DEPARTMENT OF HEALTH

Vital Statistics Interactive Query: User Guide

This guide provides detailed instructions on how to effectively use the vital statistics interactive tool built with Tableau to analyze mortality and natality trends. By leveraging the full capabilities of these dashboards, users can perform comprehensive analyses, gaining insights into crude birth rates, fertility rates, age-adjusted death rates, crude death rates, premature death rates, and age-adjusted premature death rates. Interactive maps enable users to click on any county to find specific rates, with the bar charts, tables, and maps dynamically updating based on the selected filters. By analyzing birth and death data, researchers and analysts can identify seasonal variations, trends, and potential factors contributing to fluctuations in mortality and live birth rates throughout the year.

These dashboards are online at: MDH Vital Statistics (https:/www.health.state.mn.us/data/mchs/vitalstats).

Contents

Minnesota Department of Health
Center for Health Statistics
651-201-3880; health.healthstats@state.mn.us
www.health.state.mn.us

March 2025

To obtain this information in a different format, contact: 651-201-3880 | health.healthstats@state.mn.us

Overview: Vital statistics dashboards

The Minnesota Center for Health Statistics (MCHS) maintains birth and death statistical files that are used to monitor trends in vital statistics (e.g., pregnancy risk factors, birth outcomes, and causes of death) for the state overall and for specific subgroups (e.g., race, age, or county of residence). The **Minnesota Vital Statistics Interactive Query Dashboards** summarize data for the state of Minnesota ten to eleven months following the close of a calendar year.

The Minnesota Center for Health Statistics will continue in the future to incorporate additional years of data. The Minnesota Center for Health Statistics applied single-race categorization starting with the 2021 data and phased out bridged-race categorization following the 2020 data. Users should not compare bridged-race statistics with single-race statistics, due to this change in categorization.

The Tableau dashboards replace the Vital Statistics Interactive Query Tool, which was discontinued due to security concerns. These dashboards provide a secure and user-friendly platform for accessing vital statistics data while ensuring compliance with data privacy regulations and safeguarding sensitive information.

Included dashboards

MDH has developed a suite of interactive Tableau dashboards shown below to help you explore and analyze vital statistics data.

- Mortality data
- Mortality data table
- Crude death rates
- Age-adjusted death rates
- Premature deaths (< 75 yrs) and age-adjusted rates
- Natality data
- Natality data table
- Crude birth rates
- Crude fertility rates

How to navigate dashboards

Explore and analyze vital statistics data using the following instructions applicable to all dashboards:

1. **Select dashboard**: Choose the desired dashboard from the menu to begin exploring vital statistics data.
2. **Categories**: Use drop-down menus or filters to select specific categories, such as age at death, cause of death, maternal age, birth month, etc. Refer to Table 1 and Table 2 for a complete list of variables.
3. **Filters**: After selecting categories, apply filters to display data by year for a single county, multiple counties, or statewide. Click the “Apply” button to update the dashboard with selected filters. When selecting counties from the drop-down filters, include or exclude “State of Minnesota” and/or “Missing Counties” to meet your project needs.
4. **Visual elements**: Navigate through interactive elements, including maps, bar charts, and data tables. Hover over map regions, bars in charts, or rows in tables to view detailed information, such as county names, specific rates (e.g., crude death rate, crude birth rate), and counts (e.g., number of deaths, number of births).
5. **Sorting**: All bar charts and tables have sort controls enabled. Selecting respective headers sorts the data alphabetically or numerically, facilitating easier data analysis.
6. **Tables and customized reports**: For dashboards featuring tables, use row and column variable filters to generate customized reports by year. Avoid selecting the same elements in both row and column filters to ensure data visibility.

7. **Download**: CSV and/or ZIP files, including birth, death, and data tables, are available for download.
8. **Trends**: Analyze trends by toggling between different years or comparing data across various demographic groups, such as age, race/ethnicity, and geographic locations (e.g., counties).
9. **Legend and annotations**: Refer to legends on maps or annotations provided to understand color-coding or specific data definitions (e.g., age-adjusted rates, premature deaths).

Birth statistics query system

Select one of the categories listed below from the **row variable** and **column variable** drop-down filters.

Sort **county** filters to navigate the natality (birth) data and data table dashboards.

Natality data dashboards: Key variables

Includes categories, rows, columns, and filters.

Key Variable: Natality Dashboards	Description
Attendant type	Attendant at birth: • CNM/CM • MD/DO • Other midwife • Other/unknown
Birth month	• Month infant was born
Delivery method	• Caesarean • Vaginal • VBAC • Unknown
Facility type	• (Free standing) Birth center • Home • Hospital • Other/unknown
Infant sex	• Female • Male
Last live birth	• Less than one year ago • More than one year ago • None • Unknown
Low birth weight	• No • Yes • Unknown

Key Variable: Natality Dashboards	Description
Maternal age	Age broken down by individual years • 12-53 years
Maternal age group	Age of mother at time of birth grouped as follows: • 10-14 years • 15-19 years • 20-24 years • 25-29 years • 30-34 years • 35-39 years • 40-44 years • 45+ years
Maternal country of origin	• Outside of United States • United States • Unknown
Maternal eclampsia	• No • Yes • Unknown
Maternal education status	Mother's level of education at the time of birth grouped as follows: • four-year high school • College; college+ • Less than four-year high school • Unknown

Key Variable: Natality Dashboards	Description
Maternal gestational diabetes	• No • Yes • Unknown
Maternal gestational hypertension	• No • Yes • Unknown
Maternal marital status	Marital status of mother at time of birth: • Married • Not married • Unknown
Maternal preexisting diabetes	• No • Yes • Unknown
Maternal preexisting hypertension	• No • Yes • Unknown
Maternal pre-pregnancy BMI	Pre-pregnancy body mass index (BMI) of mother: • Average weight 19 to <25 • Morbid obese 41+ • Obese 30 to <41 • Overweight 25 to <30 • Underweight <19 • Unknown
Maternal race/ethnicity, bridged race	• "Bridged race" four categories: American Indian or Alaska Native; Asian or Pacific Islander; Black; White • Hispanic • Unknown

Key Variable: Natality Dashboards	Description
Maternal race/ethnicity, single race	• "Single race" five categories: American Indian or Alaska Native; Asian or Pacific Islander; Black; White; multiracial • Hispanic • Unknown
Maternal smoking status	Mother smoked during pregnancy: • No • Yes • Unknown
Maternal weight gain during pregnancy	• Less than 0 lbs • 0-9 lbs • 10-19 lbs • 20-29 lbs • 30-39 lbs • 40-49 lbs • 50-59 lbs • 60-69 lbs • 70+ lbs • Unknown
Multiple births	• No • Yes
NICU admission	• No • Yes • Unknown
Paternal age	Age broken down by individual years: • 14-79 years • Unknown

Key Variable: Natality Dashboards	Description
Paternal age group	Age of father at time of birth grouped as follows: • 10-14 years • 15-19 years • 20-24 years • 25-29 years • 30-34 years • 35-39 years • 40-44 years • 45+ years • Unknown
Paternal education status	Father's level of education at the time of birth grouped as follows: • four-year high school • College • College+ • Less than four-year high school • Unknown
Paternal race/ethnicity, bridged race	• "Bridged race" four categories: American Indian or Alaska Native; Asian or Pacific Islander; Black; White • Hispanic • Unknown
Paternal race/ethnicity, single race	• "Single race" five categories: American Indian or Alaska Native; Asian or Pacific Islander; Black; White; multiracial • Hispanic • Unknown
Premature births	• No • Yes • Unknown
Previous births	• Less than four • More than four • Unknown
Residence county	Minnesota county of residence: lists 87 counties • County where mother lived
Source of payment	• Private/Tricare • Public (Medicaid, IHS, other government) • Self-pay • Other • Unknown
Trimester prenatal care began	• First trimester • Second trimester • Third trimester • None • Unknown
Year	• Year of birth

