Healthy Colorado 2010

Working Together to Make Colorado the Healthiest Place to Live

Colorado Department
of Public Health
and Environment

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STATE OF COLORADO

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Colorado Department
of Public Health
and Environment

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Dear Partner in Public Health:

The Colorado Department of Public Health and Environment is proud to present the Colorado Healthy People 2010 Report. This document is the result of contributions from many public health professionals and programs that "work together to make Colorado the healthiest place to live." The Colorado report focuses on the 10 leading health indicators and the two national objectives. Those objectives are to increase the quality and years of healthy life, and to eliminate health disparities among different segments of the population.

There are many documented public health and environmental achievements of which Colorado can be proud. Under each leading health indicator, there is a featured Colorado "best practice project" that can serve as a model for communities throughout the state and nation. Whenever possible, county and state data has been used with references given regarding primary sources. Many department programs have published specific reports. They are listed for easy reference at the end of the sections.

We are pleased to provide both electronic and hard copies of this resource report. This report will be available on the Colorado Department of Public Health and Environment home page http://www.cdphe.state.co.us beginning in June 2005. The department is committed to working with local communities and organizations to address health and environmental concerns and to improve the health and quality of life of the people of Colorado.

Sincerely,

Douglas H. Benevento
Executive Director

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This document also is available in .pdf format on the web at http://www.cdphe.state.co.us.

INTRODUCTION

Healthy Colorado 2010 was spearheaded by the Office of Local Liaison of the Colorado Department of Public Health and Environment to serve as a resource for communities, public health professionals, policy makers and funders interested in improving the health and well-being of Coloradans. This resource compiles information from local, private, state and federal sources on 10 leading indicators of Coloradans' health. It also highlights many state and local resources that can be used in building and strengthening programs and initiatives designed to make Colorado's communities the healthiest place to live.

Healthy Colorado 2010 grew out of the national Healthy People 2010 initiative to improve the health status of U.S. Americans by the year 2010. The two central objectives of this national initiative are:

1. To increase the quality and years of healthy life
2. To eliminate health disparities among different segments of the population.

A primary goal of this report is to centralize information about selected health priorities for easier access by program planners, policy makers, health advocates and the public. Another important goal is to establish a framework for focusing Colorado resources based on state-specific and data-driven health priorities, best and promising practice research, and information about other similar efforts and potential partners in the state. Importantly, this framework links state priorities to national research and available data sources which can serve to further focus, support and monitor health efforts.

Organization of *Healthy Colorado 2010*

Healthy Colorado 2010 uses the 10 Leading Health Indicators recommended by the U.S. Department of Health and Human Services to track progress in improving the health and well-being of the population:

- Physical Activity
- Overweight and Obesity
- Environmental Quality
- Responsible Sexual Behavior
- Access to Health Care
- Immunization
- Mental Health
- Injury and Violence
- Substance Abuse
- Tobacco Use

The Leading Health Indicators were selected based on their ability to motivate action, the availability of data to measure progress and their importance as public health issues. For more information about the national initiative, its objectives and history, please refer to http://www.healthypeople.gov/.

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There are 10 major sections of *Healthy Colorado 2010*, each focusing on one of these Leading Health Indicators. The report presents the 10 Leading Health Indicators in the order shown. Further, each section is broken down into several key components that link this state report and resource to the national plan and tailor it to meet state and local needs.

Healthy Colorado 2010 provides the following information about each of the Leading Health Indicators and prioritized health objectives for Colorado:

Introduction to the Leading Health Indicator

Each section begins with a brief introduction to key public health trends and issues related to one of the 10 Leading Health Indicators and state-identified priorities.

Indicator

State-identified priorities are defined in terms of one to three indicators developed by the national initiative to monitor different aspects of the Leading Health Indicators. For example, Section V: Access to Health Care of this report, examines three indicators: Health Insurance Coverage, Specific Source of Primary Care, and Prenatal Care in the First Trimester. Each of these three indicators was identified from a much larger set of indicators monitored nationally, based on the interviews conducted with state, local and non-profit partners. For each indicator prioritized for the state, the following is summarized:

Objective—The Healthy People 2010 objective listed in the national plan and the number associated with the objective is cited for referencing national materials. The objective is a general statement that explains what officials and policy makers intend to achieve nationally. Commonly, separate Healthy People 2010 objectives are defined for adolescents, adults or other age groups (e.g., over 65). For example, the following is an objective from Section I: Physical Activity, with the same wording and the objective number from the national plan:

> Objective (22-2): Increase the proportion of adults who engage regularly (preferably daily) in moderate physical activity for at least 30 minutes per day.

Definition—National Healthy People 2010 materials informed the definitions provided for each indicator. The purpose of these definitions is to facilitate a shared understanding of the common parameters and standard terminology, typically used within governmental guidelines and national research. For example, the following definition was utilized in Section VI: Immunization:

> Immunization coverage of two-year-olds is a standard, national measure used to assess childhood immunization rates. Immunization coverage rates are determined by the proportion of children aged 19 to 35 months receiving the recommended 4:3:1:3:3 vaccine series of at least four doses of diphtheria-tetanus-acellular pertussis (DTaP), at least three doses of polio, at least one dose of measles-mumps-rubella (MMR), at least three doses of Haemophilus influenzae B (Hib) and at least three doses of hepatitis B antigens.

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Healthy People 2010 target—The national plan specifies a target goal for each objective. The target generally identifies a percentage that must be achieved (often for an age group) in order to meet the national objective. Targets were derived from research about the level of change needed to have a significant impact on U.S. American health. An example of a Healthy People 2010 target from Section IX: Substance Abuse is:

> Only 6 percent of adults 18 years of age and older will report binge drinking in the past 30 days.

In some sections, a Colorado-specific target was set as a goal for the state to reach by 2010. These targets were created by state programs and were based on Colorado research and trends.

Baseline estimates for Colorado and the Nation—Healthy People 2010 typically uses 1998 as the baseline year, that is, the first annual measure used to assess how well the nation is doing over time with regards to an indicator. For indicators with 1998 baseline estimates available, there are usually five subsequent years of data (1999 – 2003) available that can be compared to the baseline to determine whether the trend has stayed relatively stable, improved or declined with regards to the health indicator.

The Wonder Database, developed by the Centers for Disease Control and Prevention to serve as an online source of state and national data on Healthy People indicators, was consulted to obtain baseline estimates for Colorado and the nation (http://wonder.cdc.gov/data2010/obj.htm). Estimates cited from this database were based on data and source information available through September 2004.

The CDC Wonder Database indicates that in some cases a state-specific estimate is not available from the source used to establish a national baseline. When an alternative data source for state health statistics was identified by the Wonder Database or by Colorado health professionals, the recommended data source was used to derive baseline estimates for both the state and nation in order to compare Colorado to the nation (i.e., to ensure use of the same data measure).

Local Public Health Context in Colorado—The state-specific public health significance of each indicator is described briefly. This context often includes information about the state's public health system, an overview of findings from private and governmental research specific to Colorado, and information concerning the economic and social costs of the health problem to the state.

Data trends—Longitudinal, state data is presented for each indicator when available. These trends provide a picture of how an indicator has improved or declined over time. At a minimum, data are presented from the baseline year (typically 1998) established by Healthy People 2010 to the most recent year of available data (typically 2003). In some cases, data are available from 1990 or earlier, providing an even longer range picture of health trends.

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Demographic trends and health disparities—This section presents current information available on sub-population trends and health disparities between these sub-populations. Available data are presented on race/ethnicity, gender, age and geography, in this order. In some sections, "other disparities" are summarized, when data and research indicate disparities that exist among other common sub-populations, for example, persons with disabilities.

Major State Initiatives

Following the presentation of data and research on selected indicators, each section of the report summarizes major initiatives in Colorado addressing the Leading Health Indicator and the state-selected priorities. These initiatives reflect statewide, multi-county or regional public health activities receiving federal, state or private funding.

Emerging Best or Promising Practices

Each section summarizes public health practices that have been demonstrated through scientific research and evaluation to improve targeted health indicators. Since these standards are set high, and because many programs have not undergone rigorous evaluation (e.g., control groups and replication), few *best* practices have been established in many public health areas. Therefore, *promising* practices also are presented. These are practices which are based on research and which appear to have promising results, although these results have not been fully tested by the scientific process.

Local Story

Every section highlights a local project that has proven promising in addressing the Leading Health Indicator. These local stories represent highlights only of the many local health activities that exist across the state. They were selected to highlight work with diverse sub-populations, different regions of the state and promising practices. They also were selected based on available information concerning the project's success in affecting positive health changes.

Resources

At the end of each section, a list of resources is provided for health advocates, professionals, officials, funders, policy makers and researchers interested in learning more about the Leading Health Indicator or contacting individuals and organizations already working on the issue in the state. The goal of the report was to provide a good cross-section of local, state, federal and private resources. Due to constraints of the report, this resource list is not exhaustive, but should provide readers with a good beginning point for their work. Direct links to web sites are provided for all resources, where available. In addition, local and regional contact names and phone numbers are provided so that readers can contact local chapters and regional offices.

References

Each section concludes with a list of the data sources, government publications and online reports consulted in the development of the section. Many of these references are available online and can be accessed using the web addresses provided. Formal citations for referenced journal articles also are listed. Individuals interested in pursuing topics in-depth can use this reference section to explore health data and issues further.

INTRODUCTION

Using the *Healthy Colorado 2010* Report

Healthy Colorado 2010 was developed to serve as a resource tool for professionals, officials, advocates, and funders working in the public health arena. Specifically, it was designed as a resource for strategic planning, monitoring and strengthening of health promotion and disease prevention efforts at local and state levels. It also was intended to support policy makers by bringing together current research and information on some of the most salient public health issues confronting the state. Some potential uses of *Healthy Colorado 2010* include:

- **Local Public Health Context in Colorado:** Use this research to frame funding requests and lay the groundwork that establishes why your program is needed. Use this information to mobilize community members around health issues.

- **Data trends:** Find similar categories of data available from local school surveys or public health agencies. Use this data to gain some perspective about how your local community compares to the state.

- **Demographic trends and health disparities:** Use county level data presented on Leading Health Indicators to prioritize health issues in your community. Use data to support grant proposals. Learn about how health issues affect sub-populations differently. Consider how your program can be refined to better address the needs of different sub-populations and the health isues that are most relevant in the county.

- **Local stories:** Contact a local program engaged in health promotion activities that you are hoping to bring to your community. Ask what helped to get the program off the ground. Learn from the program's challenges and successes. Tailor the materials that it has created to your own community.

- **Resources:** Use some of the web-based resources to network with others engaged in public health and in addressing health issues of interest. Share web-based resources with other local professionals, including training materials and professional development opportunities that you may find.

This report may be shared with others working in public health-related fields by accessing the .pdf formatted *Healthy Colorado 2010* document posted on the Colorado Department of Public Health and Environment web site at http://www.cdphe.state.co.us.

SECTION I

Given its centrality to physical and mental health, physical activity is one of the leading indicators monitored by Healthy People 2010 to measure progress in the improvement of the overall health status of U.S. Americans. This section examines data concerning the physical activity levels of adults and adolescents in Colorado.

HEALTHY PEOPLE 2010 GOAL: *Improve health, fitness, and quality of life through daily physical activity.*[i]

Poor nutrition and physical inactivity are second only to tobacco use as the leading causes of preventable death in Colorado. Regular physical activity, even moderate levels, helps promote both physical and mental well being. Although vigorous physical activity is recommended for cardiorespiratory (heart and respiratory systems) fitness, even moderate physical activity can help maintain a healthy weight, decrease blood pressure, increase levels of "good" cholesterol (high-density lipoprotein, or HDL)[1] and decrease depression.

Health officials promote physical activity throughout the lifespan. Children need to be physically active to reach their developmental, cognitive and academic potential. During childhood and adolescence, weight-bearing physical activity is essential for normal skeletal development and the maintenance of peak bone density in young adulthood.[1] In addition, regular physical activity contributes to a longer life and enhances the quality of life for people of all ages.[2] Among older adults, regular physical activity also helps to maintain functional independence.

The health benefits of regular physical activity include:

- Reduction in the risk of coronary heart disease, hypertension (high blood pressure), colon cancer, obesity and diabetes mellitus
- Improvements in mood, depression and anxiety
- Enhancement of one's ability to perform daily tasks.[3]

Table 1: Everday activities that meet recommended health guidelines for moderate physical activity 30 minutes daily on 5 days a week[6]

- Walking or riding a bike instead of driving
- Getting off the bus a few stops early and walking the remaining distance
- Raking leaves
- Pushing a stroller
- Taking a brisk 10+ minute walk in the morning, at lunch, and after dinner
- Gardening
- Walking up stairs instead of taking an elevator
- Doing exercises while watching television (stationary bike or exercises with weights)
- Mowing the lawn with a push mower
- Cleaning the house
- Golf (including carrying clubs)
- Dancing

Source: Colorado Department of Public Health and Environment, Colorado Physical Activity and Nutrition State Plan 2010

[i] Unless otherwise noted, the source of information for this section of the report was the *Colorado Physical Activity and Nutrition State Plan 2010,* 2nd Edition in press.[4] Original data sources were referenced where possible.

PHYSICAL ACTIVITY

ADULT PHYSICAL ACTIVITY

Indicator: Adult Physical Activity

Objective (22-2): Increase the proportion of adults who engage regularly (preferably daily) in moderate physical activity for at least 30 minutes per day.

Definition: The Behavioral Risk Factor Surveillance System (BRFSS) assesses whether adults meet recommended guidelines for moderate physical activity with the following items:

- "Now, thinking about the moderate activities you do … in a usual week, do you do moderate activities for at least 10 minutes at a time, such as brisk walking, bicycling, vacuuming, gardening, or anything else that causes some increase in breathing or heart rate?"
- "How many days per week do you do these moderate activities for at least 10 minutes?"
- "On days when you do moderate activities for at least 10 minutes at a time, how much total time per day do you spend doing these activities?"[5]

Healthy People 2010 Target: 50 percent of adults aged 18 years and older will report light or moderate physical activity for at least 30 minutes five or more times per week.

Baseline[ii]: (1998 Behavioral Risk Factor Surveillance System (BRFSS))[iii]

- **Colorado**: 29 percent of adults aged 18 years and older reported moderate physical activity
- **National**: 25 percent[iv]

Local Public Health Context in Colorado[5]

In 2003, over 55 percent of Colorado adults 18 years of age and older reported engaging in moderate physical activity for at least 30 minutes, five or more days per week. This is significantly higher than the national rate of 47.2 percent for the nation for the same year. One third, or 33 percent, of Coloradans reported engaging in vigorous activity for 20 or more minutes per day, at least three or more times a week.

In general, Coloradans have higher levels of education, income and a younger median age than the national average; each of these factors has been shown to be independently associated with physical activity. In addition to these demographic factors, the natural resources and beauty of Colorado create environmental conditions that facilitate outdoor recreation. Colorado experiences approximately 300 days of sunshine a year. Opportunities to hike, bike and enjoy the outdoors are available across Colorado and may contribute to higher rates of physical activity observed in the state. Denver has the nation's largest city park system; has 450 miles of paved bike trails; and is in close proximity to the mountains and numerous hiking trails.[8]

Another indicator of Colorado's relative health with regards to physical activity is its rates of overweight and obesity, which are among the lowest in the nation. However, while Colorado has comparably low rates of obesity, obesity is on the rise in the state as well as nationally. Thus, physical activity represents an important health behavior to promote not only to improve mental and physical well being but also as a preventive strategy for decreasing obesity and obesity-related diseases.

[ii]Healthy People 2010 utilizes the National Health Interview Survey (NHIS) to establish a national baseline estimate. Since this source does not provide state level data, this report utilizes national and state estimates from the Behavioral Risk Factor Surveillance System (BRFSS) to establish a comparable baseline.

[iii]Items measuring moderate and vigorous exercise were added to the BRFSS in 2003. Currently, only data for 2003 are available. However, the Centers for Disease Control and Prevention Wonder database reports a baseline estimate of 29 percent for Colorado in 1998, citing BRFSS data. It is unclear how this figure was derived. For this same year, 1998, BRFSS estimated a national rate of 25 percent[5, 7]

[iv]Healthy People 2010 reports a baseline of 32 percent from the 1997 National Health Interview Survey (NHIS).

PHYSICAL ACTIVITY

Data Trends[5]

Trend data are not available for moderate and vigorous levels of physical activity. Prior to 2003, the Behavioral Risk Factor Surveillance System (BRFSS) monitored leisure-time physical activity, measured by the following item: "During the past month, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?" This measure is very broad and cannot be used to assess whether adults are engaging in recommended levels of physical activity.

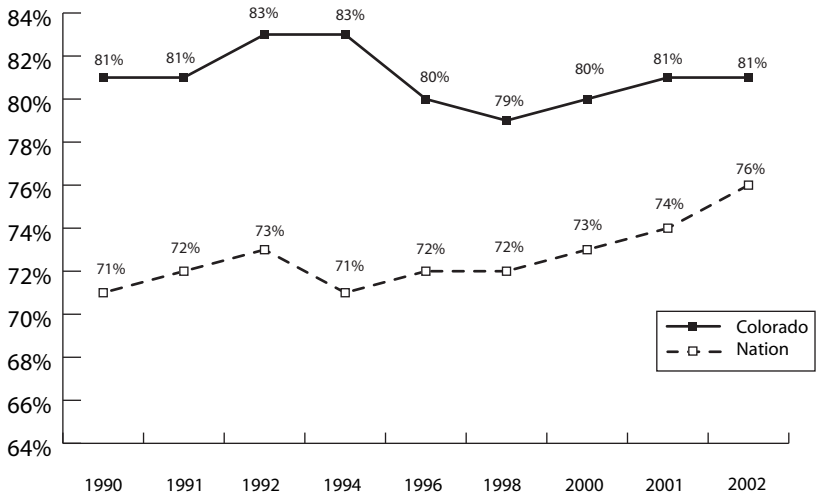
Despite these limitations, rates of leisure-time physical activity show that Colorado rates have been consistently higher than the nation. While the percentage of Colorado adults reporting leisure-time physical activity has fluctuated over the last twelve years, the rate remained at 79 percent or better among the adult population, compared to national rates that ranged from a low of 71 percent to a high of 76 percent.

In 2003, the BRFSS implemented new measures of physical activity based on the Surgeon General's recommended levels: adults should engage in at least 30 minutes of moderate physical activity on most days of the week or in 20 minutes of vigorous physical activity three or more times per week.[9] These measures of moderate and vigorous physical activity are based on criteria that are more difficult to achieve than past month leisure-time physical activity; thus, a smaller proportion of adults meets these criteria.

Demographic Trends and Health Disparities[5]

This section examines 2003 data on the Healthy People 2010 target objective, compiled from the Behavioral Risk Factor Surveillance Survey (BRFSS). In 2003, an estimated 45 percent of Coloradans did not meet the recommended guidelines for moderate physical activity. Individuals who were over 65 years of age, Hispanic, who had less than a high school education and who earned less than $15,000 a year were disproportionately represented among those adults that did not report 30 minutes of moderate physical activity daily.

