

# To Improve Homicide Firearm Information Reporting – Rhode Island State Crime Laboratory

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## ABSTRACT

Information on homicide firearms can be used to help state and local communities understand the problems of violence and decrease injuries and deaths. However, it is difficult to collect these data. To our knowledge, in the public health arena, the National Violent Death Reporting System (NVDRS) is the only system that collects detailed firearm information. The Rhode Island State Crime Laboratory (RISCL) can provide detailed information about the firearms and cartridge cases/bullets involved in firearm deaths. With help from the RISCL, the firearm information related to homicides in Rhode Island has improved dramatically. In 2015, information on caliber/gauge increased by 80%, the firearm type by 50%, the make by 50%, and the model by 20%. By documenting the process of using information from the RISCL, it is hoped that this process can be used as a model by other states when reporting on violent deaths.

**KEYWORDS:** homicide; firearms; Rhode Island State Crime Laboratory (RISCL); Rhode Island Violent Death Reporting System (RIVDRS)

## INTRODUCTION

Information on homicides by firearms can help all states and local communities better understand the problems of violence and identify effective ways to reduce crime, injuries, violence and deaths. However, it has been difficult to collect homicide firearm data. First, during the case investigation process, law enforcement agencies usually withhold information until after the trial. Second, it is difficult to get firearm homicide information if a gun, suspect, or eyewitness is not available.

To our knowledge, in the public health arena, the National Violent Death Reporting System (NVDRS), a Centers for Disease Control and Prevention (CDC) initiative, is the only data collection system that includes detailed firearm information. NVDRS is a surveillance system that gathers violent death information and is implemented in 40 states, the District of Columbia, and Puerto Rico. The Rhode Island Violent Death Reporting System (RIVDRS) is a component of NVDRS. Our firearm data come mainly from law

enforcement reports. The 2015 RIVDRS data were closed out at the end of June 2017, and the 2016 RIVDRS data will be closed out by the end of June 2018. We usually only get the initial police report. This results in extensive time lags.

The Rhode Island State Crime Laboratory (RISCL) at the University of Rhode Island is a publicly-funded, independent, non-partisan laboratory [1]. In 1978, the General Assembly passed legislation to make the RISCL the state's official crime laboratory. In 1995, Dennis Hilliard became Director/Adjunct Assistant Professor of the RISCL and is the current Director [1]. The RISCL, staffed by scientists and former police officers, offers services related to firearms, trace evidence, and latent prints, and sponsors many continuing education classes throughout the year. The RISCL has held a certificate of accreditation in ISO/IEC 17025 since 2007 [1].

The RISCL is an excellent resource for detailed information about firearms and cartridge cases/bullets involved in firearm deaths [2]. A data sharing agreement/Memoranda of Understanding (MOUs) between the RISCL and RIVDRS was established in 2004. The RISCL examines the evidence and provides documentation for court records, which includes more detailed firearm information than is found in the police department/law enforcement report [2]. Since there is only one crime laboratory in Rhode Island, the RISCL is a very efficient data source. RIVDRS generates a list of police case numbers for homicides that included a firearm, and sends the list to the RISCL to arrange for the records to be pulled for review. The firearms data are abstracted by RIVDRS staff at the RISCL on an annual basis. The process, as described below, provides lessons learned and can be used as a model for other states in their reporting of violent deaths to the NVDRS.

## METHODS

RIVDRS collects timely, accurate, and comprehensive surveillance data on all violent deaths using a web-based data entry system and guidelines provided by the CDC [3]. RIVDRS was funded in 2003 and data collection began in 2004. The primary sources, which are required, are medical examiner reports (including toxicology), death certificates, and law enforcement reports. The secondary sources, which are optional, are data from child fatality review teams, emergency department records, hospital discharge records,

Emergency Medical Services (EMS), Attorney General Office-Press Releases, state crime laboratories, National Incident-Based Reporting System (NIBRS), and Supreme Court Domestic Violence Training and Monitoring Unit [3]. RIVDRS collects information on the following: firearm type, caliber or gauge, make, model, owner, if the firearm was stolen, how the gun was stored (loaded, and locked), and gun access [3].

