

The intersection between suicide prevention and firearm safety

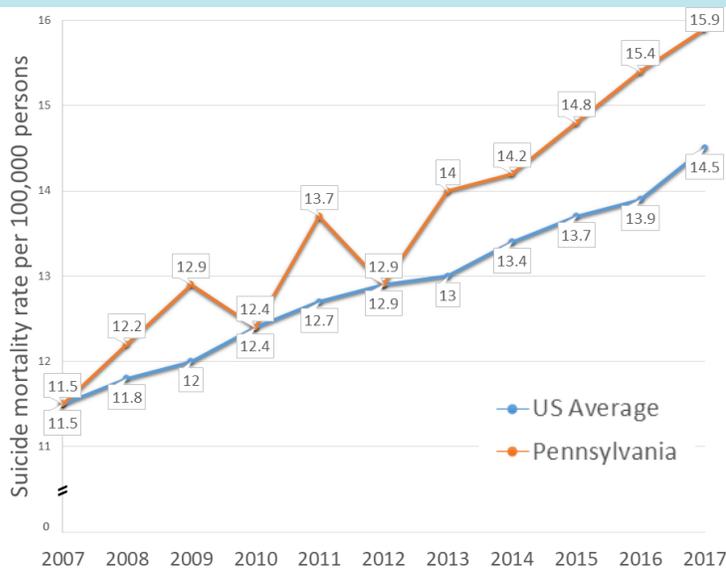
State Epidemiological Outcomes Workgroup, 2019

Suicide - the 10th leading cause of death in the United States (U.S.) and responsible for 47,173 deaths in 2017 [1] – has emerged as an important public health issue. Suicide is the second leading cause of death among people 10-34 years of age [2]. Youth and young adults often experience many risk factors that leaves them especially vulnerable to suicidal thoughts.

In Pennsylvania, suicide deaths are the highest they have ever been and are driven equally by suicide by firearm and suicide by other methods [1]. The connection between suicide and firearms recently reached the highest office in Pennsylvania, with Governor Wolf issuing an executive order in August 2019 to reduce gun violence, with a major priority being the reduction of suicides by firearm.

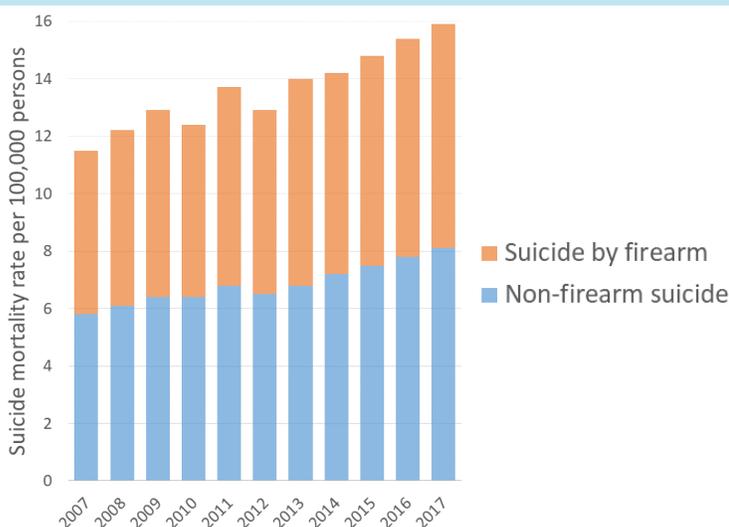
The purpose of this report is to provide information and data on suicide, suicide deaths by firearm, and suicide prevention strategies focused on youth and young adults to help inform Pennsylvania lawmakers and other key stakeholders on strategies that address this important public health issue.

The impact of suicide in Pennsylvania



All cause suicide mortality rates have been increasing for the last decade, with Pennsylvania consistently surpassing the average rate for the United States since 2013.

