and window guard, and a two-year-old boy who was confined in a plastic container used as a toy chest, while playing hide-and-seek.

**Fatal Unintentional Asphyxia Among Children (1-12 years) in the Home by Mechanism of Injury and Gender, NYC 2001-2007, n=22**



Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner

**Injury Risk for Children with Mental or Physical Impairments**

Research has shown that children with disabling conditions or developmental disabilities have an increased burden of injury. For example, children with cognitive impairment have a high risk for poorer outcomes following an injury than children with no preexisting impairment. Conditions associated with cognitive impairment include autism, Down syndrome, hydrocephalus, cerebral palsy, developmental delay, fetal alcohol syndrome, mental retardation, learning disability, and others.<sup>i</sup> Impulsive, highly active, or sensation-seeking children are also face a higher risk of injuries. Those with attention deficit/hyperactivity disorder, who have high levels of impulsivity and activity, have been found to have significantly higher rates of injury than children without this disorder.<sup>ii</sup> In addition, research shows that children with a hearing or vision disability or chronic asthma, also had a significantly higher risk of injuries.<sup>iii</sup> Professionals caring for children with cognitive impairment, disabling conditions or chronic disease, should alert parents and teachers to the increased vulnerability of this population.

Findings from this study show that 15% (22 deaths) of child deaths due to unintentional injuries in the home had a known physical or mental impairment.

<sup>i</sup> Braden K, et al. Injuries to children who had pre-injury cognitive impairment: a 10-year retrospective review. *Arch Pediatr Adolesc Med.* 2003;157:336-40.

<sup>ii</sup> Morrongiello BA. Et al. Understanding unintentional injury risk in young children. The contribution of caregiver supervision, child attributes, and parent attributes. *J Pediatric Psychology.* 2006;31(6):540-51.

<sup>iii</sup> Xiang H et al. Nonfatal Injuries among US children with disabling conditions. *AM J Public Health.* 2005;95(11):1970-5.

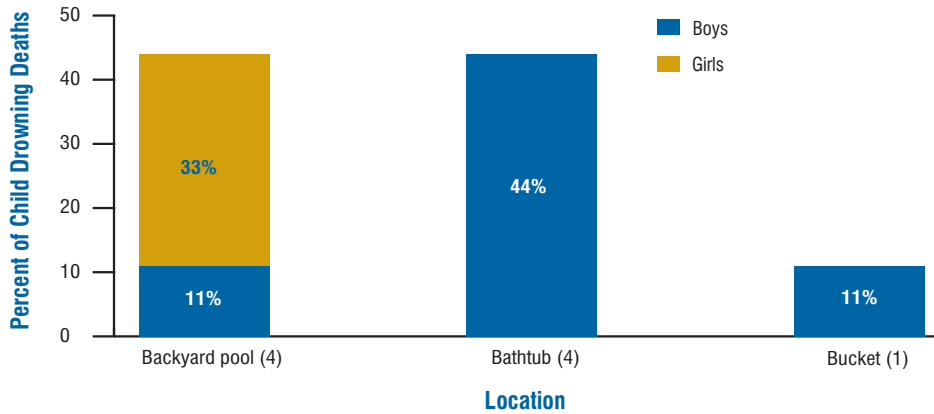
## Drowning Deaths

Drowning led to 6% (9 deaths) of unintentional fatal injuries in the home among NYC children; the home was identified as the main location for accidental drowning deaths. Nine children, ages one to 12 years old, drowned from 2001 to 2007. Four drownings occurred in backyard, above-ground pools, another four occurred in a bathtub, and one occurred in a five-gallon commercial bucket partially filled with water.

### Demographics

All four pool drownings occurred among children ages one to two years (three girls, one boy). Three children were non-Hispanic white and the fourth child was of Asian/Pacific Islander decent. Of the four bathtub drownings, all were boys, three were among one-year-olds, and the fourth was a three-year-old. Three children were non-Hispanic black and one child was of Hispanic decent. The bucket drowning occurred to a one-year-old non-Hispanic black boy.

### Fatal Unintentional Drownings Among Children (1-12 years) in the Home by Location, NYC 2001-2007, n=9



Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner

### Pool drowning

All pool drownings occurred in residential backyard, above-ground pools. Adults were present in the environment but children entered the pool areas undetected; in three cases barriers were either inadequate (two) or missing (one) and, in one case, it was unknown if the pool had protective barriers.

### Bathtub drowning

All four bathtub drownings involved a lack of adult supervision (or in one case, insufficient adult supervision for the number of children being bathed). In at least one case, the drowning appeared to have occurred quickly, when the child's supervisor stepped away to answer the telephone and retrieve a towel.

### Bucket drowning

In the bucket drowning case, a one-year-old boy was found in the kitchen, head down in a five-gallon commercial bucket used to collect water from a leak in the ceiling.

## Poisoning Deaths

Five children died as the result of unintentional poisoning. Three deaths were among non-Hispanic black children and two among non-Hispanic white children. Four deaths involved girls ages nine to 12. Two children died from carbon monoxide poisoning caused by improper ventilation of their home heating system due to illegal conversion or blocked exhaust. One child was found unconscious in her home from inhalant abuse of a common air freshener; another child suffered a poisoning death after being improperly administered albuterol. The last poisoning death was among a two-year-old girl who accidentally drank hydrofluoric acid, which was placed in her sippy cup, by her older sibling, for use in an art project.

**Table 5. Fatal Unintentional Poisonings Among Children (1-12 years) in the Home by Type, NYC 2001-2007**

Type of poisoning	N
Carbon monoxide	2
Albuterol misuse	1
Inhalation abuse	1
Ingestion of hydrofluoric acid	1
<b>Total</b>	<b>5</b>

Source: Bureau of Vital Statistics, NYC DOHMH; Office of Chief Medical Examiner

## Weapon-Related Deaths

Three non-Hispanic black boys died from unintentional self inflicted wounds from a weapon. Two deaths were among four-year-olds fatally wounded by unlocked handguns (one licensed, one unlicensed), and the third death was to a 10-year-old killed by an unintentional knife stabbing.

