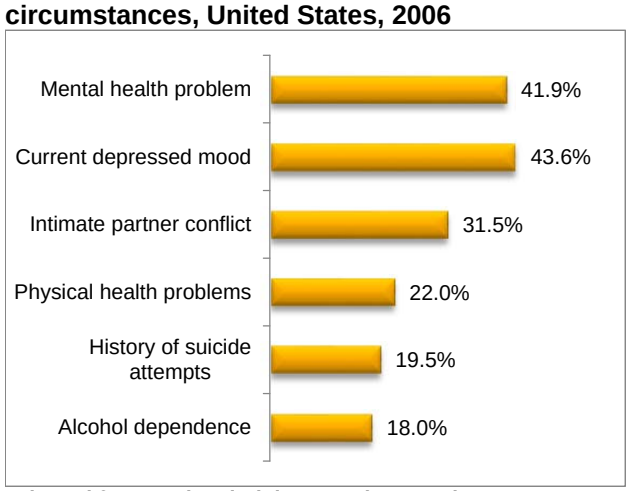
Suicide

Suicide is defined as "a death resulting from the use of force against oneself when a preponderance of the evidence indicates that the use of force was intentional."[1] This category includes the deaths of persons who intended only to injure rather than kill themselves and suicides involving only passive assistance to the decedent (e.g., supplying the means or information needed to complete the act). The category does not include deaths caused by chronic or acute substance abuse without the intent to die or deaths attributed to autoerotic behavior (e.g., self-strangulation during sexual activity). Nearly half of the suicide-related internet websites provide advice on how to take one's own life.[2]

Why people kill themselves is a complex issue (Figure 21.1), yet, in many cases, it often can be prevented by early recognition and treatment of mental disorders. Suicide is often perceived as the solution for one's depression.[3] More than 90% of decedents are reported to have had a mental or substance abuse disorder, or a combination of disorders.[4] Toxicological testing indicates that a substantial percentage of suicide decedents test positive for alcohol or other drugs, with alcohol being detected in a third of cases.[5] There is evidence to suggest that non-Hispanic black suicide decedents are less likely to have had depression than non-Hispanic white decedents.[6] Also, suicide attempts among blacks are more common than previously thought.[7]

Figure 21.1. Percentage of suicides by selected circumstances, United States, 2006



Adapted from National Violent Death Reporting System, 2006

In addition to mental and substance abuse disorders, risk factors for an attempted suicide include prior suicide attempt, stressful life events, and access to lethal suicide methods. The rate of suicide for people who had a prior suicide attempt is 100 times higher in the year following the episode than for the general population. Long-term studies show that this increased rate of suicide persists beyond the first year. In Jackson County, MO, suicide victims were 1) more likely to live in houses than in apartments or trailers; 2) more likely to live in more expensive homes; 3) more likely to kill themselves because of factors other than financial strain; and 4) if financial strain was a factor, more likely to kill themselves during a period of financial troubles after becoming accustomed to a more affluent lifestyle.[8]

Suicide rates in the United States have declined in recent years, reversing earlier trends, although there has been an increase in suicides among whites aged 40-64 years.[9] [10] In the United States in 2009, suicide was the 10th leading cause of death with 36,547 deaths, representing 1.5% of all deaths that year.[11] More males commit suicide than females, and the percent of deaths attributed to suicide among whites was two times higher than among blacks. Suicide rates among minorities tend to be highest among adolescents and young adults, and then decline or level off with increasing age.[12] In contrast, rates among whites are highest for those aged 40-54 years.

Suicides are more likely to occur on Wednesdays than any other day of the week and are more likely during summer months than the winter.[13] Firearms are used in slightly more than half of all suicides, with suffocation/hanging accounting for just over 20% and poisonings almost 20%. Although suicide rates have been declining, no significant decrease occurred in suicidal thoughts, plans, gestures, or attempts during the 1990s, despite a dramatic increase in treatment.[14] Among young adults

there are significant differences between males and females in the risk factors for attempted suicide.[15] The age-adjusted suicide mortality rate for men has changed very little over the past 3 decades while declining fairly consistently among women.