Figure 1: Percentage of Individuals Reporting Leisure-Time Physical Activity in Colorado and the Nation, 1990-2002



**No Colorado or National data are available for the following years: 1993, 1995, 1997, 1999*

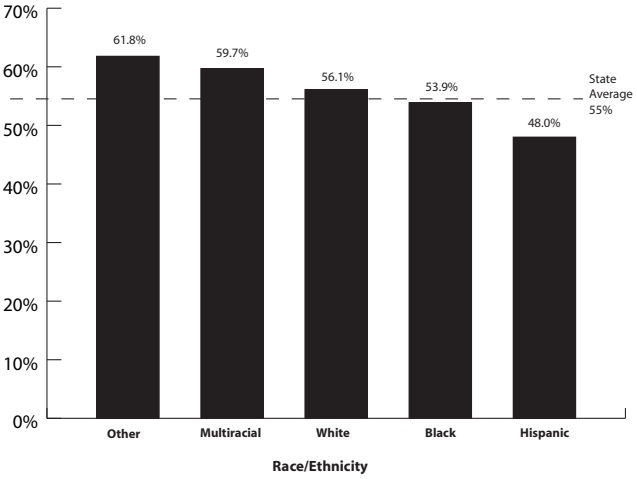
Source: Behavioral Risk Factor Surveillance System, 1990-2002

PHYSICAL ACTIVITY

Race/Ethnicity

BRFSS data indicate that in 2003 almost all racial/ethnic groups in Colorado exceeded the Healthy People 2010 target objective. The only exception was Hispanics, who nearly reached the target with an estimated 48 percent of the adult population meeting recommended guidelines. "Other" racial/ethnic groups reported the highest percentage of moderate physical activity with 61.8 percent of adults meeting recommended guidelines, followed by 59.7 percent of multi-racial adults, 56.1 percent of whites and 53.9 percent of blacks.

Figure 2: Percentage of Colorado Adults Who Report Moderate Physical Activity for Five or More Days a Week by Race/Ethnicity in 2003



Source: Behavioral Risk Factor Surveillance System, 2003

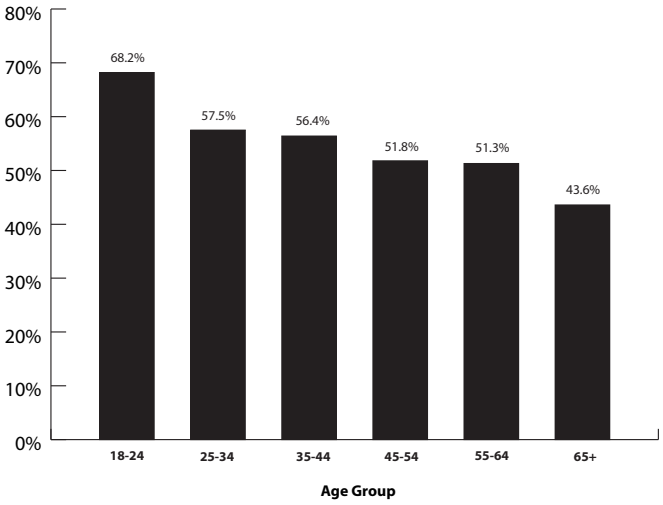
Gender

In 2003, adult males and females were equally likely to engage in moderate physical activity according to BRFSS data. However, historically, there have been gender differences in the proportions of males and females reporting moderate physical activity. Furthermore, data indicate that there are gender differences in reported levels of vigorous physical activity. In 2003, adult males were more likely to report engaging in vigorous physical activity than adult females, 38.2 percent and 27.7 percent, respectively.

Age

Physical activity over the life course is key to maintaining a healthy lifestyle. Strength training and other forms of exercise preserve the ability of older adults to continue living independently and reduce the risk of injuries from falling. However, nationally and in Colorado, data indicate that substantial declines in moderate physical activity occur with aging. In 2003, BRFSS data indicated that all age groups in Colorado, except 65 years and older, exceeded the Healthy People 2010 standard for moderate physical activity. Whereas slightly over 51 percent of adults aged 45-54 and 56-64 met the recommended guideline for moderate physical activity, only 43.6 percent of Colorado adults over the age of 65 reported engaging in this level of physical activity.

Figure 3: Percentage of Colorado Adults Who Report Moderate Physical Activity for Five or More Days a Week by Age Group in 2003



Source: Behavioral Risk Factor Surveillance System, 2003

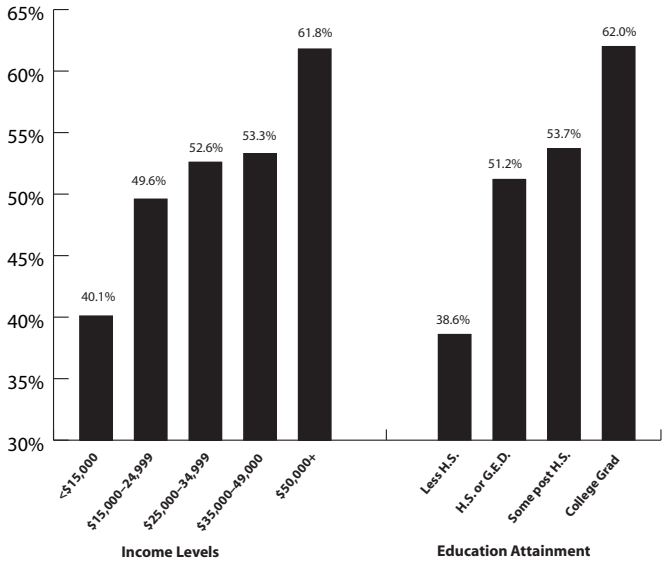
Geography

Physical activity rates vary regionally. States with the highest rates of physical activity are located in the West or North-central areas of the country. Information about how physical activity may vary regionally within Colorado is not available.

Other Disparities

Individuals with less formal education and lower socioeconomic status tend to report lower levels of physical activity. According to 2003 BRFSS data, Colorado adults without a high school degree were less likely to engage in moderate exercise than their college-educated peers, 38.6 percent and 62.0 percent, respectively. A similar pattern was apparent among different income levels.

Figure 4: Percentage of Colorado Adults Reporting Moderate Physical Activity in 2003 by Income and Education Levels



Source: Behavioral Risk Factor Surveillance System, 2003

ADOLESCENT PHYSICAL ACTIVITY

Indicator: Adolescent Physical Activity

Objective (22-7): Increase the proportion of adolescents who engage in vigorous physical activity that promotes cardiorespiratory fitness three or more days per week for 20 or more minutes per occasion.

Definition: The percentage of students who report engaging in vigorous physical activity for at least 20 minutes on three or more of the past seven days, that would promote cardiorespiratory fitness.[10]

Healthy People 2010 Target: 85 percent of adolescents in grades 9-12 will engage in vigorous physical activity that promotes cardiorespiratory fitness three or more days per week for 20 or more minutes per day.

Baseline: (1995 Youth Risk Behavior System (YRBS))[v]

- **Colorado**: 65.1 percent of adolescents in grades 9-12 reported meeting recommended levels of vigorous physical activity
- **National**: 63.7 percent

Local Public Health Context in Colorado

Colorado adolescents report higher rates of engaging in vigorous physical activity than adolescents nationwide. However, physical activity levels among Colorado adolescents remain well below the Healthy People 2010 target. Furthermore, the conditions of overweight and risk of overweight appear to be growing among Colorado's youth.

Since adolescents spend a substantial proportion of their time in school, schools can play an important role in promoting a healthy lifestyle. Nationally, however,

[v]Baseline estimates for the nation and Colorado are based on the 1995 Youth Risk Behavior Survey (YRBS), the last year for which state estimates were available.

physical education programs have been significantly cut due to budget constraints. It is estimated that only 50 percent of U.S. elementary and middle schools provide physical education. The proportion of high schools offering physical education is even lower, just 20 percent. This is concerning since nationwide adolescents report less physical activity as they progress through high school.[10]

Data Trends[10]

The 1995 Youth Risk Behavior Survey (YRBS) data indicated that a larger proportion of Colorado adolescents engaged in vigorous physical activity than the national average, although this percentage, 65.1 percent, fell short of the Healthy People 2010 target of 85 percent. Reliable Colorado estimates are not available for years subsequent to 1995. Therefore, changes in the proportion of adolescents reporting vigorous physical activity cannot currently be examined.

The Colorado Department of Public Health and Environment is in the process of collecting these data from the Colorado Child Health Survey, a random digit-dial telephone survey. The first year of the telephone survey is 2004, and data will not become available until mid-2005.

Nationally, however, YRBS data from the years 1993-2003 indicate that adolescents' rates of vigorous activity have remained fairly stable, ranging from a low of 62.6 percent to a high of 65.8 percent.

Demographic Trends and Health Disparities[10,11]

As noted previously, Colorado estimates for adolescent physical activity levels are not currently available, subsequent to the year 1995. General patterns from the results of the 2001 Colorado Youth Behavior Risk Survey (YRBS) are presented in this section, due to a higher response rate than other years following the 1995 administration (the last year for which data were weighted and state estimates were available). However, 2001 YRBS data were not weighted and do not represent a state estimate. Therefore, these data reflect the physical activity of only the Colorado students that took part in the 2001 YRBS. For this reason, general patterns, rather than specific percentages, are presented from the 2001 YRBS.

Race/Ethnicity

In 1995, Hispanic and black adolescents in Colorado were less likely to report engaging in vigorous physical activity than non-Hispanic white adolescents. This pattern appears to have held true in 2001, when Hispanic adolescents were less likely to report engaging in vigorous physical activity than non-Hispanic, white adolescents. Nationally, similar trends are apparent, where Hispanic and black adolescents are less likely than white adolescents to report vigorous physical activity. Adult data, collected through the Behavioral Risk Factor Surveillance System (BRFSS), indicate that this disparity continues into adulthood.

Gender

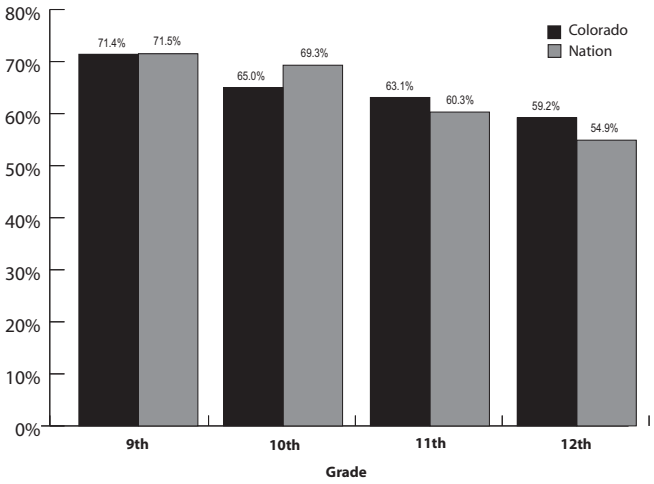
According to national and Colorado YRBS estimates, males are more likely to engage in vigorous physical activity than females. Furthermore, the decrease in physical activity observed with age is more pronounced for girls than for boys. This is true regardless of whether vigorous physical activity or more general participation in team sports is measured.[2]

Colorado YRBS data indicated that in 1995, 74.7 percent of adolescent males, compared to 54.8 percent of adolescent females, reported exercising vigorously for three or more of the last seven days. This pattern remained true in 2001, where adolescent males were more likely to report exercising vigorously on three or more of the last seven days than their female counterparts. Compared to boys, girls were less likely to participate in team sports but were more likely to take part in aerobics or dance.

Age

Even among adolescents, growing older is associated with less vigorous physical activity. This pattern is apparent at both national and state levels. In 1995, 71.4 percent of Colorado ninth graders reported engaging in weekly vigorous activity as opposed to 65 percent of 10th graders, 63.1 percent of 11th graders and 59.2 percent of 12th graders. A similar pattern was observed in 2001, where 12th graders were least likely to report meeting the Healthy People 2010 objective for vigorous activity among adolescents.

Figure 5: Percentage of Students in Grades 9 Through 12 Reporting Vigorous Physical Activity in 1995: Colorado and the Nation



Source: Youth Risk Behavior Survey, 1995

Geography

County-level data on adolescent physical activity are not currently available.

Major State Initiatives

Comprehensive School Health Education

The Colorado Comprehensive Health Education Act of 1990 was created to foster healthy behaviors in children and communities through a comprehensive educational plan to increase health knowledge and modify high-risk behaviors (CRS 22-25-102).[13] Comprehensive school health education is defined as a planned, sequential health program of learning experiences in preschool, kindergarten, and grades 1 through 12, which includes nutrition, personal health and physical fitness.[14] Since 1990, the Colorado Department of Education has administered this program and provided funding to approximately 55 school districts to implement comprehensive school health programs.[15]

Colorado On The Move™

Through a partnership with the University of Colorado Health Sciences Center and the Colorado Physical Activity and Nutrition Program (COPAN) of the Colorado Department of Public Health and Environment, Colorado On The Move™ seeks to improve health and prevent obesity by promoting lifestyle physical activity and by addressing the environmental factors that inhibit it. With a focus on integrating additional movement as

Did You Know?

- Colorado has higher rates of physical activity and lower rates of obesity compared to the nation.
- At work, the promotion of physical activity opportunities can lower stress, increase productivity and improve the health of workers. It also can reduce health care costs, as well as absenteeism.[2]
- Strength training and other forms of exercise preserve the ability of older adults to maintain independent living status and reduce the risk of falling – the 3rd leading cause of injury death among all age groups in Colorado.[12]
- One-fourth of the trips people make are less than one mile from their house; yet, 75 percent of those trips are made by car.[4]
- In schools, physical education and sound nutrition programs help students achieve, both physically and academically.
- Youth become more inactive as they grow older, with larger decreases seen among females than males.

a lifestyle change, this program is implemented for a minimum of 12 weeks.

Colorado On The Move™ (COTM) encourages Coloradans to walk 2,000 additional steps a day, roughly equivalent to walking a mile, through programs implemented in schools, work sites and communities. This small and achievable increase in physical activity could stop the weight gain seen in the population of Colorado over the past decade. Physical activity, through increased steps, can also support individuals in maintaining weight loss. Since 2001, approximately 300,000 people in a third of the counties across the state have participated in Colorado on the Move. The program distributes pedometers to help participants monitor and increase physical activity.

Colorado on the Move™ also focuses on nutrition and over-eating. Colorado on the Move provides information to help Coloradans learn more about energy balance and to use simple, but realistic, guidelines to decrease intake. Helpful fact sheets, such as *100 Ways to Lose 100 Calories*, are provided to participants to promote healthy eating.

An evaluation of pilot efforts of the program was published in a recent volume of the *Journal of Physical Activity and Health*. Evaluators found that the interventions significantly increased physical activity by at least 2,000 steps at participating work sites and churches.[16] According to investigators, these interventions were easily implemented at minimal expense and effort. In addition, formerly sedentary participants successfully sustained physical activity. This program demonstrates the importance of promoting community-based programs that encourage small behavioral changes over time to achieve long-term, positive health outcomes.

Emerging Best and Promising Practices

Colorado Physical Activity and Nutrition (COPAN) Program Recommended Strategies for Adults

The environment in which individuals live and work shapes the degree to which they are physically active. Public health initiatives can assist individuals with incorporating physical activity into their daily lives if such strategies are responsive to factors that contribute to why people are not physically active. Such challenges include:

- Lack of enjoyment
- Habits
- Interpersonal relationships
- Cost
- Time
- Convenience
- Competing demands of work, day-care, family
- Lack of recreation facilities.

Environmental and organizational strategies that support the 2,000 steps program promote healthy behavior. Such strategies may include using point-of-decision prompts to promote stair use; expanding and promoting the use of bicycle trails; extending lunch hours to allow time for physical activity; and supporting the development of pedestrian-friendly residential areas with connecting sidewalks or paths. These examples illustrate ways in which individual behavioral changes can be supported by organizational and environmental change.

COPAN Recommended Strategies for Promoting Physical Activity in Colorado Schools

The following recommended strategies can be implemented in schools to address the education and health needs of students. Physical activity programs for grades pre-kindergarten through 12 can be designed to include Colorado's physical education standards and incorporate extracurricular activities and recess periods.

Work Site Strategies that Promote Increased Physical Activity[6]

Promote social support interventions and/or health education activities in the workplace

- Offer regular health education presentations on physical activity and other wellness-related topics
- Provide health education information through newsletters, publications, Web sites, email, libraries and other company communications.

Explore opportunities for increased physical activity

- Support physical activity breaks during the workday, such as stretching or walking
- Implement incentive-based programs to encourage physical activity, such as pedometer walking challenges
- Post motivational signs at elevators and escalators to encourage stair usage
- Offer flexible work hours to allow for physical activity during the day
- Support recreation leagues and other physical activity events on-site or in the community
- Offer on-site fitness opportunities, such as group classes or personal training
- Provide incentives for participation in physical activity and/or weight management/ maintenance activities
- Explore discounted memberships to local health clubs, recreation centers or YMCAs.

Alter worksite environment and/or policy to promote physical activity

- Provide bicycle racks in safe, convenient, and accessible locations
- Provide clean, safe, and aesthetically appealing stairwells, and promote their use
- Establish on-site fitness rooms or exercise facilities
- Add weight management/maintenance, nutrition, and physical activity counseling as a member benefit in health insurance contracts
- Provide a safe walking environment on facility grounds
- Create a company culture that discourages sedentary behavior, such as television viewing on breaks and sitting for long periods of time.

Provide age-appropriate and culturally sensitive instruction in physical education classes that help students develop the knowledge, attitudes, skills, and behaviors to adopt, maintain, and enjoy a physically active lifestyle

- Educate students about the health benefits of physical activity by integrating it into other subject areas and curricula
- Encourage school staff to seek out and attend professional development programs on current physical activity standards and assessments, best practices, and resources
- Integrate health-related physical fitness assessment into the curriculum as an evaluation tool
- Recommend state and local policy to require daily physical education from grades pre-kindergarten through twelfth grade[12]
- Require periods of physical education that total a minimum of 150 minutes per week for elementary school and 225 minutes per week for middle and high schools
- Devote the majority of physical education class time to moderate or vigorous physical activity
- Encourage physical activity as a part of a young person's lifestyle
- Discourage the use of physical activity as punishment when disciplining young people

- Assure safe and adequate equipment, facilities, and resources for the full implementation of physical education classes in a pre-kindergarten through 12th grade curriculum
- Hire licensed physical education teachers, or provide opportunities for personnel to acquire the recommended training or certification
- Encourage and support coaches to acquire appropriate training and/or certification similar to or exceeding that recommended by the Colorado High School Activities Association.

