

Suicide Mortality Rates in Louisiana, 1999-2010

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This report is a descriptive study on suicide deaths in Louisiana occurring in the years 1999 to 2010. Mortality data was collected from death certificates from this 12-year period to describe suicide mortality by year, race, sex, age group, and methods of suicide. Data were also compared to national data. Rates and methods used to commit suicide vary greatly according to sex, race, and age. The highest rates were observed in white males, followed by black males, white females, and black females. Older white males had the highest suicide rates. The influence of age was modulated by the sex and race categories. Firearm was the most common method used in all four categories. Other less common methods were hanging/strangulation/suffocation (HSS) and drugs/alcohol. Although no parish-level data were systematically analyzed, a comparison of suicide rates post-Katrina versus pre-Katrina was done for Orleans Parish, the rest of the Greater New Orleans area, and a comparison group. It appears that rates observed among whites, particularly males, were higher after Katrina. Data based on mortality do not give a comprehensive picture of the burden of suicide, and their interpretation should be done with caution.

INTRODUCTION

Suicide is defined as a fatal, intentional, self-inflicted injury with the intent to end life.¹ Based on the most recent 2010 mortality data, suicide death is the 11th ranking cause of death in the United States compared to homicide as the 15th rank for cause of death.² Based on 1999 to 2005 data, it is the third leading cause of death for the 15 to 34-year-old age group and the sixth leading cause of death for the 35 to 44-year-old age group in Louisiana.³ To better understand the epidemiology of this fatal self-inflicted injury in Louisiana, death certificate data were analyzed by years of suicide, race, sex, age groups, and method used to commit suicide. Louisiana suicide data were compared to US data to see if Louisiana residents show the same pattern as seen in the United States during the last 10 years, for which both U.S. and Louisiana were available.

POPULATION AND METHODS

Mortality data were collected from Louisiana death certificates from 1999 to 2010. International Classification of Diseases (ICD) 10 Codes X60-X84 were used for data extraction. Rate calculations were limited to black and white populations because of the small number of suicides among other races, but all other data analysis are based on all races. Because of the small number of residents in some rural parishes, no parish level data analysis was attempted.

However, since there has been extensive press coverage of an increase in suicides in the New Orleans-area parishes impacted by Hurricane Katrina, it seemed useful to look into

the rates of suicide in these areas before and after Katrina. Such comparisons have very serious limitations and need to be interpreted with caution. The areas selected were

1. Orleans Parish,
2. Greater New Orleans (excluding Orleans, including Jefferson, St. Bernard, St. Tammany, and Plaquemines Parishes), and
3. Four urban control parishes grouped together: Rapides, Caddo, Bossier, and Ouachita Parishes.

Since sex, race and age have a profound influence on suicide rates, the data was stratified accordingly. Age groups selected were 25 to 44, 45 to 64, and 65 and over. The comparison was done for 2003 - 2004 for the pre-Katrina period and 2006 - 2007 for the post-Katrina period. The year 2005 was excluded because of the difficulty in having reliable population data in the immediate aftermath of Katrina.

For age adjustment, the 2000 US census population was used.

RESULTS

During the 12-year period, there were a total of 5,983 suicide deaths in Louisiana, averaging 498 deaths per year with a range from 361 to 551 deaths per year. The majority of these suicide-deaths were committed by white males (68.5 %) compared to 16.7 % in white females, 11.9 % in black males, and 1.9 % in black females.

