Drivers of Mental Health Disparities in American Indian Youth: The Effect of Economic Conditions

Emilia Simeonova[1], Patrick Carlin, and Randall Akee

Abstract: There are large and growing disparities in mental health problems and related mortality between Native American youth and other young people in the US. We document that both suicide and overdose deaths have been growing disproportionately among American Indian children in the past twenty years. Little is known about the driving factors behind these trends. Recent work suggests that poverty and family circumstance and economic conditions may be a substantial contributor to mental health in childhood and young adulthood. Using the universe of Native Americans' health records in Medicaid, we investigate whether the advent of tribal casino gaming impacted children and young adults' mental health utilization and outcomes. We also study the potential mediating effects of institutional factors, such as Indian Health Service ownership of tribal health clinics.

Extended Abstract:

Intro and motivation

There is increasing evidence that family circumstances may play a role in child physical and mental health (Ghandour et al, 2019). In particular, low income households may have, on average, higher incidences of mental health problems and may not have adequate access or resources for treatment. The Centers for Disease Control (CDC) reports that 7.1% of children (ages 2 through 17) have anxiety and 9.4 % have a diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) while 3.2% have a depression diagnosis.

Identifying whether the connection between family circumstances is due to hereditary characteristics (Athanasiadis et al., 2022) or environmental characteristics (such as either positive or negative income shocks, see Apouey and Clark, 2015; or Haushofer and Shapiro, 2016) plays an important role in informing public policies and health care provision. Recent research has shown that there is a connection between poor mental health and a person's earnings (Dobson et al., 2021; Hale et al., 2015; Sareen et al., 2011). Therefore, identifying the distinction between these competing mechanisms is an important public health concern.

In this analysis, we focus attempt to isolate the pure income shock on potential mental health outcomes for American Indian children and young adults while holding other family and hereditary characteristics constant. We examine the impact of the opening of new tribal casinos on drug mortality rates and suicide mortality rates for American Indian children and young adults. Tribal casinos may provide a new source of earnings income and/or an increase in employment as well. Our data analysis will focus on a standard difference in difference analysis

[1] Simeonova: Johns Hopkins University, NBER and IZA; esimeon1@jhu.edu; Carlin: Washington State University; Akee: UCLA, NBER and IZA; rakee@ ucla.edu

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for communities that started a tribal casino to those that did not start a tribal casino; we will examine child, young adult and older adult deaths due to suicide, accidents and drug use.

Data

We have access to CMS Medicaid files on all individuals who identified as Native American starting in 1999. The data are panel by individual. We start with all individuals present in the Medicaid files in 1999, and add new records as they appear in the files, while at the same time following all those who continue Medicaid utilization through time. In addition to all Native American records, we have acquired a 5 percent random sample of all other records, which are organized in the same manner to create individual panels over time. The last data in the database are from 2021, which gives us 23 years of longitudinal data on utilization and outcomes.

Native Americans are eligible for Indian Health Service coverage if they are members of a recognized tribe. The Indian Health Service sometimes contracts care out, and serves as payor only. It also runs tribal clinics and a few hospitals, which are mostly concentrated in the South West region of the United States. The IHS has made significant efforts to enroll eligible Native Americans into Medicaid. In fact, Medicaid is the most widely used source of health coverage among Native Americans. According to the Kaiser Family Foundation (KFF), about 16 percent of non-elderly Native Americans were uninsured in the period 2016-2021, as opposed to 7% of whites (KFF, 2023). Among children, 44% of AIAN children were covered by public health insurance (Medicaid), 47 percent were covered by private sources, and 9% were uninsured (KFF, 2023). The rate of public health insurance coverage among Native American children is almost double the rate of coverage among white children. Further, the proportion of Medicaid coverage is even higher among rural Native American children, which is the group that we will focus on. This high coverage of Medicaid implies that using Medicaid data to analyze the effects of economic shocks on children's mental health care utilization and outcomes would have strong validity for the entire population of American Indian children.

We use the restricted-access county-level mortality data from the National Vital Statistics Systems (NVSS) at the CDC[1]. This dataset includes the universe of deaths in the US reported to the CDC by a coroner or medical examiner. Specifically, we examine the multiple cause of death (MCOD) records which include every ICD-10 code listed on a death certificate. Other variables reported include race, age, and sex as well as county of residence and county of death. We include all deaths in the US by county from 1999-2020.

We are specifically interested in: all drug deaths (ICD-10 codes T360-T659); opioid deaths (ICD-10 codes T402-T404); synthetic opioid deaths (ICD-10 code T404); heroin deaths (ICD-10 code T401); suicide deaths (ICD-10 codes X600-X849). We are also specifically interested in Native American (American Indian/Alaskan Native) decedents. Though racial misclassification is a problem in the mortality data, it is often Native American decedents misreported as White[2]. Therefore, our estimates might be an underestimated.

