

Risk Factors for Fatal and Non-Fatal Suicidal Behaviors Among Youth Aged 10-19 Years –

Los Alamos, New Mexico, 2016

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Background

On April 12, 2016 the Los Alamos Public School Board requested assistance from the New Mexico Department of Health (NMDOH) regarding a possible cluster of youth suicide deaths, attempts, and ideation in the Los Alamos community. Possible objectives identified included characterizing the extent of fatal and non-fatal suicidal behaviors, identifying underlying risk factors, and providing recommendations to reduce suicide risk.

In 2013, there were two suicides among high school students in the Los Alamos County Public School System. Because the deaths occurred in close proximity, local public health officials, public school officials, and community members became more concerned about suicide risk among youth in the community.

Objectives of the NMDOH investigation and response included:

1. Examine trends of fatal and non-fatal suicidal behaviors from January 1999 through September 2016, among youth 10-19 years of age in Los Alamos County, New Mexico.
2. Investigate fatal and non-fatal suicidal behaviors among youth 10-19 years of age in Los Alamos County, New Mexico to help inform prevention strategies to be implemented by the community.
3. Make recommendations on how Los Alamos Public Schools can reduce the risk of youth suicide.

Los Alamos County

Los Alamos County is located in northern New Mexico and is the 21st most populous county in the State of New Mexico, with approximately 18,000 residents. The median age is 44 years. Sixty-four percent of Los Alamos County residents have a Bachelor's degree or higher, and the median household income is \$105,989. Race/ethnicity is distributed as follows; White (76%), Hispanic (16%), Black or African American (1%), Asian or Pacific Islander (6%), and American Indian or Alaska Native (1%) (U.S. Census).

Methods

NMDOH used multiple data sources to identify fatal and non-fatal suicidal behaviors and to examine trends in suicidal behaviors and associated risk and protective factors among Los Alamos County youth 10-19 years of age. NMDOH staff also conducted Los Alamos Medical Center (LAMC) medical chart reviews to identify factors that may have contributed to suicidal behaviors among this group.

The investigation consisted of the following sequential steps:

1) Review of existing data

- New Mexico Death Certificate Database, Bureau of Vital Records and Health Statistics, New Mexico Department of Health. Retrieved from the New Mexico Department of Health, Indicator-Based Information System for Public Health (NM-IBIS);
- New Mexico Hospital Emergency Department Data, Health Systems Epidemiology Program, New Mexico Department of Health;
- Youth Risk and Resiliency Survey (YRRS), Injury and Behavioral Epidemiology Bureau, New Mexico Department of Health;

2) Data gathering Line list of suicide attempt and suicidal ideation ED visits among youth 10 – 19 years of age who were residents of Los Alamos County from 2014-2016

- Syndromic Surveillance System, Health Systems Epidemiology Program, New Mexico Department of Health
- Emergency Department (ED) visit data from Los Alamos Medical Center (LAMC)
 - a. Medical chart abstraction at LAMC
 - b. Summer 2016 LAMC Emergency Department active, real-time surveillance

3) Data Analysis - Trends in fatal and non-fatal suicidal behaviors among youth ages 10 to 19 years were examined using the five data sources listed above. Descriptive epidemiology findings

- Statistical tests of significance

4) Recommendations and dissemination of findings

Data Sources

New Mexico Bureau of Vital Records and Health Statistics (BVRHS) Death Certificate Data

Mortality data were collected from the New Mexico Death Certificate Database, BVRHS, New Mexico Department of Health. According to NM statute, all deaths that occur in NM are required to be reported to the NMDOH, BVRHS. Data from vital records reporting are highly accurate and consistent over time. Mortality data are based on items reported on the death certificate and include demographic, geographic, injury, medical and cause of death information on decedents. In most cases, funeral directors work with an informant (usually a relative or friend) to collect demographic and geographic information. Physicians and other persons authorized to certify the cause(s) and manner of death submit this information to BVRHS. When deaths of New Mexico residents occur out of state, information from the death certificate is transmitted to NM Vital Records and Health Statistics. New Mexico death data were used to calculate self-inflicted injuries/suicide rates among Los Alamos County resident youth 10 – 19 years of age. Suicide deaths were defined using the International Classification of Diseases, 10th revision (ICD-10) underlying cause of death codes.

New Mexico Emergency Department (ED) Visit Data

Hospitals share data with the NMDOH through a web-based system. NMDOH staff in the Health Systems Epidemiology Program searched for ICD-9-CM and ICD-10-CM external cause of injury E-codes and diagnoses codes for suicide and self-inflicted injury in emergency department records diagnosis fields from January 2010 through December 2015 for patients 10 to 19 years who were Los Alamos County residents (2015 data are based on preliminary data since not all facilities have reported for 2015).

Los Alamos Medical Center (LAMC) Emergency Department Medical Chart Abstraction

Data from LAMC emergency department visits were abstracted from medical charts and based on case definition. Cases were defined as any emergency department visit from January 2014 – April 2016 with an ICD-9-CM or ICD-10-CM external cause of injury E-code or diagnosis code for suicide attempt in any diagnosis field and any mention of intentional self-injury with expressed intent to cause injury or die. Intentional self-injury without mention of intent to harm oneself or expressed intent to die (cutting/laceration) were excluded.

Youth Risk Resiliency Survey (YRRS)

The New Mexico Youth Risk and Resiliency Survey is a biennial, comprehensive, anonymous, and voluntary survey that examines behaviors, experiences, and other factors that influence the health and well-being of New Mexico's high school and middle school youth. It is offered to a systematic sample of high school and middle schools in each school district. Topic areas for the YRRS include risk behaviors related to alcohol and drug use, body weight, unintentional injury and violence, suicidal ideation and attempts, tobacco use, sexual activity, physical activity, and nutrition; resiliency (protective) factors, which are measures of positive and supportive relationships, such as relationships in the family, school, community, and with peers. The most recent survey data were collected in the fall of 2015 and resulted in responses from 890 Los Alamos High School students, with a response rate for Los Alamos County of 81%. Corrective weights were applied to the data to ensure proportional representation based on enrollment by grade within each strata. Risk and resiliency data from Los Alamos County youths were compared to New Mexico statewide and national Youth Risk Behavior Surveillance System (YRBSS) results from 2015.

To examine potential risk factors for non-fatal self-injury, the 2015 New Mexico YRRS data were compared to corresponding items on the National Youth Risk Behavior Surveillance System data (<http://www.cdc.gov/healthyyouth/data/yrbs/index.htm>). Data from high school students in Los Alamos High School were compared to the mean from all New Mexico public high schools, and to the median nationally, on five self-reported risk variables: 1) feeling sad or hopeless almost every day for ≥ 2 weeks in a row so that they stopped doing some usual activities during the 12 months before the survey; 2) seriously considered attempting suicide during the 12 months before the survey; 3) made a plan about how they would attempt suicide during the 12 months before the survey; 4) attempted suicide one or more times during the 12 months before the survey; and 5) attempted suicide during the past 12 months that resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse. We also compared high school students in Los Alamos High School to the mean from all New Mexico public high schools on 14 self-reported resiliency variables: 1) a parent or other adult is interested in my homework; 2) a parent or other adult believes I will be a success; 3) if I am gone, a parent or other adult knows where I am and knows who I am with; 4) a teacher or other adult listens to me when I have something to say; 5) a teacher or other adult believes I will be a success; 6) there are clear rules about what students can and cannot do; 7) I am involved in sports, clubs, or other extra-curricular activities; 8) there is an adult who really cares about me; 9) there is an adult who tells me when I do a good job; 10) I am a part of group activities; 11) I am involved in music, art, literature, sports, or a hobby; 12) I plan to go to college or some other school after high school; 13) I have a friend about my own age who really cares about me; and 14) I have a friend about my own age who helps me when I'm having a hard time.

