

KANSAS

Suicides, Kansas, 1989-1998



**Research
Summary**

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In 1998, suicide was the ninth leading cause of death for all Kansans, but was the third leading cause of death for individuals in the 5-14 year age-group, second in the 15-24 year age-group, and fourth in the 25-44 year age-group¹. The 328 suicides in Kansas in 1998 resulted in 11,437 years of potential life lost², following only deaths from cancer, unintentional injuries, and heart disease.

For an historical perspective, Kansas suicide death rates per 100,000 population (calculated since 1916) were highest from 1927 to 1941, ranging from a low of 13.0 to a high of 18.9 during that time period. Prior to 1927, the highest rate was 12.4 in 1918; and since 1941, only seven years have had a rate above 12.7 (Figure 1). Since 1941, suicide death rates have remained remarkably stable, increasing its importance as a cause of death, since advances in medical science have reduced death rates from other causes of death, such as tuberculosis, syphilis, and pneumonia and influenza.

Male suicide rates have always been higher than those for females, but the disparity between those rates has increased in recent years. During the 1981-1985 time period, 78.8 percent of suicide deaths were male; during 1994-1998, 82.6 percent were male. Between 1971-1975 and 1994-1998, the suicide death rate for females decreased from 5.9 to 4.2, a 28.8 percent drop. The rate for males rose from 18.7 to 20.5 per 100,000, a 9.6 percent increase³ (Table 2).

There has also been a shift in suicide death rates among age groups over time. The highest increases were seen in 15-24 year olds (31.6 percent) and 35-44 year olds (23.0 percent). Increases in the 5-14 year-old and 75-plus age groups were not statistically significant. The largest declines were in 55-64 year olds (24.8 percent) and 65-74 year olds (24.1 percent) (Table 2).

At the national level, suicide is the eighth leading cause of death. The age-adjusted mortality rate for suicide has decreased for the third consecutive year at the national level, declining 1.9 percent between 1997 and 1998⁴. During the same period Kansas' age-adjusted suicide rate increased 2.6 percent, although the increase was not statistically significant (Table 3). The 1998 Kansas age-adjusted suicide rate remained distant from the national Healthy People Target for year 2000 of 10.5 deaths per 100,000 population⁵. Between 1989 and 1998, Kansas had the eleventh highest death rate for ages 15-19, with 270 teens in this age range taking their own lives during this 10-year period⁶ (Table 4).

The current paper examines suicide deaths in Kansas from 1989 to 1998 in an attempt to identify populations most at risk. Following observations refer to that group of data unless stated otherwise. Text statements have been tested for statistical significance, and a statement that a certain rate or percent is higher or lower than another indicates that the difference is statistically significant unless specifically stated otherwise. Variables considered include age, gender, race, marital status, county of residence, urban / rural residence, and occupation of the individual, and method of commission.

Age

The numbers of suicide deaths were highest in the age groups from 15 to 39. However, because of the lower population numbers among the elderly, rates were highest above age 70. Males 75 and over were almost twice as likely to commit suicide as were males 15-39. For females, suicide rates were highest among individuals in the 35-44 and 45-54 age groups, although the differences among female age groups were not statistically significant (Figures 2 and 3).

In 1989, 1990, and 1994, Kansas' age-adjusted death rate for suicide was below that of the United States. Otherwise, over the past ten years, the Kansas age-adjusted rate has ranged from 0.9 to 15.4 percent higher than the national rate (Table 3).

Gender

From 1989 to 1998 in Kansas, 81.8 percent of those who committed suicide were males (Figure 4). Males experienced a greater number of suicide deaths and died from suicide at a higher rate in all age groups than did females. Suicide rates for males were especially high in the age groups above 70 (Table 4, Figures 2 and 3). Males were more likely than females to choose guns or explosives to commit suicide, with 68.4 percent of male suicide deaths being by these methods, compared to 42.7 percent of female suicide deaths. Conversely, 24.2 percent of female suicide deaths were attributed to drugs, chemicals, and liquids, as opposed to 5.5 percent of male suicide deaths by the same means (Table 5 and Figure 6).

It should be noted that, while the data in this paper are for suicide deaths only, females are known to attempt suicide in greater numbers than do males⁷. Therefore, it is not meant to suggest that suicide prevention efforts should be directed any less toward females than toward males.

Race

Suicides among whites accounted for 95.1 percent of all suicides. The racial distribution has changed little from 1981-1985 (96 percent). During 1989-1998 the suicide death rate for whites was 12.7 per 100,000, compared to 7.7 per 100,000 for blacks. The number of suicides among other races was too small to calculate reliable rates (Tables 6 and 7).

Marital Status

For 1989-1998, the suicide death rate was highest for divorced individuals, at 379.0 deaths per 100,000 population, compared to 213.8 for those never married, 175.4 for widowed, and 103.3 for married individuals. Among males, however, the rate was highest for those who were widowed, especially for younger widowers. The rate of 2076.1 for the 35-44 age group among males was significantly higher than rates in the older age groups, although it should be noted that that particular rate was based on a fairly small number of events.

Female suicide rates were highest for divorced individuals, but rates did not vary significantly among age groups. There was no significant difference between the suicide rates for females who were widowed and for those who had never been married. For both males and females, married individuals had the lowest suicide death rates, by a significant amount (Table 8, Figure 7).

County of Residence

Table 1 includes 5-year suicide death rates by county for 1989-1993 and 1994-1998. During the former five-year period only Wyandotte County had a rate which was statistically significantly higher than the state rate of 12.2 deaths per 100,000 population. Only Riley County had a rate significantly lower. For the latter five-year period (1994-1998), Barton and Shawnee were the counties significantly above the state rate (12.3), while Douglas and Johnson counties were significantly below. It must be noted, when using Table 1, that many Kansas counties had so few suicide deaths that confidence intervals for their rates are extremely large, making any meaningful comparison of rates between counties difficult.

Method of Commission

Guns were the most common method of suicide for males and females, accounting for 63.9 percent of all suicide deaths. After guns, the most common methods were hanging (13.5 percent), carbon monoxide and motor vehicle exhaust (9.8 percent), and drugs (8.9 percent). Over two thirds (68.3 percent) of male suicides and almost 44 percent (43.7) of female suicides involved guns. A significantly higher percentage of males killed themselves with guns, while a significantly higher percentage of females killed themselves with drugs (Table 5 and Figure 6).

Occupation and Type of Industry of Decedent

When looking at the occupation of those who committed suicide in Kansas from 1989 to 1998, no one occupation stands out. Four occupations, about evenly divided, accounted for 64.9 percent of suicide deaths: operators, fabricators, and laborers, at 18.5 percent; precision production, craft, and repair, at 16.5 percent; managerial and professional specialty, at 15.0 percent; and technical, sales, and administrative support, at 14.9 percent (Table 9, Figure 8). Similarly, those who committed suicide were from a variety of industries. Only two, manufacturing (15.2 percent) and construction (12.3 percent) accounted for over 10 percent of suicide deaths (Table 10, Figure 8).

Urban / Rural

There were no significant differences in suicide death rates in any age group between the urban group of counties (those with population density greater than or equal to 40.0 persons per square mile) and rural counties (population density less than 40.0 persons per square mile). While the rural rate for

suicide by gun (82.5 per 100,000 population) was higher than the urban rate (75.5), the difference was not statistically significant. The two methods of commission where there was a significant difference were drugs, with an urban rate of 12.8 compared to a rural rate of 7.1, and carbon monoxide and motor exhaust, with an urban rate of 13.5 compared to a rural rate of 8.8 (Table 11, Figure 9).

Figure 1.

