

# SUICIDE IN ALASKA FROM 1978 TO 1985: UPDATED DATA FROM STATE FILES

NORMA FORBES, PhD, and VINCENT VAN DER HYDE

**ABSTRACT.** Based on revised data resulting from improved quality control measures, this study reveals an average increase of 38% in the number of suicides recorded from 1978 through 1985 in Alaska. Excluding 1979, Alaska's suicide rate was among the top four in the United States. No significant decrease has occurred in the Alaska Native suicide rate since 1978. The problem is particularly serious for younger males (more than 6 times the national rate of Caucasian males). The study concludes with two hypotheses which require the availability of more accurate data prior to 1978, emphasizing the importance of continuing this data updating process.

In early 1985, the research unit of the Division of Planning, Alaska Department of Health and Social Services, became aware that the data generated from computerized data files for violent deaths were incorrect. Following an initial inquiry from the Fairbanks area, the research unit conducted a pilot study of 1983 suicides in that area and identified 13 suicides previously not identified on the statistical tape. On the basis of this information, the Director of the Division of Planning authorized a review and update of the statewide suicide database.<sup>1</sup> It should be noted that the study deals with the under-recording of violent deaths, rather than the under-reporting, although both affect the quality of the data.<sup>2</sup>

The under-recording of violent deaths in the state's vital statistics computer files results in the undercounting of the number of violent deaths in state publications, such as the Annual Vital Statistic Report.<sup>3</sup> As is the case with distortions of health data in any area of concern, this undercounting may have serious consequences for appropriate funding of programs, for evaluating the effectiveness of existing programs, and for planning and prioritizing future programs.

There are a number of steps between the initial recording of a death by a physician or funeral director and the inclusion of that death in a published research report. Errors and omissions may occur at any step in the process. At several points in the current system delayed information could be sidetracked and not make its way onto the appropriate data file.

In order to correct the information on violent deaths including suicides in the statistical files, the research unit examined each death certificate in the vault for the years 1959 through 1984.<sup>4</sup> For the years 1978 through 1984, 202 queries requesting additional information were sent to the recording districts. In addition, several hundred changes were requested based on discrepancies between the certificates and the computer files. The majority of the errors involved the smaller rural recording districts. As a result, a disproportionate number of incorrectly recorded death certificates were those of rural Alaska

---

AMERICAN INDIAN AND ALASKA NATIVE MENTAL HEALTH RESEARCH  
1(3), MARCH, 1988, pp. 36-55.

Natives in which cause of death should have been suicide or homicide. The White suicide count increased an average of 21%, while the Native count increased an average of 76%.

One of the problems involved in accurately determining trends and relationships for Alaskan suicide is population size. For statistical purposes, the number of suicide deaths in Alaska in any particular year is very small and predictions based on small numbers are subject to errors due to chance variation.

Table 1

**Change in Resident Suicide and Homicide Counts for 1978-1983 After Suicide Study**

Year	# Suicides	# Suicides	Percent	# Homicides	# Homicides	Percent
	VSAR	Post-Study	Increase	VSAR	Post-Study	Increase
1978	59	88	49%	60	62	3%
1979	53	62	17%	48	52	8%
1980	72	84	17%	33	38	15%
1981	66	88	33%	50	59	18%
1982	62	85	37%	57	79	36%
1983	88	95	18%	63	70	11%

**Note.** VSAR refers to Annual Vital Statistics Report for the year concerned. The initial count for 1983 prior to the Suicide Study was 55. However, most of the Suicide Study corrections were incorporated in the records prior to the publication of the 1983 report. The improved count (from 55 to 95) as a result of the Suicide Study produced a 73% increase in recorded suicides.

The frequencies and rates reported here are those of deaths of Alaskan residents, both in and outside of Alaska which have been legally determined to be suicides. These figures were taken from the corrected data files of the Bureau of Vital Statistics as of February, 1988. Future reports may indicate one or two more suicides in a particular category as the results of prolonged inquests are submitted, as previously undiscovered bodies are found and determined to have been suicide, or as additional quality assurance procedures are implemented.

### Suicide in the United States<sup>5</sup>

Suicide in Alaska can be placed in perspective by looking at suicide in the nation as a whole. Between 1957 and 1977 there was an upward trend in United States suicide rates which leveled off after 1978. Since 1978, the national rate has been about 12 suicides per 100,000 population with relatively little fluctuation from year to year. The magnitude of the problem and the patterns of its occurrence differ between the sexes. Suicide rates for males are much higher than those for females. For males, suicide rates tend to increase with age, while rates for females increase through ages 45 to 54 and then decrease. Between 1970 and 1980, suicide rates for older persons in the United States decreased,

while those for younger persons increased, resulting in a flatter curve for rates by age group. The change in rates for younger persons was not the same for females as for males. In the 15- to 24-year age group, rates for males increased 50%, while female rates increased only slightly in the same time period. In the next older age group (25-34), male suicides increased 30%, while the rate for females decreased. The sharp increase in rates for males 15-24 years old appeared in all but two countries of the European Economic Community as well. Australia and Canada also have experienced sharp increases in suicide among the young.

The increase in suicide rates in the United States primarily is the result of more suicides among Caucasian males. Suicide rates are relatively low among Blacks and Asians. Although the suicide rate for American Indians is higher than that of other minorities, they constitute a small percentage of the total population and have little impact on national rates.

Completed suicides are much more common among males than females, however, attempted suicides are several times as common among females. In 1980, the age-adjusted completed suicide rate for males was 3 times that for females. Within the younger age groups, the disparity between the sexes is even greater.

Young adults, 20-24 years old, had approximately twice the number and rate of suicides as adolescents 15-19 years old. Adolescents and young adults are particularly at risk in the western United States, which has had consistently higher suicide rates than the balance of the U.S. For every age group beyond the age of 5, suicide is among the 15 leading causes of death. However, it is of special concern regarding adolescents and young adults for whom suicide is the third leading cause of death.

