

## APPENDIX B

# *Critical Health Indicators*

The State of Michigan uses 21 critical indicators to provide an overview of the health of Michigan residents and the health system that serves them. These indicators examine

- major risk behaviors that affect the public health;
- prevalence of certain diseases among the Michigan population;
- major causes of death; and
- access to and cost of health care in the state.

The indicators are useful for determining public health trends in Michigan and also for roughly comparing Michigan to the nation (available data do not always allow for same-year and/or national comparisons).

The data are from the Michigan Department of Community Health (MDCH) publication, *Critical Health Indicators*, 1997, and are presented here in four major categories: health risk behavior, disease and disability, mortality, and health care. For reading ease, percentages and rates are rounded to the nearest whole number.

### HEALTH RISK BEHAVIOR

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#### Smoking

Smoking is the leading cause of preventable death both in Michigan and nationwide. Data on smoking come from the Behavioral Risk Factor Survey (BRFS), an annual, random telephone survey of persons 18 years and older conducted in each state. The trend indicates that smoking is becoming less popular among Michigan residents.

- In 1982 about 33 percent of Michigan adults reported that they smoked cigarettes.
- In 1994 Michigan had the 14th highest proportion of smokers among all the states.
- In 1995 Michigan smoking had declined to 26 percent of the state's adult population.
- By 2000 an estimated 22 percent of Michiganders will smoke.

### Weight

The condition of being overweight often is the result of dietary, physical-activity, and genetic patterns and can result in numerous health problems, among them heart disease and stroke, diabetes, and cancer. The percentage of Michigan adults who are overweight (based on a body-mass index that compares height and weight) also comes from the BRFSS. The survey reveals that the number of overweight people in the state is on the rise.

- In 1987 approximately 24 percent of the state's adult population were overweight.
- By 1995 the percentage of overweight adults in Michigan climbed to 31.
- In 1995 Michigan ranked fifth in the nation with respect to the percentage of its overweight adult population.
- By 2000 state officials project that 38 percent of Michiganders will be overweight.

### Childhood Immunization

Immunization (oral and injected administration of vaccine) protects against certain diseases. A child is considered fully immunized if before age three s/he has received four doses of diphtheria-tetanus-pertussis vaccine, three doses of polio vaccine, and one of measles-mumps-rubella vaccine. Immunization data are drawn from (1) school-entry records for 1991, (2) the Michigan results of a national telephone survey in 1994, and (3) a state-sponsored telephone survey in 1996. Michigan immunization rates have improved significantly in recent years.

- In 1991 only an estimated 42 percent of children were fully immunized.
- By 1994 the percentage had increased to 61 percent, and by 1995 it was 70 percent; the national average for July 1994–95 was 75 percent.
- By 1996 the Michigan childhood immunization figure reached 74 percent.
- In 1998 Michigan officials anticipate 95 percent immunization.

### Teen Pregnancy

The teen pregnancy rate pertains to the estimated number of young women aged 15–19 who have given birth or experienced abortion or miscarriage. Teen pregnancies are thought to reflect primarily inadequate health and sex education, lower socioeconomic status, abuse of alcohol and drugs, poor academic progress, history of sexual abuse, lack of birth control, and low self-esteem/determination. The state rate is based on data reported to the MDCH. Although Michigan's teen pregnancy rate surged during the late 1980s, the 1990s are marked by a decline.

- From 1984 to 1990 Michigan's teen pregnancy rate rose from 88 pregnancies per 1,000 women aged 15–19 to a record high of 99/1,000.
- In 1992 the state rate was 93/1,000; the national rate was only slightly higher.

- By 1995 Michigan's rate decreased to 82/1,000.
- In 2000, if the downward trend continues, the state teen pregnancy rate could be lower than the projected 87/1,000.

## DISEASE AND DISABILITY

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### Chlamydia

Chlamydia is one of the most common sexually transmitted diseases, and its rate is used as a proxy to indicate the general spread of venereal disease. The state rate is based on the number of cases reported to the MDCH; reporting for chlamydia began in 1992.