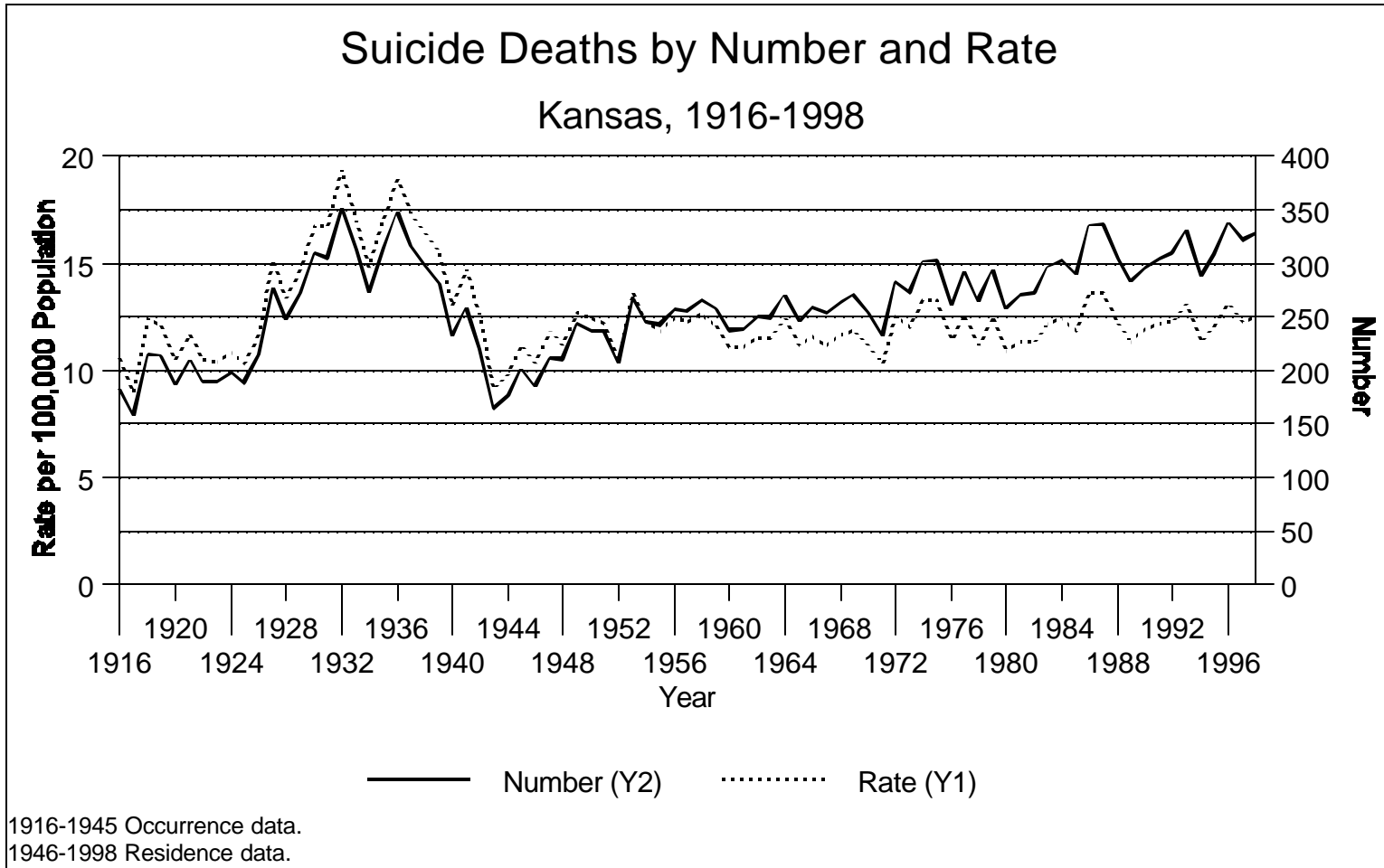


Table 1. 5-Year Suicide Death Rates* by County: Kansas, 1971-1975, 1981-1985, and 1989-1998

County of Residence	1971-1975**		1981-1985**		1989-1993		1994-1998	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Kansas.....	1,391	12.2	1,431	11.7	1,525	12.2	1,583	12.3
Allen.....	7	9.2	11	13.4	11	15.0	17	23.2
Anderson.....	3	7.0	6	13.4	5	12.7	11	27.5
Atchison.....	10	9.8	9	10.1	6	7.1	8	9.7
Barber.....	2	5.6	4	12.0	6	20.5	9	32.8
Barton.....	17	9.8	31	18.9	17	11.6	20	14.2
Bourbon.....	8	10.3	10	12.1	8	10.7	16	21.2
Brown.....	9	13.7	6	9.7	6	10.8	3	5.4
Butler.....	25	13.0	29	11.9	42	16.2	37	12.5
Chase.....	3	16.7	-	-	-	-	1	6.9
Chautauqua.....	7	27.4	6	22.6	2	9.2	3	13.7
Cherokee.....	11	9.9	14	12.5	16	14.8	15	13.4
Cheyenne.....	2	9.8	6	33.1	0	0.0	1	6.2
Clark.....	4	27.6	-	-	3	24.9	2	16.7
Clay.....	5	9.8	3	6.0	8	17.6	5	10.8
Cloud.....	9	12.9	8	13.0	8	14.6	8	15.5
Coffey.....	9	21.5	4	7.6	5	11.8	3	6.9
Comanche.....	1	7.0	2	16.1	-	-	-	-
Cowley.....	20	11.5	20	10.4	21	11.4	20	10.8
Crawford.....	32	16.7	23	12.1	34	19.0	29	16.0
Decatur.....	4	15.4	3	13.2	6	30.6	4	22.7
Dickinson.....	12	10.3	6	5.9	8	8.3	12	12.1
Doniphan.....	7	13.8	2	4.3	5	12.1	8	20.8
Douglas.....	29	10.1	25	7.2	37	8.9	32	7.1
Edwards.....	1	4.4	1	4.7	3	16.1	3	17.3
Elk.....	4	19.3	1	4.7	-	-	3	17.9
Ellis.....	7	5.9	15	11.0	15	11.5	10	7.6
Ellsworth.....	4	11.1	5	14.3	6	18.5	3	9.4
Finney.....	16	14.6	15	11.8	14	8.3	25	14.1
Ford.....	11	9.2	22	17.6	15	10.9	14	9.6
Franklin.....	17	16.6	13	11.5	14	12.6	11	9.3
Geary.....	19	15.7	21	13.9	20	13.1	26	18.9
Gove.....	2	9.8	1	5.2	1	6.1	-	-
Graham.....	-	-	4	20.3	2	11.5	1	6.1
Grant.....	2	5.9	7	18.5	1	2.8	7	17.9
Gray.....	1	4.2	1	3.7	3	11.0	1	3.7
Greeley.....	1	9.3	2	20.8	1	11.4	2	22.7
Greenwood.....	11	23.6	5	12.1	2	5.1	7	17.4
Hamilton.....	2	13.0	2	15.0	4	34.3	1	8.6
Harper.....	3	7.2	3	7.3	7	19.9	6	18.3
Harvey.....	17	12.2	10	6.3	18	11.6	18	11.2
Haskell.....	1	5.0	-	-	2	10.2	2	10.0
Hodgeman.....	1	7.2	-	-	2	18.3	1	8.9
Jackson.....	5	8.8	6	10.0	8	13.8	4	6.7
Jefferson.....	11	17.5	8	9.5	16	19.6	10	11.4
Jewell.....	3	9.7	2	7.9	1	4.8	1	5.1
Johnson.....	137	11.7	197	13.5	197	10.7	185	9.0
Kearny.....	1	6.2	-	-	3	14.8	3	14.3
Kingman.....	2	4.0	6	13.0	3	7.2	6	14.1
Kiowa.....	3	14.7	1	5.0	1	5.6	1	5.7
Labette.....	14	11.1	14	10.6	13	10.9	20	17.4
Lane.....	-	-	2	16.2	-	-	-	-
Leavenworth.....	31	12.7	34	12.3	50	15.0	30	8.6
Lincoln.....	1	4.1	4	19.9	2	11.3	3	17.7
Linn.....	5	12.0	2	4.7	2	4.8	10	22.5
Logan.....	4	21.1	4	22.6	2	12.9	3	19.4

Table 1. 5-Year Suicide Death Rates* by County: Kansas, 1971-1975, 1981-1985, and 1989-1998

County of Residence	1971-1975**		1981-1985**		1989-1993		1994-1998	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Lyon.....	14	9.3	10	5.5	20	11.6	19	11.1
Marion.....	11	14.2	7	10.4	1	1.6	4	6.1
Marshall.....	7	9.9	6	9.7	1	1.7	4	7.1
McPherson.....	15	12.1	12	8.6	10	7.3	14	10.1
Meade.....	2	7.9	1	4.2	3	14.1	2	9.1
Miami.....	9	8.7	17	15.3	14	11.7	14	10.9
Mitchell.....	4	9.8	3	7.1	4	11.1	1	2.8
Montgomery.....	29	13.0	22	9.9	19	9.8	25	13.4
Morris.....	-	-	-	-	3	9.5	3	9.6
Morton.....	2	11.1	1	5.6	1	5.8	-	-
Nemaha.....	4	6.4	6	11.0	4	7.6	5	9.7
Neosho.....	8	8.7	6	6.2	8	9.3	7	8.3
Ness.....	5	20.7	3	13.7	2	10.0	2	10.8
Norton.....	7	18.7	5	15.5	6	20.4	2	6.9
Osage.....	10	14.7	13	16.2	8	10.3	16	19.0
Osborne.....	5	15.3	8	28.1	3	12.3	4	17.2
Ottawa.....	5	15.6	2	6.7	4	14.2	2	6.9
Pawnee.....	9	21.9	9	22.7	9	23.9	4	10.7
Phillips.....	5	12.0	4	10.8	6	18.2	5	16.1
Pottawatomie.....	10	15.7	10	12.2	7	8.5	12	13.4
Pratt.....	4	8.3	9	16.4	6	12.3	7	14.4
Rawlins.....	4	17.9	6	31.1	-	-	1	6.2
Reno.....	40	11.8	33	9.9	45	14.3	51	16.2
Republic.....	10	23.7	9	24.4	4	12.4	6	19.4
Rice.....	7	11.7	6	10.4	10	19.0	8	15.7
Riley.....	26	13.2	23	6.9	25	7.6	27	8.2
Rooks.....	5	13.2	5	15.0	4	13.3	2	6.9
Rush.....	6	22.6	2	9.1	4	21.2	1	5.7
Russell.....	9	18.3	3	7.1	5	12.9	2	5.2
Saline.....	21	9.0	25	9.6	42	16.8	43	16.6
Scott.....	3	9.7	3	9.9	2	7.6	4	15.8
Sedgwick.....	229	13.7	229	12.2	236	11.5	306	14.2
Seward.....	9	10.9	10	11.1	11	11.7	5	5.1
Shawnee.....	111	13.1	105	13.1	125	15.3	132	16.0
Sheridan.....	2	10.2	1	5.5	2	13.2	2	14.4
Sherman.....	5	12.4	8	21.0	7	20.6	7	20.9
Smith.....	4	11.7	1	3.4	3	12.1	-	-
Stafford.....	3	9.7	2	7.3	4	15.3	4	15.6
Stanton.....	2	16.3	1	7.8	2	16.9	-	-
Stevens.....	2	8.8	2	7.9	2	7.9	3	11.3
Sumner.....	17	14.2	20	15.3	9	6.9	17	12.7
Thomas.....	2	5.1	4	9.2	-	-	6	14.6
Trego.....	2	8.6	3	15.0	6	32.9	1	5.9
Wabaunsee.....	3	8.9	3	8.6	5	15.2	5	15.0
Wallace.....	3	26.3	1	10.2	-	-	3	33.2
Washington.....	4	8.4	4	9.7	6	17.1	1	3.0
Wichita.....	2	10.9	1	6.8	3	21.7	2	14.5
Wilson.....	11	16.2	7	10.8	7	13.5	10	19.4
Woodson.....	3	12.0	1	4.5	3	15.0	1	5.0
Wyandotte.....	108	11.4	123	14.3	132	16.2	100	13.0

** Rate per 100,000 population

* Source: Annual Summary of Vital Statistics, Kansas, 1985. Office of Information Systems and Computing, Kansas Department of Health & Environment.

