

Key Findings

- The mortality rate for all causes increased by 14% in 2020 compared with 2015–2019.
- Provisional data indicate that the number of deaths exceeded the number of births in 2020 (12,018 deaths versus 10,791 live births).
- COVID-19 was the 3rd leading cause of death in Montana in 2020.
- The mortality rate for drug poisoning deaths and suicides in 2020 was similar to 2015–2019.
- The mortality rate for chronic liver disease and alcohol-induced deaths were significantly higher in 2020 compared with 2015–2019.

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Todd M. Koch, MPH
Lead Vital Statistics
Epidemiologist

[Office of Epidemiology and
Scientific Support](#)

406-444-1756

Provisional Leading Causes of Death and Other Select Causes in Montana, 2020 and 2015–2019

Introduction

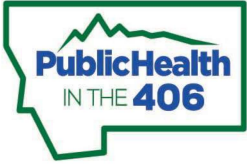
The coronavirus disease (COVID-19) pandemic had a profound impact on the health and daily lives of residents in the United States (US) and Montana. To understand the effect the COVID-19 pandemic had on mortality among Montanans, this report describes deaths occurring in 2020 compared to the previous five-year period of 2015–2019 by the 15-leading causes of death and other select causes, specifically drug poisoning and alcohol-induced deaths.

Methods

Data used in this report come from the Montana death certificates collected by the Montana Office of Vital Records and were limited to Montana residents. Deaths were tabulated by underlying cause using the International Classification of Diseases 10th Revision (ICD-10).¹ Leading causes of death are classified according to the National Center for Health Statistics Instruction Manual Part 9 which includes the addition of COVID-19 (U07.1).² Alcohol-induced deaths included the following ICD-10 codes; 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 were defined as having an ICD-10 underlying cause of death code of X40–X44 (unintentional poisoning), X60–X64 (suicide), X85 (homicide), or Y10–Y14 (undetermined intent).

Age-adjusted mortality rates were calculated using the direct method using the 2000 US standard population.³ Rates between year groups were compared and considered statistically different if the 95% confidence intervals did not overlap.

Data in this report for deaths occurring in 2020 are provisional; provisional counts are not final and are subject to change. As of February 25, 2021, 98.6% of Montana death certificates were assigned ICD-10 codes for the underlying cause of death.



Results

In 2020, the all-cause mortality rate significantly increased by 14% from 747.0 deaths per 100,000 population in 2015–2019 to 852.6 in 2020 (Table). There were approximately 1,900 excess deaths in 2020 compared to the average number per year in the previous 5-year period (2015–2019) (Table). Provisional vital statistics data indicate that the number of deaths exceeded the number of births in 2020 (12,018 deaths versus 10,791 live births), the first-year deaths exceeded births since records started in 1908.

Heart disease and cancer were the first and second leading causes of death in 2020 and 2015–2019, accounting for approximately 37% and 42% of all deaths, respectively. COVID-19-associated mortality was the 3rd leading cause of death in 2020 attributing to 9% of all deaths in 2020.

Deaths due to chronic liver disease and homicide were significantly higher in 2020 compared with 2015–2019 (Table). Meanwhile, deaths from chronic lower respiratory disease and influenza and pneumonia were significantly lower in 2020 compared with 2015–2019 (Table).

Deaths associated with substance use disorder or mental health crisis were also examined. Alcohol-induced deaths were significantly higher in 2020 compared with 2015–2019 (Figure). Meanwhile, drug poisoning deaths and suicides in 2020 were similar to 2015–2019 (Figure).

Discussion

The COVID-19 pandemic had a profound impact on mortality among Montana residents in 2020. The mortality rate for all-causes significantly increased by 14% in 2020 compared with the previous 5-year period (2015–2019). This increase was, in part, due to the number of COVID-19-associated deaths, which was the 3rd leading cause of death for 2020.

Deaths from influenza and pneumonia and chronic lower respiratory diseases in Montana decreased in 2020. This was likely due to decreased influenza activity in the US and elsewhere in 2020—which coincided with COVID-19 mitigation measures.⁴

Deaths from chronic liver disease and alcohol-induced deaths increased significantly in 2020 compared to the previous 5-years (2015–2019). 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. In addition, the homicide death rate significantly increased over 60% in 2020 compared with 2015–2019. In comparison with other leading causes of deaths, homicide deaths were the fewest, and more information from other data sources, such as autopsy or police reports, is needed to determine the factors associated with the observed increase. While Montana has historically had one of the highest rates of suicide in the US, deaths from suicide in 2020 were similar to the previous five-year period. Drug poisoning deaths in 2020 were also similar to 2015–2019.

State and local public health jurisdictions should continue surveillance of mortality among Montana residents through the duration of the COVID-19 pandemic.

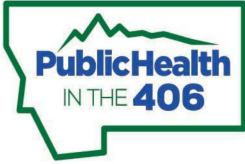


Table. Number and age-adjusted mortality rate among Montana residents by underlying cause of death, 2020 and 2015–2019.