New Mexico Population Estimates, University of New Mexico, Geospatial and Population Studies (GPS) Program

All New Mexico population estimates were calculated using "Population Estimates", retrieved on November 22, 2016 from New Mexico Department of Health, Indicator-Based Information System for Public Health website: <http://ibis.health.state.nm.us/>.

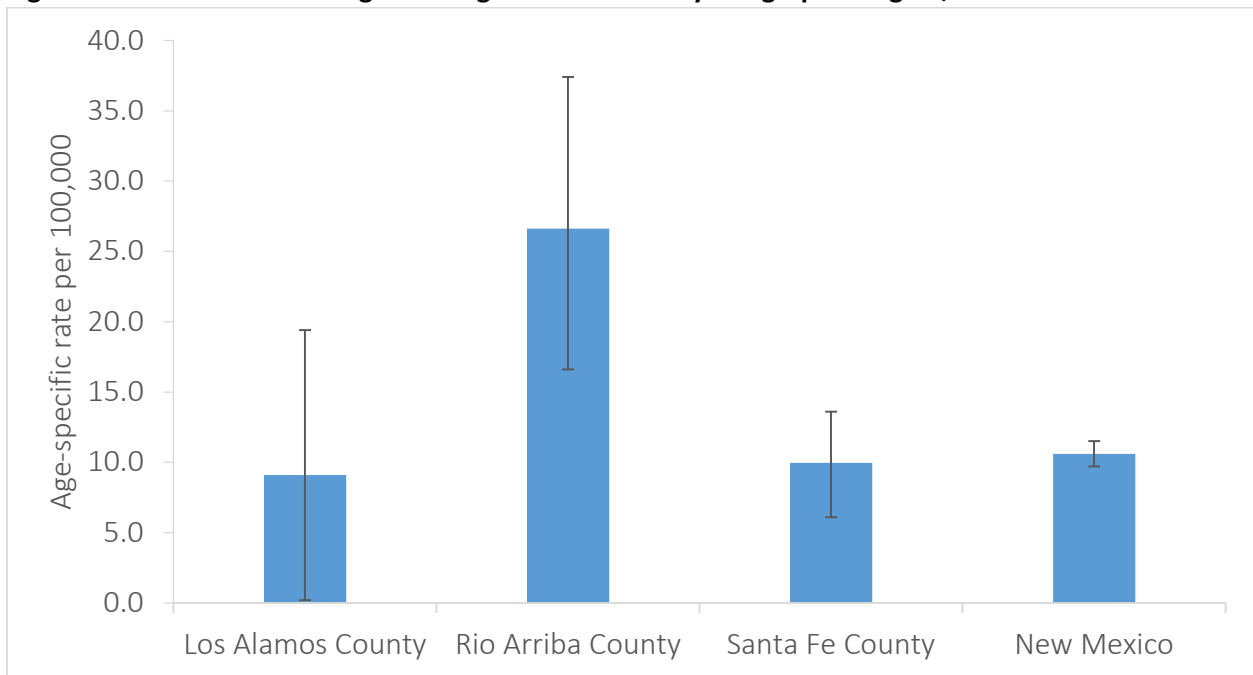
Results

Suicide Deaths among Youth

There were four suicide deaths from 1999-2015 among youth aged 10-19 years in Los Alamos County, which corresponded to an overall suicide rate of 9.1 per 100,000 persons. All four decedents were males, with a mean age of 16.75 years (median age 16 years). Two deaths were due to firearms, 1 was due to hanging, and 1 resulted from jumping from a high place.

During 1999 – 2015, the suicide rate among 10 to 19 year olds in Los Alamos County (9.1 per 100,000) was lower than the rate in Rio Arriba County (26.6 per 100,000), and similar to the rates in Santa Fe County (10.0 per 100,000), and statewide (10.6 per 100,000). The youth suicide rate in Los Alamos County was not statistically significantly different than the surrounding counties or statewide rates (Figure 1). It should be noted that some of these rates were calculated with fewer than 20 cases; therefore, the rates in Figure 1 are unstable and should be interpreted with caution.

Figure 1. Suicide Rates Among Youth Aged 10-19 Years by Geographic Region, 1999 – 2015

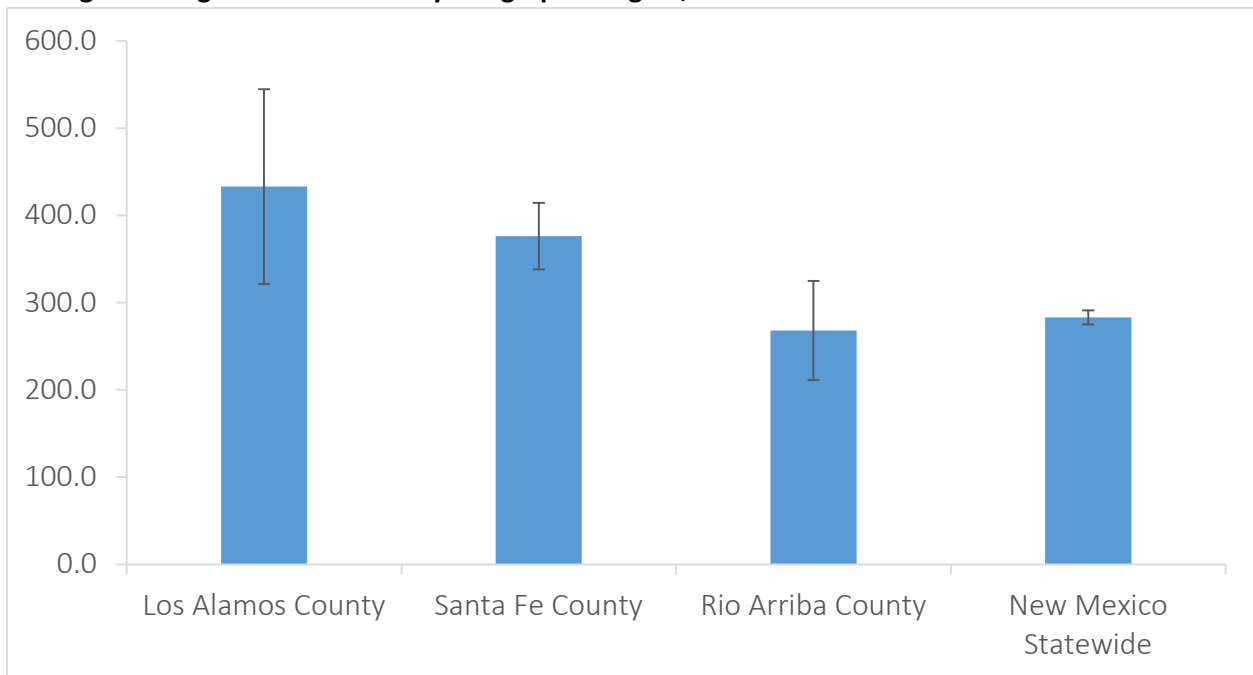


Source: New Mexico Death Certificate Database, Bureau of Vital Records and Health Statistics, New Mexico Department of Health. Retrieved November 28, 2016 from New Mexico Department of Health, Indicator-Based Information System for Public Health website: <http://ibis.health.state.nm.us/>.

