

## Appendix B

### Technical Notes

**Age-adjusted and crude rates** are different ways to measure death rates. The crude rate is defined as the total number of events divided by the total population at risk, then multiplied by 100,000. A crude rate demonstrates the impact on the community, but may not be useful for comparing mortality among geographic areas or monitoring changes over time because mortality depends on the age composition of the population for a specific area as well as age-specific death rates. Thus, it is useful to summarize specific death rates in an overall mortality index that takes the age of the population into account. One such index is the age-adjusted mortality rate.

The age-adjusted death rate is a summary rate of deaths that is developed using a standard population distribution to improve the comparability of rates for areas or population subgroups with differing age distributions. Age-adjusted death rates represent the mortality experience that would have occurred in a standard population had the age-specific rates of the area or population subgroup been experienced by the standard population. Both crude and age-adjusted rates are presented as per 100,000, except for infant mortality.

**Behavioral Risk Factor Survey (BRFS)** is an annual telephone survey of a random sample of persons aged 18 or older. The surveillance system uses a survey instrument to ask participants a core set of questions. It relies on self-reported information.

**Behavioral Risk Factor Surveillance System (BRFSS)** is a series of annual telephone surveys. The Centers for Disease Control and Prevention (CDC) provides a core set of questions and each state may add their own survey questions. The surveillance system allows Michigan to compare itself to the U.S. and to examine change over time.

**CDC** is the U.S. Centers for Disease Control and Prevention, and is an agency of the Department of Health and Human Services.

**Childhood immunization** is measured as the percentage of children who received four doses of DPT, three doses of polio, and one dose of MMR by their second birthday (4-3-1 series). In 1999, three doses of *Haemophilus influenzae* type B vaccine (Hib) and three doses of hepatitis B vaccine (Hep B) were added to the list of vaccines used to assess the extent to which Michigan's children are appropriately immunized. The 1991 immunization data in this report are from a retrospective study done by the state of Michigan. All other data are from the National Immunization Survey conducted annually by the Centers for Disease Control and Prevention.

**Childhood immunization for Medicaid managed care** is measured as the percentage of children who received four doses of DTaP or DPT, four doses of HiB, three doses of IPV or OPV, three doses of Hep B, and one dose of MMR by their second birthday (4-4-3-3-1 series). Data is from an External Quality Review of the Medicaid contracted health plans. This review was conducted by the Michigan Peer Review Organization for the Michigan Department of Community Health.

**Comparison of Michigan to the U.S.** uses the most recent data available for which comparable state and national data exist and does not take trends into account.

**Comparability Ratios:** The comparability ratio results from double-coding a large sample of the national mortality file, once by the old revision (ICD-9) and again by the new revision (ICD-10), and expressing the results of the comparison as a ratio of deaths for a cause of death by the later revision divided by the number of that cause of death coded and classified by the earlier revision. A ratio greater than 1.0 indicates that the new coding structure will classify more deaths to that underlying cause of death. For a list of comparability ratios for leading causes of death in Michigan, please see [www.michigan.gov/mdch](http://www.michigan.gov/mdch) mortality statistical table notes.

**County maps** are constructed by partitioning counties into four groups - - two equal groups with rates higher than the state rate and two equal groups with rates lower than the state rate. County rates are considered to be unreliable when there are fewer than six events when using crude rates, or fewer than 20 events when using age-adjusted rates. Three-year averages were used for the county maps to decrease the effects of rate variability.

**Data** are primarily provided by the Division for Vital Records and Health Statistics, Medical Services Administration, and the Bureau of Epidemiology, MDCH. Other sources of data are identified either on the chart or in the text for each indicator.

**Data - ICD 9 Codes:** The following codes from the *International Classification of Diseases, Ninth Revision (ICD-9)* are used to define mortality indicators:

- Heart disease deaths 390-398, 402, 404-429
- Cancer deaths 140-208
- Stroke deaths 430-438
- Chronic obstructive pulmonary disease deaths 490-496
- Unintentional injury deaths E800-E949
  - Motor vehicle crash deaths E810-E825
- Pneumonia and influenza deaths 480-487
- Diabetes-related deaths\* 250
- Kidney disease deaths 580-589
- Chronic liver disease and cirrhosis 571
- Suicide E950-E959
- Homicide E960-E978
- HIV/AIDS deaths 42-44
- Alcohol-induced deaths\*\* 291, 303.0, 305.0, 357.5, 425.5, 535.3, 571.0-571.3, 790.3

\* Diabetes mentioned as either underlying or related cause of death.

\*\* Alcohol-induced deaths are not directly comparable to the indicator reported in 1996, which did not include 357.5, 425.5, 535.3, and 790.3. However, data are directly comparable to the indicator reported in 1997 and 1998.

**Data - ICD-10 Codes:** Starting in 1999, deaths were classified using ICD-10 coding. The following codes from the *International Classification of Diseases, Tenth Revision (ICD-10)* are used to define mortality indicators.