Provide opportunities for physical activity that help students develop the knowledge, attitudes, skills, and behaviors to adopt, maintain, and enjoy a physically active lifestyle

- Provide daily recess for elementary school students, featuring time for unstructured but supervised play
- Encourage fun, pleasant, and safe after-school programs that include physical activity
- Use school facilities for physical activity programs offered outside school hours
- Work cooperatively with city parks and recreation programs to provide physical activity opportunities, such as midnight basketball or recreation center sleep-ins for youth
- Promote walking or bicycling to and from school using programs such as Walking School Bus and Bike Train
- Plan health-promotion activities and incentives for students, parents, and staff that encourage regular physical activity such as recreational demonstrations, and walking clubs
- Provide and encourage participation in school athletics and intramural programs
- Include information on physical activity in school communications, such as newsletters, back-to-school nights, or health fairs
- Work with school boards to increase physical activity opportunities for students.

Local Story: Metro Denver Black Churches are on the Move![17]

DENVER – The Metro Denver Black Church Initiative is a member organization representing 45 churches, 29 of which are members of the Faith and Health Ministries. The Initiative recognizes that congregation members wish to participate in physical activity to increase their physical and spiritual well being. Physical activity can produce a number of health benefits, including preventing and alleviating symptoms associated with many of the chronic diseases that disproportionately affect the black community. Having heard about Colorado On The Move™ and being motivated to promote wellness, the health liaisons within the Metro Denver Black Church Initiative invited project coordinators to do a presentation about their program to members.

The Colorado on the Move program encouraged participants to walk 2,000 steps a day more than they walked before the program. To help participants meet this goal and motivate members to incorporate additional movement into their daily routine, pedometers were provided at a minimal cost—except to seniors over the age of 70 who received free pedometers. Project coordinators also provided participants with tips on fun, easy and safe ways to add extra steps to their day, such as taking a walk around the local mall; going to the bathroom on a different floor while at work; and getting off the bus one stop early.

Since the first pilot of 600 participants, the program has grown to 3,000 pedometer-wearing walkers. The majority of participants are women over the age of 55, an age group which typically reports the lowest levels of physical activity. Not only have more church members joined the program, but members also have brought Colorado on the Move into their workplaces and communities. Program evaluation findings indicate that participants have successfully increased activity from baseline by at least 2,000 steps a day.

PHYSICAL ACTIVITY

Resources

American Council on Exercise
http://www.acefitness.org

Colorado On The Move™
Phone: 303-315-9045
Program materials are available at:
http://www.americaonthemove.org

Colorado Physical Activity and Nutrition Program (COPAN)
Colorado Department of Public Health and Environment
Phone: 303-692-2606
http://www.cdphe.state.co.us/pp/COPAN/COPAN.html

Colorado Governor's Council for Physical Fitness
Phone: 303-692-2503
Email: council@colorado-fitness.org
http://www.colorado-fitness.org/

Rocky Mountain Center for Health Promotion and Education
RMC has served as a resource for comprehensive school health education programs and provided in-service training to educators, parents, and others committed to improving health.
http://www.rmc.org/index.html

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[13] Colorado Department of Education. The Colorado Comprehensive Health Education Act: The laws and guidelines. Available at: http://www.cde.state.co.us/cdeprevention/download/pdf/comp_health_guidelines.pdf. Accessed September 28, 2004.

[14] Colorado Department of Education. Comprehensive health education. Available at: http://www.cde.state.co.us/cdeprevention/comphealthed.htm. Accessed August 27, 2004.

[15] Colorado Department of Public Health and Environment. Annual report: Comprehensive school health. Available at: http://www.cdphe.state.co.us/ps/ipsp/annualrpt/cde/compschoolhealth03.pdf. Accessed September 28, 2004.

[16] Wyatt H, Peters J, Reed G, et al. (2004). Using electronic step counters to increase lifestyle physical activity: Colorado on the move. *Journal of Physical Activity and Health*. 2004;1:181-190.

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Section II

A higher percentage of Coloradans, like their peers in other western states, have maintained a healthy weight. In fact, Colorado boasts the lowest rate of obesity in the United States, as well as one of the lowest rates of overweight. Health officials have attributed this, in part, to the active lifestyles and the relatively youthful age of the state's population. Still, Colorado's rate of overweight and obesity has increased with the nation and currently costs an estimated $874 million in medical expenses annually.

HEALTHY PEOPLE 2010 GOAL: *Promote health and reduce chronic disease assocated with diet and weight.*[i]

The August 2004 issue of the *National Geographic*[1] reported that being overweight will surpass smoking as the leading cause of preventable death in the United States by 2005. Overweight and obesity affect 59 percent of the U.S. adult population and this rate is continuing to increase.[2] Over the past three decades, the proportion of affected adults has doubled.[1] In addition, a growing number of young children and teens are obese or overweight.[1]

Being overweight or obese has been shown to substantially increase one's risk of cardiovascular disease; type 2 diabetes; some cancers such as colon, breast and endometrial; and asthma. As a result, being overweight or obese has been associated with 300,000 premature deaths in the United States annually.[3] In addition, it is estimated that adult obesity costs the United States more than $75 billion a year in medical expenditures.[4]

In response to the growing risk that overweight and obesity represent to the health of the U.S. public, the Surgeon General released a call to action in 2001 to prevent and decrease these health conditions.[5] This report spurred both national and local efforts to address overweight and obesity. Decreasing the prevalence and degree of overweight and obesity has come to represent a major strategy for increasing the overall health and well being of the public. As such, overweight and obesity are leading health indicators monitored by Healthy People 2010.

A higher percentage of Coloradans, like their peers in other western states, have maintained a healthy weight. In fact, Colorado boasts the lowest rate of obesity in the United States, as well as one of the lowest rates of overweight. Health officials have attributed this, in part, to the active lifestyles and the relatively youthful age of the state's population. Still, Colorado's rate of overweight and obesity has increased with the nation and currently costs an estimated $874 million in medical expenses annually.[4] A number of state and local initiatives are underway to establish new partnerships and programs that will address the growing health risk and, at the same time, build upon Colorado's legacy of promoting healthy weight.

Determining Body Mass Index (BMI)[10]

BMI has become the standard measure used to estimate rates of overweight and obesity. BMI is calculated by dividing one's weight by one's height squared and, multiplying this estimate by the number 703. The final number then is compared to recommended BMI score cutoffs to determine one's weight status.

However, the BMI does not measure body fat. Someone with a large muscle mass and a low percentage of body fat may have the same BMI as a person who has more body fat, since BMI is calculated using weight and height only. BMI alone is not an adequate indicator of one's health status. When used in combination with other information, however, the BMI can be helpful in assessing health risks. Other factors such as waist circumference, smoking habits, physical activity level and diet are essential to consider in determining individual risk.

$$BMI = \left[\frac{\text{Weight in Pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \right] \times 703$$

$$BMI = \left[\frac{220 \text{ lbs.}}{(75 \text{ in.}) \times (75 \text{ in.})} \right] \times 703 = 27.5$$

The Centers for Disease Control and Prevention recommends the following cutoffs for determining weight status based on one's BMI score:

BMI Score	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and above	Obese

[i]Unless otherwise noted, the source of information for this section of the report was the *Colorado Physical Activity and Nutrition State Plan 2010,* 2nd Edition in press.[3] Where possible, original data sources were referenced.

OVERWEIGHT AND OBESITY

Health Consequences of Obesity[3]

Obesity is linked to many conditions that contribute to premature death. These conditions include:

Cardiovascular Disease

Cardiovascular disease is the leading cause of death in Colorado, claiming the lives of more than 9,300 residents in 2002 and accounting for 33 percent of all deaths. Excess body weight contributes to high blood pressure and increases the risk for developing diabetes, both of which are risk factors for cardiovascular disease.

Diabetes

Diabetes is a disease that impairs the body's ability to use food. Type 1 diabetes is sometimes called juvenile diabetes, or insulin-dependent diabetes. Type 2 diabetes is the most common form of diabetes, accounting for 90 to 95 percent of all diagnosed cases of diabetes in the United States. It reflects the body's inability to manage and produce insulin appropriately. Although the exact cause is unknown, type 2 diabetes is associated with factors such as older age, obesity, family history of diabetes, history of gestational (pregnancy-related) diabetes, physical inactivity and race/ethnicity. In both the United States and Colorado, the prevalence rate for type 2 diabetes is increasing as the population becomes older and more overweight.

Cancer

Being overweight increases the risk of certain cancers such as breast, colon, kidney, gallbladder, prostate, cervical, ovarian and esophageal. In addition, it is associated with later detection of cancers possibly due to complications related to screening overweight patients. Moreover, overweight individuals may be more likely to avoid or delay cancer screening, possibly due to body image issues.[7,8]

Osteoarthritis

Overweight and obese people are more likely than individuals at a healthy weight to report pain, stiffness, or swelling in or around a joint; they also are more likely to be diagnosed with arthritis by a doctor. Joints and connective tissue are injured more often and deteriorate more quickly from excess body weight. Furthermore, diminished activity due to joint discomfort can lead to stiffness and a decreased range of motion. Cumulatively, the effects of arthritis can lead to decreased physical activity and, thereby, exacerbate the cycle of weight gain and physical limitation.

High Cholesterol[9]

Cholesterol does not mix well with blood. Protein coats cholesterol, making lipoproteins, to allow cholesterol to travel through blood. The two most commonly discussed lipoproteins are high-density lipoprotein, or HDL cholesterol, and low-density lipoprotein, or LDL cholesterol. HDL is believed to remove cholesterol from the blood; this has earned it the name, "good cholesterol." LDL, on the other hand, is known as "bad cholesterol," because, in excess, it forms a build-up of plaque on the insides of artery walls, leading to restricted blood flow—which can cause angina (chest pain) or a possible heart attack. High LDL cholesterol is more prevalent among overweight or obese adults than among healthy weight adults. However, LDL levels can be decreased by following a low fat diet and participating in regular physical activity.

High Blood Pressure

In 2003, 20 percent of Colorado adults, aged 18 and older, reported that they had been told they had high blood pressure by a health care professional. High blood pressure is associated with the deaths of hundreds of thousands of Americans annually. It increases the heart's workload, causing it to enlarge and weaken over time. Being overweight or obese increases one's risk of high blood pressure. Furthermore, when high blood pressure co-occurs with obesity, it increases the risk of heart attack or stroke several times.

ADULT OBESITY

Indicator: Adult Obesity

Objective (19-2): Reduce the proportion of adults who are obese.

Definition: In adults, ages 20 and older, obesity is defined as a Body Mass Index (BMI) of 30 or greater. Overweight is classified as a BMI score between 25 and 29.9.

Healthy People 2010 Target: Only 15 percent of adults 20 years of age and older will be obese.

Baseline: (1998 Behavioral Risk Factor Surveillance System (BRFSS)) [11, ii]

- **Colorado**: 14.4 percent of adults 18 years of age and older were obese
- **National**: 18.3 percent

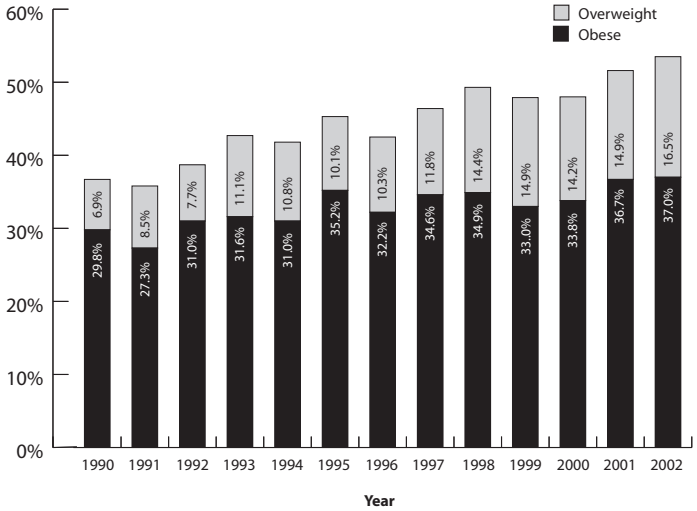
Local Public Health Context in Colorado[11]

For many years, Colorado has had one of the lowest prevalence rates of obesity in the nation, although these rates have increased along with the rest of the country. As of 2003, 16 percent of Colorado adults were estimated to be obese; this estimate falls just above the national Healthy People 2010 target of 15 percent. However, 36 percent of Coloradans were overweight and, therefore, at risk of future obesity. Although Colorado tends to have a relatively low prevalence of obesity when compared to other states, over one-half of Colorado adults are overweight or obese. This leaves 49 percent of Colorado adults in 2003 who were found to be at a healthy weight. Health officials estimate that more than one-third of premature deaths in Colorado were attributable to obesity.[3]

Data Trends[11]

The prevalence of overweight and obesity among Colorado adults has been steadily increasing since before 1990. In 1990, the Behavioral Risk Factor Surveillance System (BRFSS) found 6.9 percent of Colorado adults to be obese. By 1998, this estimate had more than doubled, to 14.2 percent. Since 1998, the rates of overweight and obesity appear to have continued to increase, although more gradually.

Figure 1: Percentage of Overweight and Obese Adults in Colorado from 1990-2002



Source: Behavioral Risk Factor Surveillance System, 1990-2002

[ii] 1998 Behavioral Risk Factor Surveillance System (BRFSS) data are reported for this indicator in order to establish comparable Colorado and national baseline estimates. Although, nationally, HP 2010 uses the National Health and Nutrition Examination Survey (NHANES), for years 1988-1994, to provide a baseline estimate of adult obesity, state level data are not obtainable from this source. For the years 1988-1994, the NHANES reported that 23 percent of adults were obese, nationally. This figure is much higher than the national estimate reported by the BRFSS for 1998, 18.3 percent. Given that obesity has increased over time, the difference between BRFSS and NHANES rates can be assumed to be an artifact of data measurement rather than a decline between 1994 and 1998. It also may be the case that because the BRFSS measures rates for a larger and younger population, 18 and older (rather than 20 and older as the NHANES does), it had the effect of making the rate appear lower. [11, 12]

OVERWEIGHT AND OBESITY

Demographic Trends and Health Disparities[3, 11, iii]

Race/Ethnicity[iv]

Nationally, black adults had the highest prevalence of obesity among the major racial/ethnic groups, followed by Hispanics and non-Hispanic whites. This same trend holds true for Colorado. Data for 2000-2003 indicated that 22.6–30.0 percent of blacks and 18.1–25.5 percent of Hispanics were obese, as compared to 13.0–15.0 percent of non-Hispanic whites. These differences in the obesity rates of blacks and Hispanics, as compared to non-Hispanic whites, have been found to be statistically significant.

Racial/ethnic minorities are not only disproportionately affected by obesity but also by diseases associated with excess body weight. In Colorado, the black population has the highest death rates resulting from heart disease, cerebrovascular disease (stroke) and all types of cancer—especially cancers of the breast, colon/rectum and prostate. Obesity-related diseases also disproportionately affect Hispanics. Hispanics have a higher occurrence and death rate resulting from diabetes, colorectal cancer and cervical cancer.

Gender

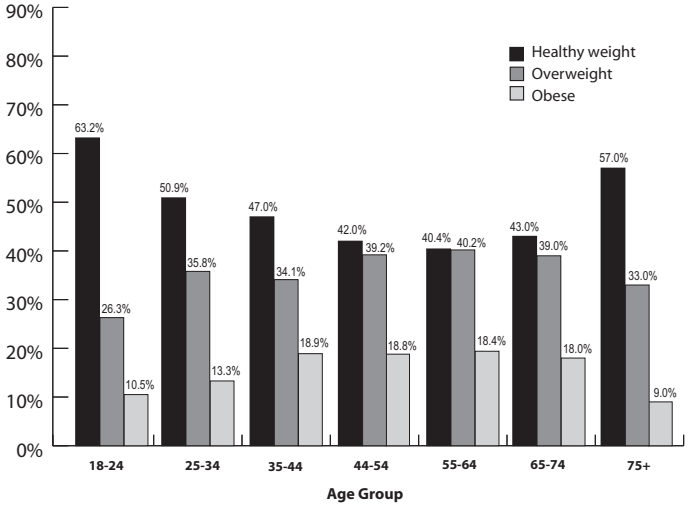
Overall, the rates of obesity have been statistically equivalent for males and females in Colorado. For the period 2000-2003, 13.9–17 percent of males and 14.5–15 percent of females in Colorado were obese.

However, nationally, gender differences are observable between black and Hispanic females and males. For blacks, the proportion of women who are obese is 80 percent higher than the proportion of men who are obese.[13]

Age

Data indicate that individuals under 35 and over 75 tend to have a higher proportion of individuals at healthy weight and lower obesity rates than individuals, ages 35–75. In 2003, the age groups, 18–24 and 25–34, had obesity rates of 10.5 percent and 13.3 percent, respectively. For the age group over 75, the obesity rate was just 9 percent in 2003. These rates were lower than all other age groups, where the obesity rate was at least 18 percent or higher.

Figure 2: Percentage of Adults in Colorado by Weight Status and Age Group, 2003



Source: Behavioral Risk Factor Surveillance System, 2003

Geography

County-level data on overweight and obesity are currently not available for the state.

[iii]Figures for 2000-2002 were compiled from the Behavioral Risk Factor Surveillance System (BRFSS). State estimates for 2003 were not available yet from this online data system; these data were cited from the *Colorado Physical Activity and Nutrition State Plan 2010.*

[iv]BRFSS encourages data users to exercise caution when interpreting subpopulation estimates based on fewer than 50 cases. For blacks, 2002 was the only year for which state estimates were based on a sample size larger than 50. The state estimate for obesity among blacks for that year was 30%. For Hispanics, the only year with a sample size smaller than 50 was 2001; percents for other years cited ranged from 18.5 to 25.5%.

Other Disparities[3, 13]
Obesity is especially prevalent among females with lower incomes. Among all groups nationwide, females of lower socioeconomic status with incomes less than or equal to 130 percent of the poverty threshold are approximately 1.5 times more likely to be obese than females of higher socioeconomic status.

Overweight and Obesity Among Children and Adolescents

Indicator: Overweight and Obesity among Children and Adolescents

Objective (19-3c): Reduce the proportion of children and adolescents 6 to 19 years of age who are overweight or obese.

Definition: Overweight and obesity are defined based on the Body Mass Index (BMI). For children and adolescents, BMI is determined by age and sex-specific growth charts based on self-reported height and weight. A healthy BMI will vary depending on the age and sex of children and adolescents.

Healthy People 2010 Target: Only 5 percent of youth 6 to 19 years of age will be overweight.

Baseline: (1988-1994 National Health and Nutrition Examination Survey (NHANES))[v]

- **Colorado**: No state level data were obtainable from NHANES
- **National**: 11 percent of children 6 to 19 years of age were obese

Local Public Health Context in Colorado

National trends indicate that the prevalence of the conditions of overweight is growing among all age groups, including children. Although Colorado has a comparably low overweight and obesity risk than other states, Colorado is not immune to this national trend.