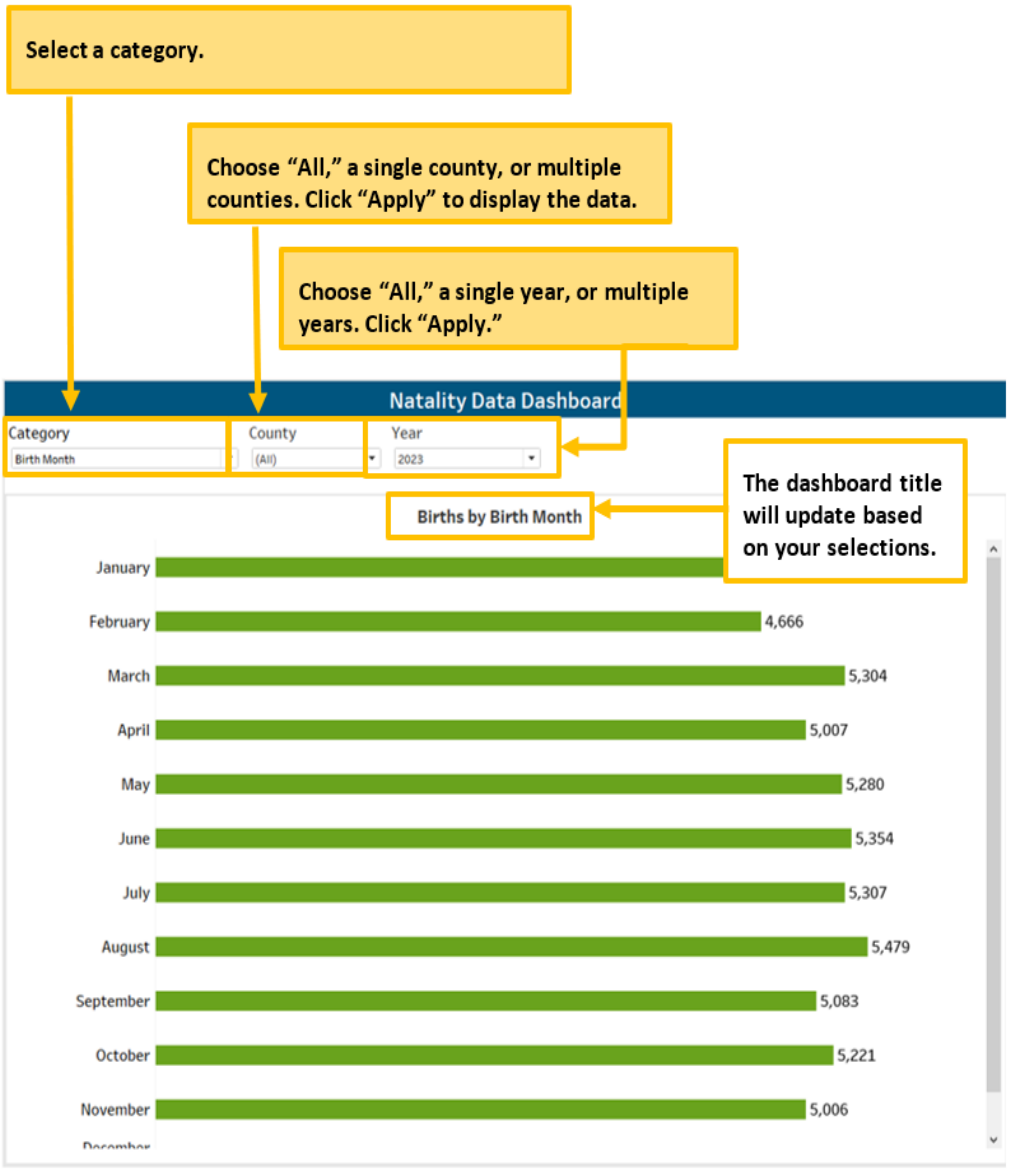
Natality data dashboards: Screenshots

Refer to the screenshots below for guidance on navigating through the dashboards more efficiently.

Screenshot: Natality data dashboard

This dashboard displays birth statistics for Minnesota residents. The bar chart illustrates the total number of births by selected category, county, and year.

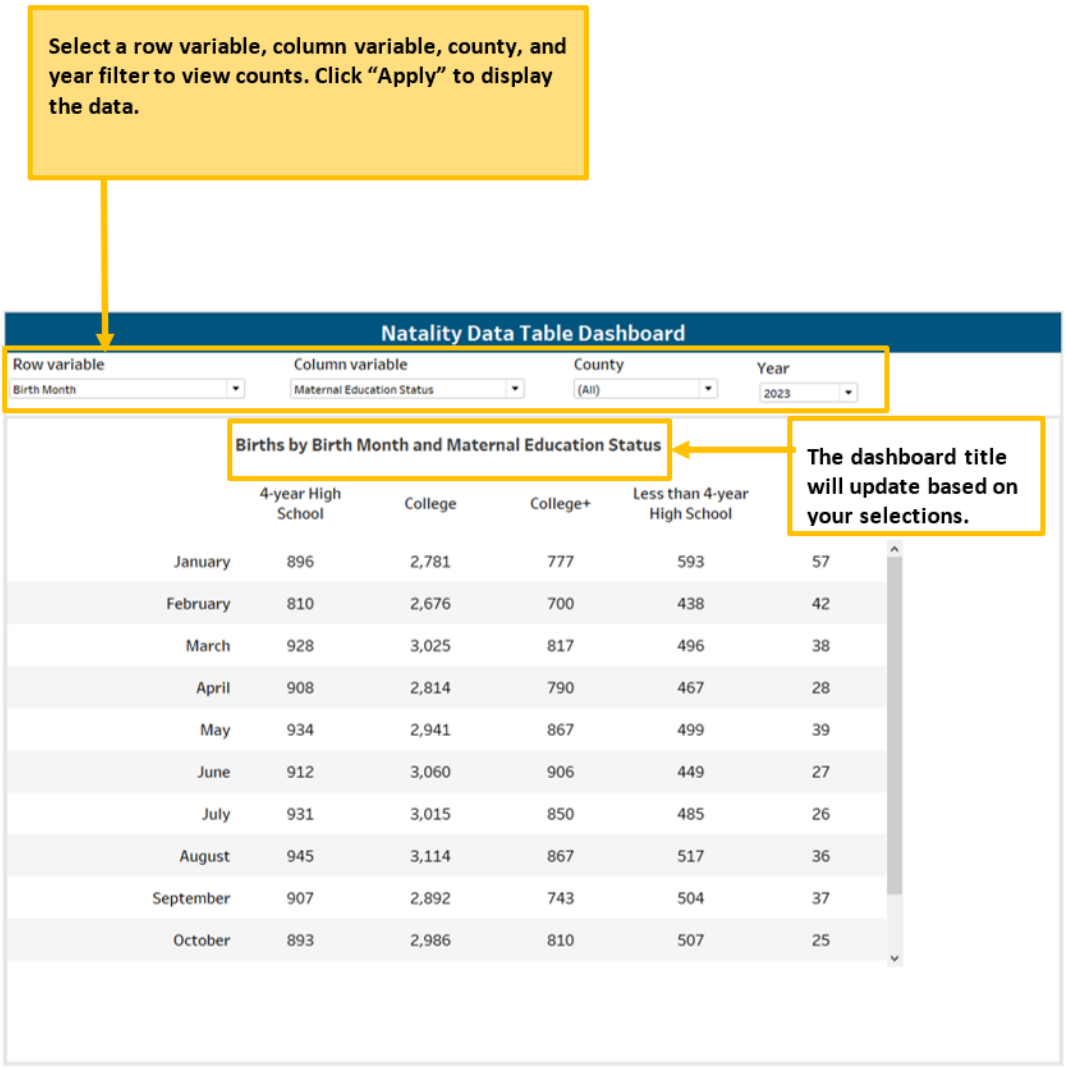
Counts fewer than 10 are represented by an asterisk (*) symbol.



