Youth Firearm Fatalities and NVDRS: a Minnesota Example

Learning Objectives
In this session, participants will:
Be able to develop ideas for analyzing NVDRS data to help inform state level prevention programs.
Be able to verify the NVDRS variables more associated with one manner of death over another.
Be able to identify the appropriate NVDRS variables that could be analyzed to answer specific community questions.

Statement of Purpose
How can the National Violent Death Reporting System (NVDRS) be used to address and prevent firearm fatalities among youth?
NVDRS is funded in all 50 states. NVDRS includes all firearm deaths and collects over 600 data elements providing valuable context, including relationship problems; mental health problems and treatment; toxicology results; and life stressors. Since the ‘90s there have been efforts to decrease firearm deaths. NVDRS is being used in Minnesota for this purpose, addressing the following questions:
What patterns can be noticed from analyzing the data collected through NVDRS?
How do suicidal firearm fatalities compare and contrast with homicidal firearm fatalities?
Can the next steps along the path of decreasing violent deaths be informed and illuminated?

Methods
This analysis included Minnesota residents, ages 0-24 years, who died of a suicidal or homicidal firearm injury in 2015 and 2016.
Incidents and characteristics from NVDRS were examined, described, and analyzed using Pearson $\chi^2$ tests of significance between suicide and homicide deaths.

Results
An argument preceded 34% of homicides. Thirty-nine percent of suicide victims had documentation of depressed feelings or were perceived by family or friends to be depressed. Alcohol and substance misuse are linked to 19% of homicides and 14% of suicides.
There are significant associations between location of injury type and manner of death. Suicides had a significant frequency of occurrence inside private living spaces while homicides occurred more frequently on the street, in parking lots or in public use spaces.
Notably, intimate partner violence circumstances are present in the majority of homicides among those 18-24 years of age. This finding supports the use of Safe Dates curriculum in high schools.

Conclusions
This analysis of two years of Minnesota NVDRS data demonstrates the types of findings and information that can be gained. For many states, analysis of NVDRS data is at an early stage. However, even a few years of data can be analyzed to better inform programs and prevent future deaths.

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Mary DeLaquil is an Epidemiologist with the Injury and Violence Prevention Section at the Minnesota Department of Health in St. Paul, Minnesota. Currently her main areas of focus are overdose, fall, and violence mortality surveillance. Before switching careers to Public Health, Mary spent 14 years with Reuters working with legal data, product development and training employees worldwide. Mary is ardent about public health data and how it can be used to inform and evaluate effective public health interventions.
Surveillance in Action: Producing and Disseminating County-Level Data for Firearm Injury Prevention

Learning Objectives
1. Understand data sources and analytical approaches for understanding firearm-related injury.
2. Recognize the benefits of collaboration between epidemiology and program staff when creating data products.
3. Explore how firearm injury data can be accessed and used in a variety of community settings.

Statement of Purpose
In a wave of local, state and national attention to gun violence, Public Health – Seattle & King County has been working to update our data on firearm-related injury and death. Collaboration between epidemiology and program staff enables us to make data accessible to a variety of community partners. We will discuss our approach and illustrate how community partners use our data.

Methods
We will highlight analytic approaches from our most recent fatal firearm injury updates. We used a variety of surveillance data sources, including the Behavioral Risk Factor Surveillance System, death certificates, the Medical Examiner’s Office, and the county Child Death Review, to describe firearm-related fatalities locally. Following our county’s policy of striving for equity and leading with race, we examined disparities by race, age, gender, neighborhood poverty and location, as well as changes over time. To address data challenges unique to small populations, we sought input from community organizations. Using case studies, we will discuss opportunities and challenges in interpreting and messaging around our analyzed data, including how we addressed sensitive issues like racism and community trauma.