The rapid increase in suicide rates among the young caused the U.S. Department of Health and Human Services to establish a specific health objective for reduction of the suicide rate among 15- to 24-year-olds. In a special publication on suicide, the Center for Disease Control (1985) states, "a problem of this magnitude requires priority attention on the part of public health agencies at the national, state, and local levels." (p. 7)

### Suicide in Alaska

Alaska differs from the balance of the states in a number of ways including the size, youth, and ethnic composition of its population. As a result of the youth of Alaska's population, comparisons between death rates for Alaska and other states (or the nation as a whole) may be misleading. Alaska has few older residents and a high proportion of younger residents. The 1984 crude death rate for Alaska was 376.8, less than half of the U.S. 1984 rate of 866.8. When rates

are adjusted for the difference in age distribution of the Alaska and U.S. populations, the age-adjusted 1984 death rate for Alaska is 10% higher than the U.S. as a whole. In other words, compared to a population with the same age distribution, Alaskans have a higher death rate.<sup>6</sup>

Factors other than youth enter into the relationship between the crude rate and the age-adjusted rate for suicide (e.g., the distribution of suicide deaths in different age groups). Therefore, the difference between the crude rate and the age-adjusted rate in Alaska/United States comparisons tends to be smaller for suicide than for total mortality. Nevertheless, age-adjusted rates, when available, provide the more accurate comparison.

Table 2 provides both crude and age-adjusted suicide rates for comparison with the U.S. rates. It also gives Alaska's rank versus other states, based on the revised data rather than previous incorrect data listed in National Center for Health Statistics reports.<sup>7</sup> Nevada, Wyoming, and New Mexico have consistently ranked among the top four in suicide rates; Alaska has joined them for 7 of the last 8 years.

Alaska's high suicide rate indicates a serious health problem. However, as is the case in the U.S. as a whole, Alaskan suicide rates differ widely from one age, sex, or ethnic group to another. In order to have a comprehensive picture of the nature of suicide as a health problem in Alaska, it is necessary to look at the different groups within the population and examine rates for different age, sex, and ethnic groups. As we look at each group we will be dealing with smaller numbers of people and of deaths. This brings us back to the problem of the variance associated with small numbers and the effect of that variance on the accuracy of predictions. One way of dealing with the small number problem is to pool the cases from several years, providing more stable indications of trends. When this report deals with groups broken out by sex, ethnic, and age groups, suicide figures are presented by 3-year moving averages. For example, Figure 1 is based on an average of the years 1983, 1984, and 1985.

Table 2

Comparative Suicide Rates for 1978 - 1984 (per 100,000)

	1978	1979	1980	1981	1982	1983	1984	1985
U.S. All Races	12.6	12.1	11.9	12.0	12.2	12.1	12.4	12.3
U.S. All Races, 15-24	12.7	12.4	12.8	12.3	12.1	11.9	12.5	12.9
<b>Alaska, All Races</b>								
Frequencies	91	67	92	90	89	97	92	118
Crude Mortality Rates	22.6	16.7	22.9	20.7	19.1	19.5	17.6	21.9
Age-adjusted Rates	23.9	17.5	23.4	22.7	19.3	20.2	17.7	23.0
Age Group 15-24	42.3	29.2	36.5	34.1	40.7	37.3	39.3	41.8
<b>White Males</b>								
Frequencies	54	32	48	47	54	52	46	53
Crude Mortality Rates	32.0	19.3	29.0	26.2	28.2	25.5	21.5	24.1
Age Group 15-24	47.1	21.2	30.7	36.1	40.6	36.5	36.3	36.5

Table 2 (continued)

	1978	1979	1980	1981	1982	1983	1984	1985
<b>White Females</b>								
Frequencies	12	8	10	10	6	9	15	14
Crude Mortality Rates	8.2	5.6	6.9	6.5	3.6	5.1	8.2	6.8
Age Group 15-24	3.5	7.1	10.7	3.6	7.0	12.0	13.8	6.3
<b>White All</b>								
Frequencies	66	40	58	57	60	61	61	67
Crude Mortality Rates	21.0	12.9	18.7	17.1	16.8	16.1	15.4	15.7
Age-Adjusted Rates	24.4	12.1	20.8	21.0	16.8	18.7	15.7	16.6
Age Group 15-24	27.3	14.8	21.4	21.0	25.4	23.3	26.2	19.2
<b>Native Males</b>								
Frequencies	18	21	26	25	24	31	21	38
Crude Mortality Rates	57.4	65.5	79.9	76.8	67.7	83.9	54.8	100.1
Age Group 15-24	168.1	174.2	168.6	150.5	130.5	178.0	153.6	206.6
<b>Native Females</b>								
Frequencies	4	3	4	5	3	3	7	9
Crude Mortality Rates	13.2	9.7	12.7	15.3	8.7	8.4	19.1	24.1
Age Group 15-24	56.6	13.6	26.5	38.7	12.2	36.4	60.4	63.2
<b>Native All</b>								
Frequencies	22	24	30	30	27	34	28	47
Crude Mortality Rates	35.2	38.1	46.8	45.0	38.7	46.8	37.2	64.9
Age-Adjusted Rates	31.7	35.7	45.0	44.9	36.9	43.1	34.6	68.8
Age Group 15-24	112.7	94.6	98.4	95.5	72.2	108.0	107.6	134.1
Alaska's State Rank	2nd	8th	2nd	2nd	3rd	3rd	4th	3rd

*Note.* Alaskan residents only, in and out-of-state deaths; both Native and White rates are age-adjusted against White population for that year; U.S. rates are crude rates.