Screenshot: Natality data table dashboard

This table displays birth statistics for Minnesota residents in a tabular format. Users can filter the data by selecting a row and column variable, specific counties, and year.

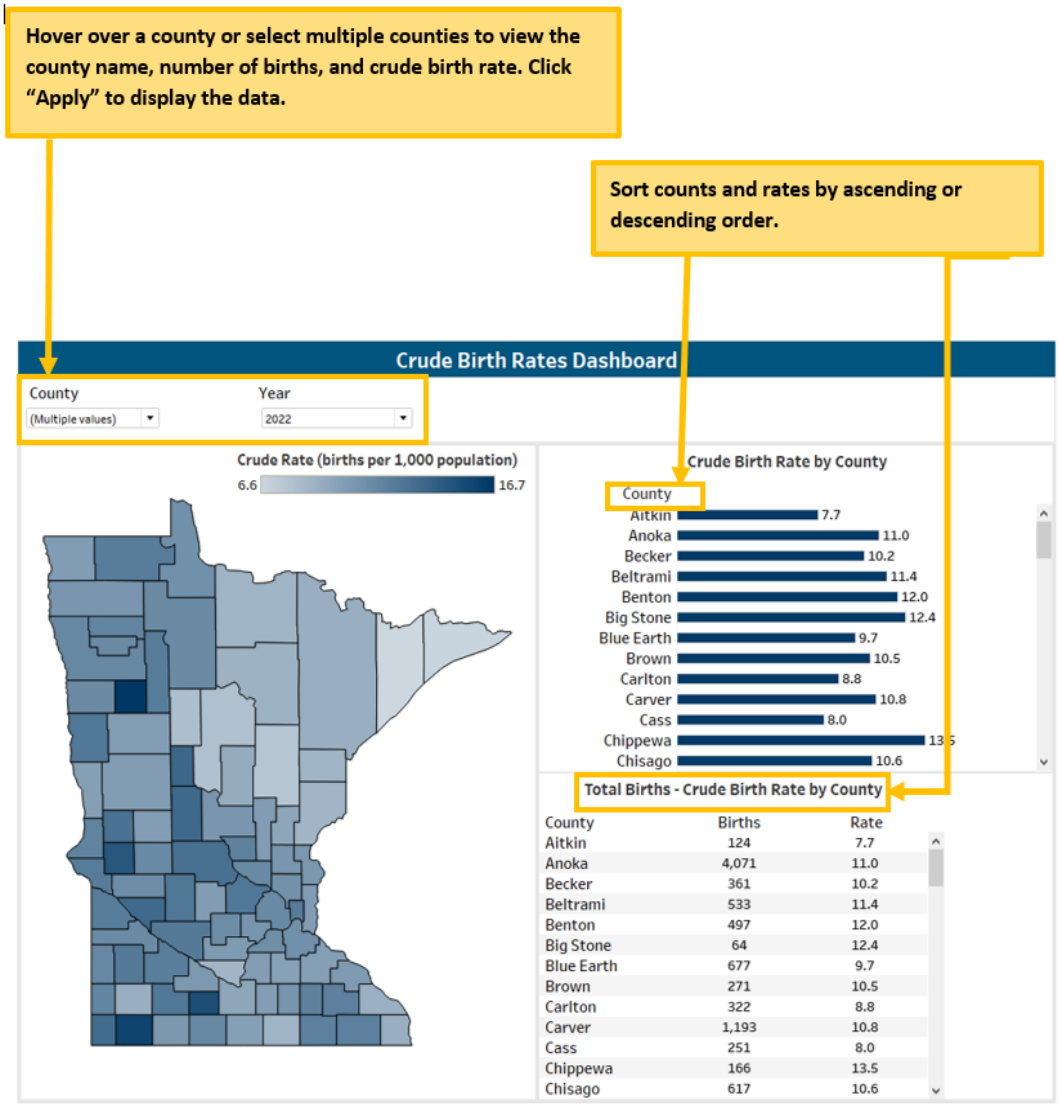
Counts fewer than 10 are represented by an asterisk (*) symbol.



	4-year High School	College	College+	Less than 4-year High School	
January	896	2,781	777	593	57
February	810	2,676	700	438	42
March	928	3,025	817	496	38
April	908	2,814	790	467	28
May	934	2,941	867	499	39
June	912	3,060	906	449	27
July	931	3,015	850	485	26
August	945	3,114	867	517	36
September	907	2,892	743	504	37
October	893	2,986	810	507	25

