

10 TECHNICAL NOTES

10.1 Major Data Sources

Jefferson County residents' responses to the **2003 Community Health Survey**, conducted by the Jefferson County Department of Health and Environment (JCDHE) and the National Research Center, Inc., Boulder, Colorado, provided a large portion of the data for this assessment. The survey was distributed in both English and Spanish by mail to 10,000 county residents in 2003. Over 3,200 surveys were completed and returned. A copy of the survey and the full report of results can be accessed and downloaded from the JCDHE website at <http://health.jeffco.us>

A major source of background information on public health issues and national comparison data for this assessment was the Healthy People 2010 (**HP 2010**) Program, National Center for Health Statistics (NCHS), and Centers for Disease Control and Prevention (CDC). Unless otherwise cited in the text, U.S. data, health trends and background information were referenced from online publications that can be accessed at the NCHS HP 2010 website at www.cdc.gov/nchs/hphome.htm

All birth and death data analyses for Jefferson County and Colorado residents were conducted using records provided to the JCDHE Epidemiology program by the Colorado Department of Public Health and Environment (CDPHE) Health Statistics and Vital Records Division (**CDPHE-HSVRD**) or accessed online. The CDPHE-HSVRD maintains the Colorado Health Information Dataset (**CoHID**), a comprehensive web-accessible data warehouse including birth and death records, population statistics, Behavioral Risk Factor Surveillance Survey, and other major public health data about the health of Colorado's population. The CoHID site is available to the public at www.cdphe.state.co.us/cohid

Communicable disease data on Jefferson County residents was provided to JCDHE-Epidemiology by programs within the CDPHE Communicable Disease Control and Environmental Epidemiology Section (**CDPHE-CDEED**).

Birth defects data are collected by the Colorado Responds to Children with Special Needs Program of the CDPHE (**CDPHE-CRCSN**). These data are also available online at the CoHID website cited above.

The Colorado Health and Hospital Association (**CHA**) collects and compiles hospitalization data for persons who are admitted to or have outpatient procedures in Colorado hospitals. These data are available to public health agencies and researchers. See www.cha.com for more information.

Other health information and data not attributable to the sources listed above are cited within the text and described below (see Section 10.3 - End Notes).

10.2 Statistical Analyses

The JCHDE Epidemiology program performed all analyses for this report.

Crude Rates

In general, a *crude rate* is the number of events divided by the number of persons at risk in a specific time period. For example, the *crude death rate* is the number deaths within a population (such as from a specific disease) divided by the number of persons in the population, usually over a 1-year period. In this report, any rate that is not age-adjusted should be considered a crude (or unadjusted) rate.

Age-Adjusted Mortality and Disease Rates

Age-adjusted mortality and disease rates are used to compare populations with differences in age structures. Statistical procedures are carried out to remove the effect of different age compositions. Because of the age-adjustment they should be viewed as relative indexes, e.g., for visualizing trends over time, rather than actual measures of risk.

Age-adjusted rates, R' , were standardized to the 2000 U.S. population using the direct method,³⁴ by applying age-specific death rates (r_i) to the U.S. standard population (p_i):

$$R' = \sum_{i=1}^n r_i \times (p_i / P)$$

where r_i = age-specific rates for the population of interest (Jefferson County), p_i = 2000 U.S. standard population in age group i , $P = \sum_{i=1}^n p_i$ for the age groups that comprise the age range of the rate being age adjusted, and n = total number of age groups over the age range of the age-adjusted rate.

Smoothing via Locally-Weighted Regression

When rates are highly variable, it can be very difficult to ascertain trends or structures in data. Smoothed trend lines (primarily “loess” smoothing in this report) were plotted for several indicators to estimate and visualize global trends occurring over a several-year period. The loess method, or locally-weighted regression, weights nearby data points heavier and a robust weighted regression is used to predict the y-axis value at each point on the x-axis.³⁵