- In 1994 the state rate was 186 cases of chlamydia per 100,000 population.
- In 1995 the rate jumped to 228/100,000, which was much higher than the U.S. rate of 182/100,000.
- In 1996 Michigan's chlamydia rate decreased to 210/100,000.
- For 2000 the state goal is a rate no higher than 215/100,000.

### Tuberculosis

Tuberculosis (TB) can affect lungs, bones, and other parts of the body. Because it is highly communicable and has very serious consequences, public health officials monitor its incidence rate carefully. The rate is based on the number of cases reported to the MDCH. In the past decade the TB incidence rate has declined substantially in Michigan.

- In 1985 Michigan's rate of new TB cases was 6 per 100,000 population.
- In 1996 the state rate was 5/100,000 (443 cases), lower than the national rate.
- In 2000, if the state rate continues to decline, it may be under 4/100,000.

### Psychiatric Hospital Days of Care

In past years mental illness was treated primarily in private/public hospitals. This has changed dramatically; today, treatment increasingly occurs in community settings. This trend is apparent in the sharp drop in the number of hospital days devoted to treating a primary diagnosis of mental illness (hospitalization for mental retardation and alcohol and substance abuse-related psychoses is excluded). Data are collected by age group: children (aged 17 and under) and adults (aged 18 and over). The rate is derived by dividing the number of days of hospitalization by the number of people in the age group. Data are obtained from the MDCH hospital records and the Michigan Inpatient Data Base. During recent years the number of psychiatric hospital days in Michigan has declined substantially; comparisons among states are not possible because there is no standard definition for psychiatric hospitalization.

- In 1987 the rate of psychiatric hospitalization in Michigan was 107 days for children and 303 days for adults.
- In 1995 the rate was 59 days for children and 171 days for adults.
- There are no projections for the future because the MDCH's goal is a progressive reduction in the psychiatric hospitalization rate.

## MORTALITY

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### Infant

The infant mortality rate is the annual number of deaths among babies aged under one year per 1,000 live births. High infant mortality rates are thought to reflect poor socioeconomic status, risky lifestyle behavior, and inadequate prenatal care. Although Michigan's infant mortality rates are high compared to the nation, the state is making dramatic improvement.

- During the 1980s Michigan's infant mortality rate reached 13 per 1,000 live births.
- By 1995 the rate had declined to slightly over 8/1,000 live births; the provisional U.S. rate that year was about 7/1,000.
- In 1995 the infant mortality rate for African-Americans in Michigan was higher than for any other racial/ethnicity group; at more than 17/1,000 live births, the rate for this group is almost three times that of Caucasian infants, which is 6/1,000.
- For 2000, the projected overall state infant-mortality rate is under 8/1,000 live births; one state goal is to reduce the rate for African-Americans to no more than 14/1,000 live births.

### Child and Adolescent

The child and adolescent mortality rate is the number of deaths among children aged 1–19, divided by the population in that age group. Overall, unintentional injury is the leading cause of death among this group; others are congenital (present since birth) health problems, cancer, homicide, and suicide. High death rates in this age group are thought to reflect problems in the health system, family, and community-health delivery. Over the years, Michigan's rate of death among children and adolescents has fluctuated widely: In 1987 the rate was among the highest on record and in 1995 among the lowest.

- In 1987 the Michigan child and adolescent mortality rate reached a high of 54 deaths per 100,000 1–19-year-olds.
- In 1994 the rate was 45/100,000; the U.S. rate was 43/100,000.
- In 1995 Michigan's rate fell to a low of 41/100,000.
- For 2000 the state's projected rate is 43/100,000.

### Heart Disease

Heart disease is the leading cause of death in Michigan; in 1995 it caused about 28,000 (roughly 34 percent) of the more than 83,000 deaths in the state. Although Michigan's heart disease-related death rate has decreased over the last two decades, it remains higher than the national average.

