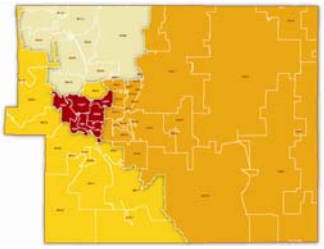
El Paso County Suicide Rates: *Cause for Alarm?*



Pikes Peak
Behavioral Health Group

Pikes Peak
Suicide Prevention Partnership

May 20, 2009

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Executive Summary

In the Pikes Peak United Way-sponsored *2008 Quality of Life Indicators* report, high suicide rates for teens and older adults were identified among the four significant health issues for this region. They were the *only* health issues out of the four to receive red flag warnings.

This study prompted Pikes Peak Behavioral Health Group and Pikes Peak Suicide Prevention Partnership to investigate suicides in El Paso County.

This paper represents an analysis of the available data on suicide for our area, possible causative factors, and prevention strategies and interventions for consideration.

Suicide is a devastating event with catastrophic human and economic costs. Survivors of suicide, defined as family members or friends of a person who died by suicide, represent "the largest mental health casualties related to suicide."[1] The loss of a loved one by suicide is not only extremely painful – it is often entirely unexpected. The grief that ensues can be intense, complex, and long term. Survivors often struggle with the reasons why the suicide occurred and whether they could have done something to prevent the suicide or help their loved one.

Not always considered in the study of suicide are the economic consequences of suicide for the family and community. Medical costs, alone, for suicide and suicide attempts in El Paso County are estimated at $4 million, annually. For a suicide attempt, average medical costs, combined with the costs of lost work, are approximately $25,000 per attempt. For completed suicide, these costs are 58 times higher – $1.45 million per suicide.

Colorado has one of the highest suicide rates in the nation. In 2004, the state was 8th highest and, although the ranking varies from year to year, it remains consistently in the top ten. All of the Rocky Mountain States and Alaska lead the nation in deaths by suicide. And yet, there is very little evidence regarding reasons for the high suicide rate in Colorado and other western states.

[1] Shneidman, E., American Association of Suicidality. As quoted in *Survivors of Suicide Fact Sheet*. www.cvhn.org/SurvivorsFactSheet.pdf

According to the Colorado Office of Suicide Prevention, there are a number of theories for why suicide rates are higher in this part of the country. One hypothesis is the "frontier mentality" – that the west tends to attract people who are independent and subscribe to the "just pick yourself up by your boot straps and handle it yourself" mindset. Additionally, people who relocate to the west often are geographically removed from extended family and friends, losing their natural support systems. It is also possible that there is a stronger stigma in the west attached to asking for help and receiving treatment for mental health disorders like depression.

Access to treatment in the western states can be difficult due to limited mental health funding and the challenges presented to people who live in rural areas where there are relatively few treatment providers.

In 2007, suicide was the 7th leading cause of death for both Colorado and El Paso County. In 2004, the metropolitan area of Colorado Springs had the second-highest suicide rate (26 suicides per 100,000 residents) compared with 53 other large cities. Over a 15-year span, Colorado Springs' suicide rate averages 19 suicides per 100,000 residents.

In all years but one spanning 2000-2007, annual suicide rates for El Paso County equaled or surpassed the rates for Colorado. El Paso County has slightly higher suicide rates than Colorado for specific demographic groups – such as males ages 25-54, whites, and Hispanics.

A portion of the excess suicide rate in El Paso County may be due to the high proportion of veterans in the population. Veterans comprise approximately 18% of the Colorado Springs adult population, second among metropolitan areas only to Virginia Beach, Virginia. Although the suicide rate for veterans in El Paso County is similar to the Colorado rate (but significantly higher than the U.S. rate), veterans account for almost one-third of the total suicides in El Paso County in recent years.

An analysis of suicide rate by zip codes in El Paso County reveals that the highest suicide rates are in the central metro or downtown Colorado Springs area.

Suicide risk factors may be thought of as conditions that lead to or are associated with suicide. Risk factors are quite varied and include an individual's attitudinal and behavioral characteristics as well as attributes of the environment and culture. Dr. Thomas Joiner, in his 2005 book *Why People Die by Suicide*,[2] takes a wide-ranging, comprehensive approach to understanding suicide that goes beyond a consideration of risk factors. Joiner explains that for an individual to die by suicide, he or she must have both the desire for death as well as the capability for lethal self-injury.

[2] Joiner, T. *Why People Die by Suicide.* Cambridge: Harvard University Press, 2005.

Interventions for preventing suicide include the use of protective factors that reduce the likelihood of suicide. Protective factors enhance resilience and counterbalance risk factors. Comprehensive suicide prevention programs are believed to have the greatest likelihood of reducing the suicide rate, particularly if the programs incorporate a range of services and providers within a community. Comprehensive, community-based suicide prevention programs should include universal, selective, and indicated prevention strategies:

- Universal – Focus on everyone in a defined population or geographic area regardless of their risk; for example a hospital, school, or county;
- Selective – Target subgroups of people at increased risk due to age, gender, or ethnicity or stressors like unemployment and multiple military combat deployments;
- Indicated – Provide services to individuals who have been assessed to be at the greatest risk of suicide due to previous suicide attempts and other factors.

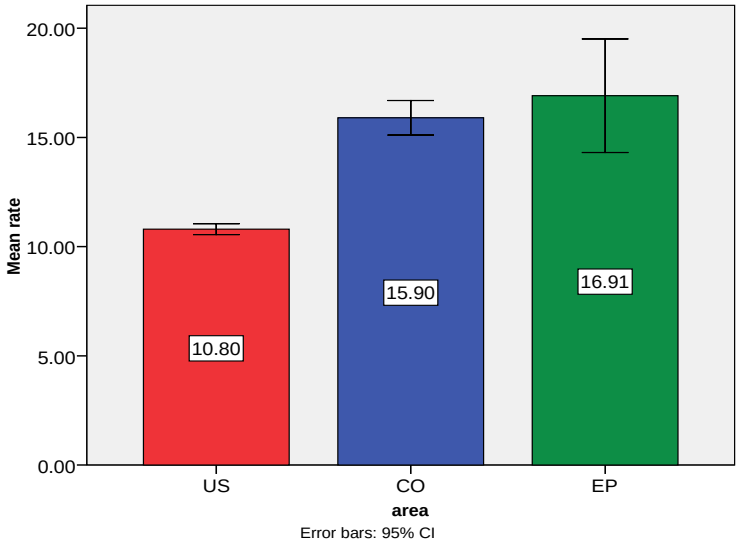
Important: Suicide rates, including those in this report, should be interpreted as "best estimates." Many variations in interpreting a death as a suicide and in attributing a specific suicide to a specific location, such as El Paso County, exist. For example, county coroner's office staff and state demography professionals may differ in the interpretation of an individual death as suicide. Also, suicide deaths may be reported by place of permanent address for death-certificate-based data, such as much of the state and county data used for this report, but by suicide *location* for violent death mortality data, including much of the national data in this document. Also, the annual variation is higher for smaller population sizes or events which occur relatively infrequently, highlighting the importance of investigating suicide rates over several years for areas such as El Paso County.

A Comparison of Suicide Rates in El Paso County, Colorado, and the U.S.

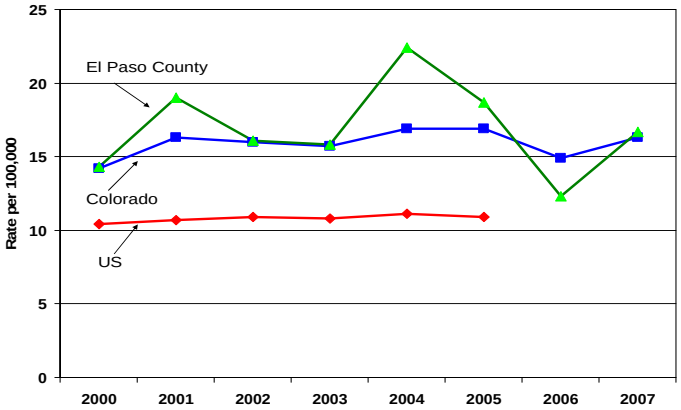
The suicide rates for Colorado and El Paso County are notably higher than for the nation, as illustrated in the figures below. Colorado's annual suicide rate is among the top 10 in the nation compared with other states and the District of Columbia. Likewise, Colorado's neighboring western states (the Rocky Mountain Region) and Alaska have high suicide rates relative to other states. The 2000-2007 El Paso County annual suicide rates have equaled or surpassed the rates for Colorado in all years except one. Both are notably higher than average national suicide rates.[3]

Average Suicide Rate per 100,000 People: U.S., Colorado, and El Paso County, 2000-2007

(2000-2005 average rate for U.S.)



Suicide Rates by Year: U.S., Colorado, and El Paso County[4]



[3] Unless otherwise noted, national data for this report are derived from National Center for Injury Prevention and Control. *WISQARS Leading Causes of Death Reports.* http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html;
state and county data for this report, unless otherwise noted, are from Colorado Department of Public Health and Environment. http://www.cdphe.state.co.us/cohid/deathmenu.html

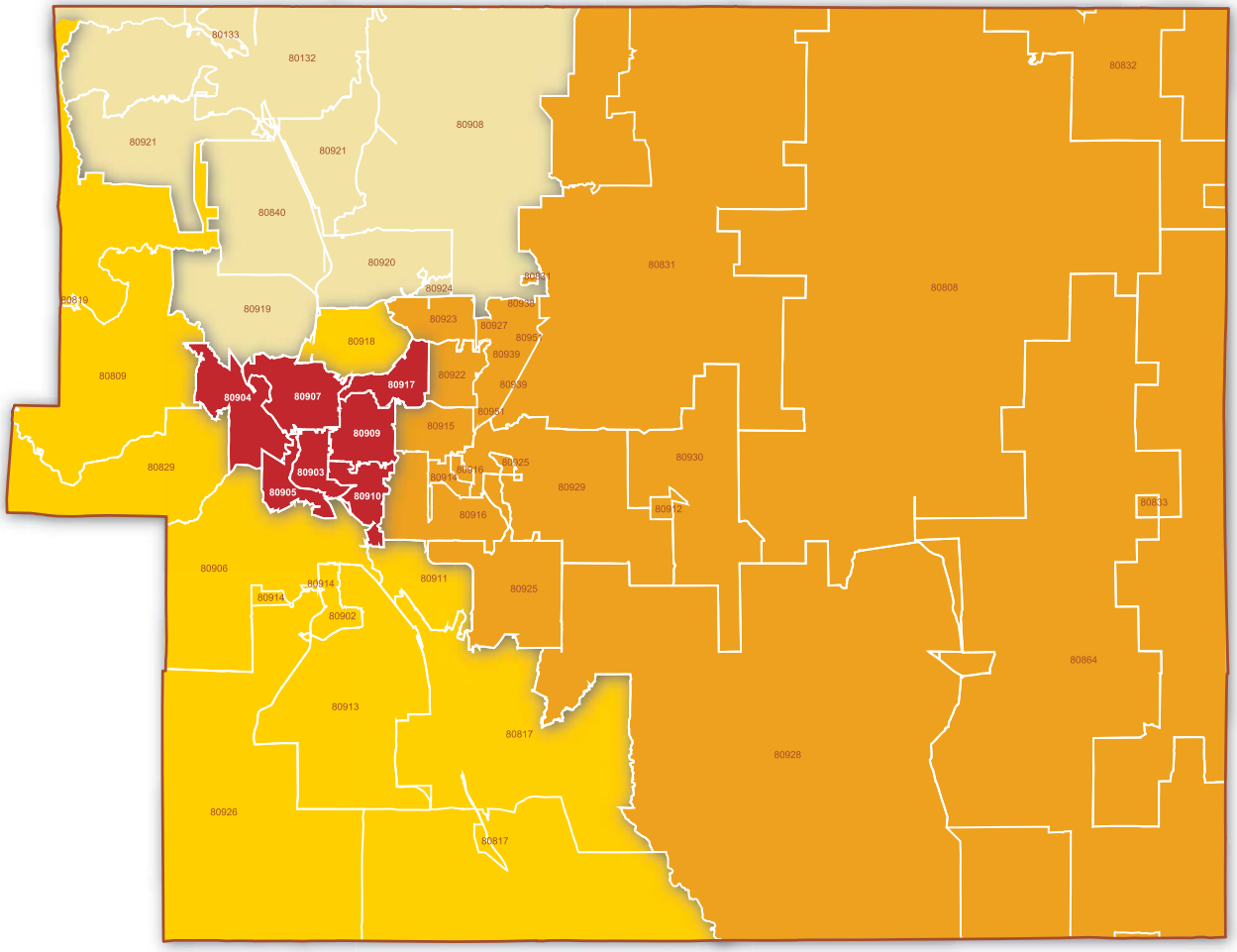
[4] 2005 is the most recent annual suicide data available for the US; 2006 and 2007 data are available for CO and El Paso County.