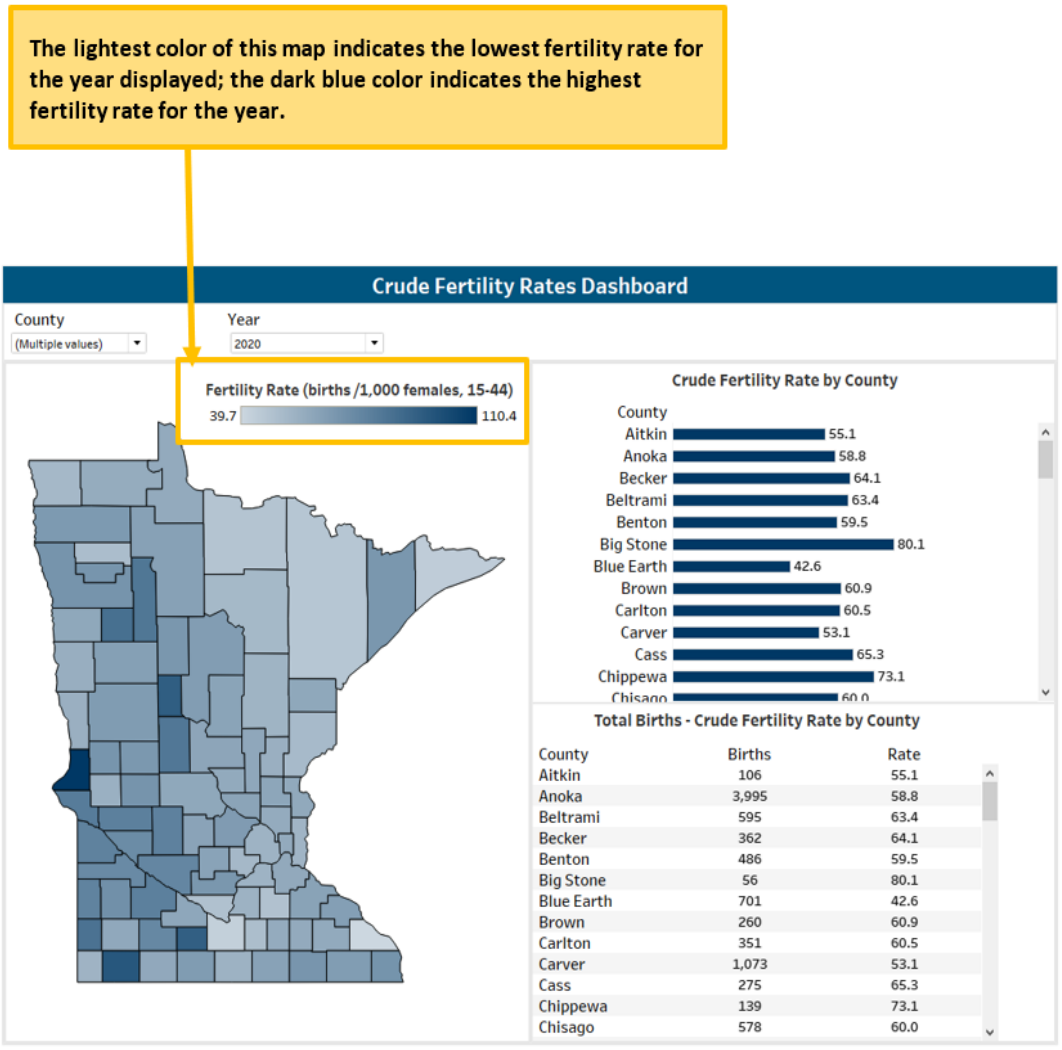
Screenshot: Crude birth rates dashboard

This dashboard displays crude birth rates for Minnesota residents. The bar chart illustrates crude birth rate by county. The map and table display the total number of births and crude birth rate for each county.



Screenshot: Crude fertility rates dashboard

The dashboard displays crude fertility rates for Minnesota residents. The bar chart illustrates crude fertility rate by county. The map and table display the total number of births and crude fertility rate for each county.



Death statistics query system

Select one of the categories listed below from the **row variable** and **column variable** drop-down filters.

Sort **county** filters to navigate the mortality (death) data and data table dashboards.

Mortality data dashboards: Key variables

Includes categories, rows, columns, and filters.

Key Variable: Mortality Dashboards	Description
Age at death	Age (broken down by individual years) of decedent at time of death: • 0 to 85+ years
Age groups	Age of decedent at time of birth grouped as follows: • 0-4 years • 5-14 years • 15-24 years • 25-34 years • 35-44 years • 45-54 years • 55-64 years • 65-74 years • 75-84 years • 85+ years

Key Variable: Mortality Dashboards	Description
Cause of death *NCHS compiled a list of 113 selected causes of death to establish a consistent grouping and ranking standard. Among these, 52 rank-able causes of death are marked with a pound symbol "#." The mortality dashboards feature 21 of these causes of death at right, including a category for residual (other/unknown).* *For details, including ICD-10 codes, review: National Vital Statistics Reports, volume 73, number 4: Deaths: Leading Causes for 2021 (PDF).* *The MDH Center for Health Statistics uses a modified version of the NCHS 52 rank-able causes of death for its reporting.*	NCHS selected causes of death: • AIDS/HIV • Alzheimer's • Atherosclerosis • Cancer • COPD • Chronic liver disease (includes cirrhosis) • Congenital anomalies • COVID • Diabetes • Essential hypertension (includes hypertensive renal disease) • Heart disease • Homicide • Nephritis • Parkinson's • Perinatal conditions • Pneumonia/ influenza • Septicemia • SIDS • Stroke • Suicide • Unintentional injury • Residual (other/unknown)

Key Variable: Mortality Dashboards	Description
Marital status	• Divorced/separated • Married • Missing/unknown • Never married • Widowed
Month of death	• Month decedent passed away
Place of death	Type of place where death occurred: • Hospital in-patient • ER/outpatient • Hospital – DOA • Decedent's home • Hospice facility • Nursing home/long-term care • Other • Unknown
Race/ethnicity, bridged race	• "Bridged race" four categories: American Indian or Alaska Native; Asian or Pacific Islander; Black; White • Hispanic • Unknown

Key Variable: Mortality Dashboards	Description
Race/ethnicity, single race	• "Single race" five categories: American Indian or Alaska Native; Asian or Pacific Islander; Black; White; multiracial • Hispanic • Unknown
Residence county	Minnesota county of residence – lists 87 counties: • County where decedent lived
Sex	• Male • Female
Veteran status	The veteran deaths include those who served in the armed forces, Minnesota National Guard and the U.S. Reserve Forces: • Non-veteran • Veteran • Unknown
Year	• Year of death

List of 113 selected causes of death and enterocolitis due to clostridium difficile

The MDH Center for Health Statistics uses a modified version of the NCHS 52 rank-able causes of death for its reporting.

The full list is at: National Vital Statistics Reports, volume 73, number 4: Deaths: Leading Causes for 2021 (https://www.cdc.gov/nchs/data/nvsr/nvsr73/nvsr73-04.pdf).

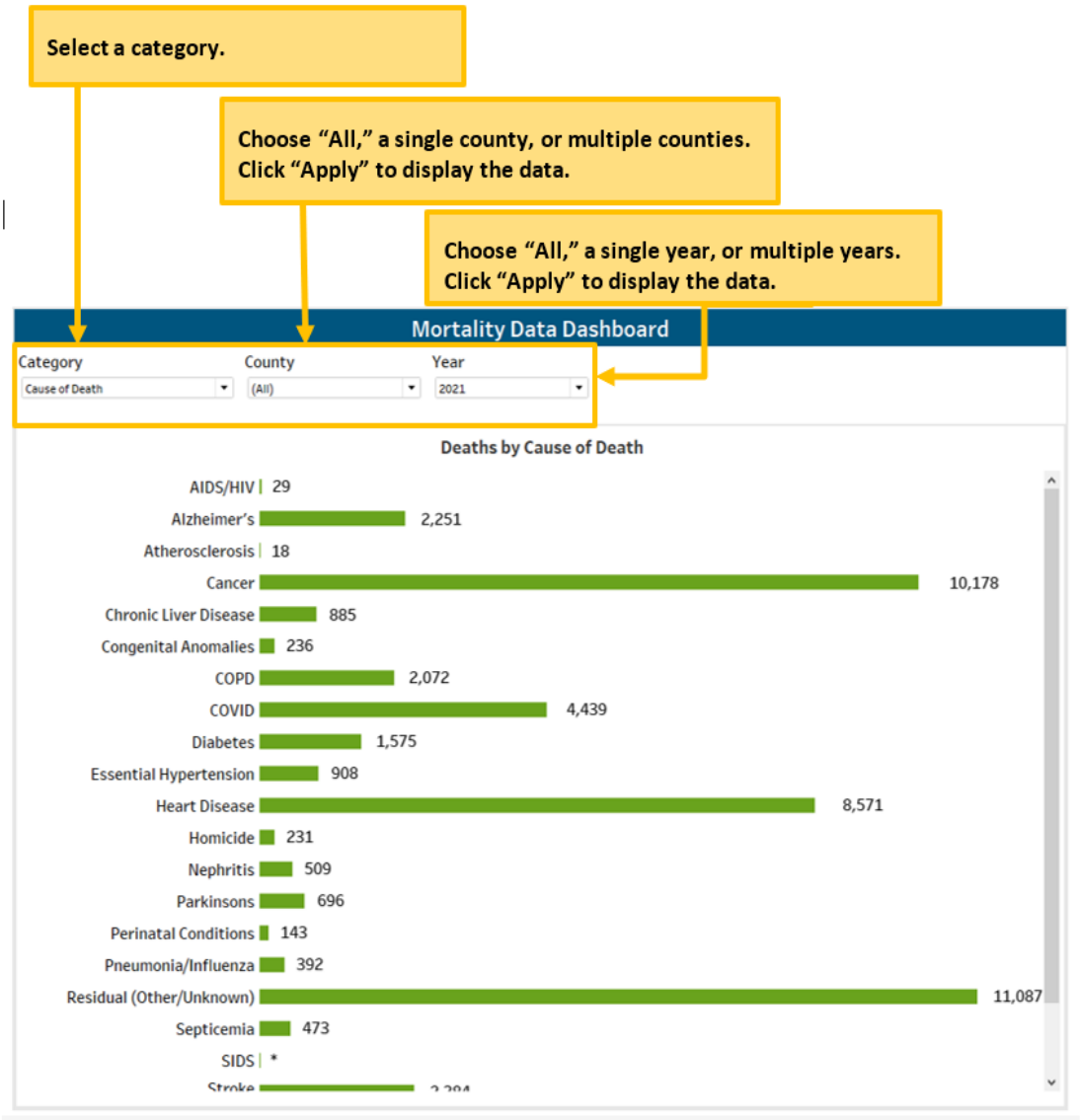
Mortality data dashboards: Screenshots

Refer to the screenshots below for guidance on navigating through the dashboards more efficiently.