Data source: CDC Wonder

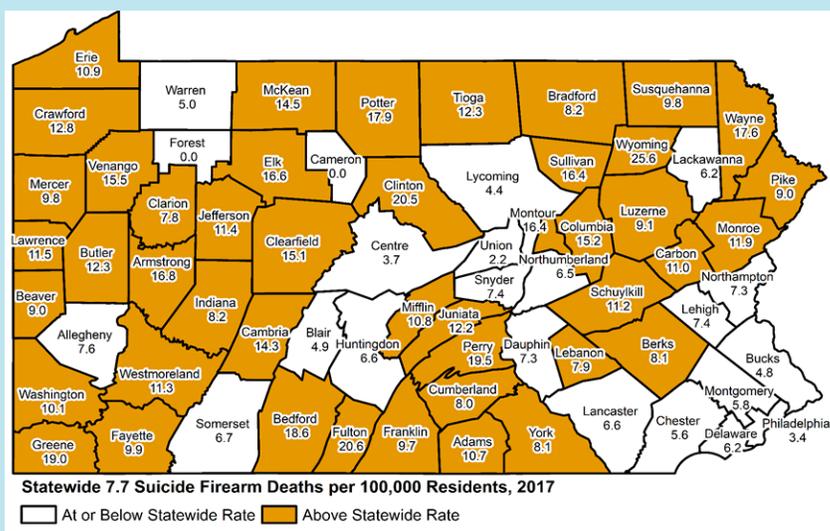


Suicide by firearm is on the rise in Pennsylvania.

One factor contributing to the rise in suicide is the rise in suicide by firearm. In 2017, 61% of firearm deaths in Pennsylvania were suicides [3] and nearly half of all suicide deaths were by firearm [1]. In Pennsylvania, firearms remain the most lethal method of attempting suicide – 85% of self-injury by firearm is fatal, compared to 3% of poisonings [4].

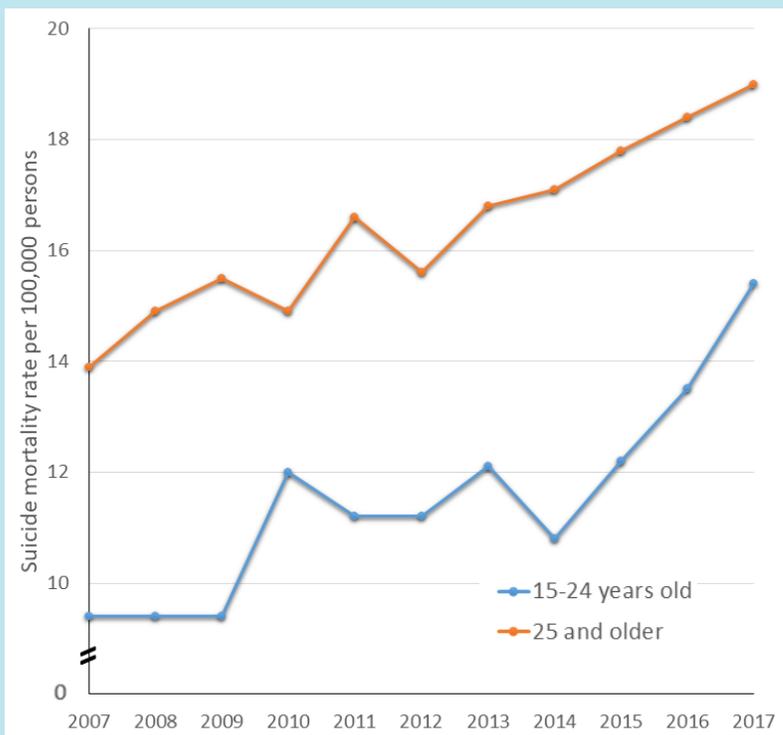
Data source: CDC Wonder

Rural Pennsylvania has seen the greatest rise in suicide deaths by firearm.



From 2007 through 2017, counties with the highest suicide by firearm rates were all rural counties [3]. In 2017, the counties with the highest suicide by firearm rates per 100,000 residents were Bedford (18.6), Clinton (20.5), Fulton (20.6), Greene (19), Perry (19.5), and Wyoming (25.6) [3]. In contrast, Philadelphia county had one of the lowest suicide rates (3.4), along with a mix of rural and urban counties, including Cameron (0), Forest (0), Union (2.2), Centre (3.7), Lycoming (4.4) and Bucks (4.8) [3].

