

## Youth Homicide Deaths in Rhode Island, 2004–2012

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Youth homicide is a substantial public health problem in the United States, and has had a devastating effect on individuals, families, and communities.<sup>1-3</sup> In 2008, homicide was the second leading cause of death for persons aged 15–24 years based on data from 16 states that participate in the CDC National Violent Death Reporting System.<sup>3</sup> During 2004–2012, homicide was the leading cause of violent deaths including homicides, suicides, legal intervention deaths, unintentional firearm deaths, and deaths of undetermined intent among those <25 years of age in Rhode Island. Over one-third (39%) of the 284 homicides during that time period were among children and youth aged 0–24 years. Youth homicide can be prevented through a strategic public health based approach.<sup>1</sup> It is critical to increase awareness among the general public, public health officials, health care professionals, social service providers, and policy makers. This study provides the best available data on youth homicide from the Rhode Island Violent Death Reporting System to help better understand the pattern of youth homicide and, ultimately, reduce these untimely deaths.

The Rhode Island Violence Death Reporting System (RIVDRS) is a statewide, active surveillance system that links multiple source documents and collects detailed information concerning all violence-related deaths (homicides, suicides, legal intervention deaths, unintentional firearm deaths, and deaths of undetermined intent).<sup>3,4</sup> Rhode Island is one of 18 states currently funded by the CDC National Violence Death Reporting System (NVDRS).

Prior to 2004, Rhode Island violent death data were collected and described independently by several organizations across the state. Although these data were of high quality, single data sources (e.g., death certificates) were not integrated and provided only limited information in efforts to understand patterns of violent death in Rhode Island.

### METHODS

RIVDRS uses multiple data sources, including death certificates, medical examiner records, law enforcement reports, and secondary sources (e.g., supplementary homicide reports, hospital data, crime laboratory data, etc.).<sup>4</sup> RIVDRS is an incident-based system, which assures that associated deaths such as homicide-suicides are considered together and collects information regarding demographics, means/weapon used, International Classification of Diseases, Tenth Revision (ICD-10), location and date of death, toxicology test

reports, associated circumstances preceding death, etc.<sup>3,4</sup>

RIVDRS defines a homicide as a death resulting from the intentional use of force or power, threatened or actual, against another person, group, or community when a preponderance of evidence indicates that the use of force was intentional.<sup>3,4</sup> RIVDRS case definitions are coded on the basis of the ICD-10. Cases with the following selected ICD-10 codes are defined as homicide: X85–X99, Y00–Y09 for deaths up to one year after injury and Y87.1 for death more than one year after injury.<sup>3,4</sup>

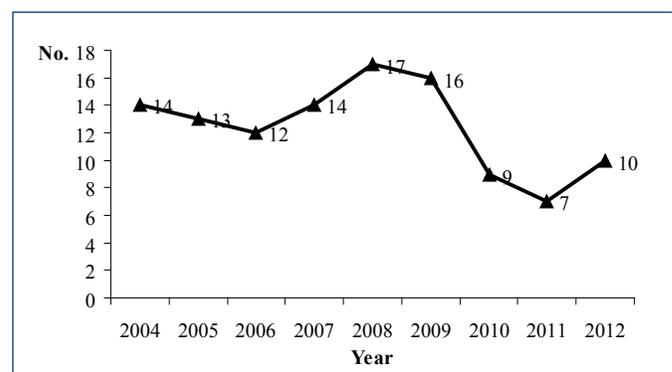
Homicide data during 2004–2012 were obtained from the RIVDRS. Small numbers have substantial year-to-year variation in the study. Statistics were generated from nine years of data to correct for this variation. Information on youth homicide is summarized by 1) counts, which display the most basic measure of youth homicide deaths and are important for quantifying the problem; and 2) percentages, which show distributions in the underlying population relative to demographics, positive toxicology test, and circumstance characteristics.

Because of small counts in some categories, only cells with five or more deaths are shown. The statistical software used for the analysis was SAS version 9.2 (SAS Institute, Cary, NC, 2010).

### RESULTS

This study includes 112 youth homicides identified in the RIVDRS during 2004–2012. Overall, the homicide counts slightly increased each year during 2006–2008, then continually decreased each year after 2008 until 2011 (Figure 1).