Trends

Trends of age-adjusted suicide death rates from 1999-

Table 1: Numbers and Rates of All Suicide Deaths by Method, Louisiana 1999-2010

Age group	Numbers						
	Firearm	HSS	AlcDrug	Drown	Misc.	Unspec.	Total
10-14	24	23	0	0	2	0	49
15-19	219	81	13	2	9	0	324
20-24	391	130	18	3	18	3	563
25-29	375	123	52	8	24	3	585
30-34	342	125	44	6	27	1	545
35-39	363	116	57	14	26	3	579
40-44	375	108	73	6	33	3	598
45-49	406	88	76	7	41	1	619
50-54	347	68	64	6	35	4	524
55-59	288	47	53	3	20	1	412
60-64	219	25	13	7	10	1	275
65-69	189	13	7	2	8	2	221
70-74	184	16	13	4	0	7	224
75-79	161	6	8	1	8	1	185
80-84	136	3	4	1	7	1	152
85+	93	10	4	0	6	1	114
Total	4112	982	499	70	274	32	5969
Age group	Rates/100,000 per year						
	Firearm	HSS	AlcDrug	Drown	Misc.	Unspec.	Total
10-14	2	1.9	0	0	0.2	0	4.1
15-19	16.8	6.2	1	0.2	0.7	0	24.8
20-24	33.8	11.2	1.6	0.3	1.6	0.3	48.7
25-29	33.7	11.1	4.7	0.7	2.2	0.3	52.6
30-34	29.1	10.6	3.7	0.5	2.3	0.1	46.3
35-39	26	8.3	4.1	1	1.9	0.2	41.5
40-44	27.1	7.8	5.3	0.4	2.4	0.2	43.2
45-49	32.2	7	6	0.6	3.3	0.1	49.1
50-54	31	6.1	5.7	0.5	3.1	0.4	46.8
55-59	32.9	5.4	6.1	0.3	2.3	0.1	47.1
60-64	31	3.5	1.8	1	1.4	0.1	38.9
65-69	31.4	2.2	1.2	0.3	1.3	0.3	36.7
70-74	34.2	3	2.4	0.7	0	1.3	41.7
75-79	58.9	2.2	2.9	0.4	2.9	0.4	67.7
80-84	60.3	1.3	1.8	0.4	3.1	0.4	67.3
85+	66.1	7.1	2.8	0	4.3	0.7	81
Total	28.4	6.8	3.4	0.5	1.9	0.2	41.2

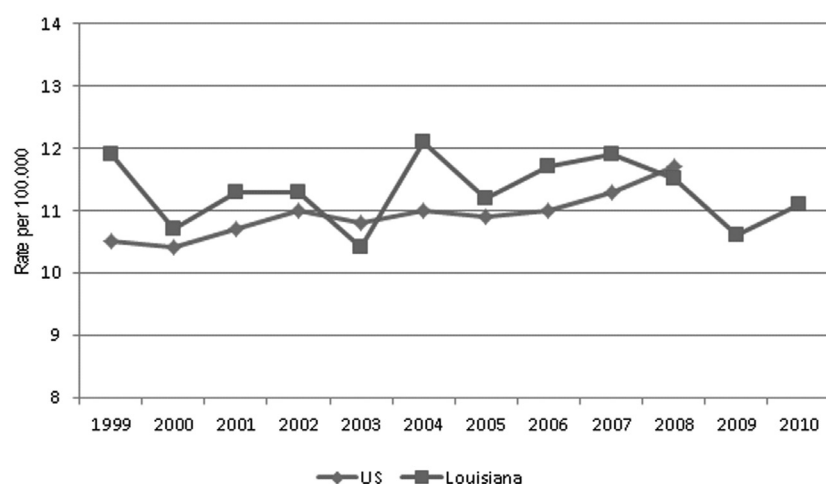


Figure 1: Age adjusted* suicide death rate (per 100,000 population), US and Louisiana, 1999-2010.

*US 2000 Standard Population, all races, both sexes.

NOTE: The US data were only available until 2008.

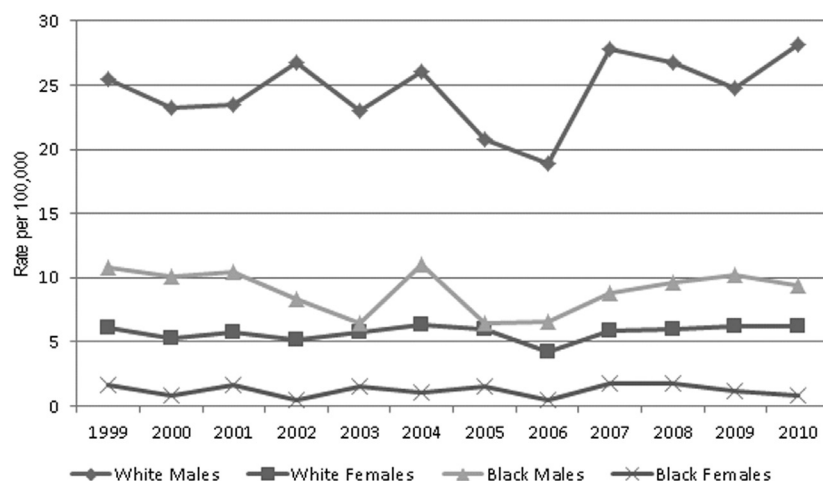


Figure 2: Age-adjusted* suicide death rates by race and sex, Louisiana 1999-2010.

*US 2000 Standard Population, all races, both sexes.