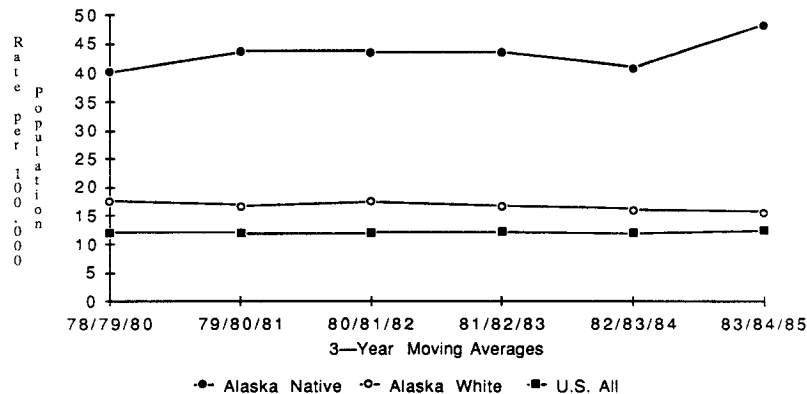
### Sex Differences

As is the case in the balance of the United States, completed suicides are much more common among males than females in Alaska. The difference in rates of completed suicides between males and females has been attributed to the different methods used by males and females in attempting suicides (Centers for Disease Control, 1985). In the U.S. in 1980, 63.1% of male suicides and 38.6% of female suicides used firearms or explosives.<sup>8</sup> The trend among Alaskan females (as in the rest of the nation) is for a lower percentage of use of firearms and a higher percentage of poisoning than for males. The number of female suicides is small, making it difficult to define a trend in method used from year to year. As a group, a greater percentage of Alaskans than non-Alaskans use firearms. While 57% of all 1980 U.S. suicides used firearms or explosives, the percentage of Alaskans using firearms ranged between 75% and 85% for each year from 1978 through 1984.

Over the period 1978-1985, the average ratio of male to female suicides for White Alaskans was 5:1 while the average ratio for Native Alaskans was 6:1. Alaska's White population has a higher proportion of males to females than does the Native population, or the U.S. as a whole. Therefore, rates (numbers of deaths per unit of population) will give a somewhat more accurate picture than frequencies of the relationship between male and female suicides. The 1978-1985 average of rates for male suicides among Whites was 4 times that of White females; for Natives the male to female ratio was 5:1.

### Ethnic Group Differences

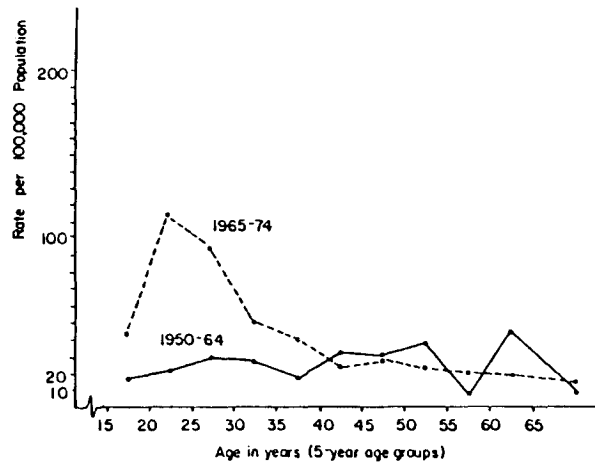
The age distribution and magnitude of suicide as a health problem differ between Alaska Natives and their White peers as much or more than they do between the sexes. As can be seen in Figure 1, suicide is a greater problem for Alaskan Whites than for Whites in the rest of the U.S. However, the most urgent problem exists among Alaska Natives. The number of suicides within Alaska's other minority groups, Blacks and Asians, is so small (3 or fewer in any year since 1977) that no meaningful statistics can be computed.



**Figure 1.** Suicide rates by ethnic group 1978-1985.

**Note.** U.S. All rates are for the mid-year referenced, (e.g. 1979 for 78/79/80). Alaska Native and White rates are 3-year moving averages.

For the total U.S. population, the suicide rate tends to increase with age but this is not the case for Alaska Natives. Suicide rates are high for Alaska Natives under 30 years of age and decrease sharply after the age of 30. This pattern has not always existed. Figure 2 is taken from Kraus and Buffler (1979) showing the age-specific rates for Alaska Natives for two time periods. The early time period, 1950-1964, shows a pattern similar to that of the U.S. as a whole (i.e., a relatively flat curve with highest rates in older age groups). The later period, 1965-1974, shows the pattern of youth suicide well established with rates highest in the age group 20-24 years old and dropping rapidly after 30 years old as shown in Figures 3 and 4.



**Figure 2.** Alaska Native suicide rates for two time periods.

**Note.** From "Sociocultural Stress and the American Native in Alaska" by Kraus & Buffler, 1979, *Culture, Medicine and Psychiatry*, 3.

For males, Figure 3 points out the similarity between the age trends of Alaskan White males and the 1980 national rates for White males. The age-related trend for Alaska Native males in 1983/84/85 is much the same as the 1965-74 trend in Kraus and Buffler's figure. Figure 4 presents the age trends for females and again, White Alaskans have much the same age-related pattern as the rest of the nation. Suicides for Alaska Native females are more sharply grouped in the ages between 15 and 30. Other years between 1978 and 1985 were graphed by age group during data analysis for this report and all demonstrated the same patterns.

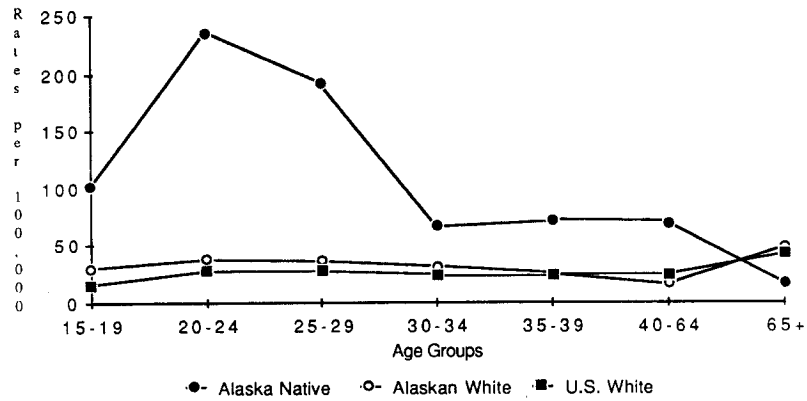


Figure 3. Male suicide rates by age and ethnic group 1983/84/85; White male data is 1980.