Relatively little is known, however, about the prevalence of overweight among Colorado's children and adolescents. In the absence of this information, health officials have looked to national trends to help guide programmatic efforts. Currently, efforts are underway

Body Mass Index (BMI) Measures Differ for Children and Adolescents[10]

As children and adolescents grow, their body compositions change. The bodies of girls and boys also differ as they mature. This is why BMI scores are derived from gender- and age-specific growth charts.[vi] These charts are used for children and adolescents between the ages of 2 and 20.

The BMI scores of children and adolescents are used somewhat differently from the adult population. Among children and adolescents, BMI is used to assess underweight, at risk for overweight and overweight. The guidelines applied to gender- and age-specific growth charts are outlined below:

Underweight	BMI-for-age < 5th percentile
Healthy weight	BMI-for-age 5th to 84th percentile
At risk of overweight	BMI-for-age 85th percentile to < 95th percentile
Overweight	BMI-for-age ≥ 95th percentile

[v]State baseline estimates were not available from the National Health and Nutrition Examination Survey (NHANES) or the Youth Risk Behavior Survey (YRBS). The YRBS did not begin collecting these data at national and state levels until 2001. Also, YRBS data reflect only information about 9th-12th graders.
[vi]To access the 2000 CDC Growth Charts and additional information about BMI, please visit CDC's National Center for Health Statistics (http://www.cdc.gov/growthcharts).

in Colorado to implement surveillance systems that will facilitate the collection and monitoring of these data in the future.[vii]

Data Trends

Nationally, during 1988-94, 11 percent of children and adolescents aged 6 to 19 years were overweight or obese.[13] The last year for which Colorado estimates of adolescent health behavior were available from the Colorado Youth Behavior Risk Survey (YRBS) was 1995; however, data on the height and weight of adolescents was not collected at that time.

Demographic Trends and Health Disparities[14, 15]

As noted previously, Colorado estimates for the rate of overweight among Colorado adolescents are not currently available. Since state estimates are not available, general patterns from the 2001 Colorado Youth Behavior Risk Survey (YRBS) are presented in this section. This year is used to examine patterns, because of its relatively high response rate. These data reflect the rate of overweight of only the Colorado students that took part in the 2001 YRBS. For this reason, general patterns, rather than specific percentages, are presented.[viii]

Race/Ethnicity

The 2003 Youth Risk Behavior Survey (YRBS) results indicated that nationally there is a higher prevalence of overweight among black, 17.6 percent, and Hispanic, 16.8 percent, adolescents, than non-Hispanic whites, 12.2 percent. This pattern also holds true within the adult population nationally and in Colorado. According to 2001 Colorado YRBS data, a larger percentage of participating Hispanic adolescents were overweight compared to participating non-Hispanic white adolescents. (The sample of black adolescents included insufficient cases for reporting purposes.)

Factors Influencing the Increase in Overweight and Obesity among Children, Youth and Adults[3]

Healthy People 2010 recognizes that obesity is the consequence of an intricate web of social, behavioral, cultural, environmental, physiological and genetic factors. The physical and social environment in which people live has a commanding influence on individual behaviors—promoting some, while constraining others. For example, television commercials and media messages; "super-sized" portions; and promotional pricing encourage the consumption of food that is high in calories, sugar, and fat, and low in nutrition. Convenience stores and fast-food restaurants also make high-calorie foods readily available and accessible. Meanwhile, opportunities to burn surplus calories are hindered by technological advances such as remote controls, escalators, and poor infrastructure such as lack of sidewalks and unsafe recreational areas.

Gender

The national 2003 YRBS indicated that adolescent males in grades 9 -12 were more likely to report weight and height that indicated overweight for their age and sex than females. This pattern holds true for the 2001 Colorado YRBS participants as well. In addition, the 2001 Colorado YRBS suggested that adolescent females were more likely to describe themselves as being slightly or very overweight, compared to adolescent males. Females also were more likely to describe themselves as trying to lose weight than their male counterparts. These data may be indicative of gender differences in weight

[vii] In the *Colorado Physical and Nutrition State Plan 2010*, the Colorado Department of Public Health and Environment reported that it is in the process of collecting these data from the Colorado Child Health Survey, a random digit-dial telephone survey designed to supplement the Youth Risk Behavior Survey (YRBS). Among other areas, this survey will provide state-level estimates of physical activity levels, nutrition and BMI for children and adolescents. However, 2004 represents the first year of survey administration, and these data will not be available until mid-2005.

[viii] Please note, however, that these data reflect participants in the ninth through twelfth grades, not the full range of ages targeted by the Healthy People 2010 objective (ages 6-19).

watching behavior and body image.

Age
National and state data indicate that adolescents become more physically inactive as they progress from ninth through the twelfth grades. Given this trend, overweight and risk of overweight might increase as adolescents age.

Geography
Currently, no county-level data are available on the distribution of overweight and risk of overweight among Colorado children and adolescents.

Other Disparities
Nationally, the proportion of adolescents from poor households who are overweight is twice that of adolescents from middle- and high-income households.[13] No Colorado data are currently available.

Did You Know?

- Individuals who are overweight in childhood are at risk for excess body weight in adulthood.[6]
- Youth from poor households are twice as likely to be overweight compared to adolescents from middle and high income households.[13]
- Weight loss and regular exercise can help improve the harmful effects of being overweight. Studies show that losing 10 percent of body weight can improve health, including helping manage type 2 diabetes.[5]

Major State Initiatives

There are several initiatives underway in Colorado to address the rise in obesity and overweight among different age groups, racial-ethnic populations and low-income families.

Colorado Physical Activity and Nutrition Program
The key goals of the Colorado Physical Activity and Nutrition Program are to:

- Increase the percentage of Coloradans who are regularly physically active
- Increase the percentage of Coloradans who consume at least five servings of fruits and vegetables a day
- Increase the percentage of Coloradans who balance caloric intake with caloric expenditure
- Decrease the number of hours that children and adults watch television
- Increase the proportion of Coloradans with a BMI of less than 25.

This state program coordinates the Colorado Physical Activity and Nutrition Coalition, a group of over 450 public and private partners charged with:

- The development of a state plan that would address the issue of overweight and obesity, as well as related health factors such as physical activity and nutrition
- The design and coordination of effective and culturally appropriate statewide interventions.

There are 11 task forces that make up the Coalition including 6 lifespan task forces, such as Early Childhood-Birth to Five Years, and other task forces including:

- 5 A Day
- Active Community Environments
- Health Disparities
- Provider Education
- Surveillance and Evaluation.

Colorado Nutrition Network
This is a statewide collaborative alliance with the mission to link public and private organizations to promote and coordinate nutrition education for low-income Coloradans. The Network has two major initiatives that serve communities throughout the state:

- ***The Food Friends*** – This initiative utilizes a tested program, called Making New Foods Fun for Kids, that combines social marketing and education strategies. The program is a 12-week intervention implemented within Head Start classrooms.
- ***Nutrition Links*** – This is a community nutrition education incentive award program. It seeks to improve the collaborative base supporting nutrition education within a community, while promoting nutrition-based behavior change among priority populations chosen by the community.

The network and its initiatives represent one of four components of the Colorado Nutrition Education Plan at Colorado State University. Other components include the promotion of Alternative Strategies, the Integrated Nutrition Plan and the Food Stamp Nutrition Education Program. Each of these components has its own initiatives, designed to address nutrition and reduce obesity and overweight.

Funding is provided through the Colorado Nutrition Education Plan at the Colorado State University. The source of funds originates from the U.S. Department of Agriculture Food Stamp Program through the Colorado Department of Human Services, Food Stamp Program.

Colorado 5 A Day

The Colorado 5 A Day Task Force (of Colorado Physical Activity and Nutrition Program (COPAN)) receives funding from the Obesity Control and Prevention Grant from the Centers for Disease Control and Prevention. Partners such as King Soopers and Wild Oats grocers assist in funding special programs such as events during National 5 A Day month and National Employee Health and Fitness Day. In August 2003, the 5 A Day Task Force designed a presentation for health professionals to use as a guide in counseling their patients on fruits and vegetables or to use for presentations to the general public. The 5 A Day Task Force also is involved in a restaurant promotion. In June 2004, the task force began a pilot program with Old Chicago restaurants in Colorado. The idea was that an increase in promotion of 5 A Day would increase patrons' consumption of fruits and vegetables. The pilot consisted of table tents, buttons, children's activity books and other promotional items for 5 A Day. The restaurant servers recommended specific menu items that consisted of vegetables to their customers. The task force plans to expand the concept of marketing 5 A Day in restaurants across Colorado.

Steps for a Healthier Colorado

Colorado was one of five states selected to receive a $15 million Steps to a Healthier U.S. grant. This grant, awarded to the Colorado Department of Public Health and Environment, will help Colorado families maintain healthy lifestyles by promoting efforts to increase health education and healthcare in the community. Designed to reach Coloradans where they live, work and attend school, these programs seek to reduce the burden of diabetes, obesity and asthma. Health departments in Pueblo, Mesa, Teller and Weld counties were selected to receive state funding.

Steps to Healthier U.S. programs in Colorado serve senior citizens; the under- and uninsured; government and school district employees; youth living in low-income areas; minority populations; and migrant workers. Specifically, these programs provide:

- Education to students and citizens about the importance of improved nutrition and physical activity, including classes offered in both English and Spanish
- Improved strategies for preventing and diagnosing disease, providing appropriate care, managing of chronic disease, and promoting decreased tobacco use.

Emerging Best and Promising Practices

The *Colorado Physical Activity and Nutrition State Plan 2010* specifies strategies for reducing obesity and modifying risk factors related to poor nutrition and physical inactivity throughout the lifespan, from infancy to senior adults. Best practices and strategies related to physical activity are highlighted in the first section of this report; therefore, the strategies described below focus specifically on the reduction of obesity.

Colorado Early Childhood Strategies and Action Steps Recommended by the Colorado Physical Activity and Nutrition (COPAN) Program

The Early Childhood Task Force of COPAN identified the following strategies to address the growing prevalence of the condition of overweight in children:

- Raise awareness of the benefits of healthy eating and developmentally appropriate activity in children birth to age five and their families
- Provide educational opportunities that will improve parents and other caregivers' abilities to meet recommendations for healthy eating and developmentally appropriate physical activity
- Provide for health care professionals education opportunities and resources related to nutrition and physical activity
- Promote an environment that encourages healthy eating and active lifestyles as the norm rather than the exception.

Colorado School Site Strategies and Actions Steps Recommended by COPAN

The School Site Task Force of COPAN developed a number of strategies to promote physical activity and healthful nutrition choices in Colorado schools, including:

- Build awareness and encourage positive role modeling among administrators, teachers, food service staff, coaches, nurses, parents, students, other school staff and community leaders about the contribution of proper nutrition to the maintenance of lifelong healthy weight.

Colorado Worksite Strategies and Actions Steps Recommended by COPAN

Research continues to show that employers gain a return on their investment in the health of their employees through comprehensive health promotion programs. Data indicate that health promotion programs can save four-to-five times more money than costs associated with healthcare and absenteeism. Additionally, worksite health-promotion programs continue to gain popularity as an outstanding employee recruitment and retention tool to attract and maintain healthier and productive workers.

The *Colorado Physical Activity and Nutrition State Plan 2010* provides a variety of ideas for employers and employees on how to initiate wellness activities in worksites of any size. The worksite strategies that promote increased physical activity and healthful nutrition choices include:

- Promoting social support interventions and/or health education activities
- Exploring opportunities for increased physical activity
- Exploring opportunities for healthful eating
- Altering worksite environments and/or policy to encourage health and wellness.

Colorado Health Disparities Strategies and Action Steps Recommended by COPAN

- Identify geographic areas in Colorado that are likely to bear the greatest burden of obesity, such as neighborhoods that are predominantly Black or Latino, in order to target resources
- Provide mini-grants to culturally diverse community organizations as identified by their communities to promote better nutrition and increased physical activity
- Ensure that all task forces have culturally diverse representation and produce and utilize materials that are culturally competent and available in Spanish or other languages, where appropriate
- Support communities and neighborhoods in creating coalitions and conducting assessments to determine what health-promoting characteristics of the community exist, what can be leveraged and what barriers to change exist
- Use collaboration as a tool to leverage resources for those having a stake in a community's health including such entities as government, local merchants and local foundations
- Collaborate with researchers who focus on physical activity, nutrition and/or obesity to encourage them to focus their research on sufficient numbers of people from communities of color
- Partner with medical and public health schools, health disparities collaborations and public health leadership training programs in Colorado to encourage and support people of color becoming health care providers and public health professionals
- Promote the dissemination of research and interventions for communities of color at professional conferences for health care providers and public health professionals
- Integrate with other chronic disease programs to better address health disparities.

OVERWEIGHT AND OBESITY

Other Prevention Strategies Promoted by the COPAN[16]

- Change the perception of overweight and obesity at all ages from being a cosmetic problem to a health problem
- Promote breastfeeding; research suggests that breastfed infants may be less likely to become overweight or obese, and mothers who breastfeed may return to pre-pregnancy weight more quickly
- Reduce time engaged in sedentary activities such as watching television and make physical activity a routine part of the day
- Promote healthy food choices at home, in schools, at worksites and in communities
- Make healthy personal food choices, including at least 5 servings of fruits and vegetables daily and 6 servings of grains.

Local Story: Steps to a Healthier Pueblo

SOUTHEASTERN COLORADO - *Steps to a Healthier Pueblo* is a program of the Pueblo City-County Health Department funded by the federally awarded Colorado Steps to a Healthier U.S. grant, administered by the Colorado Department of Public Health and Environment. Steps to a Healthier Pueblo contracts with Pueblo School District 60 to provide coordinated school health programs and activities that foster healthy nutrition and physical activity. It also contracts with numerous community agencies and organizations such as Parkview Medical Center, St. Mary-Corwin Medical Center, Colorado State University (CSU) Extension service office in Pueblo County, American Lung Association, the Pueblo Diabetes Project, the YMCA and Southeastern Colorado Health Education Center to provide diabetes, asthma, tobacco and nutrition education. Through these contracts, Steps to a Healthier Pueblo promotes healthy eating by encouraging individuals and workplaces to make fruits and vegetables more available at home and work. It also introduces businesses and individuals to the Pueblo On the Move pedometer program, which helps people be more active.

During March Nutrition Month, the Steps to a Healthier Pueblo program conducted several innovative activities to promote a healthy lifestyle. Activities included:

- Offering low cost or free cholesterol testing through a mobile van unit
- Providing access to registered dietitians through local grocery stores in order to promote conversation about the relative nutritional value of fruit and vegetable choices
- Promoting the importance of drinking milk, including other ways to naturally consume needed calcium, through local school districts
- Sponsoring scholarships to individuals to attend the Southeastern Colorado Area Health Education Center's third annual "For the Health of It" conference, focused on fitness as well as diabetes and obesity prevention.

Contact Information: Cathy Dehn, Steps Community Coordinator • Pueblo Health Department • 719-583-4315

OVERWEIGHT AND OBESITY

Resources

Colorado Dietetic Association
For state or district information, contact:
Toll free: 866-790-2200
http://www.eatrightcolorado.org

Colorado Nutrition Network
http://www.cahs.colostate.edu/fshn/extension/programs/colorado_nutrition_network.htm

Department of Food Science and Human Nutrition
Colorado State University
http://www.cahs.colostate.edu/fshn/NEP

Colorado Department of Public Health and Environment
Colorado Physical Activity and Nutrition Coalition (COPAN)
http://www.cdphe.state.co.us/pp/COPAN

Colorado Weigh
Center for Human Nutrition at the University of Colorado School of Medicine
http://www.coloradoweigh.com

Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity (2001)
http://www.surgeongeneral.gov/topics/obesity

LIFESTEPS
Western Dairy Council
http://www.wdairycouncil.com

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Section III

Environmental factors play a central role in shaping human development and disease patterns across populations. Human exposures to infectious agents, toxic substances and hazardous materials in the air, water, soil and food are major contributors to illness, disability and death worldwide.

HEALTHY PEOPLE 2010 GOAL: *Promote health for all through a healthy environment.*

Environmental factors play a central role in shaping human development and disease patterns across populations. Human exposures to infectious agents, toxic substances and hazardous materials in the air, water, soil and food are major contributors to illness, disability and death worldwide.[1] According to the World Health Organization:

> *In its broadest sense, environmental health comprises those aspects of human health, disease and injury that are determined or influenced by factors in the environment. This includes both the direct pathological effects of various chemical, physical and biological agents, as well as the effects on health of the broad physical and social environment, which includes housing, urban development, land-use, transportation, industry and agriculture.*[2]

One of the leading health indicators for environmental quality is outdoor air quality. In Colorado, protecting and maintaining outdoor air quality has long been a major focus. Over the last 20 years, Colorado has undertaken major initiatives throughout the sate that have improved outdoor air quality in both urban and rural communities.

Over the past two years, a second environmental health issue has become a concern to Coloradans, West Nile virus. This virus is transmitted to people and animals by mosquitoes that carry the virus. The most serious result of West Nile virus infection in humans is fatal encephalitis (inflammation of the brain). Given the public concern with regards to this issue in Colorado, this section of the report also focuses on the impact of the West Nile virus and the public health response.

OUTDOOR AIR QUALITY

Indicator: Outdoor Air Quality[i]

Objective (8-1a-c): Reduce the proportion of persons exposed to air that does not meet the U.S. Environmental Protection Agency's health-based standards for the harmful air pollutants ozone, particulate matter and carbon monoxide.

Definition: Air quality is assessed by measuring levels of gases and particles in the surrounding or ambient air. Monitoring stations located across Colorado are used to measure the major pollutants, which are ozone, particulate matter and carbon monoxide. Each of these is defined below with their monitoring standards:

Ozone (O_3): Ground-level ozone should not be confused with the protective ozone layer in the upper atmosphere. Ground-level ozone is a pollutant that is formed when volatile organic compounds and nitrogen oxides mix and react in the presence of sunlight.[3]

The U.S. Environmental Protection Agency (EPA) has set the ozone standard as an 8-hour standard of 0.08 parts per million, which is determined by the fourth highest 8-hour daily maximum at any single monitor station averaged over a three-year period.[4]

Particulate matter (PM2.5 and PM10): Particles less than 2.5 micrometers in diameter (PM2.5) are referred to as "fine" particles and are believed to pose the largest health risks. Sources of fine particles include all types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Particles

[i]Unless otherwise noted, the source of information presented for this leading health indicator was the *Colorado Air Quality Data Report 2002*, with permission from the Air Pollution Control Division of the Colorado Department of Public Health and Environment.[10]

with diameters between 2.5 and 10 micrometers (PM10) are referred to as "coarse." Sources of coarse particles include crushing or grinding operations and dust from paved or unpaved roads.[5]

- **PM2.5**—In 1997, the EPA added new fine particle standards, PM2.5, to the existing PM10 standards. The EPA annual PM2.5 standard was set at a concentration of 15 micrograms per cubic meter (μg/m3) and a 24-hour PM standard set at 65 μg/m3.[6]

- **PM10**—In July 1987, the EPA promulgated National Ambient Air Quality Standards for particulates with an aerodynamic diameter of 10 microns or less (PM10). The standard has two forms, a 24-hour standard of 150 μg/m3 and an annual arithmetic mean standard of 50μg/m3.[6]

Carbon monoxide (CO): Carbon monoxide is a colorless, odorless and (at much higher levels) poisonous gas, formed when carbon in fuels is not burned completely. High concentrations of CO generally occur in areas with heavy traffic congestion. In cities, as much as 95 percent of all CO emissions may emanate from automobile exhaust. Nationwide, motor vehicles contribute about 60 percent of all CO emissions. Other sources of CO emissions include industrial processes, non-transportation fuel combustion and natural sources such as wildfires. Peak CO concentrations typically occur during the colder months of the year when CO automotive emissions are greater and nighttime inversion conditions are more frequent.[7]

The EPA has developed two national standards for carbon monoxide. They are 35 ppm averaged over a 1-hour period and 9 ppm averaged over an 8-hour period. These values are not to be exceeded more than once in a given year at any given location. A location will violate the standard with a second exceedance of either standard in a calendar year.[8]

Healthy People 2010 Target: Reduce to zero percent the proportion of persons exposed to air that does not meet the Environmental Protection Agency's (EPA) health-based standards for ozone, carbon monoxide and particulate matter.