**Table 2. Suicide Death Rates* by Age-Group and Gender:
Kansas, 1981-1985 and 1994-1998**

Ages	1981-1985			1994-1998		
	Total	Male	Female	Total	Male	Female
All Ages						
Rate	12.9	20.9	5.3	12.3	20.5	4.2
Number ...	1,431	1,127	304	1,583	1,307	276
5-14						
Rate	0.8	1.2	0.2	1.3	2.0	0.5
Number ...	13	11	2	25	20	5
15-24						
Rate	11.7	19.1	3.9	15.4	25.9	4.2
Number ...	245	205	40	286	248	38
25-34						
Rate	16.7	26.2	6.9	17.1	28.9	5.2
Number ...	340	271	69	311	264	47
35-44						
Rate	13.5	20.7	6.4	16.6	26.9	6.2
Number ...	189	144	45	348	284	64
45-54						
Rate	17.7	25.4	10.2	13.6	21.2	6.2
Number ...	197	139	58	207	159	48
55-64						
Rate	14.9	23.7	6.9	11.2	16.9	6.0
Number ...	168	127	41	116	84	32
65-74						
Rate	16.6	31.0	5.4	12.6	23.8	3.4
Number ...	146	119	27	115	98	17
75+						
Rate	18.7	45.1	4.7	20.2	48.2	4.5
Number ...	133	111	22	174	149	25

* Rate per 100,000 population

Figure 2.

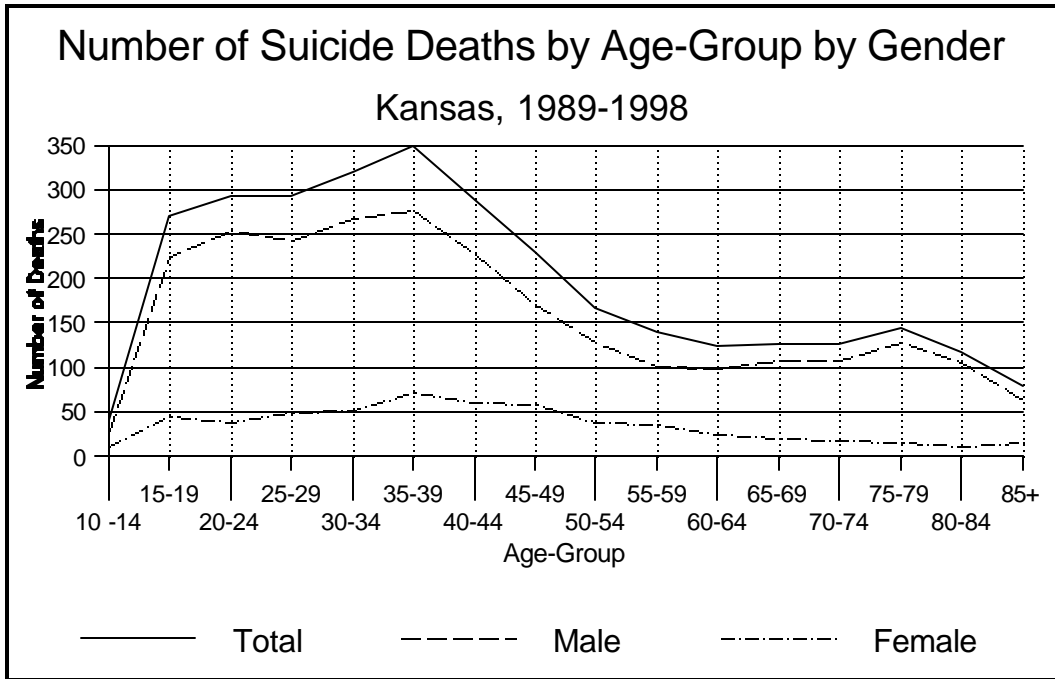


Figure 3.

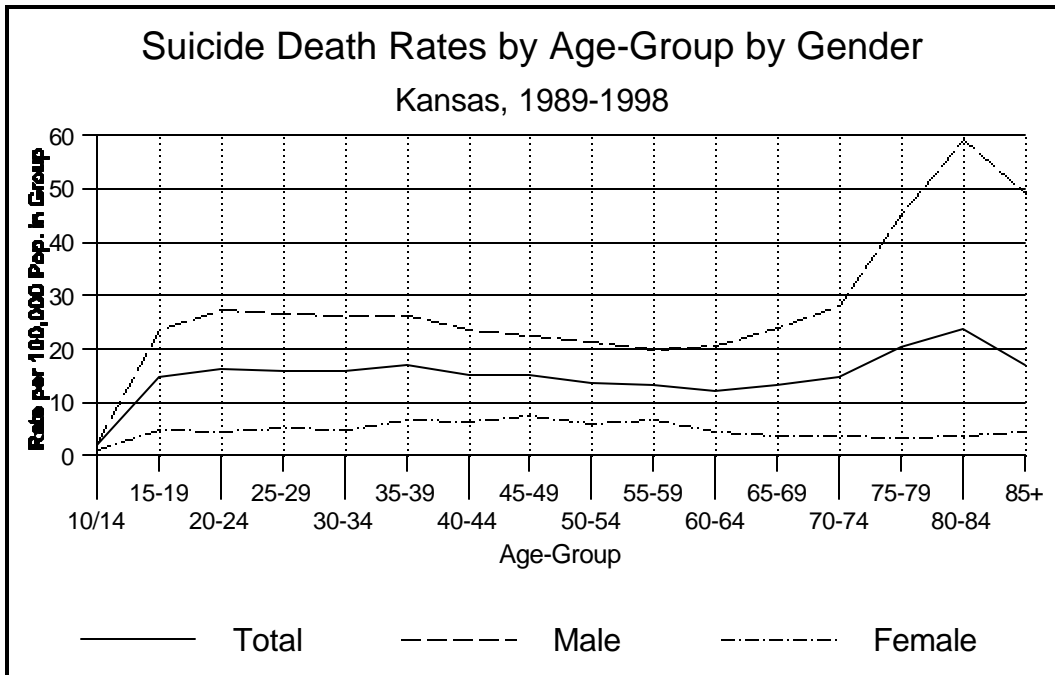


Table 3: Suicide Deaths by Number, Crude Rate*, and Age-Adjusted Rate: Kansas and the U.S., 1989-1998**

Year	Kansas			U.S.		
	Number of Deaths	Crude Rate	Age-Adj. Rate	Number of Deaths	Crude Rate	Age-Adj. Rate
1998	328	12.5	12.0	30,575	11.3	10.4
1997	321	12.3	11.7	30,535	11.4	10.6
1996	339	13.1	12.2	30,903	11.6	10.8
1995	307	11.9	11.4	31,284	11.9	11.3
1994	288	11.3	10.8	31,142	12.0	11.3
1993	332	13.1	12.4	31,102	12.1	11.4
1992	310	12.3	12.0	30,484	11.9	11.2
1991	304	12.2	11.8	30,810	12.2	11.3
1990	296	11.9	11.1	30,906	12.4	11.5
1989	283	11.4	10.9	30,232	12.2	11.4