Suicide Rates by Area for El Paso County

Suicide rates were examined for El Paso County by the zip code where the suicide victims resided. As shown below, suicide appears highest in the central metro areas of Colorado Springs.

El Paso County Suicide Rates by Area of County, 2000-2007[5]

(See footnote for cautionary notice.)



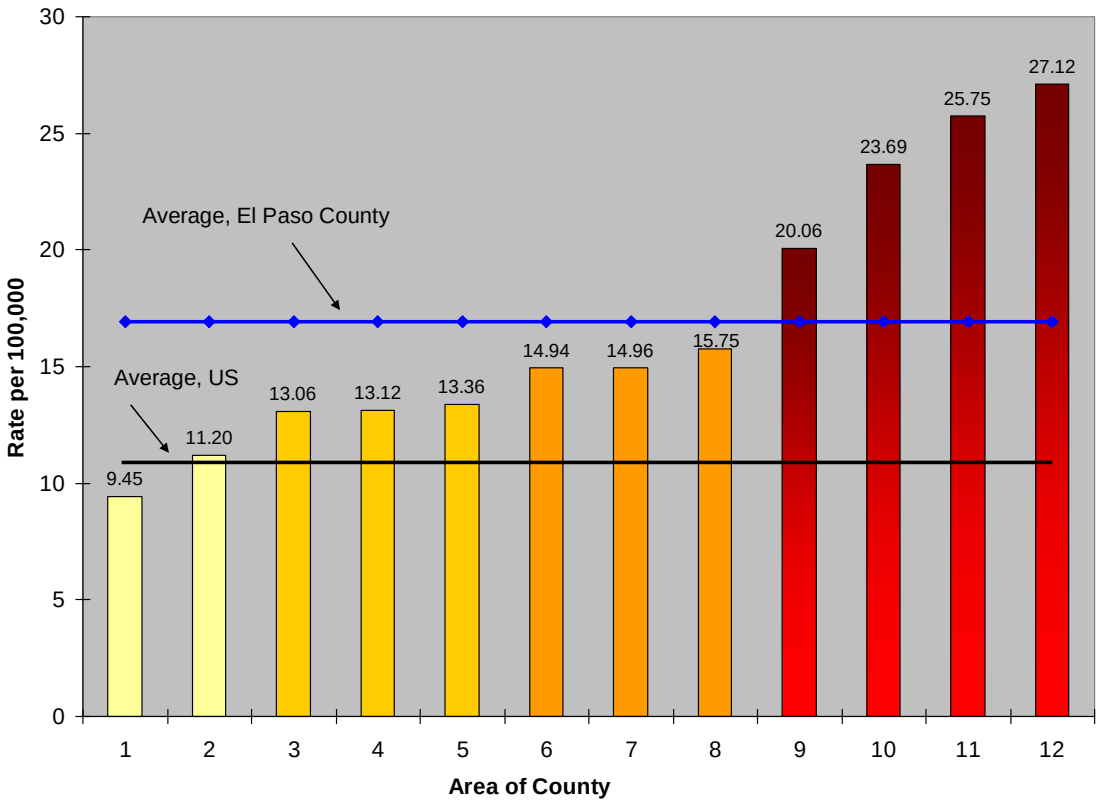
Above National and El Paso County Average

Above National Average, But Below El Paso County Average

Slightly Above National Average, But Below El Paso County Average

At or below National Average

[5] These rates should be interpreted as estimates only: Population data by zip code and suicide data, both which contain inherent inaccuracies, were averaged to calculate these multi-year rates. Population estimate data by zip code obtained from Maponics (www.maponics.com) and the US Census Bureau (www.census.gov/epcd/www/zipstats.html). Data were adjusted consistent with zip code changes during the eight year span.



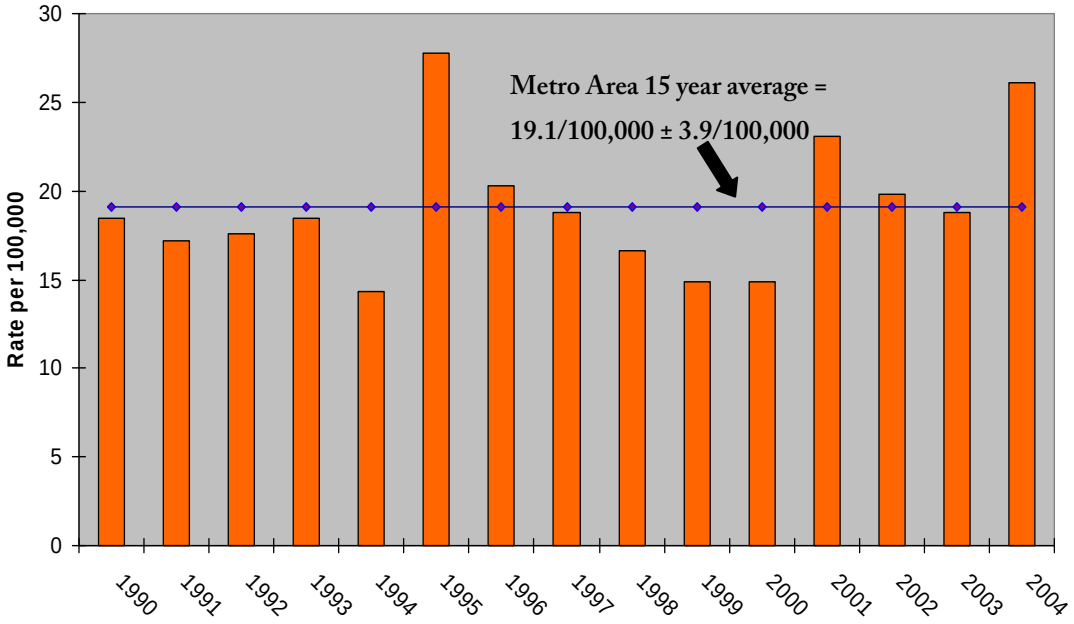
Area	Area Description	Zip Codes
1	Monument, Palmer Lake, adjacent areas east and west	80132, 80133, 80840, 80908, 80921
2	Upper northern metro Colorado Springs	80919, 80920, 80924
3	Northern metro Colorado Springs (UCCS general area)	80918
4	Western El Paso County, Manitou Springs, Cascade, adjacent area south	80809, 80819, 80829, 80906
5	Fountain, Ft. Carson, adjacent areas south and north	80817, 80902, 80911, 80913, 80926
6	Eastern metro Colorado Springs	80915, 80922, 80923, 80927, 80929, 80951
7	Eastern El Paso County, rural areas	80106, 80808, 80831, 80832, 80833, 80864, 80928, 80930
8	Southeastern metro Colorado Springs	80916, 80925
9	North central metro Colorado Springs	80907, 80917
10	South central metro Colorado Springs	80903, 80910
11	East central metro Colorado Springs	80909
12	West central metro Colorado Springs	80904, 80905

Examination of the Suicide Rate for the Colorado Springs Metropolitan Area

The suicide rate for metro Colorado Springs has attracted national attention in the past few years due to a 2007 report from the National Association of County and City Health Officials.[6] Based on 2004 suicide data, a comparison with 53 other large cities in the U.S. revealed the suicide rate for the metropolitan area of Colorado Springs at 26.1/100,000 – second highest in the nation (Las Vegas, NV, had the highest rate). Also, the 2004 suicide rate for Colorado Springs males was second highest among this comparison group of metropolitan areas.

However, for smaller areas such as El Paso County, the suicide rate varies considerably from year to year. Therefore, it is important to consider suicide rates over several years rather than isolating the data for a single year. As shown below, the Colorado Springs metro suicide rate has experienced peaks and valleys during the 15-year span from 1990 to 2004. The average rate for this period is 19.1/100,000 ± 3.9/100,000. The rate for 2004, which was chosen for the National Association of County and City Health Officials report, was unusually high.

Colorado Springs Metropolitan Area, 1990-2004 Suicide Rates



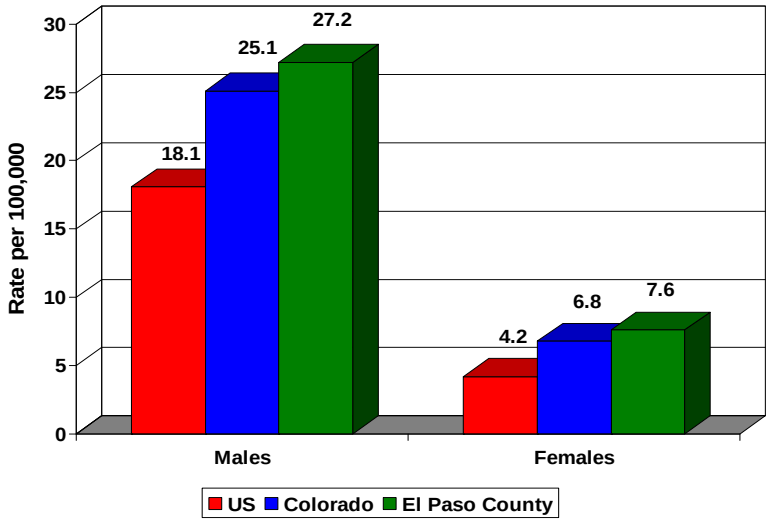
[6] Benbow, N, editor. *Big Cities Health Inventory: The Health of Urban America, 2007*. Washington, DC: National Association of County and City Health Officials, 2007.

Suicide Rates by Gender and Age

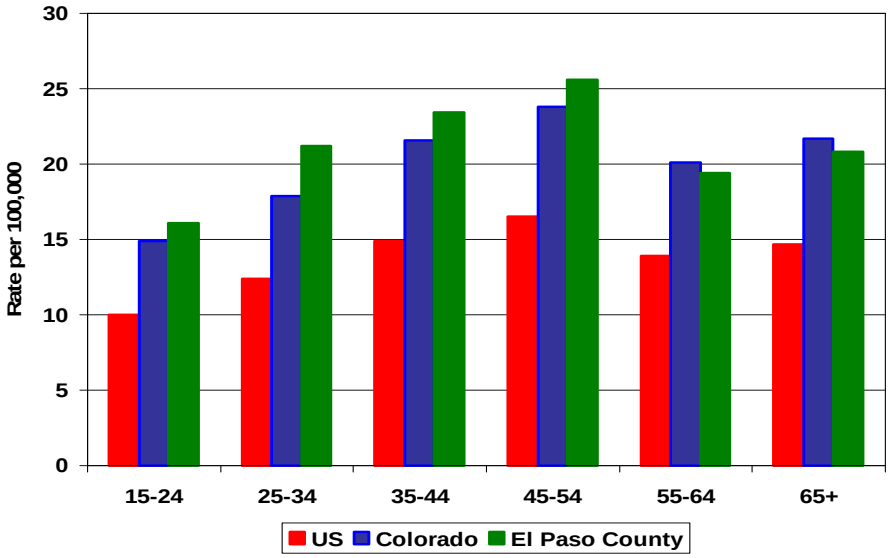
Traditionally in the U.S., about 75-80% of completed suicides are among males and about 20-25% among females. This trend holds for El Paso County, with the 2000-2005 average rate for males about 3.5 times higher than the rate for females. When broken down by gender, both male and female average suicide rates for 2000-2005 are higher for Colorado and El Paso County than for the nation.