Baseline: (1997 Aerometric Information Retrieval System (AIRS))[9, ii]

- **National**
  - 43 percent of persons living in nonattainment areas[iii] were exposed to levels that exceeded the National Ambient Air Quality Standards for **ozone**
  - 20 percent were exposed to levels that exceeded the National Ambient Air Quality Standards for **carbon monoxide**
  - 12 percent were exposed to levels that exceeded the National Ambient Air Quality Standards for **particulate matter**

- **Colorado**
  Baseline data were not available. As of 2002, all areas of Colorado were in attainment for all National Ambient Air Quality Standards. There were slight exceedances of the new 8-hour ozone standard in 20003 in the Denver metropolitan area, but none in 2004.

[ii]As of 2001, the EPA began tracking air quality indicators in its Air Quality System (AQS), a subset of the original AIRS database.

[iii]"Nonattainment areas" refer to geographic regions that did not attain Environmental Protection Agency (EPA) standards for air quality; once designated, nonattainment areas retain this status for three years, regardless of annual improvements in air quality.[1]

Health Concerns Associated With Compromised Outdoor Air Quality[10]

- **Health concerns related to Ozone**

  Short-term exposures (one to three hours) to ambient ozone concentrations have been linked to increased hospital admissions and emergency room visits for respiratory-related problems. Repeated exposures to ozone can make people more susceptible to respiratory infection and lung inflammation and can aggravate pre-existing respiratory diseases such as asthma. Children that are active outdoors during the summer when ozone concentrations are highest are most at risk of experiencing such effects. Other at-risk groups include outdoor workers, individuals with pre-existing respiratory disease, such as asthma and chronic obstructive lung disease, and individuals who are unusually responsive to ozone.

- **Health concerns related to Particulate Matter**

  The health risk from an inhaled dose of particulate matter depends on the size and concentration of the particulate. Size determines how deeply the inhaled particulate will penetrate into the respiratory tract where they can persist and cause respiratory damage. Particles less than 10 microns in diameter are easily inhaled deep into the lungs can reduce lung function as well as cause or aggravate respiratory problems. They can also increase the long-term risk of lung cancer or lung diseases.

  In addition, there is strong evidence that asthmatics are much more sensitive to the effects of very fine particulates than the general healthy population. Little scientific evidence exists that show elderly persons (older than 65 years) are particularly sensitive to the effects of particulate matter air pollution.

- **Health concerns related to Carbon Monoxide**

  Carbon monoxide, entering through the lungs, affects the central nervous system by depriving the body of oxygen. In the presence of carbon monoxide, the distribution of oxygen is reduced throughout the body. Blood laden with carbon monoxide can weaken heart contractions with the result of lowering the volume of blood distributed to the body. This can significantly reduce a healthy person's ability to do physical tasks, including working, jogging and walking. A life-threatening situation can exist for patients with heart disease when these people are unable to compensate for the oxygen loss by increasing the heart rate.

  The EPA has concluded that the following groups may be particularly sensitive to carbon monoxide exposures: angina patients, individuals with other types of cardiovascular disease, persons with chronic obstructive pulmonary disease, anemic individuals, fetuses and pregnant women. Concern also exists for healthy children because of increased oxygen requirements that result from their higher metabolic rate.

Local Public Health Context in Colorado

In 2002, Denver was officially recognized by the Environmental Protection Agency (EPA) for meeting all the National Ambient Air Quality Standards. Denver is the first city in the nation to realize this achievement after having numerous violations of air standards in the 1970s and 1980s. Colorado's air quality continues to be better than the National Ambient Air Quality Standards throughout the state. There were slight exceedances in 2003 in the Denver metropolitan area, but none in 2004.

Colorado began working on improving its air quality starting in the 1960's. Impacts from motor vehicles and industrial emissions were addressed under successive Governors. The State implemented an innovative program to control wood burning, with many mountain communities adopting their own programs. In 1988, the first oxygenated gasolines program in the country debuted along Colorado's Front Range to reduce carbon monoxide emissions from automobiles during the winter months.

Years of effort resulted in all areas of Colorado being in attainment for all of the National Ambient Air Quality Standards by 2002. Public education, outreach and voluntary measures have been implemented along the Front Range to prevent ozone concentrations from exceeding the National Ambient Air Quality Standard (NAAQS). To ensure compliance with the more stringent eight-hour standard established by the Environmental Protection Agency in 2004, Colorado developed an Early Action Compact for Ozone.[12] Passed unanimously by the Colorado Legislature, the Early Action Compact calls for the implementation of new control measures regarding industry emissions of volatile organic compounds, such as those produced as a result of oil and gas emissions.

Environmental Protection Agency (EPA) Establishes a More Rigorous Eight-Hour Standard for Ambient Ozone Concentrations[11]

In 1996, the EPA proposed a revised standard for ambient ozone concentrations. The original standard was based on an average of measurements taken over a one-hour period. However, ozone levels can fluctuate throughout the day at a given location. The revised standard, established in 2004, attempts to correct this by using an average taken over an eight-hour period, resulting in a more accurate picture of the actual ozone levels.

Data Trends

Ozone[10]

Statewide data shows that there has been a consistent decline in the number of second maximum 1-hour ozone concentrations reached since 1983. The trend is not as clear for 8-hour average ozone concentrations, but over the past 20 years there has been a slight decline. Over the past six years there has been no real change in concentrations for either the 1-hour or 8-hour averages, although there have been elevated concentrations during hot, dry spells. No exceedances, however, occurred in the summer of 2004.

Particulate Matter[10]

Monitoring for PM2.5 in Colorado began in 1999 with eight sites, and by 2002, twelve more had been added for a total of twenty. Only one site in Colorado has exceeded the level of the new 24-hour standard and no sites have exceeded the level of the new annual standard. One Denver site exceeded the 24-hour level of the standard twice in 2001. The exceedances occurred on Thursday, February 15, 2001 (68.4 μg/m3) and Saturday, February 17, 2001 (68.0 μg/m3). The PM2.5 site in Grand Junction is the only site with three complete calendar years of data to compare to the standards, and it is well below both the 24-hour and the annual PM2.5 standards.

PM10 data has been collected in Colorado since 1985, with modification in 1997 to conform to the requirements of the new standard. Although the state has had at least one monitor exceed the level of the 24-hour PM10 standard (150 μg/m3) every year since 1988, the trend in the statewide concentrations have decreased. These data, however, exclude regional natural phenomenon. One such event was the large wind and dust storm that occurred on March 31, 1999 when monitors from Steamboat Springs to Telluride reported high PM10 concentrations. Similar exceptional events have been documented in Lamar and Alamosa. These events are not included, although they bear a health risk, because they are natural and are not controllable or predictable.

Carbon Monoxide[10]

Carbon monoxide concentrations have dropped dramatically from the early 1970s. This change can be seen in both the concentrations measured and the number of monitors in the state that exceeded the level of the 8-hour standard of 9.5 ppm. In 1975, 9 of the 11 state-operated monitors exceeded the 8-hour standard. In 1980, 13 of the 17 state-operated monitors exceeded the 8-hour standard. Since 1995, Colorado has recorded only one exceedance of the 8-hour standard at any of the 13 monitors.

Throughout the 1980s state-operated carbon monoxide monitors exceeded the 8-hour standard of 9.5 ppm. In 2002, the average 8-hour concentration was 4.1 ppm. This is about a 67 percent drop in 20 years of monitoring.

The trend in the 1-hour average carbon monoxide concentrations statewide has fallen even more dramatically than the 8-hour concentrations. The maximum concentration ever recorded at any of the state-operated monitors was a 79.0 ppm recorded at a Denver monitor in 1968. In 2002, the maximum 1-hour concentration was recorded at a Colorado Springs monitor and was 10.4 ppm. In comparison, in 1966, there were 367 exceedance periods of the 8-hour standard compared to none in 1996, 1997, 1998, 2000, 2001 and 2002. The 1-hour annual maximum concentrations have declined from more than twice the standard in the late 1960s to less than one half of the standard in 2002.

Demographic Trends and Health Disparities

Race/Ethnicity

People with asthma are more sensitive to changes in air quality. In 2002, the Centers for Disease Control and Prevention (CDC) noted that nearly twice as many Coloradans, or 7.7 percent, reported currently having asthma compared to 4.7 percent nationally.[13] Numerous studies have shown asthma to be more prevalent among racial/ethnic minorities and individuals living in poverty. Healthy People 2010 reports that blacks and Hispanics are two to six times more likely to die from asthma than non-Hispanic whites.[14] In 2000-2001, blacks in Colorado were more likely to have asthma than any other racial/ethnic group. The rate was 21 percent among blacks, compared to 12 percent among non-Hispanic whites, 10 percent among Hispanics and 12 percent among other racial/ethnic groups.[15]

Age

According to an air quality planner and environmental health scientist with the Colorado Department of Public Health and Environment, the elderly and young children are two groups typically affected by poor air quality. The elderly may be more sensitive because lung function may be compromised. Young children, on the other hand, may not have fully developed lungs.

Geography

Denver Metropolitan Area Air[3]

For several years the Denver metropolitan area had not violated any of the Environmental Protection Agency's standards for the criteria pollutants. In the summer of 2003, ground-level ozone readings exceeded the

U.S. Environmental Protection Agency's new 8-hour ozone standard. In anticipation of violations, and to reduce ozone levels, the Denver metropolitan area entered into an Ozone Early Action Compact with the U.S. Environmental Protection Agency in December 2002. Colorado adopted tough new control measures for volatile organic compounds from oil and gas flash emissions. Even before these controls were to become fully implemented in 2005, there were no exceedances of the 8-hour standard during the 2004 summer ozone season.

No exceedances of the coarse particle (PM10) standard have occurred since 1993. In the Denver area most PM10 is caused by dust from roads. Increased street sweeping and the use of alternative de-icers as a substitute for road sanding has reduced particulate concentrations. PM10 readings were elevated along the Front Range during the summer of 2002 by wildfires but did not result in a violation of the standards. No exceedances of the federal health-based fine particle (PM2.5) standard have occurred since monitoring began. The vast majority of these particles are generated from motor vehicle exhaust, power plants and wood burning. Fine particles also degrade visibility and largely are responsible for the "Brown Cloud."

Rural Air Quality[16]

No rural areas violated federal air quality standards during 2002-03. Smoke from wildfires impacted visibility on the Western Slope during June and July 2002, but this did not result in violations of health standards. The last violation of federal air quality standards in a rural area occurred in October 2003 when elevated concentrations of PM10 resulting from wildfire smoke and blowing dust affected western Colorado.

West Nile Virus

Indicator: Environmental exposure to disease, specifically mosquito-borne viruses[iv]

Objective: Decrease the rate of infection by mosquito-borne viruses like West Nile virus.

Healthy People 2010 Target Objective: No target objective has been set.

Baseline: Since no target objective was set, baseline estimates were not provided. However, as of May 2004, West Nile virus had been documented in 47 states and the District of Columbia.[17]

Definition: West Nile virus emerged in recent years in temperate regions of Europe and North America, representing a threat to human, equine and avian health. The virus is carried by birds and is spread by mosquitoes. The most serious manifestation of infection is fatal encephalitis, an inflammation of the brain. However, most cases do not result in illness or present symptoms.

Local Public Health Context in Colorado

Only certain species of mosquitoes carry the West Nile virus and very few mosquitoes actually are infected. In Colorado, these viruses are transmitted to people by a species called Culex tarsalis, a medium-sized mosquito that feeds in the few hours around dawn and dusk. During the day, they rest in shady, secluded areas, such as under porches, roof overhangs, tall grass, shrubs and storm sewers. They breed in almost any source of standing water, including irrigated fields, old tires, hoof prints, flowerpots, tree holes or any puddle of water that lasts for more than a few days.

[iv]While related to many objectives specified by Healthy People 2010, this indicator was not prioritized as a leading health indicator.

West Nile virus is prevalent from May to September when mosquitoes are most abundant, but the risk to humans occurs primarily from August through early September. Most people who are infected with mosquito-borne viruses do not become ill and have no symptoms. For persons who do become ill, the time between the mosquito bite and the onset of symptoms, known as the incubation period, ranges from 5-15 days. Two clinically different types of disease occur in humans: (1) viral fever syndrome, and (2) encephalitis, an inflammation of the brain. Symptoms of the viral fever syndrome include fever, headache and malaise. These symptoms persist for about 2-7 days. In rare cases, the virus can cause a more serious brain infection such as aseptic meningitis or encephalitis. These infections begin with a sudden onset of high fever and a headache, and then may progress to stiff neck, disorientation, tremors and coma. Severe infections can result in permanent brain damage or death. There is no specific treatment for infection with these viruses except supportive care.

Data Trends

Local media first drew attention to this public health concern in 2003. That year there were 2,947 reported cases of West Nile virus and 63 confirmed deaths.[18] As of early October 2004, there were 279 cases of West Nile virus in Colorado and the virus had resulted in three confirmed deaths.[19]

Demographic Trends and Health Disparities

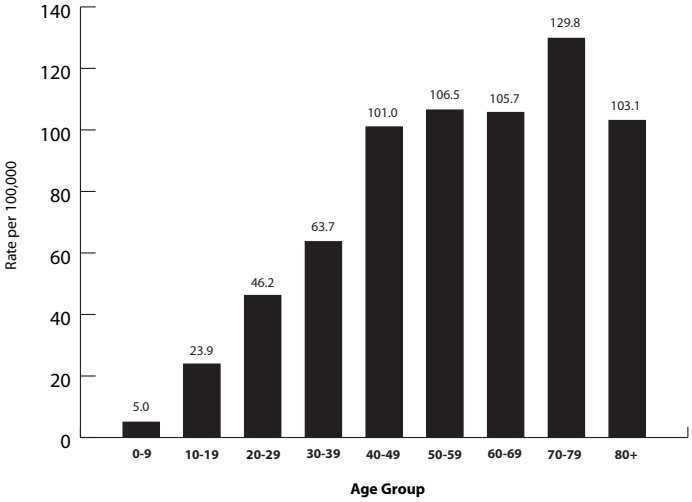
Race/Ethnicity

All residents of areas where West Nile virus activity has been confirmed are potentially at risk. Data relating to the race or ethnicity of individuals infected with the virus are not available.

Gender

In 2003, West Nile virus affected men and women equally.[18]

Figure 1: Rates of West Nile Virus Infections in Colorado By Age per 100,000 Population in 2003



Source: Colorado Department of Public Health and Environment, 2003

Age

It is estimated that 80 percent of those infected do not have symptoms. However, people over age 50 tend to experience the most severe symptoms and are also more likely to die as a result of infection.[20] 2003 data indicated that the number of reported cases of West Nile virus increased with age. However, it is difficult to determine if this accurately reflects the true rates of infection across age groups or, rather, reflects those who are more likely to experience severe symptoms and, therefore, seek medical attention.

Geography

In 2003, the areas most affected by West Nile virus were located along the Front Range in the cities of Fort Collins and Loveland, as well as unincorporated Larimer County. The majority of cases in Colorado in 2003 occurred in Larimer County with 546 cases and nine deaths; Boulder County with 421 cases and seven deaths; and Weld County with 402 cases and six deaths. The City and County of Denver and Larimer County both reported nine deaths from West Nile Virus in 2003.[18] In 2004, however, Mesa County appeared to be hardest hit; there were 125 confirmed cases and three deaths (as of October 19, 2004).[19]

Major Statewide Initiatives

Outdoor Air Quality

Air Quality Control Division Seeks to Address Identified Air Quality Problems Through Collaborative, Proactive Efforts

Over the past few years, the Air Pollution Control Division has sought to address air quality issues in collaboration with communities. Strategies have emphasized voluntary solutions, rather than regulatory ones. The following are some examples of such efforts:

CRESTED BUTTE – To reduce the levels of particulate matter that were measured in excess of federal standards in the community, a voluntary memorandum of agreement was signed by the town and the Division. This agreement continues to be implemented and particulate matter levels have declined over the years.

CRIPPLE CREEK – Following the example of Crested Butte, a memorandum of agreement was negotiated with Cripple Creek to reduce particulate matter. Division staff also recently began a study of cross-media issues including air quality, water quality, waste management and other growth-related concerns across Teller County.

GARFIELD COUNTY – Garfield County is one of the highest natural gas producing counties in the state. Citizens in the county have expressed concerns about natural gas development to agencies such as the Colorado Oil and Gas Conservation Commission. Recently, a citizens group, the Grand Valley Citizens Alliance, conducted air sampling for air toxins around one of the wells in the county. A more comprehensive study also was conducted in collaboration with county officials, the commission, Williams Production Gas Company and the U.S. Environmental Protection Agency (EPA). Toxicologists from the Colorado Department of Public Health and Environment and the EPA concluded that exposure to levels identified during the study did not pose significant health risks to area residents. This collaborative process is continuing and will focus on ways to further reduce health risks from gas drilling.

PUEBLO – When the Air Pollution Control Division issued a permit for a cement plant south of Pueblo, significant citizen concern was expressed. This prompted the Division and the Pueblo City-County Health Department to seek ways to more effectively work with the community to better understand air quality issues in Pueblo. A community advisory process was established to provide a forum for identifying and addressing air quality issues in the Pueblo area. After one year, the group developed a comprehensive program to upgrade the local health department's air quality program. Simultaneously, the Division, EPA Region 8 and Rocky Mountain Steel came to a settlement on compliance issues. Part of that settlement included more than $1 million in Supplemental Environmental Project monies for the community.