Non-Fatal Intentional Self-Injury (Emergency Department Visits), 2010-2015

From 2010 – 2015, there were 65 visits to an emergency department for non-fatal intentional self-injury among youth 10-19 years of age who were residents of Los Alamos County. This corresponds to a rate of 433.0 per 100,000 population during the six year period. The rate of ED visits in Los Alamos County was higher than the surrounding counties of Santa Fe (376.2 per 100,000), and Rio Arriba (268.0 per 100,000), as well as New Mexico statewide (283.1 per 100,000) among youth 10 - 19 years of age. The rate for Los Alamos was statistically significantly higher than the rate for Rio Arriba and statewide, but was not statistically significantly different than the rate for Santa Fe County (Figure 2).

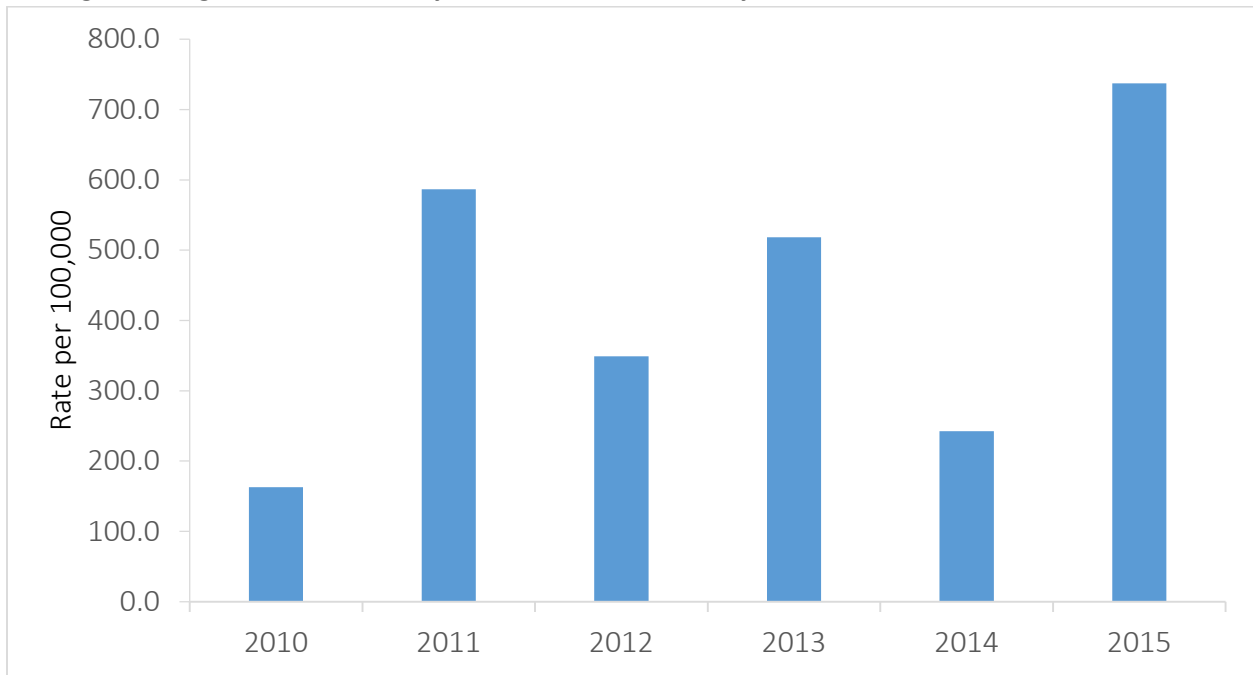
Figure 2. Non-Fatal Intentional Self-Injury (Suicide Attempt) Emergency Department Visit Rates Among Youth Aged 10 – 19 Years by Geographic Region, 2010 – 2015



Sources: NMDOH, Health Systems Epidemiology Program (HSEP), 2010-2014 Statewide Emergency Department Data and 2015 Preliminary Statewide Emergency Department Data, September 23, 2016.

Figure 3 gives the rate of non-fatal intentional self-injury emergency department visits for Los Alamos youth by year. The number of non-fatal intentional self-injury emergency department visits fluctuated by year, with a low of four in 2010 to a high of 18 in 2015 (2015 data are preliminary, as not all facilities have reported to the NMDOH for 2015). In 2010, the rate of non-fatal intentional self-injury ED visits was 162.9 per 100,000 persons (4 visits), in 2011 the rate was 586.9 per 100,000 (15 visits), in 2012 the rate was 349.2 per 100,000 (9 visits), in 2013 the rate was 518.5 (13 visits), in 2014 the rate was 242.6 (6), and in 2015 the rate was 737.1 (18 visits).

Figure 3. Non-Fatal Intentional Self-Injury (Suicide Attempt) Emergency Department Visit Rates Among Youth Aged 10 – 19 Years by Year, Los Alamos County, 2010 – 2015*

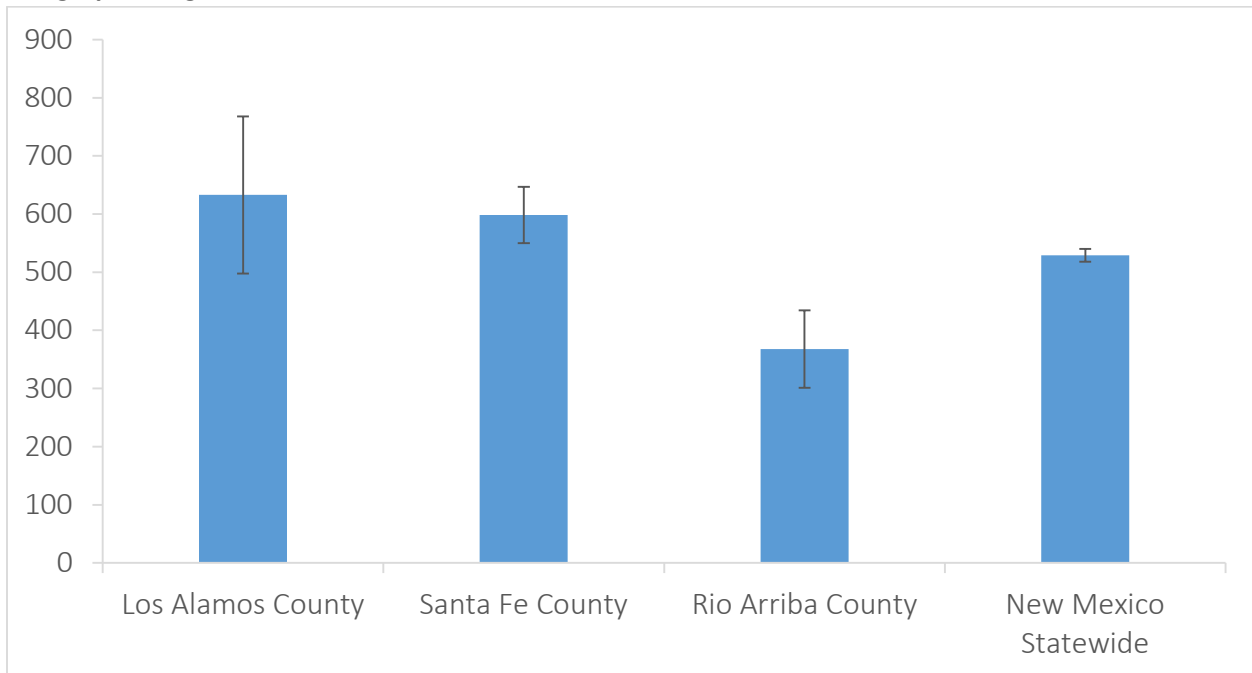


Sources: NMDOH, HSEP, 2010-2014 Statewide Emergency Department Data and 2015 Preliminary Statewide Emergency Department Data, September 23, 2016.