**Figure 1.** Number of Youth Homicide Deaths by Year, Rhode Island 2004–2012



The majority (74%) of youth homicide decedents were aged 18-24 years. The homicide number for males was 3 times than for females. Hispanics accounted for a high percentage (42%) of youth homicide deaths, followed by white, non-Hispanic (29%) and black, non-Hispanics (25%). According to the 2010 census data there were 67% white, non-Hispanic; 19% Hispanic; and 7% black, non-Hispanic among 0-24 year olds in Rhode Island. Hispanic and black, non-Hispanic youth homicide victims were represented at higher proportions based on the census data. More than two-third (68%) of youth homicide victims resided in the four core cities including Central Falls, Pawtucket, Providence and Woonsocket. RI defines a core city as any city or town where 25% or more of children live below the federal poverty level according to the 2006-2010 American Community Survey, conducted by the US Census. Firearms were used in 69% of youth homicides, followed by sharp instruments, hanging/strangulation/suffocation, and personal weapons. A house or apartment was the most common location of homicide (47%), and the next-most-common location of homicide was a street/road, sidewalk, or alley (33%) (Table 1).

**Table 1.** Characteristics of Youth Homicide Victims, Rhode Island 2004-2012 (N=112)

Characteristic/Method/Location	n	%
<b>Age group (yrs)</b>		
<1	7	6.3
1-9	7	6.3
10-17	15	13.5
18-24	82	73.9
<b>Sex</b>		
Male	84	75.0
Female	28	25.0
<b>Race/Ethnicity</b>		
White, non-Hispanic	32	29.4
Black, non-Hispanic	27	24.8
Hispanic	46	42.2
<b>City of residence</b>		
Core city*	75	67.6
Non-core city	19	17.1
Out of state	17	15.3
<b>Means/Weapon used</b>		
Firearm	77	69.4
Sharp instrument	9	8.1
Hanging/strangulation/suffocation	8	7.2
Personal weapons	6	5.4
<b>Location</b>		
House, apartment	51	46.8
Street/road, sidewalk, alley	36	33.0
Parking lot/public parking garage	6	5.5
Motor vehicle	6	5.5

Data are not presented for cells containing fewer than 5 cases.

\*Core-city: Central Falls, Pawtucket, Providence and Woonsocket.

Alcohol or drug tests were conducted for 96% of youth homicide decedents. Among tested homicide decedents who tested positive for alcohol (24%), 69% had a BAC of  $\geq 0.08$  g/dl. Marijuana, opiates, and cocaine were identified in 42%, 10%, and 9% of homicide decedents tested, respectively (Table 2).

Associated circumstances preceding death were identified for 64% of youth homicide decedents. Over a quarter of youth homicides were due to a conflict between the decedent and suspect over something other than money, property, or drugs. Approximately 15% of those homicides were precipitated by another crime. Drug-involvement homicides accounted for 12% of youth homicides. Intimate partner violence was reported as a circumstance in 11% of youth homicides. Other common circumstances were an argument over money or property (7%); drive-by shooting (6%); or gang-related (6%) (Table 3). Since each victim may have more than one circumstance, the total number of circumstances exceeds the total number of homicides.

**Table 2.** Positive Toxicology Tests of Youth Homicide Victims, Rhode Island 2004-2012 (N=112)

Toxicology test	n	% <sup>+</sup>
Tested	107	95.5
BAC*	26	24.3
BAC<0.08 g/dl	8	30.8
BAC $\geq$ 0.08 g/dl	18	69.2
Marijuana	45	42.1
Opiates	11	10.3
Cocaine	10	9.3
Other drug(s)	27	25.1

\* BAC: blood alcohol concentration, BAC $\geq$ 0.08 g/dl used as the standard for intoxication.

+ Subcategories do not sum to 100% because test results of victims can be positive for alcohol or multi-drugs.

**Table 3.** Circumstances of Youth Homicide Deaths, Rhode Island 2004-2012 (N=112)

Circumstance	n	% <sup>+</sup>
Other argument, abuse, conflict*	29	25.9
Precipitated by another crime	17	15.2
Drug involvement	13	11.6
Intimate partner-violence-related	12	10.7
Argument over money/property	8	7.1
Drive-by shooting	7	6.3
Gang-related	7	6.3
Jealousy (lover's triangle)	6	5.4
Victim was a bystander	5	4.5
Not Reported	40	35.7

Circumstances are not presented for cells containing fewer than 5 cases.

\* Other argument, abuse, conflict: conflict between decedent and suspect was over something other than money, property, or drugs.