Suicide rates are of concern for all age groups: from teens to the elderly. Colorado and El Paso County average suicide rates for 2000-2005 are higher for all age groups, shown below, compared to national figures.

Average Suicide Rates by Gender: 2000-2005



Average Suicide Rates by Age: 2000-2005

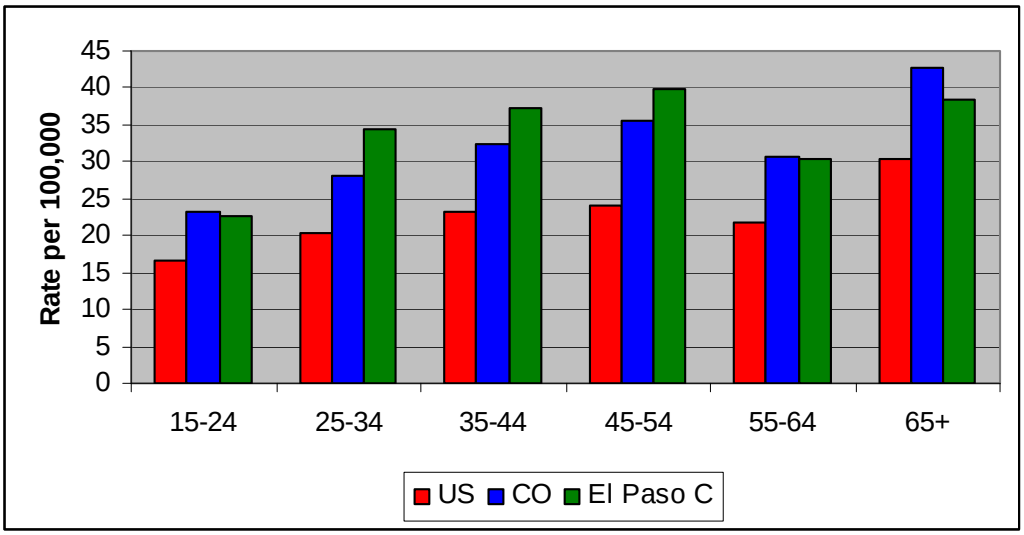


Further Examination of El Paso County Suicide Rates by Gender and Age

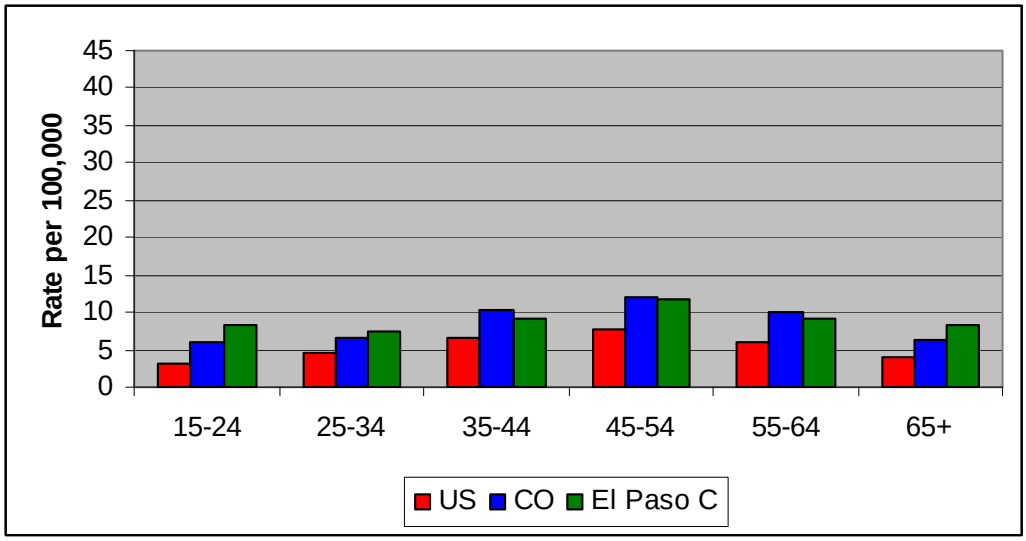
To further explore El Paso County's suicide rates by age and gender, separate rates for males and females by age groups are shown below. For both males and females, Colorado and El Paso County average suicide rates for 2000-2005 exceed national rates, particularly for males.

(Note: The two figures below have identical vertical axis scales to aid in direct comparison of the two figures)

Suicide Rates by Age, 2000-2005: Males



Suicide Rate by Age, 2000-2005 Average: Females



Special Note: Teen Suicide

Suicide is a leading cause of death among adolescents and young adults. For the U.S., Colorado, and El Paso County, suicides among 12-19 year olds account for about 6-7% of total suicides. Similar to other age groups, the Colorado and El Paso County suicide rates for 12-19 year olds are notably higher than the national rate, with the rate for males higher than that for females.

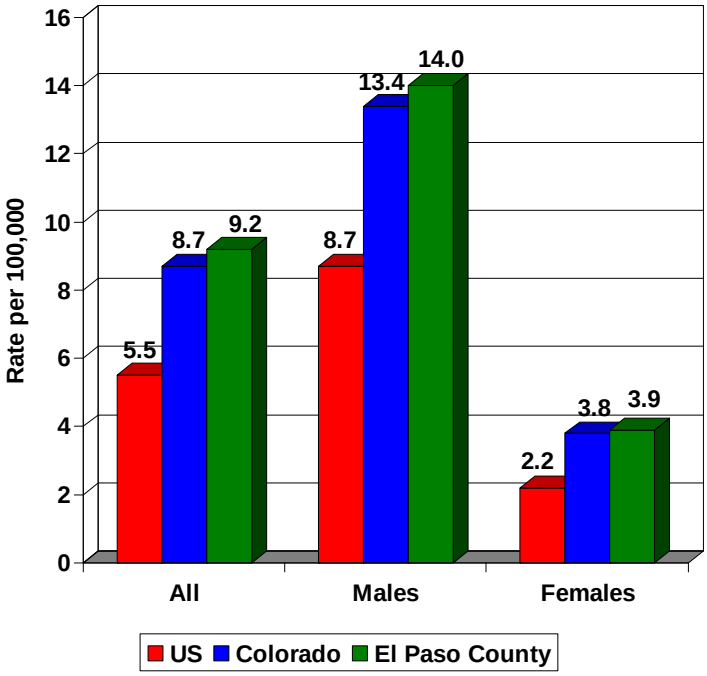
Percent of All Suicides for Area Involving 12-19 Year Olds

(2000-2005 average for U.S., 2000-2007 average for state and county.)

Area	Percent of Total Suicides
U.S.	5.8%
Colorado	6.3%
El Paso County	6.8%

Average 2000-2007 Suicide Rates, 12-19 Year Olds

(2000-2005 average rate for U.S.)



Special Note: Suicide among Older Adults

Nationally, suicide rates are higher among individuals 65 and older compared to other age groups. However, suicides among older adults account for a higher proportion of suicides nationally compared with Colorado and El Paso County. Although this is not the age group with the highest suicide rate in either Colorado or El Paso County, this age group is growing as a percentage of our state and county population. Major risk factors for suicide among older persons are depression, social isolation (a high proportion are divorced or widowed), and physical illness.[7]

Percent of All Suicides for Area Involving 65+ Year Olds

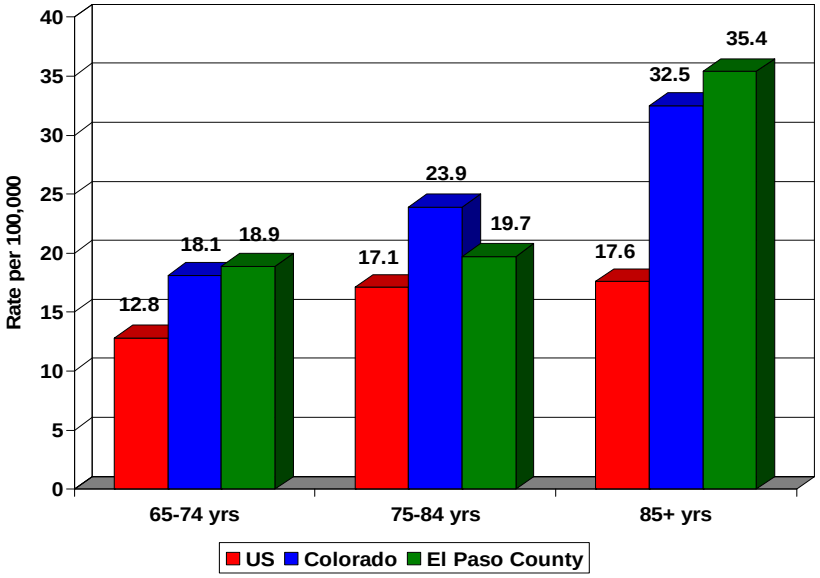
(2000-2005 average for U.S., 2000-2007 average for state and county.)

Percent of Total Suicides for Area

Area	65-74 years	75-84 years	85+ years	All, 65+
U.S.	7.5%	6.9%	2.6%	17.0%
Colorado	6.0%	4.9%	2.3%	13.2%
El Paso County	5.7%	3.5%	1.9%	11.1%

Average 2000-2007 Suicide Rates, 65+ Year Olds[8]

(2000-2005 average rate for U.S.)