Suicidal Ideation (Emergency Department Visits), 2010-2015

From 2010 – 2015, there were 95 visits to an emergency department with any diagnosis of suicidal ideation among youth 10-19 years of age who were residents of Los Alamos County. This count corresponds to a rate of 632.9 per 100,000 population during the six year period. The ED suicide ideation visit rate in Los Alamos County was higher than that for the surrounding counties of Rio Arriba (367.7 per 100,000) and Santa Fe (598.4 per 100,000), as well as New Mexico statewide (529.1 per 100,000) among youth 10 - 19 years of age (Figure 4). The rate for Los Alamos County was not statistically significantly higher than Santa Fe County or statewide, but was statistically significantly higher than the rate for Rio Arriba County.

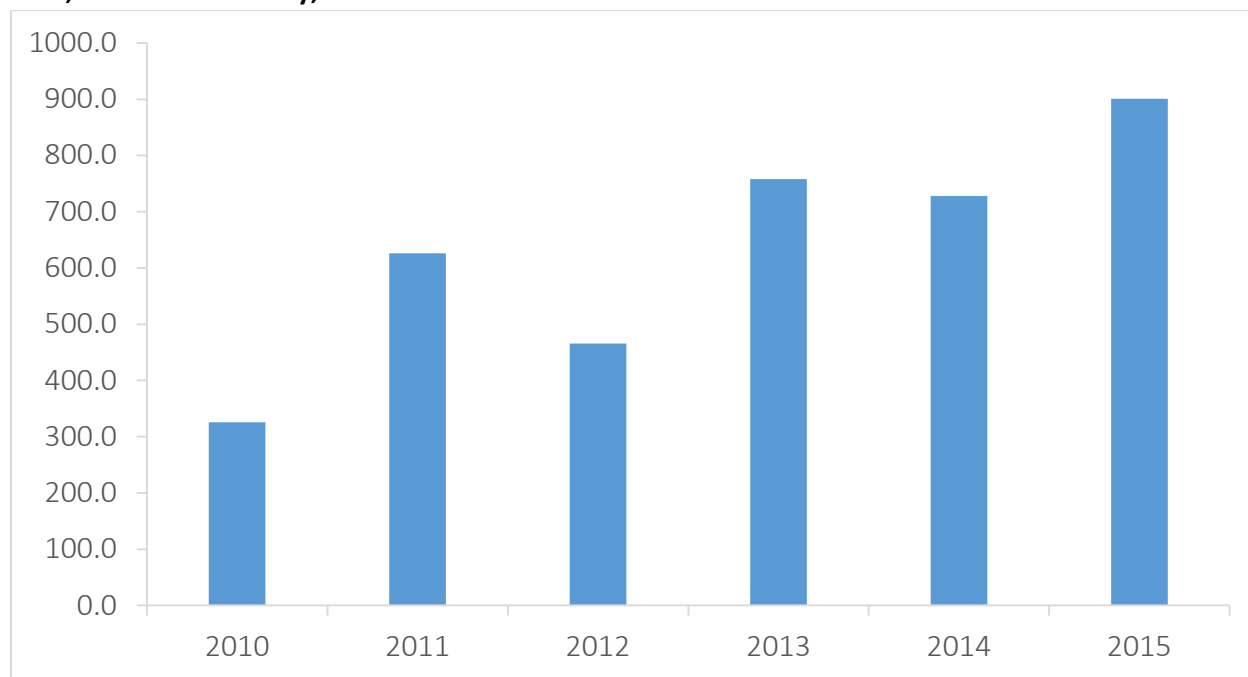
Figure 4. Suicidal Ideation Emergency Department Visit Rates Among Youth Aged 10 – 19 Years by Geographic Region, 2010 – 2015



Sources: NMDOH, HSEP, 2010-2014 Statewide Emergency Department Data and 2015 Preliminary Statewide Emergency Department Data, September 23, 2016.

By year, the number of ED visits for suicidal ideation fluctuated, with a low of 8 in 2010 to a high of 22 in 2015. Figure 5 gives the rate of suicidal ideation ED visits for Los Alamos youth by year. In 2010, the rate of suicidal ideation ED visits was 325.7 per 100,000 persons (8 visits), in 2011 the rate was 626.0 per 100,000 (16 visits), in 2012 the rate was 465.7 (12 visits), in 2013 the rate was 757.9 (19 visits), in 2014 the rate was 727.9 (18 visits), and in 2015 the rate was 900.9 (22 visits).

Figure 5. Suicidal Ideation Emergency Department Visit Rates Among Youth Aged 10 – 19 Years by Year, Los Alamos County, 2010 – 2015



Sources: NMDOH, HSEP, 2010-2014 Statewide Emergency Department Data and 2015 Preliminary Statewide Emergency Department Data, September 23, 2016.

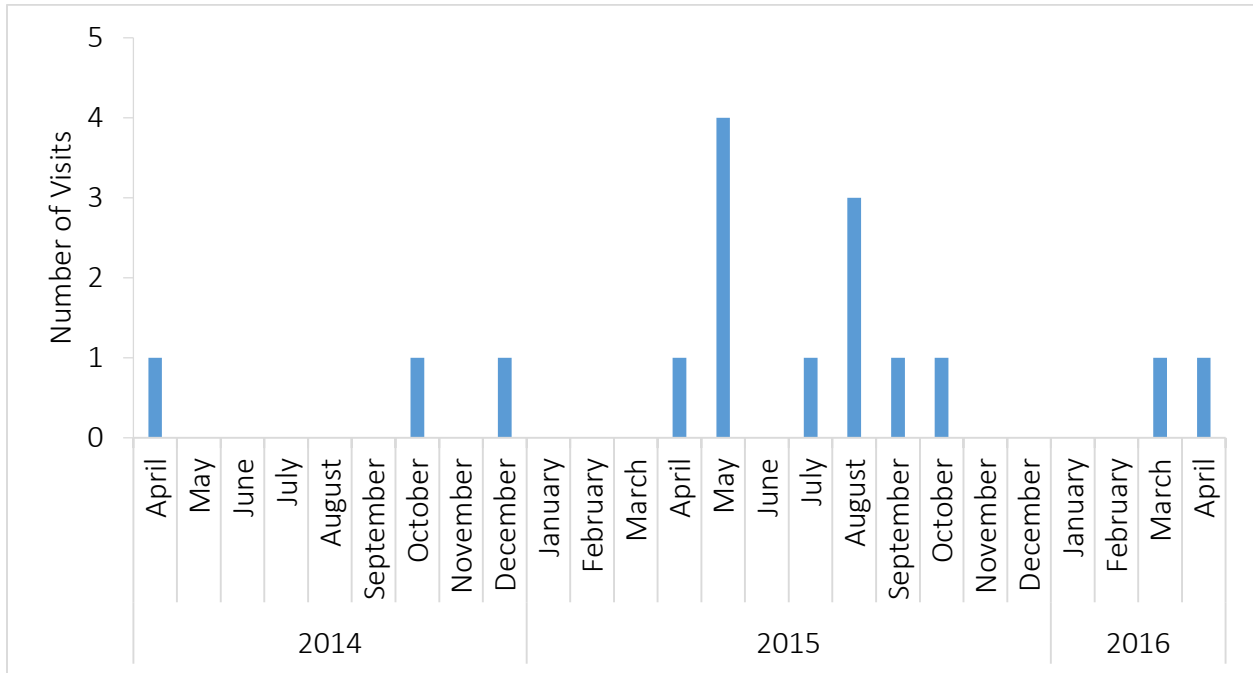
Los Alamos Medical Center Emergency Department Medical Chart Abstraction