## Other Unintentional Deaths in the Home

Other unintentional fatal injuries that contributed to child death included two cases of self-extubation from medical equipment of physically disabled children, one from hyperthermia (due to sleeping too close to an oversized radiator), and one case of intestinal obstruction, following ingestion of foreign materials.

## Undetermined Deaths in the Home

Deaths are reported as undetermined if autopsy findings or death scene investigation provide insufficient information to certify the cause or manner of death (accidental or intentional) with certainty. From 2001 to 2007 there were 20 undetermined child injury deaths of an undetermined manner that occurred in the home. Eighty-five percent (17 out of 20) were among children ages one to three years; the remaining deaths occurred in a five-year-old and two 10-year-olds.

Of the 20 deaths, there were three drowning deaths among children left unsupervised (two bathtub, one pool), one death due to scald burn injuries, one death sustained from being struck by a falling cabinet, one six-story fall from an open window, and one poisoning death from over-administration of cold medications.

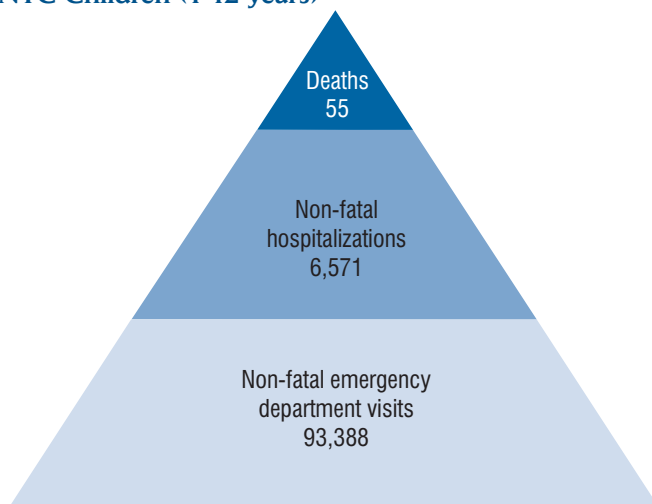
The remaining 13 deaths were also certified as undetermined cause of death due to lack of definitive findings at autopsy and death scene investigation. Of these cases, four children were found unresponsive in their crib, one child may have drowned in a bathtub, and another child experienced a fall in the bathtub, but the fall's role in the death is uncertain. In the remaining cases, children had a physical or developmental disability that may have contributed to their death.

## Nonfatal Injuries

Childhood injury deaths, such as those described in this report, are tragic events that prematurely end the lives of young individuals. However, nonfatal injuries among children are much more common and have many economic and social costs. In some cases, injury can result in permanent disability, indefinitely altering a child's quality of life.

In New York City, nonfatal injuries are a leading cause of emergency department (ED) visits and hospitalizations among children ages one to 12 years. Each year, more than 93,000 children ages one to 12 years receives treatment in the city's emergency departments, with more than 6,500 hospitalized for a nonfatal injury. In other words, for every fatal injury in this age group, there are approximately 1,700 additional emergency room visits and 120 hospitalization admissions.

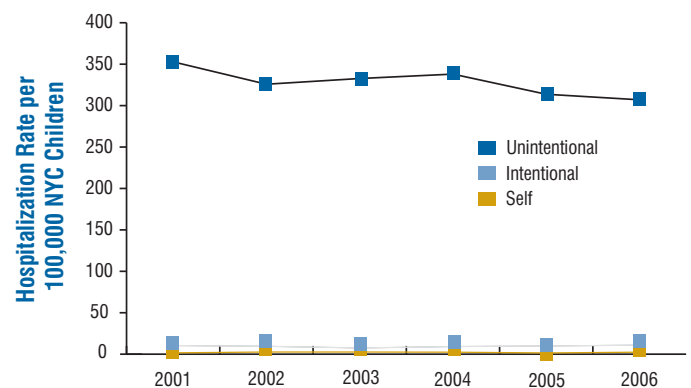
### Injury Pyramid: Average Annual Burden Among NYC Children (1-12 years)



Note: Years of data available for calculating averages: 2001-2007 deaths, 2001-2005 hospitalizations, 2005-2006 ED visits.

Source: Bureau of Vital Statistics NYC DOHMH, Statewide Planning and Research Co-operative System (SPARCS) NYS DOH, updated June 2007

### Comparison of Injury-Related Hospitalization Rates Among Children (1-12 years), NYC 2001-2006, n=26,923



Source: Statewide Planning and Research Co-operative System NYS DOH, updated June 2007

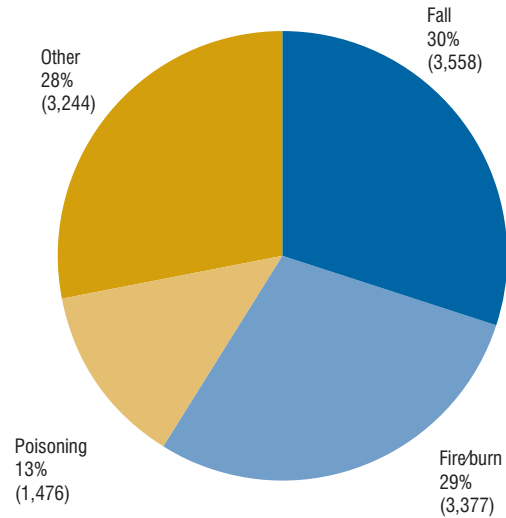
A review of six years of available data from New York City hospitals found that 26,923 hospitalizations for a nonfatal injury occurred among children between 2001 and 2006. Nearly all (97%) of these hospitalizations involved unintentional injuries, 3% involved intentional injuries and less than 1% involved self-inflicted injuries. While the hospitalization rate due to unintentional injuries decreased 13% from 2001 to 2006, the rates due to intentional and self-inflicted injury remained steady.

