

## APPENDIX 1

### Indicator Definitions

#### Measures of Consequences

##### *Mortality*

- Number of deaths - Numbers of cause-specific deaths were derived from Wisconsin and United States death certificate data. See Appendix 2 (“Mortality data” section) for details about the data source and methods.
- Age-adjusted mortality rate - Age-adjusted rates per 100,000 population were calculated using the direct method based on the year 2000 U.S. standard population.

##### *Motor Vehicle Deaths and Injuries*

Alcohol-related motor vehicle crashes are those in which at least one driver, pedestrian or bicyclist was drinking before the crash.

- Alcohol-related motor vehicle deaths - Deaths resulting from alcohol-related crashes that occur within 30 days of the crash. Includes drivers, passengers, pedestrians and bicyclists.

Note: Alcohol-related motor vehicle death data in this report come from two sources: the Fatality Analysis Reporting System (national and state-level deaths) and the *Traffic Crash Facts* report produced by the Wisconsin Department of Transportation (county-specific deaths). For more information about how the two sources compile total numbers of deaths, see Appendix 2, “Other Data Sources for this Report.”

- Alcohol-related motor vehicle injuries - Nonfatal injuries resulting from motor vehicle crashes where alcohol was determined to be a factor, including injuries to drivers, passengers, pedestrians and bicyclists.

##### *Hospitalizations*

- Numbers of hospitalizations - The number of hospitalizations (hospital inpatient discharges) related to alcohol and the number related to use of other drugs. See Appendix 3, “Wisconsin inpatient hospitalization data” section, for details about the data source and methods.
- Hospitalization rate - The rate of alcohol-related hospitalizations per 100,000 population, and the rate of other drug-related hospitalizations per 100,000 population.
- Hospital charges - Total hospital charges for alcohol-related hospitalizations, and total hospital charges for drug-related hospitalizations. Hospital charges are the total facility charges for the entire length of stay. Charges are not the same as the actual costs paid by any particular payer, which depend on negotiated discounts and other

arrangements, and do not include physicians' and other professional fees. Hospital charges in this report have not been adjusted for inflation.

### *Crime and Arrests*

- Wisconsin and county - Crimes and arrests reported by Wisconsin law enforcement agencies using the Wisconsin Uniform Crime Reporting System to the Federal Bureau of Investigation (FBI) and the Wisconsin Office of Justice Assistance (OJA) Statistical Analysis Center. Crime rates per 100,000 population are defined and calculated as the number of crimes divided by population, multiplied by 100,000.
- United States - Crimes and arrests reported to the FBI by law enforcement agencies using the Uniform Crime Reporting System.

### *Dependence or Abuse*

- Alcohol or Drug Abuse - DSM-IV definition of abuse is one or more of the following in the same 12-month period:
  - 1) Recurring use resulting in failure to fulfill important role obligations, 2) recurrent use in situations in which it is physically hazardous, 3) recurrent substance-related legal problems, and 4) continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance. In addition, symptoms have never met criteria for dependence.
- Alcohol or Drug Dependence - DSM-IV definition of dependence is three or more of the following in the same 12-month period:
  - 1) Tolerance, 2) withdrawal, 3) substance often taken in larger amounts or over a longer period than intended, 4) persistent desire or unsuccessful efforts to cut down or control substance use, 5) a great deal of time spent in activities necessary to obtain the substance, use it, or recover from its effects, 6) important social, occupational, or recreational activities given up or reduced because of substance use, 7) use continued despite knowledge of having a persistent physical or psychological problem that is likely to have been caused or exacerbated by the substance.

For information about the incorporation of DSM-IV definitions of substance abuse and dependence into National Survey on Drug Use and Health measures, go to:

<http://www.oas.samhsa.gov/Dependence/appendixc.htm>

### *Publicly Funded Treatment*

The number of alcohol and other drug abuse clients in Wisconsin receiving publicly funded services and the total public funds expended for alcohol and other drug abuse treatment in the state were obtained from the Human Services Reporting System, Division of Mental Health and Substance Abuse Services, Wisconsin Department of Health Services. No comparable United States data on public funds expenditures were available.

