Youth Suicide

An Assessment of Youth Suicide Behavior in Anne Arundel County 2008 - 2012

This Report Includes a Discussion on Prevention and Intervention.

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Introduction

Suicide is a serious public health problem that can have lasting harmful effects on individuals, families and communities. Nationally, suicide was the tenth leading cause of death in 2011 and on average 105 people commit suicide every day in the United States.[1, 3]

In 2012, suicide was the ninth leading cause of death in Anne Arundel County. Every year, around 50 Anne Arundel County residents commit suicide.[2]

Suicide was the second leading cause of death for youth between the ages of 10 and 24 in the United States in 2011.[3] Suicide was also the second leading cause of death for youth in Anne Arundel County for the time period between 2008 and 2012; during that time period, 15.3% of all deaths in Anne Arundel County youth aged 10-24 years were due to suicide.[4]

Suicidal behavior is a complex and multidimensional issue that requires a multifaceted response. Deaths from youth suicide are only part of the problem. More young people survive suicide attempts than actually die. The national Centers for Disease Control and Prevention (CDC) estimates there is one suicide for every 25 attempted suicides.[1] Each year, around 200 Anne Arundel County youth between the ages of 10 and 24 receive medical care for self-inflicted injuries at hospital emergency departments across Maryland.[5]

The 2013 Maryland Youth Risk Behavior Survey found that 16.9% of youth in grades 9–12 in public schools in Anne Arundel County reported seriously considering suicide and 13% reported creating a plan to take their own life in the 12 months preceding the survey. The same survey also found that 19.6 % of Anne Arundel County high school students had ever seriously thought of killing themselves.[6]

Several factors, including family history of suicide, history of depression or other mental illness, alcohol or drug abuse, a stressful life event or loss, easy access to lethal methods, the exposure to the suicidal behavior of others and incarceration, can put a young person at risk for suicide. However, having these risk factors does not mean that a suicide will occur.[7]

Suicide-related data can help public health practitioners and community members better understand the scope of the problem, identify high-risk groups, implement new programs and monitor the effects of existing suicide prevention programs.

Methodology

Anne Arundel County Department of Health analyzed the death data file obtained from the Maryland Department of Health and Mental Hygiene, Vital Statistics Administration and the emergency department and inpatient hospital discharge data files obtained from the Maryland Health Services Cost Review Commission (HSCRC) for the 2008 – 2012 time period to estimate the burden of suicide and suicide attempts in Anne Arundel County. Suicide-related data from the Anne Arundel County Police Department, Anne Arundel County Department of Health's Bureau of School Health Services and the Maryland Youth Risk Behavior Survey (2013) estimate the burden of suicide-related behaviors and thoughts.

Trends over time, comparisons of County data with Maryland and U.S. data, economic costs and information on associated behavioral health conditions are included where data was available. This report presents aggregate data to determine the magnitude of suicide and suicide-related behavior by age, gender, race and geography.

Definitions

- **Youth**: Individuals ages 10 to 24 years.
- **Suicide**: Death caused by self-directed injurious behavior with any intent to die as a result of the behavior.
- **Suicide attempt**: A non-fatal self-directed potentially injurious behavior with any intent to die as a result of the behavior. A suicide attempt may or may not result in injury.
- **Rate:** An expression of the relative frequency with which an event occurs among a defined population per unit of time.

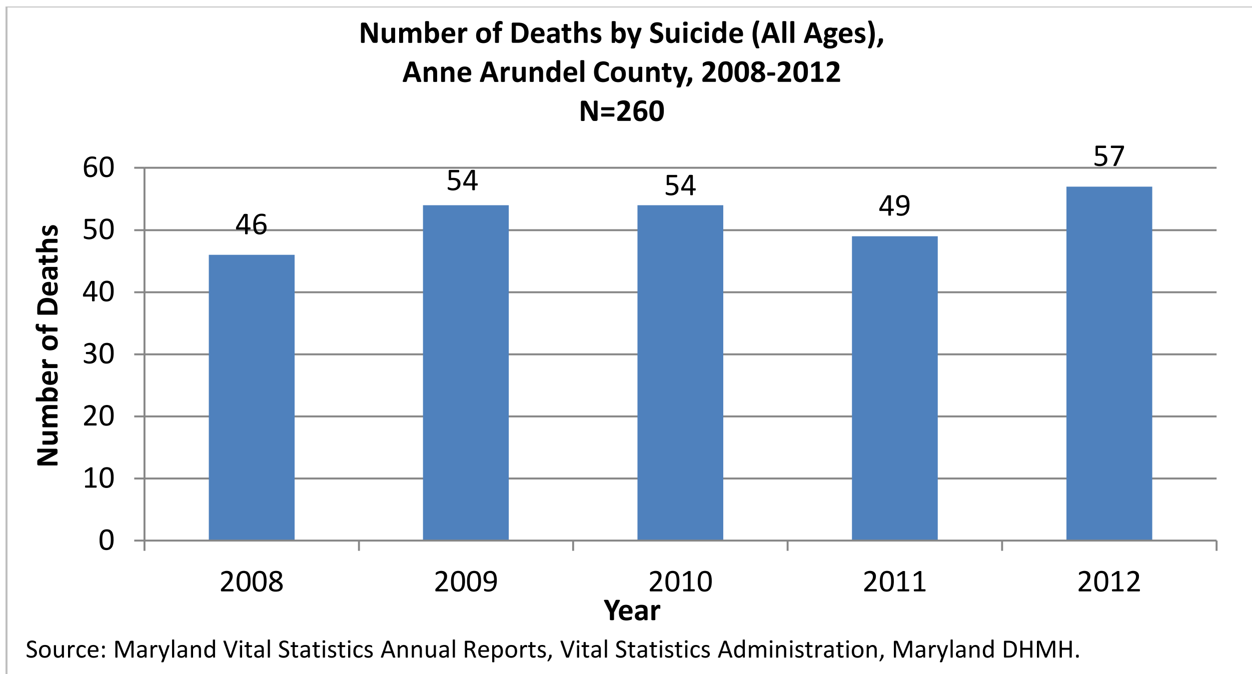
Data Limitations

Suicide and suicidal behavior data continue to have many limitations. Data is only available for Anne Arundel County residents admitted to hospitals in Maryland. Therefore, we do not have access to data for youth admitted to hospitals in other jurisdictions, including college students living out of state. In addition, different hospitals have different medical record numbers for the same patient making it difficult to estimate the number of youth who made multiple suicide attempts and sought treatment at different hospitals. Also, we are unable to accurately calculate the burden of suicide-related emergency department visits and hospitalizations in the Hispanic community because a significant percentage of hospital records are missing Hispanic ethnicity data. The racial data presented for Whites is inclusive of Hispanic and non-Hispanic Whites, similarly the data for Blacks is inclusive of Hispanic and Non-Hispanic Blacks. Lastly, information on cases in ZIP Codes that include multiple counties is calculated with the assumption that the burden of suicide attempt is uniformly distributed within the ZIP code.

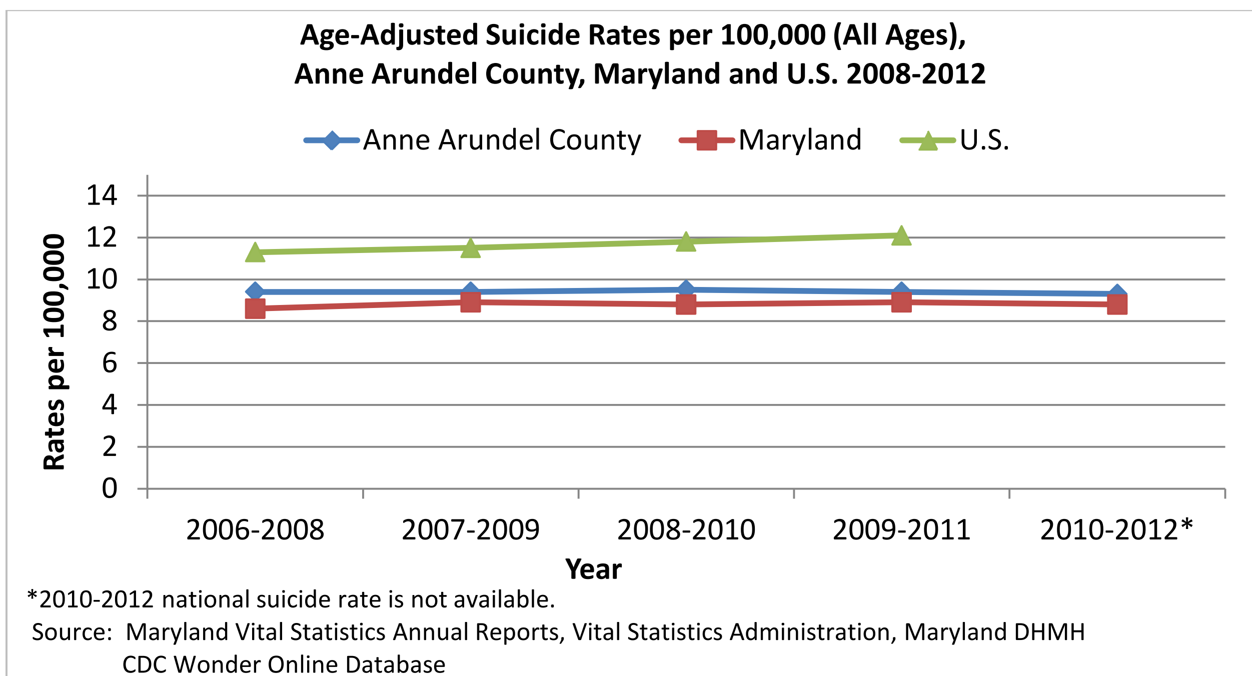
Due to a change in the hospital data collection methodology by the Maryland Health Services Cost Review Commission (HSCRC), this report is not comparable with a previous report published by Anne Arundel County Department of Health using data from 2004 to 2008. Therefore, information on emergency department visits and hospitalizations due to suicide attempts will serve as baseline information for future reports.

Suicide Among All Ages in Anne Arundel County

Suicide is a serious public health problem in Anne Arundel County. From 2008 to 2012, 260 Anne Arundel County residents committed suicide. On average, around 50 people commit suicide every year in this county. Suicide was the ninth leading cause of death for an Anne Arundel County resident in 2009.[2] From 2009 to 2011, the average rate of suicide in Anne Arundel County (9.4 per 100,000) was lower than the national rate (12.1 per 100,000), but it was higher than the Maryland rate (8.9 per 100,000).



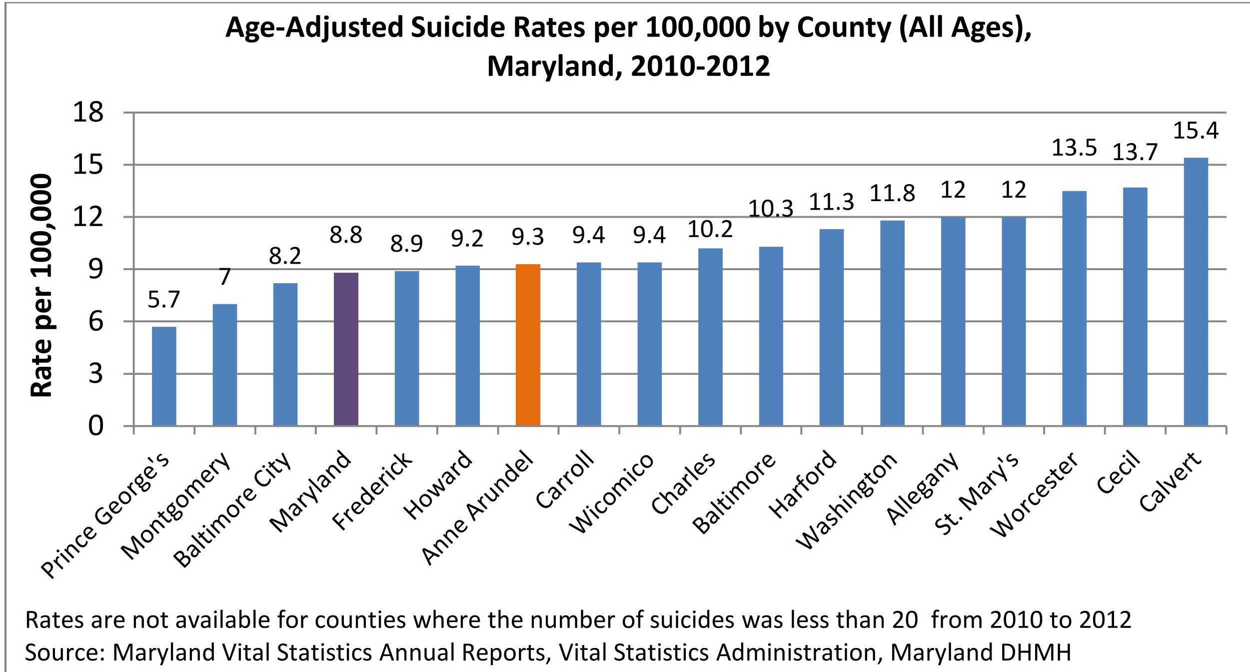
Source: Maryland Vital Statistics Annual Reports, Vital Statistics Administration, Maryland DHMH.

