

3.5 Selected Causes of Death

3.5.1 Suicide

3.5.1.1 Suicide as a Leading Cause of Death

In Kalamazoo County, suicide was the eighth leading cause of death in 2007, when 37 deaths occurred (a crude rate of 15.1 deaths per 100,000 population). In comparison, suicide was the tenth leading cause of death in Michigan overall, with a crude rate¹ of 11.1 deaths per 100,000 population. Causes of death are ranked in order of the number of deaths that occurred in a time period.

Ranked Leading Underlying Causes of Death, Kalamazoo County and Michigan 2007

Underlying Cause of Death	Kalamazoo County			Michigan		
	Rank	Number of Deaths	Crude rate per 100,000*	Rank	Number of Deaths	Crude rate per 100,000*
All Deaths	--	1,908	777.7	--	86,642	860.2
Heart Disease	1	447	182.2	1	24,258	240.9
Cancer	2	445	181.4	2	20,060	199.2
Chronic Lower Respiratory Disease	3	103	42.0	4	4,616	45.8
Unintentional Injury (Accidents)	4	101	41.2	5	3,714	36.9
Alzheimer's Disease	5	100	40.8	7	2,430	24.1
Stroke	6	97	39.5	3	4,638	46.0
Diabetes Mellitus	7	68	27.7	6	2,825	28.0
Suicide	8	37	15.1	10	1,123	11.1
Kidney Disease	9	27	11.0	9	1,611	16.0
Pneumonia & Influenza	10	26	10.6	8	1,633	16.2
Septicemia	11	16	6.5	12	971	9.6
Homicide	12	15	6.1	13	702	7.0
Chronic Liver Disease	13	10	4.1	14	1007	10.0
AIDS	14	3	1.2	11	186	1.8

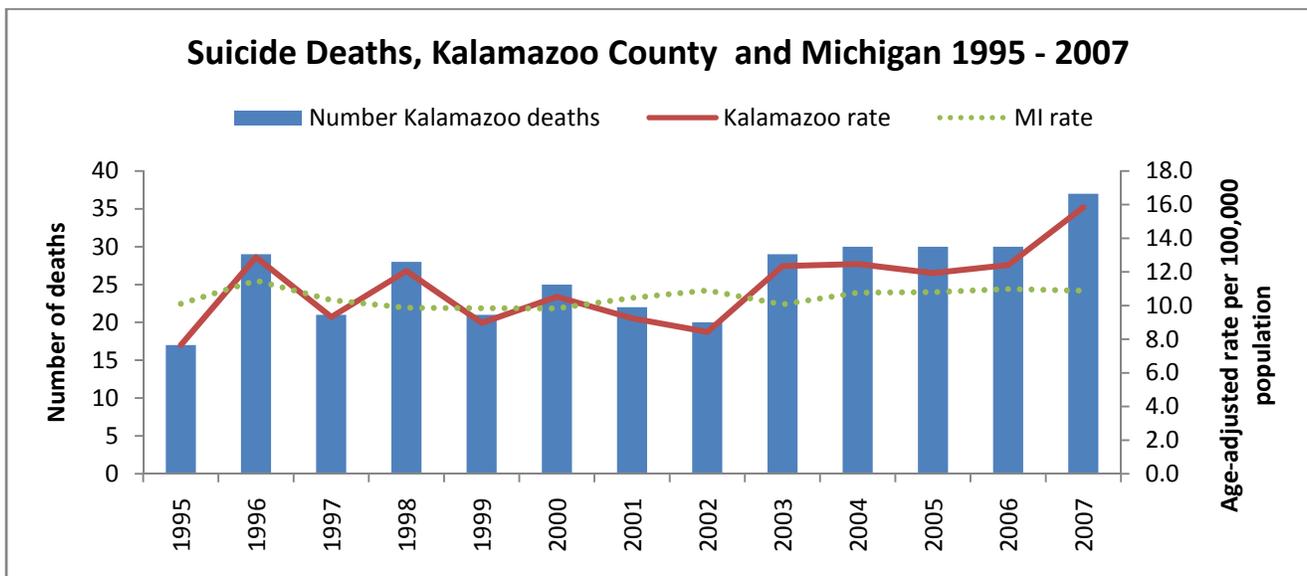
*Crude rates are not adjusted for age.

Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

Population data source: National Center for Health Statistics, U.S. Census Populations with Bridged Race Categories, updated 9/2008.

¹ A crude rate is a straight proportion (the number of deaths divided by the total number of people).

Between 2003 and 2007, Kalamazoo County averaged 31.2 suicide deaths per year (an increase from the previous five years' average of 23.2 deaths per year (1998-2002)). Age-adjusted rates² in Kalamazoo County have fluctuated around the statewide rate each year, but from 2003-2007 the county rate stayed slightly above the rate in Michigan.



Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

3.5.1.2 Suicide Risk Groups

Between 2005 and 2007, males in Kalamazoo County were 3.4 times more likely to commit suicide than females (21.3 deaths per 100,000 population vs. 6.4 deaths per 100,000 population), and rates among white and black populations were similar.

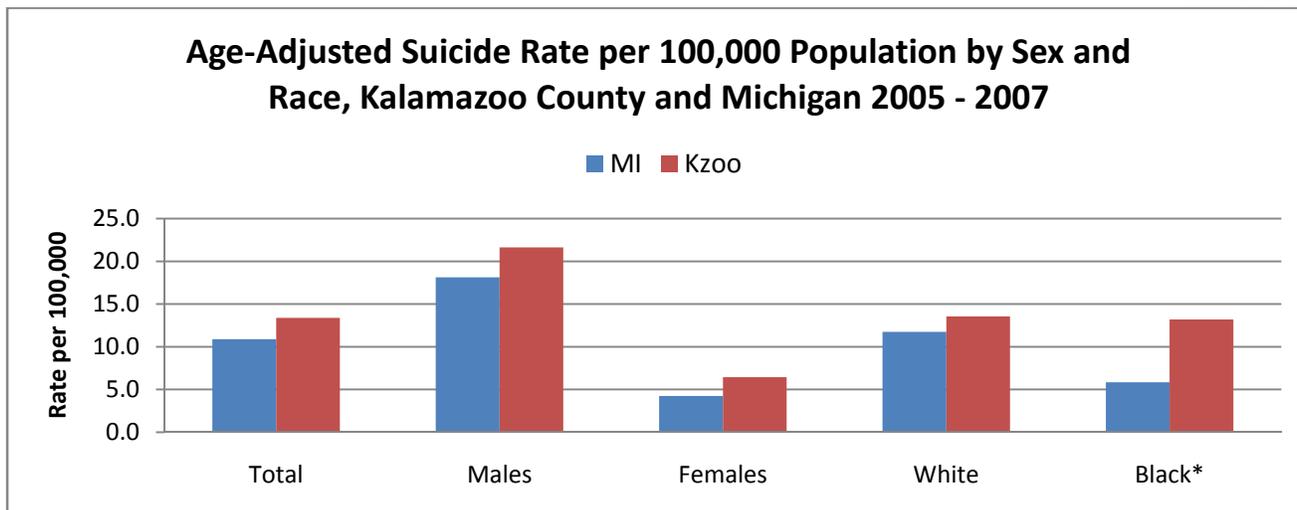
Age-Adjusted Mortality Rates per 100,000 Population Due to Suicide, by Sex and Race, Kalamazoo County and Michigan 2005-2007

Area	Total	Males	Females	White	Black
Kalamazoo County	13.4	21.6	6.4	13.5	13.2
Michigan	10.9	18.1	4.2	11.8	5.9

Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File.

Population data source: National Center for Health Statistics, U.S. Census Populations with Bridged Race Categories, updated 9/2008.