The Pollution Prevention Advisory Board [21]

The Pollution Prevention Advisory Board was created by the Governor's Office in 1992 to provide overall policy guidance, coordination and advice to the Colorado Department of Public Health and Environment on pollution prevention activities. One role of this board is to administer the Colorado Pollution Prevention Grant program, which awards over $100,000 in pollution prevention project funding each year. Funded programs address many types of prevention activities including public education about air quality, alternative transportation and conservation of gasoline, among other topics.

West Nile Virus

Colorado's plan for preventing the spread and contraction of West Nile virus includes a public awareness campaign and targeted interventions where mosquitoes breed.

Fight the Bite!

Fight the Bite! is a prevention and education campaign of Colorado's state and local health departments. It educates the public on effective use of insect repellent and ways to eliminate mosquito-spawning areas. It provides information on how the infection spreads from mosquitoes to birds and horses and gives guidance regarding the identification of symptoms in animals. Materials also describe common symptoms in humans and advises those experiencing severe symptoms, including headache, high fever, neck stiffness, disorientation, muscle weakness or convulsions, to seek immediate medical attention.[20]

Emerging Best or Promising Practices

Outdoor Air Quality

Use of Alternative Fuels

Alternative fuels serve as an important innovation for improving outdoor air quality. Ethanol Blended Fuel has been studied as a potential alternative fuel that may reduce harmful emissions. A 1999 report determined that fuel mixed with 10 percent ethanol results in lowered particulate matter emissions by approximately 30 to 43 percent, while decreasing fuel efficiency only by 1 to 2 percent.[22]

Policy and Community-Based Strategies

Ongoing monitoring and reporting are methods of enforcing environmental standards and industry regulations. Public education, conservation efforts, community mobilization and capacity building are other important strategies that may be employed to promote environmental quality.

West Nile Virus

Use of Larvicides

Public awareness campaigns are an important strategy for reducing the risk of West Nile Virus infection. Another best practice is to use larvicides to decrease the population of mosquitoes. In contrast to adulticides, larvicides decrease the mosquito population that is in the larval stage of development. This generally is considered preferable to the use of adulticides for several reasons:

1. Use of mosquito larvicides prevents the appearance of the blood feeding adults
2. Mosquito larvicides can provide up to a month of control, rather than the few hours provided by fogging with adulticides
3. Common mosquito larvicides are less toxic than adulticides and involve less human exposure
4. Mosquito larvicides usually are applied to relatively small areas, unlike adulticides.[23, v]

[v] Adulticiding is the application of insecticides to control mosquito adults. It can serve as an important part of an effective mosquito management program if it is based on mosquito surveillance information. Mosquito adulticiding relies on the release of insecticide spray in as many very fine droplets as possible, in order to allow the droplets to stay in the air longer and increase the chances that droplets will come into contact with a mosquito.[23]

Table 1: State and Local Strategies to Reduce Air Pollutants

Outdoor Air Pollutant	State and Local Strategies
Ozone (O_3)	■ Basic and enhanced automobile inspection and maintenance programs ■ Gasoline transfer controls ■ Substitution of non-reactive hydrocarbons ■ Solvent control and pollution prevention programs ■ Summertime ozone advisory programs
Particulate Matter	■ Diesel emissions control program ■ Street sanding and street sweeping improvements ■ Transportation planning ■ Basic and enhanced automobile inspection and maintenance programs ■ Travel reduction programs ■ Woodburning controls ■ Stationary source controls and pollution prevention programs ■ High pollution advisory programs
Carbon Monoxide (CO)	■ Basic and enhanced automobile inspection and maintenance programs ■ Oxygenated gasoline program ■ Transportation planning ■ Travel reduction programs ■ Residential burning controls ■ Stationary source controls and pollution prevention programs ■ High pollution advisory programs

Source: Colorado Air Quality Control Commission Report to the Public, 2002-2003

Tips for Protecting Yourself Against Mosquitoes[20]

- Mosquitoes lay eggs in stagnant pools of water. DRAIN standing water around the house weekly, including water that may collect in tires, cans, flowerpots, clogged rain gutters, rain barrels, toys and puddles.
- DUSK and DAWN are when mosquitoes that carry the virus are most active, so limit outdoor activities or take precautions to prevent mosquito bites.
- DEET is an effective ingredient to look for in insect repellents. Always follow label instructions carefully.
- DRESS in long sleeves and pants during dawn and dusk or in areas where mosquitoes are active.
- WEST NILE VIRUS disease is rare, but if you have symptoms including high fever, severe headache and stiff neck, contact your health care provider immediately.

Source: Colorado Department of Public Health and Environment

Local Story: Healthy Air for Northeast Denver

DENVER COUNTY – Northeast Denver is an area impacted by the convergence of multiple major thoroughfares, including Interstate-70 as well as industrial complexes. In the spring of 2004, the EPA Region 8, which serves Colorado, as well as Montana, North Dakota, South Dakota, Utah, Wyoming and 27 tribal nations, began assessing the feasibility of a pilot project, *Healthy Air for Northeast Denver*. Currently, the goals of the project are to:

1. Reduce emissions and exposure to air toxins in a relatively short time
2. Build the capacity of the community to sustain and expand reduction activities in the future
3. Continue to develop a model for action that can be replicated in other communities across the country.

As a part of the project, community groups, agencies, industry associations and others will be interviewed to learn about issues and needs related to air quailty in northeast Denver communities. Then, *Healthy Air for Northeast Denver* stakeholders will be convened from community organizations, industry and state and local governments. The group will select strategies to reduce emissions which may include diesel retrofit projects; anti-idling campaigns; pollution prevention workshops for small businesses; and indoor air education and toxic reduction efforts. The group will measure and track improvements to learn how best to implement similar projects in other areas. Strong partnerships to date include the City and County of Denver, the Colorado Department of Public Health and Environment, Cross Community Coalition, Groundwork Denver, the northeast Metro Pollution Prevention Alliance and the Colorado Department of Transportation.[24]

Resources

Outdoor Air Quality

Air Pollution Control Division, Colorado Department of Public Health and Environment
http://www.cdphe.state.co.us/ap/aphom.asp

Air Quality Control Commission
http://www.cdphe.state.co.us/op/aqcc/aqcchom.asp

Colorado Air Quality Index Reporting System (includes Ozone advisories)
http://apcd.state.co.us/psi/main.html

Colorado Air Quality Forecasts and Reports
http://www.epa.gov/cgi-bin/airnow.cgi?MapDisplay=WHEREILIVE&MapDomain=co#denver

Colorado Pollution Prevention Program
http://www.coloradop2.org/cop2p.htm

EPA Region 8 Activities and Information
http://www.epa.gov/region8/

West Nile Virus

Fight the Bite!
Statewide toll-free help line (7 am to 11 pm daily):
Phone: 877-462-2911
http://www.fightthebitecolorado.com/index.htm

Human West Nile Virus Infections in Colorado Website
Updated daily, this website presents the number and severity of confirmed West Nile Virus infections by county: http://www.cdphe.state.co.us/dc/zoonosis/wnv/HUMAN_WNV_04.HTML

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SECTION IV

Adolescents are at increased risk of acquiring sexually transmitted diseases because they may be more likely to have unprotected sexual intercourse, to have multiple partners and to select high-risk partners than other age groups. Almost four million new cases of STDs are reported annually among adolescents alone, and 50 percent of all new cases of HIV are reported for young people under the age of 25.

HEALTHY PEOPLE 2010 GOAL: *Promote responsible sexual behaviors.*

Healthy People 2010 measures responsible sexual behavior in terms of 1) abstinence during adolescence or condom use among those sexually active and 2) the rate of intended or planned pregnancy. According to Healthy People 2010, responsible sexual behavior promotes protection against sexually transmitted diseases (STDs), including HIV infection, and unintended pregnancy.[1] Adolescents are at increased risk of acquiring sexually transmitted diseases, because this age group is more likely to have unprotected sexual intercourse, to have multiple partners and to select high-risk partners than other age groups.[2] Almost four million new cases of STDs are reported annually among adolescents alone, and 50 percent of all new cases of HIV are reported for young people under the age of 25.[3] Young people also have a disproportionate share of unintended pregnancies. Thus, the promotion of responsible sexual behavior is of particular importance for adolescents. Protective behaviors include:

- Abstinence from sexual intercourse during adolescence
- Return to abstinence for long periods of time after having had intercourse in the past
- Use of condoms consistently and correctly if sexual activity is occurring.[1]

RESPONSIBLE ADOLESCENT SEXUAL BEHAVIOR

***Indicator*:** Responsible Adolescent Sexual Behavior

Objective (25-11): Increase the proportion of adolescents who abstain from sexual intercourse or use condoms if currently sexually active.

Definition: The number of students in grades 9 through 12 who report never having had sexual intercourse; or who have had sexual intercourse, but not in the past three months; or who have had sexual intercourse in the past three months but used a condom at last sexual intercourse.

Healthy People 2010 Target: 95 percent of adolescents will report abstaining from sexual intercourse or using condoms if currently sexually active.

Colorado Interim Target:[i] 63.5 percent adolescents in grades 9 through 12 will report never having sexual intercourse.

Baseline: (1995 Youth Risk Behavior Survey)[ii]

- **Colorado**: 53 percent of adolescents in grades 9 through 12 reported never having sexual intercourse[iii]
- **National**: 46.9 percent

Local Public Health Context in Colorado

In general, adolescents in Colorado tend to report higher rates of abstinence when compared to their peers nationally. Sexually active teens in Colorado also tend to report higher rates of condom use. However, YRBS data from 1995 and 2001 indicates that Colorado Hispanic adolescents are less likely to report abstinence than their Hispanic peers nationally or their non-Hispanic, white peers in the state. Also, ninth graders in Colorado also are less likely to report abstinence than their peers nationally.[4, 5]

[i]The Colorado interim target was developed by the Colorado Department of Public Health and Environment to serve as a milestone marking progress towards the Healthy People 2010 target objective.

[ii]A composite measure of responsible sexual behavior, including abstinence and condom use items, was not introduced to the Youth Risk Behavior Survey (YRBS) until 1999. 1999 state estimates for this composite measure are not available, however. To obtain comparable baseline for the state and the nation, this report uses the 1995 YRBS, although these data measure only abstinence behavior.
limitation.

[iii]Only information regarding abstinence was available from the 1995 Youth Risk Behavior Survey (YRBS). Condom use was not measured until 1999 and representative state data are not available.

RESPONSIBLE SEXUAL BEHAVIOR

Data Trends

Nationally, there has been an increase in adolescent abstinence as well as condom use among sexually active young people.[4] Estimates available from the 1995 and 2001 administrations of the Youth Risk Behavior Survey (YRBS) indicated that abstinence increased among youth nationally, 46.9 percent in 1995 to 54.4 percent in 2001.[4] In addition, the national average for reported condom use among sexually active adolescents increased from 53.9 percent to 57.7 percent.[4] Weighted trend data for the state are not available.[iv]

Demographic Trends and Health Disparities

General patterns from the results of the 2001 Colorado Youth Risk Behavior Survey (YRBS) are presented in this section, due to a higher response rate than other years following the 1995 administration (the last year for which data were weighted and state estimates were a vailable). Since 2001 YRBS data do not represent a state estimate, these data reflect the sexual activity of only the Colorado students that took part in the 2001 YRBS. For this reason, general patterns only are presented. Where possible, national YRBS data are provided to support observed differences between demographic groups.

Race/Ethnicity[4]

Racial/ethnic disparities exist in self-reported abstinence rates among adolescents. National YRBS data for 2001 indicate that 39.2 percent of black adolescents reported abstinence—the lowest percentage of any racial/ethnic group. In contrast, over half, or 51.6 percent, of Hispanic adolescents and 56.8 percent of non-Hispanic, white adolescents reported never having had sex. In contrast, 1995 Colorado YRBS data (the last year for which state estimates were available) indicated a disparity in abstinence rates existed between Hispanic and non-Hispanic, white adolescents, where abstinence rates were 40.6 percent and 58.2 percent respectively. (Data were only available for Hispanics and non-Hispanic whites due to the small sample size of black adolescents, yielding less reliable estimates.) This pattern held true in 2001, based on Colorado YRBS data.

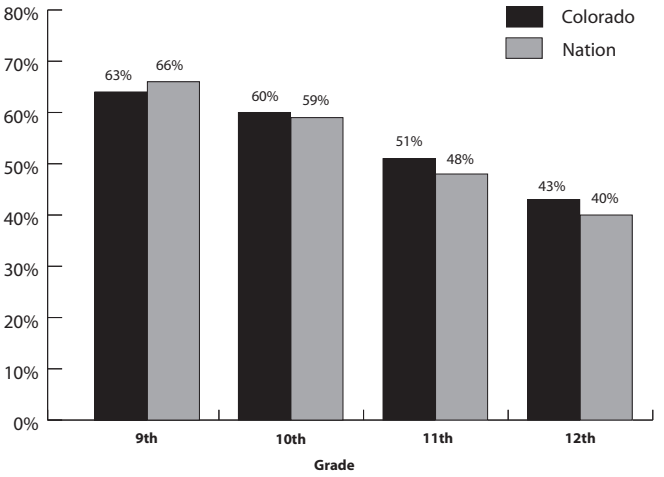
Gender[4]

Historically, females have consistently reported higher rates of abstinence. This trend may be changing. Nationally, in 2003, the percentage of white, non-Hispanic males that reported abstinence was statistically similar to that of white females. However, 1995 and 2001 Colorado YRBS data indicated that females were more likely to abstain than males.

Age[4, 5]

The percentage of high school students who report abstinence decreases as adolescents get older. Nationally, students in grades 9 and 10 were less likely to report having had sexual intercourse than those in grades 11 and 12. A similar patter was oberserved in Colorado.

Figure 1: State and National Patterns in Reported Abstinence, 9th–12th Grade, 2001



Source: Youth Risk Behavior Survey, 2001[v]

[iv]State level estimates for adolescent sexual behavior are not currently available subsequent to 1995. Therefore, trends could not be examined.

[v]Note that 2001 Colorado YRBS data were not weighted and, therefore, are not representative of the state. The data are presented here to illustrate the overall pattern only.

Geography
Information concerning abstinence and condom use among adolescents is not available by region or county for Colorado.

UNINTENDED PREGNANCY

Indicator: Unintended Pregnancy

Objective (9-1): Increase the proportion of pregnancies that are intended.

Definition: *Unintended* pregnancy rates can be calculated from the number of pregnant women who report that 1) they never wanted to get pregnant or 2) they wanted to become pregnant at a later point in time. *Intended* pregnancies, by contrast, are determined by the number of pregnant women who report that they wanted to become pregnant sooner or at the time that they conceived. Note that self-reported rates among pregnant women may not include counts of miscarriages and abortions. Therefore, the rate of unintended pregnancies is likely underestimated.[6]

Healthy People 2010 Target: Reduce to no more than 30 percent the proportion of all pregnancies that are unintended.

Baseline: (1995 National Survey of Family Growth)[7]

- **Colorado**: No baseline estimates for the state were available from this source[vi]
- **National**: 49 percent of all pregnancies were unintended

Local Public Health Context in Colorado

Unintended pregnancy is of public health importance, because it may influence a woman's behavior and maternal and child health during pregnancy.[6] Women whose pregnancies are unintended are likely to discover their pregnancies later than those with intended pregnancies. Consequently, they may not initiate prenatal care as early in their pregnancy.[6] Moreover, women who do not plan to become pregnant may be less likely to take prenatal vitamins and abstain from the consumption of alcohol, caffeine and tobacco products, which can harm the developing fetus.[6]

Unintended pregnancies cost Colorado $28 million in 1997.[8] More than half of all women who had an unintended pregnancy were not using contraception at the time of conception. In 2000, the Allan Guttmacher Institute estimated that increasing the rate of contraceptive use could reduce unintended pregnancies from 26,800 to 13,400 in Colorado.[8] Increased access to contraception may be particularly important for minority communities who report the highest rates of unintended pregnancy.

Data Trends

The percentage of unintended pregnancies in Colorado remained fairly stable approximating 40 percent from 1997 to 2002.[9] However, the actual rate of unintended pregnancy is difficult to measure, since at least some unintended pregnancies end in abortion or miscarriage.[10]

In Colorado, adolescent pregnancies, specifically among the 15 to 17 year age group, declined through the 1990s to a low of 25.6 in 2001.[10] Between 2000 and 2001, in particular, Colorado experienced a sharp decline in teen fertility rates, which dropped 14 percent. This decrease was nearly double the 8 percent decrease observed nationally.[10] According to the Colorado Health Watch report published in June 2003 by the Health Statistics Section of the Colorado Department of Public Health and Environment, "The 14 percent decrease is the sharpest drop in at least 25 years."[10]

[vi] 1997 Colorado data gathered from the Pregnancy Risk Assessment Monitoring System (PRAMS) estimated an unintended pregnancy state rate of 37.9 percent.[9] This baseline estimate, however, is not directly comparable to the national rate due to differences in the data sources.

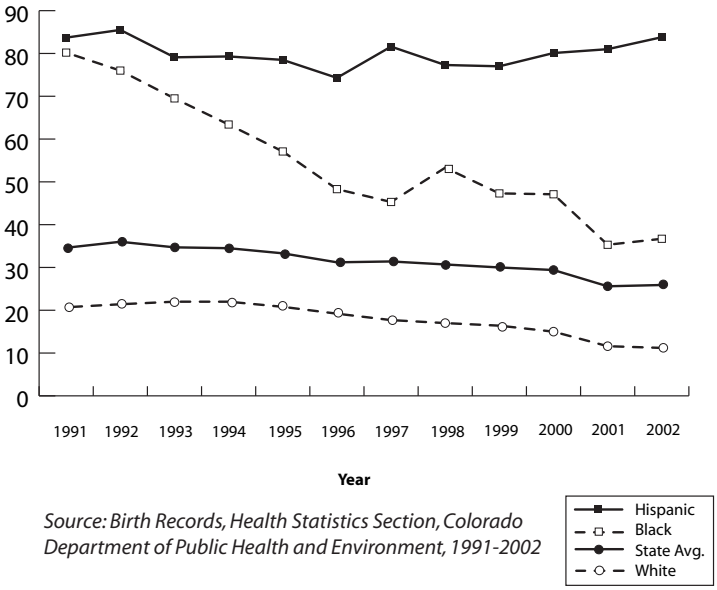
Demographic Trends and Health Disparities

Race/Ethnicity

Racial/ethnic minorities are more likely to report an unintended pregnancy than non-Hispanic, white women. In 2002, 34 percent, of non-Hispanic, white women indicated that their pregnancy was unintended.[9] In contrast, 45 percent of Hispanic women, 60 percent of black women, and 51 percent of women of other racial/ethnic groups reported unintended pregnancies.[9]

Throughout the 1990s, teen pregnancy rates declined in Colorado. The most dramatic decline was observed among black adolescents. Since 1991, the fertility rate among black adolescents 15-17 years of age decreased from 80.2 to 36.7 per 1,000 15-17 year olds in 2002.[10] There was nearly a 50 percent decrease in the fertility rate of white adolescents 15-17 as well during this same time period. However, fertility rates among Hispanic adolescents 15 to 17 year of age did not demonstrate the same rate of decline as seen among other racial/ethnic groups.[11]

Figure 2: Colorado Teen Fertility Rates per 1,000 Females Ages 15-17 by Race/Ethnicity, 1991-2002



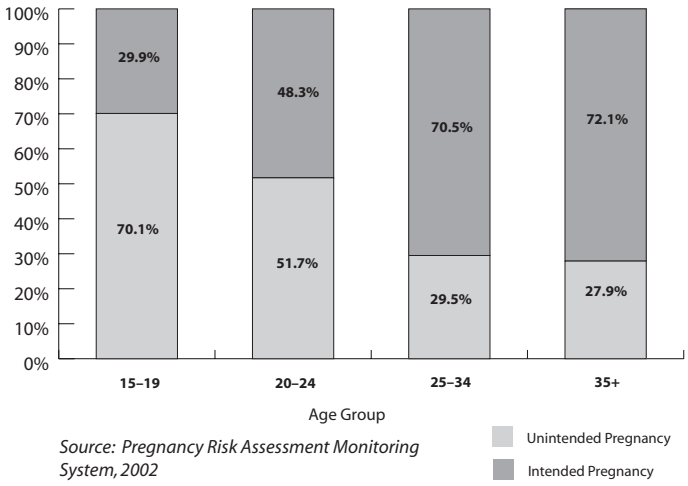
Source: Birth Records, Health Statistics Section, Colorado Department of Public Health and Environment, 1991-2002

Age

Adolescents 15 to 19 years of age in Colorado have the highest unintended pregnancy rate of any age group. In general, unintended pregnancy rates tend to decline with age.[vii]

During 2002, almost 70 percent of pregnancies among adolescents were unintended.[9] Over half, or 51.7 percent, of women aged 20-24 who experienced a live birth in Colorado reported that the pregnancy was unintended—the second highest percentage of any age group.[9] These data suggest that adolescents and young adult women may be important target populations for public health efforts designed to promote planned pregnancy.