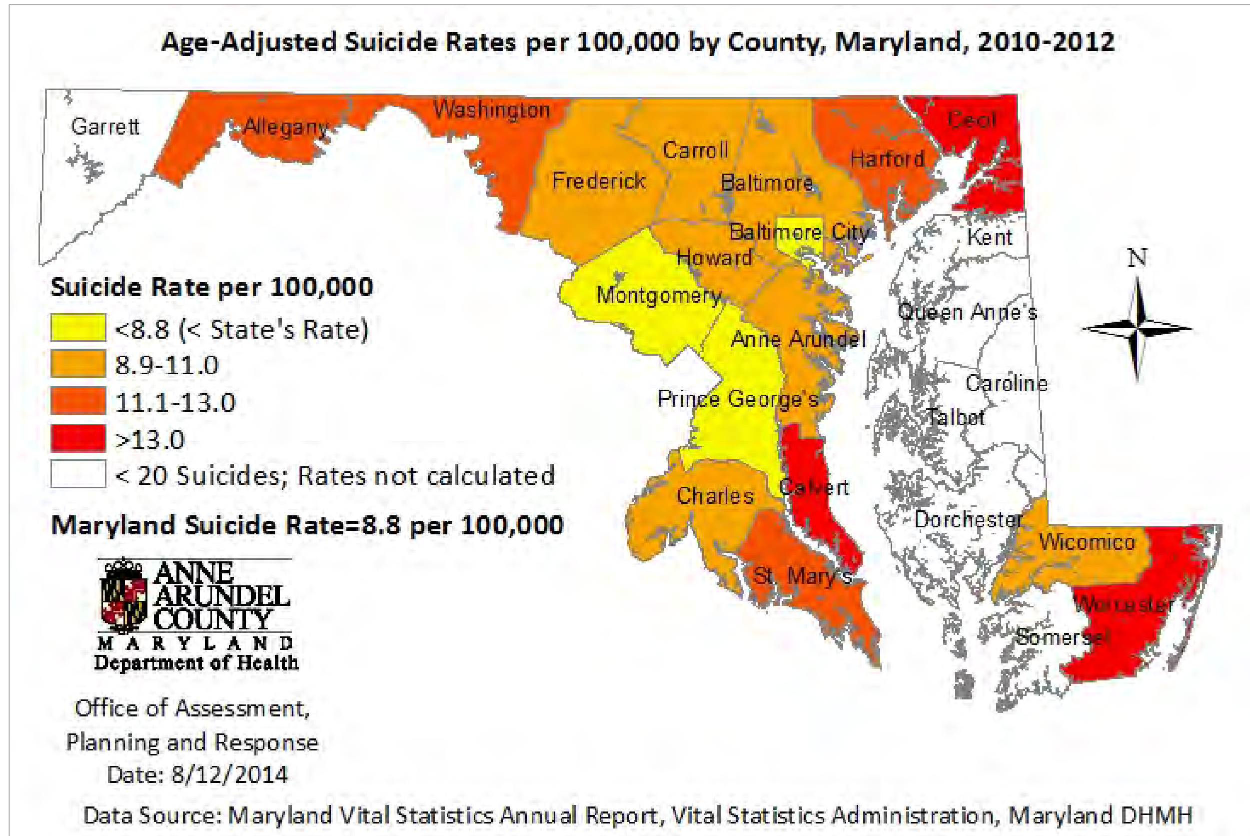


*2010-2012 national suicide rate is not available.
Source: Maryland Vital Statistics Annual Reports, Vital Statistics Administration, Maryland DHMH
CDC Wonder Online Database

Suicide Among All Ages in Anne Arundel County

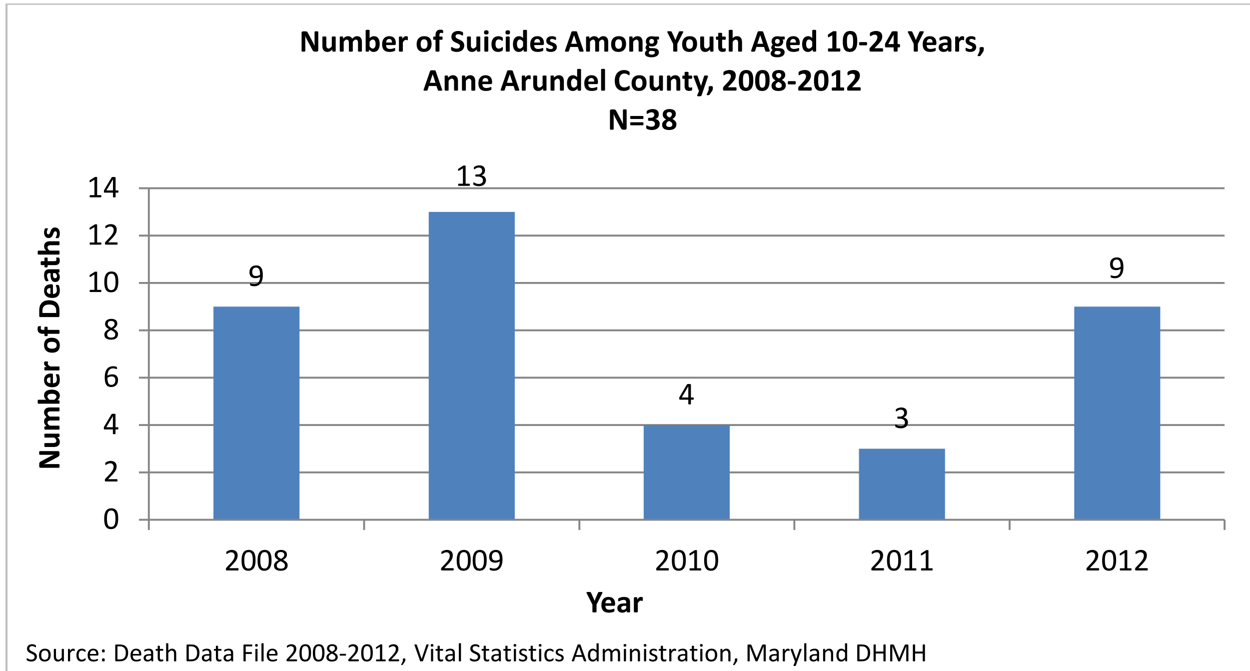
Although the suicide rate in Anne Arundel County is higher than Maryland's rate, it has the sixth lowest suicide rate among Maryland counties.



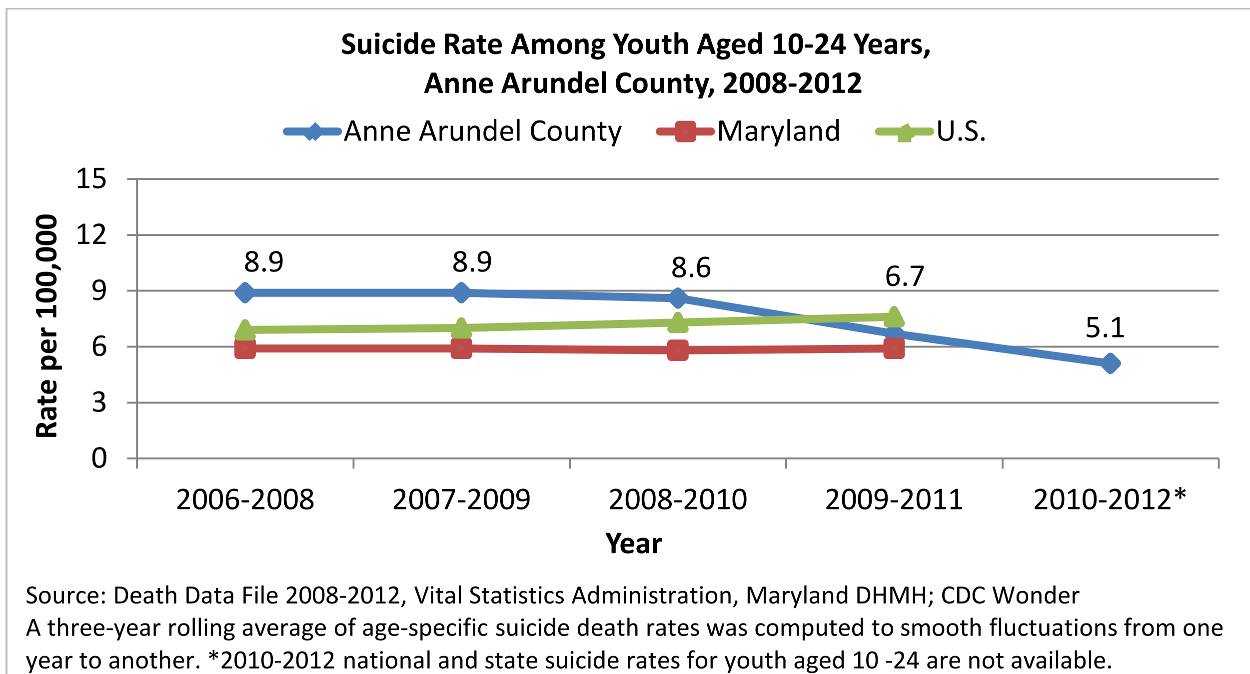


Youth Suicide in Anne Arundel County

Suicide is a serious public health problem that affects youths too. From 2008 to 2012, 38 Anne Arundel County youth aged 10-24 years committed suicide. Among them, 17 (45%) were aged 10-19 years.[4] The three-year average youth suicide rate in Anne Arundel County has declined in the last few years mostly due to the decline in number of youth suicides in 2010 and 2011.



Source: Death Data File 2008-2012, Vital Statistics Administration, Maryland DHMH

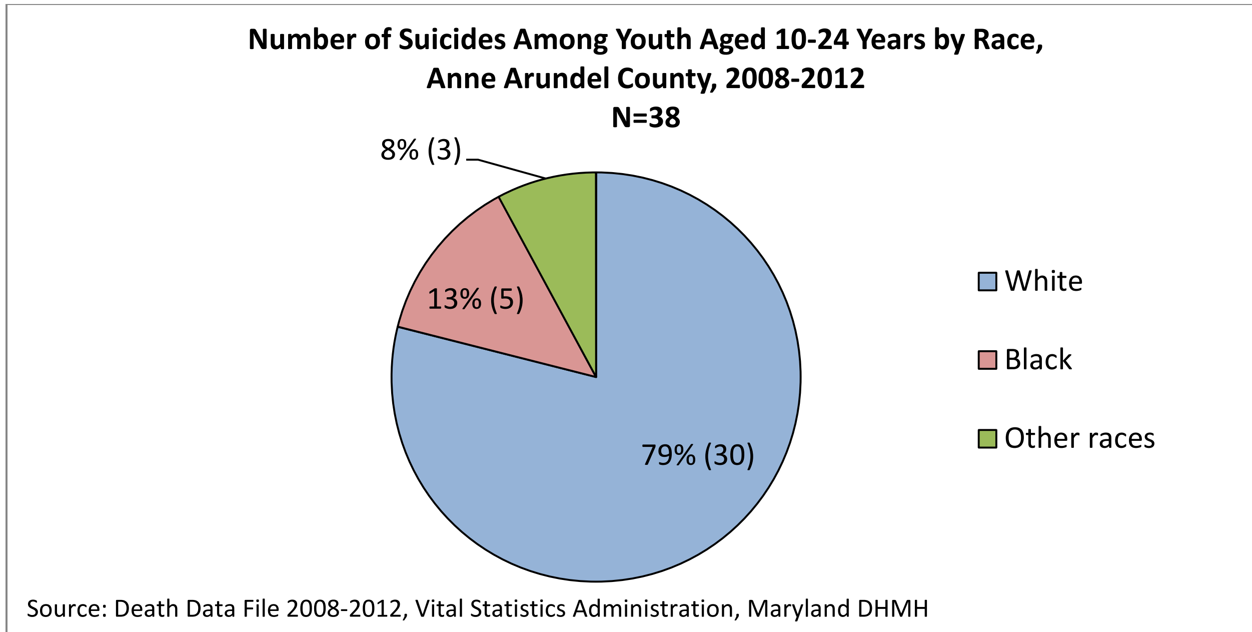


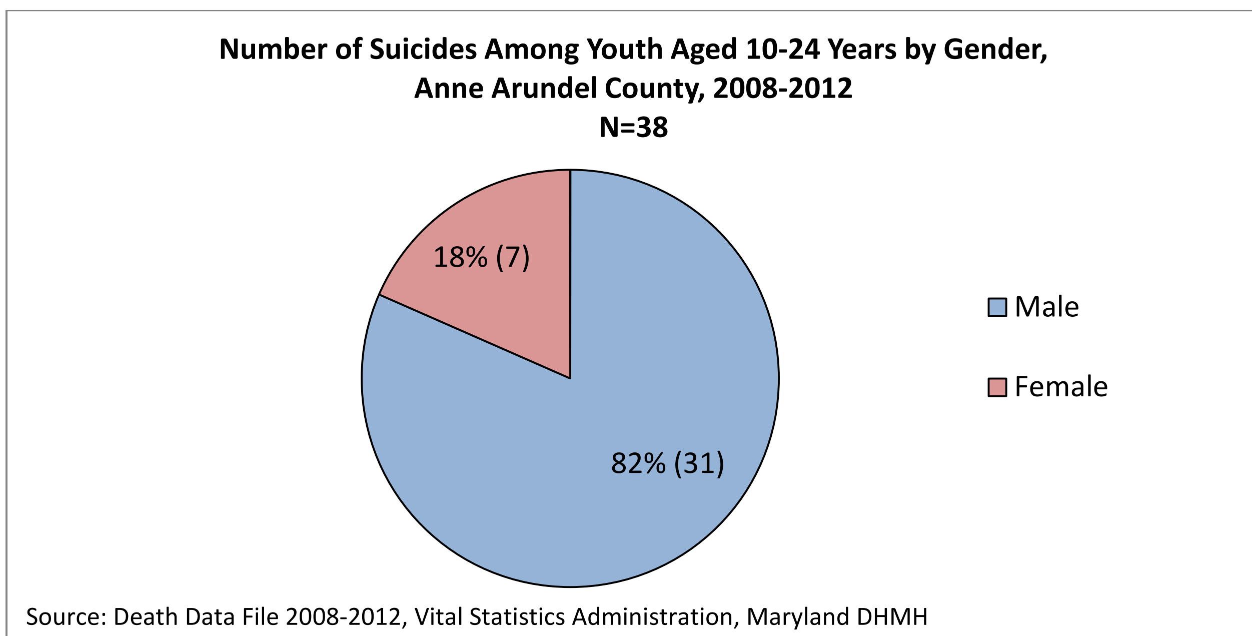
Source: Death Data File 2008-2012, Vital Statistics Administration, Maryland DHMH; CDC Wonder
A three-year rolling average of age-specific suicide death rates was computed to smooth fluctuations from one year to another. *2010-2012 national and state suicide rates for youth aged 10 -24 are not available.

Youth Suicide in Anne Arundel County

By race, 79% of youth aged 10-24 years who committed suicide between 2008 and 2012 were White, 13% were Black and 8% were of other races which mirrors the County's demographic profile.