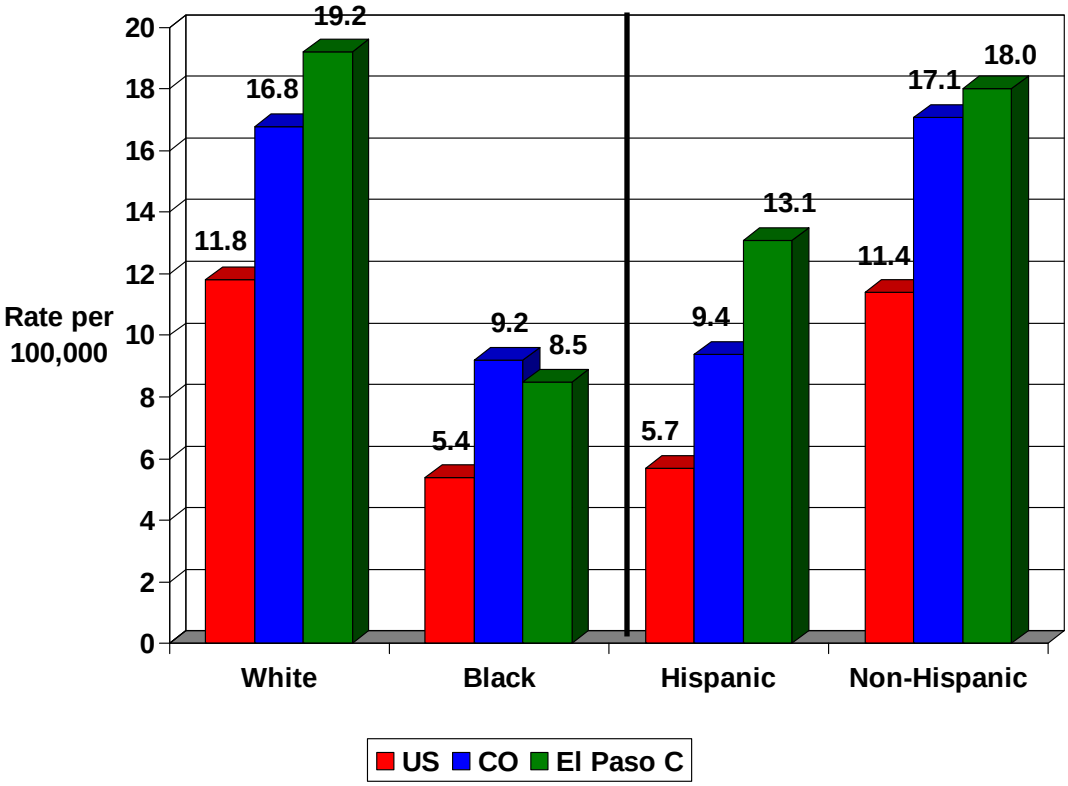
[7] SAMHSA. *A National Strategy for Suicide Prevention. Suicide among the Elderly.* http://mentalhealth.samhsa.gov/suicideprevention/elderly.asp

[8] The age 65+ age group was not sub-divided into gender categories due to the small numbers of individuals in these sub-divided groups in El Paso County, particularly females. Such sub-division results in small numerators and makes the *rate* of suicide high among some older age groups, although the *numbers of individuals* involved are actually very few.

Suicide Rates for Ethnic and Racial Groups

Nationally, suicide rates are highest among White non-Hispanic individuals. Average suicide rates for the major racial and ethnic groups in El Paso County are shown in the figure below. Average 2000-2005 suicide rates for White and Hispanic individuals in El Paso County exceed U.S. and Colorado rates. Suicide rates for El Paso County Black individuals are slightly less than rates for the U.S., but are similar to Colorado suicide rates.

2000-2005 Average Suicide Rates by Major Racial and Ethnic Groups in El Paso County[9]



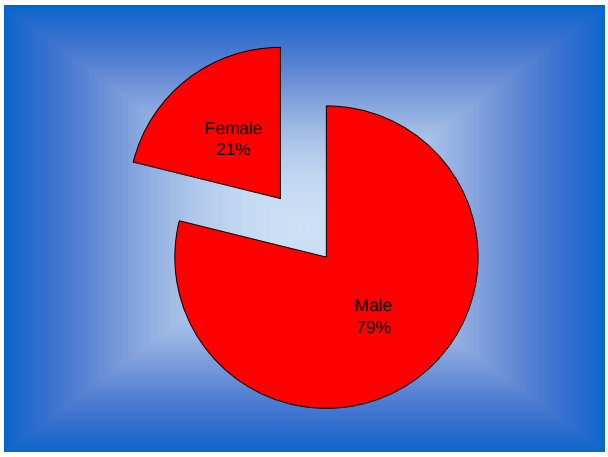
[9] El Paso County rates calculated using population estimates for racial and ethnic groups from the U.S. Census Bureau (http://www.census.gov/popest/counties/asrh/CC-EST2005-RACE6.html) and suicide data from Colorado Department of Public Health and Environment (http://www.cdphe.state.co.us/cohid/deathmenu.html).
U.S. and Colorado rates from Centers for Disease Control, *WISQARS Leading Causes of Death Reports.* http://webappa.cdc.gov/sasweb/ncipc/ypll.html

Percentage of Suicides in El Paso County by Demographic Characteristics

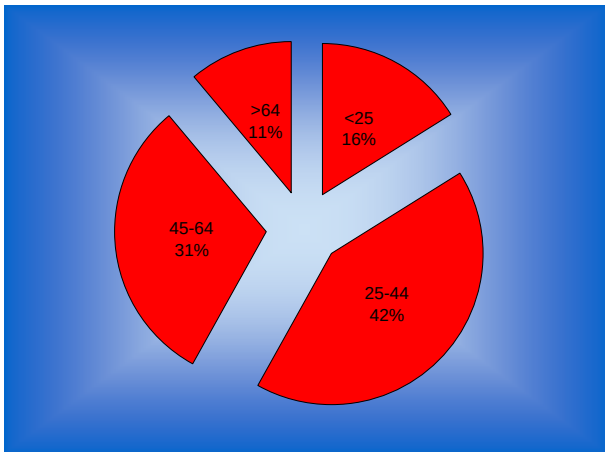
Examining suicide for an area only by rate per 100,000 people fails to provide a composite picture of the mix of demographic characteristics for individuals completing suicide. In El Paso County, a large percentage of suicide victims are made up of males, middle-aged individuals, and White, non-Hispanic individuals. The percentages shown below mirror nearly exactly those for the State of Colorado for the same time period. These data illustrate the conclusion reached by the National Institute of Medicine: The suicide rates in the U.S. are largely driven by rates for white men.[10]

Percent of Suicides, El Paso County, 2004-2007

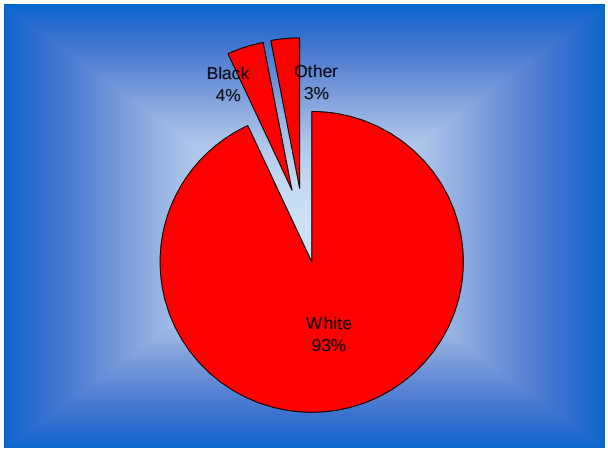
Gender



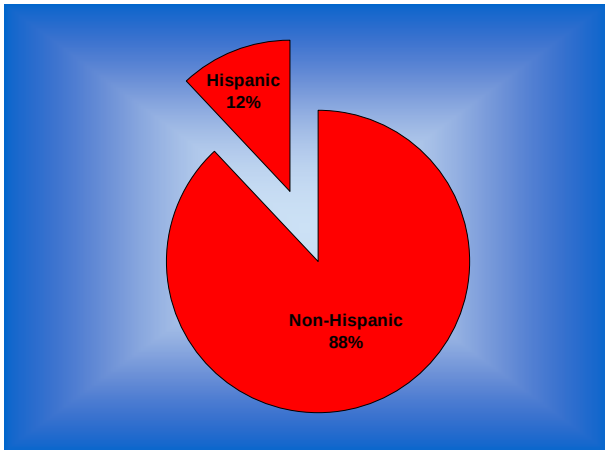
Age



Race



Ethnicity



[10] National Institute of Medicine. *Risk Factors for Suicide: Summary of a Workshop*. Washington, D.C.: National Academy Press, 2001.

Reasons for the Problem

In 2001, the U.S. Department of Health and Human Services, under the leadership of the Surgeon General, published the *National Strategy for Suicide Prevention*.[11] Much of the information in this paper regarding risk and protective factors for suicide has been derived from this document or from the Suicide Prevention Resource Center (SPRC) website,[12] implemented as one of the national suicide prevention strategies.

Suicide is best understood as a very complex human behavior with no single determining cause.[13] Risk factors may be thought of as leading to or being associated with suicide; that is, people "possessing" the risk factor are at greater potential for suicidal behavior. The factors that increase the likelihood of a person attempting or completing suicide can be categorized as follows:

Biopsychosocial Risk Factors

- Mental disorders, particularly mood disorders (depression, bipolar), schizophrenia, anxiety disorders, and certain personality disorders
- Alcohol and other substance use disorders
- Hopelessness
- Impulsive and/or aggressive tendencies
- History of trauma or abuse
- Some major physical illnesses
- Previous suicide attempts
- Family history of suicide

Environmental Risk Factors

- Job or financial loss
- Relational or social loss
- Easy access to lethal means
- Local clusters of suicide that have a contagious influence
- Barriers to accessing health care, especially mental health and substance abuse treatment

Sociocultural Risk Factors

- Certain cultural and religious beliefs (for instance, the belief that suicide is a noble resolution of a personal dilemma)
- Lack of social support and sense of isolation
- Stigma associated with help-seeking behavior
- Exposure to suicide, including through the media, and influence of others who have died by suicide

[11] http://mentalhealth.samhsa.gov/SuicidePrevention/

[12] http://www.sprc.org/

[13] SPRC. Suicide Prevention: The Public Health Approach and Risk and Protective Factors for Suicide. http://library.sprc.org/

In addition to the above, numerous research studies have found major individual risk factors for suicide and suicide attempts to include:

- Problems with anger and impulse control;
- Stressful life events, such as physical illness, unemployment, divorce, marital problems, current incarceration, and other life stress; some experts maintain that the number of stressors may be more important that they types of stressors;
- Easy access to firearms (the method used for approximately one-half of completed suicides), including firearms in the home; and
- Gay, lesbian, bisexual, or transgender identity.[14]

Thomas Joiner, Ph.D., in his 2005 book *Why People Die by Suicide*, takes a wide-ranging approach to understanding suicide. Joiner explains that for an individual to die by suicide, he or she must have both the desire for death as well as the capability for lethal self-injury. The desire for death is brought about by perceptions of being a burden to loved ones and feeling disconnected or isolated. Psychological characteristics traditionally correlated with suicidal behavior, such as impulsivity, sadness, hopelessness, and poor problem-solving, all contribute to these two states.

Mental illness and/or substance abuse are often part of the picture, but not always. Without the presence of both perceived burdensomeness and failed belongingness, one does not truly desire or seek death. Joiner goes on to state that desire for suicide is not enough, but that the individual must also have the capacity for suicide. To acquire this, an individual must "work himself up" to suicide by getting used to its threat and danger. In doing so, the individual is able to overcome mankind's most basic instinct of self preservation.

Joiner helps explain the high suicide rate in certain parts of the country through his research on *cultures of honor*.[15] The western states and Alaska are all considered culture of honor states, meaning that insults and threats to reputation, self, home, or family are often taken quite seriously and can be met with violence. People in culture of honor states who perceive themselves as dishonored may be more prone to suicide.

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[14] A two-fold excess in suicide attempts among the GLBT population was recently reported by a meta-analysis of quality studies. King, M, Semlyen, J, Tai, SS, Killaspy, H, Osborn, D, Popelyuk, D, and Nazareth, I. A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay, and bisexual people. *BMC Psychiatry* 8: 70, 2008.

[15] Cohen, D. Culture of Honor Reveals a Violent Streak. *Science News* 154 (11): 165, 1998.

The Prevalence of Suicide Risk Factors among El Paso County Citizens

Limited information is available on risk factors for suicide in El Paso County. However, the information available can help guide prevention and intervention efforts in our county.

Risk Factor: Depression, Substance Abuse, and Other Behavioral Health Problems

Findings from the National Surveys on Drug Use and Health[16] provide insight into several risk factors for suicide: depression, substance dependence, and the ability to access help for substance dependence. For example, results from the 2004-2005 surveys include:

- Colorado ranked first in the nation in the rate of adolescents 12 to 17 who reported having at least one major depressive episode during the previous year. Almost 10% of Colorado youth reported having such an episode, defined as a period of at least two weeks in which they had most of the signs of clinical depression.
- Compared to youth from other states, Colorado adolescents ages 12 to 17 ranked fourth in alcohol dependence and sixth in dependence on or abuse of illegal drugs.