The reported total public funds expended were adjusted for inflation to 2008 dollars (the most recent year of data) using the U.S. Bureau of Labor Statistics Consumer Price Index Inflation Calculator (<http://www.bls.gov>). The CPI inflation calculator uses the average

Consumer Price Index for a given calendar year. Data represent changes in prices of all goods and services purchased for consumption by urban households. For the current year, the latest monthly index value is used.

## Measures of Consumption: Alcohol

### *Age of Initiation*

Youth Risk Behavior Survey (YRBS): The percentage of students who used alcohol ("more than a few sips") before age 13.

### *Current Alcohol Use*

- Youth Risk Behavior Survey (YRBS): At least one drink of alcohol on one or more of the past 30 days.
- Behavioral Risk Factor Survey (BRFS): At least one drink of alcohol in the past 30 days.

### *Binge Drinking*

- Youth Risk Behavior Survey (YRBS): Five or more drinks of alcohol in a row on one or more of the past 30 days.
- Behavioral Risk Factor Survey (BRFS): Five or more drinks on one occasion, one or more times in the past 30 days (both sexes, through 2005). As of 2006, the threshold for women was changed to four drinks on one occasion in the past 30 days.

### *Heavy Use of Alcohol*

Behavioral Risk Factor Survey (BRFS): More than two drinks per day for men and more than one drink per day for women.

### *Per Capita Consumption of Alcohol*

National Institute on Alcohol Abuse and Alcoholism (NIAA): Per capita gallons of ethanol sold in a state, based on the population age 14 and older.

### *Underage Drinking*

National Survey on Drug Use and Health (NSDUH): Drinking among youth 12-20 years of age, with current drinking defined as alcohol use in the past month, and binge drinking as five or more drinks on at least one day in the past month.

## Measures of Consumption: Illicit Drugs

### *Age of Initiation (Marijuana)*

Youth Risk Behavior Survey (YRBS): The percentage of students who tried marijuana for the first time before age 13.

### *Current Use of Illicit Drugs*

- Current use of marijuana
  - National Survey on Drug Use and Health (NSDUH): Smoked marijuana in the last month.
  - Youth Risk Behavior Survey (YRBS): Used marijuana one or more times during the past 30 days.

- **Current use of cocaine**
  - National Survey on Drug Use and Health (NSDUH): Used cocaine in the last year.
  - Youth Risk Behavior Survey (YRBS): Used any form of cocaine one or more times during the past 30 days.
- **Current use of illicit drugs other than marijuana**
  - Youth Risk Behavior Survey (YRBS): Used any illicit drugs other than marijuana in the past 30 days.
  - National Survey on Drug Use and Health (NSDUH): Used any illicit drugs other than marijuana in the past month.
- **Current use of pain relievers for non-medical purposes**
  - Youth Risk Behavior Survey (YRBS): Used pain relievers for non-medical purposes in the past 30 days.
  - National Survey on Drug Use and Health (NSDUH): Used pain relievers for non-medical purposes in the past year.

### *Lifetime Use of Illicit Drugs*

- **Lifetime use of marijuana**, Youth Risk Behavior Survey (YRBS): Ever used marijuana, one or more times.
- **Lifetime use of cocaine**, Youth Risk Behavior Survey (YRBS): Ever used any form of cocaine, one or more times.
- **Lifetime use of inhalants**, Youth Risk Behavior Survey (YRBS): Ever “sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high,” one or more times.
- **Lifetime use of heroin**, Youth Risk Behavior Survey (YRBS): Ever used heroin, one or more times.
- **Lifetime use of methamphetamines**, Youth Risk Behavior Survey (YRBS): Ever used methamphetamines, one or more times.

## APPENDIX 2

### Surveys and Other Data Sources

#### Survey Data: Sample Sizes and Error

Much of the data in this report come from surveys of the Wisconsin population. Estimates derived from surveys differ in their level of precision. Although sample size is not the only factor in determining the amount of potential error in a point estimate, it can provide a general guide. Estimates based on surveys with smaller sample sizes will tend to have wider confidence intervals than estimates from surveys with larger samples.