Like deaths, a major setting for nonfatal injuries among children is the home environment. From 2001 to 2006, 45% of unintentional injury-related hospitalizations were for injuries that took place in the home, compared to 11% in parks or recreation areas, and 6.8% on streets or highways. The most common causes of hospitalizations from injury at home were accidents due to falls (30%), fire/burn (29%), and poisoning (13%).

The leading cause of nonfatal, injury-related hospitalizations among children, both nationally and in New York City, are injuries resulting from falls, which are less frequently fatal than fires (the leading cause of unintentional fatal injuries in the home) or drownings.

Child injury prevention efforts should consider factors leading to both fatal and nonfatal injuries because of their burden to individuals, families and society.

### Hospitalizations for Unintentional Injuries Among Children (1-12 years) in the Home, NYC 2001-2006, n=11,655



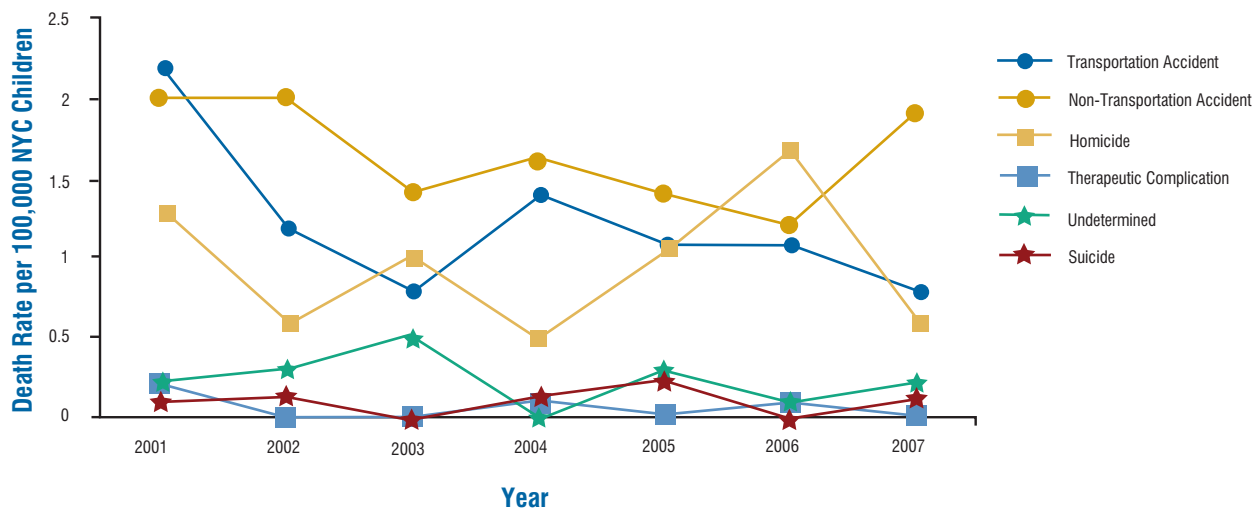
Source: Statewide Planning and Research Cooperative System NYS DOH, updated June 2007

## Cause and Manner of All Injury Deaths Among NYC Children

### Overview

In addition to a review of fatal unintentional injuries sustained in the home, other causes of child injury deaths were examined. The graph below shows trends in child deaths by manner from 2001 to 2007. In five of the seven years, non-transportation deaths from a wide range of causes were the highest contributor to injury deaths in children. The second leading cause were transportation-related or homicide. In 2006, homicides were the leading cause of child injury deaths, however, homicides among children declined in 2007. The next section describes child injury deaths from 2001 to 2007 by manner of death (accidental, homicide, suicide, and undetermined).

### Trends in Injury Deaths Among Children (1-12 years) by Manner of Death, 2001-2007



Source: Bureau of Vital Statistics, NYC DOHMH

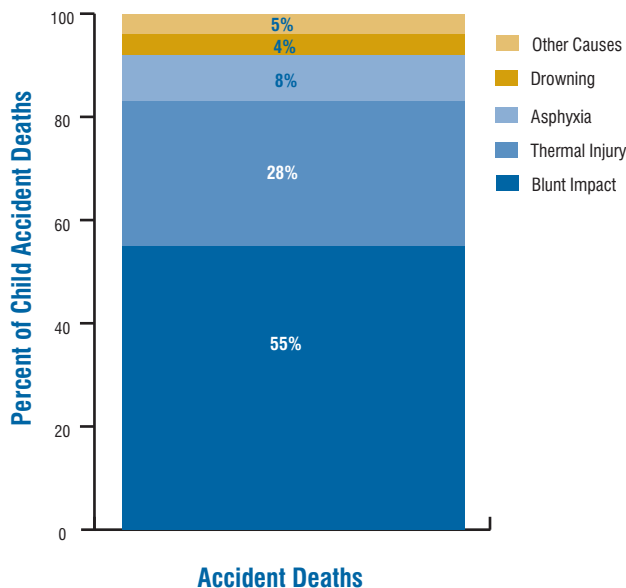
## Other Fatality Review Teams

There are several other fatality review teams in NYC. Two of these groups – The Administration for Children’s Services (ACS) Accountability Review Panel and the New York City Domestic Violence Fatality Review Committee (DVFRC) – reviewed many of the child deaths included in this report. Family history was known to ACS for 35% of child (ages one to 12 years) injury death cases from 2001 to 2007. For cases where family history was known, ACS reviewed 51% of child accident deaths, 55% of child homicide deaths, 33% of child suicides and 17% of child undetermined deaths. Overall, ACS reviewed 9% of child accident deaths, 44% of child homicides, 17% of suicide deaths, and 44% of child undetermined deaths during the time period examined by the CFRT. For the period of study (2001 to 2007), the DVFRC reviewed 67% of child homicide cases included in this report.