2010 seem to be comparable between Louisiana and the United States (Figure 1); however, no US data were available for 2009 and 2010, so the trends were calculated only for 1999 to 2008. There was no increased trend (Cochrane-Armitage test for linear trend: $\chi^2 = 0.09$; $df=1$; $p = 0.76$). The regression line analysis shows a slightly negative slope ($y = -0.008x + 11.4$) in suicide death rate ($p=0.86$). For the United States, there is a slightly increasing trend ($y = 0.112x + 10.3$), and given the large sample, the trend is significant (Cochrane-Armitage test for linear trend: $\chi^2 = 284.69$, $df = 1$, $p = 0.000$). The US death rate from 1999 to 2008 ranged between 10.4 to 11.7 per 100,000 per year compared to

Louisiana, where the suicide rate from 1999 to 2010 ranged from 10.4 to 12.1 per 100,000 per year.

Sex and Race Distribution

White males had the highest suicide death rate, followed by black males, white females, and black females. There was no significant increase over time that could be detected in any of these groups.

Age Distribution

In white males, the suicide rates increase steeply from ages 10 - 14 to reach a rate of 33 /100,000 per year in the age group 20 - 24. This is followed by a plateau around 28 to 32 /100,000 per year until the age group 70 - 74. Rates for older age groups increase abruptly to reach 65 /100,000 per year by age 85 (Figure 3).

In black males, the pattern is similar but depressed in comparison with white males - steep increase to 20/100,000 per year in the 25 - 29 age group, then a plateau ranging from 20 to 15. Contrary to white males, this plateau continues up to the very old age (Figure 3).

In white females, there is a progressive increase up to a maximum at 15 /100,000 per year around age 55 - 59, followed by a decline in the older age groups. In black females, the rates oscillate between 0 and 10 in all age groups (Figure 4).