² Age-adjusting rates allows comparisons among populations that may have different age distributions; an age-adjusted rate should be viewed as an index for comparison rather than a true proportion in a population.



*For Kalamazoo County, represents 9 completed suicides among the black population over a three-year period (due to small numbers, rate calculations should be interpreted with caution).

Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

Among all causes of death within age groups, suicide ranked low for adults aged 45 years and older and much higher for ages 15 to 44 years. However, in looking at rates per population, adults between the ages of 30 and 44 and 75 years and older had the highest rates per population of completed suicide from 2005 through 2007 in Kalamazoo County, followed by adults aged 45 to 64 years. Therefore risk does not decline through older middle age (even though the contribution of suicide as a proportion of all deaths declines), the number of deaths due to other causes just increases. In comparison with rates by age in Michigan overall, adults in Kalamazoo County aged 30 to 44 years and 75 years and older had higher rates of completed suicide but differences were not significant statistically.

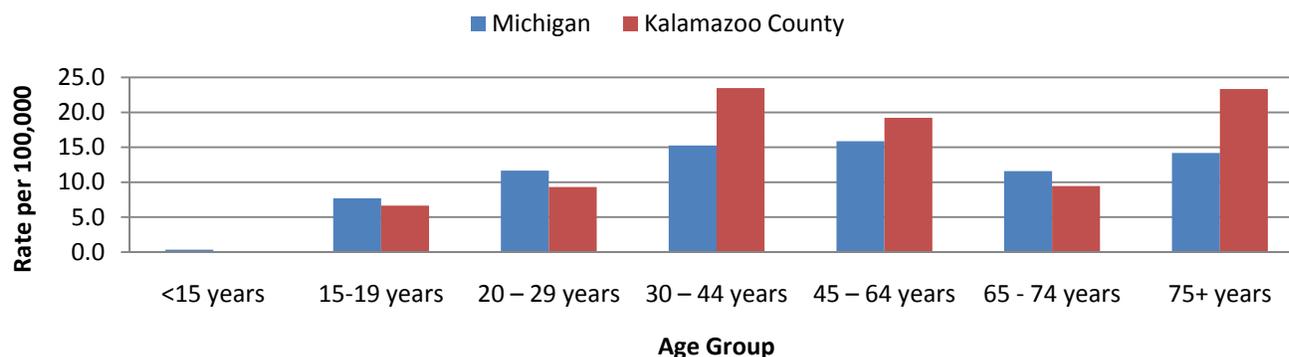
Number of Deaths, Percentage of Deaths, and Age-Specific Mortality Rates per 100,000 Due to Suicide by Age Group, Kalamazoo County and Michigan 2005 – 2007

Age Group	Kalamazoo County			Michigan		
	Number of Deaths	Suicide as % of All Deaths in Age Group	Rate per 100,000	Number of Deaths	Suicide as % of All Deaths in Age Group	Rate per 100,000
<15 years	0	0.0%	0.0	21	0.5%	0.3
15-19 years	4	12.5%	6.6	172	13.4%	7.7
20 – 29 years	12	16.0%	9.3	469	12.4%	11.7
30 – 44 years	33	16.9%	23.5	955	9.0%	15.3
45 – 64 years	34	3.4%	19.2	1252	2.5%	15.9
65 - 74 years	4	0.5%	9.4	224	0.5%	11.6
75+ years	10	0.3%	23.3	265	0.2%	14.2

Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

Population data source: National Center for Health Statistics, U.S. Census Populations with Bridged Race Categories, updated 9/2008.