* Rate per 100,000 population

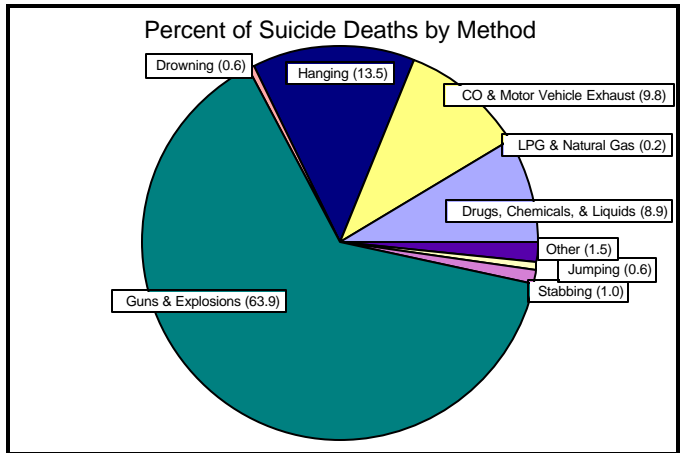
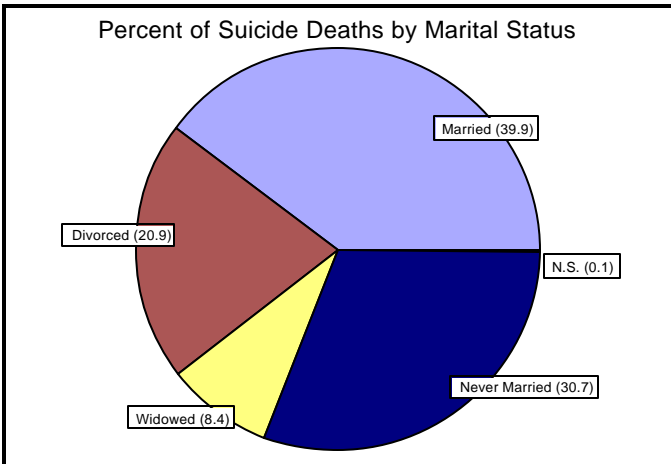
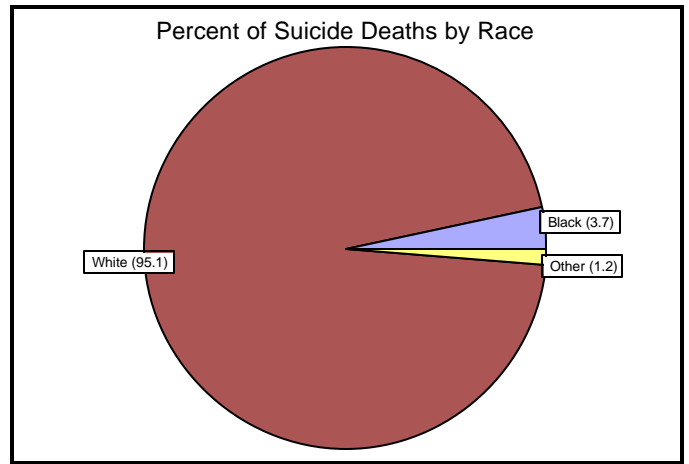
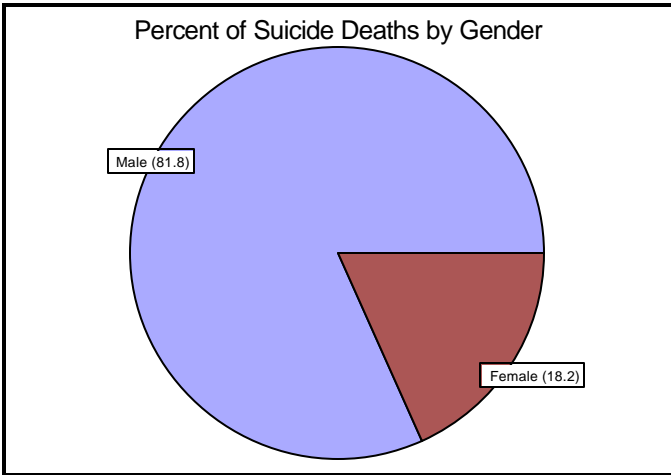
** Age-Adjusted to the standard 1940 population.

Source for U.S. data, except 1997 & 1998: <http://wonder.cdc.gov/wonder/usr/ano./ANONDE0A03BF24/WO511TSN.PCW.00.html>

Source for 1997 U.S. data: National Vital Statistics Reports, Vol. 47, No. 19

Source for 1998 U.S. data: National Vital Statistics Reports, Vol. 48, No. 11

Figure 4. Suicide Deaths
Percent Distribution by Selected Characteristics
Kansas, 1989-1998



**Table 4. Suicide Deaths, Numbers and Rates*
by Year by Age-Group and Gender: Kansas, 1989-1998**

Age-Group and Gender	1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1989-1998	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total	283	11.4	296	11.9	304	12.2	310	12.3	332	13.1	288	11.3	307	11.9	339	13.1	321	12.3	328	12.5	3108	12.2
male	226	18.7	244	20.1	254	20.7	240	19.4	271	21.7	232	18.5	254	20.1	278	21.9	266	20.8	277	21.4	2542	20.3
female	57	4.5	52	4.1	50	3.9	70	5.5	61	4.7	56	4.3	53	4.0	61	4.6	55	4.2	51	3.8	566	4.4
10-14	4	2.3	2	1.1	2	1.1	5	2.6	3	1.5	4	2.0	2	1.0	4	2.0	8	4.0	7	3.5	41	2.1
male	3	3.3	2	2.2	2	2.1	1	1.0	1	1.0	2	1.9	2	1.9	3	2.9	7	6.8	6	5.8	29	2.9
female	1	1.2	-	-	-	-	4	4.3	2	2.1	2	2.1	-	-	1	1.0	1	1.0	1	1.0	12	1.3
15-19	23	13.2	19	11.1	31	18.4	28	16.3	28	15.8	24	13.1	28	14.7	32	16.2	24	11.8	33	15.7	270	14.6
male	19	21.2	15	17.0	26	30.0	22	24.9	24	26.4	19	20.1	23	23.5	28	27.7	21	20.1	29	26.9	226	23.8
female	4	4.7	4	4.8	5	6.1	6	7.2	4	4.6	5	5.6	5	5.4	4	4.2	3	3.0	4	3.9	44	4.9
20-24	24	13.2	28	15.4	28	15.3	32	17.5	36	19.9	22	12.4	40	22.9	28	16.4	26	15.0	29	16.2	293	16.4
male	21	22.2	26	27.6	23	24.2	28	29.6	28	30.0	20	21.7	34	37.5	26	29.5	23	25.8	25	27.2	254	27.5
female	3	3.4	2	2.3	5	5.7	4	4.5	8	9.2	2	2.3	6	7.1	2	2.4	3	3.6	4	4.6	39	4.5
25-29	35	16.7	32	16.0	32	16.7	26	14.1	26	14.7	35	20.1	26	15.0	30	17.3	32	18.6	19	11.2	293	16.1
male	27	25.6	25	24.8	29	29.9	23	24.8	20	22.4	29	33.1	20	22.9	25	28.7	29	33.8	17	20.1	244	26.6
female	8	7.7	7	7.1	3	3.2	3	3.3	6	6.8	6	7.0	6	7.0	5	5.8	3	3.5	2	2.4	49	5.4
30-34	32	15.2	30	14.1	29	13.7	29	13.8	30	14.4	37	18.0	32	16.0	25	13.0	36	19.6	39	22.0	319	15.9
male	29	27.4	27	25.4	23	21.6	17	16.0	28	26.7	32	30.9	28	27.8	20	20.8	29	31.6	35	39.4	268	26.5
female	3	2.9	3	2.8	6	5.7	12	11.5	2	1.9	5	4.9	4	4.0	5	5.2	7	7.6	4	4.5	51	5.1
35-39	25	13.2	39	19.9	40	19.9	42	20.3	27	12.8	33	15.5	34	15.8	38	17.7	39	18.3	33	15.5	350	16.9
male	21	21.9	36	36.3	29	28.5	32	30.6	17	15.9	27	25.0	31	28.4	30	27.5	25	23.1	30	27.8	278	26.5
female	4	4.2	3	3.1	11	11.1	10	9.8	10	9.6	6	5.7	3	2.8	8	7.5	14	13.3	3	2.9	72	7.0
40-44	19	11.8	28	16.6	14	7.9	25	13.8	31	16.6	32	16.6	22	11.0	46	22.4	33	15.8	38	17.8	288	15.2
male	12	14.9	20	23.6	12	13.3	19	20.8	23	24.5	26	26.7	19	18.9	38	36.8	28	26.5	30	27.8	227	23.7
female	7	8.8	8	9.6	2	2.3	6	6.7	8	8.7	6	6.3	3	3.0	8	7.9	5	4.8	8	7.6	61	6.5
45-49	20	16.0	17	13.3	20	15.4	24	16.8	27	18.1	20	12.7	21	12.7	26	14.8	24	13.6	31	17.0	230	15.0
male	13	21.0	12	18.9	14	21.7	20	28.2	22	29.7	16	20.5	15	18.3	16	18.4	18	20.5	26	28.8	172	22.6
female	7	11.1	5	7.7	6	9.2	4	5.6	5	6.7	4	5.1	6	7.2	10	11.3	6	6.7	5	5.4	58	7.5
50-54	13	12.1	13	12.1	17	15.6	21	18.7	18	15.2	12	9.8	17	13.4	12	9.3	20	14.2	24	16.4	167	13.7
male	7	13.3	8	15.2	16	30.1	17	30.9	13	22.5	6	10.0	13	21.0	12	19.0	17	24.7	20	27.8	129	21.6
female	6	11.0	5	9.1	1	1.8	4	7.0	5	8.3	6	9.6	4	6.2	-	-	3	4.2	4	5.3	38	6.1
55-59	13	12.5	13	12.6	20	19.7	14	13.8	12	11.7	9	8.6	15	14.3	12	11.2	12	11.0	19	16.5	139	13.2
male	10	19.9	9	18.1	18	36.8	10	20.5	8	16.2	5	9.9	11	21.7	8	15.5	10	18.9	13	23.4	102	20.1
female	3	5.5	4	7.5	2	3.8	4	7.6	4	7.5	4	7.4	4	7.4	4	7.2	2	3.5	6	10.1	37	6.8
60-64	20	18.8	9	8.6	15	14.4	10	9.7	21	20.7	10	10.0	9	9.1	16	16.3	6	6.2	8	8.1	124	12.2
male	17	33.7	7	14.0	12	24.2	6	12.2	21	43.4	10	20.9	7	14.7	9	19.2	6	12.9	5	10.6	100	20.7
female	3	5.3	2	3.6	3	5.5	4	7.4	-	-	-	-	2	3.9	7	13.7	-	-	3	5.9	24	4.5