This information is not broken down by Colorado county or substate region. Nonetheless, it suggests troubling trends for suicide risk among Colorado youth.

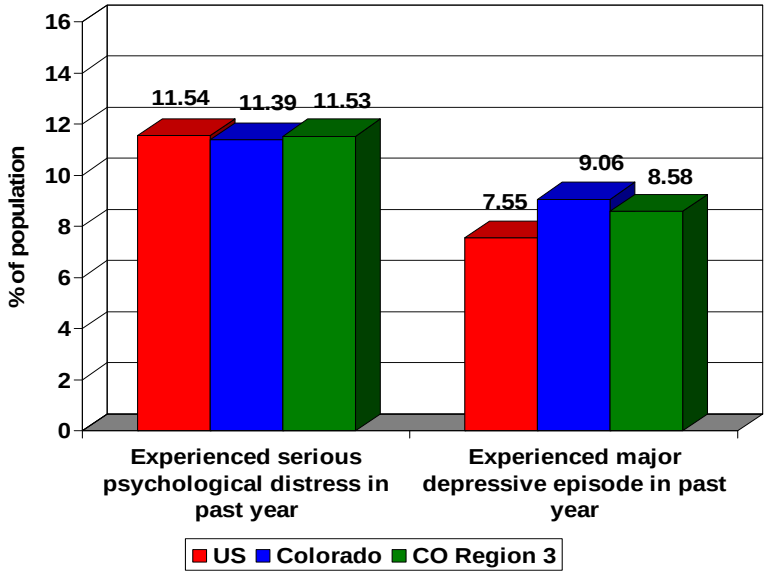
The 2004-2006 National Surveys on Drug Use and Health found depression slightly more prevalent among adults in both Colorado and the Colorado Region 3 county cluster that includes El Paso County compared with the nation. Similarly, these surveys indicate that illicit drug dependence, alcohol dependence, and needing but not receiving help for these diagnoses are somewhat more prevalent in Colorado and Colorado Region 3 compared with the nation. (Data illustrated on the next page.)

[16] Office of Applied Statistics. Substance Abuse and Mental Health Services Administration. *National Surveys on Drug Use and Health*. http://www.oas.samhsa.gov/2k6State/toc.cfm http://www.oas.samhsa.gov/substate2k8/SecC.htm#TabC10

Prevalence of Serious Psychological Distress and Major Depression among Persons Ages 18+ 2004-2006[17]

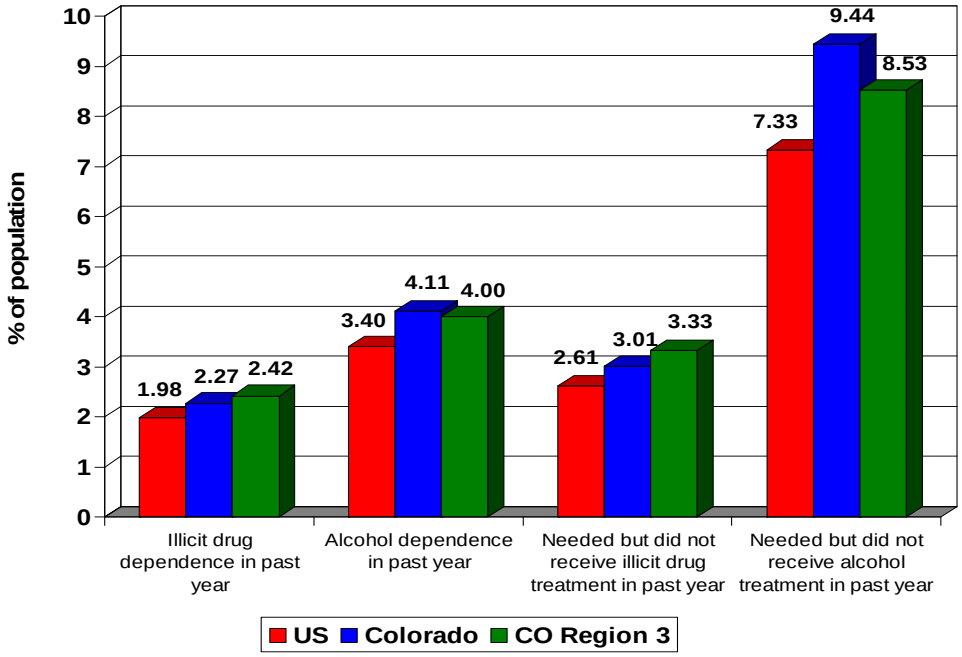
(National Surveys on Drug Use and Health)

(Percentage represents estimation of population prevalence for age group.)



Prevalence of Illicit Drug & Alcohol Dependence and Access to Substance Abuse Treatment: Persons Ages 12+

(Percentage represents estimation of population prevalence for age group.)

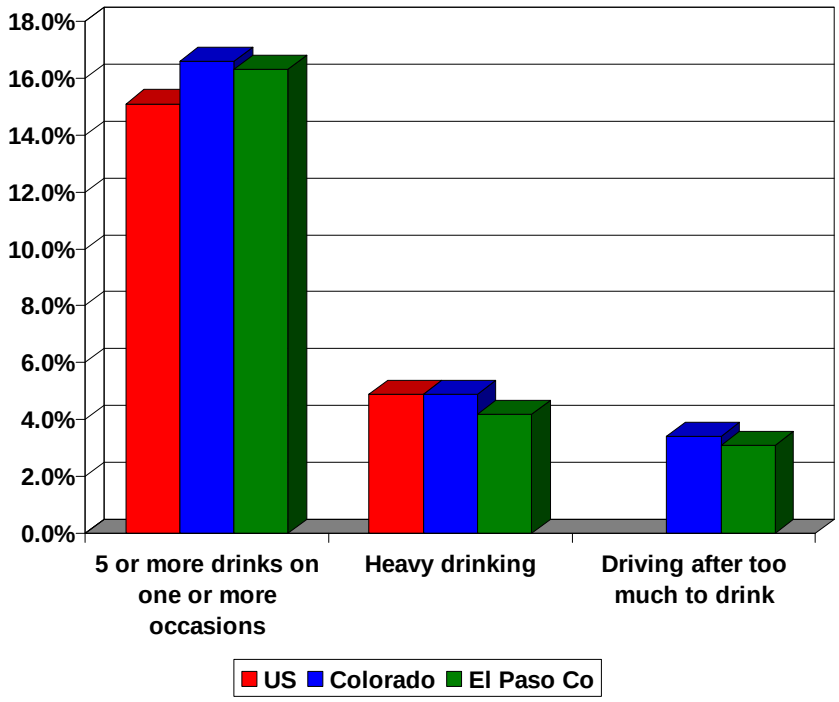


[17] The Colorado Region 3 county cluster includes El Paso County and the counties of Park, Teller, Chaffee, Custer, Fremont, and Lake. See data source footnote on preceding page.

Findings from the 2004-2005 Behavioral Risk Factor Surveillance System include self-reported data on alcohol consumption. Information from El Paso County shows no meaningful difference compared with Colorado and National data.[18]

Problem Alcohol Consumption Behavior during Past Month: Ages 18+

(Behavioral Risk Factor Surveillance System)



Notes regarding data available from public sources for this figure:

- For this survey, Colorado combines data for 2004 and 2005, while the Centers for Disease Control reports data separately for each year. Thus, national data for "5 or more drinks" in the first category, above, is reported for 2005 (15.1%); the 2004 national figure is 14.4%. For the next category regarding heavy drinking, 2004 and 2005 national prevalence estimates were the same.
- Heavy drinking is defined as >2 drinks per occasion for males and >1 drink for females.
- National data are not available for the last category regarding driving after too much to drink. Also, the Colorado and El Paso County samples were asked this question only for 2004.
- When the data for the questions in this figure were broken down by gender and for six age groups, no meaningful difference was found between national, state, and county prevalence estimates. Thus, gender and age breakdowns are not reported here.

[18] State and county data: http://www.cdphe.state.co.us/cohid/brfssdata.html National data: www.cdc.gov/brfss

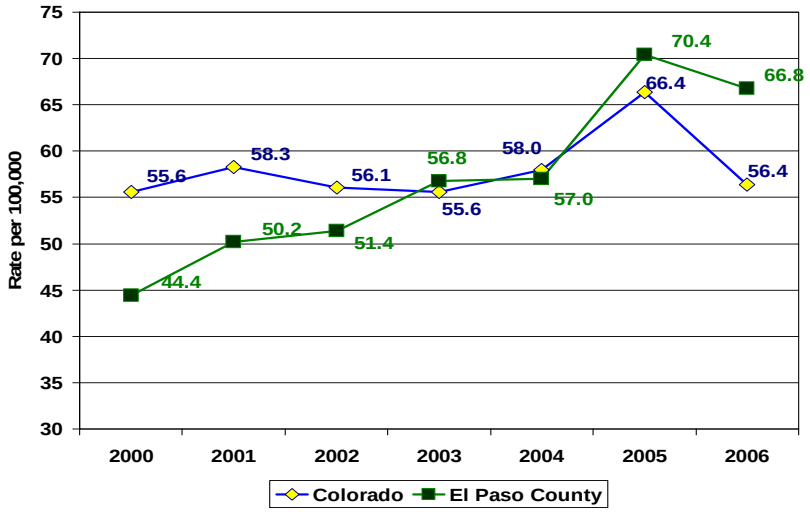
Risk Factor: Prior Suicide Attempts

For suicide, past behavior often predicts future behavior. An estimated eight to 25 nonfatal suicide attempts occur per every suicide death. Many of these attempts are neither reported nor otherwise recorded in public documents. One indicator for a proportion of attempts is hospitalizations for suicide.[19] Several conclusions about suicide attempts have been drawn from national data:

- Nonfatal attempts are more common among women and youth compared with men and the elderly.[20] In the US, Colorado, and El Paso County, about 60% of hospitalized suicide attempt patients are female.
- Major risk factors for nonfatal suicide attempts by adults include depression and other mental health issues, substance abuse, and separation or divorce.[21, 22]
- Major risk factors for attempted suicide by youth include depression, substance abuse, physical or sexual abuse, and disruptive behavior. [23]

The El Paso County rates of hospitalizations for injuries classified as suicide have surpassed Colorado rates recently.

Hospitalization Rates for Injuries Classified as Suicide Attempt, Colorado and El Paso County[24]



Seven year averages: Colorado=58.1 ± 4.0/100,000; El Paso County=56.7 ± 9.2/100,000

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[19] Hospitalization data for attempted suicide do not include individuals seen in emergency departments but not admitted for hospitalization.

[20] Moscicki, EK. Epidemiology of completed and attempted suicide: toward a framework for prevention. *Clinical Neuroscience Research* 1: 310-23, 2001.

[21] Kessler, RC, Borges, G, and Walters, EE. Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Archives of General Psychiatry* 56: 617-626, 1999.

[22] Petronis, KR, Samuels, JF, Moscicki, EK, and Anthony, JC. An epidemiologic investigation of potential risk factors for suicide attempts. *Social Psychiatry and Psychiatric Epidemiology* 25: 193-199, 1990.