- In 1970 the rate of heart-disease mortality in Michigan was 260 per 100,000 population.
- In 1995 the rate had declined to 151/100,000; the national rate was 140/100,000.
- By 2000 state officials expect the rate to decline to 122/100,000.

### Stroke

Stroke—which is caused by a hemorrhage in or blockage of a brain artery—is a top killer in Michigan; it also is the leading cause of severe long-term disability. High blood pressure (hypertension) is a major contributor to stroke. The rate of stroke deaths in Michigan dropped dramatically from 1987 to 1992, but since then it has been on the rise.

- From 1987 to 1992 Michigan's stroke death rate fell from 32 per 100,000 population to 26/100,000.
- In 1995 the rate was 29/100,000; the national rate 27/100,000.
- For 2000 the projected rate is 20/100,000, but state officials fear that if the recent increase in stroke deaths continues, the rate could exceed the projection.

### Cancer

Cancer refers to more than 100 diseases, each characterized by the uncontrolled growth and spread of abnormal cells. Over the last ten years, the Michigan death rate attributable to cancer has remained generally stable, and experts expect this trend to hold.

- From 1980 to 1991 the Michigan cancer death rate rose from 134 to 140 per 100,000 population, then began a gradual decline.
- In 1995 the Michigan rate was 133/100,000; the provisional U.S. rate was 130/100,000.
- Through 2000 state officials expect the rate to remain roughly the same as at present.

### Diabetes and Related Conditions

Diabetes is a chronic (of long duration) disease characterized by high glucose levels caused by insulin problems within one's body. The disease is the seventh-leading cause of death for Michigan residents. The rate of diabetes-related deaths is based on the number of deaths in which diabetes is listed as an underlying cause, a contributing cause, or other significant condition. Since the early 1990s the death rate attributable to the disease generally has undergone only slight change.

- In 1990 Michigan's diabetes-related death rate was 46 per 100,000 population.
- In 1992 Michigan's rate was 44/100,000; the U.S. rate was 38/100,000.
- In 1995 the state rate was up very slightly.
- For 2000 officials predict that the rate will drop slightly, to 43/100,000.

### **Suicide**

Suicide is death caused by injury purposefully inflicted by an individual on him/herself; such a death is considered a suicide even if the person did not intend the injury to result in death. The suicide rate is considered to be an indirect measure of the population's mental health. Although the rate has fluctuated from year to year, since 1980 the trend has been downward.

- In 1980 Michigan's suicide rate was 11 per 100,000 population.
- Since 1985 the Michigan rate has been equal to or slightly lower than the U.S. rate.
- In 1995 the Michigan rate was under 10/100,000; the provisional U.S. rate was 11/100,000.
- In 2000 Michigan officials project the rate at under 10/100,000.

### **Motor-Vehicle Crash**

The death rate attributable to motor-vehicle crashes decreased from the mid-1980s to the early 1990s, but it appears to be on the rise again.

- From 1988 to 1993 Michigan's motor-vehicle crash death rate dropped from 19 per 100,000 population to under 15/100,000.
- In 1995 the rate had increased to more than 16/100,000; the provisional U.S. rate was just under 16/100,000.
- By 2000 the MDCH hopes the state rate will fall below 14/100,000.

### **Alcohol Induced**

The effects of alcohol abuse and dependency are considerable, although they are difficult to measure directly because the symptoms of alcohol use often are associated with other diseases. One way to measure the effect of alcohol use/abuse on public health is to measure the extent of mortality it causes. Michigan's rate seems to hover between 6 and 8 deaths per 100,000 population.

- In 1985 the rate of alcohol-induced deaths was nearly 8 per 100,000 population.
- In 1992 the state rate was 7/100,000; the U.S. rate was only slightly higher.
- In 1995 the state rate was approximately 7/100,000.