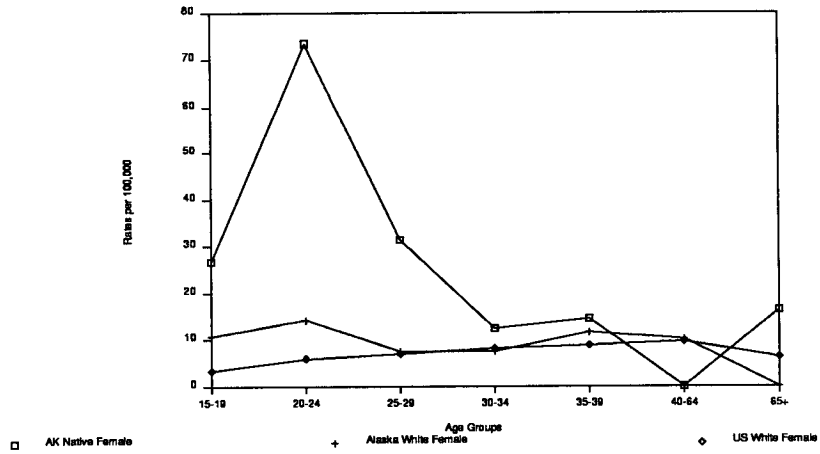


Figure 4. Female suicide rates by age and ethnic group.

Note. Alaska Native and White data are 3-year averages 1983/84/85.



Youth suicide (ages 15-24) in the U.S. peaked in 1977 and leveled off after that year (Stack, 1986). As can be seen in Figure 5, youth suicide rates for Alaskan Whites appear to have leveled off also. However, suicide rates for Alaska Native youth continue to climb.

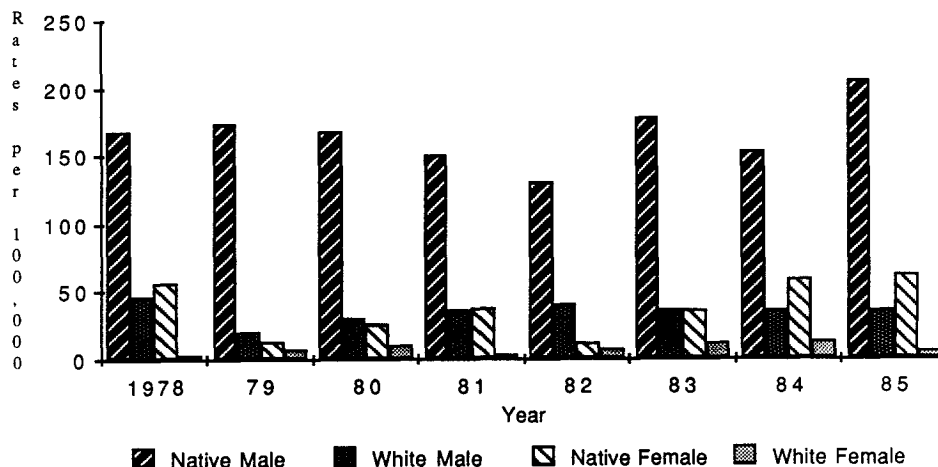
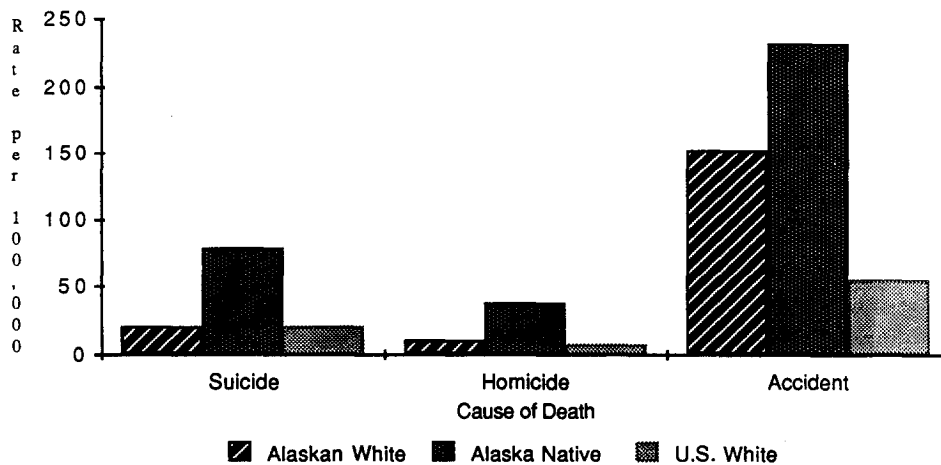


Figure 5. Suicide rates for age 15-24 by sex and ethnic group 1978-1985.

Violent death other than suicide is common in Alaska’s frontier environment. Homicides and accidents are included in this discussion for two reasons. First, authorities in the field believe that as many as 50% of all accidental deaths actually may be suicides (Sudak, Ford, & Rushforth, 1984). Second, many authorities see homicide, suicide, and accidents as different expressions of the same phenomenon (Kraus & Buffler, 1979).

