

Why are suicide rates of older American Indian and Alaska Native males so much lower than older U.S. white males?

Lawrence R. Berger, MD, MPH, Academic Director, IHS Injury Prevention Fellowship Program, Clinical Assistant Professor of Pediatrics, University of New Mexico, Albuquerque, NM. Corresponding author: bergerlaw@msn.com

The assertion that “American Indians exhibit suicide-related behaviors at rates much higher than the general population” is often made in both popular and professional publications. While the assertion is true for national-level data for adolescents and young adults,¹⁻⁵ it definitely does not apply to older adults, especially older adult males. Table 1 and Figure 1 display suicide rates for AI/AN, non-Hispanic males and white, non-Hispanic males of all ages for the years 2009-2013.⁶ (The non-Hispanic qualifier was used to reduce the impact of misclassification of race/ethnicity. For the remainder of this article, “males” refers to non-Hispanic males):

- The overall (all-ages) suicide rate for both groups is very similar: 26.4 per 100,000 for AI/AN and 26.0 for white males;
- The age group with the highest rate of suicide among AI/AN males is 20-24 years. Their rate is twice that of US white males in the same age group (58.7 vs. 26.4 per 100,000);
- Suicide rates for AI/AN males decline steadily for age groups beyond 20-24 years. In the 45-49 year old age group, AI/AN and white males have identical rates of suicide (37.0 per 100,000);
- Thereafter, AI/AN male suicide rates continue to decline as the rates for US white males increase. The suicide rate for US white males 50 years and older is 34.4 per 100,000, twice the AI/AN rate of 17.0;
- In the age group 70 years and older, the suicide rate for white males is nearly three times greater than the AI/AN rate (37.0 vs. 12.5 per 100,000).

What are possible reasons for this disparity in suicide rates? Human behavior is far too complex to expect a simple answer. In this concept paper, I present several arenas to explore in searching for answers. Those arenas include data issues, the “survivorship” hypothesis, differences in selected risk and protective factors (access to lethal means, prevalence of psychiatric illness and substance

abuse, physical illness, access to health care), resilience and the indigenous worldview. I hope you will consider the strengths and weaknesses of the evidence presented, what additional evidence might be useful, and what other aspects of the issue warrant attention.

Data issues

If the reliability and completeness of a dataset is not optimal, there is room for misinterpretation and false conclusions. Suicide mortality rates are calculated by dividing a numerator - the number of suicides among individuals in the target population - by a denominator - the total number of individuals in the target population. WISQARS (the CDC’s “Web-based Injury Statistics Query and Reporting System”) uses numerator data from a national database compiled by the CDC’s National Center for Health Statistics:

This database contains information from death certificates filed in state vital-statistics offices and includes causes of death reported by attending physicians, medical examiners, and coroners. It also includes demographic information about decedents reported by funeral directors, who obtain that information from family members and other informants.⁷

Under-estimates of the numerator can occur through misclassification (assigning an AI/AN decedent to a different race/ethnicity category)⁸⁻¹² or incorrectly assigning suicide deaths to other diagnostic categories.^{13,14}

Denominator data for WISQARS comes from an entirely different data source: the U.S. Bureau of the Census. Because the Census relies on self-reported identification of race/ethnic identify, population figures might represent overestimates if many of the individuals who self-report as American Indian or Alaska Native would be identified differently by persons who complete the death certificates.

National data, such as displayed in Table 1 and Figure 1, has the advantage of larger numerators for calculating more accurate rates. However, it has the very obvious disadvantage of masking the great diversity among tribes (e.g., cultural, economic, geographic; federally-recognized/non-Federally recognized; reservation-based or not), various AI/AN communities (rural/urban, wealthy or

poor), and individuals (lifestyles, level of education, personal history).

