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## Suicide and the opioid overdose crisis among American Indian and Alaska Natives: a storm on two fronts demanding swift action

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### ABSTRACT

The opioid crisis in the United States has received national attention and critical resources in the past decade. However, what has been overlooked is the effect the opioid crisis may be having on a three-decade suicide crisis among American Indian and Alaska Native (AIAN) communities that already have too few resources to address behavioral and mental health issues. This paper describes recent epidemiological trends associated with both opioid overdose and suicide at a national level for AIANs and the rest of the United States. We used data reported by the Centers for Disease Control and Prevention to report historical trends of opioid overdose and suicide for AIAN and non-AIAN populations. We found alarming and potentially correlated trends of opioid use and suicidality among AIAN populations. We highlight both current and future research that will be essential to understanding and addressing the unique intersection between opioid and suicide risk and protective factors to inform dual prevention and intervention efforts among AIAN populations with potential relevance to public health response among other at-risk populations.

### ARTICLE HISTORY

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### KEYWORDS

American Indian; Alaska Native; suicide; opioids; co-occurrence

There is a dangerous overlap of suicide and opioid overdose in the United States (U.S.) in general, and particularly among some American Indian and Alaska Native (AIAN) communities.

Suicide rates have increased by 35% from 10.5/100,000 in 1999 to 14.2/100,000 in 2018 for all Americans (1). However, AIANs have sustained the highest rates for many decades, experienced the greatest increase in this recent period, and have notable differences in age patterns and by region or tribal group. Unlike the pattern of higher suicide rates among older (ages 50–59 and 80+) non-Hispanic White populations in the U.S., AIANs exhibit their highest rates of suicide at a younger age (15–24 years old) (2). According to CDC data (3)<sup>\*\*\*</sup>, suicide rates for AIAN youth and young adults between the ages of 15 to 34 are more than two times higher than all other racial and ethnic groups in the U.S. (*Web-Based Injury Statistics Query and Reporting System CDC*, 2019). Some tribal regions experience even worse disparities for youth and young adults' suicide, including in Arizona and Alaska (4,5). Further, current estimates of AIAN suicide are often considered conservative due to high ethnic/racial misclassification rates, especially in urban settings (6).

AIAN communities are also increasingly affected by the national opioid overdose crisis. Between 2005 and 2009, the rate of pharmaceutical opioid overdose deaths among AIANs (1.76/100,000) was higher than all other racial and ethnic groups (7). In 2016–2017, AIAN populations saw a 58.5% increase in synthetic opioid-related deaths, second only to the increase among African Americans (60.7%) (8). Several tribes have released emergency declarations to draw on resources to combat the opioid epidemic (9).

A recent article (10) examining observed and projected premature mortality rates by race are predicting that AIAN populations' premature (ages 25–65) mortality rates will be more than double the rates of all other races by 2030; and besides a minimal uptick in whites, AIANs are the only racial populations whose rates are projected to increase. Relevant to this analysis, two of the three projected increasing causes of AIAN premature mortality are overdose and suicide.

The purpose of this article is to examine the potential correlation between suicide and opioid overdose deaths among AIAN communities with a focus on age and regional differences, while identifying critical gaps in the available data. Further, we discuss theories and

mechanisms that may explain this overlap, with a focus on socio-historical impacts on community, familial and cultural risk and protective factors. Finally, we share promising efforts already underway in AIAN communities and pose recommendations for future research priorities, policies, and interventions to address the twin crises of suicide and opioid overdoses for AIAN communities, rather than continuing to silo these deadly public health concerns.

## Data

This section compares national data on suicide and opioid-related deaths for non-AIAN (i.e., White, African American, Asian, Hispanic/Latino) and AIAN populations to develop an understanding of AIAN-specific patterns and trends. Data are from the Centers for Disease Control and Prevention (CDC) Wide-Ranging Online Data for Epidemiologic Research (WONDER) website (11).