We identified 25 ED visits between January 2014 and April 2016 among youth age 10 – 19 years that were coded with one or more non-fatal intentional self-injury (suicide attempt) ICD-CM codes. . Of the 25 visits identified, 16 (64%) met the inclusion criteria.

Non-fatal Intentional Self-harm (Suicide Attempt)

Figure 6 illustrates the distribution of visits over time and identifies two months (May and August 2015) during which the number of visits increased substantially.

Figure 6. Number of LAMC Emergency Department Visits with any Complaint of Non-Fatal Intentional Self-Injury (Suicide Attempt) Among Youth Aged 10-19 Years, Los Alamos County, January 2014 – April 2016 (n=16)



Sources: NMDOH, HSEP, 2014 Statewide Emergency Department Data, 2015 Preliminary Statewide Emergency Department Data, and 2016 Syndromic Surveillance Data, May 10, 2016. Medical record abstraction, LAMC Medical Records Department, May 9 and 11, 2016.

Among the 16 youth who were treated in the LAMC emergency department for non-fatal intentional self-harm, 13 (81%) were female, 100% were White and had a median age of 15.5 years (mean 15.4, range 12 – 19 years). A majority (12; 75%) of those who were seen in the LAMC emergency department were transferred to a mental health treatment facility, while 4 (25%) were discharged home.

Of the 16 youth who were treated in the ED, a majority (13; 81%) used a medication/drug (i.e. prescription, over-the-counter, or illicit drug) overdose as the primary method of injury, while 3 (19%) had self-inflicted cutting/lacerations. Almost all youth (14; 88%) had a previous diagnosis of a mental disorder. Of those with a previous mental disorder diagnosis, the majority (12; 75%) had a depressive disorder. Further, among the 16 youth, 6 (38%) had received mental health treatment in the 30 days prior to the emergency department visit, 3 (19%) had not received mental health treatment, and half (8; 50%) had an unknown history of receiving mental health treatment in the past 30 days. While the majority of youth had an unknown treatment history in the past month, 12 (75%) had an antidepressant listed in the medical chart as a current medication.

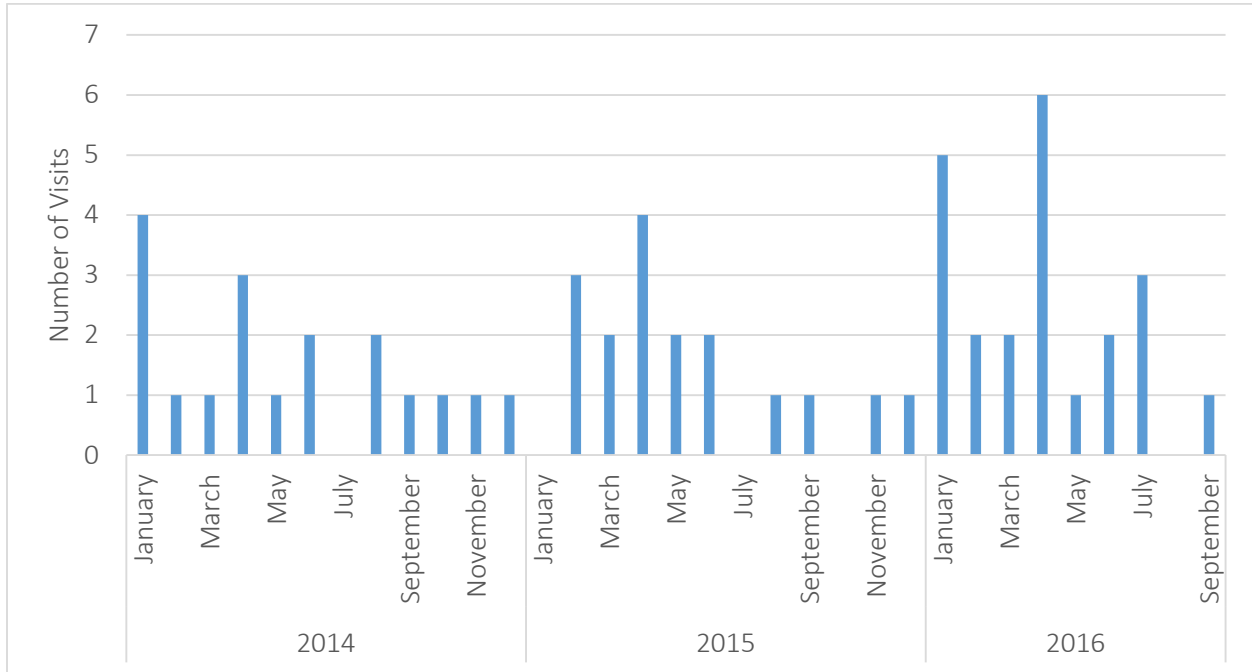
Seven (44%) had a history of one prior suicide attempt, 1 (6%) had a history of more than one prior suicide attempt, 4 (25%) had no history of prior suicide attempt, and 4 (25%) were missing this information in the medical chart. Alcohol was involved in 2 (12%) of non-fatal intentional self-injury events, while 14 (88%) did not have any alcohol involvement.

Suicidal Ideation

Between January 2014 and September 2016, there were 57 visits to the LAMC ED for suicidal ideation. Peak visits occurred during April (6, 11%) and January (5; 9%) of 2016 (Figure 7).

Among the 57 youth who were treated in the LAMC ED for suicidal ideation, the majority (53%) were female and the mean and median ages were 16 years, (range 12 – 19 years).