Results
We found a disproportionate impact of firearm homicide among young adults, males, black communities, and high-poverty neighborhoods. In contrast, firearm suicide varied little by geography or income but was highly concentrated among older adults and men. For small populations, we referenced state or national data to provide context for communities without exaggerating the significance of unstable rates.
Our case studies explore how access to local data has supported community-based grassroots organizing, development of firearm-related policies by local, state and federal lawmakers, safe storage promotion by firearm retailers, firearm violence prevention in law enforcement systems and prevention planning in medical settings.

Conclusions
Generating and using quality data is essential to the public health approach to firearm injury prevention. Our approach to data reflects our county’s values and priorities while addressing community concerns and providing resources that can be used in a variety of settings.

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Karyn Brownson is the Community Safety Manager in the Violence and Injury Prevention unit at Public Health – Seattle and King County, where she works on firearm tragedy prevention and child safety. Previously, she led the creation of Washington’s State Suicide Prevention Plan at the Washington State Department of Health. Karyn has seen firsthand the toll that trauma, violence and firearm tragedy take on young people and their families and communities, as well communities’ resilience in the face of adversity and loss. She is dedicated to partnering with those most affected by firearm tragedy to build a safer and more just King County. Public Health’s firearm violence prevention page, where you can learn about their work promoting safe firearm storage, is at www.lockitup.org.
Surveillance of Firearm-Related Morbidity and Mortality in New York State

Learning Objectives
1. To understand the morbidity and mortality behind firearm-related injury numbers including the dynamic that unintentional, self-harm, and assault/homicide type injuries contribute to the overall firearm-related burden.
2. To examine disparities that exist among firearm-related injuries including by sex, age, race/ethnicity, and neighborhood poverty.

Statement of Purpose
Firearm injuries led to 38,658 deaths across the country in 2016, with 900 of those deaths occurring in New York State (NYS). There are disparities among those affected.

Methods
NYS examined trends in firearm morbidity and mortality using emergency department (ED), hospitalization, and New York Violent Death Reporting System data. Disparities were examined using zip code level poverty data from the American Community Survey, census population data, and urbanicity based on rural-urban commuting classifications linked to violent death cases. Bivariate analysis was utilized, and confidence intervals were made to identify significant relationships.

Results
In NYS, in 2015 and 2016, there were a total of 3,256 suicides and 1,335 homicides. Firearms were involved in 28% of suicides and 56% of homicides in NYS, making them the second most common mechanism of suicide and the leading mechanism of homicide. Based on 2016 data, Black non-Hispanics are at the highest risk for being treated for firearm-related injuries in the hospital/ED, having both the highest rates for assault and unintentional firearm injuries. Black non-Hispanics also have the highest rate of firearm-related homicides, whereas white non-Hispanics had the highest rate of suicides. Males have higher risks for firearm-related medical treatment regardless of intentionality, with the largest disparities existing among self-harm related ED visits (10 times the rates of visits compared to females) and unintentional firearm hospitalizations (with nearly 27 times the rates of females).

Firearm involvement in suicides and homicides are affected by urbanicity (p<0.01), with 96% of rural firearm deaths being suicides, compared to 52% of urban firearm deaths. Firearm involvement in suicides and homicides was significantly associated with zip code of residence poverty concentration (p<0.01). Firearm deaths in high poverty areas are most prevalently homicides (75%) compared to other areas where they are more likely to be suicides (73%).

Additionally, unintentional firearm injuries are largely non-fatal, making up only 1% of violent deaths; however, they had a substantial influence on morbidity, making up 22% of firearm-related hospitalizations and 41% of firearm-related ED visits.
Conclusions
While NYS has lower rates of firearm morbidity and mortality in comparison to other states, these preventable injuries remain a public health burden.

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Matt Garnett is a research scientist with the New York State Department of Health’s Bureau of Occupational Health and injury prevention. He works in the surveillance of a crosscutting spectrum of injury and violence topic areas as the epidemiologist on New York State’s Core SVIPP grant as well as several highway traffic safety grants. Mr. Garnett has an undergraduate degree in Sociology from Drexel University and an MPH in Epidemiology from Columbia University.