### **HIV/AIDS**

AIDS (acquired immune deficiency syndrome) is the end stage of the infectious disease caused by the human immunodeficiency virus (HIV). HIV/AIDS deaths are a delayed measure of the problem of HIV infection. The death rate is based

on the number of people who die from HIV/AIDS. Generally, deaths occurring now are the result of infections contracted 10–15 years ago. Since 1987 the death rate attributable to AIDS has increased steadily, and today it is one of the leading causes of death among people aged 25–44.

- In 1995 the Michigan HIV/AIDS death rate was 8 per 100,000 population; the U.S. rate was 15/100,000.
- During the first six months of 1996, state and national data show a decline in deaths related to the disease—the first such since HIV/AIDS emerged in the early 1980s.

## HEALTH CARE

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### Access to Primary Care Physicians

Primary care is that received by a patient upon first contact with the health care system, before referral elsewhere. The number of practicing primary care physicians is an indication of the population's access to primary health care services. The indicator reflects the ratio of Michiganians to physicians working 40 or more hours a week in primary care. In calculating the ratio, full-time equivalents (FTE) are used: For example, if a physician reports working only 32 hours a week in primary care, s/he is counted as 0.8 of an FTE physician. Over the last ten years, the ratio of the Michigan population to primary care physicians has remained stable. A national standard—a ratio of 1500:1—is used to assess whether the availability of primary care physicians is adequate.

- In 1986 the state's ratio of population to primary care physicians was 1430:1.
- In 1996, the ratio was 1429:1.
- Although statewide in 1996 the ratio is better than the national standard, the standard is barely or not met in a good many of the state's 83 counties: In 33 counties the number of people to one full-time primary care physician ranges from 2,252 to 6,269; in 32 others the number is 1,430 to 2,251.
- In only 18 counties is the person-to-physician better than the statewide average: In nine, the number of people to one full-time primary care physician ranges from 1,287 to 1,429; in the remainder, the number is under 1,287.

### Preventable Hospitalization

A useful measure of access to health care is the number of cases (involving people aged under 65) for which hospitalization usually may be avoided if appropriate outpatient or ambulatory care is available or given (the conditions involved in such cases are referred to as being "ambulatory care-sensitive"). High hospital-admission rates for conditions that could be treated otherwise may be indirect evidence of a patient-access problem or deficiencies in outpatient management. In the last decade Michigan's rate of preventable hospitalizations has declined.

- In 1985 Michigan's rate of hospitalization for ambulatory care-sensitive conditions was 17 per 1,000 population.

- In 1994 the state rate declined to 14/1,000.
- The rate of preventable hospitalization in metropolitan Detroit is higher than in most other major urban areas in the United States.
- For 2000 the goal is to reduce by 10 percent the number of counties that have an inadequate ratio.

### **Health Maintenance Organization (HMO) Enrollment**

Tracking the percentage of the total Michigan population that receives primary care from an HMO is a way to monitor the expansion of managed care, a health care delivery system that relies on “gatekeepers”—primary care physicians—to refer patients to the most appropriate care provider or setting. There are various managed-care arrangements, but the most common is the HMO. Since the early 1980s the number of Michiganders enrolled in HMOs has risen steadily.

- In 1980 almost 270,000 Michigan residents—nearly 3 percent of the state population—were enrolled in an HMO.
- In 1995 the number reached 2 million—more than 21 percent; nationwide the figure was 22 percent.
- By 2000, if the current trend continues, the number of Michiganders enrolled may approach 3 million—around 30 percent.

### **Health Care Costs**

Health care costs refer to expenditures on personal health services rendered to treat or prevent diseases or conditions; they are a broad measure of the relative importance society places on health care versus other services, such as education and defense. Since 1980, health care costs in Michigan and nationwide have risen steadily.

- In 1980 Michigan’s total health care costs exceeded \$9 billion.
- In 1993 state costs had tripled, \$27 billion—an average annual growth rate approaching 9 percent (the national average annual rate was over 10 percent); the state ranked 8th in the nation in terms of health care costs, which is consistent with its standing as the 8th most populous state.