By gender, 82% of youth who committed suicides were male and 18% were female. Data illustrates that more males die from suicide than females. Both nationally and in the state of Maryland, males account for 81% of suicide deaths among youths and females account for 19% of suicide.[7, 8]



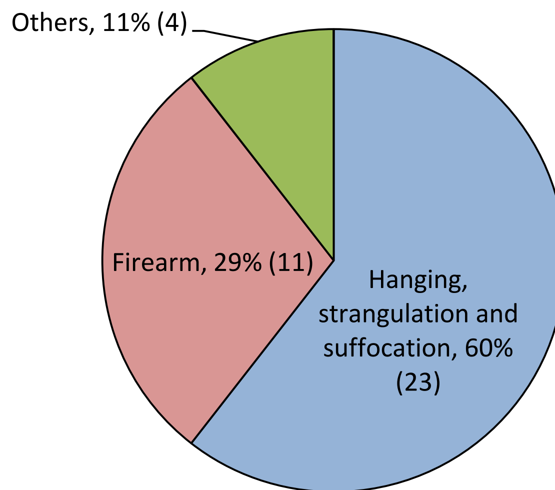


Youth Suicide in Anne Arundel County

Suicide is a multifaceted problem for which several risk factors exist. Easy access to lethal methods is one of the risk factors for suicide. The largest number of deaths by suicide among youth in Anne Arundel County between 2008 to 2012 were due to hanging, strangulation or suffocation (60%), followed by firearms (29%).[4] A similar pattern is seen among youth in Maryland (61% suicide by hanging and 28% by firearms in 2010).[8]

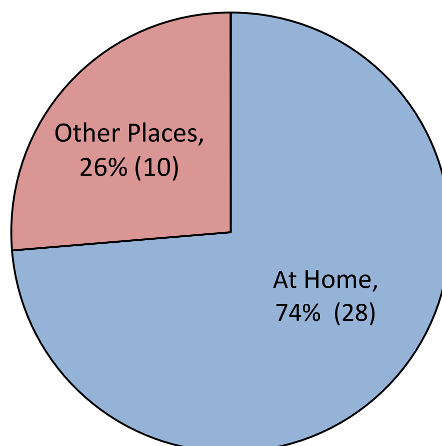
Nationally, firearm (45%) is the most common method used by youth to commit suicide, followed by hanging or suffocation (40%) and poisoning (8%).[7]

Number of Suicides Among Youth Aged 10-24 Years by Method, Anne Arundel County, 2008-2012
N=38



Source: Death Data File 2008-2012, Vital Statistics Administration, Maryland DHMH

Place of Injury Leading to Death by Suicide Among Youth Aged 10-24 Year Anne Arundel County, 2008-2012
N=38

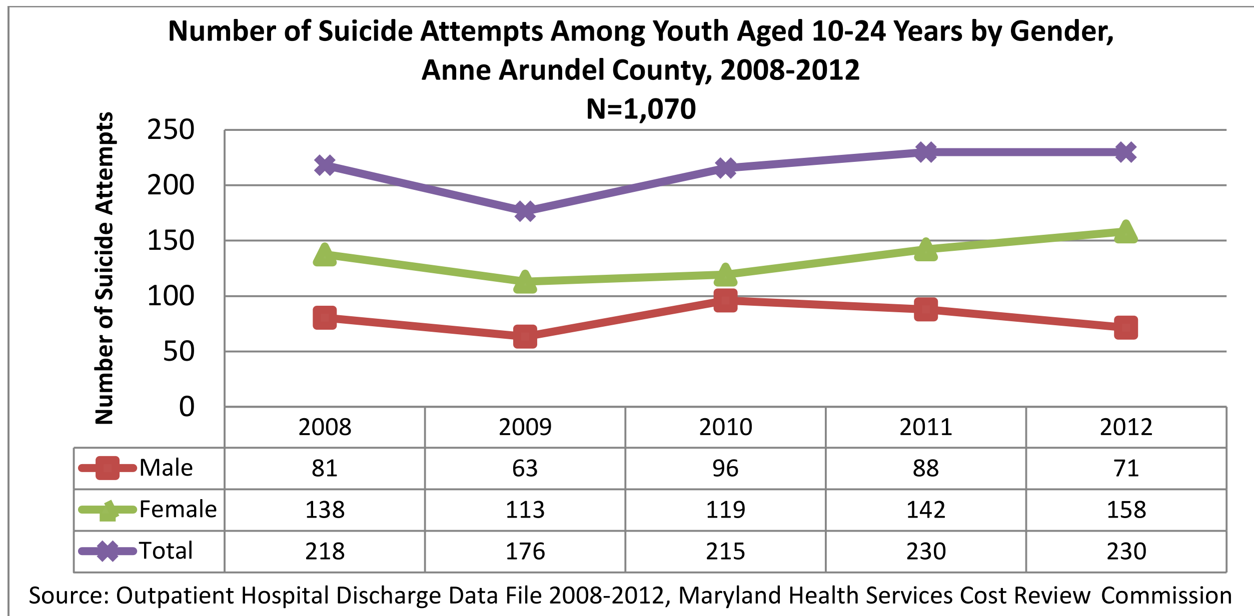


Source: Death Data File 2008-2012, Vital Statistics Administration, Maryland DHMH

Emergency Department Visits for Suicide Attempts

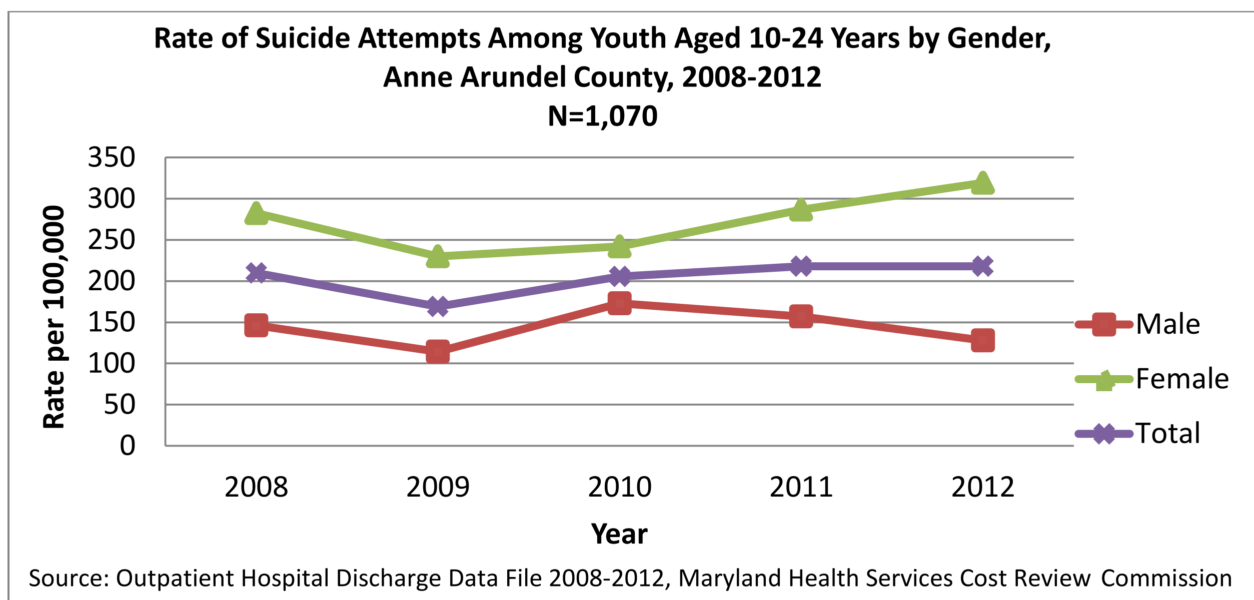
Deaths from youth suicide are only part of the problem. More youth survive suicide attempts than actually die. Suicide attempts often precede suicide. The CDC estimates there is one suicide for every 25 attempted suicides.[1] Every year, around 200 Anne Arundel County youth between the ages of 10 and 24 receive medical care for suicide attempts or intentional self-inflicted injuries at emergency departments across Maryland. The rate of suicide attempts has increased among female youth and declined among male youth in the last three years.

For the period of 2008-2012, there were an estimated 1,070 suicide attempts resulting in emergency department treatment. The total cost of 5-year emergency department visits for suicide attempts was $706,460 with a median cost of $574 per visit.[5]



	2008	2009	2010	2011	2012
Male	81	63	96	88	71
Female	138	113	119	142	158
Total	218	176	215	230	230

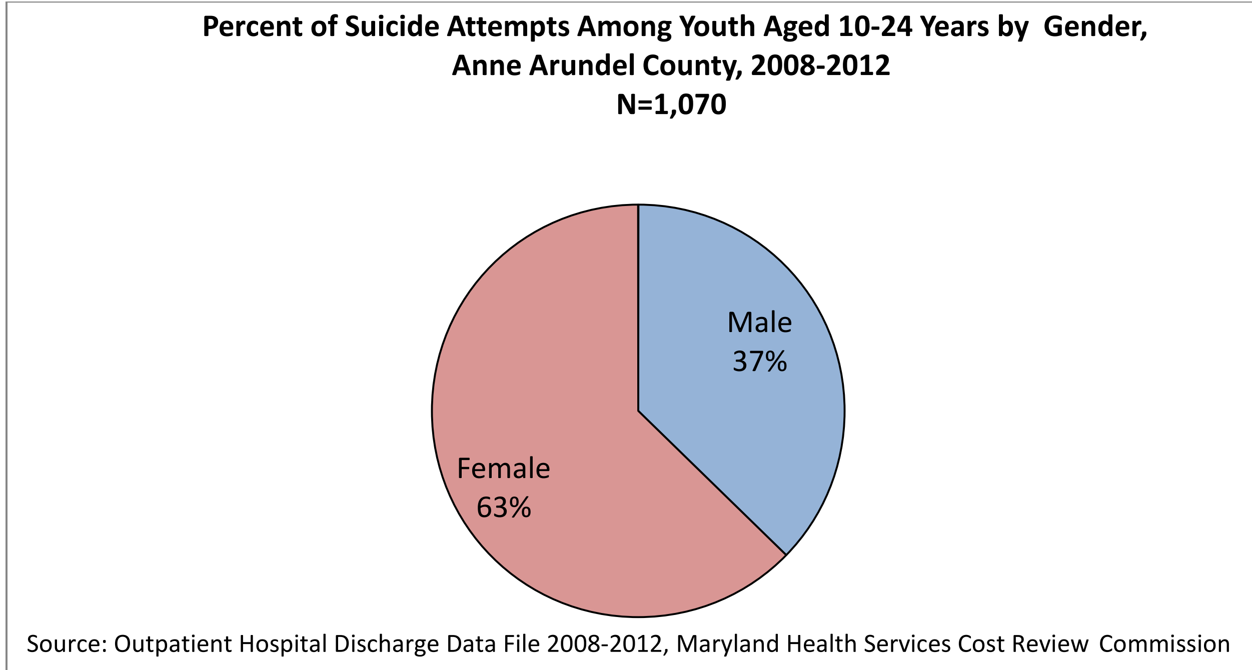
Source: Outpatient Hospital Discharge Data File 2008-2012, Maryland Health Services Cost Review Commission

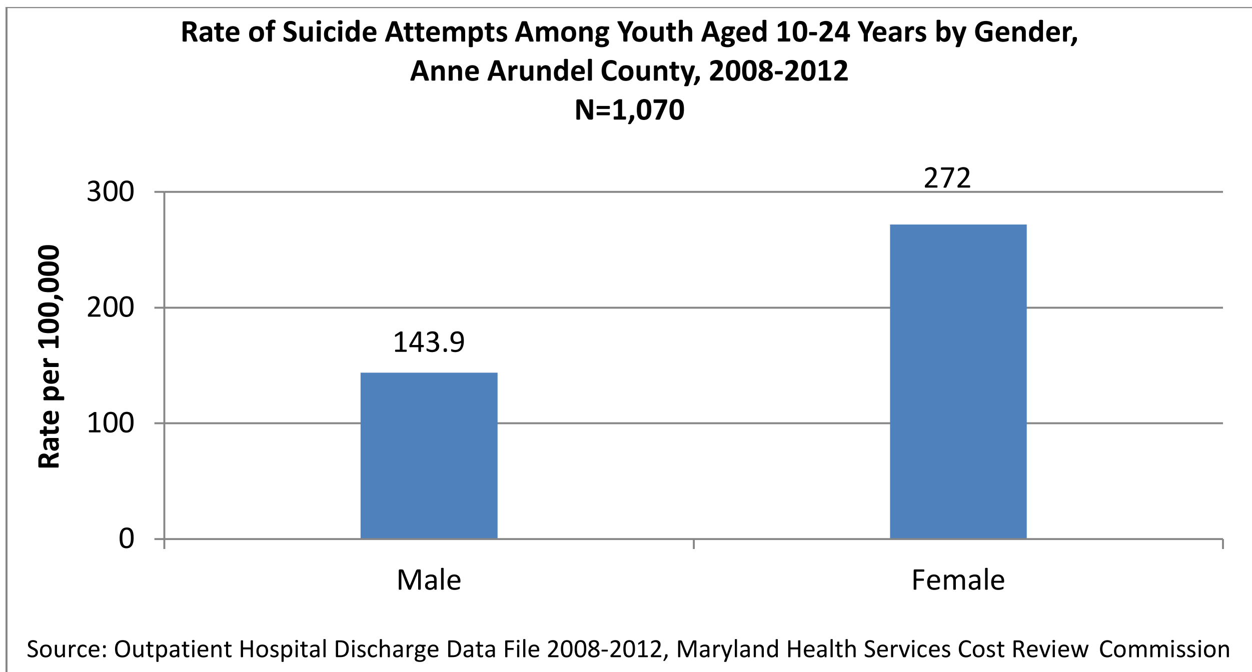


Source: Outpatient Hospital Discharge Data File 2008-2012, Maryland Health Services Cost Review Commission

Emergency Department Visits for Suicide Attempts

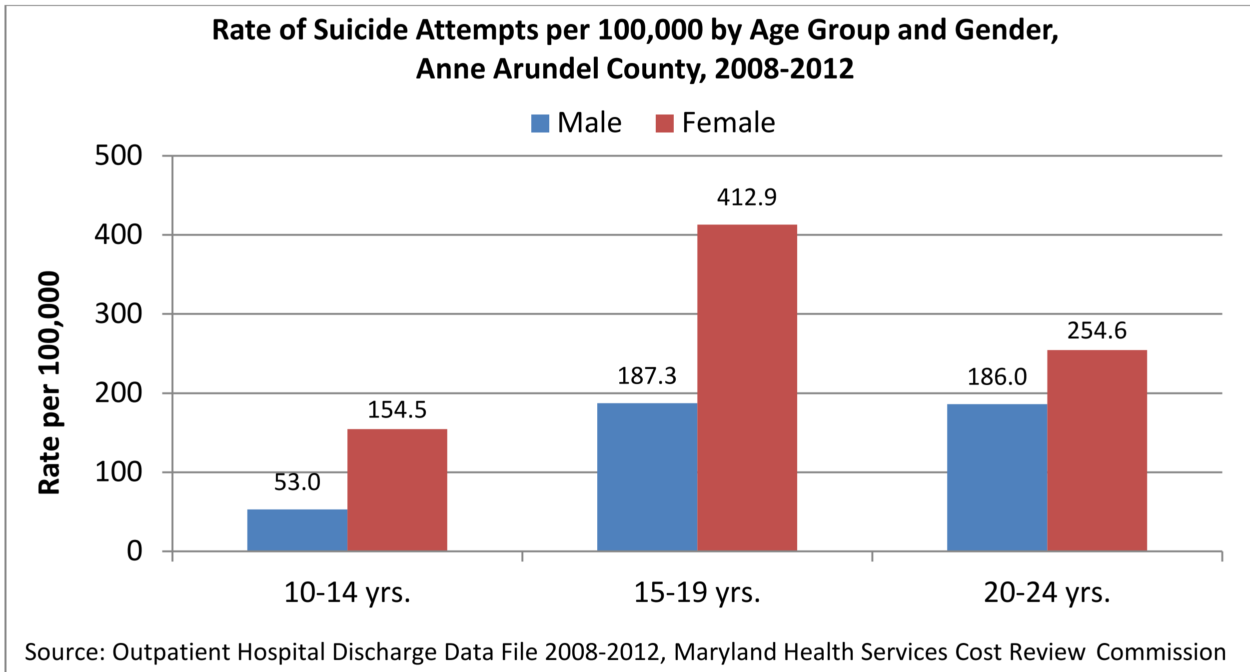
More female youth attempted suicide than males between 2008 and 2012 (63% female versus 37% male). The rate of suicide attempts in female youth was 1.9 times higher compared to male youth during the same time period.