Figure 3: Percentage of Colorado Females Reporting Intended and Unintended Pregnancy by Age in 2002



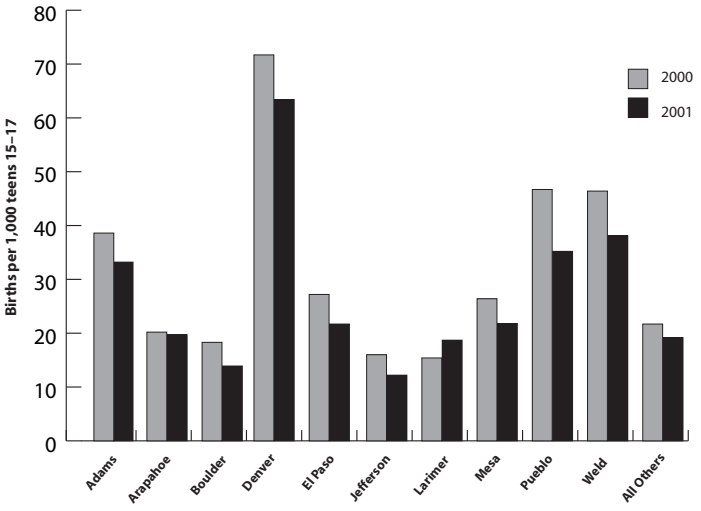
Source: Pregnancy Risk Assessment Monitoring System, 2002

Geography[10]

Teen pregnancy rates vary by geography. In 2000 and 2001, Denver County had the highest rate of teen fertility than any other county. When compared to other counties, Adams, Pueblo and Weld also had relatively high rates.

[vii]However, at the national level, women over 40 also have disproportionately high unintended pregnancy rates.[12]

Figure 4: Teen Fertility Rates by Colorado Counties with the Largest Population, 2000 and 2001



Source: Pregnancy Risk Assessment Monitoring System, 2000 and 2001

Other Disparities

Adolescent pregnancies are associated with above average high school dropout rates, poverty, divorce, low job wages, stress and substance abuse.[8]

Major State Initiatives

The Colorado Abstinence Education Program

Abstinence education programs are a way to educate young people and create an environment within communities that supports adolescent decisions to postpone sexual activity. In 1996, Colorado received federal dollars to establish the Colorado Abstinence Education Program (CAEP). The purpose of this program is to reduce out-of-wedlock births and sexually transmitted infections among adolescents by encouraging sexual abstinence until marriage. The slogan for CAEP is, "It's O.K. to say 'No Way!'—Sex can wait."

The Abstinence Education Program, a collaborative effort between the Office of the Governor and the Colorado Department of Public Health and Environment, is a primary prevention program that uses a multi-faceted approach of:

- Supporting abstinence education programs targeting both males and females, in grades 6 through 12
- Developing and implementing strategic, statewide communication efforts designed to increase awareness and acceptance of abstinence as a healthy choice and a positive lifestyle
- Involving parents and the community in the development and implementation of programs and activities that are accessible and promote abstinence decisions.

At the state level, the Abstinence Education Program provides training and technical assistance for local abstinence education programs, a media campaign and community awareness events. Grantee activities have included the implementation of curricula in classrooms and after-school programs for youth grades 6-12, peer mentoring, special events for youth, teen support networks, statewide conferences and parent workshops. In 2003, the state program funded 14 local programs in Boulder, Denver, El Paso, Mesa, Pueblo and Weld counties. Collectively, these programs serve more than 7,000 youth between 12 and 19 years of age.

Title X Family Planning Program

In 1970, the Title X of the Public Health Service Act was established to support the provision of family planning and basic reproductive health care information and services to low-income individuals. Sixty-six sites throughout Colorado receive Title X funding to provide family planning services to over 47,000 women and men annually. Colorado family planning clinics provide a range of preventive health services, including:

- Physical exams for women and men
- Cervical, breast and testicular cancer screening
- Birth control information and supplies
- Screening for sexually transmitted infections and HIV

- Health education and counseling, including information regarding abstinence
- Pregnancy testing
- Basic infertility services
- Referrals to other health and social services.

Family planning clinics often are an entry point into the health care system for women and families who otherwise lack access to health care services. The majority of Title X clients are uninsured, do not qualify for Medicaid and rely on Title X clinics as their only source of family planning services. Eighty-eight percent of the patients served in Colorado have incomes at or below 150 percent of poverty. Patient fees are determined by the patient's income and ability to pay.

Family Planning services are designed to help:

- Prevent unintended pregnancies
- Reduce the number of abortions
- Lower sexually transmitted infection rates, including HIV
- Improve women's health.

By averting unintended pregnancies, family planning programs reduce health and welfare costs. Each public dollar spent to provide family planning services saves an average of $3 in Medicaid costs for pregnancy-related services and newborn care, according to the Alan Guttmacher Institute. Over 27,000 unintended pregnancies are prevented each year in Colorado as a direct result of state- and federally-funded family planning services.[8]

Enhancing Surveillance through the Pregnancy Risk Assessment Monitoring System

In 2001, CDC expanded the Pregnancy Risk Assessment Monitoring System to include three new projects in Montana, North Dakota and Colorado. The Colorado Project has added a multi-pronged component to its standard data collection efforts. This component includes the following:

- Local sampling in counties or regions covered by three local health departments
- An intensive effort to find African American women who recently gave birth and to over-sample this group of women
- Adding PRAMS data to the Colorado Health Information Dataset—a database of Colorado health information available on the Internet.

Emerging Best or Promising Practices

Despite different perspectives regarding comprehensive sex education versus abstinence education, according to Devaney et al. (2002), "A common thread in the ongoing policy debate is an underlying interest in learning about effective program strategies that help youth make good choices that avoid risk-taking behaviors and promote healthy future lives."[13]

Research evidence supports the implementation of multi-component, comprehensive programs and curricula to promote responsible sexual behavior among adolescents. Findings reported by Manlove et al. (2000) suggest, for example:

> *… [F]ostering a stable family environment, promoting discussions between teenagers and their parents, and keeping teenagers engaged in school, as well as discouraging early sexual activity and encouraging use of effective contraceptive methods, may help lower teenage fertility. ... In addition, future programs should consider the pregnancy prevention needs of high-risk, sexually-experienced teenagers, as well as abstinence promotion for lower-risk adolescents.*[14]

Effective comprehensive sex education approaches [15,16,17]

- Involve parents and a broad-based coalition of community members
- Involve youth in the planning and implementation of programs
- Use peer leaders to influence behavior
- Increase access to family planning services
- Provide opportunities for youth to practice communication, negotiation and refusal skills
- Include male-specific initiatives; such efforts have been found to be especially effective among Hispanic adolescents
- Identify women at risk for unintended pregnancy
- Apply sound behavior change theories, which emphasize the importance of:
  - Learning and personalizing relevant information
  - Recognizing social pressure
  - Learning how to identify and anticipate risky situations
  - Establishing norms for positive behaviors
  - Learning and practicing skills to act on the information and cope with social pressures.
- Are culturally appropriate; Hispanic television and magazines are effective mechanisms to communicate health messages to Hispanics.[18]

Successful abstinence approaches[13,16]

- Start early; messages about abstinence are more likely to be effective when youth are not yet sexually active
- Talk about responsibility, self-control, respect for others
- Include youth development components
- Address sexual abuse. This is important given the connection between early sexual abuse and teen sexual activity
- Promote skill- and knowledge-building to help youth learn skills to deal effectively with social influences and peer pressure
- Incorporate abstinence programs in a wider community program
- Include more than one message of abstinence (such as abstaining from sex, drugs, and alcohol)
- Involve youth in the planning and implementation of programs.

Local Story: Boulder County Public Health's Unintended Pregnancy Prevention Initiative

BOULDER COUNTY – The Unintended Pregnancy Prevention (UPP) Program of the Boulder County Public Health Department promotes individual, family, and community well-being through the prevention of unintended pregnancies in Boulder County. In 2003, the Unintended Pregnancy Prevention Program received a National Association of Counties Achievement Award for demonstrating the following program qualities:

1. Offers a new range of services to meet identified needs in the community
2. Takes a preventive approach that enhances the well being of residents in a cost-effective manner
3. Solicits and incorporates input from at-risk populations
4. Uses innovative approaches when marketing to the community
5. Relies on volunteers for some administrative tasks and data collection
6. Mobilizes community partners to develop and implement program components
7. Adapts to community needs and identifies common ground on controversial issues related to pregnancy prevention.

This innovative program incorporates a broad spectrum of strategies to address unintended pregnancy including:

Assessment and monitoring

Analysis of data on births, low-birth weight, prenatal care and abortion in Boulder County is conducted on an ongoing basis and shared with other local agencies. Providing data to other agencies in Boulder County allows these entities to identify community needs, secure funding and monitor trends.

Community awareness

Through public speaking and generating media coverage via press releases, the program coordinator raises awareness about unintended pregnancy, its consequences and prevention strategies. Audiences include faith leaders and local businesses.

Provider training and technical assistance

Training and technical assistance are provided on an ongoing basis to health and human service providers in Boulder County. Since the program's inception, continuing medical education trainings on methods of contraception have been provided at each of three hospitals in the county. The program coordinator also responds to requests for technical assistance on such topics as marketing clinic services and increasing access to contraception.

Continued

Local Story: Boulder County, con't.

Social marketing

The program coordinator has used social marketing principles to create a poster campaign to raise awareness about contraception. The campaign was piloted on the University of Colorado at Boulder campus in 2000. Pre-testing was conducted with members of priority populations and stakeholders to determine which images and text would be best received. Posters and take-away cards were placed in bars, coffee shops, schools and human service agencies. Local businesses have played an integral role in implementing an effective campaign.

Education for men in the county jail

In collaboration with Planned Parenthood, education is provided to male inmates through a curriculum designed to increase knowledge of effective contraceptive use. The curriculum also emphasizes partner communication and the importance of its role in pregnancy and sexually transmitted disease prevention.

Skill-building for parents

The program coordinator, in collaboration with Boulder County Health Department's GENESIS Program for pregnant and parenting teens, created a presentation that they offered to parents in Boulder County. The presentation uses humor and stories to address techniques for communicating with kids about sex. Parents are given the opportunity to explore their values and learn concrete strategies for sharing them with their children.

Resources

Colorado Association of School-Based Health Care
http://www.casbhc.org/

Colorado Abstinence Education Program
Colorado Department of Public Health and Environment
Phone: 303-692-2376
http://www.cdphe.state.co.us/ps/abstinence/abstinencehom.asp

Colorado Education Program Website
"It's okay to say 'No Way!' Sex can wait."
http://www.saynoway.net/

Unintended Pregnancy Prevention Best Practices
http://www.cdphe.state.co.us/ps/bestpractices/topicsubpages/unintendedpreg.html

Teen Pregnancy Prevention Best Practices
http://www.cdphe.state.co.us/ps/bestpractices/topicsubpages/teenpreg.html

What Parents Need to Know and Do to Help Prevent Teen Pregnancy
http://www.teenpregnancy.org/resources/reading/pdf/ParentPowerEnglish.pdf

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Section V

A 2004 survey conducted by the Office of Local Liaison, Colorado Department of Public Health and Environment indicated that the most frequently cited community health problem throughout the state was access to care. This section explores three indicators of access to health care and their implications for the health and well being of Coloradans.

HEALTHY PEOPLE 2010 GOAL: *Improve access to comprehensive, high-quality health care services.*

A 2004 survey conducted by the Office of Local Liaison, Colorado Department of Public Health and Environment indicated that the most frequently cited community health problem throughout the state was access to care. This section explores three indicators of access to health care and their implications for the health and well being of Coloradans.

According to Healthy People 2010, "evidence suggests that lack of insurance over an extended period significantly increases the risk of premature death."[1] Uninsured and underinsured persons are less likely to receive health screenings and to have conditions detected and diagnosed at an early stage. Thus, health insurance status is an important indicator of health care access.

When people lack adequate access to health insurance coverage, they often seek care in understaffed, over-utilized and under-funded public clinics, community health centers, school-based health centers and emergency rooms.[2,3] Thus, being uninsured or underinsured affects whether one has a consistent source of primary care. The geographic distribution of health care providers and facilities also impacts whether one utilizes primary care. Yet, having an ongoing source of primary care enhances health outcomes by facilitating the receipt of recommended preventive screenings, referral and follow-up.

Access to prenatal care is another related health care issue. Prenatal care is recommended for all pregnant women because of its potential to improve the health of mothers and infants. Access to prenatal care can be affected by insurance coverage, geographical distance from health care providers and unintended pregnancy. Lack of access to early prenatal care has been associated with increased risk for low birth weight, premature births, neonatal mortality, infant mortality and maternal mortality.[4]

HEALTH INSURANCE COVERAGE

Indicator: Health Insurance Coverage

Objective (1-1): Increase the proportion of persons under 65 years of age with health insurance.

Definition: Health insurance coverage includes any type of health insurance or health care plan, including those obtained through employment, direct purchase and government programs such as Medicaid.[5]

Healthy People 2010 Target: 100 percent of persons under 65 years of age will have health care coverage.

Baseline: (1998 U.S. Census Bureau)

- **Colorado**: 83.6 percent of persons under 65 years of age reported having had health care coverage
- **National**: 81.6 percent

Local Public Health Context in Colorado[6]

Until recently, Colorado citizens had a higher rate of health insurance than the national average. The U.S. Census Bureau, however, has indicated that Colorado is among 18 states that has experienced a significant decrease in insurance coverage. Data suggest that it is Hispanic, young adults, children living in poverty and recent immigrants that have the highest rates of being uninsured and, therefore, who lack continuous access to health care.

Data Trends

Lack of Health Care Coverage[6]

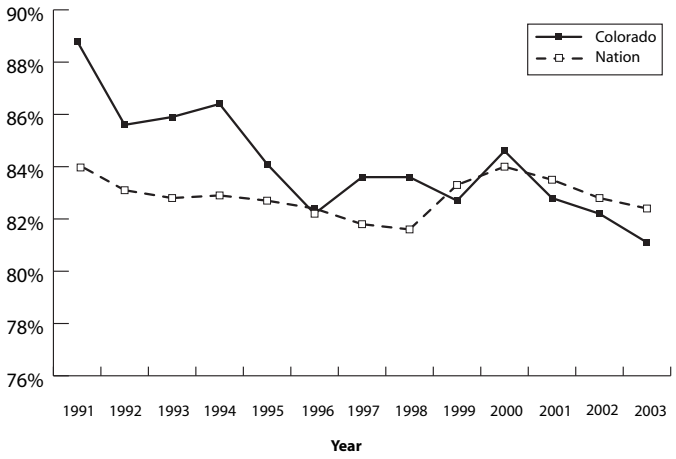
Insurance rates have been collected for the state and nation since 1991. In Colorado, according to the U.S. Census Bureau, the percentage of insured has decreased

from 88.8 percent in 1991 to 81.1 percent in 2003. Over a 10-year period from 1991 to 2000, the percentage of insured in Colorado was consistently at or above the national average. In 2001, however, the percentage of insured Coloradans was slightly lower, at 82.8 percent, than the national average of 83.5 percent.

Rates of Underinsurance[7]

Access to health care can be a problem even among those who have health insurance. Many U.S. Americans are underinsured, that is, they have health insurance but coverage is inadequate for covering health care needs. Data collected on the underinsured indicates that this population may be less likely to seek regular health care due to the out-of-pocket expenses that might be incurred.

Figure 1: Percentage of Insured Persons in Colorado and the Nation: 1991-2003



Source: U.S. Census Bureau, 1991-2003

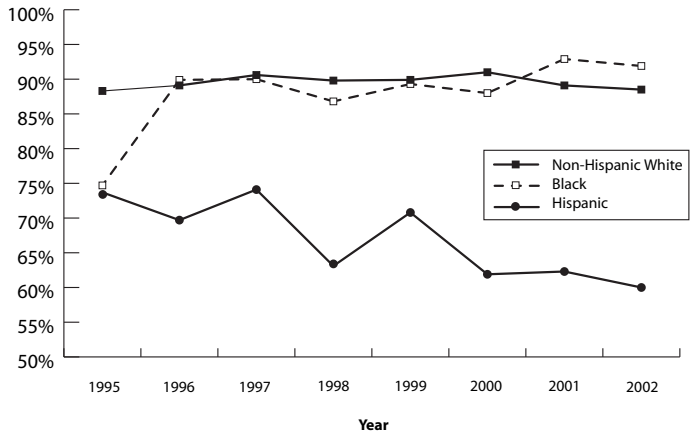
The Behavior Risk Factor Surveillance System (BRFSS) is used to assess the degree to which the adult population in Colorado is underinsured. Underinsurance is measured through items that assess whether the insured individual is not seeking needed medical care from a doctor due to concerns about the cost of these services. An item in the BRFSS questionnaire from 1995 to 2000 asked, "Was there a time during the last 12 months when you needed to see a doctor, but could not because of cost?" In Colorado, answers to this question varied over the years with the lowest percentage being 7.9 percent in 1997 and the highest at 10.9 percent in 1996.