The age-adjusted death rates for suicide in both Missouri and Kansas City exceed the *Healthy People 2020* objective of 10.2 per 100,000 population (Figures 21.2 and 21.3). In Kansas City, the rate for females is below the *Healthy People 2020* objective.

In 2009, there were 63 suicide-related deaths among Kansas City residents. Non-Hispanic whites were far more likely to commit suicide than other racial/ethnic groups (Figure 21.4). Persons aged 35-64 years have the highest age-specific rates for death by suicide (Figure 21.5). Similar to what has been reported nationally, men favor firearms when committing suicide while women utilize other methods (Tables 21.1 and 21.2).[16] The age-adjusted death rates for suicide in the counties comprising Kansas City are presented in Figures 21.6 and 21.7. For firearm-related suicides, none of the counties were statistically different from the statewide average. However, the rate for non-firearm related suicides in Jackson County was higher.

Figure 21.2. Suicide age-adjusted death rates, Missouri and Kansas City, 1990-2009

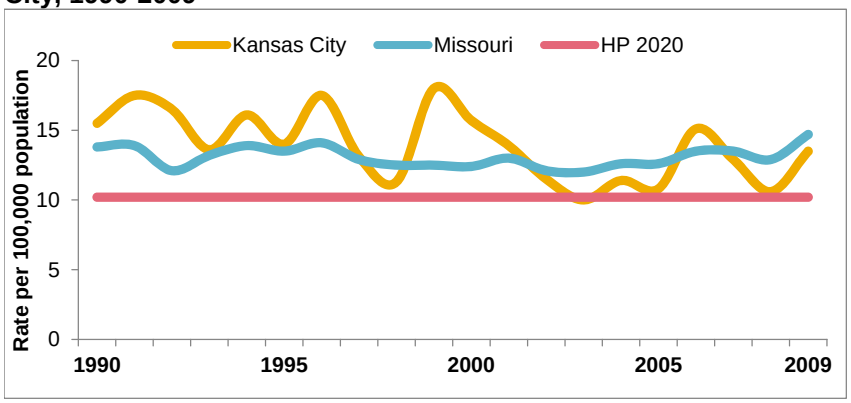


Figure 21.3. Age-adjusted suicide death rates Kansas City, MO, 1990-2009

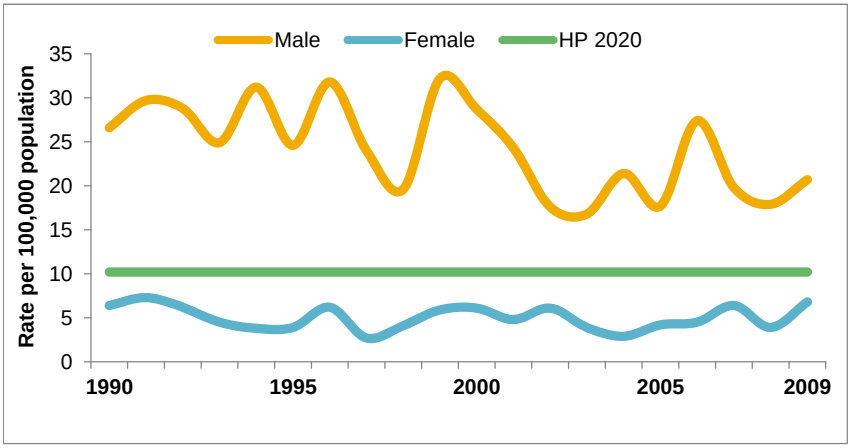


Figure 21.4. Percent of suicide deaths by race/ethnicity, Kansas City, MO, 2005-2009