Figure 1 displays the historical trends for suicide and opioid-related deaths for AIANs and non-AIANs in the U.S. from 1999 to 2017. The rates of opioid-related deaths for AIANs and non-AIANs were similar from 1999 to 2002. However, the two groups diverge from 2003 to 2015, when opioid-related death rates for AIAN populations become higher than non-AIAN rates. Then in 2017, the gap appears to close with non-AIANs exhibiting increased rates in opioid-related deaths compared to AIANs. In the meantime, the AIAN suicide rate was roughly 22/100,000 versus roughly 13/100,000 for non-AIANs.

Figure 2 presents average crude suicide and opioid-related death rates by 10-year age groups from 1999 to 2017. The suicide rate for youth ages 15–24 is threefold higher for AIAN vs. non-AIAN youth (~30 vs. ~10 per 100,000). Similarly, AIAN youth ages 25–34 have nearly twice the suicide death rate than their non-AIAN counterparts, ~29 vs. ~15/100,000. In contrast, the opioid-related death rates for AIANs and non-AIANs is similar in teenage and early adulthood.

Figure 3 presents regional differences for crude suicide and opioid-related death rates by the four geographical census regions. Opioid-related death rates are similar between AIANs and non-AIANs within each region, in contrast to suicide, which exhibits more variability between AIANs and non-AIANs across the regions. Most striking is the notably higher opioid-related deaths and suicide rates among AIANs than non-AIANs in the Midwest and West. What might be captured is the greater accessibility of data for AIANs that reside in the Midwest and West due to a higher concentration of federally recognized tribal populations in these areas and more IHS resources for data monitoring.

Given historical trends, patterns in age, and regional concentrations, it stands to reason that opioid overdose and suicide-related deaths may share similar root causes for AIAN peoples. Particularly given the projections in increased premature mortality from these causes for AIANs over the next decade, it is urgent to promote prevention and treatment approaches that target these comorbid behaviors to improve health outcomes.