**Table 4. Suicide Deaths, Numbers and Rates*
by Year by Age-Group and Gender: Kansas, 1989-1998**

Age-Group and Gender	1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1989-1998	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
65-69	11	10.9	14	13.9	11	11.0	12	12.2	11	11.2	10	10.3	10	10.4	17	17.8	19	20.3	12	13.1	127	13.1
male	11	24.0	11	23.8	9	19.6	8	17.6	11	24.3	7	15.7	9	20.4	15	34.3	16	37.3	10	23.9	107	24.0
female	-	-	3	5.5	2	3.7	4	7.5	-	-	3	5.7	1	1.9	2	3.9	3	5.9	2	4.0	20	3.8
70-74	16	19.3	16	19.1	12	14.1	11	12.7	24	27.3	11	12.5	12	13.5	9	10.3	11	12.7	4	4.6	126	14.6
male	11	31.3	13	36.5	11	30.2	10	26.7	21	54.9	9	23.3	12	30.5	7	18.0	9	23.3	4	10.3	107	28.4
female	5	10.5	3	6.2	1	2.1	1	2.0	3	6.0	2	4.0	-	-	2	4.1	2	4.2	-	-	19	3.9
75-79	11	16.3	15	22.1	18	26.2	15	21.7	20	29.0	14	20.0	15	21.2	15	20.8	11	15.0	9	12.1	143	20.4
male	11	41.7	13	48.8	17	62.6	13	47.2	18	65.2	12	42.9	12	42.1	15	51.1	10	33.1	7	22.7	128	45.4
female	-	-	2	4.9	1	2.4	2	4.8	2	4.8	2	4.8	3	7.1	-	-	1	2.3	2	4.6	15	3.6
80-84	9	19.0	14	29.1	8	16.4	9	18.3	7	14.0	8	16.0	14	27.6	20	39.0	12	23.3	17	33.0	118	23.7
male	8	48.4	14	83.5	6	35.1	8	46.0	6	33.6	6	33.2	10	54.3	20	106.7	12	63.5	16	84.2	106	59.3
female	1	3.2	-	-	2	6.3	1	3.1	1	3.1	2	6.3	4	12.4	-	-	-	-	1	3.1	12	3.8
85 and over	8	19.4	7	16.6	7	16.0	7	15.5	11	23.8	7	14.8	9	18.7	9	18.4	8	16.1	6	11.9	79	17.1
male	6	53.1	6	51.8	7	58.5	6	48.1	10	78.2	6	45.6	7	51.8	6	43.4	6	42.2	4	27.3	64	49.4
female	2	6.7	1	3.3	-	-	1	3.1	1	3.0	1	2.9	2	5.8	3	8.6	2	5.7	2	5.6	15	4.5

* Rate per 100,000 population in specified group

Table 5. Suicide Deaths by Year by Method by Gender: Kansas, 1989-1998

Method and Gender	Year										1989-1998
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Total	283	296	304	310	332	288	307	339	321	328	3108
Male	226	244	254	240	271	232	254	278	266	277	2542
Female	57	52	50	70	61	56	53	61	55	51	566
Drugs, Chemicals, & Liquids	25	24	21	29	32	34	27	27	31	27	277
Male	12	11	9	16	16	18	16	13	17	12	140
Female	13	13	12	13	16	16	11	14	14	15	137
LPG & Natural Gas	1	1	-	1	-	-	1	-	-	1	5
Male	1	1	-	1	-	-	1	-	-	1	5
Female	-	-	-	-	-	-	-	-	-	-	-
CO & Motor Vehicle Exhaust	38	27	29	27	41	21	26	34	27	34	304
Male	26	19	19	23	28	16	19	25	21	29	225
Female	12	8	10	4	13	5	7	9	6	5	79
Hanging	33	33	34	40	32	39	40	53	68	47	419
Male	25	30	30	31	23	32	36	44	60	38	349
Female	8	3	4	9	9	7	4	9	8	9	70
Drowning	-	2	-	1	2	-	5	4	3	1	18
Male	-	-	-	-	2	-	2	4	1	-	9
Female	-	2	-	1	-	-	3	-	2	1	9
Guns & Explosions	179	202	212	207	217	188	191	206	181	203	1986
Male	158	179	188	165	197	162	166	178	160	186	1739
Female	21	23	24	42	20	26	25	28	21	17	247
Stabbing	2	4	2	1	5	3	4	3	4	4	32
Male	1	2	2	1	5	3	4	3	3	3	27
Female	1	2	-	-	-	-	-	-	1	1	5
Jumping	1	1	1	2	-	1	5	5	1	3	20
Male	1	1	1	2	-	-	4	5	1	2	17
Female	-	-	-	-	-	1	1	-	-	1	3
Other	4	2	5	2	3	2	7	7	6	8	46
Male	2	1	5	1	-	1	6	6	3	6	31
Female	2	1	-	1	3	1	1	1	3	2	15
Late Effects of Self-Injury	-	-	-	-	-	-	1	-	-	-	1
Male	-	-	-	-	-	-	-	-	-	-	-
Female	-	-	-	-	-	-	1	-	-	-	1

Figure 5.

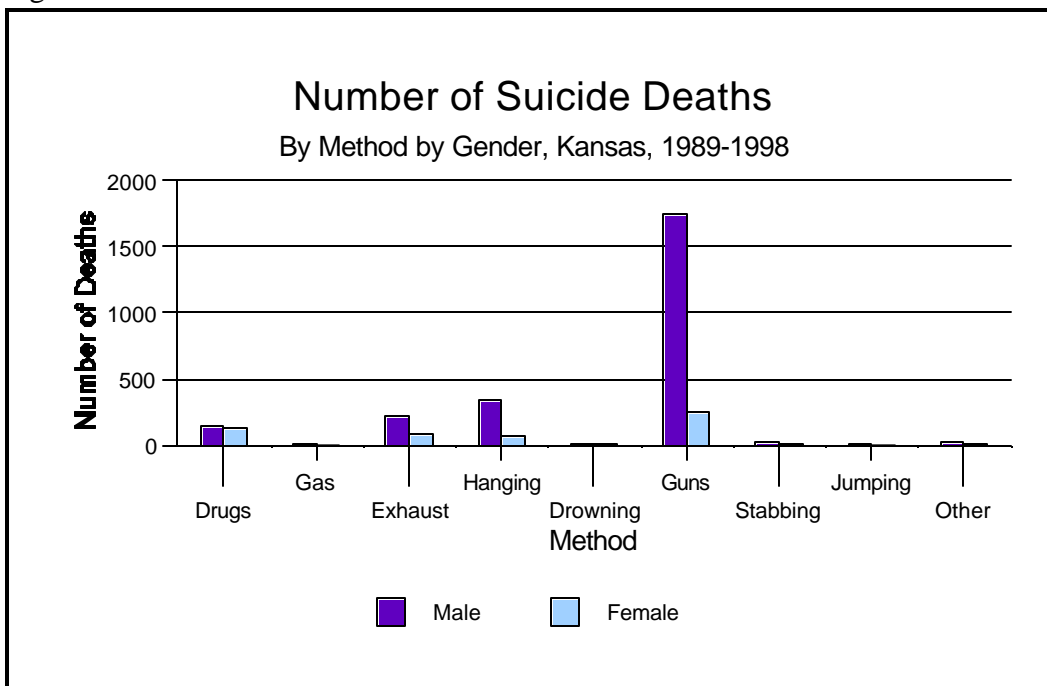


Figure 6.

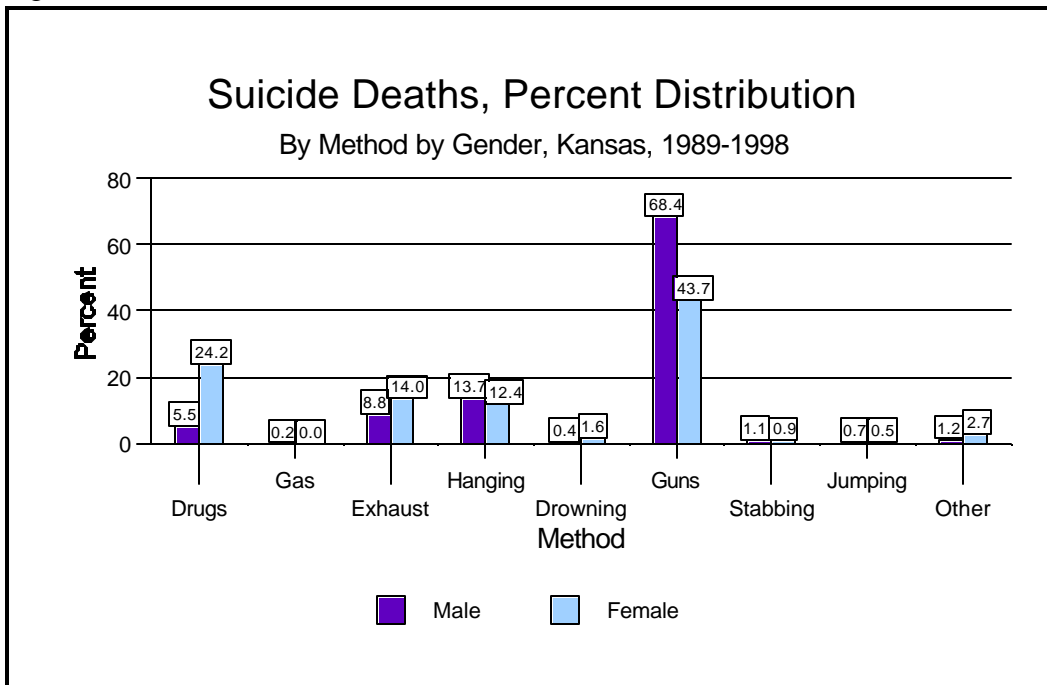


Table 6. Suicide Deaths by Year by Race and Hispanic Origin* by Gender: Kansas, 1989-1998

Race and Gender	Year										1989-1998
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Total	283	296	304	310	332	288	307	339	321	328	3,108
Male	226	244	254	240	271	232	254	278	266	277	2,542
Female	57	52	50	70	61	56	53	61	55	51	566
White	265	283	291	301	312	276	288	317	304	307	2,954
Male	215	234	245	233	258	223	245	261	251	259	2,424
Female	50	49	46	68	54	53	53	56	53	48	530
Black	13	10	11	9	15	8	7	16	12	14	115
Male	8	8	8	7	12	7	7	13	11	12	93
Female	5	2	3	2	3	1	-	3	1	2	22
Other	5	3	2	-	5	4	2	6	4	7	38
Male	3	2	1	-	1	2	2	4	4	6	25
Female	2	1	1	-	4	2	-	2	-	1	13
N.S.	-	-	-	-	-	-	-	-	1	-	1
Male	-	-	-	-	-	-	-	-	-	-	-
Female	-	-	-	-	-	-	-	-	1	-	1
Hispanic Origin	3	8	8	3	8	5	8	5	13	10	71
Male	3	8	8	2	6	5	5	3	12	10	62
Female	-	-	-	1	2	-	3	2	1	-	9

*Hispanic origin may be of any race.