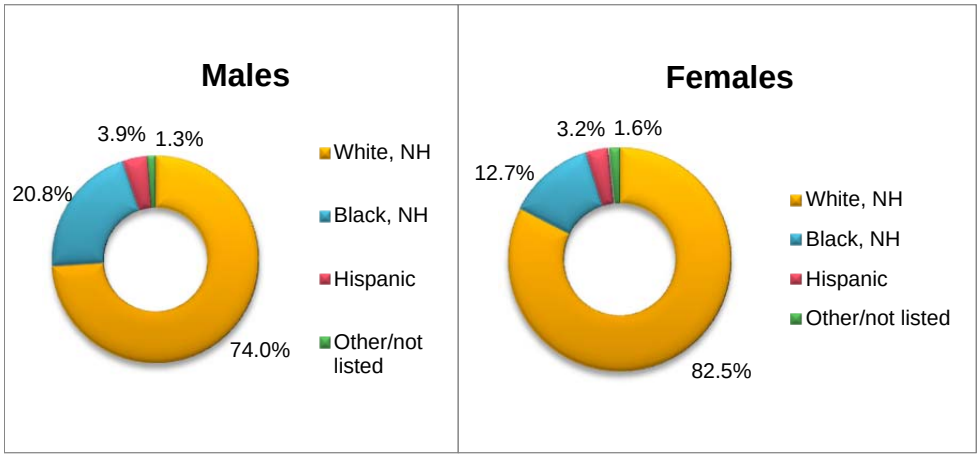
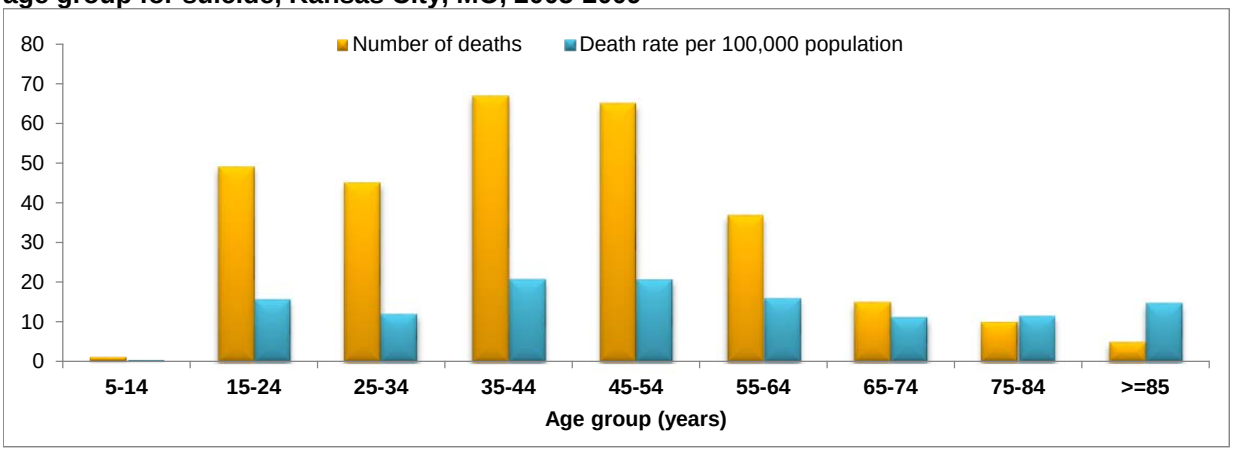


Figure 21.5. Suicide deaths and annualized age-specific death rates per 100,000 population by age group for suicide, Kansas City, MO, 2005-2009



In addition to completed suicides, the medical system must deal with emergency department (ED) visits and hospitalizations for persons thinking about suicide (ideation) and attempting, but not completing, suicide. Looking at Kansas City, Missouri, for the years 2005-2009, the age-adjusted rates for ED visits related to suicide ideation were highest among non-Hispanic whites and individuals aged 25-34 years (Figures 21.8 and 21.9). The median charges for those visits ranged from $1,504 for 10-14 year olds to $3,279 for persons ≥65 years old. Medicaid and Medicare paid 51.3% of the charges. Almost one-third (32.5%) of expenses were self-pay, private insurance paid 11.8% of expenses, and other sources paid 4.5%.