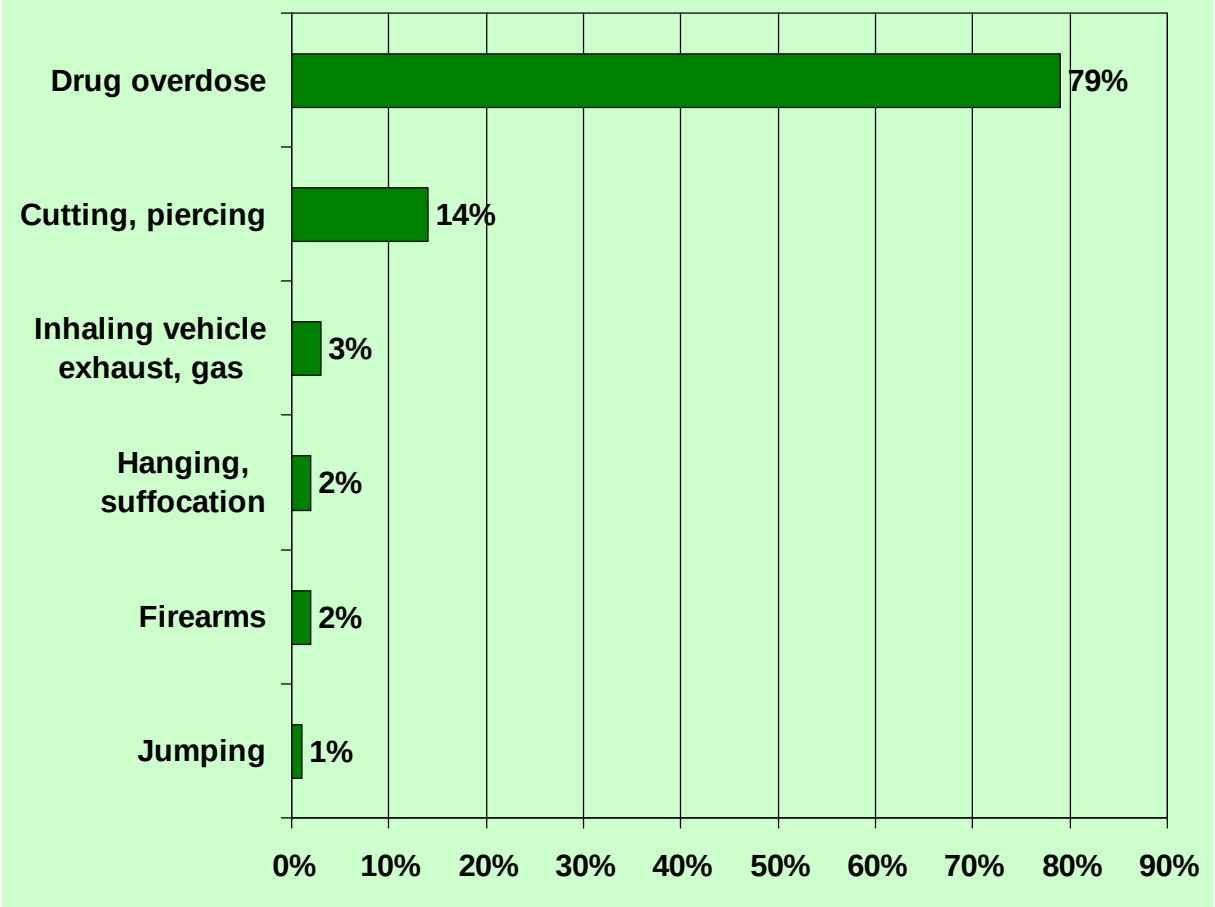
[23] U.S. Public Health Service. *National Strategy for Suicide Prevention: Goals and Objectives for Action.* Rockville, MD: U.S. DHHS, 2001.

[24] Colorado Department of Public Health and Environment. http://www.cdphe.state.co.us/cohid/injury.html Comparable national data are not available from public sources.

Method of Suicide Attempts for Hospitalized Individuals, El Paso County, 2002-2006

Among El Paso County citizens hospitalized for a suicide attempt, the primary means of injury is drug overdose. From 2002-2006, 1,689 El Paso County citizens were hospitalized for reasons categorized as suicide attempts. Of these, 2-3% died before discharge. The percentages for suicide attempt methods for El Paso County mirror almost exactly those for the State of Colorado for the same time period. Comparable data for the nation are not available.

Method of Injury for Hospitalizations Classified as Suicide Attempts[25]

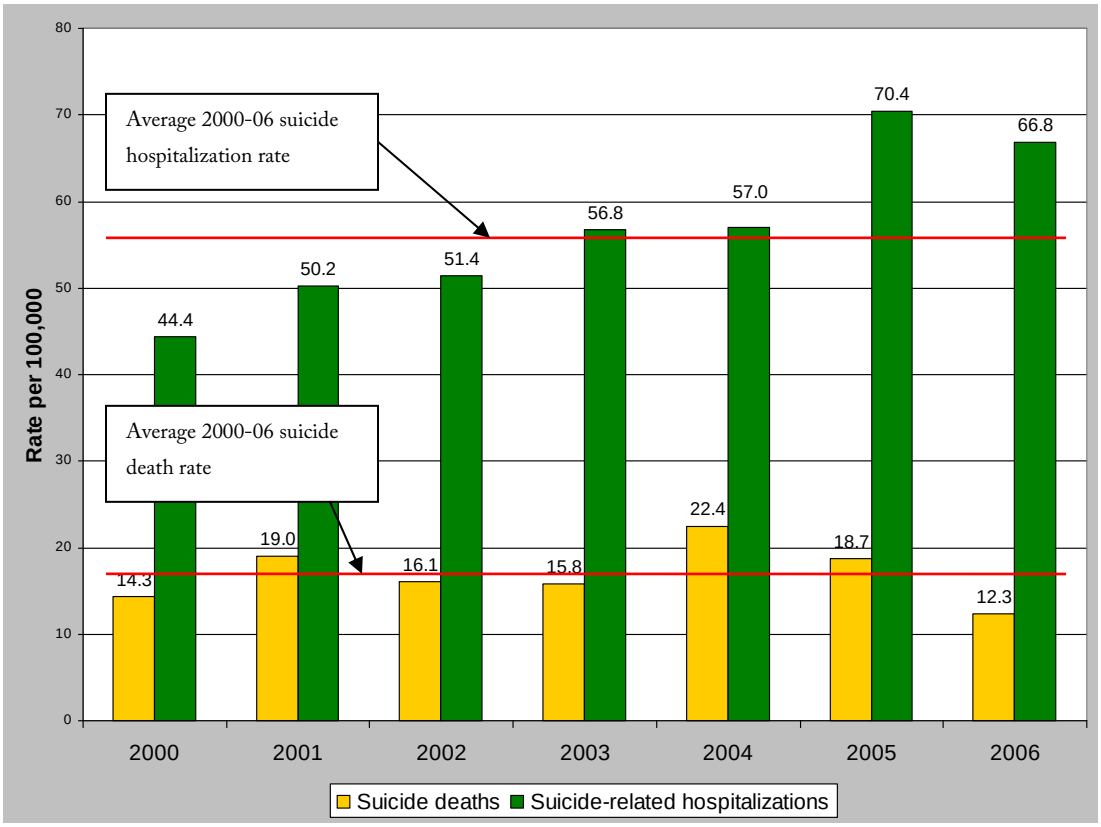


[25]Colorado Department of Public Health and Environment. *Injury hospitalization statistics.* http://www.cdphe.state.co.us/scripts/htmsql.exe/cohid/injurycustom.hsql#main
As stated earlier in this document, these data do *not* include individuals treated in the emergency department and not admitted for hospitalization.

A Comparison of Suicide Attempt Hospitalization Rate and Suicide Completion Rates, El Paso County

In El Paso County, from 2000-2006, the annual rates of suicide-related hospitalizations were approximately 2.5 to 5.0 times higher than suicide mortality rates.

El Paso County, Rates for Suicide Mortality Compared with Rates for Suicide Attempt Hospitalizations

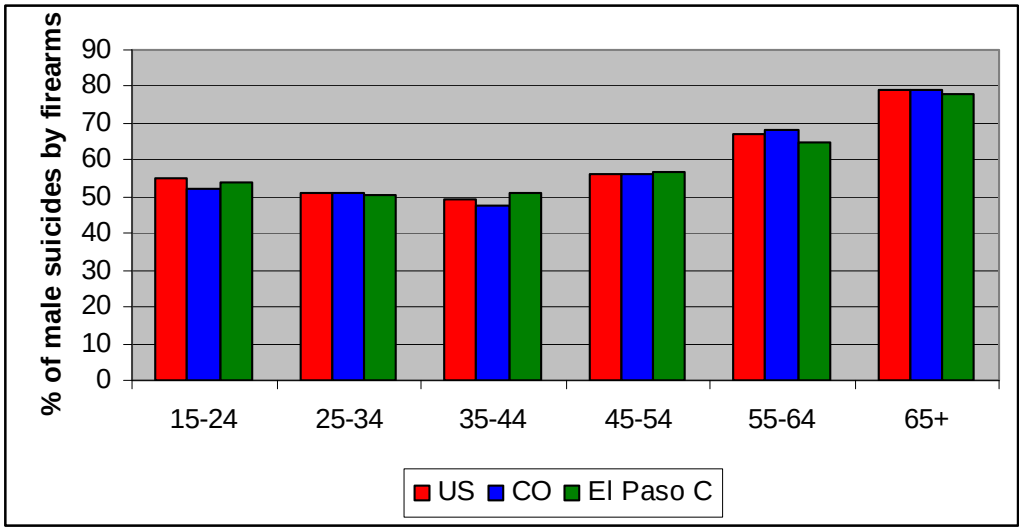


Risk Factor: Easy Access to Firearms

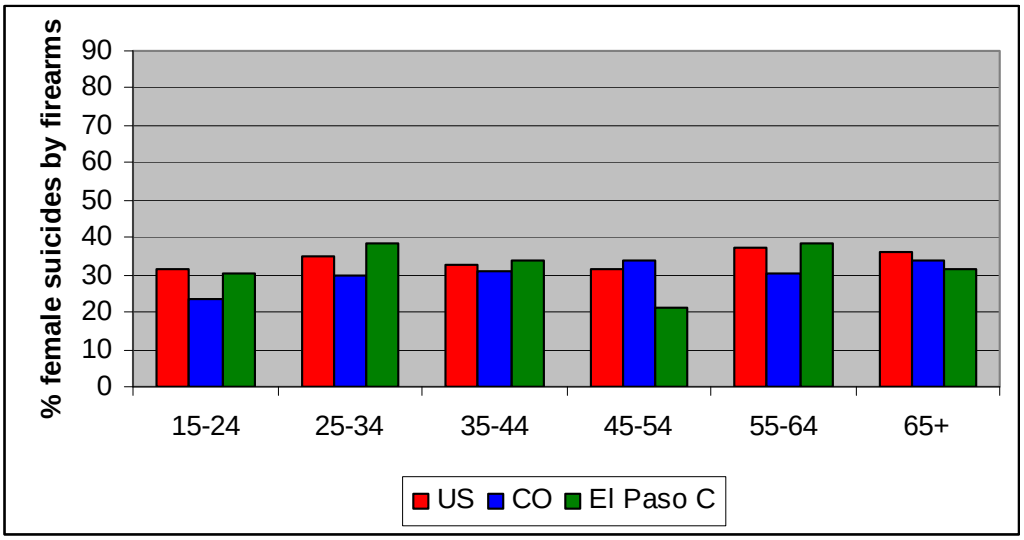
Across the nation, including in El Paso County, approximately one-half of all completed suicides involve firearms. For El Paso County males, the percent of suicides by firearms is approximately the same as the percentages for Colorado and the Nation. For El Paso County females in four of six age groups, the percentage of suicides by firearms is slightly higher than Colorado percentages, but very similar to national percentages.