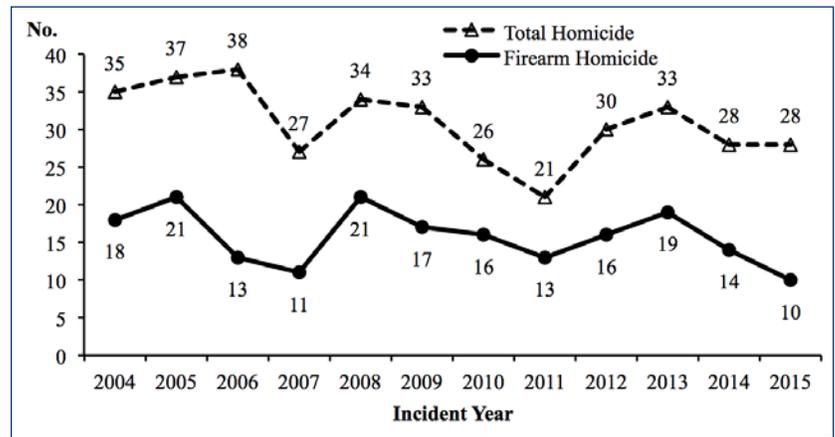
The RISCL examines firearms, fired cartridge cases, bullets, and tools used in a crime, and employs the National Integrated Ballistic Information Network (NIBIN) database. Firearm examinations include microscopic examinations of bullets, cartridge cases, and other tool marks; identification and test firing of firearms; restoration of defaced serial numbers; and testing for gunshot residue to determine the distance the muzzle of the firearm was from the victim [4]. The RISCL case files consist of the police department/law enforcement evidence submission report, the firearms examination report, and the firearm notes pages which may include a cartridge case worksheet, projectile worksheet, correlation results, and General Rifling Characteristics (GRC) database search results. Due to the relatively low proportion of violent deaths in Rhode Island that involve firearms and the time needed by the RISCL to process evidence, more frequent visits to the RISCL were determined to be inefficient. RISCL reports are accessed and abstracted annually on-site. Firearms used in suicide deaths are not normally sent to the RISCL, and therefore, data collected are almost exclusively restricted to homicides. Police departments do not necessarily submit evidence on all homicides, but usually do where a bullet, cartridge case, and/or the firearm, have been recovered.

**RESULTS**

A firearm is not recovered in every firearm homicide case. Based on previous data, less than half of firearm-related homicides have a recovered firearm. In 2015, only two firearms were recovered from ten firearm-related homicides.

The patterns of total homicides and firearm homicides were very similar from 2004 to 2015. Because of the small

**Figure 1.** Total Homicide and Firearm Homicide by Incident Year, Rhode Island 2004–2015



Data source: 2004–2015 Rhode Island Violent Death Reporting System.

**Table 1.** Valid Entry of Firearm Information by Incident Year, Rhode Island 2004–2015 (N=189)

Incident Year	Number of Firearm Homicide	Valid Entry							
		Caliber or Gauge		Firearm Type		Firearm Make		Firearm Model	
		n	%	n	%	n	%	n	%
2004	18	15	83.3	18	100.0	4	22.2	3	16.7
2005	21	17	81.0	17	81.0	8	38.1	4	19.1
2006	13	10	76.9	11	84.6	7	53.9	3	23.1
2007	11	8	72.7	6	54.6	1	9.1	1	9.1
2008	21	5	23.8	6	28.6	4	19.1	2	9.5
2009	17	8	47.1	5	29.4	3	17.7	2	11.8
2010	16	4	25.0	3	18.8	3	18.8	0	0.0
2011	13	8	61.5	5	38.5	4	30.8	3	23.1
2012	16	12	75.0	10	62.5	8	50.0	7	43.8
2013	19	19	100.0	13	68.4	10	52.6	8	42.1
2014	14	11	78.6	8	57.1	8	57.1	6	42.9
2015	10	10	100.0	9	90.0	6	60.0	3	30.0
<b>Total</b>	<b>189</b>	<b>127</b>	<b>67.2</b>	<b>111</b>	<b>58.7</b>	<b>67</b>	<b>34.9</b>	<b>42</b>	<b>21.7</b>

Data source: 2004–2015 Rhode Island Violent Death Reporting System.

numbers, firearm homicides varied over the 12 years of data collection. The lowest numbers of firearm homicides were 11 in 2007 and 10 in 2015 (Figure 1). RIVDRS has collected more information on firearm type and caliber or gauge compared to firearm make and model across the years. The availability of firearm information has fluctuated from year to year (Table 1).