Suicide attempts can be classified as possible, definite, and completed. During 2005-2009, Kansas City residents made 662 ED visits and had 483 hospitalizations for possible suicide attempts (Figures 21.10 and 21.11). Men had 51%

Table 21.1. Suicides by age group and method, Kansas City, MO, 2005-2009

Method of Suicide		
	Frequency	**% of Total**
Handgun	56	19.0
Rifle, shotgun & larger firearm	31	10.5
Other firearms	48	16.3
Self-poisoning	71	24.1
Hanging, strangulation & suffocation	63	21.4
Jumping	8	2.7
All others	17	5.8
Total	**294**	**100.0**

Table 21.2. Method of suicide by sex and race, Kansas City, MO, 2005-2009

Method	Male	Female	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian	Native American	Not listed
Handgun	48	8	35	19	1	0	0	1
Rifle, shotgun, & larger firearm	31	0	28	2	1	0	0	0
Other firearms	44	4	37	10	1	0	0	0
Self-poisoning	39	32	60	8	2	0	1	0
Hanging, strangulation, & suffocation	50	13	47	8	6	1	1	0
Jumping	8	0	4	4	0	0	0	0
All others	11	6	12	5	0	0	0	0
Total	**231**	**63**	**223**	**56**	**11**	**1**	**2**	**1**

Figure 21.6. Comparison against state age-adjusted rate per 100,000 population for suicides caused by firearms, Missouri, 2004-2008

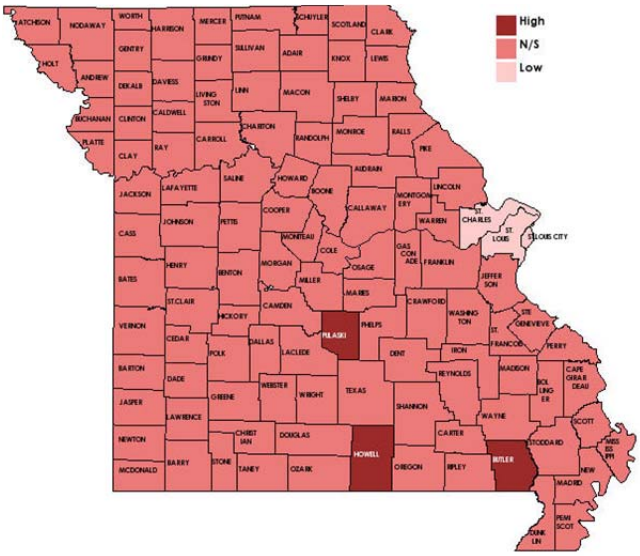
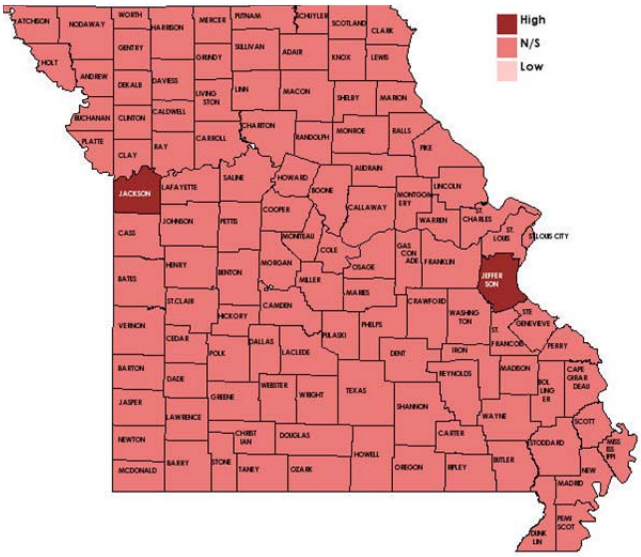


Figure 21.7. Comparison against state age-adjusted rate per 100,000 population for suicides caused by non-firearm methods, Missouri, 2004-2008



more ED visits than women and were hospitalized 62% more often. Non-Hispanic blacks had more ED visits and more hospitalizations than non-Hispanic whites.