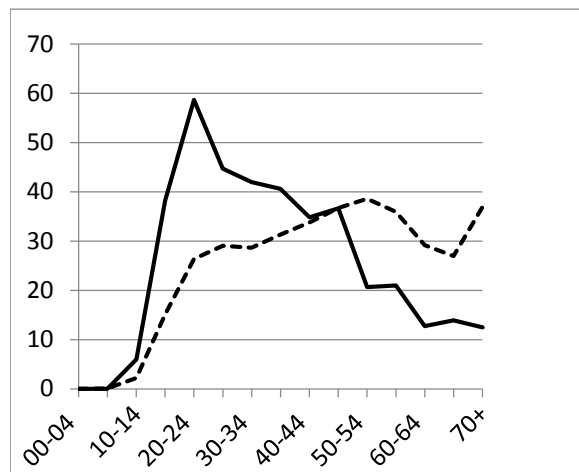
A 2014 study comparing suicide rates among AI/AN and US whites addressed the issues of misclassification and regional geographic differences. This was achieved by limiting the data to non-Hispanic individuals, linking mortality data to the IHS patient registration database, and focusing on AI/AN residents of counties known to have lower rates of misclassification. The ratio of suicide rates for AI/AN to US whites among adults 65-84 years of age ranged from 0.26 in the Southwest IHS region to 0.89 in the Southern Plains.¹⁵

The survivorship hypothesis

Figure 1 shows an ascending/descending pattern of AI/AN male suicide rates. The phenomenon of a condition reaching a peak and then steadily declining is often observed in infectious disease epidemics. There, the dynamic is referred to as “the depletion of susceptible individuals in the population.”¹⁶ How might this dynamic apply to suicide? We begin by hypothesizing that a certain, very small percentage of all males in the United States are uniquely susceptible to committing suicide, and this susceptibility is present from childhood through the end of life. We next

Figure 1

Suicide death rates per 100,000 AI/AN and White, non-Hispanic males By age group, 2009 - 2013, United States, ICD-10 Codes: X60-X84, Y87.0,*U03



Derived from CDC WISQARS. Data Source: NCHS Vital Statistics System for numbers of deaths. Bureau of Census for population estimates.

Table 1 Suicide Injury Deaths and Rates per 100,000, AI/AN and White, Non-Hispanic Males, All Ages, 2009 - 2013, United States, ICD-10 Codes: X60-X84, Y87.0,*U03

Age Group	AIAN Deaths	AIAN Rate	White Deaths	White Rate	Ratio AIAN:White	Ratio White:AIAN
00-04	0	0	0	0		
05-09	0	0	12	--		
10-14	32	6.0	656	2.2	2.7	0.4
15-19	219	38.3	4824	15.1	2.5	0.4
20-24	321	58.7	8619	26.4	2.2	0.5
25-29	209	44.7	9161	29.0	1.5	0.7
30-34	178	42.0	8637	28.6	1.5	0.7
35-39	161	40.6	9309	31.4	1.3	0.8
40-44	142	34.8	11222	33.8	1.0	1.0
45-49	160	36.7	13589	36.7	1.0	1.00
50-54	88	20.7	15159	38.6	0.5	1.9
55-59	75	21.0	13100	36.0	0.6	1.7
60-64	36	12.7	9361	29.2	0.4	2.3
65-69	27	13.9	6643	26.9	0.5	1.9
70+	35	12.5	18016	37.0	0.3	3.0
All Ages	1683	26.4	128308	26.0	1.0	0.99

assume that many AI/AN males are exposed during adolescence and young adulthood to unique stressors, more frequent stressors, and/or more intense stressors, than white males. Examples of stressors include poverty, racism, historical trauma, lack of educational and job opportunities, identity issues (“walking in two worlds”,¹⁷⁻¹⁹ defining what it means to be “Indian”²⁰), the loss of family members and peers to violence and motor vehicle crashes,²¹ and high rates of Adverse Childhood Events.^{22,23} We next make the assumption that white males are much less likely to be exposed to the same number, type, and/or intensity of the afore-mentioned stressors in their youth and young adulthood. Our final assumption is that as both groups age, they are likely to be exposed to many common stressors, such as acute and chronic diseases, decreased mobility, loss of roles, and social isolation.