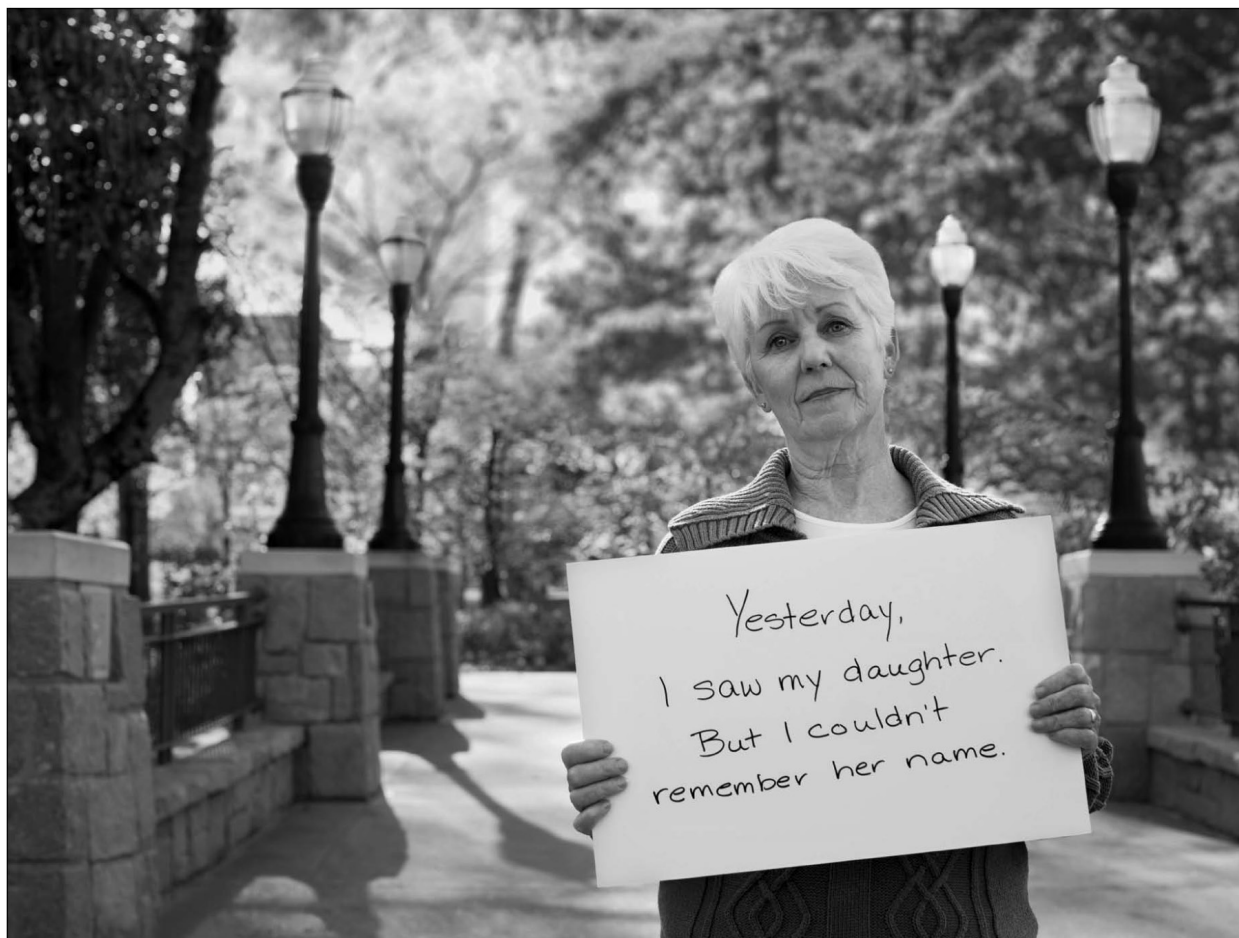
Methods of Suicides

Methods used to commit suicide are very different by sex and race (see Table 1). The majority of suicides are committed by firearm (72% for all males, 56% for white females, and 41% for black females). The second most common method is hanging, strangulation, and suffocation (16 to 17%) in men, while it is drugs and alcohol in women (23 to 24%).

Methods used by age group are presented in Table 1 and Figure 5. Firearm is the most common method in all age groups. Hanging, suffocation, and strangulation (HSS) are the second most commonly used methods, but they decrease in importance with age after age group 30 - 34, while drugs are increasing with age up to age group 50-59.

Pre and Post-Katrina Comparison

The results are presented in Table 2 for Orleans Parish, the other parishes in the Greater New Orleans area, and the control (or comparison group). The rates presented are those



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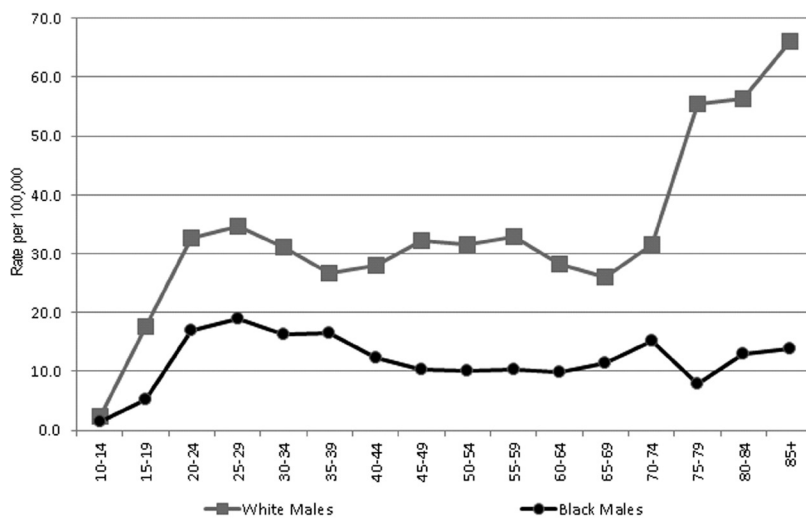


Figure 3: Suicide death rate by age group, white and black males, Louisiana 1999-2010.

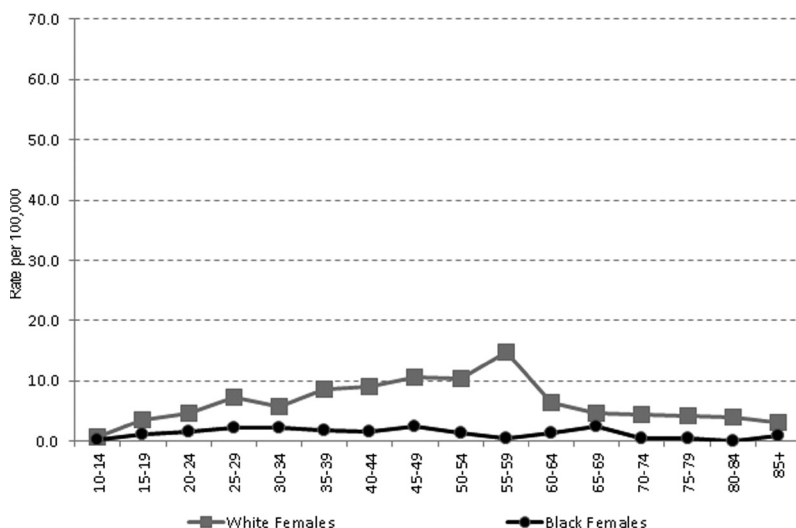


Figure 4: Suicide death rate by age group, white and black females, Louisiana 1999-2010. (The scale was kept the same for both Figures 3 and 4).

for the pre-Katrina and the post-Katrina period. For the areas where there was an increase in the rates after Katrina, the rate ratio is greater than one. The confidence intervals for the rate ratios are also presented.