During the same time period, there were 2,889 ED visits and 1,951 hospitalizations due to definite suicide attempts (Figures 21.12 and 21.13). Women had 18% more ED visits than men and were hospitalized 4% more often. Non-Hispanic whites had more ED visits and more hospitalizations than did non-Hispanic blacks.

The median charges and payor source for the possible and definite suicide attempts are shown in Table 21.3.

Figure 21.8. Age-adjusted rates per 100,000 population for emergency department visits due to suicide ideation by sex and race, Kansas City, MO, 2005-2009

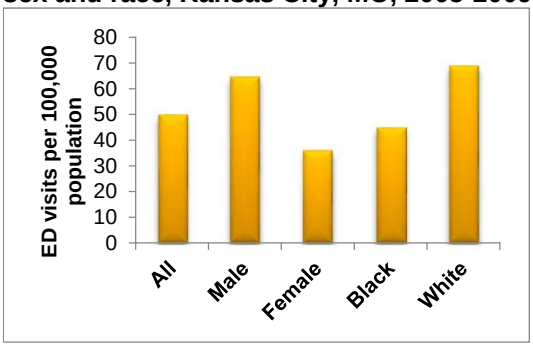


Figure 21.9. Age-adjusted rates per 100,000 population for emergency department visits due to suicide ideation by age group, Kansas City, MO, 2005-2009

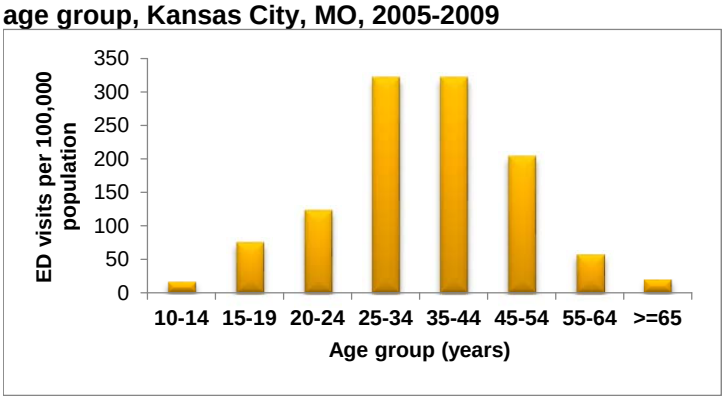


Figure 21.13 Hospitalizations for definite suicide attempts, Kansas City, Mo, 2005-2009