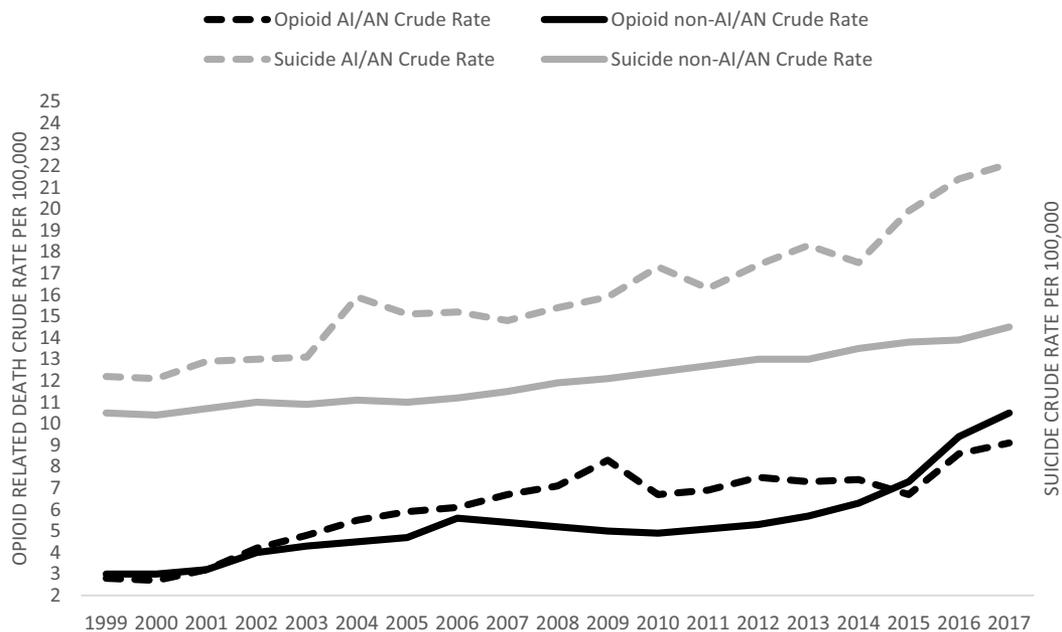
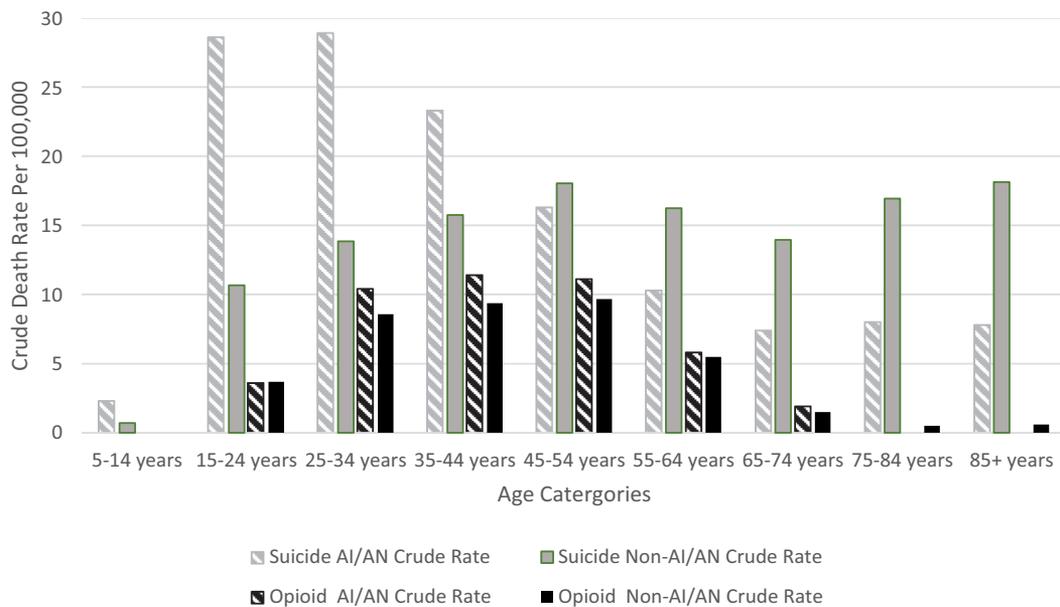
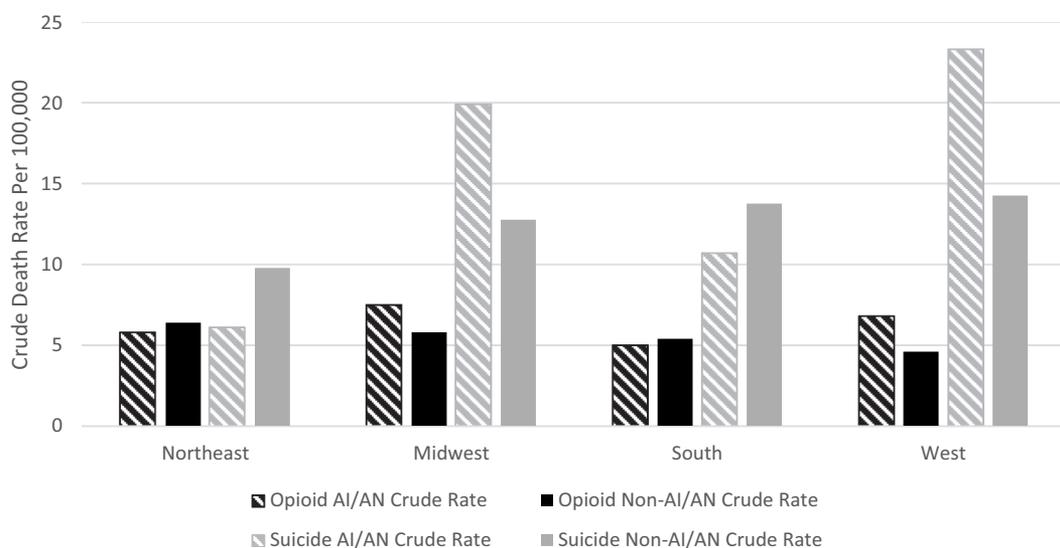


Figure 1. Trends of suicide and opioid-related deaths for AI/AN and non-AI/AN (1999–2017).