Table 2 Suicide Injury Deaths and Rates per 100,000 by Mechanism, AI/AN and White, Non-Hispanic Males, Ages 65 to 85+ 1999 - 2013, United States, ICD-10 Codes: X60-X84, Y87.0,*U03

	Cause of Death	Deaths	%	Crude Rate	Rate ratio of White : AI/AN
White	All causes	66696	100.0%	33.37	2.4
	Suicide Poisoning	4530	6.8%	2.27	1.9
	Suicide Firearm	53794	80.7%	26.91	2.5
	Suicide Suffocation	5175	7.8%	2.59	1.8
AI/AN	All causes	161	100.0%	13.98	
	Suicide Poisoning	14	8.7%	1.22	
	Suicide Firearm	125	77.6%	10.85	
	Suicide Suffocation	17	10.6%	1.48	

WISQARS, August 21, 2015

The results of this scenario would be high rates of suicide among adolescent and young adult AI/AN males compared to white males. However, in the older age groups, the suicide rate would be higher among white males, as many of the susceptible AI/AN males had previously taken their lives. Most older AI/AN males would therefore be non-susceptible survivors. This scenario is consistent with the WISQARS data demonstrating very similar overall (all-ages) suicide rates for AI/AN and white males, despite very dissimilar age-specific rates. The hypothesis is also supported by cross-national data showing that “generally, elderly suicide rates were lower in countries with higher adversity early in life.”²⁴

Access to lethal means

Nationally, over 95% of suicides among both AI/AN and white males 65 years and older are associated with three mechanisms: firearms, suffocation, and poisoning.(Table 2)⁶. Firearms accounted for approximately 80% of suicides in both groups (77% for AI/AN and 81% for white). The greatest disparity in rates is for suicides by firearms, where the rate ratio of white to AI/AN males 65 and older is 2.5.

If firearms were less accessible to older AI/AN males than to older white males, the AI/AN suicide rate would be lower because “existing evidence associates household firearm ownership with an increased risk of suicide, both among adults and adolescents.”²⁵ In 2004, nationally-representative telephone survey of 2,770 adults found that 30% of whites and 15% of non-whites reported owning a firearm.²⁶ I have not located any national data comparing firearm ownership among older AI/AN and white males. There is definitely a “striking dearth of research on guns and suicide.”²⁷ There is some intriguing data from Alaska, however, the state with the highest proportion of households (61%) possessing one or more firearms.²⁸ Community surveys in Anchorage and the adjacent rural Borough of Mat-Su revealed similar rates of reported gun ownership in AI/AN and white homes.²⁹ Yet in the age group 65-84 years old, the rate ratio of suicides of AI/AN to whites in Alaska was 0.27 (95% CI = 0.07,0.74).¹⁵ Based only this limited data, it would appear that differential access to firearms may not an important contributor to lower suicide rates among older AI/AN adults in Alaska. However, there are several

caveats in interpreting this data. Firearm ownership among Alaskan villagers consists primarily of long guns (rifles and shotguns) used for subsistence hunting (over 95% of respondents) and not handguns (29% of respondents).²⁵ Second, increased use of gun storage lockers and safety locks in Alaska may be reducing older-adult access to firearms.^{25,30} Furthermore, the survey data may not be at all representative of the state of Alaska and certainly not of the United States overall.

Mental illness and Substance Use

“Psychiatric illness is present in from 71% to 97% of suicides, with affective [mood] disorder being the most common. In particular, major depression is most closely associated [with suicide].”³¹ Factors that increase the risk of late-life depression include substance abuse disorders, anxiety disorders, medical illness, disability, functional decline, loneliness, and loss of a spouse or loved one.³²

Unfortunately, there are very few studies comparing rates of psychiatric illness between older AI/AN males and white males. One exception is a survey of over 3,000 tribal members from two tribes (one Southwest and one Northern Plains) reproduced the methods used in a previous national,

all races survey, the National Comorbidity Survey. Males in both tribes had higher lifetime PTSD rates and lifetime alcohol dependence rates. Lifetime major depressive episode rates were lower for Northern Plains men. There were fewer disparities for 12-month rates. The study involved individuals aged 15 to 54 years, however, not older age groups. The authors concluded that the results “suggest that these American Indian populations had comparable, and in some cases greater, mental health service needs, compared with the general population of the United States.”³³

Individuals with diabetes, 65 and older, were interviewed face-to-face in the 2005 ELDER (Evaluating Long-term Diabetes Self-management Among Elder Rural Adults) study. They were “African-American, Native American, and white men and women” residing in two rural counties in North Carolina. Rates of depressive symptoms were highest among Native Americans compared with the other ethnic groups...but this difference was not statistically significant.³⁴