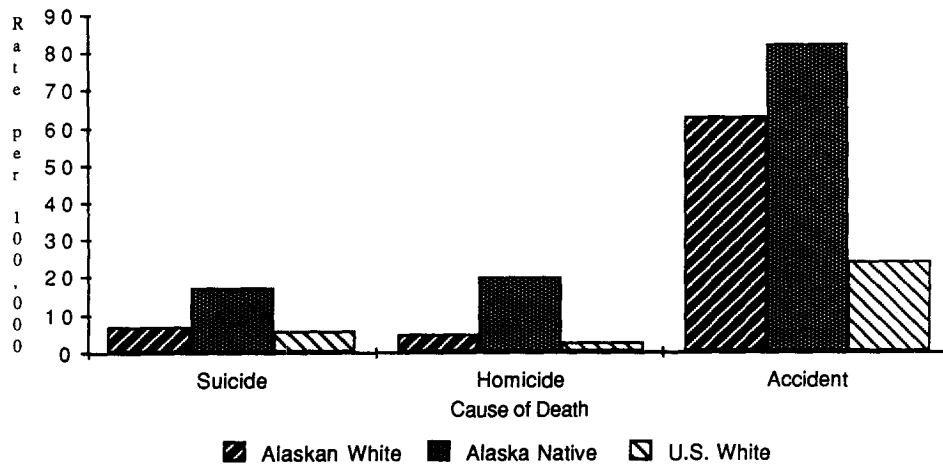
Looking at homicide as another expression of social disruption, the contrast between Alaska and the U.S. is even greater for homicide than suicide. Average crude suicide rates as shown in Figures 6 and 7 are almost the same for White males in Alaska (20.64) and in the U.S. (21.3); for White females (6.92) the rate is 17% higher in Alaska than in the U.S. (5.9). The average crude suicide rate 1983/84/85 for Native males (78.22) is 3.7 times higher in Alaska than for U.S. White males; for Native females (17.11) it is 2.5 times higher than their White female (6.92) peers in the U.S. Homicide rate differences are more extreme for

all groups; the White male homicide rate (9.98) is 20% higher than the U.S. rate (2.9), for Native males (38.24) the rate is almost five times higher than the U.S. White male rate, and for Native females (19.81) the rate is 7 times the U.S. White female rate (4.73). The increased risk for death by homicide which accompanies being an Alaskan, appears to be influenced by both sex and ethnic group, with the increased risk being least for White males and greatest for Native females. Looking at homicide as another expression of social disruption, note that for males, Alaska Natives and Whites, homicide rates exceed those of the U.S. Whites by roughly the same proportion as do suicide rates. The differences for females also are interesting: Although the suicide rate of Alaskan White females (5.4) is much the same as the U.S. rate (5.9), the homicide rate for Alaskan White females (5.7) is roughly twice the rate of U.S. White females (2.8). The differences are even greater for Alaska Native females who are twice as likely to die from homicide (17.3) as suicide (8.6) and 3 times as likely to die from homicide as Alaskan White females. Alaskan rates are age-adjusted against the U.S. population profile for 1983, so these differences are not the result of age differences. The difference in death rates from suicide, homicide, or accidents is so great between the two ethnic groups that comment hardly is necessary.



**Figure 6.** Male violent death rates by ethnic group.

**Note.** Data are averages for 1983/84/85.



**Figure 7.** Female violent death rates by ethnic group.

**Note.** Data are averages for 1983/84/85.

**Other Measures**

Examination of the rates provides clear evidence of the severity of the problem for young adult male Alaska Natives. However, the differences in age and sex distribution between the Alaska Native and non-Native populations, and the complex relationships these variables have with suicide, make it difficult to present an accurate picture in a simple manner. Two measures taken from the epidemiologic literature, the Standardized Mortality Ratio (SMR) and Years of Life Lost (YOLL), may aid in clarifying the presentation.

**Standardized Mortality Ratio.** If Alaska's population had an age distribution similar to the U.S. as a whole, and if Alaskans were dying at a rate the same as the national rate, there would have been 1,670 deaths in 1983. Since there were 1,901 deaths in Alaska that year, it can be seen that Alaskans are experiencing a higher death rate than the U.S. as a whole. The ratio of observed deaths (1,901) to the expected deaths (1,670) multiplied by 100 is the SMR. For 1983, the SMR was 113.8%. In other words, Alaska has 113.8% of the deaths which would have been expected if their rate were the same as that experienced nationally. The percentage over 100 is often referred to as "excess" deaths. The same analysis can be applied to suicide rates for different age and sex groups. Again, the small numbers are associated with greater variance from year to year.

Table 3

Suicide Standard Mortality Ratios (SMRs) by Sex and Ethnic Group for Two Time Periods

Group	Age						
	15-19	20-24	25-29	30-34	35-39	40-64	65+
<b>White Males</b>							
1978-82	140	173	142	139	157	138	189
1983-85	195	136	131	133	103	107	115
<b>Native Males</b>							
1978-82	846	729	358	373	479	192	66
1983-85	679	841	691	284	300	280	40
<b>White Females</b>							
1978-82	199	107	188	124	20	104	78
1983-85	162	206	149	72	65	143	79
<b>Native Females</b>							
1978-82	1037	394	518	113	0	39	0
1983-85	811	1233	455	150	163	0	261

In particular, the number of female suicides is so small that it was necessary to combine 5 years (1978 through 1982) in order to provide even crude comparisons. Two time periods are presented in Table 3: 1978 through 1982 and 1983 through 1985. The mid-year for 1978-82 is 1980, which makes it possible to compare directly with 1980 national data. Data presented in a three-way breakdown (age, sex, and ethnic group) is available only for 1980. The SMRs for 1983 through 1985 provide a more current contrast with national data for 1980. Note in Table 3 that the number of suicides for Alaska Native males age 15 through 19 is over 8 times, and number for Alaska Native males 20 through 24 over 7 times, what it would be if their rate were the same as that experienced nationally.

On a national level, these are the age groups which have been identified as having a suicide rate which constitutes a major public health problem and a priority objective for action. How shall we describe the extent of suicide as a health problem for Alaska Native youths with a suicide mortality many times as high? Alaskan White male suicides also are higher than expected. However, the difference is much smaller than that for Alaska Natives.

The SMRs in Table 3 illustrate the fact that suicide is a serious public health problem for females as well as males in Alaska. As low as the absolute numbers are (normally less than 10 per year), the SMRs demonstrate that suicide is a greater problem for females in Alaska than in the rest of the U.S., particularly for Alaska Native adolescent females. The absolute numbers of suicides and the severity of the problem are greater for males in general with the most serious problem existing in the under 30 age groups. The small number of deaths in Tables 3 and 4 account for the variability of SMRs shown. Because of that

variance, no single SMR should be used to predict mortality for any group. However, examination of the tables and figures for years other than 1979 through 1982 demonstrates that the relationships between ethnic, sex, and age groups within Alaska and between Alaska and the rest of the nation are consistent.