Rank [†]	Underlying Cause of Death	2020*		2015–2019		2020 compared with 2015–2019 [¶]
		Number	Rate [§] (95% CI)	Average number per year (minimum–maximum)	Rate [§] (95% CI)	
1	Heart Disease	2,365	161.6 (154.4-167.8)	2,206 (2,103–2,349)	157.5 (154.5-160.6)	=
2	Cancer	2,114	142.7 (136.5-149.1)	2,088 (2,032–2,142)	147.8 (144.9-150.8)	=
3	COVID-19 Infection	1,104	75.8 (71.3-80.5)	0	0	N/A
4	Chronic Lower Respiratory Disease	653	42.5 (39.3-46.0)	720 (679–759)	50.8 (49.2-52.6)	↓
5	Non-Motor Vehicle Accidents	484	39.0 (35.5-42.9)	425 (398–463)	35.1 (33.6-36.8)	=
6	Cerebrovascular Disease	441	30.6 (27.8-33.7)	443 (414–487)	32.2 (30.8-33.6)	=
7	Alzheimer's Disease	342	23.9 (21.4-26.6)	302 (277–326)	21.7 (20.6-22.9)	=
8	Diabetes	337	23.5 (21.0-26.3)	294 (266–321)	21.7 (20.5-22.9)	=
9	Suicide	287	25.2 (22.2-28.4)	280 (262–312)	26.1 (24.7-27.6)	=
10	Chronic Liver Disease	231	18.7 (16.2-21.5)	174 (153–196)	14.5 (13.4-15.5)	↑
11	Motor Vehicle Accidents	198	18.9 (16.3-21.8)	193 (177–219)	18.0 (16.9-19.3)	=
12	Nephritis	156	10.6 (9.0-12.6)	138 (120–154)	9.9 (9.1-10.7)	=
13	Influenza and Pneumonia	119	8.0 (6.6-9.7)	164 (148–186)	11.9 (11.0-12.7)	↓
14	Homicide	63	6.5 (4.9-8.3)	40 (38–42)	4.0 (3.4-4.6)	↑
15	Congenital Malformations	36	3.3 (2.3-4.7)	37 (28–45)	3.5 (2.9-4.0)	=
	Other Causes	2,924	209.6 (201.8-217.6)	2,582 (2,501–2,752)	191.7 (188.3-195.1)	↑
	Missing**	164	12.2 (10.3-14.3)	0	0	N/A
	Total deaths	12,018	852.6 (837.0-868.6)	10,086 (9,902–10,403)	747.0 (740.3-753.7)	↑

Abbreviation: 95% CI= 95% Confidence Interval

*Data are provisional and are subject to change.

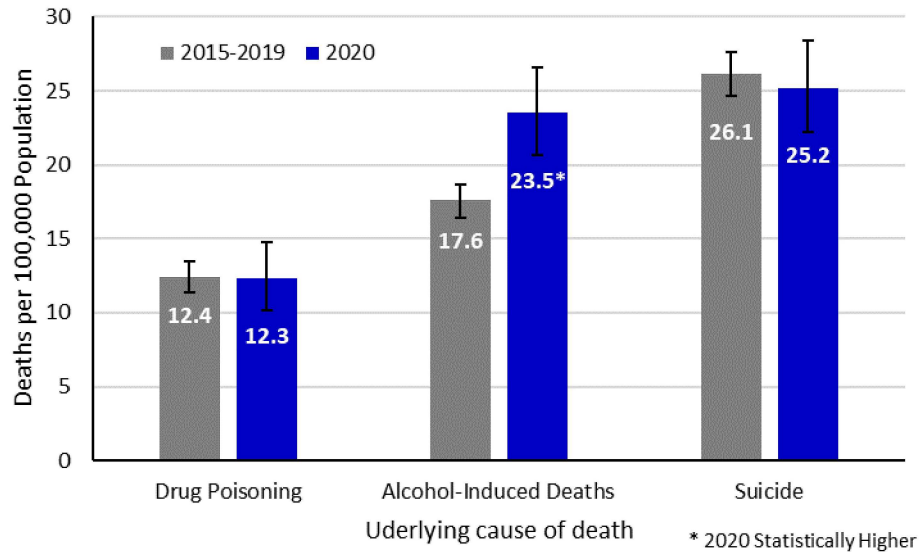
[†]Rank based on the number of deaths observed in 2020

[§]Age-adjusted rate per 100,000 population

[¶]↑ statistically higher; ↓ statistically lower; = statistically equal

**Underlying cause of death were not available as of February 25, 2021.

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



- ¹ World Health Organization. International Statistical Classification of Diseases and Related Health Problems-10th Revision 5th ed. Geneva, (CH): WHO Press; 2016.
- ² 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.
- ³ Klein RJ, Schoenborn CA. 2001. Age Adjustment Using the 2000 Projected U.S. Population. U.S. Dep. Heal. Hum. Serv. Natl. Cent. Heal. Statistics
- ⁴ Olsen SJ, Azziz-Baumgartner E, Budd AP, et al. Decreased Influenza Activity During the COVID-19 Pandemic — United States, Australia, Chile, and South Africa, 2020. MMWR Morb Mortal Wkly Rep 2020; 69:1305–1309.