The National Comorbidity Survey Replication (NCSR), another nationally-representative survey, explored the unexpected finding from previous studies that the prevalence of various psychiatric disorders was not elevated “among disadvantaged racial and ethnic minority groups, despite higher levels of social adversity experienced by these groups.” The investigators concluded that “the pattern of race-ethnic differences in risk for psychiatric disorders suggests the presence of protective factors that originate in childhood.” Hispanics, non-Hispanic blacks, and non-Hispanic whites, but not American Indians and Alaska Natives, were included in the analysis.³⁵

According to national survey data from the Substance Abuse and Mental Health Services Administration (SAMHSA) for 2004-2008, the rate of past month alcohol use was lower among American Indian or Alaska Native adults 50 and older than among adults in the general population (31% vs. 47%). Rates of past month binge alcohol use and illicit drug use were somewhat higher than the national average (15% vs. 13% and 4% vs. 3%, respectively), but the differences were not statistically significant.³⁶

Physical illness and disability

Nationally, rates of serious physical illness and disability for AI/AN are almost universally equal to or great than those of US whites. A 1999 expert panel report entitled, “Emerging Disabilities: American Indian Issues” stated that:

“...relative to the general population, socioeconomically disadvantaged groups are greatly overrepresented with respect to poor health indicators

despite public health successes in reducing the incidence of many organic diseases... Rates of limitation in major activity due to chronic conditions are higher for American Indians and Alaska Natives than for national norms, and there is no improvement in sight.”³⁷

More recently (2012), CDC estimates of disability prevalence for all ages were 33% for AI/AN (range 21% to 45% by state) and 22% for whites (range 17% to 29% by state). This age-adjusted data comes from the Behavioral Risk Factor Surveillance System (BRFSS). Disability was defined as “a Yes response to either of the following two Behavioral Risk Factor Surveillance System (BRFSS) questions: (1) “Are you limited in any way in any activities because of physical, mental or emotional problems?” and (2) “Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?”³⁸

An analysis of BRFSS data from 2001 and 2002 for individuals age 55 and older found that AI/AN respondents were significantly more likely than white respondents to report being unable to work (15.4% vs 4.6%), had higher rates of multiple risk factors for chronic disease, and more frequently reported that their general health was only “fair” or “poor” (35% of AI/AN males vs. 23% of white males, odds ratio of 1.9.³⁹

The Native Elder Care Study involved a community-based sample of 505 American Indians aged 55 years or older. Two-thirds of the study group experienced some degree of comorbidity, defined as the presence of two or more chronic conditions. They had higher rates of hypertension, diabetes, back pain, and vision loss compared to national statistics of older adults.⁴⁰

Historically, AI/AN were reported to have much lower rates of cancer than the general population. A different picture emerged when probabilistic linkage methods were used to address misclassification of race among the northwest AI/AN population. The authors found “no meaningful difference in incidence rates for selected site- and gender-specific cancers between the AIAN population and all races combined, and, in fact, some of these rates may be higher among the AIAN population.”¹²

Finally, Table 3 shows data from the most recent (2014) issue of the IHS publication, “Trends in Indian Health”. This publication provides health information for AI/AN people residing in the IHS Service Area.

The IHS service area consists of counties “on” or “near” federal Indian reservations, i.e. contract health service delivery areas (CHSDAs). As of CY 2014 the Indians residing in the service area comprise about 58 percent of all AI/AN people (alone) residing in the U.S.⁴¹

Table 3 Mortality rate ratios for selected leading causes of death, AI/AN and whites, ages 65 and older

Disease State	Rate Ai/AN:White	Ratio
Heart disease		
65-74 years		1.4
75-84 years		1.0
85 years +		0.5
Malignant neoplasm		
65-74 years		1.1
75-84 years		0.9
85 years +		0.6
Diabetes mellitus		
65-74 years		3.4
75-84 years		2.4
85 years +		1.5
Chronic liver disease/cirrhosis		
65-74 years		2.3
75-84 years		1.5
85 years +		1.3
Cerebrovascular disease		
65-74 years		1.5
75-84 years		1.2
85 years +		0.6

Rates were adjusted for misreporting of AI/AN race on the state death certificates. Data for AI/AN is from 2007-2009; for whites, 2008. Source: IHS Trends, 2014.