+ Percentages might exceed 100% because multiple circumstances might have been coded.

## DISCUSSION

During 2004–2012, the percentages for youth homicide remained disproportionately higher among those aged 18–24 years, males, and minority (Hispanics and black, non-Hispanic) populations. The highest number of homicides occurred in the four core cities, which is home to less than one-third (30%) of the state's population and 3.6% of the state's area. Among homicide deaths, firearms were used as weapons in over two-thirds of the incidents. The most common location of these deaths was at a residence (house or apartment).

Of the victims tested for alcohol, almost a quarter tested positive. A majority of victims with a positive test result had a blood alcohol concentration (BAC) that was  $\geq 0.08$  g/dl, which defines acute alcohol intoxication. Almost half of the homicide victims tested positive for marijuana. Although information on alcohol/drug use was unavailable for most offenders, the data on the victims provides compelling evidence that alcohol/drug use is an important factor in violence.<sup>3</sup> Alcohol/drug intoxication can reduce awareness of surrounding risks and make victims more vulnerable to violent confrontations.<sup>3,5</sup> Excessive alcohol/drug use might also decrease physical control, increase impulsivity, and help to elevate conflict.<sup>3,5</sup> Policy makers need to provide stricter control policy for alcohol and illegal drugs.

RIVDRS also shows that interpersonal conflicts and relationship problems are common circumstances preceding a homicide event. Reducing illegal economic activities can reduce disputes and violent solutions. Intervention at an early age produces better outcomes than intervention at a later age. Many school-based prevention programs are designed to help youth to improve positive social skills, social problem solving, self-esteem, emotional self-awareness, emotional control, conflict resolution, and team work.<sup>1,3,6</sup> Risk factor-based intervention strategies are more efficient than other intervention strategies, for example, strategies designed to reduce interpersonal problems and relationship conflicts are very valuable for prevention efforts.<sup>1,3</sup>

There is a long history of beneficial partnerships between public health, law enforcement, and communities to enhance public health and safety. Prevention strategies also need to focus on teamwork at the community level.<sup>7</sup> For example, within high-risk communities, strategies focus on changing social norms (e.g., violence cannot resolve conflict), reducing the barriers (e.g., social isolation), and intervening economic conditions (e.g., inequities with access to food supplies, adequate housing, job training programs, counseling services).<sup>3</sup> Prevention programs need to communicate clearly to high-risk youth that violent behavior would not be tolerated and that they have to answer to the community if they behave violently.<sup>7</sup> The community can offer a way out, including education, life skills training, job training, job referrals, substance abuse treatment, etc.<sup>7</sup>

The findings provided in this study are subject to at least five limitations. First, because of small numbers in this

study, it is difficult to carry out sex-specific or race/ethnicity-specific analyses to make the percentages stable. Second, circumstance data were not available for all homicides and only 64% of homicide victims had data available for at least one circumstance related to the homicide in the study. Third, RIVDRS only collects risk factors, but does not collect protective factors (i.e., circumstances that reduce the risk for homicide death).<sup>3</sup> Fourth, time of injury, an important factor in homicide, is lacking for most deaths in RIVDRS. Fifth, because gang-related crimes are difficult to identify, these circumstances might be undercounted.<sup>3</sup>

In conclusion, although youth homicide death continues to be a problematic public health concern, youth homicide counts have dropped considerably since 2008 in Rhode Island. RIVDRS can monitor the occurrence of youth homicide and assist public health and other authorities to prevent youth homicide deaths in Rhode Island. To effectively prevent youth homicide, interventions need to focus on high-risk populations, screen for at-risk youth, reduce access to firearms, alcohol and drugs, and, target small geographic areas (e.g., a housing unit or park).<sup>7</sup> Given the high proportion of homicides that are committed with firearms, authorities might consider greater enforcement of firearms laws, e.g., require background checks for all guns sales. In order to warrant future prevention efforts, additional studies need to focus on the characteristics of suspects, including victim and perpetrator relationships, mental health status, previous episodes of violence, and alcohol/drug abuse.

For more information and resources for preventing youth violence:

STRYVE: Striving To Reduce Youth Violence Everywhere  
CDC national initiative to prevent youth violence:

<http://www.cdc.gov/violenceprevention/stryve/index.html>

CDC youth violence prevention resources:

<http://www.cdc.gov/violenceprevention/youthviolence/index.html>

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### Disclosure

The authors have no financial interests to disclose.

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