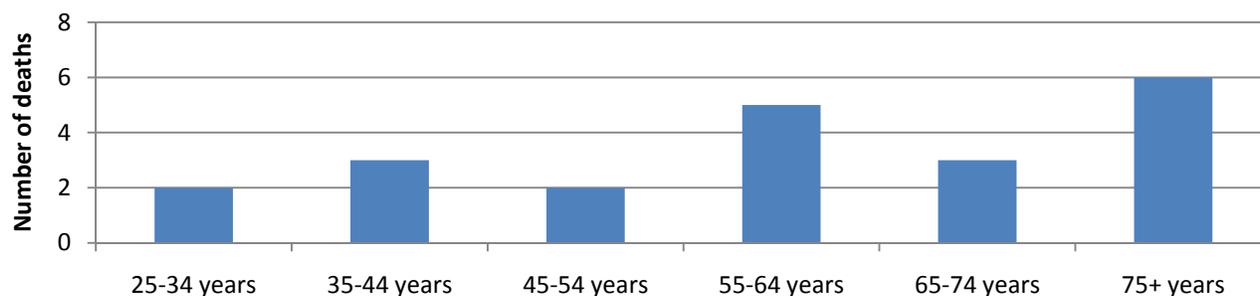
Completed Suicide Rate per 100,000 Population by Age Group, Kalamazoo County and Michigan 2005 - 2007



Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

Among completed suicides in Kalamazoo County between 2005 and 2007, 22.8% were veterans (among deaths to persons ages 18 years and older). This is slightly higher than the proportion of the general adult population (18 years and older) estimated to be veterans in Kalamazoo County (13.3%).³ The age distribution for veterans completing suicide is shown below.

Suicide Among Veterans by Age Group, Kalamazoo County 2005 - 2007



Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

³ Kalamazoo County Behavioral Risk Factor Survey, 2004/2005. (95% CI: 14.2-31.4% of suicides were veterans, 10.8-15.8% of the general population estimated to be veterans; not statistically different but may indicate a trend.)

Most individuals completing suicide were not married (69.1% were never married, a widow or widower, or divorced).

Marital Status Among Suicide Deaths in Kalamazoo County, 2005 – 2007

Marital Status	Number of deaths	Percent of suicide deaths
Never married	29	29.9%
Married or legally separated	37	38.1%
Widow or widower	8	8.2%
Divorced	23	23.7%

Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

3.5.1.3 Characteristics of Suicide Deaths

Among most completed suicides in Kalamazoo County between 2005 and 2007, the place of injury was at home (80.4% of suicide deaths). The place of death for most suicides was also at home (71.1%), but 11.3% of deaths occurred in a hospital.

Place of Injury for Suicide Deaths in Kalamazoo County, 2005 – 2007

Location of Injury	Number of deaths	Percent of suicide deaths
Home	78	80.4%
Trade and service area	4	4.1%
School, other institution and public administrative area	3	3.1%
Street and highway	3	3.1%
Industrial and construction areas	1	1.0%
Other specified places	6	6.2%
Unspecified place	2	2.1%

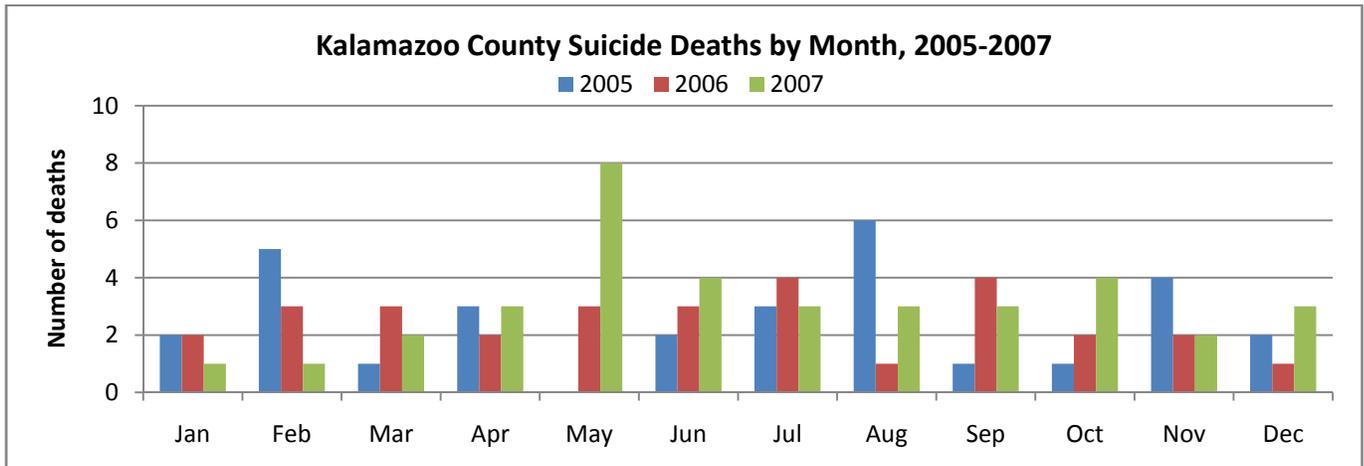
Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