The AI:AN rate ratios shown in Table 3 are based on mortality rates for several major causes of death among older age groups. The data has been age-adjusted “and also adjusted for misreporting of AI/AN race on the state death certificates”. In only 3 of the 15 age-specific disease categories (all in the 85 years+ age group) are the rate ratios below 0.9.

Access to medical and mental health services

Suggesting that AI/AN elders might have lower suicide rates because of better access to medical and mental health care is not tenable. In 2012, American Indians and Alaska Natives had worse access to care than whites for about one-third of access measures. Measures of access to care include

having health insurance, having a usual source of care, encountering difficulties when seeking care, and receiving care as soon as wanted.⁴² A 2005 study based on the Federal Employee Health Disparity Index (FEHDI) concluded that “an additional \$1.8 billion would be needed to provide active IHS users with services at the same level as those provided in a mainstream health plan such as the FEHP.”⁴³ An earlier (1999) study using the same methods found that the IHS was funded at a level of only 54% of what was needed.⁴⁴

Restrictions in access to mental health services are even more prominent

If health care services in general suffer from such intimidating fiscal constraints, then mental health services in particular bear a disproportionate share of this budgetary burden, with less than 7% of IHS funding designated for “behavioral health” and substance abuse treatment services combined...Owing to chronic budgetary constraints, recruitment and retention challenges, and routine cultural misunderstanding, the assertion that American Indians and Alaska Natives are “underserved” with regard to mental health care in the United States glibly understates a national travesty that demonstrates an intrinsic but ongoing repudiation of America’s longstanding Trust obligations to tribal nations.”⁴⁵

In testimony before the Senate Committee on Indian Affairs in 2010, the Deputy Director of IHS stated:

[T]here are limited mental health services in Tribal and urban Indian communities. While the need for mental health care is great, services are lacking, and access to these services can be difficult and costly. The current system of services for treating mental health problems of American Indians and Alaska Natives is a complex and often fragmented system of Tribal, federal, state, local, and community-based resources...[that] varies considerably across communities...Many of the IHS, Tribal, and Urban mental health programs that provide services do not have enough staff to operate 24 hours/7 days a week.⁴⁶

Based on a survey of IHS and tribal health care facilities in 2008 -2009, the DHHS Office of Inspector General reported that:

Staffing issues and shortages of highly skilled providers limit AI/ANs’ access to mental health services at IHS and tribal facilities...Among the challenges that access to mental health services at IHS and tribal facilities are physical barriers, such as travel conditions; personal and social barriers, such as the lack of child care; and economic issues, such as difficulty paying copayments.⁴⁷

Resilience, connectedness, and the indigenous worldview

There are many definitions of resilience and numerous domains within which resilience is proposed to operate, including physiological resilience, social support, emotional resilience (stress and coping), and spiritual/religious resilience.⁴⁸ Resilience is used here to mean “the successful adaptation to life despite risk and adversity.”⁴⁹

“Connectedness” is an aspect of resilience often mentioned in association with prevention of suicidal behavior. The CDC has made “connectedness” a foundational concept for its national suicide prevention initiative. They emphasize three dimensions: connectedness between individuals; connectedness of individuals and their families to community organizations; and connectedness among community organizations and social institutions.⁵⁰

The indigenous worldview embodies a much more all-encompassing experience of connectedness.⁶⁶ Native peoples’ understanding of the world is based on concepts such as holism, interconnection, and universal relatedness. Many Native people have traditionally held that we are all one with each other and with all of creation, and that we need to maintain a respectful balance and reverence for all life. They do not view themselves as superior to any other life form and recognize that all are essential to our survival.... Resilience comes from the Oneness they feel with all creation.⁴⁹

The indigenous worldview is “the foundation for a shared philosophy of life that gives meaning and identity to its members” and is expressed in “ceremonies and rituals, humor, oral tradition, family, and support networks [that] were essential protective strategies that kept native people strong.”⁴⁹

Many aspects of connectedness emerge from this worldview. Examples from the Diné appeared in an article about environmental activism at the Navajo Nation.⁵¹ The author, Larry Emerson, referred to:

- “Our collective need to honor and protect our sacred land, air, water, plants, animals, and, therefore our kinship system originally gifted by a Diné female holy person;
- Our sacred relationship to our earth mother;
- Respect for all living beings and understand our inherent rights to exist in harmony and balance;
- Equity and justice that is rooted in our understanding of Changing Woman who helped Diné understand themselves as good, disciplined, nurturing and strong protectors;

- Diné k’ée [kinship] practices... [that] hold us together unconditionally through compassionate reciprocity.”