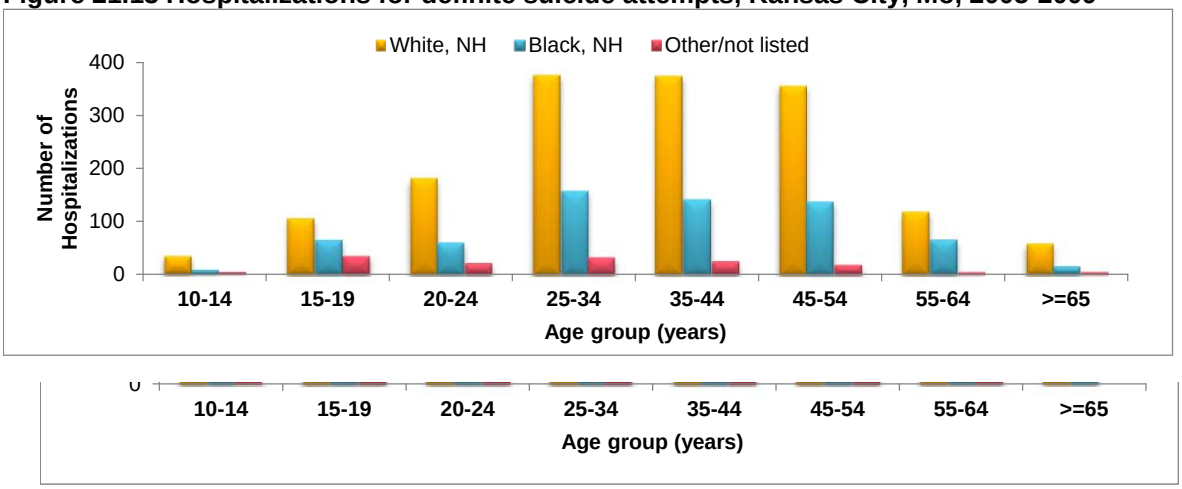


Figure 21.11 Hospitalizations for possible suicide attempts by race, Kansas City, MO, 2005-2009

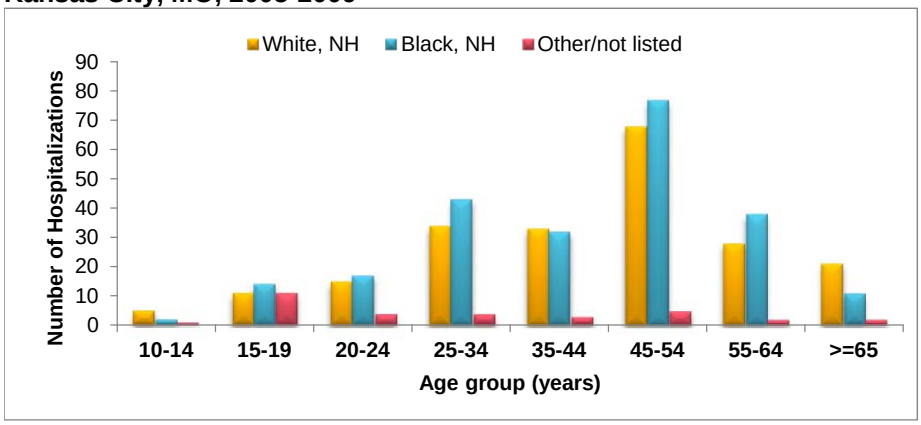


Figure 21.12. Emergency department visits for definite suicide attempts, Kansas City, MO, 2005-2009

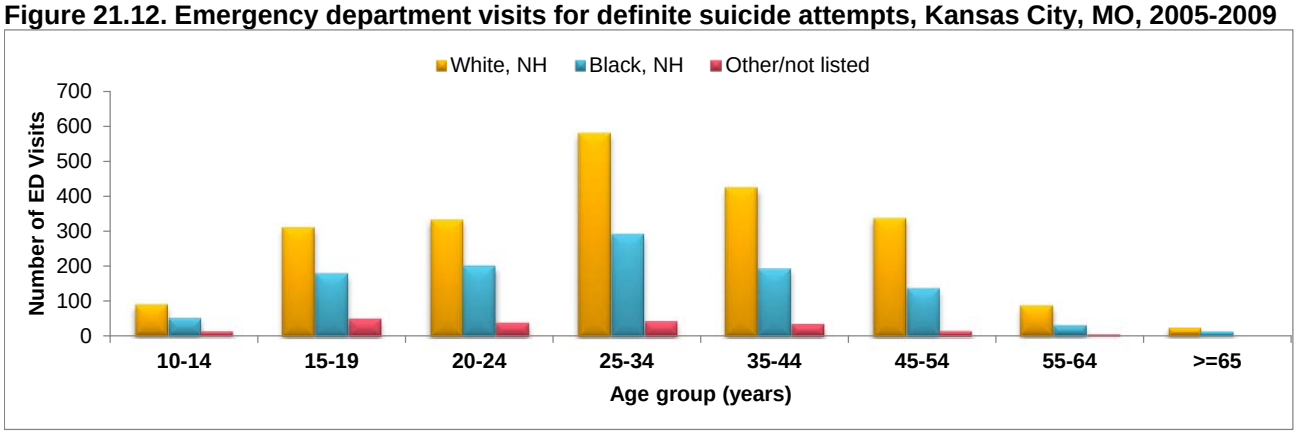


Table 21.3. Hospital charges for emergency department visits and hospitalization due to possible and definite suicide attempts, Kansas City, MO, 2005-2009