During its 12 years of data collection, RIVDRS has extracted firearm data from 189 homicides. Overall, among firearm information, caliber or gauge were most often available (67.2%), followed by the firearm type (58.7%), make (34.9%), and model (21.7%). During this time, only eight of the 189 firearm homicides had firearms designated as “firearm stolen”, four cases had firearms designated as “gun

owner”, none were designated as stored loaded and/or locked, and three cases had valid gun access narrative (Figure 2). Before August 2013, NVDRS was limited to information on how the gun was stored (loaded, and locked) and access to firearms involving youth victims and suspects (17 years of age or younger), and data collection on adult violent deaths was optional [3]. Since August 2013, information on how the gun was stored (loaded, and locked) and access to firearms is collected on all firearm deaths (regardless of age) when data are available [3].

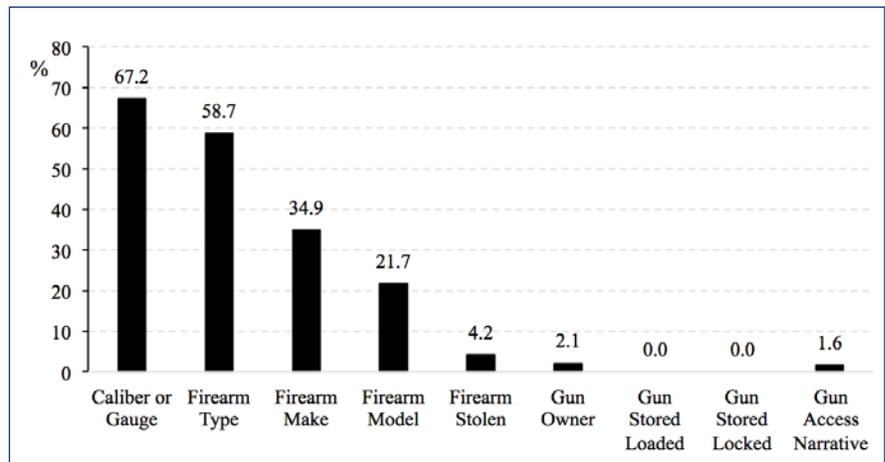
In 2015, RIVDRS reported on ten firearm homicides. After visiting the RISCL, we were able to improve our information by finding data for eight firearm caliber or gauges, five firearm types and makes, and two models (Table 2).

**DISCUSSION**

Collecting firearm make and model data is difficult as compared to the firearm’s type and caliber or gauge. Homicide firearm information mainly comes from police reports. It is understandable that law enforcement data sources are reluctant to give out detailed information on homicides during ongoing investigations. Firearm information is not always included in police department reports since there is no mandate to provide firearm make and model. Also, the make and model choices in the NVDRS web-based data entry system are outdated. The CDC is planning to revise the online firearm data fields, which will include updates to make and model listings and should lead to a more comprehensive record. Collecting firearm make and model information could help to improve public health. If there is an accidental firearm discharge due to a defect in the firearm, a recall may be initiated by the manufacturer.

Police department/law enforcement reports typically do not include information regarding firearm access, storage (loaded, locked), ownership, or if the firearm was stolen. A firearm “stored locked” includes a trigger lock, a locked closet, or a safe. Questioning relatives and family on whether the firearm was locked or loaded can be sensitive. The Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) can provide more detailed firearm information [2, 5]. The ATF firearm trace reports are designed to assist investigations by tracking the possession of specific firearms including through sales [2]. Tracing firearms helps in obtaining information on whether possession of the firearm

**Figure 2.** Percentage of Firearm Information with Valid Entry, Rhode Island 2004–2015 (N=189)



Data source: 2004–2015 Rhode Island Violent Death Reporting System.