(Note: The two figures below have a consistent vertical axis scale for aid in direct comparison of the two figures)[26]

Percent of Male Suicides by Firearms, 2000-2005



Percent of Female Suicides by Firearms, 2000-2005



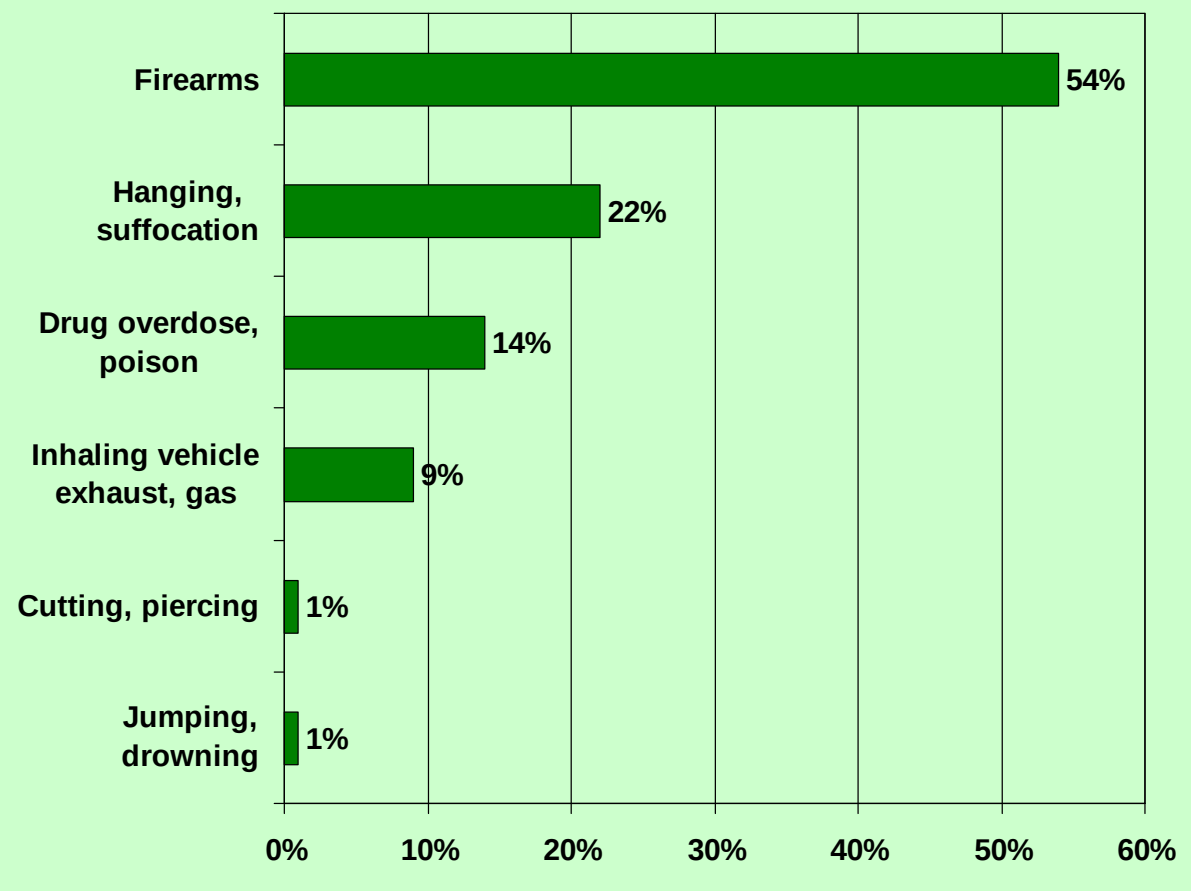
[26] In the illustrations above, average annual rates for 2000-2005 are shown.

Method of Suicide for Suicide Deaths Investigated by El Paso County Coroner: 2005-2007[27]

The El Paso County Coroner investigates sudden and unexpected, violent, or suspicious deaths occurring in the county,[28] including suspected suicide deaths. For suicide deaths, method of suicide also is determined. As shown below, the method of suicide for over one-half of suicides occurring in El Paso County during this three-year period was firearms/gunshot wounds, most commonly to the head.

Method of Suicide Deaths: El Paso County

(See cautionary footnote below regarding county of residence for individuals in this sample.)



[27]Office of the Coroner, El Paso County. Statistical and Activity Reports for 2005, 2006, and 2007. http://cor.elpasoco.com

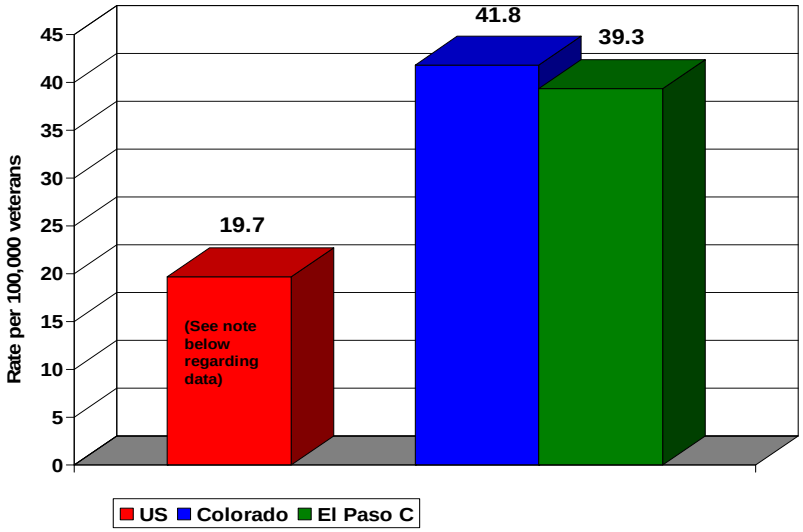
[28] These deaths occurred in El Paso County, but not all of these individuals were necessarily residents of El Paso County. Also, suicides of El Paso County residents occurring outside the county are not included in these numbers.

Risk Factor: Stressful Life Circumstances

Veterans: A portion of the excess suicide rate in El Paso County may be due to the high proportion of veterans in the population. Population-based studies indicated that male veterans face roughly twice the risk of dying from suicide as their civilian counterparts.[29] Veterans make up approximately 18% of Colorado Springs' adult population, second among metropolitan areas only to Virginia Beach, VA.[30] El Paso County has more veterans than any county in Colorado – about 18% of the state's veteran population.

Suicide Rate for Veterans[31]

(Average Rates for 2004-2005 for US; 2004-2007 for Colorado and El Paso County.)



Note: The national statistic reported above is not directly comparable to the state and county statistics.

- In the national statistic, the term "Veteran" *includes* those who served in the active duty military, Coast Guard, uniformed Public Health Service, the uniformed National Oceanic and Atmospheric Administration, reservists called to active duty, and those disabled while on active duty training. "Veteran" *excludes* current service members (i.e., active duty personnel who have not yet separated), those dishonorably discharged, those whose active duty was for training only, and those previously separated but on active duty as of the estimation date.

[29] Kaplan, MS, Huguet, N, McFarland, BH, and Newsom, JT. Suicide among male veterans: A prospective population-based study. *Journal of Epidemiological Community Health* 61: 619-624, 2007.

[30] State and county veteran population data used in calculating the above rates obtained from U.S. Department of Veterans Affairs. http://www1.va.gov/vetdata/docs/vp2007county_living_state_web.xls

[31] State and county suicide mortality data for veterans were obtained from a special data analysis conducted in 2008 by the CO Department of Public Health and Environment using data from the Colorado Violent Death Reporting System. National data were obtained from a special data analysis commissioned by CBS News Investigation. Veteran Suicides: How We Got the Numbers. December 4, 2007. http://www.cbsnews.com/stories/2007/11/13/cbsnews_investigates/main3498625.shtml

- State and county data used here were obtained from a different source, and includes deaths of individuals whose death certificates identified them as veterans (a "yes/no" question). Thus, the latter data may include a proportion of active duty military.

An Examination of Veteran Suicide Rates by Age Group

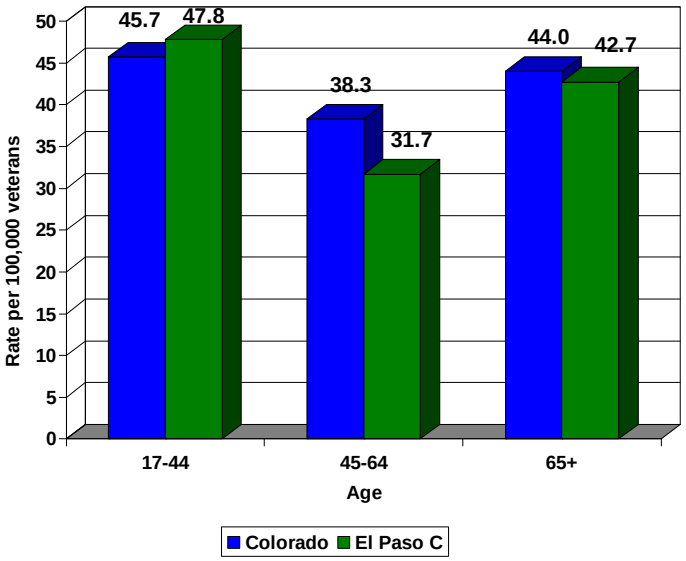
In both El Paso County and the State of Colorado, suicide rates are higher among younger and older veterans compared with middle-aged veterans. As shown in the table below, during the years 2004-2007, suicides by veterans accounted for almost one-third of the total suicides in El Paso County (31.1%) compared to approximately one-fourth (23.3%) for the State of Colorado. For the age 65 and older age group, veterans accounted for over two-thirds of the suicide deaths in El Paso County.

Percent of Total Suicides for Area Involving Veterans by Age Group: 2004-2007

Age Group	Colorado	El Paso Co
17-44	12.1%	22.5%
45-64	26.8%	37.2%
65+	64.7%	68.3%
All, Ages 17-65+	**23.3%**	**31.1%**

Suicide Rate by Age for Veterans[32]

(Average rates for 2004-2007 CO and El Paso County; comparable national data not available)



[32] State and county suicide mortality data for veterans by age were obtained from a special data analysis conducted in 2008 by the CO Department of Public Health and Environment using data from the Colorado Violent Death Reporting System. As noted on the previous page, state and county veteran mortality data reflect deaths of individuals whose death certificates identified them as veterans (a yes/no question). Thus, the data may include a proportion of active duty military.

The Economic Cost of Suicide and Suicide Attempts in Colorado

As shown in the table below, the costs of suicide and suicide attempts in Colorado were estimated for 2006 by the Massachusetts-based Suicide Prevention Resource Center:[33] These estimates include only medical and lost work costs; thus represent *partial rather than total monetary losses* associated with completed suicides and hospitalized suicide attempts. Note that suicide and suicide attempt costs vary greatly by the age of the individual and the method of suicide or attempt.

Average Cost per Case 2006, Colorado Suicides and Hospitalized Suicide Attempts

(This table lists only the medical and lost work costs; thus this is partial rather than total monetary losses associated with suicide and hospitalized suicide attempts)

	Suicide		Hospitalized Suicide Attempts	
	Medical Costs	Cost of Lost Work	Medical Cost	Cost of Lost Work (including work lost due to disability caused by the attempt)
Age Group				
5-14	$24,069	$1,833,379	$7,994	$16,522
15-19	4,435	2,013,206	7,734	12,239
20-29	4,554	2,154,243	8,814	15,490
30-49	3,018	1,670,093	10,023	11,677
50-69	3,185	859,523	13,325	7,693
70+	3,826	118,011	16,822	2,332
Method				
Cut/pierce	$8,162	$1,274,737	$10,732	$48,632
Firearms	2,817	1,347,745	64,449	65,990
Poisoning	5,111	1,314,837	8,324	1,708
Suffocation	3,375	1,687,161	30,375	239,803
Other	9,046	1,565,734	31,739	60,470
Colorado Average	**$3,738**	**$1,414,842**	**$10,014**	**$11,987**

[33] *Colorado Suicide Prevention Fact Sheet*. Suicide Prevention Resource Center, Newton, MA. http://www.sprc.org/stateinformation/PDF/statedatasheets/co_datasheet.pdf

The Economic Cost of Suicide and Suicide Attempts in El Paso County

Using the Colorado cost estimates on the previous page from the Massachusetts-based Suicide Prevention Resource Center as a base,[34] the cost of completed suicide and suicide attempts in El Paso County were estimated. Note that some individuals may appear in both estimates – about 2-3% of persons hospitalized for attempted suicide die while hospitalized.