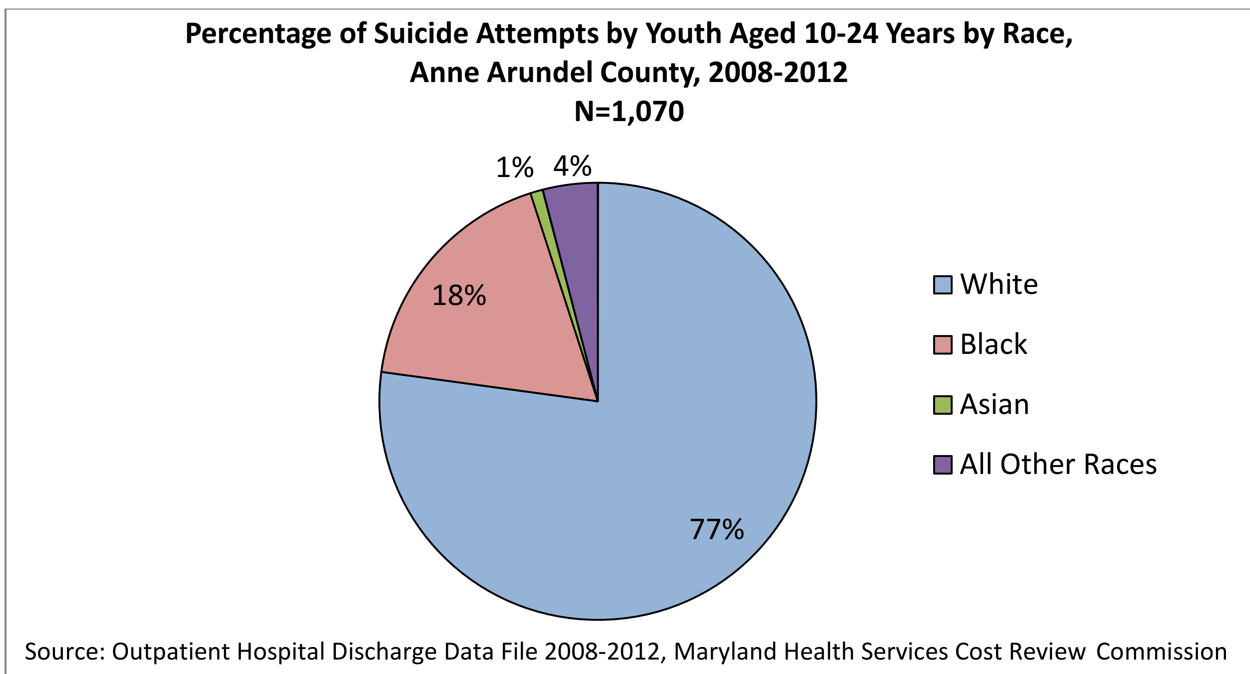




Emergency Department Visits for Suicide Attempts

The rate of suicide attempts among youth was highest in female youth aged 15-19 years. The suicide attempt rate among female youth aged 15-19 years was 2.2 times higher than male youth in the same age group. The rate of suicide attempts among female youth aged 20-24 years was 1.3 times higher and the suicide rate among female youth aged 10-14 years was 2.9 times higher than male youth of same age group. By race, 77% of youth who attempted suicide were White and 18% were Black; which closely mirrors the County's demographic profile.

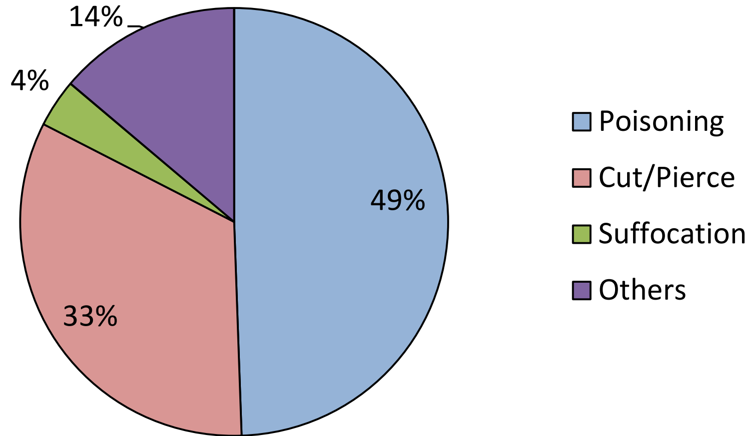




Emergency Department Visits for Suicide Attempts

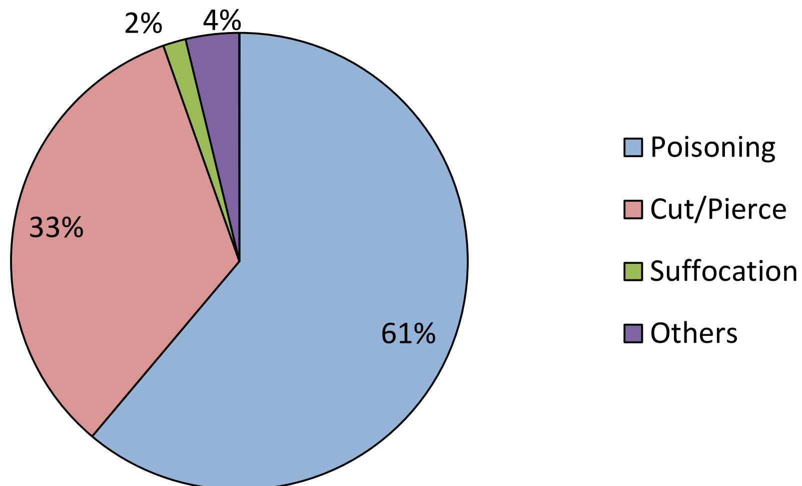
For both male and female youth, poisoning (57%) was the most common method used to attempt suicide in Anne Arundel County, followed by cut/pierce (33%) and suffocation (2%). Suicide attempt by poisoning was more common in females than males.

Method of Suicide Attempt Leading to ED Visits Among Youth by Gender, Anne Arundel County, 2008-2012
Male (N=396)



Source: Outpatient Hospital Discharge Data File 2008-2012, Maryland Health Services Cost Review Commission

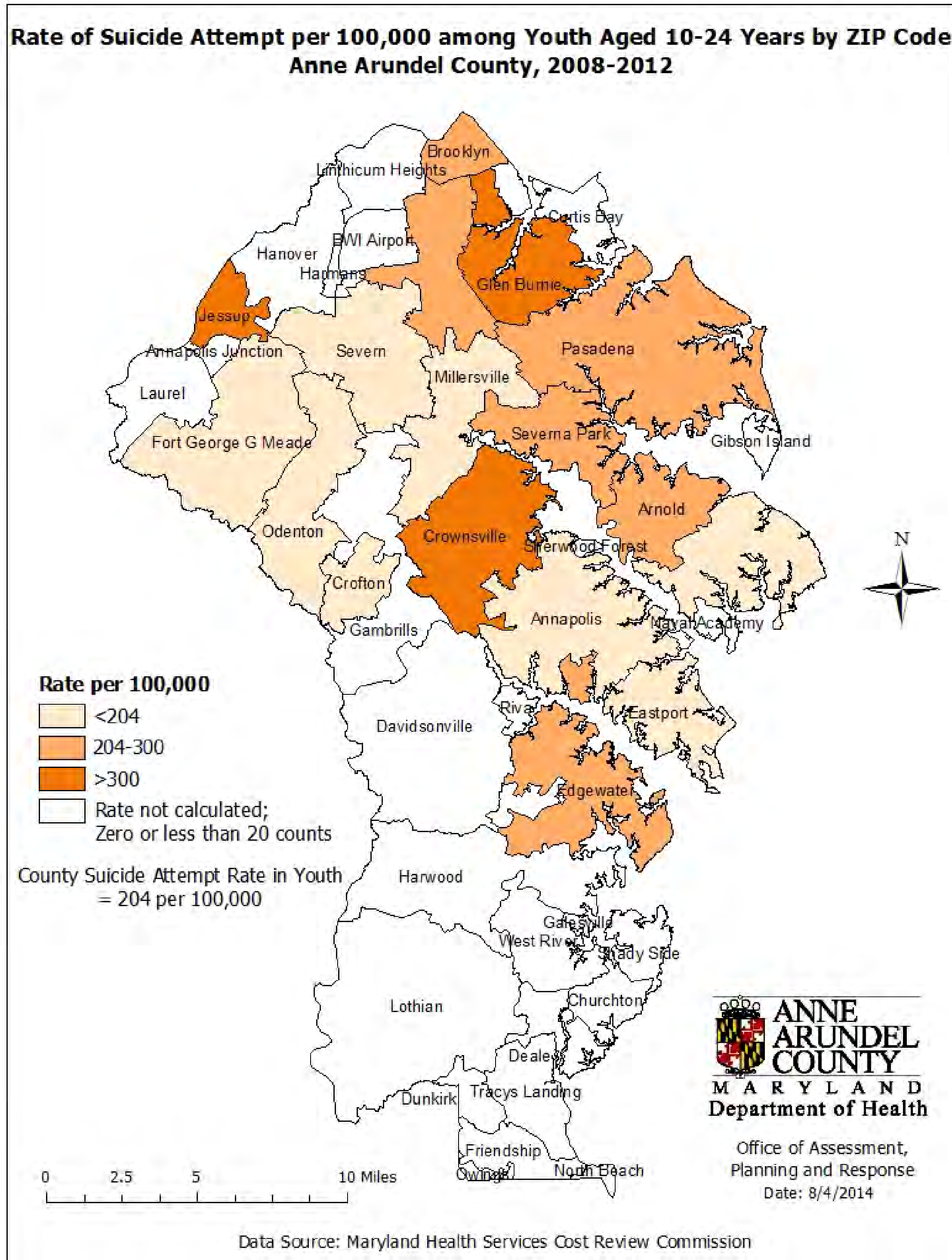
Method of Suicide Attempt Leading to ED Visits Among Youth by Gender, Anne Arundel County, 2008-2012
Female (N=674)



Source: Outpatient Hospital Discharge Data File 2008-2012, Maryland Health Services Cost Review Commission

Emergency Department Visits for Suicide Attempts

Suicide attempt rates were highest in Glen Burnie (East), Crownsville and the Jessup area compared to other ZIP Code areas. Suicide attempt rates in Arnold, Brooklyn/Brooklyn Park, Edgewater, Glen Burnie (West), Pasadena and Severna Park were higher than County's average suicide attempt rate.



Emergency Department Visits for Suicide Attempts

Frequency and Rate of Suicide Attempts Among Youth Aged 10-24 Years by ZIP Code, Anne Arundel County, 2008-2012

ZIP Code	Area	Number of Suicide Attempts	2010 Youth Population	Rate
20701*	Annapolis Junction	0	**0**	0
20711	Lothian	12	1,177	--
20714*	North Beach	<7	132	--
20724	Laurel	12	2,872	--
20733	Churchton	7	577	--
20736*	Owings	0	0	0
20751	Deale	<7	286	--
20754*	Dunkirk	<7	261	--
20755	Ft. Meade	24	3,170	151.4
20758	Friendship	<7	169	--
20764	Shady Side	11	1,048	--
20765	Galesville	<7	96	--
20776	Harwood	<7	579	--
20778	West River	<7	460	--
20779	Tracys Landing	<7	67	--
20794*	Jessup	21	977	430
21012	Arnold	54	4,162	259.5
21032	Crownsville	21	1,282	327.6
21035	Davidsonville	16	1,723	--
21037	Edgewater	47	3,652	257.4
21054	Gambrills	11	1,627	--
21056	Gibson Island	0	0	0
21060	Glen Burnie (East)	73	4,719	309.4
21061	Glen Burnie (West)	154	10,829	284.4
21076*	Hanover	18	1,774	--
21077	Harmans	0	0	0
21090	Linthicum Heights	8	2,045	--
21108	Millersville	33	3,532	186.9
21113	Odenton	54	5,736	188.3
21114	Crofton	38	5,022	151.3
21122	Pasadena	148	12,205	242.5
21140	Riva	<7	592	--
21144	Severn	63	6,359	198.1
21146	Severna Park	60	4,728	253.8
21225*	Brooklyn Park/ Brooklyn	43	3,519	244
21226*	Curtis Bay	11	701	--
21401	Annapolis	42	5,684	147.8
21402	Naval Academy	<7	4,714	--
21403	Eastport	31	4,072	152.3
21405	Sherwood Forest	0	118	0
21409	Annapolis	28	3,927	142.6
	Anne Arundel County	**1,070**	**104,829**	**204.1**

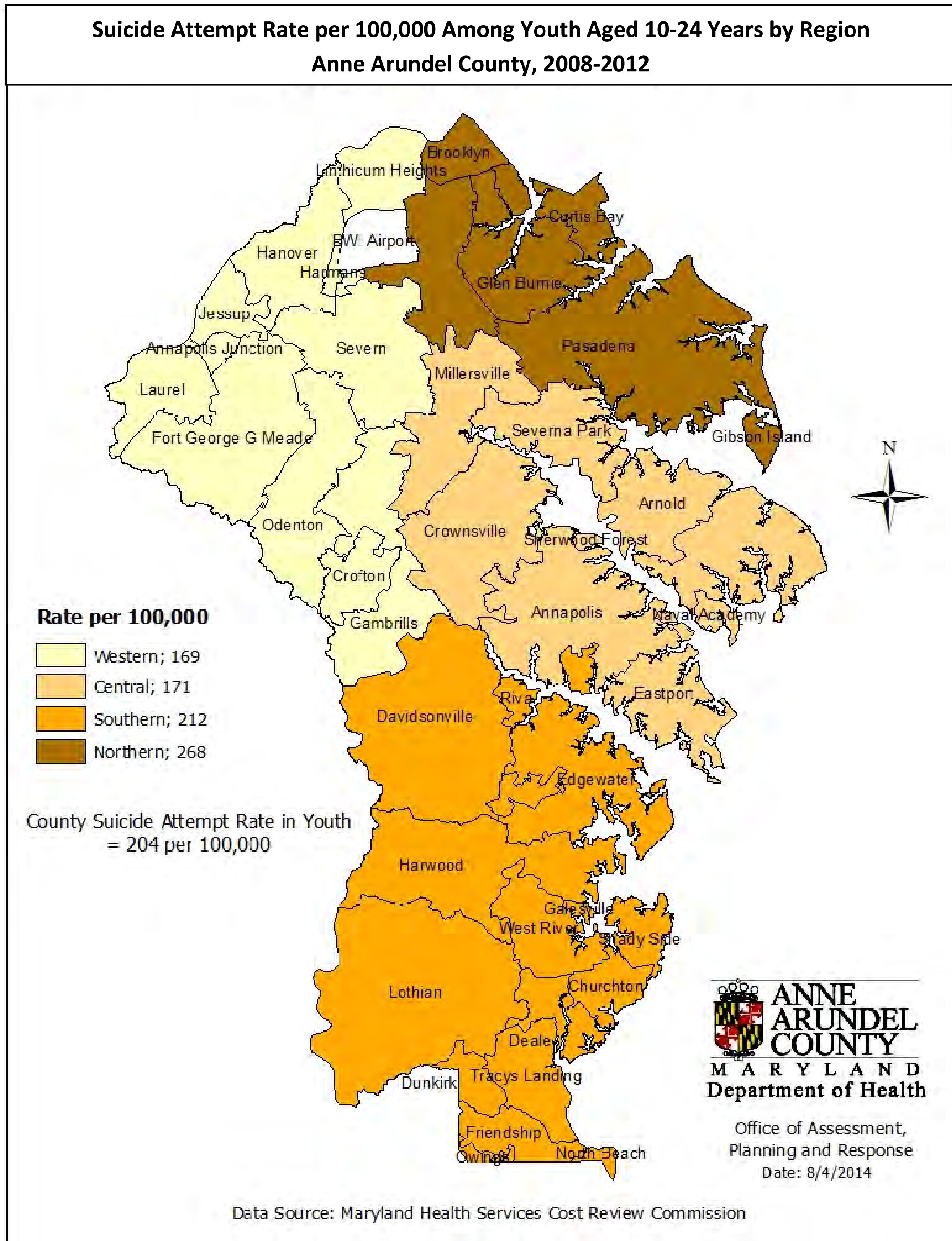
Source: Maryland Health Services Cost Review Commission, 2008-2012 Outpatient Data File

* ZIP Codes shared with other counties; data presented is for Anne Arundel County only.