**Table 2.** Change of Firearm Information in 2015 Homicide Deaths After Visiting the RISCL (n=10)

Firearm Characteristic	Before Visiting RISCL		After Visiting RISCL		Difference	
	n	%	n	%	n	%
Caliber or Gauge	2	20.0	10	100.0	8	80.0
Firearm Type	4	40.0	9	90.0	5	50.0
Firearm Make	1	10.0	6	60.0	5	50.0
Firearm Model	1	10.0	3	30.0	2	20.0

Data source: 2015 Rhode Island Violent Death Reporting System.  
RISCL: Rhode Island State Crime Laboratory

was obtained through a secondary market, which can aide in the evaluation of the effectiveness of prevention strategies [2]. Firearms are normally traced to the first retail seller [5]. RIVDRS obtained ATF trace reports from police departments prior to 2014. Generally, the RISCL does not receive ATF trace reports from police departments. The RISCL does not receive information on the firearm owner, if it had been stolen, if it was stored loaded and/or locked, and the individual’s access to the firearm.

If a firearm homicide is followed by a suicide, a firearm is usually at the scene. In this situation, firearm data are more accessible than in other firearm homicides. Police secure the firearm and gather information on the firearm type, caliber or gauge, make, and model. However, this is not the case for a homicide-suicide where the firearm was discarded after the homicide and not used in the suicide. In 2015, we had two homicides followed by suicides. The information gathered on the firearm from one of the cases was found in the police reports. The RISCL was the source of information for the second case, which also provided firearm information pertaining to the suicide. The RISCL usually gets all firearm-related evidence for all homicides, except in the cases such as a murder-suicide, where evidence is not necessarily analyzed.

## We learned the following from our partnership with the RISCL:

- 1) The police case number received for our records may not be consistent with the information received by the RISCL. Additional information may need to be provided (e.g. victim names), which helps to increase the chance of matching a case.
- 2) If a firearm was recovered from a homicide, the agency does not have to submit the firearm to the RISCL for firearm examination or analyses. Instead, the agency may test fire the weapon and submit cartridge cases for NIBIN analyses only.
- 3) In terms of gun type, if a .45 auto or .40 S&W (Smith and Wesson) cartridge case is found, we cannot conclude it is from an automatic handgun. For example, some revolvers and rifles can accept .45 auto caliber and .40 S&W caliber ammunition. If we see "pellets," we cannot state they are from a shotgun, as some handguns have the ability to fire shotshells, and there is handgun ammunition manufactured that contains pellets.
- 4) A full-automatic firearm shoots more than one shot at a time by a single pull of the trigger without manual reloading [6]. Semi-automatic and full-automatic firearms extract and eject the discharged cartridge cases, which are deposited at the location in a random fashion. If casings are found on the floor, we cannot assume that the gun was a semi-automatic or full-automatic due to an individual having the ability to reload a revolver while discarding the discharged cartridge cases on the ground.
- 5) Cartridge caliber is equal to firearm caliber. If the cartridge case is a .40 S&W caliber cartridge, it is understood to have been fired from a .40 caliber firearm.
- 6) If there is a discharged .40 S&W caliber cartridge case, we cannot say the firearm make is S&W. The S&W is part of the cartridge name which does not mean it was discharged in a firearm made by S&W. Without a firearm, the RISCL cannot determine the make and model from a discharged cartridge case. Based on rifling characteristics on a bullet, the RISCL will provide a list of potential makes and models of firearms from the Laboratory's database that have similar rifling characteristics. Make and model does not always tell you the caliber or gauge, or the type of firearm without additional research.

## CONCLUSIONS

We heavily depend on the RISCL to obtain homicide firearm information. We also need to work more closely with the Providence Police Department, since most of the firearm homicides occurred in Providence. We hope that the CDC will promulgate guidelines on how states can make better use of the firearm data gathered from violent death cases.

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## Disclaimer

The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Rhode Island Department of Health, RI State Crime Laboratory, or JSI Research & Training Institute, Inc.

## Disclosures

The authors of this manuscript have no competing interests and no conflicts of interest to disclose.

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