**Figure 2.** Crude suicide and opioid death rate by ten-year age groups for AI/AN and non-AI/AN.



**Figure 3.** Crude suicide and opioid related rate by census region for AI/AN and non-AI/A.

### ***Opioid overdose and suicide risk: a syndemic among AIAN peoples***

A syndemic approach seeks to understand the reasons why two diseases appear to cluster. To this end, a syndemic approach explores the potential overlapping pathways of the two epidemics of interest, the social conditions which may contribute to the joint occurrence of the two at the same time and space, and the consequences of the co-occurrence for targeted interventions and policy (12). This approach has been used to explain the interplay between suicide and alcohol use for AIAN populations (13) and has been identified as a promising

approach for exploring suicide and opioid-related deaths in the general population (14). Below we use an ecological framework to explore why opioid use and suicide may be clustering in AIAN populations, and what root causes may be shared for both causes of premature mortality in AIAN contexts.

### ***Using an ecological framework to understand the overlap of opioid overdose and suicide risk overlap among AIANs***

We will use a transactional-ecological framework developed by (15) for conceptualizing suicidality and points

of possible intervention to examine the possible interplay of historical, familial, and sociocultural influences driving *both* suicide and opioid overdose within Native communities. The authors work to identify unique risk and protective factors within a biopsychosocial framework that we will expand to examine current suicide and opioid use behaviors together.

### Historical

Historical trauma is a central risk factor in the Alcántara & Gone model (15). Historical trauma affecting AIAN communities and subsequent internalized oppression has been theorized and empirically linked to intergenerational grief and adverse health outcomes, including depression, suicidality and substance use (16). Historical trauma is defined as, “the cumulative emotional and psychological wounding across generations, including the lifespan, which emanates from massive group trauma” (17). Historical trauma has also been linked to high rates of Adverse Childhood Experiences (ACEs) in some tribal communities, which have been found to have a dose–response association with AIAN risk for substance abuse and suicide (18).

### Familial and sociocultural

Intergenerational stress, grief, despair and loss caused by the historical trauma of colonization, forced relocation, genocide and ongoing ethnocide have eroded protective cultural factors, family structures and social networks (19). Others have posited that suicide and substance misuse share common roots in historical traumas accumulated over many generations (20). Alcántara & Gone (15) conceptualized this process as *cultural discontinuity* and propose it as a mediating mechanism linking colonization to adverse outcomes like substance use and suicide. A useful counter point is Chandler & Lalonde’s research (21) that showed that First Nations communities that have strong community and social structures in place (i.e., self-governance, land claims, education, health care, and cultural facilities), many of which are connected to promoting and preserving traditional cultural ways, have lower rates of suicide compared to First Nations communities overall. It would be helpful to explore if the same is true for lower population risk for opioid misuse.