-- Rates not calculated for count less than 20

Emergency Department Visits for Suicide Attempts

The Northern region of Anne Arundel County has the highest suicide attempt rate among youth aged 10 to 24 years (268 per 100,000) followed by the Southern (212 per 100,000), Central (171 per 100,000) and Western (169 per 100,000) regions.

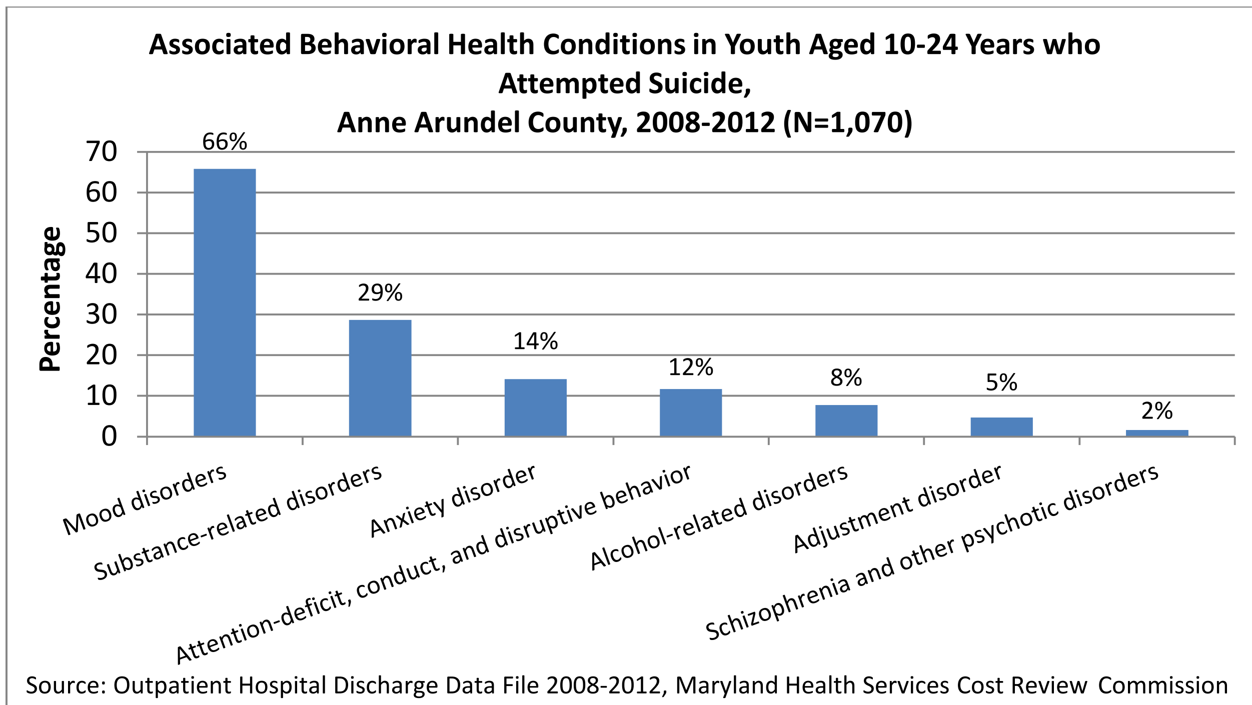


Emergency Department Visits for Suicide Attempts

Associated Behavioral Health Conditions

Behavioral health is a state of mental/emotional being and/or choices and actions that affect wellness. Behavioral health conditions* include (but are not limited to) substance abuse and misuse, serious psychological distress and mental illness.[9] Often there are associations between behavioral health conditions and suicide attempts. History of depression or other mental illness and alcohol or drug abuse are known risk factors for youth suicide.

Out of the 1,070 attempted suicides among Anne Arundel County youth between 2008 and 2012, 83% had at least one associated behavioral health problem.[5] Mood disorders (bipolar disorders and depressive disorders) were the most common behavioral health conditions associated with suicide attempts in youth.



Source: Outpatient Hospital Discharge Data File 2008-2012, Maryland Health Services Cost Review Commission

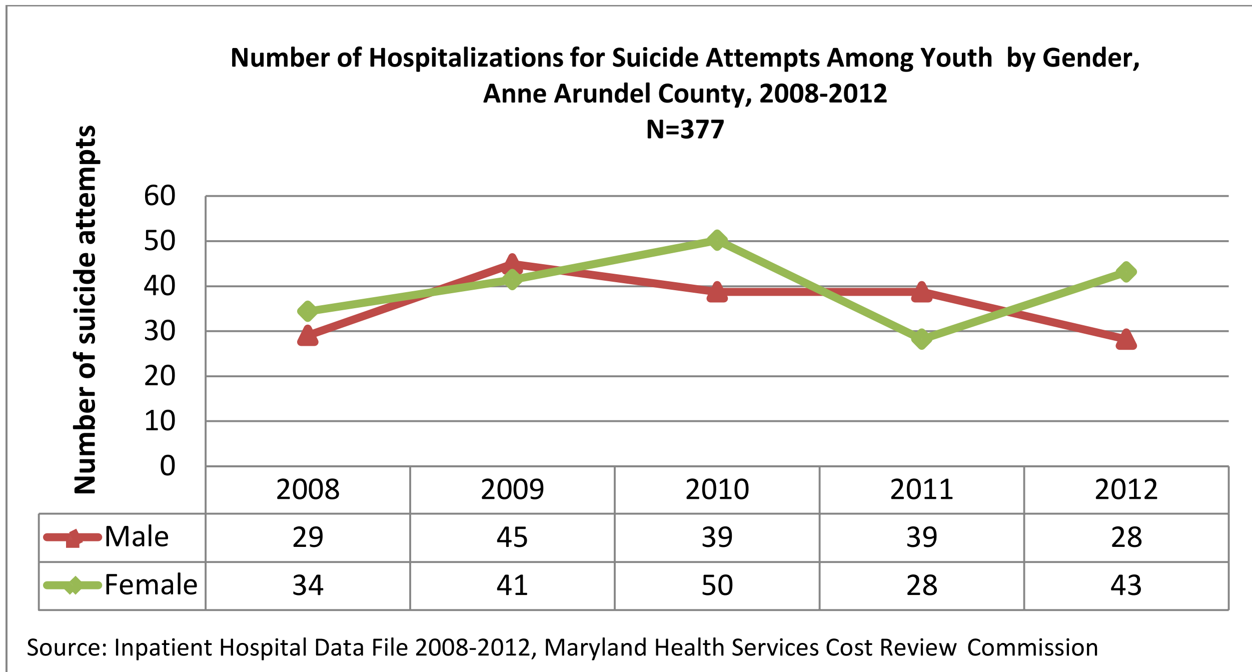
Multiple Suicide Attempts

Seventy Anne Arundel County youths attempted suicide multiple times between 2008 and 2012; of those, 87% had at least one associated behavioral health condition. More females attempted suicide multiple times than males (61% female vs. 39% male) and most were White (87%).[5] Mood disorders (74%), which includes bipolar disorders and depressive disorders, was the most common associated behavioral health condition in youth who attempted suicide multiple times, followed by substance use disorders (61%).

*See Appendix for disorders included in Behavioral Health Conditions.

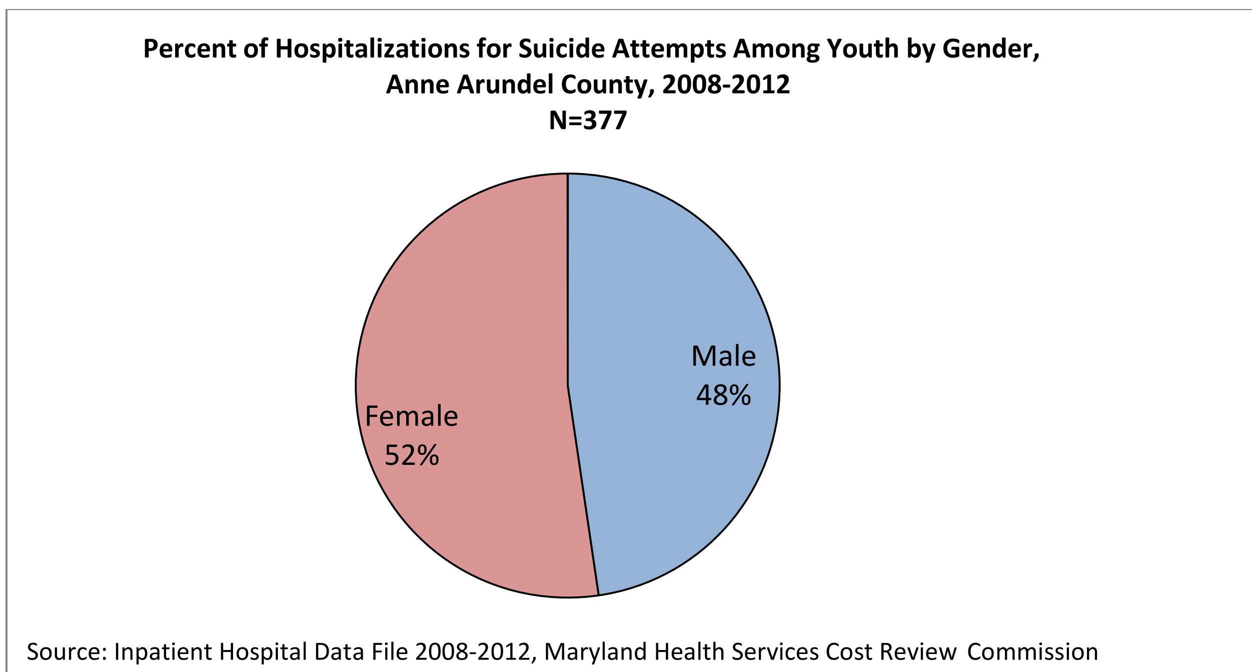
Hospitalizations Due to Suicide Attempts

Every year, more than 70 youths are hospitalized for attempted suicide in Anne Arundel County. Males and females have almost an equal hospitalization percentage for suicide attempts. Poisoning was the most common suicide method leading to hospitalization. The median cost of hospitalization due to suicide attempts from 2008 to 2012 was $5,480 per hospitalization and the total cost was $3,196,975.[10]



	2008	2009	2010	2011	2012
Male	29	45	39	39	28
Female	34	41	50	28	43

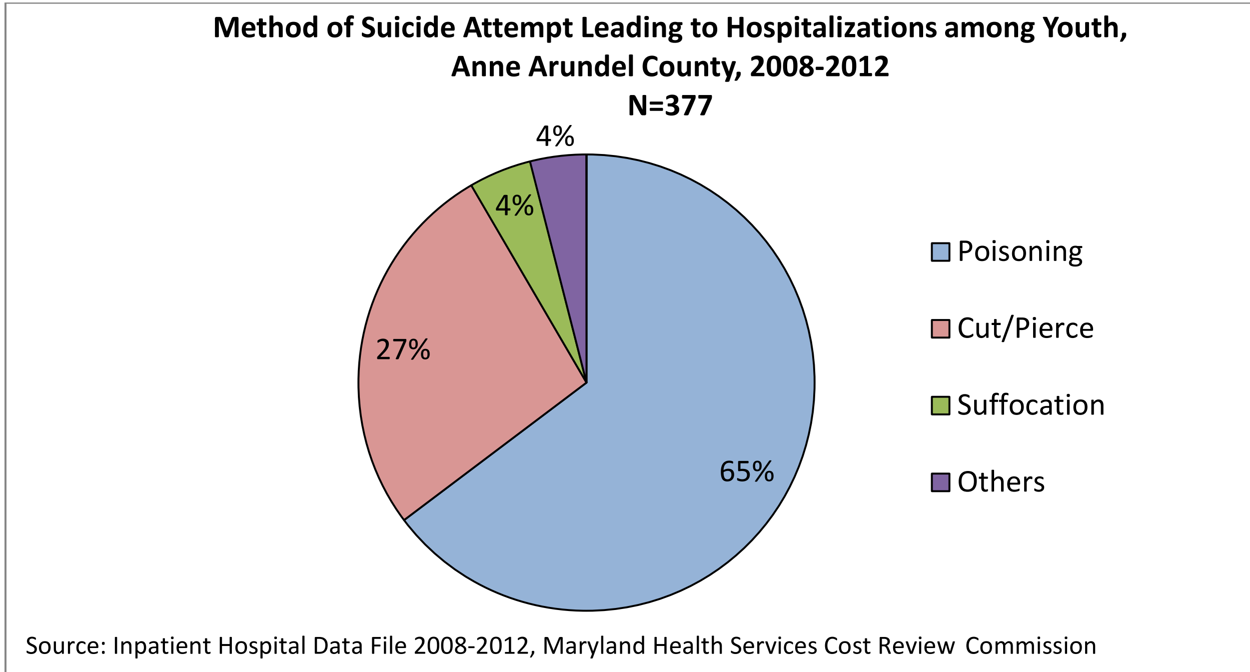
Source: Inpatient Hospital Data File 2008-2012, Maryland Health Services Cost Review Commission

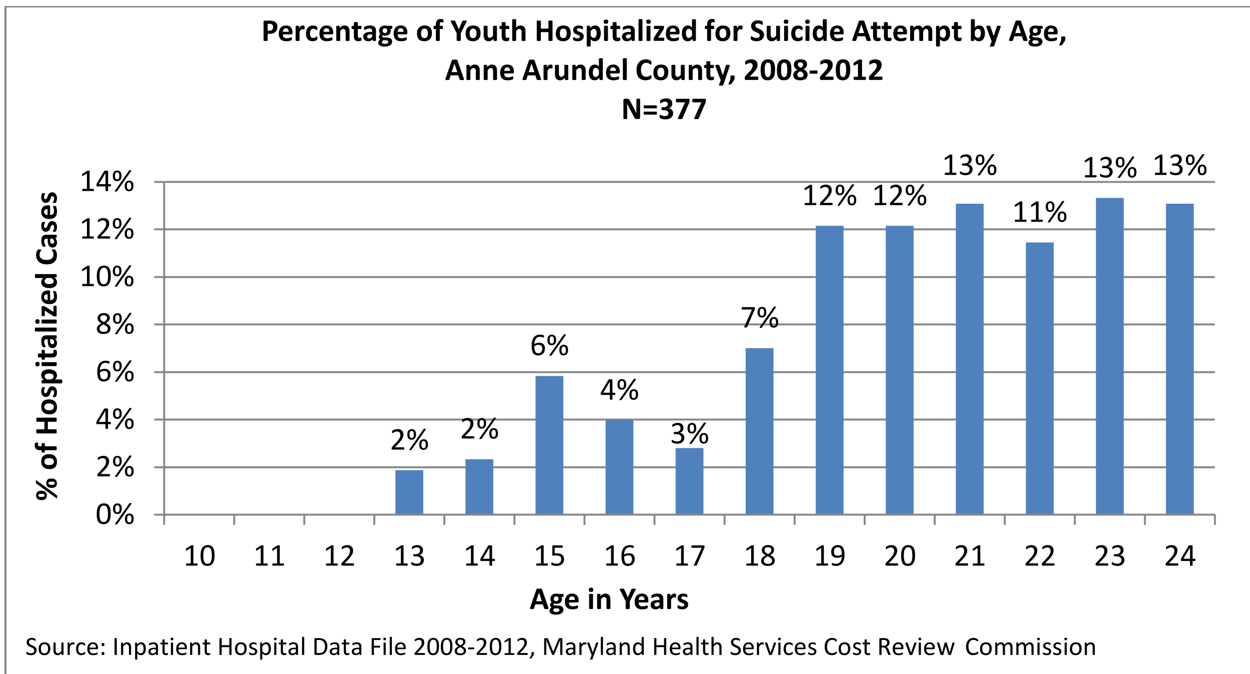


Source: Inpatient Hospital Data File 2008-2012, Maryland Health Services Cost Review Commission

Hospitalizations Due to Suicide Attempts

Poisoning was the most common method used for suicide attempts by youth which resulted in hospitalization, followed by cut/pierce (27%) and suffocation (4%). Most of the youth hospitalized for suicide attempts were age 19 and older.