Screenshot: Mortality data dashboard

This dashboard displays death statistics for Minnesota residents. The bar chart illustrates the total number of deaths by selected category, county, and year.

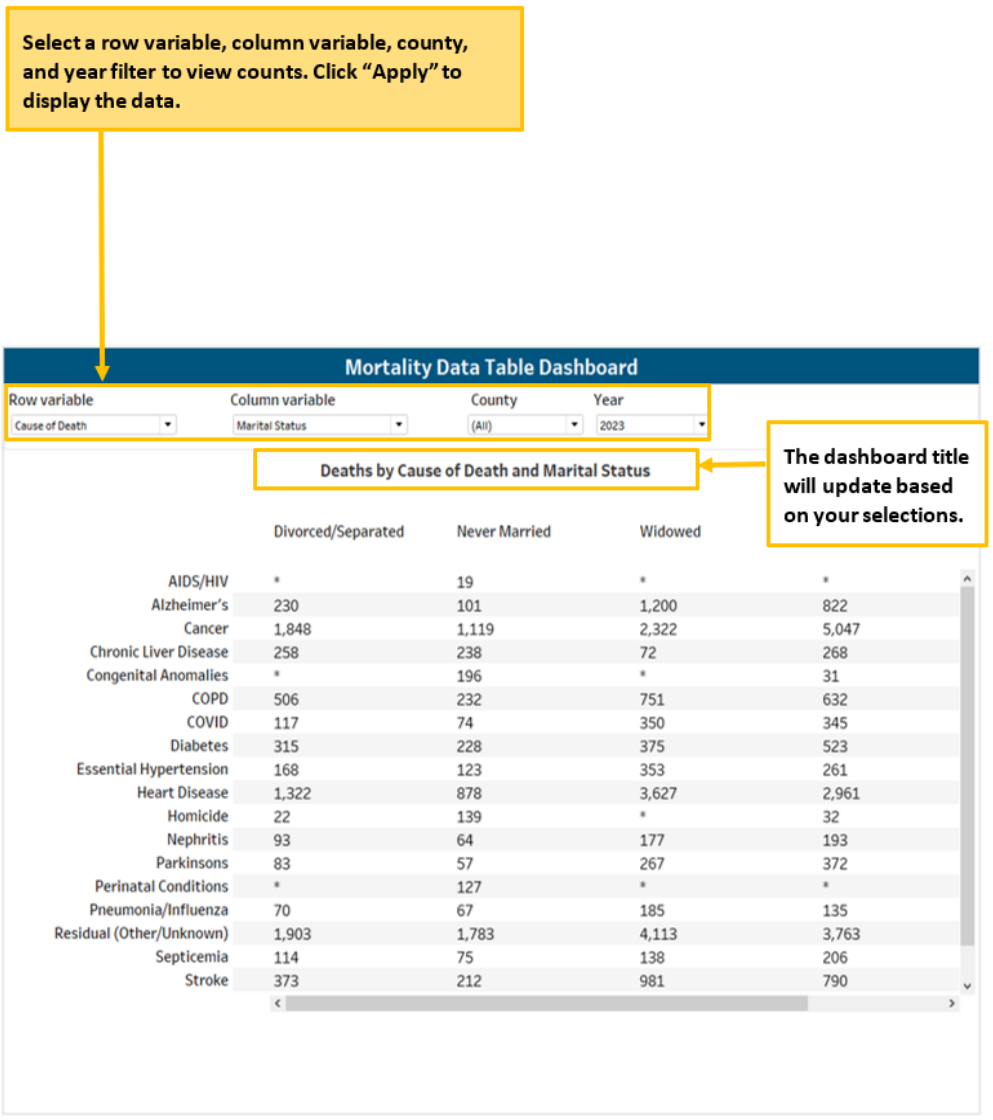
Counts fewer than 10 are represented by an asterisk (*) symbol.



Screenshot: Mortality data table dashboard

This table, in a tabular format, displays death statistics for Minnesota residents. Users can filter the data by selecting a row and column variable, specific counties, and year.

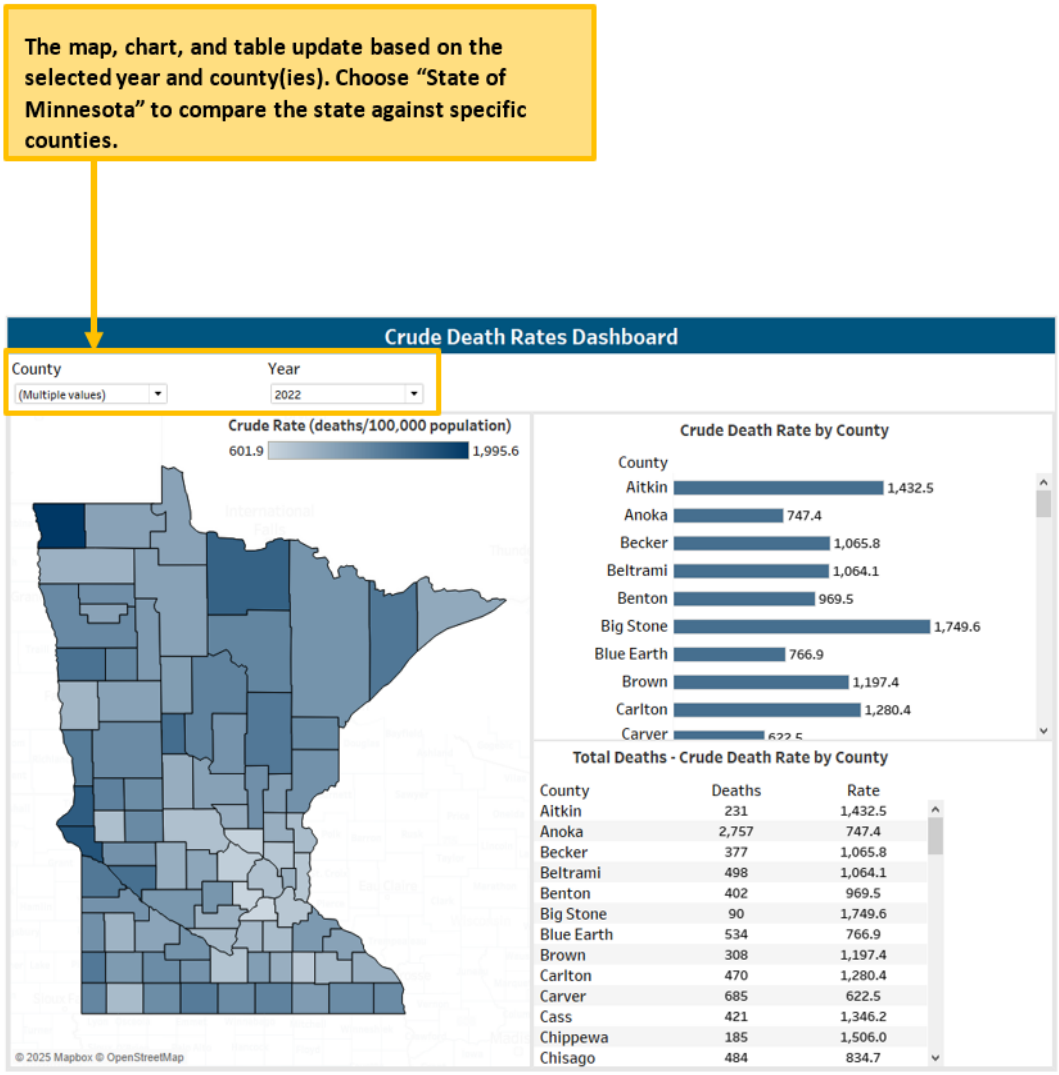
Counts fewer than 10 are represented by an asterisk (*) symbol.