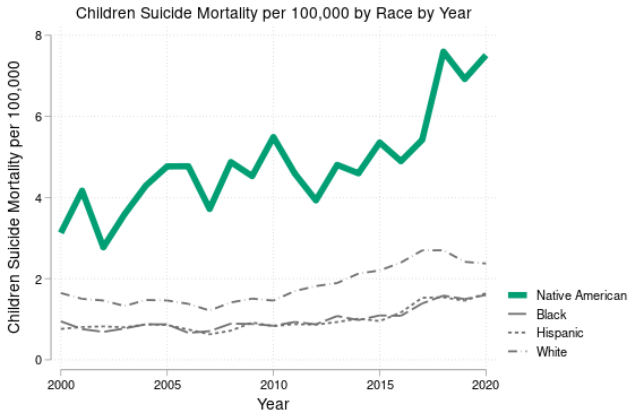
As a first pass, we use the restricted version of the mortality files to assess differences in mortality by cause across Native American and youth from other racial groups in the US (CDC, 2024). In the figures, we show the yearly trends in suicides and overdose (drug-related) deaths by race since 2000. In Figure 1 we plot the incidence of suicides by race among children up to the age of 18. There is a striking large difference in mortality rate for Native Americans relative

to all other racial groups, with suicide rates more than twice as high as the next group (whites) and rising at a faster rate over the last two decades. In the twenty years since the turn of the century, Native American suicide mortality in children has doubled.

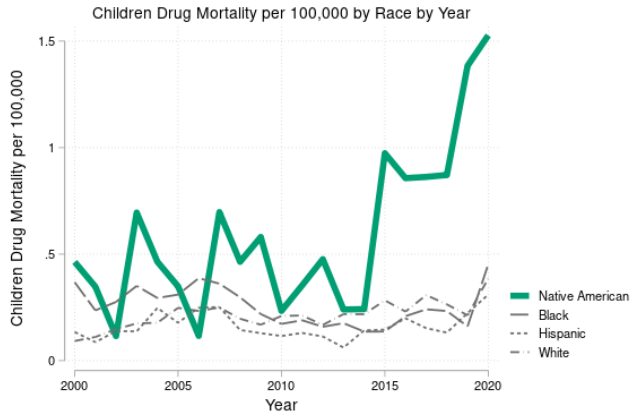
In the right has side panel we show drug-related mortality in the same age group. The mortality rates are lower, however we see a striking increase in overdose mortality among Native American children in the last decade. In 2020, this rate was three times higher than in the rest of population.

Figure 1: Child suicides and overdoses by race 2000-2020

0-18 suicides per 100K by race



0-18 Drug-related (overdose) mortality per 100K by race



We next turn to other causes of death, such as pneumonia, which are less likely to be related to mental health problems and associated care. In the next graphs we plot the incidence of mortality related to pneumonia by race over the same time period. On the right, we plot the trend in mortality from injuries over the same period. Injury-related deaths might be related to the same underlying causes that drive suicides (some injuries might in fact be unsuccessful suicide attempts), most injuries are the result of accidents.

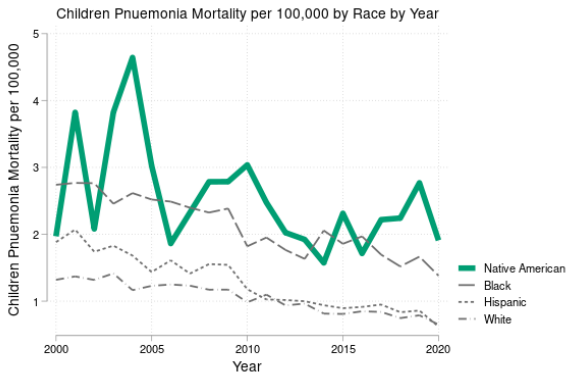
Native American children die of pneumonia at lower rates than of suicides. In 2020, the suicide rate was four times as high as the mortality from pneumonia. Further, although Native American children have higher mortality rates from pneumonia than other races, the differences are substantially smaller than what we find from suicide and overdose-related deaths. The Native-American specific disadvantage is much more pronounces in mental-health related mortality than in physical ailments.