**Years of Life Lost.** This is a common measure used in the health-related disciplines to arrive at a standardized measure to evaluate the relative severity or impact of various causes of death. It emphasizes the loss of potential contribution to society rather than the individual lives lost. In previous sections of this paper, the frequency with which suicide occurs, trends in suicide deaths, suicide rates, age-adjusted suicide rates, SMRs, and the relationship of these data to sex and race have been discussed. While it is clear that among the violent causes of death, accidents outnumber both suicides and homicides by a factor of 2.5 to 1, it is revealing to look at the average number of years of life lost both for different causes of death, and by sex and ethnicity.

Table 4

Average Years of Life Lost by Cause of Death, Ethnicity, and Sex, 1977-1984

Group	Accidents	Suicides	Homicides	All Others
Native Females	36.7	41.0	37.6	28.7
Native Males	35.7	37.9	35.9	26.6
White Females	37.6	32.3	33.9	21.9
White Males	33.7	32.1	31.0	19.8
Average by Cause of Death	34.9	34.3	34.3	23.0

Table 4 presents data on the average number of years of life lost during the period 1977-1984 for the causes of death indicated, being 34.9 for accidents, 34.3 for suicide, 34.3 for homicide, and 23.0 for all other causes of death. To arrive at these figures, a standard life expectancy of age 65 was assumed for both sexes and ethnic groups.

Focusing on suicide and looking at the relationships by sex and ethnicity show that the influence of ethnicity is significantly greater. The difference between Alaskan White males and Alaskan White females is, on the average over the 8-year period, not significant (32.1 vs. 32.3 years of life lost). The difference between Alaska Native males and Alaska Native females over the 8-year period is more significant, with an average difference of 3.1 years of life lost. Large and more significant differences are found on the basis of ethnicity. The difference between Alaskan White male and Alaska Native males over the 8-year period is some 5.8 years of life lost, while the difference between Alaskan White females and Alaska Native females is 8.7 years of life lost.

Similarly, when looking at the total number of years of life lost, Alaska Natives are disproportionately represented in the suicide category. While comprising only 16% of the state population over the period 1978-1984 Alaska Natives contributed almost 38% of the total number of years of life lost due to suicide, more than twice their population figure.

Finally, we look at the rate of years of life lost per 1,000 population in Table 5. This method standardizes the suicide data to account for the different sizes of the Native vs. White and male vs. female populations. In all cases the rates for Alaska Native males are substantially higher than for other groups. Again focusing on suicide, the Alaska Native male rate of years of life lost is 2.5 times higher than for Alaskan White males, and nearly 3.5 times higher than for Alaska Native females.

Table 5

Rate of Years of Life Lost by Cause of Death, Sex, and Ethnic Group, 1978-1984

Group	Accidents	Suicides	Homicides	All Others
Native Females	186.0	35.8	53.1	244.0
Native Males	640.7	182.2	118.4	334.7
White Females	68.1	14.2	15.4	99.0
White Males	260.5	55.2	29.2	143.7

Note. Based on 1981 population; rate is per 1,000 population. Other Risk Factors

Much of the research on suicide has been directed toward identifying characteristics of populations-at-risk. The preceding discussion has demonstrated that risk is greater for some age, sex, or ethnic groups than others. Research also has identified alcohol use, unemployment, size of age cohort, and loss of a friend or family member as factors related to suicide.

Experts in the field agree that alcohol consumption plays a significant role in suicidal deaths (Sudak et al., 1984). The percent of alcohol-related suicide attempts among Alaska Natives between 1971 and 1977 ranged from 39% to 86% per year (Kraus & Buffler, 1979). In a later study by Kost-Grant (1983), 20 of 34 Alaska Natives (59%) who had survived a self-inflicted gunshot wound had been using alcohol at the time of the shooting. Seventy-nine percent of Alaska Native suicides tested in 1983 and 1984 had detectable levels of blood alcohol, compared to 48% of White suicides for those years (Hlady & Middaugh, 1986). Frederick (1975) estimated that 75-80% of all completed American Indian suicides in the U.S. were alcohol related.

Unemployment has been linked to suicide in a number of studies. Travis (1984) hypothesized that the difference in suicide rates between the Northwest Alaska Native Association and the North Slope Region was causally linked to the difference in employment rates. However, Travis' analyses were based on the erroneous count of suicide deaths prior to the Suicide Study and his results may be altered by reanalysis based on the corrected count.

One hypothesis presented to explain the observed increases in youth suicides is the age cohort hypothesis which relates increases in the size of the adolescent population and the proportion of adolescents in the population to the suicide rate for that age group (Holinger & Offer, 1981). This hypothesis appears to be supported by the increase in suicides among the young in the U.S. as a whole, in Alaska, and in some parts of the South Pacific. However, other research reported in Sudak et al.'s (1984) review of the literature does not support Holinger and Offer's hypothesis.

On the other hand, loss of a friend or family member, particularly by suicide, is recognized as one of the most significant factors predicting suicide. For that reason, the occurrence of a suicide in any community should mobilize mental health resources to provide appropriate services to the bereaved family and community.

#### Other Alaskan Research

The research procedures of Kraus and Buffler (Kraus, personal communication, November, 1985) provided them with a suicide count for the years 1950 through 1974 which is not likely to be altered significantly by changes in the suicide database. Their series of papers constitute the definitive work on suicide and other violent deaths among Alaska Natives and provides information on trends and relationships which continues to be a reliable substitute for analyses which are planned for the as-yet-uncorrected 1959-1977 data.

Figure 8 illustrates trends across the years 1951 to 1975 for Alaska Natives, and comparison populations 1960-1975, based on Indian Health Service (IHS) data and on data from Kraus (Blackwood, 1978). Blackwood's use of data from Kraus provides a more accurate estimate than use of IHS data alone. The scale from Blackwood's study has been extended to allow the addition of data from 1978 through 1985 from the current suicide study. Unfortunately, the updated rates for 1976 and 1977 will not be available until the second phase of the suicide study is completed. Figure 8 graphically illustrates the continuing rise in suicides among Alaska Natives. Although there is a small decrease in the average rate for 1982/83/84, the difference is not statistically significant and probably reflects the chance variance associated with small numbers.