	Divorced/Separated	Never Married	Widowed	
AIDS/HIV	*	19	*	*
Alzheimer's	230	101	1,200	822
Cancer	1,848	1,119	2,322	5,047
Chronic Liver Disease	258	238	72	268
Congenital Anomalies	*	196	*	31
COPD	506	232	751	632
COVID	117	74	350	345
Diabetes	315	228	375	523
Essential Hypertension	168	123	353	261
Heart Disease	1,322	878	3,627	2,961
Homicide	22	139	*	32
Nephritis	93	64	177	193
Parkinsons	83	57	267	372
Perinatal Conditions	*	127	*	*
Pneumonia/Influenza	70	67	185	135
Residual (Other/Unknown)	1,903	1,783	4,113	3,763
Septicemia	114	75	138	206
Stroke	373	212	981	790

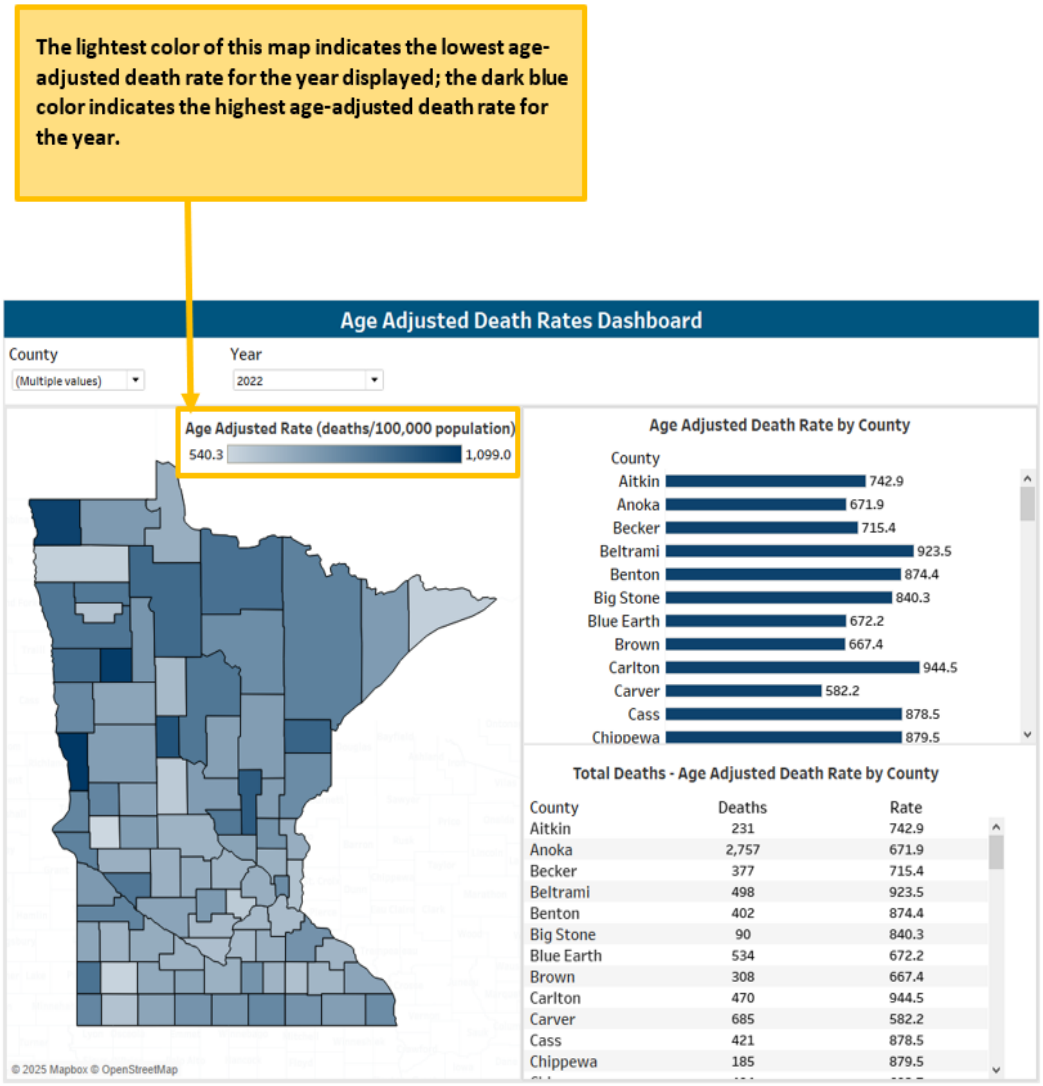
Screenshot: Crude death rates dashboard

The dashboard displays crude death rates for Minnesota residents. The bar chart illustrates crude death rate by county. The map and table display the total number of deaths and crude death rates for each county.



Screenshot: Age-adjusted death rates dashboard

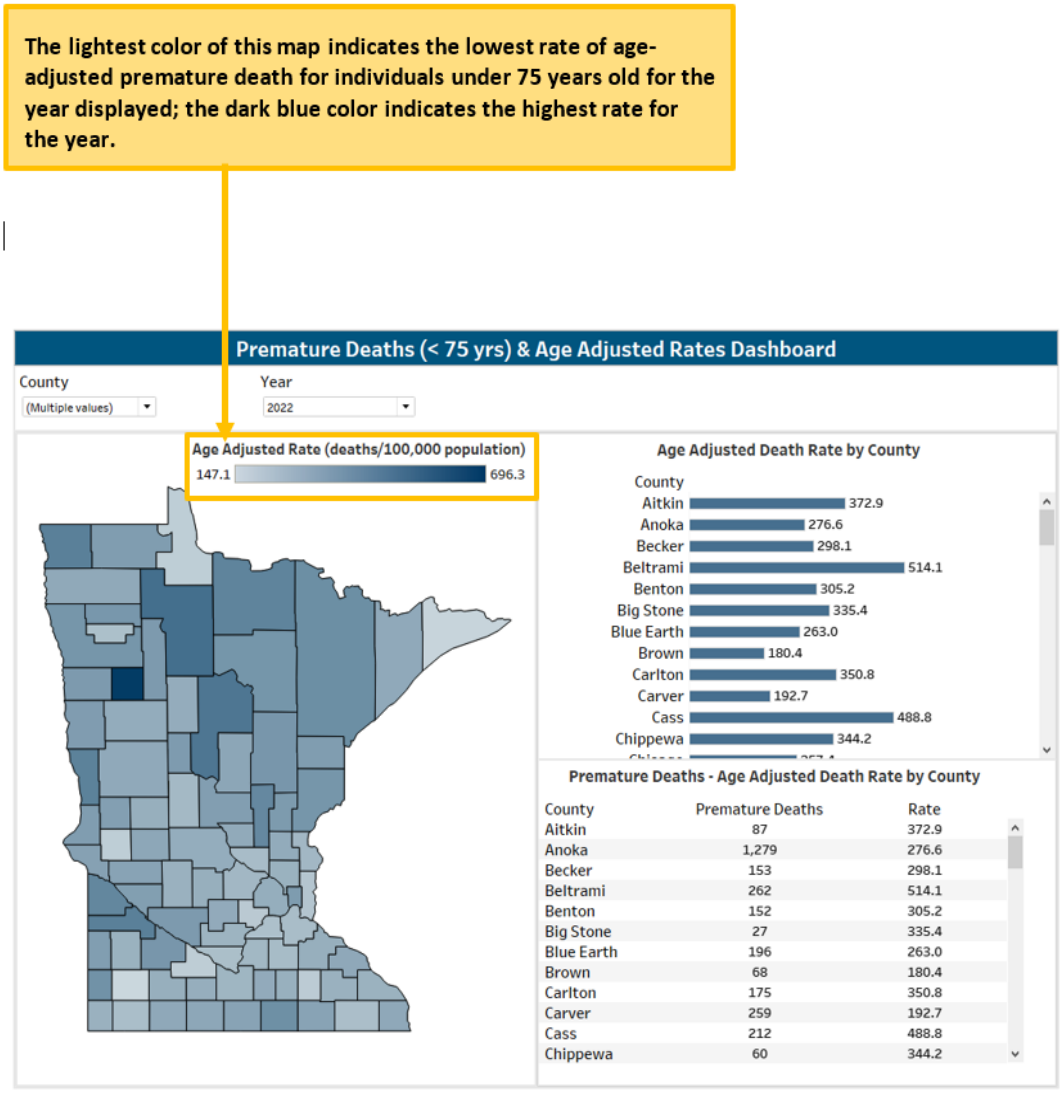
The dashboard displays age-adjusted death rates for Minnesota residents. The bar chart illustrates age-adjusted death rates by county. The map and table display the total number of deaths and age-adjusted death rates for each county.