## Accident Deaths

Deaths certified as accidents comprised 68% (n=265) of the 388 injury-related child deaths from 2001 to 2007. More than half (55%, 145 deaths) of all accident deaths were caused by blunt impact from a transportation accident (113 deaths), followed by a fall (23 deaths) or struck (9 deaths). The remaining accident deaths were caused by thermal injuries, fire and scald burn-related, (28%, 75 deaths), asphyxia (8%, 22 deaths), drowning (4%, 10 deaths), or other causes (5%, 13 deaths).

### Causes of Child (1-12 years) Accident Deaths, NYC 2001-2007, n=265



Source: Bureau of Vital Statistics, NYC DOHMH

### Transportation Accidents

Most blunt impact injuries (78%) were caused by a transportation accident. Among these, 84% were motor vehicle-related and 16% due to a single airplane accident that occurred in Queens in 2001. Of the motor vehicle accidents, the majority (81%, 77 deaths) involved child pedestrians; child bicyclists accounted for 6% (6 deaths), and the remaining 13% (12 deaths) were among child passengers. Sixty-five percent (65%) of all transportation-related deaths were among boys and more than one third (38%) were among non-Hispanic black children. (See first CFRT annual report for in-depth review of motor vehicle deaths. [www.ci.nyc.ny.us/html/doh/downloads/pdf/epirsv/epirsv-childfatality-book.pdf](http://www.ci.nyc.ny.us/html/doh/downloads/pdf/epirsv/epirsv-childfatality-book.pdf)).

### Non-Transportation Accidents Outside the Home

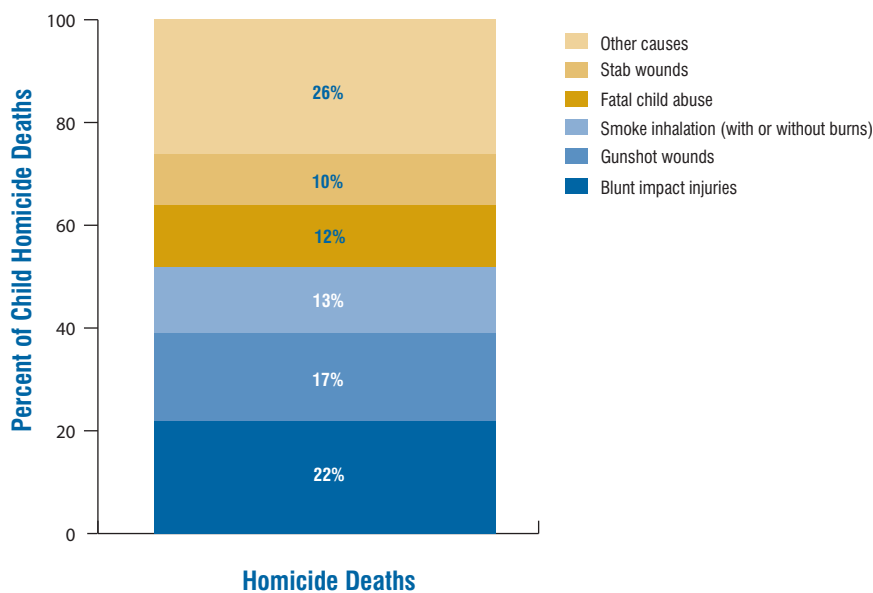
Non-transportation-related accidents sustained in the home are described earlier in this report. Non-transportation accidents among children sustained outside the home include three falls among boys ages nine to 11 years. These were caused by a fall down an elevator shaft at a construction site, a fall at a department store, and a fall down a laundry chute in an institutional residence. The remaining deaths include the drowning of a 12-year-old boy in the ocean, and the accidental dislodgment of a tracheotomy tube in a hospitalized, three-year-old boy.

## Homicides

There were 91 child homicide cases from 2001 to 2007, accounting for approximately one quarter (23%) of all injury deaths during the seven-year study period. Homicide affects boys more than girls (56% among boys vs. 44% among girls), more than half (57%) of all homicide victims were one to three years of age, and among racial and ethnic groups, non-Hispanic black children accounted for 59% of all homicide victims, and Hispanic children accounted for 30%.

Blunt impact injuries continued to be the most common cause of child homicides (22%). There were 15 homicides (17%) due to gunshot wounds, one third of which occurred in 2006 alone. There were 12 homicides (13%) caused by smoke inhalation, with or without burns, from residential fires. There were 11 deaths (12%) due to fatal child abuse syndrome, meaning that the child showed evidence of being battered over time, and there were nine stab-related deaths (10%). Other causes of child homicide include, five drownings, and another five deaths due to a combination of shaking, whiplash, and blunt impact. Four deaths were caused by smothering, and three from ingestion of a toxic substance (methadone, heroin, pain medication). Two homicides occurred due to hanging, two due to scald burns, and two children died as a result of parental neglect. One child died from dehydration, one from sepsis, and one child died from environmental hyperthermia as a result of being left unattended in a car.

### Leading Causes of Child (1-12 years) Homicide Deaths, NYC 2001-2007, n=91



Source: Bureau of Vital Statistics, NYC DOHMH

## Suicides

Six child deaths, five girls and one boy ages 11 and 12, were ruled suicides (2% of all injury-related deaths). Of these, four occurred as a result of asphyxia or intentional hanging; the remaining two deaths occurred from ingestion of medication.

## Undetermined Deaths

Between 2001 through 2007, there were 21 deaths (5% of all injury deaths) certified as having an undetermined manner of death. These included blunt impact injuries of the head, drowning, scald burns, and medication overdose. In many cases, circumstances remained unexplained following post-mortem examination and death scene investigation.

