

Key Findings

- COVID-19 was the leading cause of death among American Indian residents of Montana in 2020.
- The all-cause mortality rate increased by 36% in 2020 compared with 2015–2019 for American Indian Montana residents.
- The mortality rates for drug poisoning deaths and suicides among American Indian residents of Montana in 2020 were similar to 2015–2019.

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Leading Causes of Death among American Indian Residents of Montana, 2020 and 2015–2019

Introduction

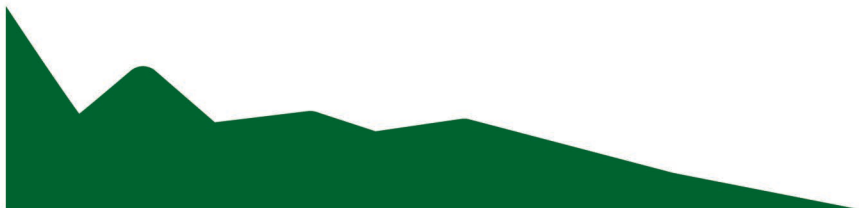
The emergence of a new pathogen, SARS-CoV-2 (the virus that causes COVID-19), in late 2019 was responsible for many deaths in 2020 in Montana and around the world. There is substantial evidence that COVID-19 had a disproportionate impact on indigenous communities, and Montana has a relatively large American Indian population with seven reservations.^{1,2,3} This report describes the leading causes of death and other select causes of death among American Indian Montana residents in 2020 compared with the previous five-years (2015–2019).

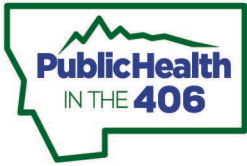
Methods

Data used in this report come from the Montana death certificates collected by the Montana Office of Vital Records and were limited to American Indian Montana residents. American Indian residents were identified as those who were classified as American Indian or Alaskan Native according to the race bridging procedure of the National Center for Health Statistics (NCHS).⁴ Deaths were tabulated by underlying cause using the International Classification of Diseases 10th Revision (ICD-10).⁵ Leading causes of death are classified according to the NCHS Instruction Manual Part 9 which includes the addition of COVID-19 (U07.1).⁶

In addition to the leading causes of death, alcohol-induced deaths and deaths due to drug poisoning were assessed in this report. Alcohol-induced deaths included deaths with one of following ICD-10 codes as the underlying cause: E24.4, Alcohol-induced pseudo-Cushing syndrome; F10, Mental and behavioral disorders due to alcohol use; G31.2, Degeneration of nervous system due to alcohol; G62.1, Alcoholic polyneuropathy; G72.1, Alcoholic myopathy; I42.6, Alcoholic cardiomyopathy; K29.2, Alcoholic gastritis; K70, Alcoholic liver disease; K85.2, Alcohol-induced acute pancreatitis; K86.0, Alcohol-induced chronic pancreatitis; R78.0, Finding of alcohol in blood; X45, Accidental poisoning by and exposure to alcohol; X65, Intentional self-poisoning by and exposure to alcohol; and Y15, Poisoning by and exposure to alcohol, undetermined intent. Drug poisoning deaths included deaths with one of the following ICD-10 codes as the underlying cause: X40-X44, unintentional poisoning; X60-X64, suicide; X85, homicide; or Y10-Y14, undetermined intent.

Age-adjusted death rates were calculated via the direct method using the 2000 US standard population, and 95% confidence intervals were calculated for both the 2020 and 2015–2019 rates.⁷ A rate was considered to have changed significantly if there was no overlap in their respective confidence intervals. The leading causes of death are displayed in the Table, ranked by the number of deaths that occurred in 2020; and select causes of death related to behavioral health are displayed in the Figure. These include deaths due to drug poisonings, alcohol-induced deaths, and suicides.





Results

Among American Indian Montana residents, there were a total of 1,022 deaths in 2020 compared with an average of 676 deaths each year during the previous five-years (2015–2019) (Table). The all-cause mortality rate significantly increased from 131.5 deaths per 10,000 person-years in 2015–2019 to 179.3 in 2020 – a 36% increase. COVID-19-associated mortality was the first leading cause of death among American Indian Montana residents in 2020, and it constituted approximately 25% of all deaths. Heart disease, unintentional injury, and cancer were the second, third and fourth leading causes of death in 2020, respectively.