The rate ratios were higher in Orleans Parish for white males in all three age groups (Rate ratios of 1.36, 1.89, and 2.66 but with large confidence intervals including 1.0). Similarly, the rate ratios were higher in white females for age groups 25 - 44 and 45 - 64. None of these rate ratios reached the 5% level of confidence. However, this lack of significance may be due to the small numbers involved. There seems to be a consistent pattern of higher suicide rates in the white population.

For black males and black females in Orleans Parish,

rate ratios were not elevated. For the other Greater New Orleans parishes and the control parishes, rate ratios did not show any definite pattern and no differences were significant.

DISCUSSION

In Louisiana, white males had the highest suicide death rate and a sharp increase in the very old age groups. This is consistent with the United States, where data show that elderly men are more likely to commit suicide than any other age group⁵ and older white men are in the highest risk group for suicide death when comparing age and birth components.⁶ Declining health and an increase in depression are potential explanations.⁷⁻⁹ In the general population, known risk factors include alcohol and drug abuse, childhood abuse, loss of a loved one, joblessness, loss of economic security,¹⁰ and residence in a rural area.¹¹

Since this descriptive study was done on death certificates, no risk factor variables were available. The authors could not explore if risk factors would differ in Louisiana compared to US data.

Even though parish information is collected on death certificates, no parish-level data analysis were performed because parishes with small population numbers would have yielded very unstable rates.

From 1999 to 2010, the suicide rate ratio between white male and female Louisiana residents older than 75 years of age was 16:1, which is much higher than reported from US data. Literature shows that the risk ratio between US men and women older than 85 years increased from 9.2 to 13 from 1980 to 1986.¹²

Firearm was the most likely method used by all groups of population studied. Other less common methods were alcohol/drugs and hanging/strangulation/suffocation. In the United States, men 65 and older are the most likely group to use firearms, followed by those

55 and older.⁵

Mortality data are easy accessible, and for the purpose of a purely descriptive study, they are very useful for getting an overview of the problem, comparing state data with national data and describing frequency and trends in different population groups. However, as many studies show, the validity of suicide mortality data is questionable, and suicide deaths might be underreported because of stigma of this type of death, religious beliefs, or insurance reasons.¹³ Methods of suicide may influence the classification. For example, use of medications and vehicular accidents may be underreported, while suicide by firearm would be less likely to be missed.



*St. Jude patient Wilnisha (left)
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Table 2: Comparison of Suicide Rates Among Residents of Orleans, Other Parishes in the Greater New Orleans Area, and Control Group by Sex and Race, Louisiana 1999-2010

Rates		WM			BM			WF			BF		
		25-44	45-64	65+	25-44	45-64	65+	25-44	45-64	65+	25-44	45-64	65+
Orleans	ProKat	23.8	23.8	21.2	12.2	8.3	28.2	12.4	14	3.3	3.2	1.3	11.2
	PostKat	32.2	45.1	56.6	8.7	3.6	20.1	15.8	23.9	0	0	5.5	6
	Ratio	1.36	1.89	2.66	0.71	0.43	0.71	1.28	1.71	0	0	4.26	0.53
	CI Lo	0.53	0.74	0.7	0.24	0.05	0.14	0.31	0.46	z	x	0.39	0.06
	CI Hi	3.50	4.83	9.71	2.12	3.65	3.52	5.35	6.35	x	x	47	4.77
GNO	PreKat	29.3	36.1	35.4	7.7	11.4	28.8	7.1	10.6	4.4	6.2	0	0
	PostKat	31.5	35.7	23.5	10.9	12.1	15.1	9.4	8.1	3.6	4.4	0	0
	Ratio	1.08	0.99	0.66	1.42	1.06	0.52	1.33	0.76	0.82	0.71	x	x
	CI Lo	0.27	0.37	0.34	0.32	0.21	0.05	0.61	0.36	0.18	0.12	x	x
	CI Hi	1.77	2.46	1.29	6.32	5.24	5.79	2.94	1.59	3.68	4.24	x	x
Control	PreKat	24.4	25.4	43.5	20.4	9.9	7.1	9.5	11	2.8	1.5	2	0
	PostKat	31.3	19.8	18.3	16.5	12.2	21	12.2	8.8	4.2	0	0	0
	Ratio	1.28	0.78	0.42	0.81	1.23	2.97	1.27	0.8	1.48	0	0	x
	CI Lo	0.77	0.43	0.19	0.33	0.33	0.31	0.56	0.33	0.27	x	x	x
	CI Hi	2.14	1.43	0.92	0.95	4.6	28.51	2.91	1.94	7.95	x	x	x