Place of Death, Suicides in Kalamazoo County, 2005 – 2007

Location at Death	Number of deaths	Percent of suicide deaths
Home	69	71.1%
Hospital	11	11.3%
Nursing home	1	1.0%
Other institution	1	1.0%
Other	15	15.5%

Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

Time of year when most completed suicides occurred varied by year from 2005 through 2007. In 2007 May was a month when an especially high number of suicides occurred, while in 2005 August and February were peak months.



Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

3.5.1.4 Means of Suicide

For almost half of all completed suicides in Kalamazoo County between 2005 and 2007, the means of suicide was a firearm (45.4% of deaths). The second most common means was poisoning (22.7% of deaths) followed by hanging, strangulation or suffocation (19.6%).

Means of Suicide in Kalamazoo County, 2005 – 2007

Means of Suicide		Number of deaths	Percent of suicide deaths
Firearm:	All firearm	44	45.4%
	<i>Rifle, shotgun and larger firearm discharge</i>	10	10.3%
	<i>Other and unspecified firearm discharge</i>	34	35.1%
Poisoning:	All self-poisoning	22	22.7%
	<i>Exposure to nonopioid analgesics, antipyretics, and antirheumatics</i>	2	2.1%
	<i>Exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified</i>	3	3.1%
	<i>Exposure to narcotics and psychodysleptics (hallucinogens), not elsewhere classified</i>	2	2.1%
	<i>Exposure to other and unspecified drugs, medicaments and biological substances</i>	7	7.2%
	<i>Exposure to alcohol</i>	1	1.0%
	<i>Exposure to other gases and vapors</i>	7	7.2%
Hanging, strangulation, and suffocation		19	19.6%
Jumping or lying before moving object		2	2.1%
Sharp object		3	3.1%
Smoke, fire, and flames		2	2.1%
Drowning and submersion		1	1.0%
Jumping from a high place		1	1.0%
Sequelae of intentional self-harm		1	1.0%
Unspecified means		2	2.1%

Mortality data source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Mortality File

3.5.1.5 Suicide Attempts

Because the number of suicide deaths reflects only a portion of suicide attempts, another indicator of suicide attempts in the community is the number of hospitalizations due to suicide attempts.

Number of Suicide Attempts Resulting in Hospitalization (Survived) and Number of Suicide Deaths Among Kalamazoo County Residents, 2005 – 2007

Age group	Hospitalized (Survived)			Deaths		
	Male	Female	Total	Male	Female	Total
<15 years	1	11	12	0	0	0
15-19 years	23	22	45	2	2	4
20-29 years	45	53	98	9	3	12
30-44 years	74	114	188	28	5	33
45-64 years	63	85	148	20	14	34
65-74 years	4	4	8	4	0	4
75+ years	5	2	7	9	1	10
Total	215	291	506	72	25	97

Attempt and Death Source: Michigan Resident Death File and Michigan Resident Hospitalization File, Michigan Department of Community Health

Hospitalizations are inpatient hospital stays as measured by stays that were completed during the specified year. The number of hospitalizations is often greater than the number of persons hospitalized since some persons are hospitalized more than once during a year. Hospitalizations in this table exclude those in which the patient died during the stay.