- Heart disease deaths I00-I09, I11, I13, I20-I51
- Cancer deaths C00-C97
- Stroke deaths I60-I69
- Chronic obstructive pulmonary disease deaths J40-J47
- Unintentional injury deaths V01-X59, Y85-Y86
  - Motor vehicle crash deaths V02-V04, V09.0-V09.2, V120V14, V19.0-V19.2, V19.4-V19.6, V20-B79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0, V88.8.V89.0, V89.2
- Pneumonia and influenza deaths J10-J18
- Diabetes-related deaths\* E10-E14
- Kidney disease deaths N00-N07, N17-N19, N25-N27
- Chronic liver disease and cirrhosis K70, K73-K74
- Suicide X60-X84, Y87.0
- Homicide X85-Y09, Y87.1
- HIV/AIDS deaths B20-B24
- Alcohol-induced deaths F10, G31.2, G62.1, I42.6, K29.2, K70, R78.0, X45, X65, Y15

\* Diabetes mentioned as either underlying or related cause of death.

**Infant Support Services (ISS)** provides psychosocial support, nutrition information, and transportation to families with infants at risk of poor health outcomes.

**Kessner Index** is a measure of the level of prenatal care based on information obtained from birth certificates.

- An adequate level of prenatal care is defined as care that began within the first trimester and which included an

average of at least one or two additional prenatal visits per month of gestation, depending on the length of gestation.

- An intermediate level of prenatal care is defined as care that began during the second trimester of pregnancy with correspondingly fewer visits, or that began during the first trimester but with fewer visits than would be appropriate for the length of gestation.
- An inadequate level of prenatal care is defined as no care received or care that began during the third trimester. It is also inadequate if care began during the first or second trimester but less than five visits occurred when the length of gestation was 34 weeks or more. When the length of gestation was less than 34 weeks, care is inadequate if it began during the first or second trimester but a number of visits less than four occurred, that number depending on the actual weeks of gestation.

**MDCH** is the Michigan Department of Community Health.

**MICHild enrollment** data are reported to the Michigan Department of Community Health by Maximus. In October of 1998, there were 2,945 children added to MICHild from the Caring for Children Program.

**Maternal and Infant Health Advocacy Services (MIHAS)** provide support services to women least likely to get into and stay in prenatal care. The program's peer advocates assist women to obtain and keep prenatal, other health, and social support service appointments that help women cope with problems affecting their pregnancy.

**Morbidity** is the state of being diseased. The morbidity rate the number of cases of disease found to occur in a population, usually given as cases per 100,000.

**MPRO** is the Michigan Peer Review Organization, a private firm contracted by the Michigan Department of Community Health to do an external quality review of Medicaid managed care health plans.

**Maternal Support Services (MSS)** provides psychosocial support, nutrition information, and transportation to pregnant women at risk of poor birth outcomes.

**Overweight** is a Body Mass Index (BMI) at or above 25kg/m<sup>2</sup> in adults. Obesity is a BMI at or above 30kg/m<sup>2</sup>. These measurements are based on the National Institutes of Health (NIH) Clinical Guidelines. BMI is a practical measure that requires only two things: accurate measures of an individual's weight and height. BMI has some limitations, in that it can overestimate body fat in persons who are very muscular, and it can underestimate body fat in persons who have lost muscle mass, such as many elderly.

**Population estimates** used for the calculation are the most current available at time of report. Past Michigan Critical Health Indicators report used earlier estimates. As a result, statistics rates may be slightly different.

**PRAMS**, the Pregnancy Risk Assessment Monitoring System, is a surveillance project of the Centers for Disease Control and Prevention and state health departments. PRAMS collects state-specific, population-based data on maternal attitudes and experiences prior to, during, and immediately following pregnancy.

**Rates** are subject to variation that is directly related to the number of events used to calculate the rate. The smaller the number of events, the higher the variability. Rates based on small numbers of events over a specified time period or for a small population vary considerably and should be viewed with caution. This report uses three-year averages to provide some stabilization for the rates calculated at the county level. The reader should also be cautioned against assigning undue significance to a rate that represents only a single point in time.

**Trend** directions are determined after calculating a 10-year slope as well as percent change over 10 years and one year. All three were reviewed to determine the significance and direction of change.

**Underlying Cause of Death** is the condition giving rise to the chain of events leading to death.

**Years of Potential Life Lost (YPLL)** is a measure of mortality designed to emphasize mortality that is prevalent among people under age 75. The number of years of potential life lost is calculated as the number of years between

the age at death and 75 years of age for persons dying before their 75<sup>th</sup> year.

**YPLL rate** is the approximated total number of Years of Potential Life Lost due to a specific cause of death, divided by the current population estimate for people under the age of 75. 2000 Census population e was used to calculate 2001 YPLL rates.

**Average YPLL/person** is the approximated total number of Years of Potential Life Lost due to a specific cause of death, divided by the number of people who died from that cause.

**Youth Risk Behavior Survey (YRBS)** is a survey of ninth through twelfth graders undertaken every other year. The YRBS has been administered in Michigan every other year since 1991. Earlier administration of the YRBS in Michigan did not obtain sufficient participation from schools and students to generalize the results to the entire state. The 1997, 1999 and 2001 YRBS can be generalized to the entire state.

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