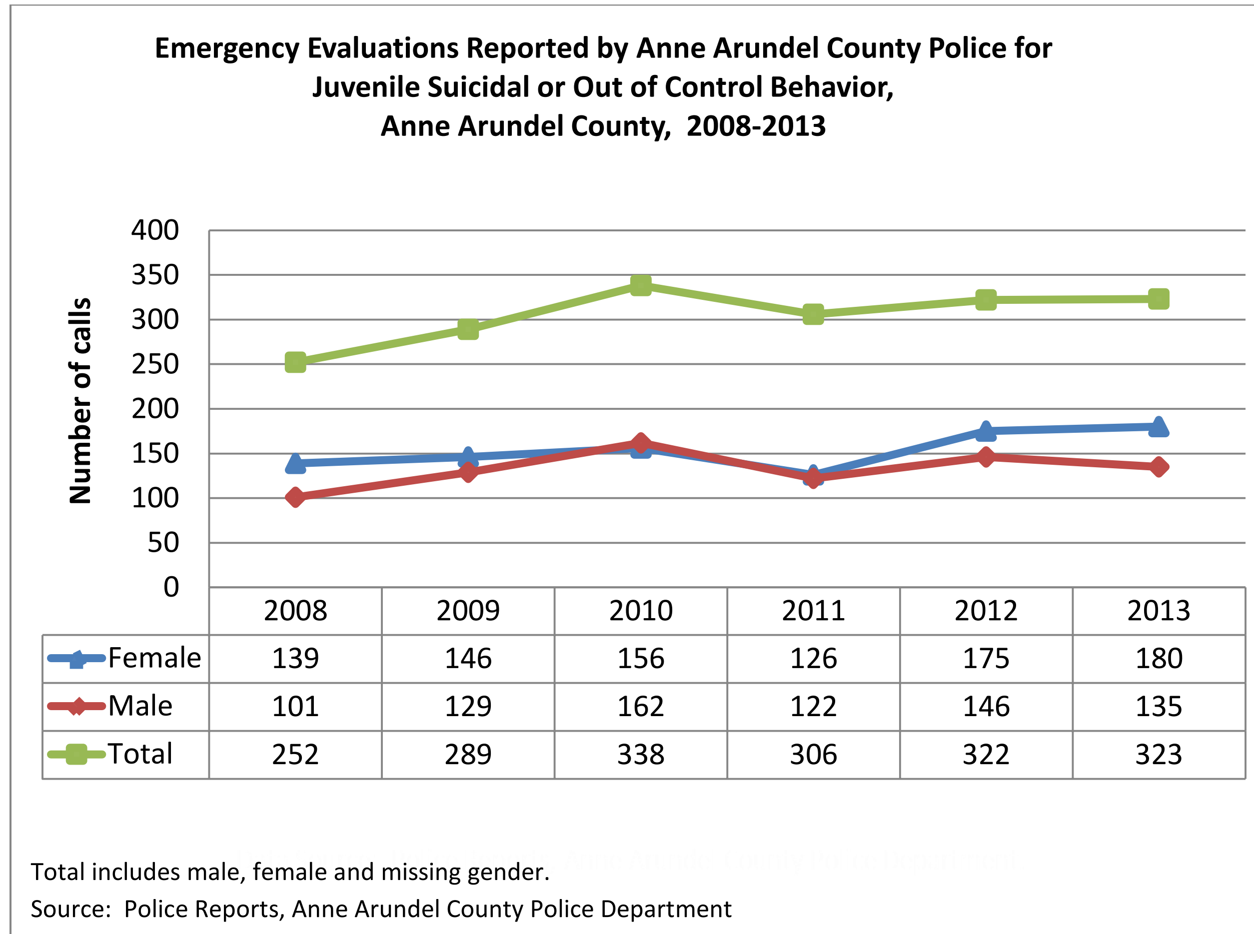




Emergency Evaluations Reported by Police

From 2008 to 2013, there were approximately 1,800 emergency evaluations reported by Anne Arundel County Police for juvenile (age 17 years and younger) suicidal or out of control behavior. More than two-thirds of these were among White juveniles which mirror the County's demographic distribution.

The vast majority of these evaluations involved suicide threats or attempts. In most cases police officers transported youth to a local hospital emergency room for a court-ordered emergency evaluation by a mental health professional.



	2008	2009	2010	2011	2012	2013
Female	139	146	156	126	175	180
Male	101	129	162	122	146	135
Total	252	289	338	306	322	323

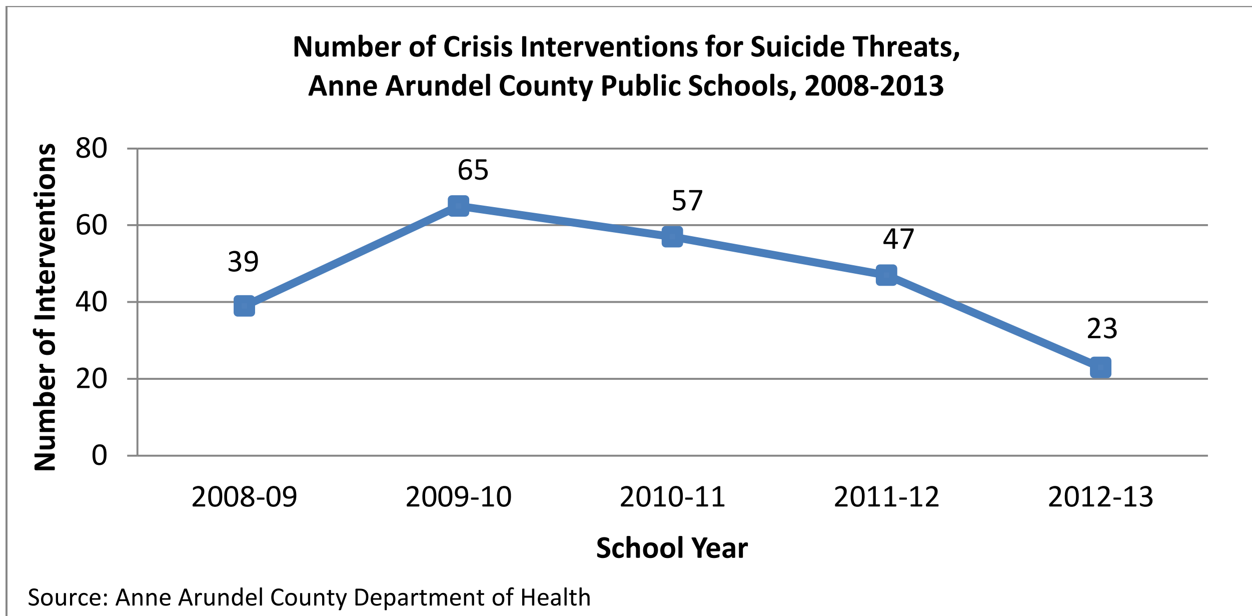
Total includes male, female and missing gender.

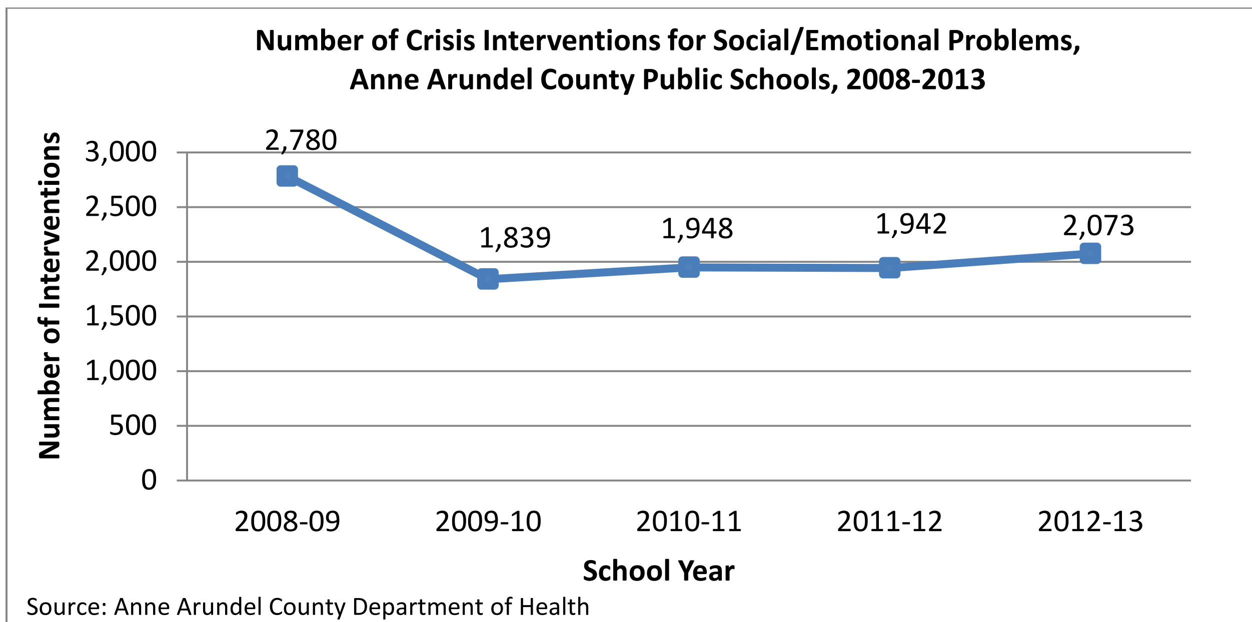
Source: Police Reports, Anne Arundel County Police Department

School Health Room Visits

Anne Arundel County Public Schools have school health rooms that provide health services to students. School health nurses work collaboratively with guidance counselors and other school staff to address students' social, emotional and mental health needs.

During the 2012-2013 school year, 23 students visited school health rooms for suicide threats, and 2,073 students visited school health rooms for other social/emotional problems, such as anxiety issues due to family problems or poor peer relationships.



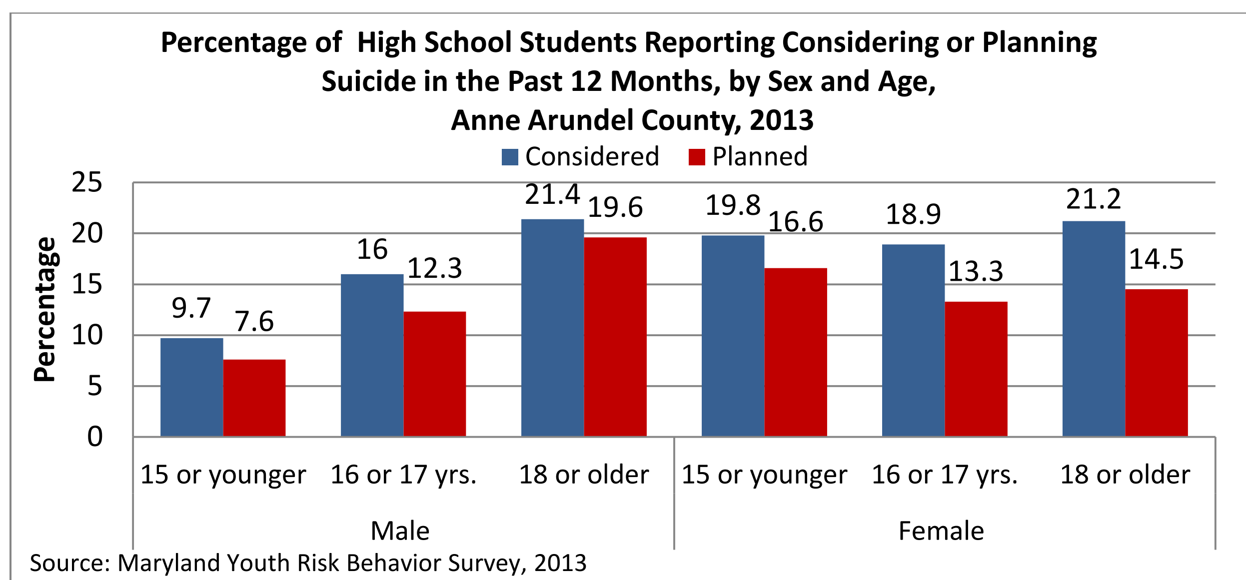


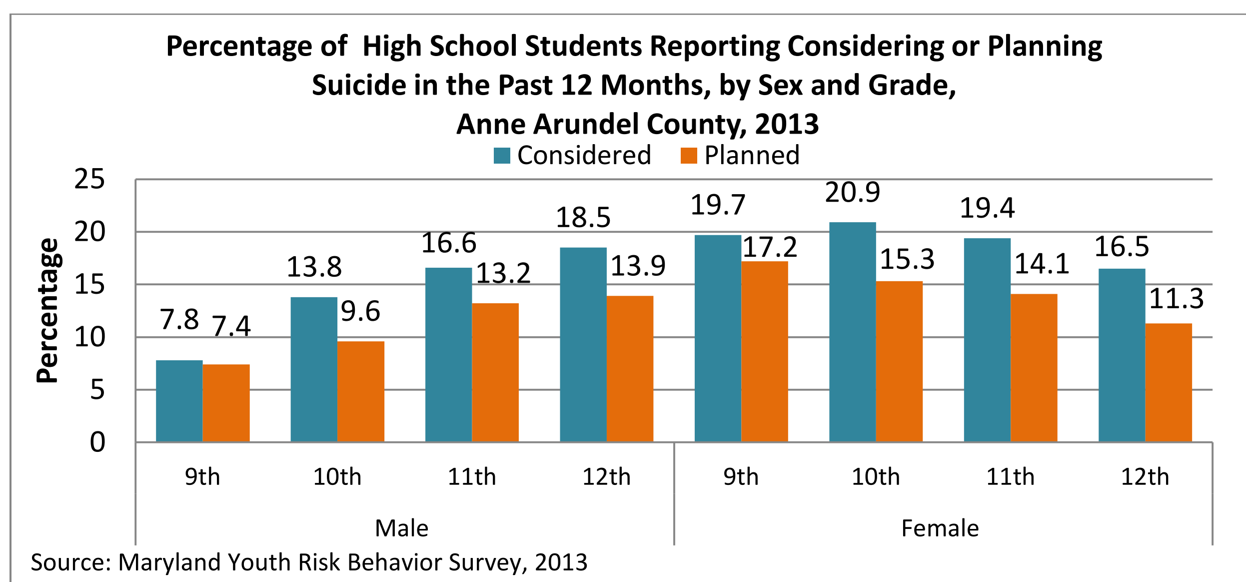
Maryland Youth Risk Behavior Survey, 2013