Readers should also note that sample sizes provided in the table below are for all of Wisconsin. Sample sizes will be much smaller for subgroups of the population, particularly racial subgroups. Although the report includes very few estimates for groups with a sample size smaller than 100, all subgroup estimates should be interpreted with confidence intervals ranging from plus or minus 4 percentage points to plus or minus 10 percentage points.

Table A1 shows Wisconsin statewide sample sizes for the Behavioral Risk Factor Survey (BRFS), the Youth Risk Behavior Survey (YRBS), and the National Survey on Drug Use and Health (NSDUH). Details of each survey follow the table.

**Table A1. Survey data included in this report: Wisconsin sample sizes**

Survey	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
BRFS— Main sample		2,721	3,605	4,356	4,054	4,503	4,900	4,831	5,021	4,729	
BRFS— County oversample*								3,701	2,414		
YRBS	1,336		2,120		2,121		2,389		2,094		2,434
NSDUH**				1,587	1,655	1,805	1,612	1,848	1,830	1,883	

\* BRFS county estimates in the report are based on three-year aggregations of data (2004-2006 and 2005-2007) and are weighted to represent county populations.

\*\* NSDUH estimates in the report are based on two-year aggregations of data.

## Methodological Information about the Surveys

### Behavioral Risk Factor Survey (BRFS)

[www.cdc.gov/brfss](http://www.cdc.gov/brfss) and [dhs.wisconsin.gov/stats/BRFS.htm](http://dhs.wisconsin.gov/stats/BRFS.htm)

The Wisconsin Behavioral Risk Factor Survey is a representative, statewide telephone survey of adults age 18 and older. The Wisconsin BRFS is part of the national Behavioral Risk Factor Surveillance System, a collaboration between the U.S. Centers for Disease Control and Prevention (CDC) and health departments in all states and U.S. territories. BRFS is state-based and does not have a separate national sample. National BRFS estimates are the medians (mid-points) of the distributions of state-level estimates. CDC weights BRFS data by state to account for non-response and sample design, and to adjust for the demographic characteristics of state populations. County-specific BRFS estimates in this report were calculated using a three-year aggregated data file re-weighted to represent each county's population. As of 2009, BRFS conducts both landline and cell phone-only interviews in all states and territories, but has not yet publicly released cell phone-only or combined landline-cell phone data.

BRFS landline sampling procedures exclude adults living in institutions and other group quarters. CDC calculates post-survey weights for each state's/territory's annual BRFS landline results and provides weighting variables for use in analyzing the data. Weighted BRFS results are representative of state and territory adult populations residing in households with landline telephones.

Early estimates indicate that the cell phone-only population has a higher rate of binge drinking than the population with landline telephones (Blumberg and Luke, 2009; 2008 Wisconsin BRFS Cell Phone Pilot, unpublished data); this effect does not appear to be related to the younger average age of cell phone users. Accordingly, given the continuing increase in cell-only telephone users (now approximately 20% of the population), binge drinking estimates based only on landline survey data are likely to underestimate prevalence by 2 to 3 percentage points. (Reference: Blumberg, S.J. and J.V. Luke. 2009. "Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December, 2008." U.S. Centers for Disease Control and Prevention.)

### Youth Risk Behavior Survey (YRBS)

[www.dpi.state.wi.us/sspw/yrbsindx.html](http://www.dpi.state.wi.us/sspw/yrbsindx.html)

The Youth Risk Behavior Survey is a school-based survey conducted among students in grades 9-12 in public high schools. YRBS has both national and state samples. The state and national samples are separate, and in some cases, schools may be selected as part of both samples. The YRBS is conducted every two years in odd-numbered years. The Wisconsin Department of Public Instruction (DPI) oversees the administration of the Wisconsin YRBS.