Table 7. Suicide Death Rates* by Year by Race

Race	Year										1989-1998
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Total	11.3	11.9	12.2	12.3	13.1	11.3	11.9	13.2	12.4	12.5	12.2
White	11.6	12.4	12.7	13.0	13.4	11.8	12.6	13.4	12.8	12.8	12.7
Black	9.1	6.9	7.5	6.0	10.0	5.3	4.6	10.6	7.9	9.0	7.7

* Rates per 100,000 population in specified racial group. Rates not included for "Other race" category due to the small number of occurrences. Rates based on small numbers of events tend to be unreliable due to large random variation.

Figure 7.

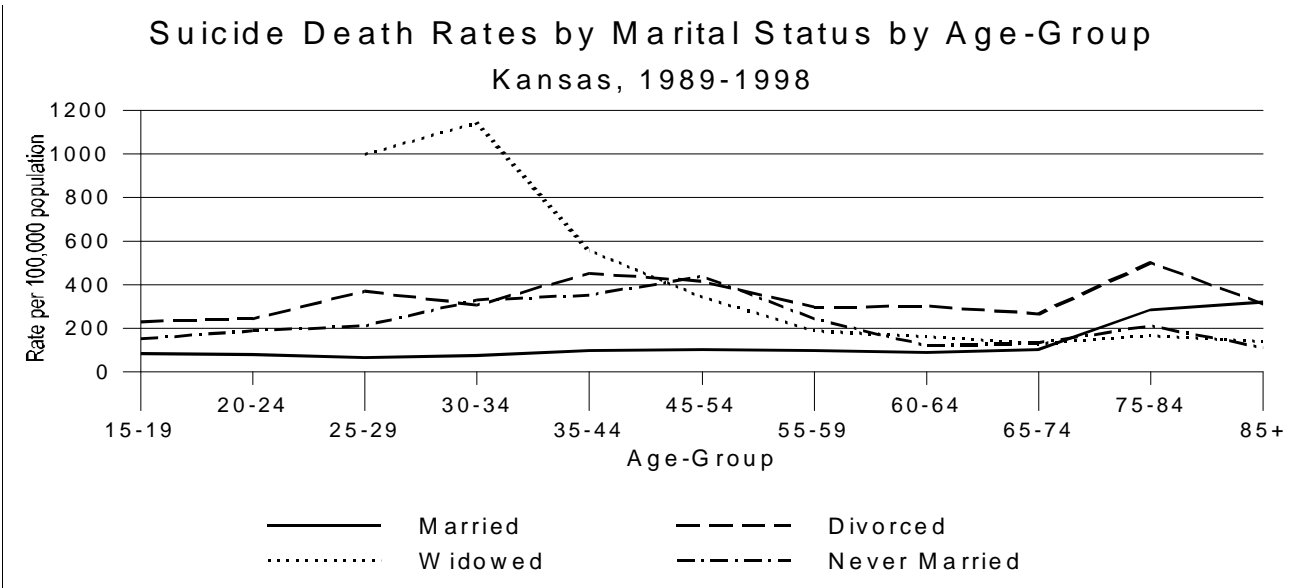


Table 8. Suicide Death Rates* by Gender and Marital Status by Age-Group: Kansas, 1989-1998

Gender and Marital Status	Age-Group											Total
	15-19	20-24	25-29	30-34	35-44	45-54	55-59	60-64	65-74	75-84	85+	
Total												
Married	87.3	83.6	69.5	75.7	98.9	103.0	99.2	88.1	105.8	284.9	320.9	103.3
Divorced	229.4	246.8	373.5	306.7	453.1	417.6	301.8	304.2	267.0	504.2	314.5	379.0
Widowed	**	**	1000.0	1146.8	559.7	345.2	189.7	162.0	129.6	166.6	139.6	175.4
Never Married ..	154.6	188.6	211.6	330.1	353.9	440.4	244.7	123.8	137.0	214.2	111.2	213.8
Male												
Married	204.3	174	123.4	132.8	152.0	158.8	154.0	147.1	170.3	458.5	465.0	171.3
Divorced	**	506.7	641.4	516.9	752.9	689.3	475.2	599.3	630.2	1342.3	1185.8	663.2
Widowed	**	**	**	**	2076.1	1041.7	604.8	512.5	620.8	951.4	627.3	819.5
Never Married ..	248.9	286.1	305.6	467.8	529.8	682.4	331.4	213.6	286.7	529.1	359.7	330.4
Female												
Married	40.7	23.2	23.4	22.2	44.4	45.1	42.7	24.7	31.2	41.7	31.2	34.8
Divorced	318.5	115.9	169.3	122.3	202.0	213.0	174.5	96.1	44.6	106.2	0.0	163.2
Widowed	**	**	520.8	436.0	142.7	206.9	112.5	96.2	43.9	32.1	51.1	59.5
Never Married ..	50.8	51.7	56.5	103.3	88.0	98.8	127.7	0.0	0.0	50.1	46.7	63.5

* Rate per 100,000 population in specified group.

** Rate does not meet standards of statistical reliability (designated whenever the denominator is less than 200).

Rates were figured using population figures adjusted from the 1990 U.S. Census figures for Kansas to the 1989-1998 average Kansas population.

Table 9. Suicide Deaths by Occupation of Decedent: Kansas 1989-1998

Occupation of Decedent	Number of Suicide Deaths										1989 -1998	
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Number	Percent
Total	283	296	304	310	332	288	307	339	321	328	3,108	100.0
Housewives	17	17	11	22	13	17	17	12	14	12	152	4.9
Managerial and Professional Specialty	46	40	50	51	39	39	46	54	52	51	468	*15.0
Technical, Sales and Administrative Support	34	53	46	40	60	54	42	53	39	41	462	14.9
Operators, Fabricators, and Laborers	62	61	67	52	54	40	48	66	59	65	574	18.5
Farming, Forestry and Fishing	22	17	18	22	24	18	23	28	31	17	220	7.1
Precision Production, Craft, and Repair	38	45	52	49	52	50	57	54	55	62	514	16.5
Service Workers	20	25	12	16	31	21	27	27	22	26	227	7.3
No Occupation	9	9	10	10	5	13	6	13	11	9	95	3.1
Students	31	21	28	41	44	25	28	24	29	35	306	9.8
Other and Not Stated	4	8	10	7	10	11	13	8	9	10	90	2.9

* rounded down to add to 100.0 percent

Table 10. Suicide Deaths by Type of Industry of Decedent: Kansas, 1989-1998

Type of Industry	Number of Suicide Deaths by Year										1989-1998	
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Number	Percent
Total	283	296	304	310	332	288	307	339	321	328	3,108	100.0
Professional Services	29	31	29	28	27	32	36	23	26	34	295	9.5
Agriculture, Forestry and Fisheries	20	17	18	24	23	18	24	29	33	19	225	7.2
Manufacturing	45	45	56	41	56	38	37	64	40	51	473	15.2
Retail Trade	21	30	20	19	34	34	29	33	27	31	278	8.9
Transportation, Communications, and Public Utilities	21	23	31	24	26	18	19	30	26	25	243	7.8
Construction	38	39	30	34	31	31	45	43	42	48	381	12.3
Public Administration	15	18	7	6	12	12	6	11	9	13	109	3.5
Business and Repair Services	15	15	18	17	12	15	16	17	18	18	161	5.2
Personal Services	2	3	3	3	11	4	5	5	2	7	45	1.4
Finance, Insurance, and Real Estate	6	7	11	9	8	12	9	9	12	5	88	2.8
Wholesale Trade	6	8	13	18	11	7	8	9	12	7	99	3.2
Mining	2	3	7	5	4	-	7	6	7	1	42	1.4
Entertainment and Recreation Services	2	2	2	3	3	1	1	-	1	-	15	0.5
Other and Not Stated ..	61	55	59	79	74	66	65	60	66	69	654	21.0

Figure 8. Suicide Deaths
Percent Distribution by Selected Characteristics
Kansas, 1989-1998