High School Youth

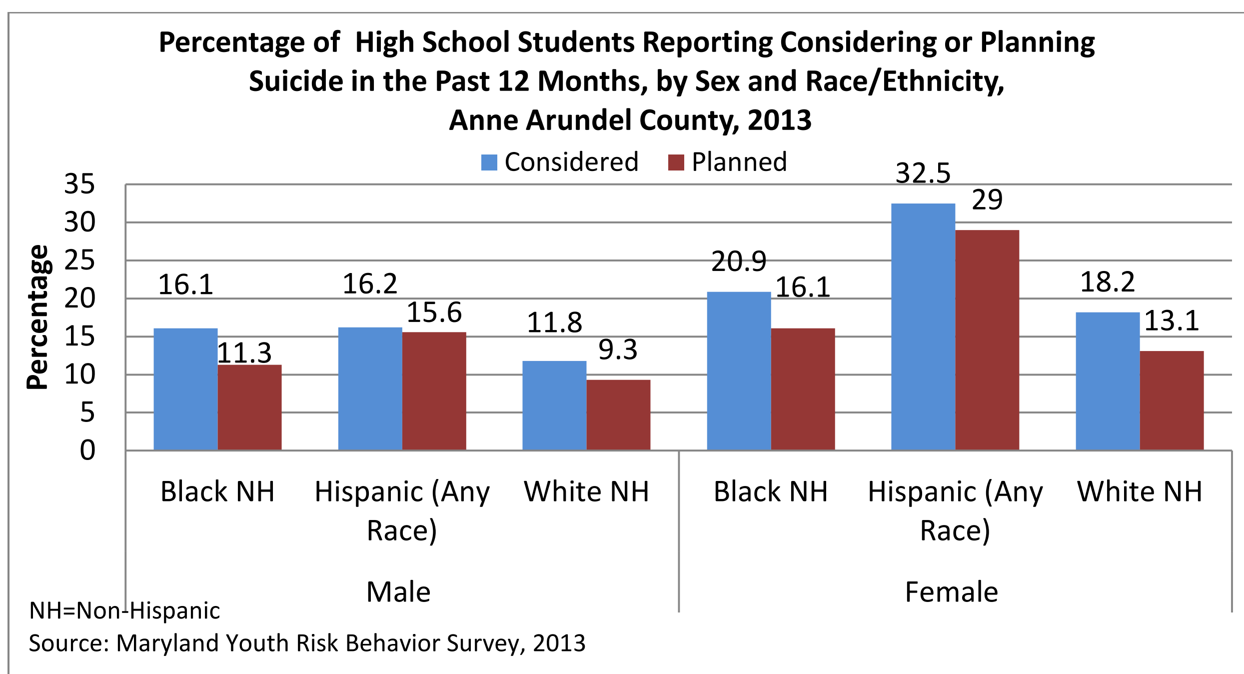
The Maryland Youth Behavior Survey, 2013, shows that 16.9% of high school students (grades 9-12) in Anne Arundel County seriously considered attempting suicide and 13% made a plan about how they would attempt suicide in the past 12 months. Comparatively, 16% of high school students in Maryland seriously considered attempting suicide and 12.5 % made a plan about how they would attempt suicide in the past 12 months.

Female high school students in Anne Arundel County were more likely to report having considered or planned suicide compared to male. (Considered Suicide: 19.5% female vs. 13.9% male; Planned Suicide: 14.8% female vs. 10.9% male). The prevalence of having seriously considered or planned suicide also differed by age, grade and race/ethnicity.



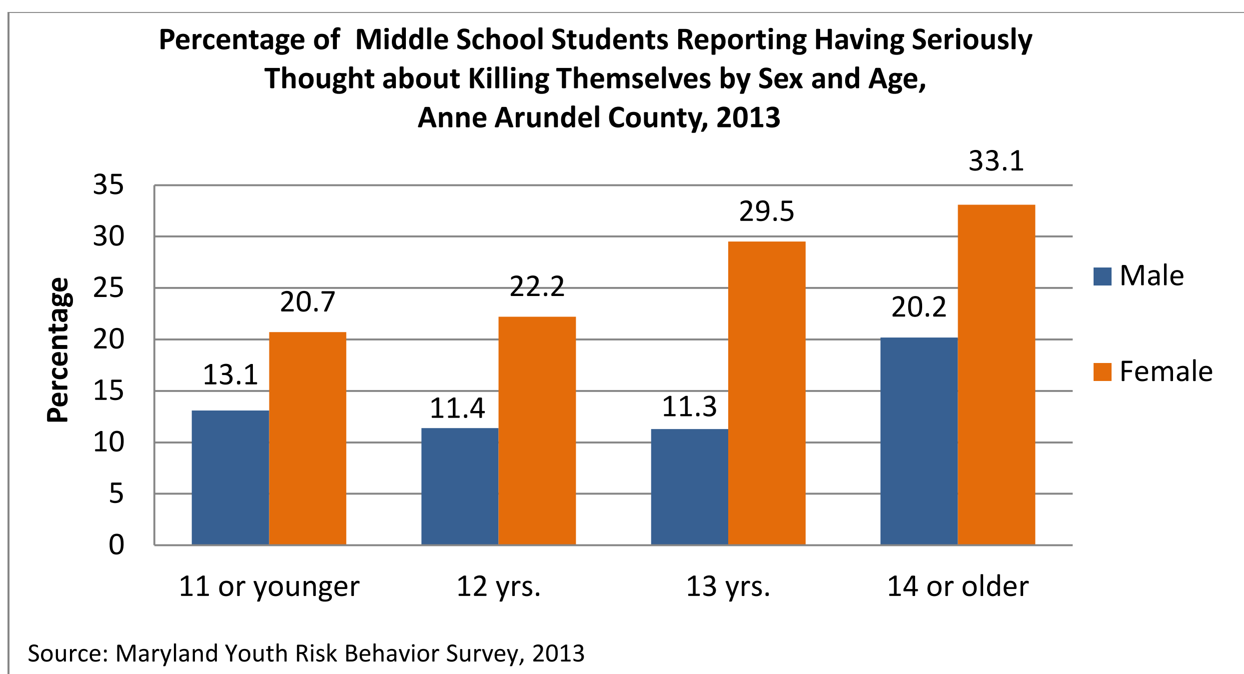


Maryland Youth Risk Behavior Survey, 2013

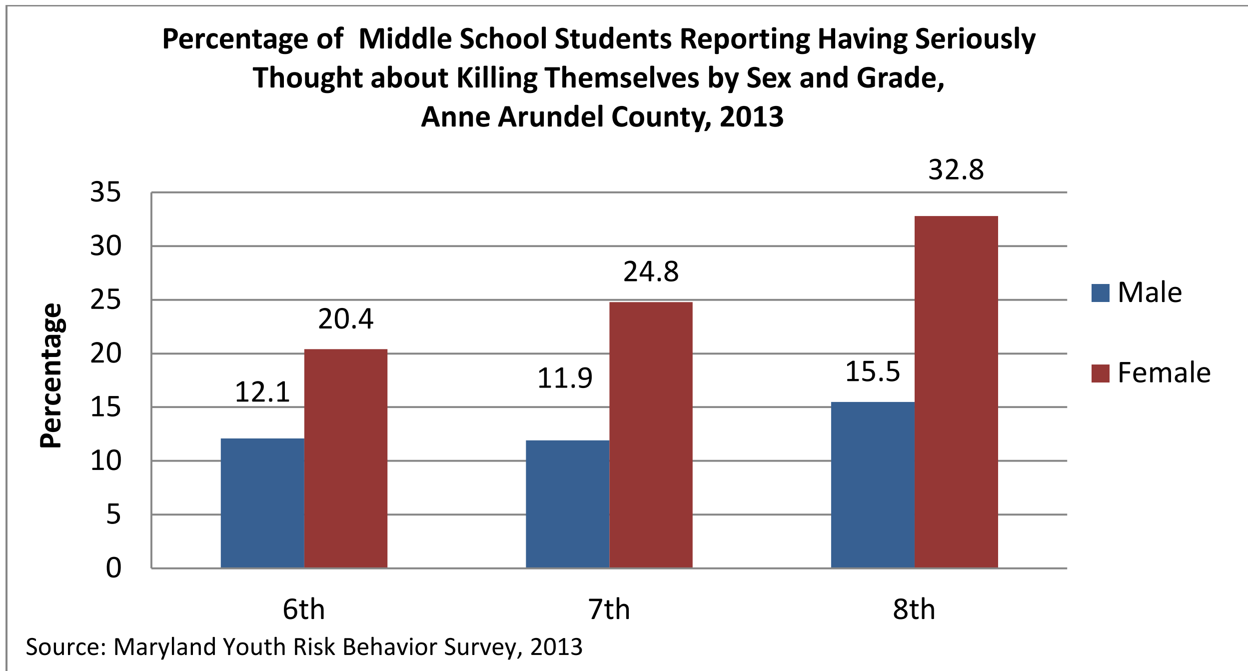


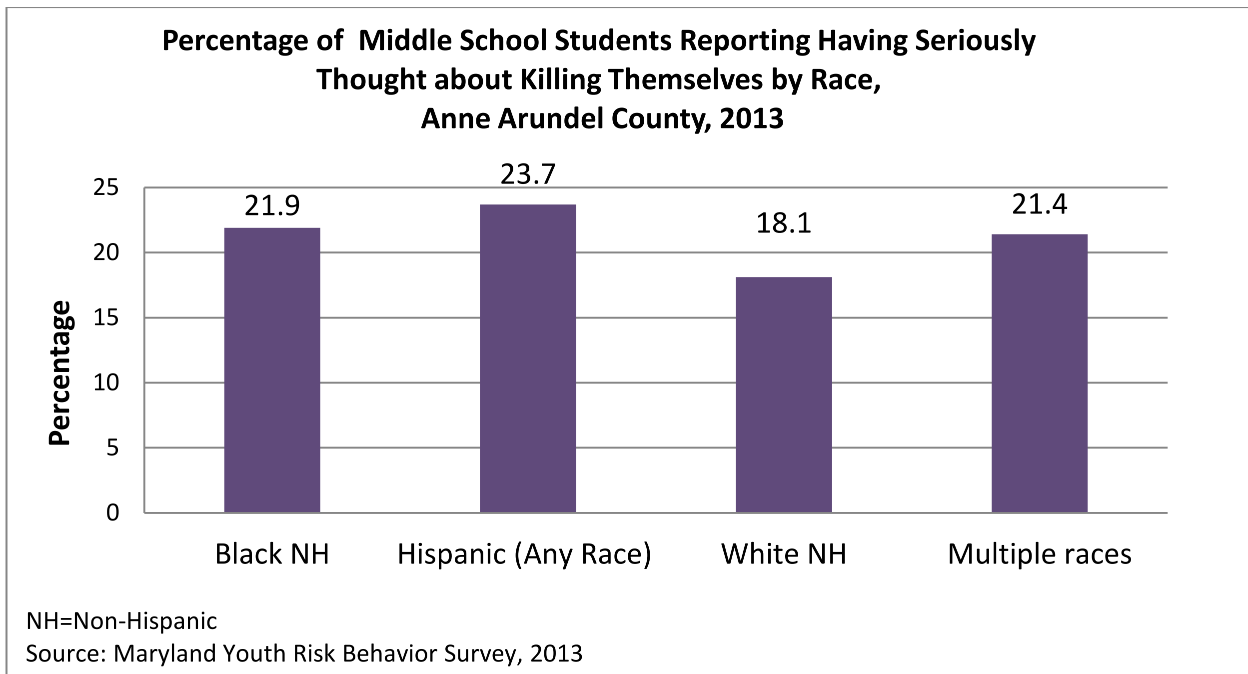
Middle School Youth

The Maryland Youth Behavior Survey, 2013, also shows that 19.6% of middle school students (grades 6-8) in Anne Arundel County have seriously thought about killing themselves. Female middle school students were more likely to report seriously thinking about killing themselves compared to males (26.1% female vs. 13.2% male). There were differences in results by age group, grades and race/ethnicity.



Maryland Youth Risk Behavior Survey, 2013





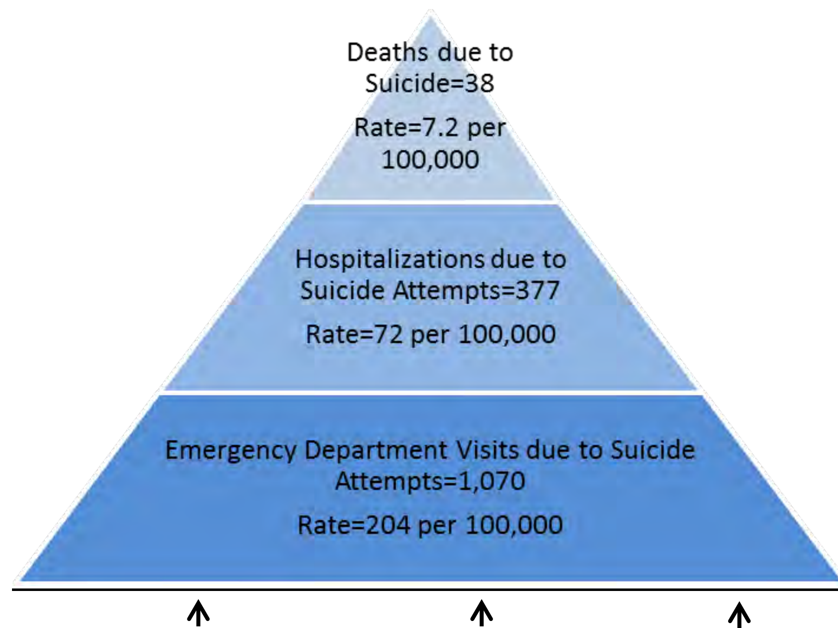
Gay, Lesbian and Bisexual Youth

The Maryland Youth Behavior Survey, 2013, also shows that gay, lesbian or bisexual high school students are more likely than heterosexual students to seriously consider attempting suicide (13% heterosexual vs. 43.2% gay, lesbian or bisexual) and also more likely to make a plan about how they would attempt suicide (9.8 % heterosexual vs. 34.3% gay, lesbian or bisexual).