Sampling for state YRBS follows a two-stage cluster design. Schools are selected as clusters using probability proportional to size, and classes are randomly selected within schools from among required subjects or time periods.

Sampling for the national YRBS is a three-stage procedure, with counties and groups of counties as the first stage.

## National Survey on Drug Use and Health (NSDUH)

[nsduhweb.rti.org/](http://nsduhweb.rti.org/)

The National Survey on Drug Use and Health (formerly the National Household Survey on Drug Abuse) is a scientific, annual survey of the U.S. population age 12 and older, sponsored by the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA) in the U.S. Department of Health and Human Services. The universe of NSDUH respondents includes persons living in households, non-institutionalized group quarters (including shelters, rooming houses, college dormitories, migrant workers' camps and halfway houses), and civilians living on military bases. Interviews are conducted face-to-face at the respondent's residence.

NSDUH uses small-area estimation (SAE) to produce estimates for most states, including Wisconsin, as state-level samples are not large enough to produce direct estimates.

Additional information about NSDUH methodology can be found at <http://www.oas.samhsa.gov/nhsda/methods.cfm#2k6>.

## Other Data Sources for this Report

### Mortality Data

Data on deaths of Wisconsin residents from alcoholic liver cirrhosis, "other" alcohol-related causes (other than alcoholic liver cirrhosis and motor vehicle crashes), and drug-related causes were prepared in the Population Health Information Section, Division of Public Health, from Wisconsin resident death certificate files. Comparable data for the United States were supplied by Amanda Jovaag in the University of Wisconsin Population Health Institute using CDC Wonder (available at <http://wonder.cdc.gov/mortSQL.html>) from the U.S. Centers for Disease Control and Prevention.

Data on deaths from motor vehicle crashes are from the Fatality Analysis Reporting System (see below).

Data on deaths from recreational vehicle crashes are from the Wisconsin Department of Natural Resources (<http://dnr.wisconsin.gov>).

**Estimating other alcohol-related mortality:** The numbers of alcohol-related deaths from causes other than alcoholic liver cirrhosis and motor vehicle crashes were estimated from the Wisconsin mortality file using Alcohol-Related Disease Impact (ARDI) specifications from the National Center for Chronic Disease Prevention and Health Promotion. (See <http://apps.nccd.cdc.gov/ARDI/HomePage.aspx>). These specifications define 63 conditions or groups of conditions and associate each with a distinct fraction of cases attributable to alcohol. Staff from the Division of Public Health, Population Health Information Section and the University of Wisconsin Population Health Institute used the ARDI specifications to identify deaths from these conditions with the ICD-10 codes specifying underlying causes of death. The alcohol-attributable deaths were then estimated by multiplying the number for each condition by the associated alcohol-attributable fraction and summing over conditions.

- A table showing the alcohol-related conditions, their ICD-10 codes, and the alcohol-attributable mortality fraction for each is available by request from the Division of Public Health, Population Health Information Section ([DHSHealthstats@dhs.wisconsin.gov](mailto:DHSHealthstats@dhs.wisconsin.gov)).

### Fatality Analysis Reporting System (FARS)

Mortality data on traffic crashes in Wisconsin and the United States are from the Fatality Analysis Reporting System, a comprehensive, national traffic fatality data system produced in conjunction with the National Highway Traffic Safety Administration (NHTSA). FARS incorporates data from multiple sources to arrive at the total number of deaths, by state, attributable to motor vehicle crashes, for both overall crashes and crashes where alcohol was a factor. FARS draws on the following sources of data:

- Police accident reports (PARS)
- State vehicle registration files
- State driver licensing files
- State highway department data
- Vital statistics
- Death certificates
- Coroner/medical examiner reports
- Hospital medical records
- Emergency medical service reports

For additional information about FARS, see:  
<http://www-nrd.nhtsa.dot.gov>

### Wisconsin Inpatient Hospitalization Data

Data on inpatient discharges are reported quarterly by all non-federal Wisconsin hospitals, as required by Wisconsin statute and rule. These data are extensively edited and corrected.