Figure 7. Number of LAMC Suicidal Ideation Emergency Department Visits Among Youth Aged 10-19 Years, Los Alamos County, January 2014 – September 2016 (n=57)

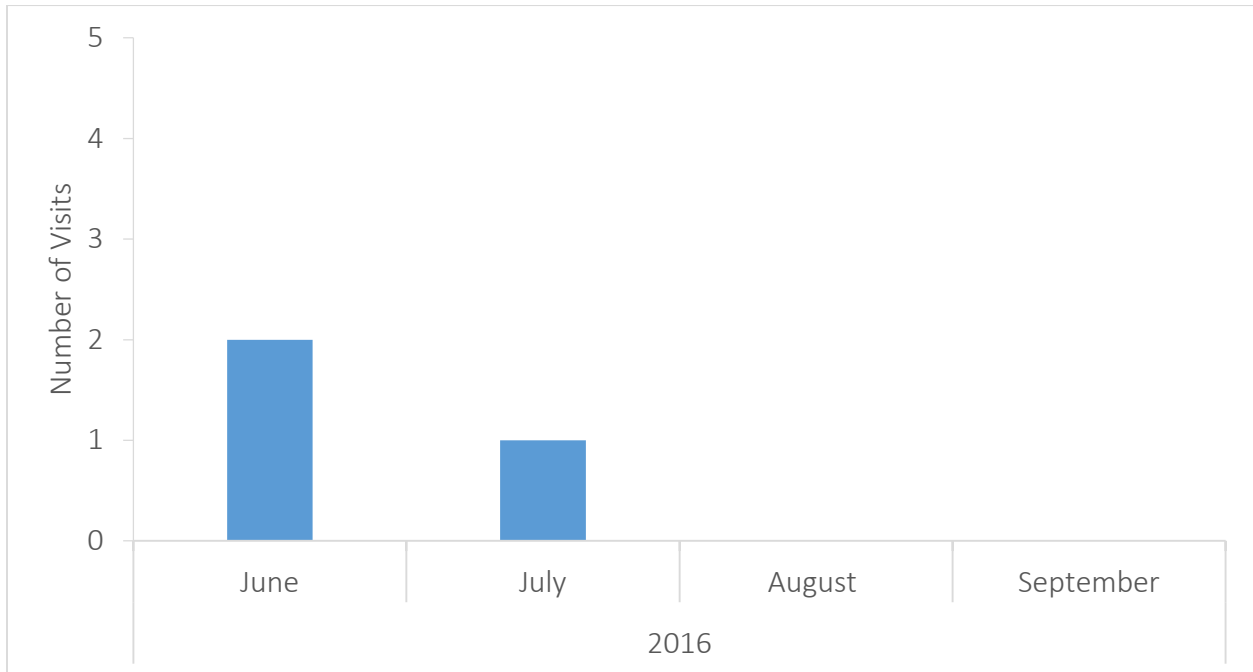


Sources: NMDOH, HSEP, 2014-2015 Statewide Emergency Department Data and 2016 Syndromic Surveillance Data, October 19, 2016.

LAMC Emergency Department Surveillance, June – September, 2016

Based on an increase in suicide attempts during the summer months in 2015 (identified through medical chart abstraction), the NMDOH increased surveillance for fatal and non-fatal suicide behaviors at Los Alamos Medical Center Emergency Department from June 1 – September 12, 2016. LAMC Emergency Department staff reported demographic, method of injury, and discharge disposition data to NMDOH for emergency department visits due to suicide attempt in youth age 10-19 years. During this time, there were three visits to the emergency department for suicide attempt. Of the three visits, two were male, the median age was 14 years, all visits were due to drug overdose, and all three patients were transferred to an inpatient treatment facility for follow up care. The epidemiology curve below (Figure 8) illustrates the timing of suicide attempts during the summer 2016.

Figure 8. Number of LAMC Emergency Department Visits for Suicide Attempt Among Youth Aged 10-19 Years by Month, Los Alamos County, June 1 – September 12, 2016



Source: LAMC Emergency Department Adolescent Suicide Attempts reporting log.

Risk and Protective Factors Associated with Fatal and Non-fatal Suicidal Behaviors

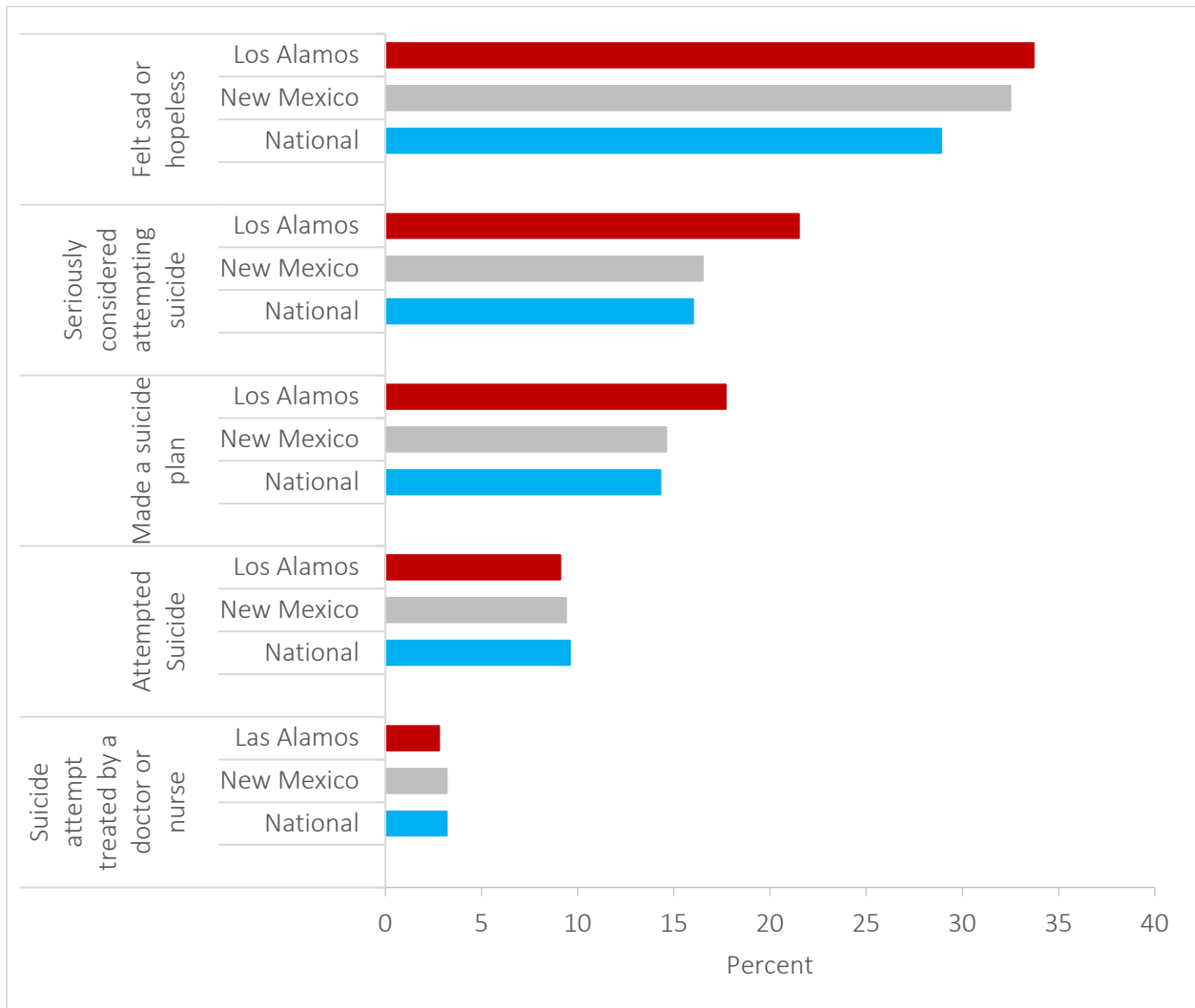
Among Los Alamos High School (LAHS) students in 2015, 33.7% (CI: 30.1 – 37.4%) of students reported feeling sad or hopeless almost every day for two weeks or more in a row during the past 12 months that they stopped doing some usual activities during the past 12 months. This compares to 32.5% (CI: 30.8 – 34.3%) of high school students statewide and a median of 28.9% (range: 24.1 – 34.2%) nationally.