Deaths associated with substance use disorder or mental health crisis were also examined. The age-adjusted rate of alcohol-induced deaths was significantly higher in 2020 compared with 2015–2019 (Figure). The mortality rate for drug poisoning and suicide, however, were similar in 2020 to 2015–2019 (Figure).

Table. Number and age-adjusted mortality rate among American Indian Montana residents by underlying cause of death, 2020 and 2015–2019.

Rank	Underlying Cause of Death	2020		2015–2019		Change in Rate (2020 versus 2015–2019)*
		Number	Rate [†] (95% CI)	Average Number per Year	Rate [†] (95% CI)	
1	COVID-19	251	45.1 (39.4–51.5)	0	0.0 (0.0–0.0)	N/A
2	Heart Disease	119	23.3 (19.0–28.3)	115	24.6 (22.5–27.0)	=
3	Unintentional Injury	100	14.5 (11.7–17.9)	75	11.7 (10.4–13.1)	=
4	Cancer	93	16.7 (13.2–20.9)	103	20.8 (18.9–22.9)	=
5	C.L.D.C.	73	11.6 (9.1–14.9)	49	8.2 (7.2–9.4)	=
6	Diabetes Mellitus	47	8.1 (5.8–11.0)	42	8.3 (7.1–9.6)	=
7	Suicide	36	4.9 (3.4–7.1)	24	3.1 (2.6–3.8)	=
8	C.L.R.D.	28	5.0 (3.2–7.6)	32	7.9 (6.6–9.3)	=
9	Cerebrovascular Disease	25	5.1 (3.2–7.9)	18	4.1 (3.2–5.2)	=
10	Homicide	21	2.9 (1.8–4.8)	10	1.4 (1.0–2.0)	=
	Total deaths	1,022	179.3 (167.7–191.5)	676	131.5 (126.7–136.5)	↑

Abbreviations: 95% CI = 95% Confidence Interval

C.L.D.C. = Chronic Liver Disease and Cirrhosis

C.L.R.D. = Chronic Lower Respiratory Disease

N/A = Not Applicable

[†]Age-adjusted rate displayed as deaths per 10,000 person-years

*2020 compared to 2015–2019 (↑ significantly higher, ↓ significantly lower, = statistically equal)

Discussion

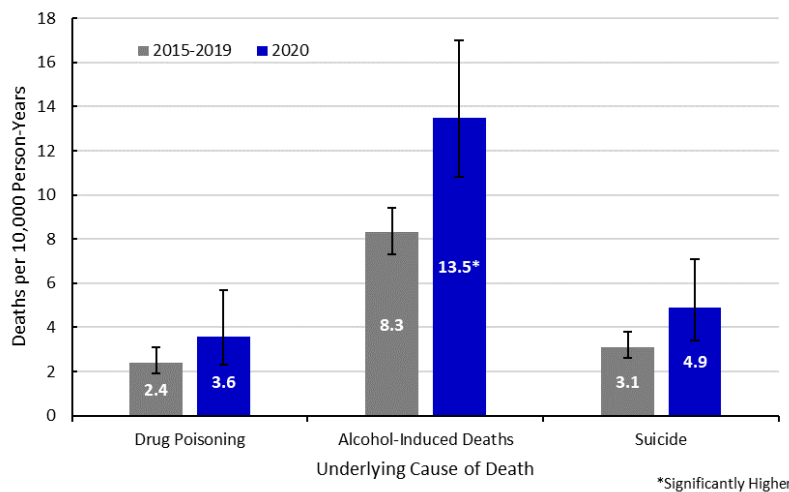
The COVID-19 pandemic greatly impacted the general population of Montana in 2020 and the effects were particularly severe among American Indians. The all-cause age-adjusted mortality rate among American Indians increased by