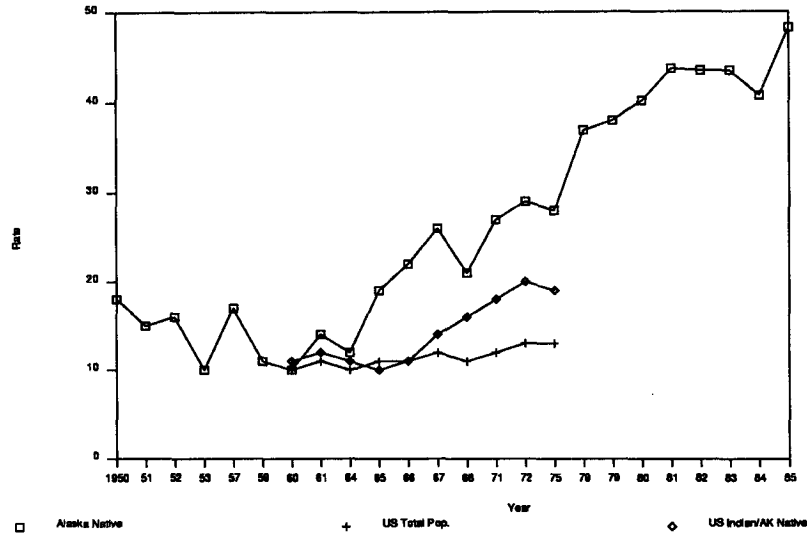


Figure 8. Crude suicide death rates: Alaska Natives 1951-1975 and 1978-1985.

Note. Adopted from Blackwood, L. (1978). *Health problems of Alaska Natives*, Alaska Area Native Health Service. Data presented (1978-1985) is in 3-year moving averages. Years listed on x-axis are mid-years for 3-year averages.

The 1985 Alaska Native Health Board (ANHB) report on suicide states that "From 1976 to 1982, however, the rate [for Alaska Natives] declined dramatically from 43.6 to 23.5 per 100,000" (p. 57). The data used to support that statement are taken from a table prepared by the Alaska Area Native Health Service, Program Formulation Branch, Statistics Section. The Statistics Section in turn bases its table on NCHS figures relayed to them by the national office of the IHS. NCHS figures undercount Alaskan suicides because they do not include as suicides those deaths determined through inquest or autopsy to be suicide after the original death certificate is filed. Unfortunately, the conclusion that Alaska Native suicides are decreasing reached by the authors of the ANHB report is in error. Based on the same erroneous data the 1986 Indian Health Service report, *Indian Health Care* states, "The Alaska crude mortality rate from suicide declined between 1972 to 1982..." (U.S. Congress, 1986). The same report lists the average crude suicide rate for Alaska Natives as 21.3; the correct figure is 43.5. IHS funding decisions based on such data have a potentially profound impact on the health care of Alaska Natives.



### American Indians

Most of the comparisons made so far have been between Alaska Natives and Alaskan Whites or U.S. Whites. American Indians also have high suicide and violent death rates among the young. As Kraus and Buffler point out in their 1979 paper, the violent death rate for Alaska Natives seems to be a phenomenon affecting American Indians in general. Yet for suicide, as distinct from homicide and accidents, there is considerable variation among American Indian groups. McIntosh and Santos (1981) indicate that the Navajo and Chippewa, the two largest tribal groups of non-Alaskan American Indians, have a low suicide rate. However, they also point out that despite tribal differences, "Indian suicides are... in the younger age ranges than is the case for the population as a whole. For Indians, suicides usually peak in the twenties or early thirties and consistently decline thereafter with age" (p. 305). For Alaska Natives, Kraus and Buffler (1979) identify suicide among the young as an emergent pattern manifesting itself primarily after 1965 and attribute the rapid increase in the overall Alaska Native suicide rate since 1950 to suicide among the young. Havighurst (1971) and Ogden, Spencer, and Hill (1970) have commented on the same pattern among non-Alaskan American Indians (i.e., a strikingly high rate of suicide among young people as compared with non-Native Americans and lower rates among older American Indians). However, Shore (1975) demonstrated that annual suicide rates vary more than 10-fold from tribe to tribe and the stereotype of the suicidal American Indian is misleading and an oversimplification.

Unfortunately, data on American Indian suicides for the last 5 years are not available, although isolated cases of American Indian adolescent suicides of epidemic proportions are reported in the popular press and only recently in the scientific literature (see Bechtold in this issue). The IHS figures do not provide a satisfactory comparison because (a) the IHS provides services for only about 60% of American Indians, and (b) their national figures for American Indians are taken from the NCHS. Figure 8 combining the trends reported by Blackwood for 1950 to 1975 and the suicide study data for 1978-1984 suggests that suicide is a much more serious problem for Alaska Natives than for American Indians outside Alaska.

### Summary

Sociocultural stress associated with rapid change continues to be identified as the cause of increased suicide among the young in many settings. However, rapid social change is not a useful explanation when the design of effective prevention programs is the desired outcome. As noted in the Report of the Secretary's Task Force on Black and Minority Health (Department of Health and Human Services Task Force, 1985), "an increasing body of research suggests that the ways an individual copes with stress and the resources available to resolve stressful situations, rather than the stressor itself, play the more important role in health outcome" (p. 47).

Although 47 Alaska Natives committed suicide in 1985, more than 75,000 did not, even though they also were exposed to the stress associated with rapid social change. There is an urgent need to identify specific factors in the lives of those who choose suicide so that more effective prevention programs can be designed. This type of research cannot be done from computer tapes. For example, we do not know whether one Alaska Native group currently is more vulnerable to stress, or more likely to choose suicide as a response to stress, than another. Because ethnicity is so loosely defined on a death certificate (usually just as White or Native) we cannot obtain the desired information about ethnicity without individual case studies. Nor do we know accurately whether those Alaska Natives who commit suicide in regional or urban centers are transients or long-term residents because those who make out death certificates are unlikely to know the decedent's life history. This type of research is expensive, time consuming, and greatly needed.