Although the suicide death rate was higher among males than females, when suicide attempts that end up in the hospital and suicide deaths were combined, the crude rate of “attempts or deaths” was similar among males and females in Kalamazoo County between 2005 and 2007 (80.5 per 100,000 male population vs. 84.1 per 100,000 female population). By age groups, the highest rate for this combined indicator was among ages 30 to 44 years.

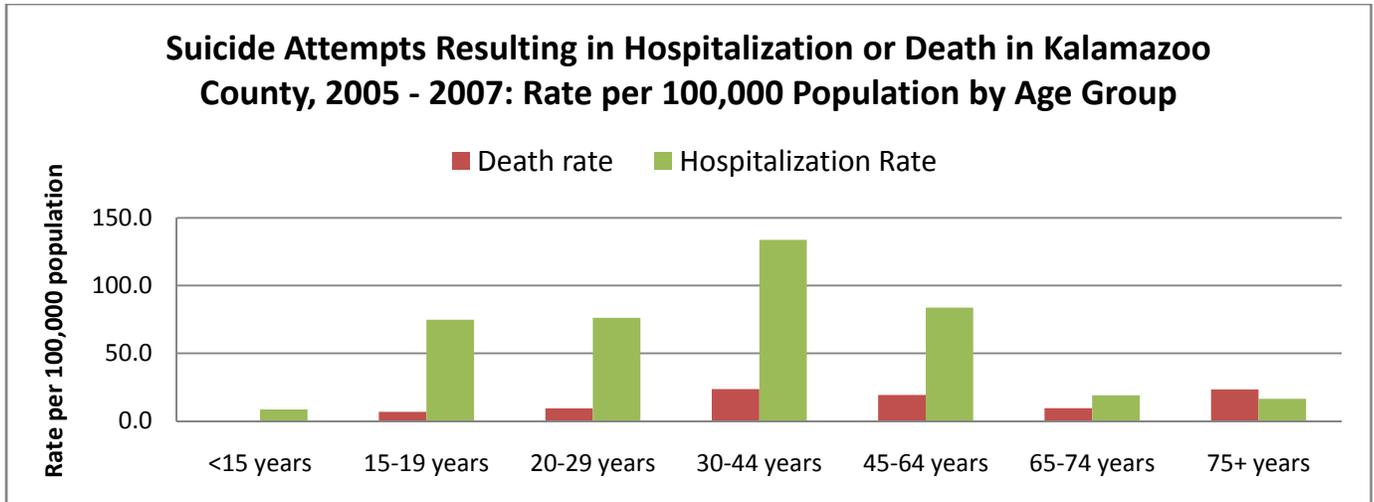
Number and Rate per 100,000 Population of Suicide Attempts Resulting in Hospitalization or Death Among Kalamazoo County Residents in 2005 – 2007

Age group	Counts			Rate per 100,000 population		
	Attempts or deaths	Attempts or deaths	Attempts or deaths	Attempts or deaths	Attempts or deaths	Attempts or deaths
	Male	Female	Total	Male	Female	Total
<15 years	1	11	12	1.4	16.0	8.5
15-19 years	25	24	49	82.9	80.0	81.4
20-29 years	54	56	110	84.4	86.5	85.4
30-44 years	102	119	221	146.7	167.4	157.2
45-64 years	83	99	182	96.7	108.7	102.9
65-74 years	8	4	12	41.5	17.3	28.3
75+ years	14	3	17	89.9	11.0	39.7
Total	287	316	603	80.5	84.1	82.3

Attempt and Death Source: Michigan Resident Death File and Michigan Resident Hospitalization File, Michigan Department of Community Health

Hospitalizations are inpatient hospital stays as measured by stays that were completed during the specified year. The number of hospitalizations is often greater than the number of persons hospitalized since some persons are hospitalized more than once during a year.