Some studies estimate that official death certificates underestimate suicide death rate by about 40%. Furthermore, these studies also suggest that rates of underreporting are higher for blacks than for whites.¹⁴

Another limitation is that mortality data show only fatalities due to suicide. For suicide attempts or incomplete suicide, no national data are available. Based on a most recent study of the Substance Abuse and Mental Health Service Administration (SAMSHA), it is estimated that there are 25 attempts for each suicide death: 100 - 200 attempts for each suicide for younger persons; the ratio is 4:1 in the elderly.⁸

Findings from studies on suicide deaths after natural disaster are varied. A cross-sectional study conducted in Taiwan after an earthquake showed that disaster victims were 1.5 times more likely to die by suicide compared to non-victims. The risk of suicide attempt was highest in persons with current or past history of psychiatric morbidity.¹⁵ Another study that looked at different types of disasters showed no difference in pre and post-disaster suicide rate in 24 countries affected by hurricanes.¹⁶

The high risk ratio of pre and post-suicide rates seen in white males after Katrina should be interpreted with caution. This study was limited to the population living in the Greater New Orleans area, therefore including only pre-Katrina residents who had returned "home." Other pre-Katrina residents who had not returned home were not included in this study. There may have been more suicides

in that population.

Since this study was based solely on mortality data, it was not able to look at very important variables such as underlying health condition or psychiatric illness, and feeling of the loss of community (and therefore depression), which probably confounded the association between suicide deaths and Hurricane Katrina.

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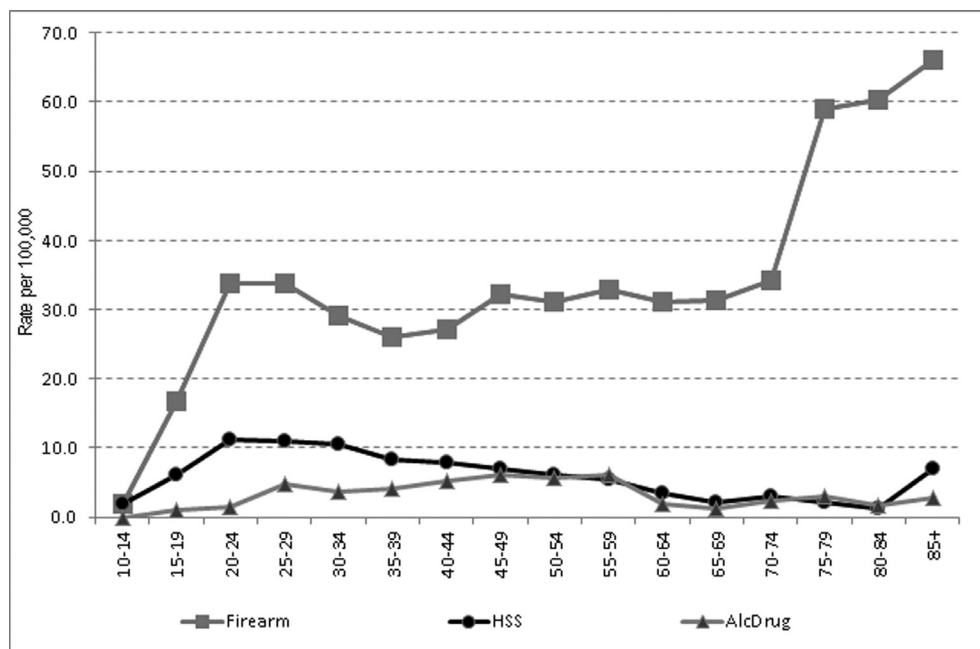


Figure 5: Suicide death rate by age group and methods, Louisiana 1999-2010. HSS = hanging, suffocation, strangulation.

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