Two research questions which can be answered from the computerized data are (a) investigation of the hypothesis stated in the ANHB report indicating that the construction of the oil pipeline was associated with an increased rate of suicide, and (b) the cohort effect. The cohort effect refers to the hypothesis that the increase in suicide rates is specific for certain generations, that is, each generation or age cohort starting out with a higher suicide rate maintains higher rates as the individuals in that generation grow older. Murphy and Wetzel (1980) reviewed official statistics for the U.S. over the past 30 years and found that each successive 5-year age cohort started out with a higher suicide rate than the one preceding it and maintained higher rates at every age. If the age cohort hypothesis is valid in Alaska, intensive services for members of the generations currently in the age group of 15-30 years will need to be maintained for many years in the future.

In order to test the age cohort and pipeline hypotheses, the computerized data files for 1959 through 1977 will need to be corrected and analyses performed. Correcting these older files will be more difficult, particularly for rural areas, because many records of coroners' files will not be available. However, the

severity of the problem of suicide in Alaska together with the evidence now available indicating the Alaska Native suicide rate is not decreasing, place a high priority on the availability of more accurate data for the years before 1978 and increased quality control for current years.

Division of Mental Health and Developmental Disabilities  
 Department of Health and Social Services  
 1423 Peger Road  
 Fairbanks, Alaska 99709

#### Notes

1. This study and the subsequent changes in the computer files were done with limited staff and funding resources. For that reason, it was decided to limit the study in its initial phases to the data for 1978 through 1984. The data for 1959 through 1977 will be investigated when funding is available.
2. Under-reporting is a chronic problem whenever and wherever suicide is studied, and is estimated to be as high as 40% on a national basis. Variation in the number of suicides reported by different sources arises from the fact that different sources (e.g., state patrol data, official death certificates, inquest and autopsy reports, medical records) are counting different but overlapping sets of events. Further differences result from counting deaths by residence of the decedent as opposed to the counting of deaths by place of occurrence.
3. The Division of Planning has created a Vital Statistics Data Base Coordination Committee (VSDBCC) to address some of the problems of data processing which have emerged in the past year and to improve system coordination. The Committee includes the registrar, vital statistics programmer, and division research analysts, a representative of the commissioner's office, and users such as the state epidemiologist and the state demographer.
4. The improved counts as shown in Table 1 do not include suicides by out-of-state residents which occur in Alaska. Suicide in Alaska by an out-of-state resident is more common than a suicide by an Alaskan resident occurring out of state. Residents of other states committed suicide in Alaska an average of 4 times a year from 1978 through 1984.
5. Data in this section is taken from Suicide Surveillance, 1979-1980, Centers for Disease Control, 1985.
6. Age-adjusted rates in this report have been computed against the national population profile for the year in question.
7. National Center for Health Statistics annual reports titled "Advanced Report of Final Mortality Statistics".
8. Although the ICDA category classifies explosives with firearms, less than 1% of the deaths in that category are due to explosives.

#### References

- Alaska Native Health Board, Inc. (1985). *Rural health issues and suicide evaluation project: A resource document*. Anchorage, AK: Alaska Native Health Board.
- Blackwood, L. (1978). *Health problems of the Alaska Natives: Suicide mortality and morbidity*. U.S. Department of Health, Education, and Welfare, U.S. Public Health Service.
- Centers for Disease Control. (1985). *Suicide surveillance, 1970-1980*. U.S. Department of Health and Human Services, Public Health Service.

- Department of Health and Human Services. (1985). *Report of the Secretary's task force on Black and minority health* (Vol. 1). Washington, DC.
- Frederick, C. (1975). *Suicide, homicide, and alcoholism among American Indians*. Washington, DC: U.S. Government Printing Office.
- Havighurst, R. (1971). The extent and significance of suicide among American Indians today. *Mental Hygiene, 55*, 174-177.
- Hlady, W. G., & Middaugh, J. P. (1986). *The recording and epidemiology of suicides in Alaska 1983-1984*. Anchorage, AK: Epidemiology Office, Division of Public Health.
- Holinger, P. C., & Offer, D. (1981). Perspectives on suicide in adolescence. In R. Simmons (Ed.), *Social and community health*. Greenwich, CT: Jai Press.
- Kost-Grant, B. L. (1983, January-February). Self-inflicted gunshot wounds among Alaska Natives. *Public Health Reports, 98*(1), 72-78.
- Kraus, R. F., & Buffer, P. A. (1979). Sociocultural stress and the American Native in Alaska: An analysis of changing patterns of psychiatric illness and alcohol abuse among Alaska Natives. *Culture, Medicine and Psychiatry, 3*, 111-151.
- McIntosh, J. L., & Santos, J. F. (1981). Suicide among Native Americans: A compilation of findings. *OMEGA, 11*(4), 303-316.
- Murphy, G. E., & Wetzel, R. D. (1980). Suicide risk by birth cohort in the United States, 1949-1974. *Archives of General Psychiatry, 37*, 519-523.
- Ogden, M., Spencer, M. I., & Hill, C. A. (1970). Suicides and homicides among Indians. *Public Health Reports, 85*, 75-80.
- Shore, J. H. (1975). American Indian suicide: Fact and fantasy. *Psychiatry, 38*, 86-91.
- Stack, S. (1986). Youth suicide. *American Association of Suicidology NewslinK, 12*, 4-6.
- Sudak, H. S., Ford, A. B., & Rushforth, N. B. (1984, July). Adolescent suicide: An overview. *American Journal of Psychotherapy, 38*(3), 350-363.
- Travis, R. (1984, September). Suicide and economic development among the Inupiat. *Alaska Native News, 34*-42.
- U.S. Congress, Office of Technology Assessment. (1986). *Indian Health Care* (OTA-H-290). Washington, DC: U.S. Government Printing Office.