Data source: Pennsylvania Department of Health.
Prepared by the Center for Rural Pennsylvania

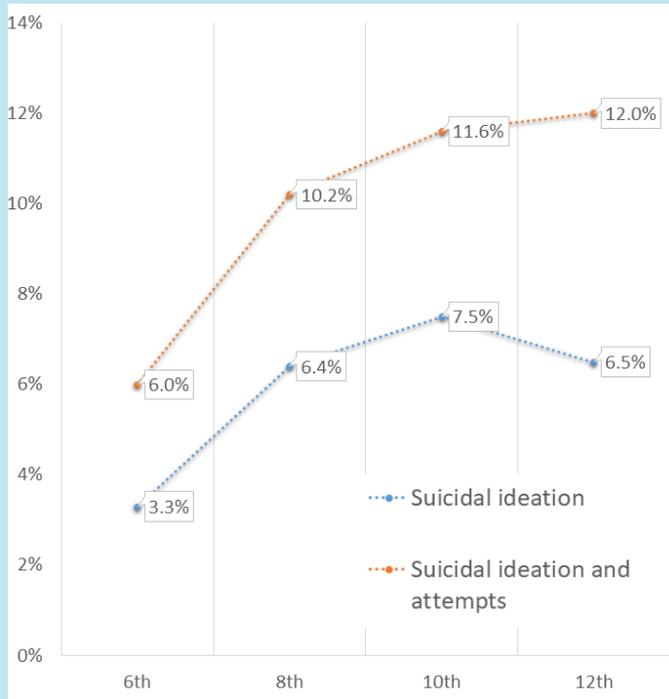


The rate of all cause suicide mortality in Pennsylvania youth and young adults has seen a similar upward trend as adults, with an especially steep increase starting in 2014.

Youth and young adults are often dealing with many risk factors that are associated with increased risk of suicide, including substance misuse, mental health, bullying, and lack of social connectedness [2].

Data source: CDC Wonder

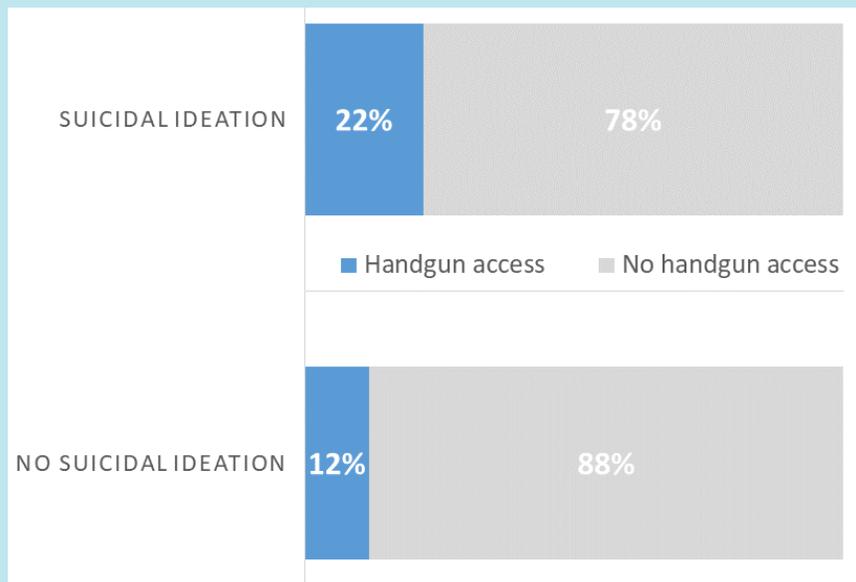
While suicide deaths have reached the highest numbers in U.S. history, substantially more people are hospitalized as a result of suicide attempts than are fatally injured. In 2017 among adolescents aged 12 to 18, for every one suicide, three reported requiring medical treatment for a suicide attempt, 15 reported making a suicide attempt, 19 reported making a suicide plan, and 25 reported suicidal thoughts [5].



While suicidal ideation peaks in early high school, suicide attempts continue to increase for Pennsylvania students.