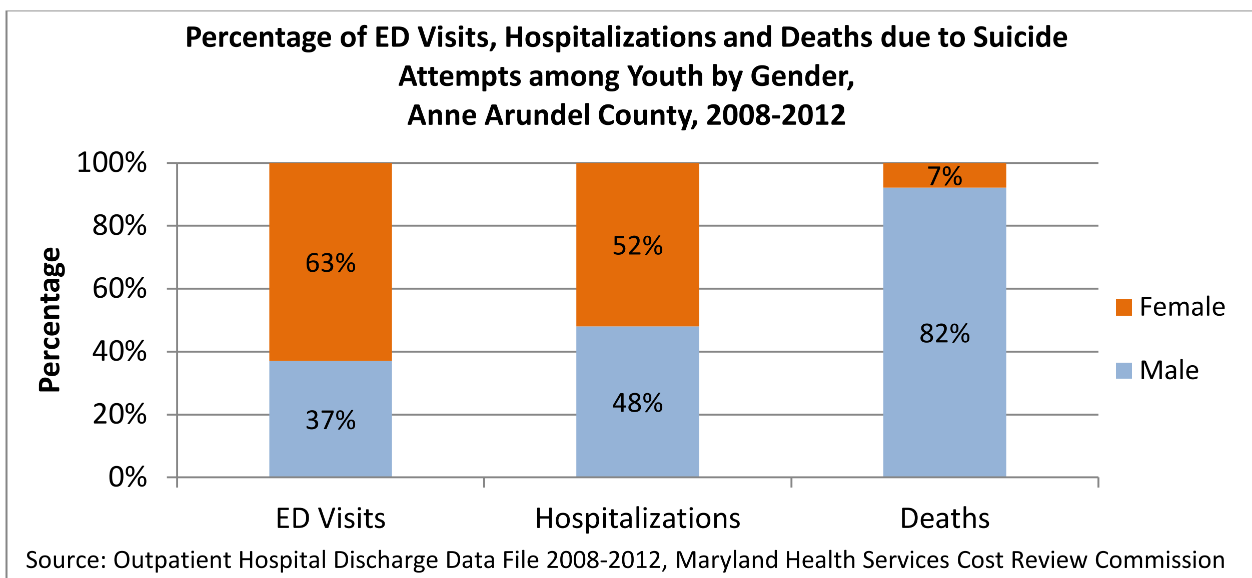
Public Health Burden of Suicide and Suicidal Behavior Among Youth

The public health burden of suicide in youth in Anne Arundel County is much greater than the number of deaths. For every youth who dies due to suicide, there are many more who think about, plan or attempt suicide. Female youth accounted for most of the suicide-related emergency departments visits while male youth accounted for most of the suicide deaths.

Public Health Burden of Suicide and Suicidal Behavior among Youth Aged 10-24 Years, Anne Arundel County, 2008-2012



Suicidal Thoughts and Feelings, Suicide Threats, Suicide Planning



Discussion

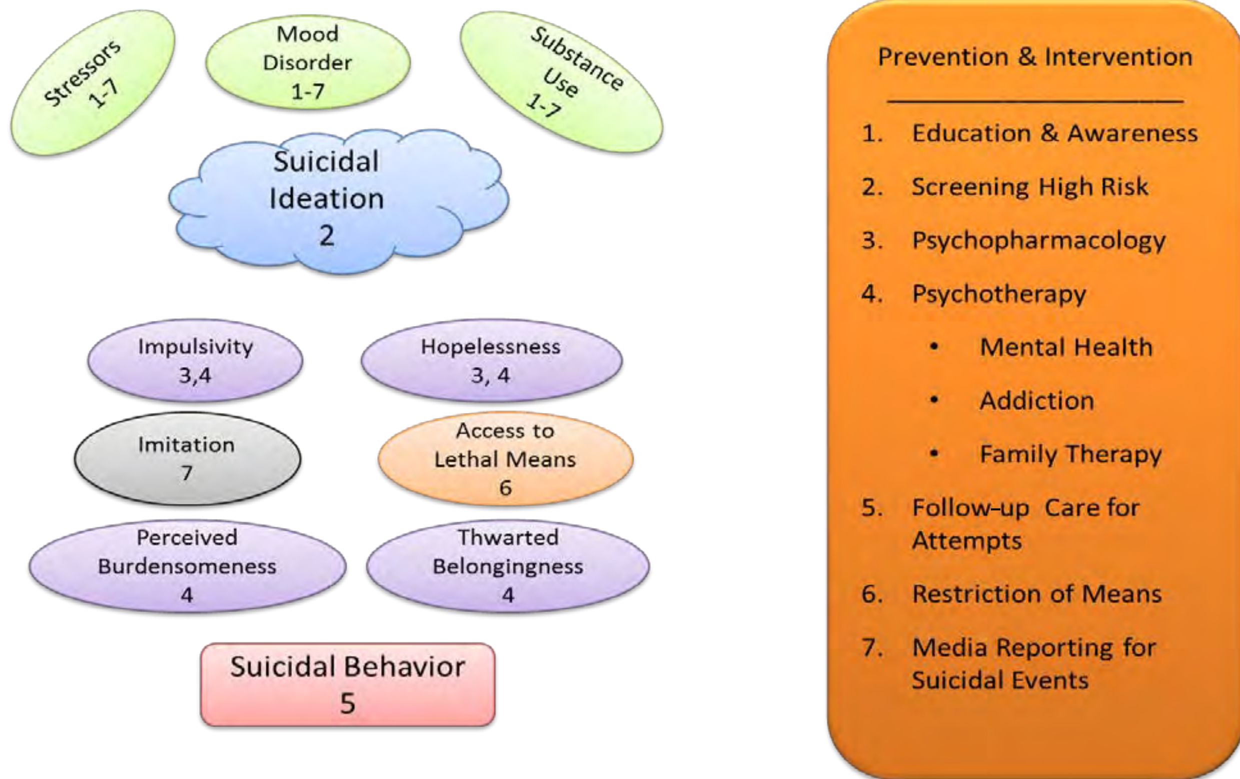
Adolescence is a time of dramatic growth and development. Just as every youth possesses unique strengths and skills, every youth faces a variety of changes and challenges. These challenges can be compounded by mood disorders, family conflict, substance abuse or grief/loss which may become overwhelming. Youth suicide is a highly complex issue that involves multiple factors; it may be triggered by an event (such as a break up in a relationship or a failed test), but is not caused by that event. Becoming aware of the risk factors for suicidal behavior and knowing how and where to seek help can prevent injury and loss of life. We don't fully understand why some youth commit suicide and others do not, however, some major risk factors for suicide among adolescents include:[12]

- A previous suicide attempt
- A psychiatric disorder, especially major depressive disorder, bipolar disorder, conduct disorder, and substance (alcohol and drug) use disorders
- Psychiatric comorbidity, especially the combination of mood, disruptive and substance abuse disorders
- Personality disorders (especially DSM IV cluster B disorders: antisocial, borderline, histrionic, narcissistic)
- Impulsive aggression (the tendency to react to frustration or provocation with hostility or aggression)
- Availability of lethal means
- Feelings of hopelessness and worthlessness that often accompany depression
- A family history of depression or suicide
- Loss of a parent to death or divorce
- Family discord
- Physical and/or sexual abuse
- Lack of a support network, poor relationships with parents or peers and feelings of social isolation
- Dealing with homosexuality in an unsupportive family or community or hostile school environment
- Bullying

Suicide may be prevented by reducing risk factors and increasing protective factors that promote resilience or coping. Protective factors for suicide include: [11]

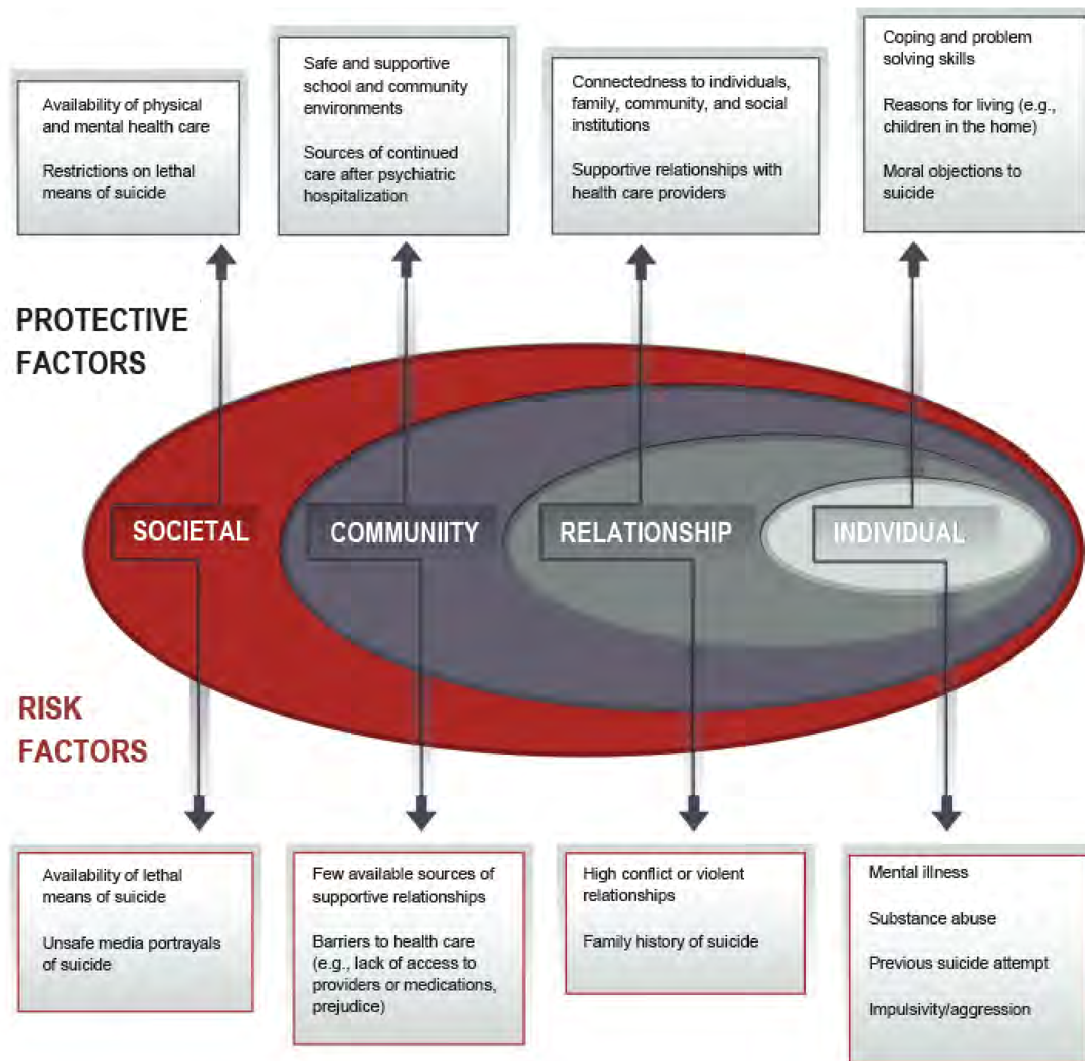
- Effective clinical care for mental, physical and substance abuse disorders
- Easy access to a variety of clinical interventions and support for seeking help
- Family and community support (connectedness)
- Support from ongoing medical and mental health care relationships
- Skills in problem solving, conflict resolution and nonviolent ways of handling disputes
- Cultural and religious beliefs that discourage suicide and support instincts for self-preservation

Youth suicidal behavior is a complex issue with multiple, interacting causes. In order to successfully intervene, suicide prevention must take a multifaceted approach with particular attention to mental health. The following figure represents some of the complex factors involved in suicidal behavior and indicates possible points for prevention and intervention efforts.



Note: Numbers refer to prevention and intervention efforts on the right.

While suicidal behavior is the act of an individual, it happens within the context of an individual's personal history, relationships, community and larger society. Looking at youth suicidal behavior through a model that allows us to consider not just the individual's dynamics but also the dynamic interaction between the individual, their families, peers, community and larger environment may provide not just a better understanding of the process, but also additional opportunities to intervene. Everyone can play a part in reducing suicide and its negative impact on the County.



U.S. Department of Health and Human Services (HHS) Office of the Surgeon General and National Action Alliance for Suicide Prevention. 2012 National Strategy for Suicide Prevention: Goals and Objectives for Action. Washington, DC: HHS, September 2012.

Where do we go next?

This report offers a summary of available data in the County and establishes a baseline for future comparison. It is hoped that this can be used to facilitate discussions within Anne Arundel County that will support positive outcomes for youth and their families and that will ultimately reduce the rate of suicide in our community.

While much is not known, there is evidence that intervention in the suicidal process can come at any point from stressor to ideation to suicidal behavior and that everyone has a role to play. Just as no suicide has a single cause, there is no single prevention or intervention activity that will prevent suicides. To be successful, these efforts must be comprehensive, coordinated across organizations and culturally attuned and relevant to Anne Arundel County.

Possible Questions for Discussion:

1. What can be done to increase protective factors in Anne Arundel County (in homes, neighborhoods, schools, churches, businesses)?
2. How can we increase the likelihood that youths will tell an adult that they feel depressed, anxious or suicidal? How can we increase the likelihood that they will be able to get the right care at the right time?
3. How can we increase recognition of warning signs and risk factors for County residents?
4. How can we help youth understand that it is okay to tell an adult that a friend is in danger and may be contemplating suicide?
5. What information does the media need in order to report on adolescent suicide prevention and intervention efforts?
6. How can we foster positive public dialogue; counter shame, prejudice and silence; and build public support for suicide prevention?
7. What can be done to address the needs of vulnerable groups; tailor messages in the appropriate cultural and situational context; and seek to eliminate disparities?
8. How can prevention efforts be coordinated and integrated with existing efforts to address health and behavioral health and ensure continuity of care?
9. What will promote changes in the County's systems, policies and environments in order to support and facilitate the prevention of suicide and related problems?
10. What are the most up-to-date evidence-based suicide prevention strategies that are right for Anne Arundel County?

Note: Questions 6-10 are adapted from the 2012 National Strategy for Suicide Prevention report.

Community Resources

For more information about how to talk to teens about suicide or for help in accessing mental health services, contact the Anne Arundel County Department of Health's Adolescent and Family Services Program at 410-222-6785 or visit www.aahealth.org.

The Anne Arundel County Mental Health Agency maintains a directory of resources, the Network of Care, at www.networkofcare.org and can be reached at 410-222-7858.

The Anne Arundel County Crisis Response Warmline is 410-768-5522.

The Anne Arundel County Public Schools Student Safety Hotline is 1-877-676-9854

The Maryland Youth Crisis Hotline is 1-800-422-0009.

The National Suicide Prevention Lifeline is a 24-hour, toll-free, confidential suicide prevention hotline available to anyone in suicidal crisis or emotional distress. By dialing 1-800-273-TALK (8255), the call is routed to the nearest crisis response team. For more information, visit www.suicidepreventionlifeline.org/

To get involved in suicide prevention efforts in Anne Arundel County, contact the Youth Suicide Action Team (YSA) or visit www.achoicetolive.org/

In case of an emergency, call 911.

Appendix

Disorders included in “behavioral health” condition are:

1. Adjustment disorders
2. Anxiety disorders
3. Attention-deficit, conduct and disruptive behavior disorders
4. Delirium, dementia, and amnestic and other cognitive disorders
5. Developmental disorders
6. Disorders usually diagnosed in infancy, childhood or adolescence
7. Impulse control disorders
8. Mood disorders
9. Personality disorders
10. Schizophrenia and other psychotic disorders
11. Alcohol-related disorders
12. Substance-related disorders

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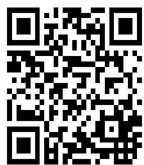

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