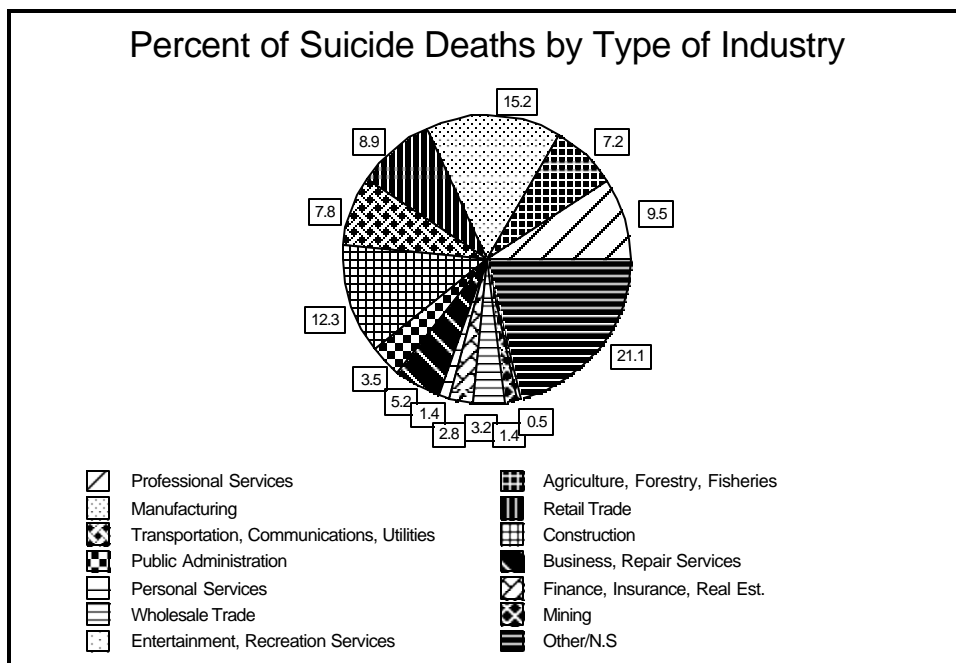
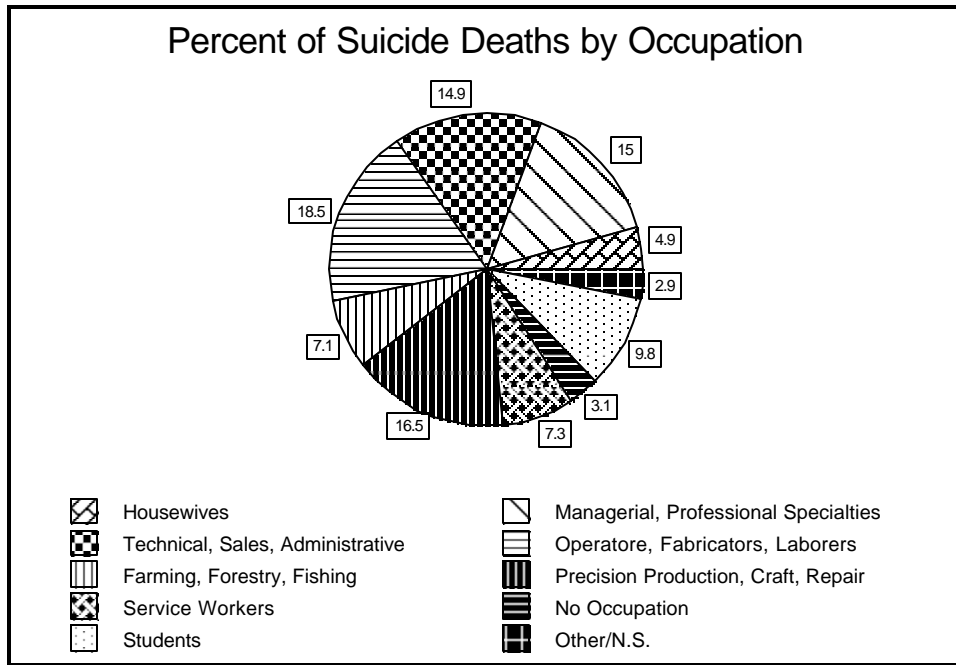


Table 11. Suicide Death Rates* by Method by Urban/Rural Counties: Kansas, 1989-1998

Urban/Rural Counties	Drugs, Chemicals	LPG Gas	CO/Motor Exhaust	Hanging	Drowning	Guns/Explosions	Stabbing	Jumping	Other	Late Effects
Urban **	12.8	0.2	13.5	16.6	0.6	75.5	1.4	0.9	1.9	0.0
Rural **	7.1	0.1	8.8	16.4	0.8	82.5	1.0	0.5	1.7	0.1

* Rate per 100,000 population. Average population per age group figured for 1990-1998 because of unavailability of 1989 data. Source: www.census.gov/population/estimates/statepop.html

** Rural counties are defined as those with population density less than 40.0 persons per square mile. Urban counties are those with population density of 40.0 or more persons per square mile.

Figure 9.

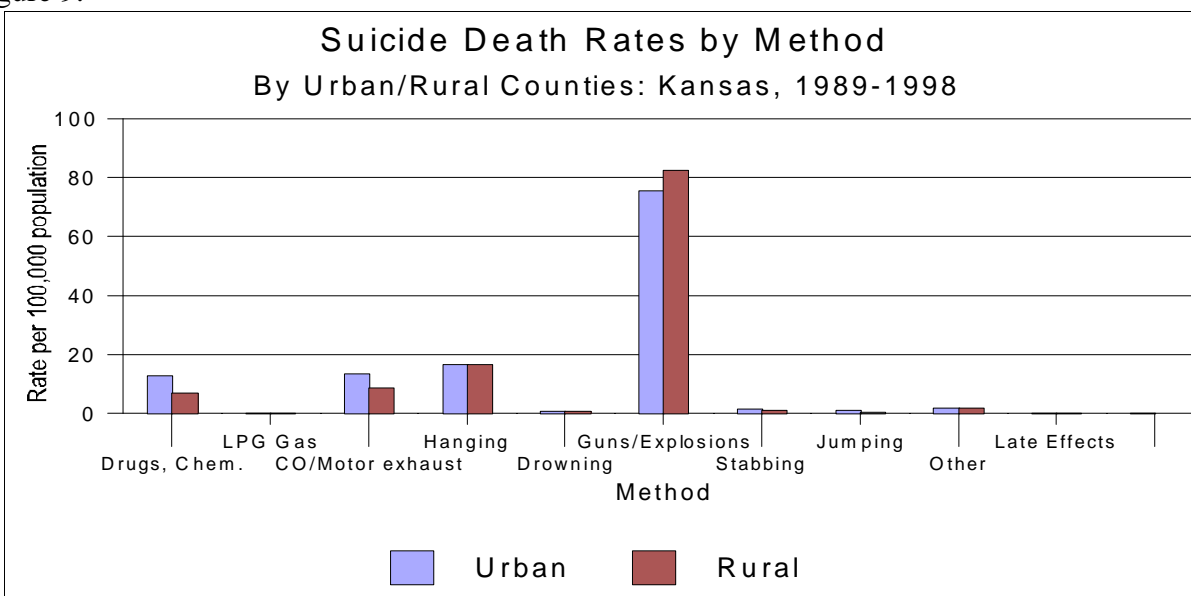
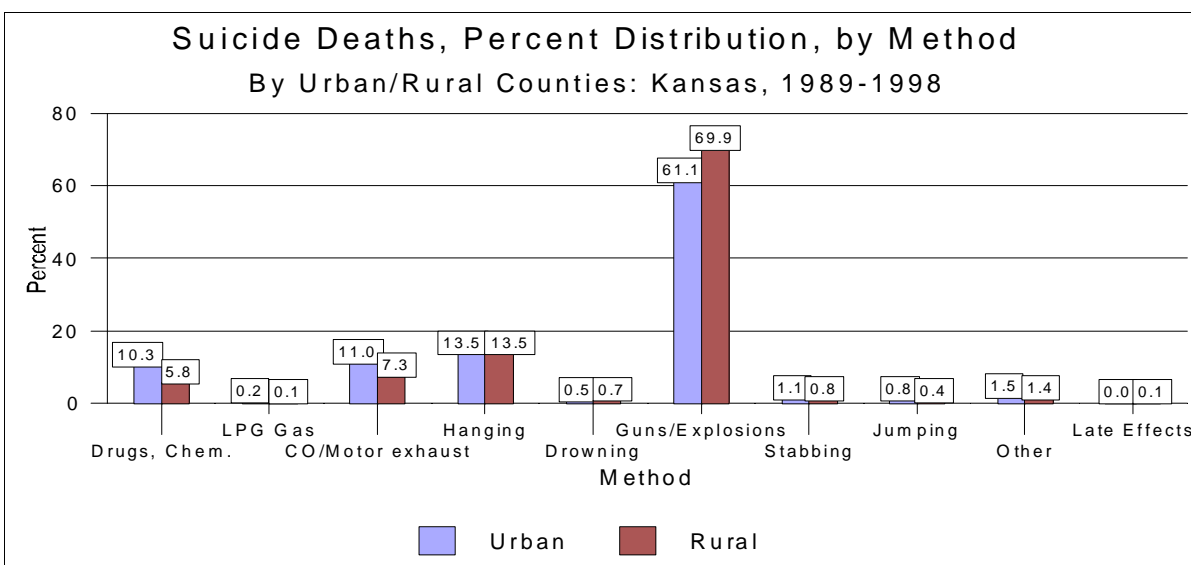


Figure 10.



Technical Notes

Registration and Quality

The reporting of Kansas vital events to the Kansas Department is mandated by law and is considered nearly 100 percent complete. The quality of the analyses depends on the completeness and accuracy of the certificates filed.

Cause-of-Death Classification

The suicide statistics presented were coded in accordance with the **International Classification of Diseases, Ninth Revision, (ICD-9), 1979** (World Health Organization), E950-E959. Accuracy of causes of death are dependent on the completeness of the information provided by the physician or coroner concerning immediate and underlying causes of death. The “underlying cause of death” is the cause considered responsible for the sequence of events leading directly to death. The MICAR (Mortality Medical Indexing Classification and Retrieval) computerized system is used to convert the exact disease terms reported on the death certificate to ICD codes. Once the appropriate codes are tabulated for a death, the codes are analyzed by the Automated Classification of Medical Entities(ACME) system as specified by the National Center for Health Statistics. Subsequently, a final underlying cause of death is assigned to each death.