Findings from the Pennsylvania Youth Survey (PAYS) indicate that suicide prevention must start early in life. In 2017, 1 in 6 students considered suicide in the past year, 1 in 8 indicated they created a suicide plan at least once in the past year, and 1 in 10 indicated they attempted suicide at least one time in the past year, with self-reported suicidal ideation and planning peaking early in high school [5]. Similar to national trends [6], the rate of suicide attempts continues to rise through high school [5].

Data source: PAYS 2017



Students who have experienced suicidal thoughts are more likely to have easy access to handguns.

Nearly 15% of students have easy access to handguns (14.6%). This percentage increased among students who had considered suicide – 22% of students who considered suicide have easy access to handguns. Students in rural counties reported nearly two times more widespread ease of access to handguns [2].

Data source: PAYS 2017

The use of safe storage practices for firearms has been shown to be protective of suicide attempts among adolescents [4]. This includes storing firearms unloaded, separate from ammunition, and secured in a locked location or with a safety device [4]. Coupled with the fact that students in rural counties were nearly twice as likely to report that it was easy to access a handgun compared to those in urban counties [5], firearm safety is critical to reduce the risk of suicide in Pennsylvania youth.

Suicide is preventable

While the impact of suicide on Pennsylvania residents is considerable, there is evidence that suicide prevention efforts do make a difference. Mental health is an important component when considering suicide prevention. Data vary on the strength of this association, with some sources finding that the majority (54%) of people who died by suicide did not have a known mental health condition [7], while others found that approximately 90% of individuals that die by suicide had a psychiatric disorder [8]. It is important to note, however, that suicide is a complex behavior and does not have a single cause.

Risk factors	Protective Factors
Easy availability of handgun	Male gender
Bullied through texting and/or social media or stayed home from school due to worries about bullying	Participated in community, family, school sponsored, or faith-based activities
Consumed marijuana or alcohol in the past 30 days	Viewed neighborhood fondly and would miss it if they had to move

Many risk and protective factors are associated with suicide attempts in Pennsylvania youth.

Using upstream risk and protective factors identified by the Centers for Disease Control and Prevention, similar factors were identified in the **PAYS 2017** data. The odds of suicide attempt (classified as one or more attempts in the past year) were estimated after controlling for depression. These data support an upstream approach to address suicide prevention – that is, identifying risk and protective factors that are associated with considering suicide and addressing these factors will help prevent suicide attempts. There are many risk factors and protective factors that can influence suicidal ideation and action. Among these factors, mental health, substance misuse, community connectedness, and access to lethal means play a large role.

Students who had easy access to a handgun had 80% higher odds of attempting suicide compared to students who reported that handguns were difficult to obtain. Students who reported worries related to bullying, both in person or through texting and social media had 320% higher odds of attempting suicide compared to students who did not experience bullying. The odds of attempting suicide were 110% higher in students who consumed alcohol or used marijuana in the past 30 days.

Many factors also proved to be protective, with students who participated in community, school, faith-based, volunteer, or family supported activities in the past 12 months having a 30% decrease in the odds of suicide attempt. In addition, students that felt connected to their neighborhood had a 30% decrease in odds of suicide attempt. While the rates of suicide in Pennsylvania have consistently been higher in males compared to females, male gender was found to be a protective factor in the 2017 PAYS data, with a 40% decrease in the odds of suicide attempt. This aligns with national findings, which show that while females are more likely to think about, plan, and act on suicidal thoughts than males, males are more likely to use more lethal means [6].

Suicide prevention and firearm safety strategies involve many partnerships

Suicide prevention can occur across many areas through strengthened partnerships and implementation of new programs. While suicide is a rare cause of death, it has a far-reaching impact on individuals and communities, with a recent estimate finding that each suicide death affects up to 135 people, 25 of which report continual distress [6]. Government entities and the health sector are best suited to adopt strategies related to economic support, access and delivery of suicide care, and protective environments.