In addition to understanding shared risk and protective factors functioning at the level of social determinants of health for American Indian and Alaska Native peoples such as historical trauma, it is also important for prevention and treatment efforts to understand how self-harm and opioid misuse interact biologically. First, opioids are depressants that have been shown to increase major depressive disorder risk with ongoing use (22). In

the general US population, clinical depression is a significant risk factor for suicide and presents in over 80% of deaths by suicide (23). Less is known about how depression is affecting suicide and opioid overdose among AI/ANs due to lack of studies and problems with the reliability of depression measures. Opioid use and depression present a profound bidirectional risk to potentiate one another. Patients with severe depression are twice as likely to use opioids for reasons aside from pain and three times more likely to use more opioids than prescribed (23). Engaging in disordered opioid use may also worsen depressive symptoms. Second, the intoxication state affected by opioid misuse is disinhibiting and leads to emotionally driven decision-making, increasing the risk for suicide attempts marked by impulsivity (24). Third, opioids could be a particularly lethal suicide method. While self-poisoning is the most common method of suicide attempt, it is only fatal in 2% of cases (25). However, due to the relatively low lethal dosage of opioids and the relative rapidity of respiratory depression as a mechanism of death, opioids have a higher case fatality rate than other commonly ingested substances, such as antidepressants or acetaminophen. The literature shows that the availability of methods with high case fatality rates leads to higher suicide rates and may explain why patients with opioid use disorder are 13.5 times more likely to die by suicide than the general population (26). In this respect (27), \*\*\*\* access to opioids may be equivalent to owning a loaded gun (see (1)). Finally, opioid use may further increase an individual’s acquired capability for suicide (28) – the ability to inflict self-harm and be fearless toward death as a result of increased pain tolerance – however, this link has not been empirically tested. Our own and others’ research has identified impulsivity and the availability of lethal methods as major risk factors for AIAN suicide (20,29,30). The increasing introduction of opioids into AIAN contexts struggling with the long-term effects of historical and modern traumas and related suicide should be a call for swift action and interventions that prevent and treat both.

### Discussion

Opioid overdose and suicide appear to be interrelated epidemics, or a syndemic, for AIAN people. Both of these behaviors affect younger populations among AIAN and at higher rates than non-AIAN groups. While currently available data are too limited to conduct a proper meta-analysis, we posit that the driving forces behind these disparities for AIAN youth and young adults include sociocultural factors, including a legacy of historical trauma, continuing oppression and

discrimination and challenging living conditions. The current analysis supports a call to action for 1) coordinated **research, practice, and policy** efforts to address the intertwining disparities of suicide and opioid-related deaths among AIAN populations and 2) resources that highlight innovative tribal efforts in this area. Further, this article provides recommendations for future directions, with possible lessons for other historically oppressed, highly affected populations.

### Research

Many states and some tribes have begun tracking AIAN-specific opioid use, morbidity and mortality. For instance, The National Congress of American Indians highlighted the Seneca Nation's efforts toolkit to track, prevent, treat, and collaborate to end the opioid epidemic for their people (31). The Cherokee Nation is leading other tribal nations to monitor, track, prevent, and work with clinicians and industry to reduce opioid overdoses for their citizens (9). However, regional and national data are generally incomplete regarding AIAN opioid use and addiction. Understanding opioid use patterns, not only who is misusing, but what types of opioids are being used and when suicide thoughts and behaviors are co-occurring, will yield essential intervention directions for addressing the opioid overdose and suicide crises cohesively. Solutions to these challenges may include data sharing across rural and urban Indian health and coordinating opioid overdose and suicide data collected in hospitals run by Indian Health Service, tribes through Public Law 638, and urban Indian centers. Tribal sovereignty may also afford additional unique opportunities for public health data collection and tribal policy to promote better-coordinated care systems for suicide and opioid risks. For example, the White Mountain Apache Tribe has received acclaim for their award winning and life-saving suicide surveillance system which has recently been expanded to include binge substance use and opioid use (32). These efforts have potential to make profound gains on addressing these currently siloed epidemics through the same surveillance and coordinated follow-up system.

More in-depth mixed methods research is needed to understand the intersection of opioid-related deaths and suicide and treatment preferences in AIAN communities. From a qualitative perspective, how and why do suicide and opioid use concentrate in younger age groups? Considering pharmacological and sociocultural approaches, research can also help define how best to combine western opioid treatment options, such as medication-assisted treatment (MAT), combined with traditional healing or other

local healing approaches (33) and culturally congruent strategies in line with tribal worldviews about wellness (5).