## SUMMARY

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This 2009 report of the New York City Child Fatality Review Team (CFRT) presents an aggregate review of injury deaths among NYC children ages one to 12 years of age from 2001 to 2007.

Although substantially lower than the national average, the child injury death rate in NYC has been stable over the past seven years. This suggests a lack of success in reducing fatal injuries among those at greatest risk including young children, and non-Hispanic black children.

Motor vehicle-related accidents (occurring on streets and roadways) remain the largest contributor to child injury deaths overall and make up 43% of unintentional injury deaths. The most common location for fatal unintentional injuries is the home (55% of unintentional deaths). To reduce unintentional child injury deaths, there is a need for more focus on both pedestrian injuries and fatal injuries in the home.

### Fatal Unintentional Injuries in the Home Environment

A review of place of injury shows that homes were the most common setting for unintentional child fatalities, and that trends for injuries in the home vary by type and mechanism of injury. Our findings and other research studies confirm that the two major sources of injuries in the home are fires and falls. Children playing with fire and other human behaviors led to the majority of fires. Fewer than one in four residences where a fatal fire began had a working smoke detector. Illegal conversion of space and illegal occupancy also introduced a number of hazards that contributed to fatal fires. These findings should be used to target prevention strategies, and raise questions of supervision and the provision of a safe home environment.

Falls were the second leading cause of child injury deaths in the home. Falls were most prevalent in younger children (one to three years), resulting primarily from falls out of windows; most windows lacked or had an improperly installed window guard. Another peak occurred among older children (10-12 years), resulting from falls down elevator shafts, out of window, and off roof tops, frequently associated with child play. Child deaths also occurred from being struck by falling objects, especially televisions resting on unsteady surfaces. Boys had a greater burden of both fall and struck deaths compared to girls.

Asphyxia also contributed substantially to fatal unintentional injuries in the home yet causes of asphyxia varied. Choking on food or a foreign object contributed to nearly half of all asphyxia deaths with an array of different food types and objects implicated. Positional asphyxia resulted from bed-sharing or suffocation in soft bedding. Drowning in the home also contributed several preventable deaths during the study period, usually occurring during a lapse in supervision. It takes as little as a few inches of water or other liquid and a short time for a child to drown.

In addition to other causes of fatal unintentional injuries, case review findings show that children with disabling conditions or developmental disabilities may have an increased vulnerability to injury. Risk of unintentional injury deaths among children also appears to be associated with excess poverty in NYC, and characteristics of the home environment in lower-income communities may increase the likelihood that an injury event may occur or increase the severity of injuries.

Prevention of injury in the home requires a safe home environment and that children have adequate adult supervision. Findings from this study should be used to target prevention strategies. Recommendations for providers, educators, researchers and health professionals, and policy makers are presented on a range of approaches to keep our City's children safe.

## LIMITATIONS

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This retrospective review of child deaths has some important limitations. The limited number of injury-related deaths in children ages one to 12 years, while encouraging and lower than the national average, reduced our ability to examine their commonalities and trends in detail. Another limitation was the frequency of missing information and lack of descriptive detail in report files. Substantial effort was made to improve quality and completeness of data by collecting and reviewing original records from multiple sources such as CPSC, DOB, DOHMH, FDNY, and OCME, for each death. In addition, some characteristics that may be related to risk for an injury were not formally captured, such as level of parental or guardian supervision, and other family conditions or stressors. These factors, particularly for certain ages of children, may play a critical role in mitigating dangerous circumstances.

## RECOMMENDATIONS

### Preventing Fatal Injuries Among Children in the Home Environment

Unintentional injuries in the home are a leading cause of death among NYC children. Based on analysis, committee members identified the following recommendations for improving child safety and preventing injuries in the home environment.

#### Health Care Providers

- At each well child visit, counsel parents about safeguarding their homes to prevent child injuries.
- Counsel parents about the need for supervision, based on child's age, development and exposure to possible hazards.
- Advise patients to call 311 for information on child services around the city.

#### Community Partners and Educators

- Expand safe public playground access and activities, including child care and recreational programs.
- Promote programs and capacity building in community centers and community-based organizations aimed at local communities.
- Launch pilot prevention programs on child injury in communities with the highest rates of injury.
- Prioritize home injury prevention in elementary and middle school curricula.

#### Researchers and Health Professionals

- Improve the collection of injury-related data, including development of consistent definitions for home injury, coding schemes and guidelines for recording information.
- Collect data on characteristics of injury and associated risk factors, as well as information to evaluate protective factors.
- Conduct community-based injury surveillance to obtain epidemiologic data on childhood injuries.
- Launch injury prevention programs that target injuries among younger aged children.
- Develop a regional research agenda for child injury including economic analysis, intervention trials, and integrating injury prevention into child health programs.
- Raise awareness on the predictable and preventable nature of child injury among policy-makers.
- Coordinate activities and collaboration across sectors for the implementation and evaluation of child injury prevention programs.

#### Legislation and Policy

- Fund and promote research interventions and evaluations on child injury prevention.
- Implement and enforce laws and standards that have been proven to reduce injuries.
- Develop strategies to reduce the ability of children to play in dangerously high places, such as roof tops and fire escapes.
- Ensure that children have access to safe playgrounds and recreational spaces to reduce the risk of injury.
- Support legislation that would:
  - Require safe temperatures for tap water, a maximum of 120 degrees Fahrenheit, for all dwelling units to prevent scald burns.
  - Prohibit the sale of novelty lighters, which have lights and are shaped like toys and other items that are attractive to children.
  - Require manufacturers of certain products like bookcases, dressers, televisions, armoires and other products to provide stabilizers and place tipping warnings on such products to prevent instability and tip over injuries.
  - Make a death of any person drowning in a pool from failure to secure the pool properly, an offense punishable under Class A misdemeanor.
  - Make deaths, due to failure to store a weapon safely, an offense, punishable by law to prevent serious injuries or death from negligently stored firearms.
  - Make gun violence prevention programs available for public schools.
  - Require the safe storage of all guns, either in a safe or an area with a locking device, provide penalties for violations, and require notices to be furnished upon transfer of guns and issuance/renewal of licenses.