- ◆ **Clinical interventions** such as hospital-based violence intervention programs and crisis intervention can connect individuals to behavioral health resources to address unresolved trauma and feelings of depression and hopelessness [2].
- ◆ **Mental health provider shortages** are a significant problem in Pennsylvania, with only one mental health professional for every 600 residents [4]. Due to this shortage, nearly two million Commonwealth residents live in an area deemed by the federal government to be a “mental health care professional shortage area” [4].
- ◆ When a person is at risk for suicide **reducing access to lethal means** of suicide is imperative. People at risk might be experiencing suicidal thoughts, have attempted suicide previously, or are struggling with mental health or substance misuse issues, often while also coping with difficult life crises [9]. Temporary storage of firearms outside of the home is the best method to reduce access. Members of the community can assist with this process to provide safe repositories for firearms. Relatives or friends, gun shops, shooting ranges, or even law enforcement can be enlisted to take temporary possession of the firearm until the crisis has passed [9]. Communities should be educated about options for temporary storage of firearms outside the home to make this process easier during a suicidal crisis [10].
- ◆ **School and community settings** can work together to teach coping and problem-solving skills through social-emotional learning programs that also teach communication, emotional regulation, and conflict resolution [2]. In addition to these programs, encouraging connectedness within peer groups and the community can decrease isolation and increase feelings of belonging and personal value [2]. Most youth who experience suicidal ideation usually find more constructive ways to resolve them. This requires support, both with adults and peers, through social connectedness. Students lacking access to adult support in school settings are more likely to transition from suicidal ideation to attempt, whereas students with trusted adults at school are more likely to seek help [11]. Creating supportive environments in the school system can help ensure that students are able to easily access the help they need.

Leveraging school-based interventions for suicide prevention

The school system plays a significant role in all levels of suicide prevention for youth. In Pennsylvania, Student Assistance Program (SAP) teams provide school and community resources and interventions to support students and their families when there is a concern about any barrier to learning, which may include substance use and/or mental health concerns [12]. The team consists of trained school staff and liaisons from community drug and alcohol and mental health agencies [12].

The Pennsylvania Positive Behavior Support Network (PAPBS Network) has also provided training and technical assistance to schools throughout the commonwealth on the implementation of Positive Behavior Interventions and Supports (PBIS) to help promote the academic, social, emotional, and behavioral well-being of all students [13].

PBIS involves three tiers of intervention [13]:

- universal for all students and settings
- secondary for students at risk
- tertiary for students requiring specialized assistance

Comprehensive suicide prevention efforts in schools should incorporate these existing mechanisms for prevention and intervention in order to more broadly address risk factors such as substance use and bullying as well as prioritize protective factors such as participating in school-supported activities and strengthening school connectedness.

Suicide prevention addresses firearm safety

This report provided data to support suicide prevention for Pennsylvania youth by addressing firearm safety. In 2017, 61% of firearm deaths in Pennsylvania were suicides and nearly half of all suicide deaths were by firearm. Firearms are a common and lethal means of suicide and addressing this cause will be a necessary and important element of suicide prevention.

To address the relationship between suicide prevention and firearm safety, suicide prevention should incorporate upstream approaches and build upon existing partnerships. Suicide is complex and involves many components that cannot be fully addressed by any one entity. These partnerships need to integrate and align their efforts, both within and between entities in order to effectively address all of these important factors.

PENNSYLVANIA SEOW

The State Epidemiological Outcomes Workgroup (SEOW) is supported by the Pennsylvania Department of Drug and Alcohol Programs. SEOW members represent both governmental and non-governmental agencies from across Pennsylvania. The goal of the SEOW is to inform and enhance state and community decisions regarding substance misuse and mental illness prevention programs, practices, and policies.

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*Information contained in this report does not necessarily reflect the views of individual SEOW members or their respective agencies.

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APPENDIX

PAYS Variable	Adjusted odds ratio (95% CI)
Easy access to handgun	1.8 (1.3 - 2.5)
Male gender	0.6 (0.4 - 0.8)
Depression	4.7 (2.5 - 8.8)
Alcohol or marijuana use in the past 30 days	2.1 (1.5 - 2.8)
Bullied through texting/social media or stayed home due to worries about bullying at school	4.2 (3.2 - 5.7)
Participated in community, school, faith-based, volunteer, or family supported activities in the past 12 months	0.7 (0.5-1.1)
Likes neighborhood and/or would miss neighborhood	0.7 (0.5 - 0.9)

Adjusted Odds Ratios Comparing Suicide Attempt Outcomes in PAYS 2017 Data