Injury-related deaths are most common in this age range from the list of causes that we have examined. This is true across all races, though Native Americans again display the highest mortality rate across all racial categories. Contrary to the trend in suicides, there is a marked downward trend in injury-related deaths among Native American children. The death rate in 2020 was close to fifty percent lower than the death rate in 2000. The injury-associated mortality among Native American children, despite being significantly higher than the rate among white

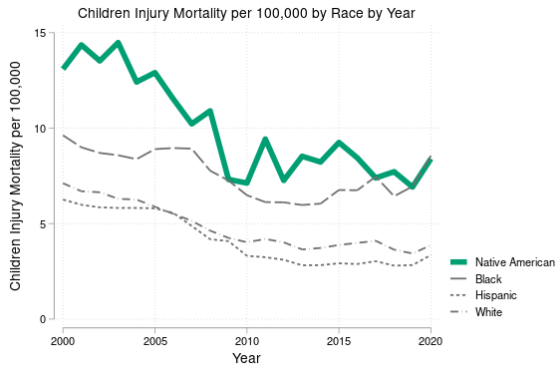
and Hispanic children, is currently similar to the injury-related mortality rate among African American children.

Figure 2: Child pneumonia and injuries mortality rate by race, 2000-2020

0-18 pneumonia mortality by race



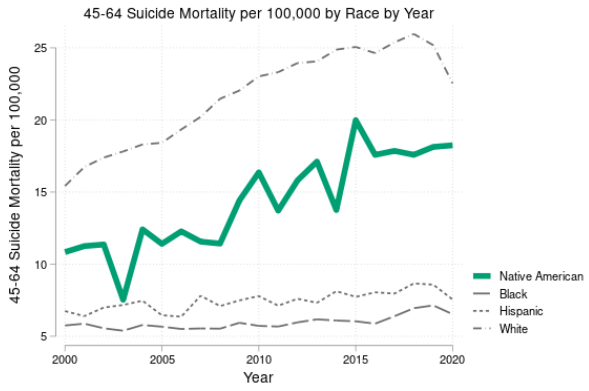
0-18 injury-related mortality by race



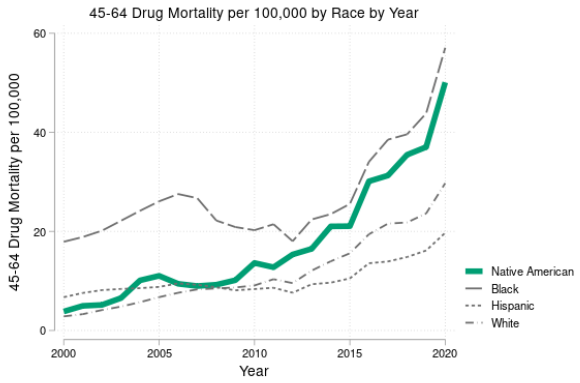
The strikingly high mental health-related death rates among Native American children relative to other groups are specific to children. The figure below demonstrates that suicide mortality among Native Americans aged 45-64, although higher than the rate among blacks and Hispanics, is lower than the rate among whites. However, the rate of suicide has increased substantially in this age group as well, although not as much as in children aged 0-18. In terms of overdose deaths, Native American mortality in 45-64 year old has grown exponentially since the early 2000s. Although the mortality is still below that of African Americans of this age group, it shows the steepest increase across all races. Clearly, drug-related deaths in Native American adults should be a cause of concern among tribal, local, and federal health leaders.

Figure 3: Suicide and overdose mortality rates by race, ages 45-64

45-64 suicide rate by race



45-64 drug-related mortality by race

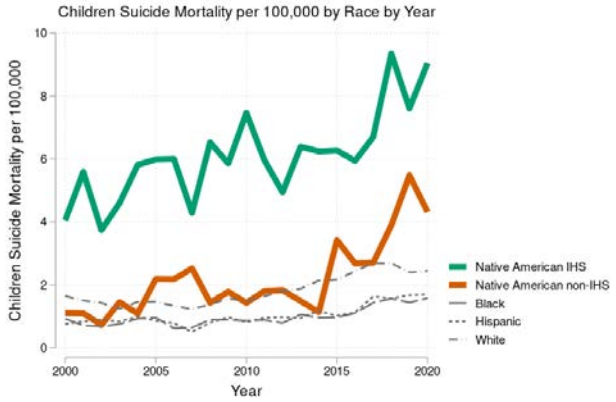


In the figures below, we demonstrate that the differences in suicide and overdose mortality are specific to the counties being served by the IHS, as opposed to tribally-operated clinics. Tribes are more likely to own health clinics if they have the financial means to cover related expenses, and if they have the depth of governance to administer these clinics. During the past two

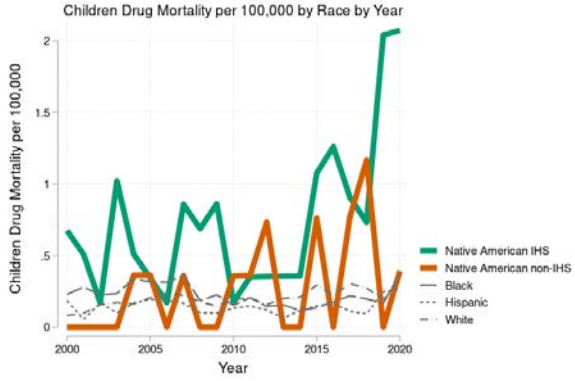
decades, more and more tribes have taken over the administration of health clinics on their lands, which may contribute to the divergence in trends that we observe across the two samples. Prima facie, it appears that Native American children residing in areas where the tribe takes over health care administration have better mental health than those residing in areas administered by the IHS.