## POLICY AND INJURY PREVENTION

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Childhood injury and death are avoidable when the causes can be identified and the events leading up to injury are foreseen. Injury prevention efforts, necessary components of public safety and health, should therefore adopt multidisciplinary strategies that focus on the child, the injury event, the environment, products, and systems in society. Policy makers should endorse a variety of approaches categorized as the “3 E’s” of injury prevention: 1) Education to influence individuals, communities, health professionals, businesses and the media by changing attitudes regarding “accidents” and altering behavior. 2) Engineering modifications to ensure that spaces and products are safe for children to live in and use everyday and, 3) Enforcement/enactment of legislation and policies that are designed to reduce the risk of injury.

The implementation of policies and regulations, at the local, state, and federal level, have shown to be an effective method in reducing fatal child injuries. Examples of such policies include:

### **New York City**

- Requires owners of residential multiple dwellings to install smoke detectors in all occupied apartments.
- Requires the installation of carbon monoxide detecting devices within proximity of bedrooms in apartments and private homes where fossil-fuel burning furnaces or boilers (that use coal, kerosene, oil, wood, fuel gases and other petroleum products) are located.
- Requires building owners to install approved window guards in homes where a child 10 years old or younger resides, and in public areas if a child under age eleven lives in the building.

### **New York State**

- Requires that children up to age seven be properly restrained when riding in a motor vehicle with appropriate child restraints based upon the child’s age and height.
- Requires the use of booster seats or other appropriate child restraint systems for four-, five- and six-year-olds.
- Requires that guns be sold with a child-safety lock.

### **Federal**

- Requires public swimming pools and hot tubs be installed with special devices that will prevent drain suction from trapping children under water.

The next section provides a summary of additional current City agency initiatives that further support injury prevention.

## ONGOING CITY INITIATIVES TO IMPROVE CHILD SAFETY

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### **Department of Buildings**

- Enforces local law requiring landlords to install smoke detectors in multiple dwelling apartment buildings, and a law requiring carbon monoxide detectors to be installed in all multiple and private dwellings, institutional and educational settings.
- Requires checks for hardwire smoke detectors for all newly constructed buildings and buildings undergoing major construction.
- Requires permits and an approved licensed electrical contractor for electrical work in apartments and buildings. Violations are issued for non-compliance.
- Launched the Elevator Enforcement Program to crack down on buildings with chronic elevator problems.
- Enforces local law requiring the installation of a four foot high fence around pools with a self-closing childproof gate. Pools must be at least three to five feet away from any lot or yard line, and no overhead electrical conductors should be installed within 15 feet of the pool.

### **Department of Education**

- Requires standardized lessons in injury prevention and fire safety in the health curriculum for children in elementary school, middle school, and high school.
- Disseminates child safety materials to parents and caregivers on asthma, childhood obesity, and health services including mental health.

## **Department of Health and Mental Hygiene**

- Staffs the New York City Poison Control Center 24 hours a day, 365 days a year, with registered pharmacists and nurses certified in poison information and provides free information about exposures to poisonous or unknown substances.
- Formed the Window Fall Prevention Program (WFPP) to investigate referrals and complaints from the public related to window guards. The window guard law requires building owners to install approved window guards in the home of any family with a child age 10 years or younger. If appropriate steps are not taken to install window guards, WFPP will help get them installed.
- The Lead Poisoning Prevention Program provides services to eliminate lead poisoning among children and pregnant women, as well as services to reduce other home health hazards. These hazards include: lack of window guards, lack of smoke detectors and carbon monoxide detectors, and unsafe use and storage of pesticides and other household chemicals. The Lead Poisoning Prevention Program responds to complaints about unsafe work practices that create lead hazards in homes, inspects homes for lead hazards and other home health hazards, and provides community outreach as well as education to families and medical providers.
- The Newborn Home Visiting Program sends a health worker to visit all new mothers, living in low income areas, to provide information on key topics such as: breastfeeding, SIDS, safe sleep, bonding and attachment, smoking cessation, health insurance, and the need for a primary doctor. The health worker can also screen for potential social problems, environmental hazards and arrange for a free crib.
- Through the Nurse Family Partnership, a nurse home-visiting program for low-income, first-time mothers can receive a free visit from a nurse every one or two weeks during pregnancy and until the baby is two years old.  
([www.nyc.gov/html/doh/html/ms/ms-nfp.shtml](http://www.nyc.gov/html/doh/html/ms/ms-nfp.shtml))
- Offers free vouchers through the Cribs for Kids program to mothers who don't have a crib for their infant, gives demonstrations on how to assemble the crib, and delivers messages about safe sleep. Approximately 700 cribs distributed annually.
- Distributes the Safe Sleep training tool for parents to learn how to reduce the risk of SIDS and prevent unintentional injuries.

## **FDNY Fire Safety Education Unit & FDNY Foundation**

- Promotes the importance of smoke detectors through a citywide advertising campaign.
- Distributes hundreds of thousands of smoke and carbon monoxide detectors and batteries directly to the public during "Operation Fresh Battery" and other public safety campaigns.
- Operates the FDNY Fire Zone, a state of the art fire-safety learning center located in Rockefeller Center, which educates more than 100,000 people annually, including more than 25,000 school age children.
- Conducts nearly 10,000 public fire safety presentations each year, focusing on high fire risk neighborhoods. The "Fire Zone on the Road" program features active and retired firefighters delivering fire safety presentations at schools, community centers, health fairs and other venues.
- Conducts hundreds of "Operation Sidewalk" programs, in which teams of fire safety educators respond immediately to communities where serious fires occur, presenting information on fire safety and prevention.
- Distributes fire safety literature in 10 languages throughout New York City.
- Presents information on fire safety, including informational videos, downloadable coloring books, and resources for parents and kids, on the FDNY [www.nyc.gov/html/fdny/html/safety/firesafety.shtml](http://www.nyc.gov/html/fdny/html/safety/firesafety.shtml) and FDNY Foundation <http://fdnyfoundation.org/websites>.