Residence Data

Residence data is information compiled according to the usual residence regardless of where the event occurred (including events occurring out-of-state).

Rate reliability

Vital statistics may be influenced by random variation and single years rates can fluctuate widely. Rates can vary widely when based on a small numbers of events in sparsely populated areas. In some instances a multiple-year rate such as a five- or ten- year average of single year rates would be more accurate in formulating conclusions on vital events. A five- or ten-year rate smooths some of the variation in single-year rates and would be more reliable indicator of mortality rates.

Race/Ethnicity

Please note that persons of Hispanic origin are those who classified themselves as Mexican, Puerto Rican, Cuban, Central or South American or other and unknown Spanish in response to questions asked on the Kansas birth certificate. Hispanic origin is not a race. It can be viewed as the ancestry or country of birth of the person or the person’s parents or ancestors before their arrival in the United States. Persons of Hispanic origin may be of any race.

Rural / Urban Counties

The designation of urban or rural county is an arbitrary division between counties with population density of 40.0 and greater and those with population density of less than 40.0, based on the population groupings used in the 1999 Kansas County Health Profile User's Guide, published by the Office of Local and Rural Health. For purposes of this paper, urban counties include those defined in the Guide as semi-urban (40.0-149.9 persons per square mile) and urban (150.0 or more). Rural counties include those defined as frontier (less than 6.0 persons per square mile), rural (6.0-19.9 persons), and densely-settled rural (20.0-39.9 persons). Neither the Guide's definitions nor those used in this paper should be confused with the U.S. Census Bureau's definitions.

Marital Status

Population estimates used in the calculation of rates were obtained from the U.S. Census Bureau's web site at www.census.gov/population/www/estimates/statepop.html, with the exception of those used to calculate rates for marital status. In that case, population figures were adjusted from those published in the U.S. Census Bureau's 1990 Census of Population, General Population Characteristics, Kansas, p. 92, using the following formula:

$$X = (A * 2,545,091) / 2,477,574$$

where X is the adjusted 1989-1998 population number for the marital status group
 A is the population number in that group in the 1990 U.S. Census
 2,545,091 is the average population of Kansas (1989-1998)
 2,477,574 is the population of Kansas from the 1990 U.S. Census

Confidence Intervals and Significance Tests

Since more than 99 percent of all births and deaths are registered, the number of vital events reported for Kansas is essentially a complete count. Although these numbers are not subject to sampling errors, they may be affected by non sampling errors such as mistakes in recording the mother's residence or age during the registration process.

The potential impact of variation increases as the number of events decreases. This makes resulting rates subject to volatility, and requires caution when comparing to rates from other populations, geographic areas, and time periods.

The 95 percent confidence interval is the range of values for the number of events, rates or percent of events that you could expect in 95 out of 100 cases (95 out of 100 rule). The confidence limits are the end points of this range of values (the highest and lowest values). Confidence limits for numbers, rates

and percents can be estimated from the actual number of events. Procedures differ for rates and percent calculations and also differ depending on the number of events on which the statistics are based.

Confidence limits are important in determining whether one rate is “significantly” different from another. The term “significantly” refers to whether or not the difference between two rates indicates a small probability (< 5%) the difference might have occurred by chance.

Confidence limits specify the degree of certainty that can be placed on a given number or rate. Similarly statistical significance tests try to specify how often a difference between two rates could be expected based on chance alone.

If the difference between two rates would occur due to variability less than 5 times out of 100, the difference is statistically significant at the 95% level. In essence, there is a 95 percent level of confidence the difference is not due to the chance variability in the rates or the number of events on which the rates are based.

On the other hand, if the difference would occur more than 5 times out of 100, then the difference is not statistically significant. If the level of certainty is only 50 percent, or even 94 percent, the difference could not occur by chance, then the difference is not statistically significant. There must be a 95 percent level of confidence when the 95 percent significance test is used.

Computing confidence limits, and ultimately statistical significance, for pairs of rates varies depending on the number of events on which each rate was created. The procedures are listed below.

Confidence limits for rates based on less than 100 events

When the numerator’s number of events is less than 100, the confidence interval for a rate can be estimated using the two formulas which follow and the values in Table 8 .

$$\text{Lower limit} = R \times L$$

$$\text{Upper limit} = R \times U$$

where:

- R = the rate (birth rate, mortality rate, etc.)
- L = the value in Table 12 that corresponds to the number N in the numerator of the rate
- U = the value in Table 12 that corresponds to the number N in the numerator of the rate

Confidence limits for rates when the numerator is 100 or more

In this case, use the following formula for the rate R based on the number of events N:

$$\begin{aligned} \text{Lower limit} &= R - [1.96 \times (R / N)] \\ \text{Upper limit} &= R + [1.96 \times (R / N)] \end{aligned}$$

where:

$$\begin{aligned} R &= \text{the rate (birth rate, mortality rate, etc.)} \\ N &= \text{the number of events (births, deaths, etc.)} \end{aligned}$$

Significance test when at least one of the rates is based on fewer than 100 events

To compare two rates, when one or both of those rates are based on less than 100 events, first compute the confidence intervals for both rates. Then check to see if those intervals overlap. If they do overlap, the difference is not statistically significant at the 95-percent level. If they do not overlap, the difference is indeed “statistically significant.”

Significance test when both rates are based on 100 or more events

To compare two rates when both are based on 100 or more events, first calculate the difference between the two rates by subtracting the lower rate from the higher rate. This difference is considered statistically significant if it exceeds the statistic in the formula below. This statistic equals 1.96 times the standard error for the difference between two rates.

$$1.96 \sqrt{\frac{R_1^2}{N_1} + \frac{R_2^2}{N_2}}$$

where:

$$\begin{aligned} R_1 &= \text{the first rate} \\ R_2 &= \text{the second rate} \\ N_1 &= \text{the first number of events} \\ N_2 &= \text{the second number of events} \end{aligned}$$

- If the difference is greater than this statistic, then the difference would occur by chance less than 5 times out of 100. The difference is statistically significant at the 95 percent confidence level.
- If the difference is less than this statistic, the difference might occur by chance more than 5 times out of 100. The difference is not statistically significant at the 95 percent confidence level.

**Table 12. Values of Lower (L) and Upper (U) Limits for Calculating
95 % Confidence Limits for Numbers of Events and Rates
When the Number of Events Is Less Than 100**

N	L	U	N	L	U
1	0.02532	5.57164	50	0.74222	1.31838
2	0.12110	3.61234	51	0.74457	1.31482
3	0.20622	2.92242	52	0.74685	1.31137
4	0.27247	2.56040	53	0.74907	1.30802
5	0.32470	2.33367	54	0.75123	1.30478
6	0.36698	2.17658	55	0.75334	1.30164
7	0.40205	2.06038	56	0.75539	1.29858
8	0.43173	1.97040	57	0.75739	1.29562
9	0.45726	1.89831	58	0.75934	1.29273
10	0.47954	1.83904	59	0.76125	1.28993
11	0.49920	1.78928	60	0.76311	1.28720
12	0.51671	1.74680	61	0.76492	1.28454
13	0.53246	1.71003	62	0.76669	1.28195
14	0.54671	1.67783	63	0.76843	1.27943
15	0.55969	1.64935	64	0.77012	1.27698
16	0.57159	1.62394	65	0.77178	1.27458
17	0.58254	1.60110	66	0.77340	1.27225
18	0.59266	1.58043	67	0.77499	1.26996
19	0.60207	1.56162	68	0.77654	1.26774
20	0.61083	1.54442	69	0.77806	1.26556
21	0.61902	1.52861	70	0.77955	1.26344
22	0.62669	1.51401	71	0.78101	1.26136
23	0.63391	1.50049	72	0.78244	1.25933
24	0.64072	1.48792	73	0.78384	1.25735
25	0.64715	1.47620	74	0.78522	1.25541
26	0.65323	1.46523	75	0.78656	1.25351
27	0.65901	1.45495	76	0.78789	1.25165
28	0.66449	1.44528	77	0.78918	1.24983
29	0.66972	1.43617	78	0.79046	1.24805
30	0.67470	1.42756	79	0.79171	1.24630
31	0.67945	1.41942	80	0.79294	1.24459
32	0.68400	1.41170	81	0.79414	1.24291
33	0.68835	1.40437	82	0.79533	1.24126
34	0.69253	1.39740	83	0.79649	1.23965
35	0.69654	1.39076	84	0.79764	1.23807
36	0.70039	1.38442	85	0.79876	1.23652
37	0.70409	1.37837	86	0.79987	1.23499
38	0.70766	1.37258	87	0.80096	1.23350
39	0.71110	1.36703	88	0.80203	1.23203
40	0.71441	1.36172	89	0.80308	1.23059
41	0.71762	1.35661	90	0.80412	1.22917
42	0.72071	1.35171	91	0.80514	1.22778
43	0.72370	1.34699	92	0.80614	1.22641
44	0.72660	1.34245	93	0.80713	1.22507
45	0.72941	1.33808	94	0.80810	1.22375
46	0.73213	1.33386	95	0.80906	1.22245
47	0.73476	1.32979	96	0.81000	1.22117
48	0.73732	1.32585	97	0.81093	1.21992
49	0.73981	1.32205	98	0.81185	1.21868
			99	0.81275	1.21746

References

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