Figure 4: Child suicide and overdoes mortality by race and institutional setup, 2000-2020

0-18 suicides rates by race and institutional setup



0-18 overdose rates by race and institutional setup



In addition to mortality and health utilization data, we have compiled a dataset of tribal casino openings (Akee, Jones and Simeonova, 2021, 2024, 2025). Using the zip code of the residence indicated in the Medicaid enrollment and utilization files, we will merge the health records to the respective tribal land geographies. To help ameliorate potential issues of selection, we will use the first address location for each individual and apply an intention-to-treat framework in the analysis.

Methods:

We start our analysis on the tribe level, and test whether the health care institutional setup is affected by tribal casino operations. Our first tests are based on a simple difference-in-differences framework, where we compare tribes that received permission to open casino operations (signed a compact) to those that did not. The outcome is an indicator whether health care on tribal lands is provided by the IHS or administered through the tribal government. Our hypothesis is that selection out of IHS would be significant among tribes running gaming operations. As it is very unlikely that the tribes would incur the cost of obtaining permissions and setting up casino operations because of health care institutions, we can confidently conclude that our analysis adequately represents the causal arrow between casino operations and health care institutional setup on tribal reservations.

Second, we will use the individual-level data from CMS to test for the effects of tribal casino operations on individual mental health utilization and outcomes, specifically among children under the age of 18. The CMS data contain indicators of death, and ICD-coded causes of death. We intend to use these data to test for the direct effects of casino operations on the probability of suicide deaths among affected Native American children. The same type of analysis will be

conducted in the case of overdose deaths. In addition to mortality, we will consider outcomes related to mental health diagnoses and related outpatient and inpatient care utilization.

References:

Akee, Randall, Margaret Jones, and Emilia Simeonova Gaming Opportunities: The Impact of Tribal Casinos on Economic Success and Intergenerational Mobility, American Economic Review – Papers and Proceedings, May, 2021

Akee, Randall, Margaret Jones and Emilia Simeonova Tribal Casinos and Identifying Who Moves to Opportunity, American Economic Association Papers and Proceedings, May 2024

Akee, Randall, Margaret Jones and Emilia Simeonova Place-based Economic Development and Tribal Casinos NBER Volume on Place-based Economic policies, forthcoming.

Apouey, B. and A. E. Clark (2015). Winning big but feeling no better? the effect of lottery prizes on physical and mental health. Health economics 24 (5), 516–538

Athanasiadis, G., J. J. Meijsen, D. Helenius, A. J. Schork, A. Ingason, W. K. Thompson, D. H. Geschwind, T. Werge, and A. Buil (2022). A comprehensive map of genetic relationships among diagnostic categories based on 48.6 million relative pairs from the danish genealogy. Proceedings of the National Academy of Sciences 119 (6), e2118688119

Dobson, K. G., S. N. Vigod, C. Mustard, and P. M. Smith (2021). Major depressive episodes and employment earnings trajectories over the following decade among working-aged canadian men and women. Journal of Affective Disorders 285, 37–46

Ghandour, R. M., L. J. Sherman, C. J. Vladutiu, M. M. Ali, S. E. Lynch, R. H. Bitsko, and S. J. Blumberg (2019). Prevalence and treatment of depression, anxiety, and conduct problems in us children. The Journal of pediatrics 206, 256–267.

Hale, D. R., L. Bevilacqua, and R. M. Viner (2015). Adolescent health and adult education and employment: a systematic review. Pediatrics 136 (1), 128–140.

Haushofer, J. and J. Shapiro (2016). The short-term impact of unconditional cash transfers to the poor: experimental evidence from Kenya. The Quarterly Journal of Economics 131 (4), 1973–2042.

Kaiser Family Foundation (2023) Health Coverage Among American Indian and Alaska Native and Native Hawaiian and Other Pacific Islander People, by Latoya Hill and Samantha Artiga Published: Nov 30, 2023 (https://www.kff.org/racial-equity-and-health-policy/issue-brief/health-coverage-among-american-indian-and-alaska-native-and-native-hawaiian-and-other-pacific-islander-people/)

Sareen, J., T. O. Afifi, K. A. McMillan, and G. J. Asmundson (2011). Relationship between household income and mental disorders: findings from a population-based longitudinal study. Archives of general psychiatry 68 (4), 419–427.