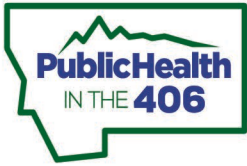
approximately 36% in 2020 compared to the previous 5-year period (2015–2019). This increase was driven by the 251 COVID-19-associated deaths, which made COVID-19 the leading cause of death among American Indian Montana residents. COVID-19 was the third leading cause of death among all Montana residents in 2020, and both the COVID-19 mortality rate and the all-cause mortality rate were much higher among American Indian residents of Montana than they were among the general population of Montana.⁸ American Indian communities have higher levels of social vulnerability, such as a living in shared housing, difficulties accessing timely health care, and lower household incomes which may increase the risk for infection with SARS-CoV-2.⁹ American Indian residents also have a higher prevalence of chronic health conditions and other risk factors for severe COVID-19 illness or death compared to the general population, such as cardiovascular disease, diabetes, and chronic lung diseases.¹⁰

While most of the other leading causes of death did not significantly increase in 2020 compared to the previous five years, there was a significant increase among alcohol-induced deaths (Figure). The disease processes that lead to alcohol-related deaths accumulate over many years and more information is needed to determine what factors may be associated with the observed increase. State and local public health agencies should continue monitoring the effects of the COVID-19 pandemic on American Indians.

The high COVID-19 mortality rate among American Indians residents in 2020 demonstrates the importance of taking measures to prevent the spread of COVID-19 in American Indian Communities. Presently, COVID-19 mortality is, largely, preventable. Vaccination is the best protection against SARS-CoV-2 infection and at preventing severe COVID-19 outcomes, such as hospitalization and death. The COVID-19 vaccine is widely available to Montanans aged five years and older. In addition to vaccination, DPHHS encourages all Montana residents and visitors to take precautionary measures to slow the spread of the virus, including wearing a face covering when appropriate, avoiding large crowds, staying home when not feeling well, and washing hands frequently. In 2020, the Blackfeet Nation began enforcing some of these additional measures, such as the use of face coverings in public, and documented a thirty-three-fold reduction in its peak COVID-19 incidence.¹¹

Figure. Age-adjusted mortality rates for drug poisoning , alcohol-induced, and suicide deaths among American Indian Montana residents, **2020** and **2015–2019**.





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- ¹ Wang H. Why the Navajo Nation was hit so hard by coronavirus: Understanding the disproportionate impact of the COVID-19 pandemic. *Applied Geography* 2020; 134 (102526).
 - ² Alsan M, Chandra A, Simon K. The Great Unequalizer: Initial Health Effects of COVID-19 in the United States. *Journal of Economic Perspectives* 2021; 35(3): 25-46.
 - ³ Williamson LL, et al. COVID-19 Incidence and Mortality among American Indian/Alaska Native and White Persons – Montana, March 13—November 30, 2020. *MMWR* 2021; 70: 510-513.
 - ⁴ National Center for Health Statistics. NCHS Procedures for Multiple-Race and Hispanic Origin Data: Collection, Coding, Editing, and Transmitting. 2004.
 - ⁵ World Health Organization. *International Statistical Classification of Diseases and Related Health Problems-10th Revision 5th ed.* Geneva, (CH): WHO Press; 2016.
 - ⁶ National Center for Health Statistics. List of 113 Selected Causes of Death, Enterocolitis due to *Clostridium difficile*, and COVID-19. In: NCHS Instruction Manual Part 9. 2020.
 - ⁷ Klein RJ, Schoenborn CA. 2001. Age Adjustment Using the 2000 Projected U.S. Population. U.S. Dep. Heal. Hum. Serv. Natl. Cent. Heal. Statistics.
 - ⁸ Koch, T. Provisional Leading Causes of Death and Other Select Causes in Montana, 2020 and 2015–2019. Montana Department of Public Health and Human Services. March 2021.
 - ⁹ Agency for Toxic Substances and Disease Registry. CDC/ATSDR Social Vulnerability Index. April 2021.
 - ¹⁰ Montana Department of Public Health and Human Services. 2017 Montana State Health Assessment. February 2019.
 - ¹¹ Pratt CQ, et al. Use of Stay-at-Home Orders and Mask Mandates to Control COVID-19 Transmission – Blackfeet Tribal Reservation, Montana, June—December 2020. *MMWR* 2021; 70:514-518.