*Estimating alcohol-related hospitalizations:* As was done for alcohol-related mortality, the numbers of alcohol-related hospitalizations were estimated from Wisconsin inpatient hospitalization data using Alcohol-Related Disease Impact (ARDI) specifications from the National Center for Chronic Disease Prevention and Health Promotion. (See <http://apps.nccd.cdc.gov/ARDI/HomePage.aspx>). These specifications define 63 conditions or groups of conditions and associate each with a distinct fraction of cases attributable to alcohol. Staff from the Population Health Information Section and the University of Wisconsin Population Health Institute used the ARDI specifications to identify hospitalizations for these conditions with the ICD-9 codes specifying the principal diagnosis and the first eight other reported diagnoses. The alcohol-attributable hospitalizations were then estimated by multiplying the number for each condition by the associated alcohol-attributable fraction and summing over conditions.

- A table showing the alcohol-related conditions, their ICD-9 codes, and the alcohol-attributable fraction for each is available by request from the Population Health Information Section (DHShealthstats@dhs.wisconsin.gov).

*Drug-related hospitalizations:* Drug-related hospitalizations were defined based on ICD-9 codes supplied by Amanda Jovaag in the University of Wisconsin Population Health Institute, as listed in the following table.

**Drug-related hospitalizations, ICD-9 codes and descriptions, Wisconsin 2006**

<i>ICD-9 Code</i>	<i>Description</i>
292	Drug psychoses
304	Drug dependence
357.6	Polyneuropathy due to drugs
E850-E858	Accidental poisoning by drugs, medicinal substances, and biologicals
E980.0-E980.5	Poisoning by drugs and medicinal substances, unknown whether accidentally or purposefully inflicted

In the Population Health Information Section, hospital data system records for all Wisconsin residents hospitalized as inpatients in a Wisconsin hospital and discharged in the years 2006-2007 and 2007-2008 were examined for the presence of the defined drug-related conditions in the ICD-9-coded principal diagnosis or any of the first eight other diagnoses reported.

**Population Estimates, Statewide and by County**

The Department of Health Services, Population Health Information Section, produces mid-year population estimates for the counties and state of Wisconsin by age groups, sex, race and ethnicity for non-Census years. These estimates are used to calculate population-based health statistics, including the rates in this report except those obtained directly from national sources. The population data used to calculate the rates in this report are available from the Wisconsin Interactive Statistics on Health (WISH) population module:  
[http://dhs.wisconsin.gov/wish/main/wis\\_pop/wis\\_pop\\_home.htm](http://dhs.wisconsin.gov/wish/main/wis_pop/wis_pop_home.htm)

***Crime and Arrests in Wisconsin***

<http://oja.wi.gov/category.asp?linkcatid=1324&linkid=709&locid=97>

Prepared annually by the Wisconsin Office of Justice Assistance Statistical Analysis Center, *Crime and Arrests in Wisconsin* provides numbers of crimes and arrests among adults and juveniles at the state and county levels. Crimes are reported by local law enforcement agencies using the Uniform Crime Reporting System.

***Crime in the United States (CIUS)***

<http://www.fbi.gov/ucr/ucr.htm>

Produced annually by the Federal Bureau of Investigation, U.S. Department of Justice, CIUS provides national and (some) state-level data on crimes and arrests. Data are transmitted to the FBI by state and local law enforcement agencies using the Uniform Crime Reporting System.

***Wisconsin Traffic Crash Facts***

<http://www.dot.wisconsin.gov/safety/motorist/crashfacts/>

*Wisconsin Traffic Crash Facts* is produced annually by the Wisconsin Department of Transportation and includes a separate sub-report on the role of alcohol in motor vehicle crash injuries and deaths. Injury and fatality data in the report are based on information provided to the state Division of Motor Vehicles in reports submitted by police officers on the scene of crashes.

(P-45718-10) (11/10)

Wisconsin Epidemiological Profile on Alcohol  
and Other Drug Use, 2010

Wisconsin Department of Health Services  
P-45718-10 (November 2010)

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