10.3 End Notes

1. *Healthy People 2010: Understanding and Improving Health and Objectives for Improving Health*. Centers for Disease Control and Prevention.
www.healthypeople.gov/document
2. Colorado Department of Local Affairs Demography Section. See
www.dola.colorado.gov/demog/demog.cfm
3. U.S. Census Bureau. See www.census.gov
4. In Figures 1.3. and 2.1, box plots are used to show the median values and ranges of responses within subgroups. The vertical boxes represent the range of the middle half of the data (the “interquartile range”), the horizontal lines inside the box the median, the dotted lines extending vertically the span of 1.5 times the interquartile range, and the short horizontal lines the extreme values.
5. Colorado Department of Public Health and Environment, Behavioral Risk Factor Surveillance System (BRFSS); data are available at the CoHID website (see Section 10.1).
6. Colorado Department of Public Health and Environment Pregnancy Risk Assessment Monitoring System (PRAMS); data are available at the CoHID website (see Section 10.1).
7. *Tipping the Scales: Weighing in on solutions to the Low Birth Weight Problem in Colorado*. Colorado Department of Public Health and Environment Monograph, August 2000. Available at
www.cdphe.state.co.us/ps/mch/mchadmin/tippingthescales.pdf
8. Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch, April 2004. See www.seer.cancer.gov
9. *Vaccine Preventable Disease in Colorado, Surveillance Report: 2002*. Available online at www.cdphe.state.co.us/dc/Epidemiology/vaccinepreventable2002.pdf
10. U.S. Centers for Disease Control and Prevention, National Center for Infectious Diseases. See www.cdc.gov/ncidod/
11. U.S. Centers for Disease Control and Prevention. 2003. *HIV testing – United States, 2001*. MMWR June 13, 2003, 52(23): 540-545.
12. Jefferson County, Colorado, R-1 Schools. 1997, 2000 and 2003. *Search Institute Profiles of Student Life*.
13. U.S. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Facts about Secondhand Smoke. Available online at www.cdc.gov/tobacco/research_data/environmental/ets-fact.htm
14. Colorado Department of Public Health and Environment, State Tobacco and Prevention Partnership (STEPP). See
www.cdphe.state.co.us/pp/tobacco/tobaccohom.asp and
www.cdphe.state.co.us/pp/tobacco/pdfs/Youth%20Use.pdf
15. Colorado Department of Public Health and Environment, State Tobacco and Prevention Partnership (STEPP). See
www.cdphe.state.co.us/pp/tobacco/tobaccohom.asp and
www.cdphe.state.co.us/cohid/tabsdata.html

16. Body Mass Index, BMI = Weight (kg)/ Height (m²). In general, an individual with a BMI measurement of 25-30 kg/m² is considered overweight and one with a BMI greater than 30 kg/m² is considered obese.
17. U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Atlanta, GA: Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, 1996.
18. Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual Causes of Death in the United States, 2000. *JAMA*. 2004;291:1238-1245.
19. U.S. Department of Health and Human Services (HHS), Substance Abuse and Mental Health Services Administration (SAMHSA). *1998 National Household Survey on Drug Abuse*. Rockville, MD: SAMHSA, 2000
20. Personal communication, Bruce Mendelson, Research Analyst, Colorado Department of Human Services Alcohol and Drug Abuse Division. March 2004.
21. World Health Organization (WHO). *World Health Statistics Annual, 1994*. Geneva, Switzerland: WHO, 1995.
22. U.S. Centers for Disease Control and Prevention. 2003. *First Reports Evaluating the Effectiveness of Strategies for Preventing Violence: Firearms Laws*. MMWR October 3, 2003, 52(RR14); 11-20.
23. U.S. Centers for Disease Control and Prevention 1995. *Injury-Control Recommendations: Bicycle Helmets*. MMWR February 17, 1995, 44(RR-1): 1-18.
24. U.S. Centers for Disease Control and Prevention. 2004. *Unintentional and Undetermined Poisoning Deaths ---11 States, 1990—2001*. MMWR March 26, 2004, 53(11): 233-238.
25. U.S. Centers for Disease Control and Prevention. 1997. *Recommended Framework for Presenting Injury Mortality Data*. MMWR 46(RR-14): 1-30.
26. U.S. Centers for Disease Control and Prevention. 2001. *School Health Guidelines to Prevent Unintentional Injuries and Violence*. MMWR 50(RR-22): 1-46.
27. U.S. Centers for Disease Control and Prevention. 2001. *APPENDIX C: Sources of Model and Promising Strategies and Programs* MMWR 50(RR-22): 71-3.
28. U.S. Department of Transportation, National Center for Statistics and Analysis, Fatality Analysis Reporting System (FARS). See www-fars.nhtsa.dot.gov
29. U.S. Centers for Disease Control and Prevention. 2004. *Notice to Readers: Buckle Up America Week May 24-31, 2004*. MMWR 53(20): 436.
30. Colorado Department of Public Health and Environment, in cooperation with the U.S. Bureau of Labor Statistics Census of Fatal Occupational Injuries. Available online at www.cdphe.state.co.us/hs/cfoi/index.html.
31. U.S. Centers for Disease Control and Prevention, Agency for Toxic Substances and Disease. 2004. *Case studies in environmental medicine: Radon Toxicity*. See www.atsdr.cdc.gov/HEC/CSEM/radon/radon_abatement.html.
32. Colorado Department of Public Health and Environment. *Colorado Air Quality Control Commission Report to the Public, 2002-2003*. Available online at www.cdphe.state.co.us/ap/rttplinks.asp
33. U.S. Environmental Protection Agency, Envirofacts Data Warehouse. Available online at www.epa.gov/enviro/index_java.html
34. U.S. Centers for Disease Control and Prevention, National Center for Health Statistics, NCHS Definitions, Age Adjustment. See www.cdc.gov/nchs/datawh/nchsdefs/ageadjustment.htm#aarates.