Among LAHS students, 21.5% (CI: 18.8 – 24.4%) of students reported they had seriously considered attempting suicide during the 12 months before the survey. This compares to 16.5% (CI: 15.7 – 17.9%) of high school students statewide, which was statistically significantly higher, and 16% (range: 13.4 – 20.3%) nationally.

Among LAHS students, 17.7% (CI: 15.0 – 20.7%) of students reported they made a plan about how they would attempt suicide during the 12 months before the survey. This compares to 14.6% (CI: 13.6 – 15.7%) of high school students statewide and 14.3% (range: 11.0-18.2%) nationally.

Among LAHS students, 9.1% (CI: 7.2 – 11.6%) of students attempted suicide one or more times during the 12 months before the survey, compared to 9.4% (CI: 8.6 – 10.4%) statewide and 9.6% (range: 5.9-12.7%) nationally. And 2.8% (CI: 2.1 – 3.7%) of LAHS students reported attempting suicide that resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse, compared to 3.2% (CI: 2.7 – 3.8%) of high school students statewide and 3.2% (range: 1.9 – 9.3%) nationally (Figure 9).

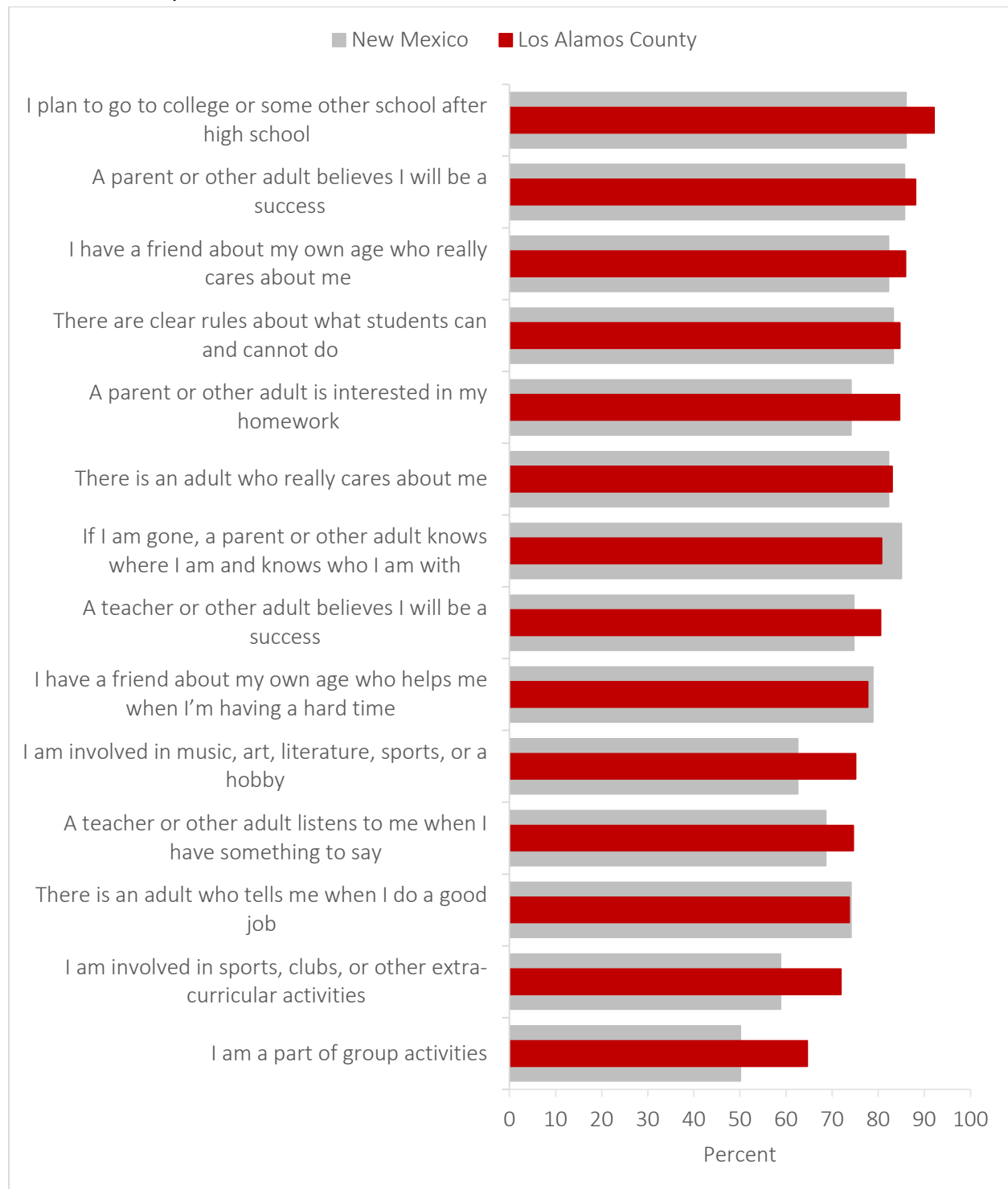
Figure 9. Suicidal Attempt and Ideation Among High School Students, Los Alamos County, New Mexico, and the U.S., 2015



Sources: NMDOH, Youth Risk and Resiliency Survey, 2015. Centers for Disease Control and Prevention, 2015 Youth Risk Behavior Survey Data. Available at: www.cdc.gov/yrbs. Accessed on September 16, 2016.

Of the 14 resiliency indicators, percentages for 11 resiliency indicators were higher for Los Alamos County high school students compared to high school students statewide (Figure 10).

Figure 10. Protective Factors for Suicidal Behaviors Among High School Students, Los Alamos County and New Mexico, 2015



Source: NMDOH, Youth Risk and Resiliency Survey, 2015.

Discussion

The New Mexico Department of Health examined trends of fatal and non-fatal suicidal behaviors and identified risk factors associated with these behaviors among youths 10 – 19 years of age in Los Alamos. From 1999 to 2015, there were four youth suicides among Los Alamos County residents. During 1999 – 2015, suicide rates among Los Alamos youth were not significantly different from suicide rates among youth in surrounding counties and statewide. From 2010 – 2015, there were 65 emergency department visits for non-fatal intentional self-injury and 95 emergency department visits for suicidal ideation among Los Alamos County youth 10 – 19 years. The Los Alamos County youth suicide attempt rate was statistically significantly higher than for Rio Arriba County and statewide but not significantly higher than Santa Fe County. The Los Alamos County youth suicide ideation rate was statistically significantly higher than for Rio Arriba County, but not statistically higher than for Santa Fe County and statewide.

Historically, males have higher rates of completed suicide since they use more lethal means of injury and do not disclose their intent to harm themselves, while females typically have higher rates of attempted suicide. Similar to national data on youth suicide, from 2010 – 2015 more Los Alamos County males died by suicide while more females were admitted to emergency departments for non-fatal intentional self-harm and suicidal ideation. Importantly, for each death by suicide, there are numerous hospitalizations, emergency department visits, and events that do not involve medical care.

Many factors contributed to suicide attempts among the youth who were treated in the LAMC Emergency Department. Many of these youth had known risk factors for attempting suicide, including a prior history of a suicide attempt and diagnosed depression. The majority of youth received proper care and were transferred to a mental health treatment facility.