## **Department of Transportation**

- Operates the Car Seat Education Program which provides six car seat fitting stations where a technician checks the installation and teaches parents how to install car seats.
- Implements Safety City, a traffic safety program for school children that uses a simulated New York City street to teach children about traffic safety through hands-on experience.
- Conducts bicycle helmet fittings to distribute and fit free bicycle helmets. DOT also provides free helmets and fittings at the six Safety City locations.
- Identified nearly 300 schools with the highest accident rates and provided short and long-term recommendations for infrastructure improvements.

## A Checklist for Parents and Caregivers

Many homes have hazards that increase a child's risk of being injured. Although there is no absolute way to prevent injuries, taking certain steps and precautions can decrease the risk.

### Falls and falling objects

- Make sure window guards are installed on all windows above the first floor that are not emergency exits. Do not rely on insect screens to keep children from falling out of windows.
- Keep furniture away from windows to avoid children from climbing out.
- Use safety gates to block access to stairs or other dangerous places.
- Securely anchor television sets to a wall or a large, balanced stand.

### Poison

- Lock up potential poisons out of children's reach, including cleaning supplies, medicines, and vitamins.
- Use safety latches for drawers and cabinets
- Follow directions when giving medicine to children.
- Keep products (for example, medicine and cleaning products) in original, labeled containers. Never put them in food or drink containers.
- Avoid using aerosol spray products.
- Post the phone number for Poison Control near the phone (1-800-222-1222).

### Choking and Suffocation

- Keep your home free of little things a child can choke on. Buttons, coins, jewelry, and small toys cannot be left lying around.
- Don't give a child under the age of four any foods that can block the windpipe and cause choking such as nuts, hard candies, popcorn, pretzels, or raw carrots. Cut hot dogs into small bites.
- Never let children run, play sports, or ride in the car with gum, candy, or lollipops in their mouths.
- Encourage children to sit when eating and to chew thoroughly.
- Learn how to provide early treatment for children who are choking; know the Heimlich maneuver to help a choking child (*Resource: American Red Cross [www.nyredcross.org/takeaclass.php](http://www.nyredcross.org/takeaclass.php)*).
- Always follow manufacturers' age recommendations when buying toys. Some toys have small parts that can cause choking, so heed all warnings on a toy's packaging.
- Never place an infant face down on soft bedding.
- Infants and children should sleep alone in a crib, bassinette, or bed.

### Fire, Burns, or Electrical Shock

- Install smoke detectors in the home, particularly outside of each bedroom. Test smoke detectors once a month and change batteries every spring and fall when you change your clocks.
- Plan several ways to escape from each room if a fire starts and practice a fire escape plan with your family.
- Install carbon monoxide detectors in every sleeping area and test them monthly.
- Keep matches and lighters out of reach of children. Teach children, fire is not a toy.
- Use back burners on stoves, and turn pot handles inward. Keep children away from the stove or microwave when cooking.
- Do not use stove, oven or burners to heat the home.
- Keep a fire extinguisher in the home.
- Cover electrical outlets with safety plugs.

### Drowning

- If you have a pool in your backyard, install fencing on all sides of the pool. Install a self-closing gate with a lock that is out of a child's reach.
- Learn how to swim and provide your child with swimming lessons.
- Never leave a child unattended in the bathtub.
- Never leave a small child unattended near a bucket filled with any amount of water or other liquid.
- Never use air-filled swimming aids (such as water wings) in place of personal floatation devices (life preservers) or as a substitute for constant adult supervision.
- Dump out all water from a wading pool when you are finished using it.
- Learn CPR (cardiopulmonary resuscitation). In the time it might take for paramedics to arrive, your CPR skills could make a difference in someone's life. (*Resource: American Red Cross [www.nyredcross.org/takeaclass.php](http://www.nyredcross.org/takeaclass.php)*)

### Firearms

- Keep guns and other firearms out of the house.
- If guns are in the house, unload them, put them in a locked place, and keep the keys out of your child's reach. Store the gun in a separate place from the bullets.
- Make sure guns are equipped with a safety lock.

**NYC's Child Fatality Reports and Other Information on Injuries in New York City are posted online at [www.nyc.gov/html/doh/html/ip/ip-index.shtml](http://www.nyc.gov/html/doh/html/ip/ip-index.shtml).**