35. Venables WN and Ripley BD. 2002. *Modern applied statistics with S – 4th edition*. Springer-Verlag New York, Inc. 492 pages.

10.4 Abbreviations and Acronyms

ADAD	Alcohol and Drug Abuse Division, Colorado Department of Human Services
AIRS	Aerometric Information Retrieval System, U.S. Environmental Protection Agency
AIDS	Autoimmune deficiency syndrome
BLS	U.S. Bureau for Labor Statistics
BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention
CD4+ T-cell	CD4+ type of T-lymphocytes
CDC	U.S. Centers for Disease Control and Prevention
CDPHE	Colorado Department of Public Health and Environment
CCCR	Colorado Central Cancer Registry
CRCSN	Colorado Responds to Children with Special Needs Program
DCEED	Disease Control and Environmental Epidemiology Division
HSVRD	Health Statistics and Vital Records Division
CoHID	Colorado Health Information Dataset
PRAMS	Pregnancy Risk Assessment Monitoring System
STEPP	State Tobacco and Prevention Partnership
CHA	Colorado Hospital Association
CHD	Coronary heart disease
CHF	Congestive heart failure
CHP+	Child Health Plan Plus, Colorado's low-cost insurance program for working families
COPD	Chronic obstructive pulmonary disease
<i>E. coli</i> O157:H7	<i>Escherichia coli</i> , serotype O157:H7
EIP	Emerging Infections Program, U.S. Centers for Disease Control and Prevention
EPA	U.S. Environmental Protection Agency
FARS	Fatality Analysis Reporting System, U.S. Department of Transportation, National Center for Statistics and Analysis
HAART	Highly active antiretroviral therapy
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HHS	U.S. Department of Health and Human Services
Hib	<i>Haemophilus influenzae</i> serotype b
HIV	Human immunodeficiency virus
HMO	Health Maintenance Organization
HP 2010	Healthy People 2010 Program, U.S. Centers for Disease Control and Prevention, National Center for Health Statistics

HPV	Human papilloma virus
HTLV-1	Human T-cell Leukemia Virus serotype 1
ISDS	Individual sewage disposal system
JCDHE	Jefferson County Department of Health and Environment
L. monocytogenes	Listeria monocytogenes
LBW	Low birthweight
MMWR	Mortality and Morbidity Weekly Report, U.S. Centers for Disease Control and Prevention
NCHS	National Center for Health Statistics, U.S. Centers for Disease Control and Prevention
NCI	National Cancer Institute, U.S. National Institutes of Health
NCID	National Center for Infectious Diseases, U.S. Centers for Disease Control and Prevention
NIAAA	National Institute on Alcohol Abuse and Alcoholism, U.S. National Institutes of Health
NTD	Neural tube defects
PID	Pelvic inflammatory disease
PNC	Prenatal Care
PSA	Prostate specific antigen
SAMSHA	Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services
SEER	Surveillance, Epidemiology, and End Results Program, National Cancer Institute
SIDS	Sudden Infant Death Syndrome
STD	Sexually transmitted disease
TB	Tuberculosis
WEE	Western Equine Encephalitis
WHO	World Health Organization
WIC	Women, Infants and Children Program, U.S. Department of Agriculture
WNV	West Nile virus