Screenshot: Premature deaths (<75 yrs) and age-adjusted rates dashboard

The dashboard displays premature deaths and age-adjusted rates of premature death for Minnesota residents. Premature deaths refer to fatalities occurring among residents under the age of 75.

The bar chart illustrates age-adjusted rate of premature death by county. The map and table display the total number of premature deaths and related age-adjusted rate for each county.



Appendix A. Technical notes

Sources of data

Vital events

Birth and death registration and fetal death reports filed with the Office of the Vital Records, Minnesota Department of Health, for respective calendar years are the source documents for data on vital statistics of Minnesota residents. Late vital event certificates may have been filed after preparation of the annual report data. Future data obtained from MDH may differ from that which appears in this report due to updates to the data year made after the cutoff date. Live births and deaths to Minnesota residents that occurred in another state are included in this report insofar as they are reported to the Office of Vital Records. The inclusion of these data is made possible by an agreement for exchange of copies of resident certificates among all registration areas in the United States.

Population data

Annual estimates are bridged-race vintage postcensal estimates of the July 1 resident population. These estimates were prepared by the Census Bureau in collaboration with NCHS. Bridged race estimates are created only for the five race or Hispanic categories based on the 1997 Office of Management and Budget standards. There are no population estimates for other/unknown. For more information or access to the data, refer to: CDC Wonder: Bridged-Race Resident Population Estimates United States, State and County for the years 1990-2020 (https://wonder.cdc.gov/wonder/help/bridged-race.html).

The bridged race coding was sunset in 2020, and categorization has been moved to single race categorization, where populations are not imputed to a single race to match older standards for classification, allowing for multiracial to also be reported. The single-race data should not be compared to the bridged-race population estimates due to differences in how populations are classified.

Annual estimates are single-race postcensal estimates of the July 1 resident population for the respective vital event year. These estimates were prepared by the Census Bureau in collaboration with NCHS. Single race estimates were created for six single race categories (including multiracial) or Hispanic categories based on the 1997 Office of Management and Budget standards. There are no population estimates for other/unknown. For more information or access to the data, refer to: Single-Race Resident Population Estimates (https://wonder.cdc.gov/wonder/help/single-race.html). This is a change from previous years, which used the bridged-race estimates for populations.

For the sociodemographic statistics, data can still be obtained from the American Community Survey, one-year and five-year estimates, which are produced by the United States Census Bureau. The one-year estimates for the preceding year are available in late summer. The five-year estimates are based on pooled data from the preceding five years and are typically available in December. Five-year estimates are more reliable because they are based on a larger sample size. The one-year and five-year estimates are not typically dramatically different from one another.

Rates

Absolute counts of health-related events do not readily lend themselves to comparison between years or across various geographic areas because of population differences and, in some cases, the small number of reported events. These demographic differences include total numbers of events and of the population, age and sex distributions, and ethnic and/or racial composition. To assess the health status of a particular population at a specified time, the absolute number of events is converted to a relative number, such as a rate, a ratio, or an

index. In cases where there are a small number of birth or death events, rate calculations and sometimes counts are suppressed (see description at the end of the section). Some of the most common rates are described below. Additional definitions are provided in Appendix B at the end of this document.

Crude rates

A crude rate is a good measure of the overall magnitude of an event (e.g., birth or death) in a population. The crude rate is useful information for some purposes, such as planning for the delivery of health care services. One should be cautious when comparing crude rates over time or across other geographies, such as a county or another state. Notably, differences in crude rates may be due to a substantially younger or older population.

A crude birth or death rate is simply the number of events divided by the total population (the denominator), multiplied by some constant so that the result is not a fraction. For birth rates and death rates, 100,000 is the most commonly used multiplier, resulting in rates per 100,000 total population.

Fertility rates are the number of births divided by the population of women ages 15 to 44 years.

Age-adjusted death rates

Age adjusting rates is a way to make fairer comparisons between counties/community health boards with different age distributions. For example, a county having a higher percentage of elderly people may have a higher crude death than a county with a younger population merely because the elderly are more likely to die. Age-adjusted death rates are used to eliminate this age bias in the makeup of the populations being compared, thereby providing a much more reliable rate for comparison purposes. Age adjusted death rates are the total number of deaths per 100,000 populations, age-adjusted to the 2000 U.S. standard population. For additional information about age-adjustment refer to: National Cancer Institute SEER Program: Standard Populations (Millions) for Age-Adjustment (https://seer.cancer.gov/stdpopulations/).

Premature death rates

Nearly four out of every 10 deaths to Minnesota residents occur to people under 75 years of age. These deaths occur prior to the average life expectancy; thus, it is important to investigate premature deaths that may be potentially preventable. The premature death rate for those under age 75 is the number of deaths to residents under age 75 per 100,000 population, age-adjusted to the 2000 U.S. standard population.

Data suppression

In cases where there are fewer than 10 births or deaths in a specific geographic area or by a certain characteristic, data may be suppressed in MCHS reports. There is a range of different suppression rules used by different agencies. However, we are reporting vital statistics data, so we use the rules from the National Vital Statistics System. Suppression of data serves two purposes: 1) to protect confidentiality and 2) to ensure statistical reliability when calculating rates. Local public health agencies may request unsuppressed counts by sending a request to the MDH Center for Health Statistics: health.healthstats@state.mn.us.

Suppression rules for confidentiality are based on both the size of the geographic area and the number of events. For example, a county can be an area that is sparsely populated or it can have a large population, but small cells still occur when stratifying outcomes by other factors, such as small ethnicity groups and small age groups. In these cases, there is risk of deductive disclosure. In other words, with the combination of variables, it may be possible to identify a specific person and deduce something about their private health information. In national reports, small counts are sometimes reported (but not a corresponding rate). However, these counts are for VERY

large geographic areas, so there is no risk of deductive disclosure. Risk of deductive disclosure applies only to data that include protected health information, most commonly birth or fetal death data.