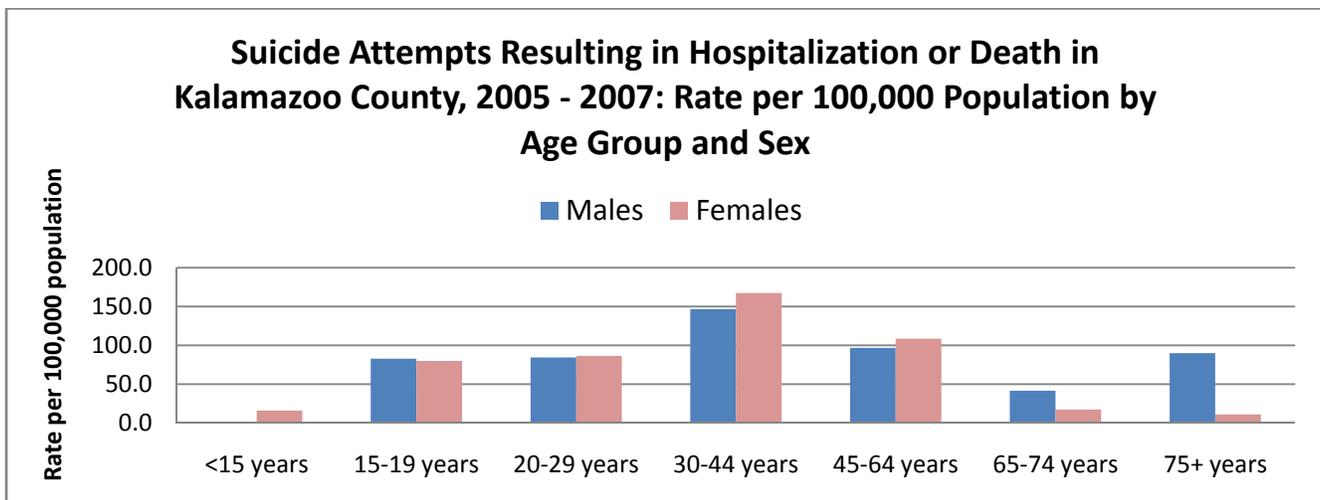
Rates of hospitalization due to suicide attempts followed a similar curve by age as suicide death rates in Kalamazoo County between 2005 and 2007. Rates increased with age until the middle age group, and then declined, and for almost all age groups the hospitalization rate was higher than the death rate. Where these rates diverged was among seniors aged 75 years and older; the suicide death rate in this group exceeded the hospitalization rate due to suicide attempts (indicating attempts among seniors are more likely to result in death).



Attempt and Death Source: Michigan Resident Death File and Michigan Resident Hospitalization File, Michigan Department of Community Health

Hospitalizations are inpatient hospital stays as measured by stays that were completed during the specified year. The number of hospitalizations is often greater than the number of persons hospitalized since some persons are hospitalized more than once during a year.

Rates by sex for the combined indicator of hospitalizations or deaths after a suicide attempt were similar for males and females at all age groups except among the seniors. Among adults ages 75 years and older, the rate was significantly higher among males than females.



Attempt and Death Source: Michigan Resident Death File and Michigan Resident Hospitalization File, Michigan Department of Community Health

Hospitalizations are inpatient hospital stays as measured by stays that were completed during the specified year. The number of hospitalizations is often greater than the number of persons hospitalized since some persons are hospitalized more than once during a year.

The majority of non-fatal suicide attempts in Kalamazoo County that resulted in hospitalization between 2005 and 2007 involved poisoning as the attempted method (93.9%).

**Cause Or Mechanism of Non-Fatal Suicide Attempts Resulting in Hospitalization
Among Kalamazoo County Residents, 2005 – 2007**

Cause	Number	Percent of Hospitalized Attempts (Who Survived)
Poisoning	475	93.9%
Sharp Object	23	4.5%
Hanging	2	0.4%
Firearms	2	0.4%
Jump	1	0.2%
Other	12	2.4%

Source: Michigan Resident Hospitalization File, Michigan Department of Community Health