	Emergency department visits		Hospitalizations	
	Possible suicide attempt	Definite suicide attempt	Possible suicide attempt	Definite suicide attempt
Total events	662	2,889	461	1,820
Total charges	$1,655,533	$7,876,391	$9,984,626	$34,601,944
Mean	$2,500	$2,726	$21,658	$10,285
Median	$1,835	$2,264	$19,045	$9,328
Self-pay	31.66%	29.2%	24.6%	22.8%
Medicaid	28.7%	28.6%	27.5%	27.9%
Private insurance	17.5%	27.8%	15.3%	27.4%
Medicare	8.6%	7.7%	22.4%	13.8%
Other	15.6%	6.7%	10.1%	8.2%

Literature Cited

[1] Karch DL et al. Surveillance for violent deaths – National Violent Death Reporting System, 16 states, 2005. *MMWR Morb Mortal Surv Summ* 2008;57:SS-3.

[2] Biddle L et al. Suicide and the internet. *Brit Med J* 2008; 336:800-802.

[3]Kansas City Metropolitan Health Council. Depression in Kansas City. What's being done and what is needed. 2005. 35 p.

[4] Karch DL et al. Surveillance for violent deaths – National Violent Death Reporting System, 16 states, 2006. *MMWR Surveil Sum* 2009;58:SS-1.

[5] Crosby AE, et al. Alcohol and suicide among racial/ethnic populations --- 17 states, 2005--2006. *MMWR Morb Mortal Wkly Rep* 2009;58:637-641.

[6] Abe K et al. Characteristics of black and white suicide decedents in Fulton County, Georgia, 1988-2002. *Am J Public Health* 2006;96:1794-1798.

[7] Joe S et al. Prevalence of and risk factors for lifetime suicide attempts among blacks in the United States. *J Am Med Ass* 2006;296:2112-2123.

[8] Young TW et al. The Richard Cory phenomenon: suicide and socioeconomic status in Kansas City, Missouri. *J Forensic Sci* 2005;50:443-447.

[9] Hu G et al. Mid-life suicide: an increasing problem in US whites, 1999-2005. *Am J Prev Med* 2008;35:589-593.

[10] Phillips JA et al. Understanding recent changes in suicide rates among the middle-aged: period or cohort effects. *Publ Health Rep* 2010;125:680-688.

[11] Kochanek KD et al. Deaths: preliminary data for 2009. *Natl Vital Stat Rep* 2011;59(4). www.cdc.gov/nchs

[12] Cosby AE et al. Suicides – United States, 1999-2007. *MMWR Morb Mortal Wkly Rep* 2011;60(January supplement):S56-S59.

[13] Kposowa A, D'Auria S. Association of temporal factors and suicides in the United States, 2000-2004. *Soc Psychiatry Psychiatr Epidemiol* 2010;45:433-445.

[14] Kessler RC et al. Trends in suicide ideation, plans, gestures, and attempts in the United States, 1990-1992 to 2001-2003. *J Am Med Ass* 2005;293:2487-2495.

[15] Zhang J et al. Gender differences in risk factors for attempted suicide among young adults: findings from the Third National Health and Nutrition Examination Survey. *Ann Epidemiol* 2005;15:167-174.

[16] Kposowa AJ, McElvain JP. Gender, place and method of suicide. *Soc Psychiatry Psychiatr Epidemiol* 2006;41:435-443.