Suppression rules for reliability are based on the production of unstable rate estimates due to the increased amount of variability (standard deviation) around the estimate. This means that the actual rate may be much higher or much lower. Moreover, a change of one or two events, more or less, can change the rate dramatically, giving the impression that there is a large change when in fact it is due to random variability of the estimates. For example, in a fictitious place where there are 146 births and two infant deaths, the infant mortality rate appears to be 13.7 deaths per 1,000 live births. The following year, in this same place, there are 154 births and three infant deaths. The infant mortality rate now appears to be 19.5 deaths per 1,000 live births. It is inappropriate to draw any conclusion from these data because the numbers are too small to produce an estimate that is not subject to random variation. More events in a given time and place will produce relatively stable estimates over time, unless there is an actual cause for a change. This situation applies to any vital event that is reported.

Geographic allocation

Vital events are classified geographically in two ways. The first is by place of occurrence, (i.e., the state, county, and city in which the birth or death took place). The second and more customary way is by place of residence, (i.e., the state, county, and city that is the usual residence of the decedent in the case of a death or of the mother in the case of a birth). While occurrence statistics are accurate and have both administrative value and some statistical importance, resident statistics are the more useful tool when constructing health indices for planning and evaluation purposes. The statistics provided here are residence data unless otherwise stated.

Race/Hispanic ethnicity data collection and reporting

More than one race may be selected when reporting race of mother and father on a birth record or fetal death report or when reporting the race of decedent on a death record.

For those who report more than one race, they are categorized as multiracial. White, Black, American Indian, or Asian/Pacific Islander are categorized as such when only one race is reported. Single-race began in 2021, with bridged-race phased out in 2020, and should not be compared to previous years due to change in categorization. For single-race classification, an exception is applied to American Indian or Alaska Native (AIAN). When a mother reports AIAN, it is classified as AIAN rather than multiracial to prevent a significant shift of AIAN individuals into the multiracial category.

Beginning with reporting year 2017, race/ethnicity data reporting changed from reporting race and Hispanic ethnicity separately to reporting each non-Hispanic race group individually. All birth and death events to those identified as Hispanic are included in the Hispanic group, regardless of any other reported races. The final set of mutually exclusive groups for pre-2021 are non-Hispanic White, non-Hispanic Black, non-Hispanic American Indian, non-Hispanic Asian or other Pacific Islander, non-Hispanic other or unknown, and Hispanic. From 2021 onward, the race is categorized as: non-Hispanic White, non-Hispanic Black, non-Hispanic American Indian, non-Hispanic Asian or other Pacific Islander, non-Hispanic multiracial, non-Hispanic other or unknown, and Hispanic. These changes are based on the National Vital Statistics System (NVSS) and NCHS practices for reporting race and ethnicity.

Appendix B. Definitions

- **Age-specific death rate**: Number of deaths due to a particular underlying cause for a specified age group per 100,000 population comprising the same specified age group.
- **Birthweight**: Birthweight is documented and reported in grams. An infant is defined as low birthweight if it weighs less than 2,500 grams (5.5 pounds). Infants defined as macrosomic or high birthweight weigh equal to or more than 4,000 grams (8 pounds, 13 ounces).
- **Cause of death**: Causes of death are classified according to the International Classification of Diseases of the World Health Organization (ICD-10). In this report, the underlying cause of death is used to classify the cause of death. The underlying cause of death is either the disease or injury that initiated the series of events leading directly to death or the accident or violence, which produced the fatal injury. Other contributing causes of death are not shown in this report.
- **Crude birth rate**: Number of live births per 1,000 total population.
- **Crude death rate**: Number of deaths per 1,000 total population or per 100,000 total population.
- **Fertility rate**: Total number of live births per 1,000 females ages 15 to 44 years.
- **Live birth**: The complete expulsion or extraction of a product of conception from its mother irrespective of the duration of pregnancy which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered a live birth and is required by state statute to be registered as a live birth, regardless of gestation or length of time living after birth.
- **Premature birth**: Preterm birth, also known as premature birth, is the birth of a baby at fewer than 37 weeks gestational age as opposed to full-term delivery at approximately 40 weeks. Extreme preterm is less than 28 weeks, very early preterm birth is between 28 and 32 weeks, early preterm birth occurs between 32 and 34 weeks, late preterm birth is between 34 and 36 weeks gestation.
- **Prenatal care (indices)**:
  - **Late prenatal care** is defined as a woman who entered prenatal care in the third trimester or who received no prenatal care.
  - **Adequacy of prenatal care** can be calculated using a variety of indices. For the Minnesota annual reports, a new index is being used. In previous years, prenatal care adequacy was assessed using the graduated index (GINDEX). This index is calculated by combining measures of the month or trimester prenatal care began, the number of prenatal visits, and the gestational age of the infant/fetus at the time of birth. Starting in 2017, Kotelchuck's Adequacy of Prenatal Care Utilization (APNCU) was used, in keeping with the standards for national reporting. It should be noted that these indices do result in a different distribution of adequacy of prenatal care, thus previous years' adequacy measures are not comparable. Specifically, in national data, the APNCU identified more intensive and slightly more inadequate prenatal care users.

    The APNCU is also calculated using the month prenatal care began, the number of prenatal visits, and the gestational age of the infant/fetus at the time of birth. However, this measure incorporates an estimate of the expected prenatal care visits compared with the actual prenatal care visits received. The month prenatal care began was used to calculate the adequacy of entry into prenatal care. The expected number of prenatal care visits given gestational age (defined by the American College of Obstetricians and Gynecologists (ACOG)) was calculated and divided by the actual number of visits to create a ratio of expected to actual

visits. This ratio was then combined with the adequacy of entry into prenatal care variable to classify the adequacy of prenatal care as adequate plus, adequate, intermediate, inadequate, or none.

Intensive use of prenatal care (adequate plus) is associated with poor birth outcomes, due in most part to more prenatal care needed for high-risk pregnancies. Thus, distinguishing those with intensive use of prenatal care from those with adequate/expected prenatal care is meaningful for understanding pregnancy risks and adverse birth outcomes.

- **Residence**: Residence is the geographic area of the usual place of residence of the mother (in the case of a live birth or fetal death) or of the deceased at the time of death. This means, in general, the place where one lives and sleeps most of the time. However, when the decedent's usual residence is in a nursing home or other institution where a patient resided for receiving care, residence is coded to the place, if known, where the patient lived prior to admission to the institution.
- **Trimester**: One third of the total gestational period necessary for a full-term pregnancy (9 months). Thirteen weeks are allotted to each trimester. The count of weeks begins with the first day of the last menstrual period.

Appendix C. Acronyms

- **AIAN**: American Indian or Alaska Native
- **AIDS**: acquired immunodeficiency syndrome
- **BMI**: body mass index
- **CDC**: Centers for Disease Control and Prevention
- **CNM**: certified nurse midwife
- **CM**: certified midwife
- **COPD**: chronic obstructive pulmonary disease
- **DO**: doctor of osteopathy
- **DOA**: dead on arrival
- **ER**: emergency room
- **HIV**: human immunodeficiency syndrome
- **HPR**: hypertensive renal disease
- **IHS**: Indian Health Services
- **LTC**: long term care
- **MCHS**: Minnesota Center for Health Statistics
- **MD**: medical doctor
- **NCHS**: National Center for Health Statistics
- **PI**: Pacific Islander
- **SIDS**: sudden infant death syndrome
- **VBAC**: vaginal birth after cesarean