This investigation has several limitations. First, emergency department data on suicide attempts and suicidal ideation came from hospital administrative databases that are used for cost reimbursement and billing. While the data were collected using a systematic methodology, there are limitations to using ICD codes to identify and describe self-inflicted injury ED visits. Variations in how medical providers diagnosed suicidal behaviors, as well as differences in medical record coder practices and/or training between hospitals may have resulted in misclassification of suicide attempt visits. In addition, coding systems changed from ICD-9-CM to ICD-10 CM during this time period, which may have introduced further error into our comparisons. Medical record abstraction was used to accurately classify LAMC emergency department visits as suicide attempts with an intent to die versus visits for other diagnoses, such as mental illness with or without suicidal ideation and self-harming behaviors without suicidal intent. However, chart review is not practical for on-going public health surveillance of suicidal behaviors. Second, we described emergency department visits for suicidal behaviors using two different surveillance systems. It is possible that youth residing in Los Alamos County visited emergency department facilities outside of Los Alamos, Rio Arriba and Santa Fe counties, and therefore were not accounted for in the 2016 emergency department visit data. Also, due to small numbers, it is difficult to calculate stable rates of suicide-related emergency department visits among youth living in Los Alamos County. Suicide deaths may be subject to local misclassification of the underlying cause of death. The number of youth suicides in NM is small enough that slight fluctuations lead to large increases and decreases in suicide rates from year to year. Unstable rates may fluctuate widely across time periods

due to random variation; very unstable rates should not be used to inform decisions. Finally, there are several limitations to the YRRS data. Findings from the YRRS represent estimates of youth risk behaviors since 2015 data were collected from a sample of high school students attending Los Alamos High School. Therefore, results may not be generalizable to the high school age population not attending Los Alamos High School but residing in Los Alamos County. The YRRS does not assess other factors that could potentially be contributing to suicidal behaviors in this community, such as academic pressure and achievement, family relationship issues, and social environments, nor does it assess all potential protective factors, such as school support programs and social support. For example, the majority of suicide attempts during 2014-2016 occurred outside of the calendar school year suggesting school may have been a protective factor for youth.

In conclusion, this investigation into risk and protective factors associated with youth suicide in Los Alamos County, New Mexico found that youth with fatal or non-fatal suicidal behaviors in the community had multiple risk factors for suicide before an attempt was made. The most prevalent risk factor was having a diagnosis of depression. This finding contradicts the common myth that most suicides occur suddenly and without warning. The most prevalent protective factor was that most youth were receiving treatment when they were admitted to the emergency department; and most youth who needed more intensive mental health services were transferred to an inpatient mental health facility. The community has formed community-wide partnerships and dedicated extensive resources towards suicide prevention activities. As evidenced by a decrease in suicide attempts and ideation during the 2014-2015 school year, the mental health resources and social support provided in schools for youth in Los Alamos is strong. Community and school programs are important resources that help prevent fatal and non-fatal suicidal behaviors in youth. Factors identified in this investigation demonstrate that youth suicide is a public health problem that requires a multi-level response.

Recommendations

Based on the findings of this investigation, we recommend the following programmatic and surveillance actions:

Programmatic

1. Provide education and assistance to parents on navigating mental health care resources. Facilitate communication between parents and school staff regarding individual students' well-being.
2. Improve care coordination. Data from medical chart abstraction suggest that youth who attempted suicide had previous exposure to the mental health care system. Over three quarters (88%) had a history of mental illness, and of those 86% had a depressive disorder, and half had a history of prior suicide attempt. Therefore it is necessary to improve care coordination among families, schools, primary care providers, and mental health providers.
3. Primary care providers can screen youth for suicide risk and can help combat negative social views and norms around suicide and mental health issues that keep individuals and families from seeking the treatments and supports the need (U.S. Department of Health and Humans

Services (HHS) Office of the Surgeon General and the National Action Alliance for Suicide Prevention, 2012). There are many resources for primary care providers that may increase their efficacy to screen for suicidal thoughts and behaviors including:

- Zero Suicide (www.zerosuicide.com)
 - Columbia Suicide Severity Rating Scale (<http://www.cssrs.columbia.edu>)
 - MacArthur Depression Toolkit (http://www.integration.samhsa.gov/clinical-practice/macarthur_depression_toolkit.pdf)
 - Behavioral Health in Primary Care: Clinical Strategies and Program Models for Working and High-Risk Youth (http://www.parecovery.org/documents/BH_Primary_Care.pdf)
 - Recognizing and Responding to Suicide Risk in Primary Care (<http://www.sprc.org/settings/primary-care/toolkit>)
 - Engaging Primary Care Providers in Suicide Prevention (http://www.sprc.org/system/files/private/event-training/Wintersteen_Engaging.pdf)
 - Tip and Strategies for Billing for Mental Health Services in a Primary Care Setting (<http://www.sprc.org/sites/default/files/tipsandstrategiesforbilling.pdf>)
4. Continue to develop partnerships with community organizations and agencies in different sectors to combine resources to help address the needs of youth. Partnerships across different organizations and agencies could help foster connectedness as a protective strategy against youth suicide, especially during the summer months when the support from school programs is absent. Examples include:
- A PSA campaign developed by youth, and run in conjunction with the newspaper and radio stations.
 - An art contest using the warning signs of suicide, or something about asking for help (i.e. "I'm here for you" or R U OK?) with the winner getting \$50, and the design being put on tee shirts provided by Smith's Food and Drug Store.
 - Sponsor an event to celebrate first responders (law and EMT) billed with a "get-to-know-you theme" organized by youth. Possibly a basketball tournament, or a dance-off competition as part of it.
 - Collaborate with gun shop owners to display suicide prevention materials in their shops as well as provide training on awareness of warning signs of suicide in their clients (<https://afsp.org/american-foundation-suicide-prevention-launches-project-2025/>).
5. Continue to review and implement evidence-based primary prevention strategies that address the associated risk factors for youth suicide. Youth prevention strategies are outlined in the Substance Abuse and Mental Health Services Administration's Suicide Prevention Resource Center's toolkit: "Preventing Suicide: A Toolkit for High Schools" (http://store.samhsa.gov/product/Preventing-Suicide-A-Toolkit-for-High-Schools/SMA12-4669?WT.ac=EB_20120622_SMA12-4669).
- See Appendix A for a list of suggested and recommended programs for implementation in schools.

6. Increase education of parents, guardians, and healthcare providers, regarding “means restrictions”, specifically, to reduce access to lethal means that people use to attempt suicide (<http://www.sprc.org/resources-programs/calm-counseling-access-lethal-means>).
7. Training for emergency room providers, online and free (<http://www.sprc.org/events-trainings/advancing-suicide-prevention-practice-emergency-department-setting>).

Surveillance

1. Continue to monitor trends in suicide-related behaviors among youth through local data sources such as NM-VDRS, NM IBIS, NM Syndromic Surveillance System, and Emergency Medical Services.
2. Participate in Adverse Event Reporting to NMDOH through Los Alamos Schools during upcoming and future school years.
3. Continue to assess youth suicide risk factors through YRRS and local surveys.
4. Add items to the Los Alamos youth survey to assess perceptions of academic pressure, extracurricular activities, bullying, and course load.
5. Consider social media monitoring as an active, real-time surveillance tool to identify discussion about suicide or suicide related behaviors.