Another concrete manifestation of the indigenous worldview is its incorporation into the legal system of the Navajo Nation. In 2002, the Navajo Nation Council amended the Navajo Nation Code to recognize the “Fundamental Laws of the Dine”.⁵² The resolution stated that, “the Dine recognize that the Dine Life Way is a holistic approach to living one’s life whereby one does not separate what is deemed worship and what is deemed secular in order to live the Beauty Way.” The “Declaration of the Foundation of Dine Law”, includes these statements:⁵³

- “We, the Dine, the people of the Great Covenant, are the image of our ancestors and we are created in connection with all creation;
- We are identified by: Our Dine name, Our clan, Our language, Our life way, Our shadow, Our footprints. Therefore, we were called the Holy Earth-Surface-People;
- The four sacred elements of life, air, light/fire, water and earth/pollen in all their forms must be respected, honored and protected for they sustain life;
- The Diné have a sacred obligation and duty to respect, preserve and protect all that was provided. for we were designated as the steward of these relatives through our use of the sacred gifts of language and thinking;
- Mother Earth and Father Sky is part of us as the Diné and the Diné is part of Mother Earth and Father Sky; The Diné must treat this sacred bond with love and respect without exerting dominance for we do not own our mother or father.”

The indigenous worldview provides individuals with many strengths and protective factors relevant to suicide. Among them are intrinsic strengths, such as every person having important roles, obligations, and connections to all of creation; and extrinsic factors, such as expanded social networks and deep respect for elders as the bearers of ancestral wisdom and traditions. A shared worldview is also independent of socio-economic status, tribal enrollment, level of education, urban/rural lifestyles, and other differences among American Indians and Alaska Natives. This is not the case for many of the other risk and protective factors discussed in the literature, such as access to care or rates of substance abuse.

There is empirical evidence to support the association between “cultural spiritual orientation” (which might be indicative of personal connectedness to the indigenous worldview) and reduction in the risk of attempted suicide. Interviews were conducted with Northern Plains Indian

tribal members ages 15 to 57. “Cultural spiritual orientation” was assessed using “yes/no” responses to eight items (e.g., “I am in harmony with all living things”, “I feel connected with other people in life”, “I give to others and receive from them in return”). “Those with a high level of cultural spiritual orientation had a reduced prevalence of [attempted] suicide compared with those with a low level of cultural spiritual orientation. (OR=0.5, 95% CI=0.3, 0.9).”⁵⁴

Conclusion

My purpose in writing this article was actually three-fold. First, amidst the justified concern about youth suicide and other serious health problems facing American Indians and Alaska Natives, the good news about lower rates of suicide among older adult AI/AN males also warrants attention. Second, encouraging research to identify the reasons for the lower older adult suicide rate might stimulate additional efforts to preserve and strengthen the contributing factors among AI/AN adults. Finally, identifying these factors might also lead to enhanced interventions among other populations, including older US white males.

Because of constraints in time, editorial space, and the limits of my own expertise, this article contains a very selective review of the literature. There are hundreds of books, articles, and data sources relevant to issues of aging and suicide. Among them are works in social psychology,⁵⁵ psychiatry,⁵⁶ gender studies,^{57,58} epidemiology,⁵⁹⁻⁶¹ neurobiology,⁶² gerontology, sociology, and anthropology. Analysis of time trends, cross-national and cross-cultural comparisons,^{63,64} and psychological autopsies⁶⁵ are additional methodologic approaches not mentioned in this article.

Despite the plethora of useful resources, many limitations remain in terms of their applicability to older adult suicides, generalizability to different tribes and sub-populations, and relevance to suicide mortality as opposed to ideation or attempts. All of the above-mentioned disciplines can advance knowledge about resilience and suicide prevention. However, none will be more important than listening to the voices of indigenous people willing to share their experiences and their wisdom.

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