### Practice approaches

There is potential for medical systems in AIAN populations to systematically screen and conduct risk assessments for comorbid suicide and opioid use. The Emergency Department is one of many crucial settings to conduct screening and initiate MAT (34). There are a small number of evidence-based interventions in general and fewer among AIANs that address suicide; however, none to our knowledge targets opioid use as either a risk factor or a means of suicide. While some have successfully developed prevention programs that address either substance use (35) or suicide (5,36,37), there is now rationale to design and evaluate interventions to address suicide and opioid overdose simultaneously.

Mounting evidence suggests that early life interventions that promote family-based protective factors may impact long-term prevention of suicide and substance use disorder, including opioid risks (38,39). One such approach, early childhood home visiting programs, have been shown to reduce substance abuse in AIAN parent caregivers, reduce maternal depression symptoms, and prevent internalizing, externalizing, and dysregulation behavior problems in home-visited children – all risk factors for later suicide and substance abuse (40). Home visiting provides a unique avenue for helping families in acute distress who may be at risk of suicide or opioid overdose. Home visiting programs involve repeated visits from pregnancy to 2 to 5 years postpartum, allowing home visitors a unique opportunity to recognize and assess suicide risk and overdose risk in age groups of parents at high risk. Some tribal organizations have also created unique curricula around opioids to use with families participating in home-visiting programs (41).

### Policy approaches

IHS was one of the first federal agencies directly involved in patient care to implement a system-wide opioid dispensing policy starting in 2016, protecting AIAN patients against spurious dispensing practices (42). Potential challenges to implementing this policy include that each individual IHS facility is also operating under tribal and state-level policies that could affect the consistency in implementing standard policies system-wide. An ideal systems approach to opioid and suicide mortality prevention would also need to integrate with tribally run health care programs and regional centers

that provide significant contract or Medicaid/Medicare supported services to AIAN populations.

The Indian Health Service has been historically under-resourced due to inadequate congressional appropriations (43). The per capita expenditure on IHS patients is \$4,078, about one-half the U.S. national expenditures per person, which are \$9,726; IHS budget appropriations were \$5.8 billion in F.Y. 2019 (44). To adequately meet the health care needs of tribal nations, the federal government would need to allocate an additional \$2 billion per year to HIS (45)<sup>\*\*\*\*\*</sup>. One-quarter of IHS positions are vacant, and among the most substantial vacancies are in psychiatry. Increased funds must be allocated to tribes and Urban Indian Health Programs to attend to mental health crises. While bills have recently been introduced that are imperative to enact; the National Congress of American Indians also has published resolutions related to suicide (e.g., Resolution #TUL-13-054) and opioids (e.g., Resolution #PHX-16-027). (*NCAI Resolutions* | NCAI, n.d.), the recent American Rescue Plan Act provides meaningful contributions to tribal communities, Indian Health Services, mental health care and provisions to address suicide – all of which might provide opportunities to accelerate coordinated systems approaches to prevention suicide and opioid overdose.

## Conclusion

National, state and tribal data (46) indicate AIANs are at accelerating risk for both of these behavioral health concerns. This article draws attention to the overlap in upward trends for opioid overdoses and suicide deaths for AIANs compared to non-AIANs and posits research, practice, and policy approaches to coordinated systems of care for both. This work is urgent as the disproportionate effects of COVID-19 on tribal communities may exacerbate mental health conditions, including risk for suicide and opioid-related deaths. In the meantime, new resources for health care coming to Indian Health Service and tribal governments through the American Rescue Plan Act of 2021 (H.R. 1319) may afford a timely opportunity to arrest the projected trends toward increased premature mortality from suicide and opioid overdose for AIAN peoples. A syndemic approach has the greatest potential to accelerate improved health for AIAN peoples.

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