## Resources for Home Injury Prevention and Child Safety

- **American Academy of Pediatrics – Age-related Safety:** [www.aap.org/family/tippmain.htm](http://www.aap.org/family/tippmain.htm)
- **American Red Cross (NY Chapter) – First Aid/CPR:** [www.nyredcross.org/takeaclass.php](http://www.nyredcross.org/takeaclass.php)
- **CDC’s National Center for Injury Prevention and Control:** [www.cdc.gov/injury/index.html](http://www.cdc.gov/injury/index.html)
- **Consumer Product Safety Commission – Consumer Safety:** [www.cpsc.gov/](http://www.cpsc.gov/)
- **Home Safety Council – Child Safety Check List:** [www.homesafetycouncil.org/safety\\_guide/sg\\_child\\_p001.pdf](http://www.homesafetycouncil.org/safety_guide/sg_child_p001.pdf)
- **Injury Free Coalition for Kids – Safety Topics:** <http://new.injuryfree.org/safety.cfm>
- **Mayo Clinic – Infant and Toddler Health:** [www.mayoclinic.com/health/child-safety/FL00003](http://www.mayoclinic.com/health/child-safety/FL00003)
- **McGruff.org – Child Safety Center:** [www.mcgruff.org/?gclid=CJfRrYSOy5oCFQIWFQodcirt3A](http://www.mcgruff.org/?gclid=CJfRrYSOy5oCFQIWFQodcirt3A)
- **New York City Fire Department – Fire Safety:**  
[www.nyc.gov/html/fdny/html/safety/firesafety.shtml](http://www.nyc.gov/html/fdny/html/safety/firesafety.shtml)  
[www.fdnfirezone.org/](http://www.fdnfirezone.org/)
- **New York City Healthy Homes – Keeping Homes Health and Safe for Children:**  
[www.nyc.gov/html/doh/downloads/pdf/lead/lead-brochure-healthy-home.pdf](http://www.nyc.gov/html/doh/downloads/pdf/lead/lead-brochure-healthy-home.pdf)
- **New York City Poison Control Center:** [www.nyc.gov/html/doh/html/poison/poison.shtml](http://www.nyc.gov/html/doh/html/poison/poison.shtml)
- **New York City Window Fall Prevention Program:** [www.nyc.gov/html/doh/html/win/winbas1.shtml](http://www.nyc.gov/html/doh/html/win/winbas1.shtml)
- **New York State Office of Children and Family Services – Keeping Children Safe:**  
[www.ocfs.state.ny.us/main/prevention/tips.asp](http://www.ocfs.state.ny.us/main/prevention/tips.asp)
- **New York State Department of Health – Swimming Pool and Bike Safety:** [www.health.state.ny.us/press/releases/2008/2008-07-15\\_summer\\_child\\_safety.htm](http://www.health.state.ny.us/press/releases/2008/2008-07-15_summer_child_safety.htm)
- **Safe Kids – Preventing Accidental Injury:** [www.usa.safekids.org/](http://www.usa.safekids.org/)

## Appendix

### Data Sources

**Injury deaths:** Death certificates of all persons who die in NYC are collected and maintained by the DOHMH Bureau of Vital Statistics. For the years 2001 to 2007, injury deaths among children ages 1–12 years were identified by underlying cause of death with International Classification of Disease 10 Codes (ICD-10). Deaths due to injuries and other external causes, such as therapeutic complications and sequelae of complications of medical and surgical care were identified using the following codes: V01–V99, W00–W99, X00–99, Y00–Y89. CFRT staff abstracted de-identified demographic and injury information from death certificates for the purpose of aggregate data analysis.

**Fatal unintentional injuries in the home:** All fatal accidents among children are examined by the Office of Chief Medical Examiner (OCME). OCME information was reviewed by CFRT staff for all fatal unintentional injuries sustained in the home among NYC children ages 1 to 12 years from 2001 to 2007. Unintentional injury deaths were identified using International Classification of Disease 10 Codes (V01–X59, Y40–Y86, Y88) where place of injury was the home environment. Deaths categorized with an undetermined manner were also reviewed and identified using ICD 10 Codes (Y10–Y34, Y87.2, Y89.9) where place of injury was the home.

Based on the Medical Examiner number found on the death certificate, OCME files were reviewed and pertinent information abstracted. A data abstraction form was created using Microsoft Access. Documents examined in OCME records included autopsy, postmortem examination and toxicology reports; police reports (Supplemental Case Information and precinct reports); investigation reports; hospital reports; and ambulance call reports.

Bureau of Fire Investigation Reports obtained from FDNY were examined for fire and burn-related cases. Reports contained an incident face sheet, 10–45 report for fire-related injuries, and investigation interview sheet(s) for each fatal fire. Incident information including cause and origin of fire were obtained from these sources.

Inspection reports obtained from NYC DOHMH Window Fall Prevention Program (WFPP) were examined for window fall cases. WFPP investigates referrals and complaints related to window guards. Reports contained window guard compliance information, description of violations, and incident summaries.

Incident Investigation Reports from the Consumer Product Safety Commission were also examined for drowning and struck by falling object cases. Reports contained synopsis of accident or complaint and product information.

**US comparison data:** National data on overall child injury deaths are available from the CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS) (<http://webappa.cdc.gov/sasweb/ncipc/mortrate.html>). Data were accessed May 2009.

**Building characteristics:** Type of residence and type of ownership information was obtained from the NYC land use field within the PLUTO dataset for building classifications.

Residence and ownership information for all buildings at which a fatal unintentional injury occurred, evidence of violations, and illegal occupancy was collected from the NYC Department of Buildings Building Information System (BIS) database for building classifications.

Non-fatal unintentional injuries in the home: Prepared by NYC DOHMH staff, non-fatal unintentional injury hospitalizations and emergency department visits with live discharges were identified using the New York State Department of Health Statewide Planning and Research Cooperative System (SPARCS) using the following ICD9 E-codes: E800–E869, E880–E929. Data for 2001 to 2006 hospitalizations and data for 2005 to 2006 emergency department visits were updated in June 2007. Injuries where the location of injury was not identified as the home were excluded from the data.

### Mapping Procedures

Locations of fatal fires were geocoded using the NYC Department of City Planning's Geosupport Desktop Edition Software 9.6.9. Geocoded addresses were then mapped using ArcGIS 9.1.

Department of City Planning population poverty table was used to map the distribution of poverty among NYC residents by community districts. [www.nyc.gov/html/dcp/download/census/sf3povp301.xls](http://www.nyc.gov/html/dcp/download/census/sf3povp301.xls). Accessed on January 2009.

### Additional Information

**Data analysis:** Rate calculations conducted by the DOHMH Bureau of Vital Statistics were conducted using SAS 9.1. Analyses by dedicated CFRT staff were performed with SAS 9.1. 2000 Census information was used to compute rates.

**CRFT meetings:** CFRT 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.