Completed Suicides

Over three years (2004-2006), 296 deaths of El Paso County residents were attributed to suicide. The estimated economic cost to our community was approximately $143 million per year. Calculations are detailed below.

A majority of the economic loss associated with completed suicide is the lost value of the work of these individuals over their remaining natural lifespan, which averages over $1.4 million for each El Paso County suicide or over $143 million per year. In contrast, the medical cost associated with El Paso County completed suicides is much less, estimated at about $3,600 per completed suicide or over $352,000 per year.

Formulas Used to Estimate the Cost of Suicide, El Paso County, 2004-2006[35]

("Age" was chosen for estimation rather than method due to the greater variation in cost by age; also "method" data are not available from public sources)

Age	Average CO Suicide Medical Cost		Average CO Suicide Cost of Lost Work		# Suicides El Paso County		Estimated El Paso County Total Cost*
5-14	$24,069	+	$1,833,379	x	1	=	$1,857,448
15-19	4,435	+	2,013,206	x	14	=	$28,246,974
20-29	4,554	+	2,154,243	x	59	=	$127,369,023
30-49	3,018	+	1,670,093	x	124	=	$207,465,764
50-69	3,185	+	859,523	x	71	=	$61,252,268
70+	3,826	+	118,011	x	27	=	$3,289,599
	**				**296 Suicides Over Three Years: 2004-06**		**$429,481,076 / 3 years** *Or approximately* **$143,000,000 / year** *Or approximately* **$1,450,000 / suicide**

*[(Med cost + Work cost) x # suicides] = Total

**Medical costs for El Paso County group over three years = $1,058,514 or $352,838 per year.

[34] *Colorado Suicide Prevention Fact Sheet*. Suicide Prevention Resource Center, Newton, MA. http://www.sprc.org/stateinformation/PDF/statedatasheets/co_datasheet.pdf

[35] Suicide hospitalization data are only available through 2006, thus it was decided to end the three year period for both economic cost tables in this analysis at 2006.

Suicide Attempts

From 2004 to 2006, 1,100 hospitalizations for attempted suicide were recorded for El Paso County residents.[36] The estimated economic cost to our community was over $9.25 million per year. The $9.25 million annual loss is made up of about $5.5 million in the cost of lost work plus over $3.75 million in medical costs. The calculations are detailed in the table below.

Formulas Used to Estimate the Cost of Suicide Attempts, El Paso County, 2004-2006

("Method" was chosen for estimation rather than age due to the greater variation in cost by method)

Method	Average Colorado Medical Cost		Average Colorado Cost of Lost Work		# Hospitalized Attempts, El Paso County[37]		Estimated El Paso County Total Cost*
Cut/pierce	$10,732	+	$48,632	x	162	=	$9,616,968
Firearms	64,449	+	65,990	x	18	=	$2,347,902
Poisoning	8,324	+	1,708	x	888	=	$8,908,416
Suffocation	30,375	+	239,803	x	22	=	$5,943,916
Other	31,739	+	60,470	x	10	=	$922,090
	**	+		x	**1,100 Attempts Over Three Years: 2004-06**	=	**$27,739,292 / 3 years** *Or approximately* **$9,250,000 / year** *Or approximately* **$25,000 / hospitalized attempt**

*[(Med cost + Work cost) x attempts] = Total

**Medical costs for El Paso County group over three years = $11,276,018 or $3,758,672 per year.

[36] These numbers do not include individuals seen in emergency departments but not hospitalized.

[37] Data from Colorado Department of Public Health and Environment. *Injury Hospitalization Statistics.* http://www.cdphe.state.co.us/scripts/htmsql.exe/cohid/injurycustom.hsql#main

Prevention and Intervention

Suicide prevention interventions reduce risk or enhance protective factors. People who "possess" risk factors for suicide are at greater potential for suicidal behavior; protective factors, on the other hand, reduce the likelihood of suicide. Protective factors enhance resilience and may serve to counterbalance risk factors. Unfortunately, understanding the interactive relationship between risk and protective factors for suicide and how to apply this knowledge to suicide prevention can be difficult. There are risk factors that can be mitigated, like by providing effective treatment for certain mental illnesses. Other risk factors cannot be changed, like previous suicide attempts, but may still provide information for evaluating suicide risk and keeping individuals safe.

Measures that employ or enhance protective factors play an essential role in preventing suicide. The use of protective factors to prevent suicide should take into account not only the individual but aspects of the environment and culture as well. Some of the most important protective factors are outlined below:

Protective Factors

- Effective clinical care for mental, physical, and substance use disorders;
- Easy access to a variety of clinical interventions and support for help-seeking;
- Restricted access to highly lethal means of suicide;
- Strong connections to family and community support;
- Support through ongoing medical and mental health care relationships;
- Skills in problem solving, conflict resolution, and nonviolent handling of disputes; and
- Cultural and religious beliefs that discourage suicide and support self-preservation.

Comprehensive community-based suicide prevention programs are believed to have a greater likelihood of reducing the suicide rate than are interventions that address only one risk or protective factor, particularly if the program incorporates a range of services and providers within a community.[38] Comprehensive programs engage community leaders through coalitions that cut across traditionally separate sectors, such as health and mental health care, public health, justice and law enforcement, education, and social services. These coalitions involve a range of groups, including faith communities, civic groups, and businesses. Additionally, suicide prevention programs need to support and reflect the experience of survivors, build on community values and standards, and integrate local cultural and ethnic perspectives.

[38] SPRC. Suicide Prevention: The Public Health Approach and Risk and Protective Factors for Suicide. http://library.sprc.org/

Suicide prevention programs should include multiple prevention strategies that are:

- Universal – Focus on everyone in a defined population or geographic area regardless of their risk; for example a hospital, school, or county
- Selective – Target subgroups of people at increased risk due to age, gender, or ethnicity or stressors like unemployment, multiple military combat deployments, etc.
- Indicated – Provide services to individuals who have been assessed to be at the greatest risk of suicide due to previous suicide attempts, etc.

Interventions, like risk and protective factors, may be characterized along biopsychosocial, environmental, and socio-cultural dimensions. A matrix can be constructed to show the level of population targeted and the dimension addressed by the interventions. Use of a matrix can identify gaps in suicide prevention approaches and help match interventions to intended outcomes. A matrix of suicide prevention strategies is illustrated in the table below.[39]

Matrix of Interventions for Suicide Prevention

	BIOPSYCHOSOCIAL	ENVIRONMENTAL	SOCIOCULTURAL
UNIVERSAL (The intervention is designed to affect everyone in a defined population)	Incorporate depression screening into all primary care practice	Promote safe storage of firearms and ammunition Package drugs in blister packs	Teach conflict resolution skills to elementary school children Provide programs that improve early parent-child relationships
SELECTIVE (The intervention is designed especially for certain sub-groups at particular risk for suicide)	Improve the screening and treatment for depression of the elderly in primary care practices	Reduce access to the means for self-harm in jails and prisons	Develop programs to reduce despair and provide opportunities (increase protective factors) for high risk populations, such as Native American youth
INDICATED (The intervention is designed for specific individuals who, on examination, have a risk factor or condition that puts them at very high risk)	Implement cognitive-behavioral therapy immediately after patients have been evaluated in an emergency department following a suicide attempt	Teach caregivers to remove firearms and old medicines from the home before hospitalized suicidal patients are discharged	Develop and promote honorable pathways for law enforcement officers to receive treatment for mental and substance use disorders and return to full duty without prejudice

[39] SPRC. Suicide Prevention: The Public Health Approach and Risk and Protective Factors for Suicide. http://library.sprc.org/

It is highly recommended that suicide prevention interventions be scientifically tested prior to large scale implementation. The community gatekeeper concept is an example of an evidenced-based strategy that can be incorporated into all three levels of suicide prevention. A community gatekeeper is a person who regularly comes into contact with individuals or families in distress or anyone who is interested in being trained as a gatekeeper. Community gatekeepers are trained to recognize behavioral patterns and other factors that place individuals at risk for suicide, and are equipped with effective strategies to intervene before the behaviors and early signs of risk evolve further. Key gatekeepers interact with people in environments of work, play, and natural community settings, and have the opportunity to interact in other than medical settings.

Key Gatekeepers

- Teachers and school staff
- School health personnel
- Supervisors in occupational settings
- Hospice and nursing home volunteers
- Correctional personnel
- Emergency health care personnel
- Natural community helpers
- Clergy
- Police officers
- Primary health care providers
- Mental health care and substance abuse treatment providers

Conclusion

The facts regarding suicide in El Paso County contained in this report show that suicide is a significant health problem for our area:

- Suicide rates generally equal or slightly surpass Colorado rates.
- Suicide is the 7th leading cause of death.
- Medical costs are approximately $4 million annually.
- Suicide rates are higher than Colorado in specific populations like males ages 25-54, whites, and Hispanics.
- Veterans account for almost one-third of the total suicides.
- Suicide rates vary by county location; for example, the suicide rate in west central metro Colorado Springs area is 27.20 compared to the El Paso County average of 16.91.

At the same time, the 2007 report from the National Association of County and City Health Officials indicating that Colorado Springs had the second highest suicide rate in the country does not hold true when rates are examined over several years rather than a single year. El Paso County's suicide rate (16.91) is more than 50% higher than the suicide rate for the rest of the country (10.80). But for the most part, El Paso County mirrors the suicide rates of Colorado and other Western states.

In 2001, the U.S. Surgeon General called for communities across the nation to institute broad-scale, comprehensive strategies to prevent suicide. One of the suggested approaches was increased public awareness and education. We are hopeful that this paper and Community Forum serve this purpose.

So, is El Paso County's suicide rate a cause for alarm?

We should not be fearful about suicide – but we do need to take action. Suicide is a tragic, devastating and costly event that may be largely preventable.

About the Authors

Rhonda D. Terry, Ph.D., is Director of Research for the Pikes Peak Behavioral Health Group. Dr. Terry has more than 30 years of experience in health-related research. Her areas of expertise are program evaluation and applied healthcare research, and she has 28 research articles in peer-reviewed publications. She has successfully managed, evaluated, and reported on data for federal, state, and local research and program grants. Prior to joining the staff at Pikes Peak Behavioral Health Group, she directed her own research program for 13 years as a faculty member of Iowa State University.

Annette D. Fryman, R.N., M.B.A., is Senior Advisor to the CEO with Pikes Peak Behavioral Health Group. Previously, she served as Interim Chief Operating Officer with the organization, and was Senior Vice President of its managed care and disease management companies, Connect Care and ProCare. Ms. Fryman is a registered nurse with a bachelor's degree in nursing and a master's degree in business administration. Ms. Fryman served as a hospital-based psychiatric nurse and a variety of executive management roles including administrative director of two general hospital behavioral health departments and a free-standing psychiatric hospital, and CEO of a provider-owned managed behavioral health care company. Ms. Fryman has extensive experience in the leadership and management of health care delivery systems, program development, and quality improvement.

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