Demographic Trends and Health Disparities

Race/Ethnicity

Racial and ethnic disparities in insurance status exist in both Colorado and the nation. Data available from the Behavior Risk Factor Surveillance System (BRFSS) for the years 1995 through 2002 indicate that Hispanics have consistently reported lower rates of health insurance when compared to other racial/ethnic groups in the state. In 2002, the most recent year for which data are available, 40 percent of Hispanic adults in Colorado reported that they did not have any kind of health insurance coverage.[7] Data indicate that this trend

Figure 2: Percentage of Insured Coloradans by Race/Ethnicity: 1995-2002



Source: Behavioral Risk Factor Surveillance System, 1995-2002

has worsened since 1995 when about 26 percent of Hispanic respondents reported being uninsured.[7] Reflecting the pattern observed among adults, Hispanic children and youth in Colorado also are more likely than their counterparts to be uninsured. Specifically, 29.4 percent of the state's Hispanic children do not have some form of health insurance coverage.[3]

In 2002, the BRFSS indicated that more Coloradans who self-identified as black and of multi-racial backgrounds were insured as compared to the national averages for these populations. In Colorado, the rates of insurance coverage among these racial/ethnic groups was comparable to non-Hispanic whites.[7] It should be noted, however, that there was a small number of black individuals sampled in Colorado and therefore, estimates are statistically unreliable as a statewide estimate. Based on pooled surveys in March 2001 and 2002, the Urban Institute and Kaiser Commission on Medicaid and the Uninsured estimated that 22 percent of blacks in Colorado (compared to 20 percent nationally) do not have health insurance.[8]

Gender[7]

In Colorado and the nation, a slightly higher percenage of females have had health insurance coverage than males. In 2002, 85.0 percent of Colorado females had health care insurance compared to 81.8 percent of Colorado males.

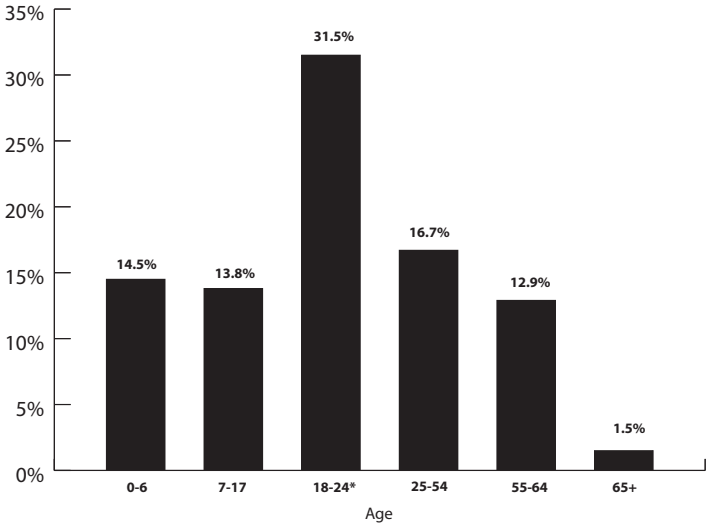
Age

According to the Behavior Risk Factor Surveillance System (BRFSS), young adults in Colorado, ages 18 to 24, are least likely to be insured.[7] This pattern is persistent at both the state and national levels and may reflect issues particular to this population, for example: being dropped from a parent or guardian's insurance policy once turning 18 and/or working in lower wage jobs which are less likely to provide health insurance coverage. Uninsurance rates in Colorado increase from 13.8 percent at ages 7-17 to 20.6 percent for young adults, aged 18.[9] This represents a significant health disparity for individuals entering adulthood.

For more information about adolescent health and access issues, please refer to the Colorado Department of Public Health and Environment's *Adolescent Health in Colorado* report, 2003, available from http://www.cdphe.state.co.us/ps/adolschool/adolehealthreport.asp.

Another insurance coverage disparity concerns Colorado children from low-income families. These children are disproportionately represented among those lacking health insurance coverage. Specifically, while 12 percent of all Colorado youth ages 0 to 17 are uninsured, 23 percent of Colorado children living in families with incomes below 200 percent of the federal poverty level are uninsured.[10]

Figure 3: Percentage of Uninsured Coloradans by Age* in 1997-1999



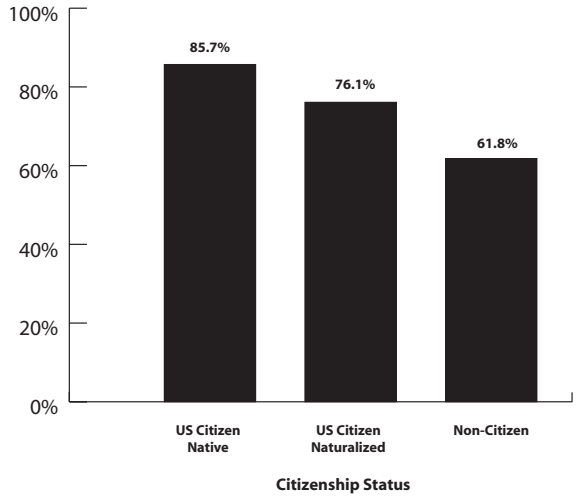
Source: The Urban Institute's tabulations of a combined three-year average from March 1997, 1998 and 1999. Current Population Survey (CPS) conducted by the U.S. Census Bureau.[9]

**The estimates for 18 year olds, who are sometimes grouped with children rather than young adults, are: 42,782 insured and 11,119 uninsured, for a total of 20.6% uninsured.*

Since 2000, important improvements have been made in the percentage of low-income children covered by the Children's Basic Health Plan (CBHP), which is referred to as Child Health Plan Plus (CHP+). The number of children enrolled and retained in the program has increased each year since 2001 due to community partnerships that improved outreach and information dissemination as well as structural changes that made the program more cost-effective to administer and participation more affordable for families.[11]

Still, even those children living in families with health insurance may not be guaranteed access to quality health care due to the low number of primary care physicians that accept Medicaid patients in the state. According to the Child Health Director of the Colorado Department of Public Health and Environment, 25 percent of primary care physicians in Colorado take both Medicaid and CHP+ patients, while 37 percent accept Medicaid only. Physicians in Colorado, as well as in other states, tend to cite low reimbursement rates, excessive paperwork, and managed care contracting with capitated payments as reasons for not accepting Medicaid.

Figure 4: Percentage of Insured Coloradans by Citizenship Status 1997-99



Source: Urban Institute tabulations of a combined three-year annual average for the period of 1997 to 1999. Current Population Survey (CPS) conducted by the U.S. Census Bureau.[9]

Geography

Little county level data is available about the health care coverage of Colorado children and adolescents. However, U.S. Census Bureau data indicate that children in poor, inner-city areas are least likely among children to have health insurance.[12]

Other Disparities[13]

The 2000 Census estimates that 8.6 percent of the population in Colorado, or 369,903 individuals, are foreign-born. Over two-thirds, or 68 percent, of these individuals are not citizens. A three-year average derived from 1997-99 administrations of the Current Population Survey suggested that non-citizens in Colorado are nearly three times more likely to be uninsured. Slightly over 38 percent of non-citizens did not have health insurance, compared to 14.3 percent of U.S. citizens. It was estimated that non-citizens accounted for 12.5 percent of Colorado's uninsured population.

The lack of insurance extends to the children of foreign-born parents. In Colorado, one in four children born in the United States of foreign-born parents do not have health insurance.

Specific Source of Ongoing Primary Care

Indicator: Specific Source of Ongoing Primary Care

Objective (1-4a): Increase the proportion of persons who have a specific source of ongoing care.

Definition: Aspecific source of ongoing primary care is defined by Healthy People 2010 as a private doctor's office, community health center, school-based health center or other health care facility where an individual usually goes to seek health care or health-related advice.

Healthy People 2010 Target: 96 percent of persons of all ages will have a specific source of ongoing primary care.

Baseline: (1998 Behavioral Risk Factor Surveillance System (BRFSS))[i]

- **Colorado**: 68 percent of persons over the age of 18 had a specific source of ongoing primary care
- **National**: 87 percent

Local Public Health Context in Colorado

Having a specific source of ongoing primary care is important to disease prevention and control. It also represents an important way of reducing emergency room use and associated healthcare costs. Uninsured individuals and those lacking access to an ongoing source of primary care often resort to emergency room use when conditions that might have otherwise been prevented or managed become acute.

Table 1: Sources of Medical Care in Colorado by Selected Characteristics in 1999

Demographic Population	Has a Specific Source of Care	No Specific Source/ Uses Emergency Department
All Children, Ages 0-17	94.1 percent	5.9 percent
Family Income		
At or above 200 percent FPL[ii]	96.4 percent	3.6 percent
Below 200 percent FPL	89.6 percent	10.4 percent
Health Insurance Status		
Private	96.2 percent	3.8 percent
Public	95.5 percent	4.5 percent
None	77.8 percent	22.2 percent
Race/ Ethnicity		
Black	90.0 percent	10.0 percent
Hispanic	88.7 percent	11.3 percent
Non-Hispanic white	96.5 percent	3.5 percent

Source: The Urban Institute[16]

[i]The Behavioral Risk Factor Surveillance Survey is used here to establish a baseline estimate since there is no other source of comparable national and state data on this indicator. However, this data source only measures whether there is a specific source of primary care for adults 18 and older. Data are not available for the Colorado population under the age of 18.

[ii]Federal Poverty Level.

ACCESS TO HEALTH CARE

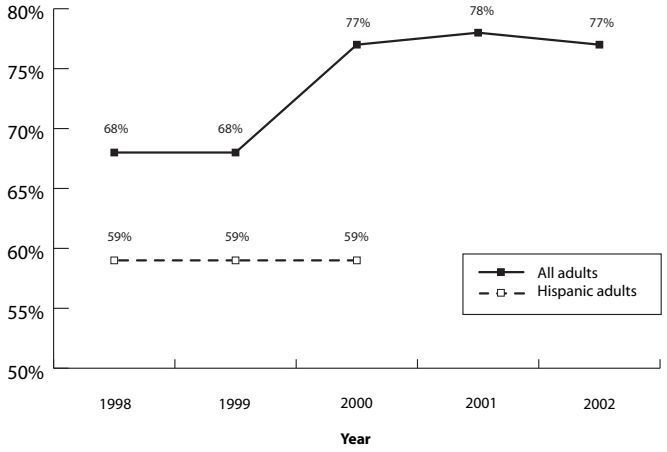
According to a survey of emergency physicians released in March 2003, patients who use emergency rooms as their primary source of care have typically delayed needed treatment and medical attention, live with more serious medical conditions and are more likely to die prematurely than those with health insurance.[15]

Coloradans face several challenges related to accessing an ongoing source of primary care. According to the Primary Care Office of the Colorado Department of Public Health and Environment, provider shortages in rural communities pose a major barrier. In addition, Coloradans seeking health care at community health centers throughout the state often find that these safety net providers are at capacity and place new patients on waiting lists. The strain on the safety net in Colorado was documented in a study published in April 2004 by The Robert Graham Center for Policy Studies in Family Medicine and Primary Care, a division of The American Academy of Family Physicians. The authors found that one-third of primary medical services in Colorado were performed by someone other than a primary care physician.[14]

Data Trends

Longitudinal data on the percentage of persons who report having an ongoing source of primary care is available from the Behavioral Risk Factor Surveillance System (BRFSS), but only for those older than 18 years of age. Between 1998 and 2002, the percentage of Colorado adults who had access to a specific source of ongoing primary care increased from 68 percent to 77 percent.[17] This trend peaked in 2001, with 78 percent of adults represented in the sample reportedly having access to an ongoing source of primary care.

Figure 5: Comparision of the Percentage of All Adults and Hispanic Adults in Colorado Who Had a Specific Source of Ongoing Primary Care: 1998-2002



Source: Behavior Risk Factor Surveillance System, 1998-2002
Note: Data on Hispanic adults was not collected after 2000

Demographic Trends and Health Disparities

Race/Ethnicity[17]

Behavioral Risk Factor Surveillance System (BRFSS) data on Hispanic adults (18 and older) are available only through 2000. In 1998, 59 percent of Colorado Hispanic adults had an ongoing source of primary care compared to 68 percent of all adults combined. The percentage of Hispanics remained unchanged between 1998 and 2000, while the percentage for all adults combined started to show improvement.

Gender[7]

In 1999, the questionnaire used to collect data for the Behavioral Risk Factor Surveillance System in Colorado included the following item, "About how long has it been since you last visited a doctor for a routine checkup?" Given that having an ongoing source of primary care facilitates receiving a routine medical checkup, estimates derived from this item may serve as a proxy indicator for the degree to which respondents might have an ongoing source of primary care. Comparing responses between

male and female survey respondents in Colorado also provides a sense of the degree to which there may be gender-specific disparities with regard to access to preventive, primary care services.

Behavior Risk Factor Surveillance System data consistently indicate that men make fewer visits to doctors for routine checkups. In Colorado, females (77.5 percent) were more likely than males (58.1 percent) to report that they had last visited a doctor for a routine checkup in the past year.

Men, in fact, were more likely than women to report:

- Never having made a routine visit to a doctor (males 2.2 percent, females 1.2 percent)
- Having visited a doctor more than five years ago (males 10.3 percent, females 3.9 percent).[17]

Factors that contribute to the more frequent utilization of primary health care services among women may include the need for reproductive services, particularly during child-bearing years. Women also are often responsible for decisions about family health care. Studies have shown that 80 percent of women choose their children's doctor, and two-thirds of women choose their families' health plan.[18]

Colorado's Health Centers, Colorado's Safety Net

Community Health Centers (CHCs) are non-profit clinics that provide primary health care services to the medically underserved. Colorado has 15 health centers operating 108 clinic sites. Community Health Centers are the health care home for:

- 44 percent of all low-income, uninsured Coloradans
- 33 percent of all Medicaid recipients
- 31 percent of all Child Health Plan Plus (CHP+) recipients

In 2003, these centers provided 1.5 million dental, medical, and mental health visits to over 372,000 patients.

- 147,200 (40 percent) of the patients were children under the age of 19
- 95 percent of patients had family incomes under 200 percent of the Federal Poverty Level
- 45 percent had no health insurance
- 30 percent were Medicaid recipients.

Community Health Centers provide high quality, cost-effective care.

- In communities with Community Health Centers, emergency room usage rates for Medicaid and uninsured patients are lower than in communities without Community Health Centers.
- Low birth weight rates for Community Health Center patients are lower than the state average.
- Community Health Centers have higher childhood immunization rates than the state's HMOs, which primarily serve insured children.

Source: Colorado Community Heatlh Network • 303-861-5165 • www.cchn.org

Age[10]

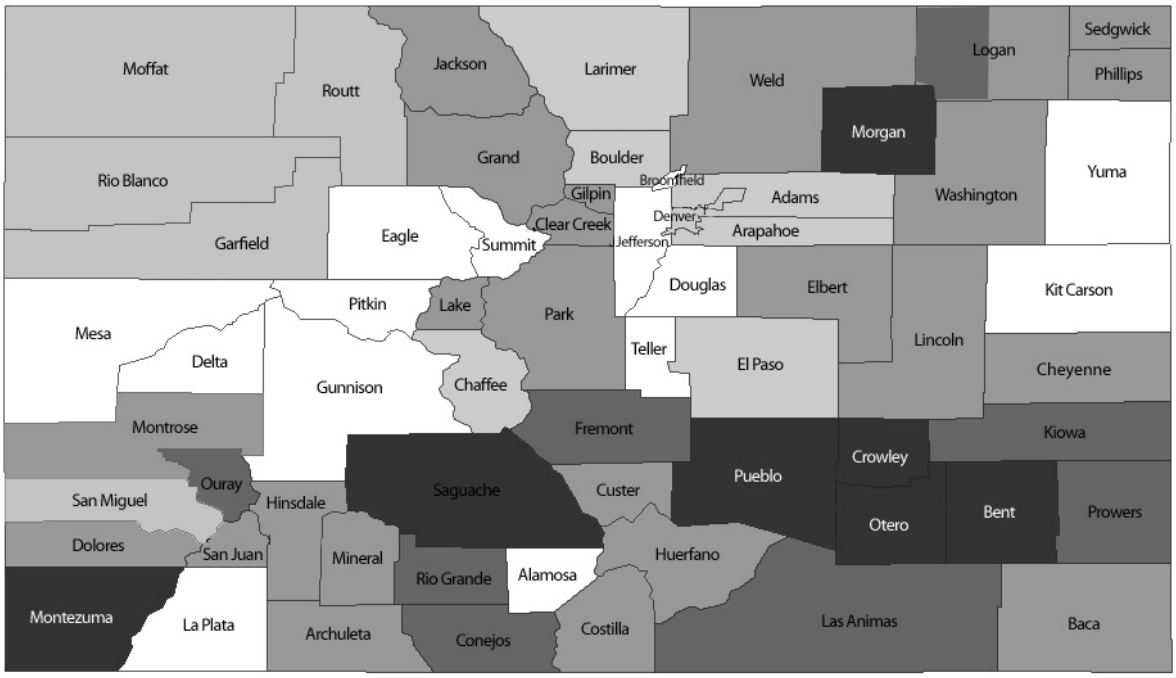
Research indicates that low-income, uninsured and Hispanic children are less likely to have an ongoing source of primary care when compared to other Hispanic and non-Hispanic white children. Approximately 22 percent of uninsured children in Colorado have no specific source of medical care or use the emergency department as their specific source of care. As previously mentioned, populations without access to an ongoing source of primary care are also most vulnerable to not receiving timely preventive services. More than half of uninsured children, and nearly 30 percent of children with public insurance, do not receive well-child visits.

Geography

Eighty-one percent of Colorado's 64 counties are considered rural. Geography plays an important role in access to health care for Coloradans. Rural Colorado faces several key challenges related to health care access, including provider shortages, fewer group plans, higher health insurance costs compared to urban areas and emergency facility shortages.

According to the Colorado Department of Public Health and Environment's Rural and Primary Care Office, almost 80 percent of Colorado counties are designated wholly or in-part as health professional shortage areas.

Figure 6: Colorado Primary Care Health Professional Shortage Area by County, 2004[iii]



Source: Colorado Department of Public Health and Environment's Rural and Primary Care Office, 2004

- Health Professional Shortage for Low-Income Population
- Health Professional Shortage for Low-Income Population and Migrant Farm Worker
- Counties Not Designated
- Health Professional Shortage Area for Entire County
- Health Professional Shortage Area for Part of the County

[iii] Note that the lack of a designation may mean only that a county has not sought this status.

ACCESS TO HEALTH CARE

The Colorado Department of Public Health and Environment's Rural and Primary Care Office reports there are 108 Federally Qualified Health Centers located primarily in the rural areas of Colorado. These "safety net" health centers aim to reach low-income and/or uninsured populations. Health care safety net providers are defined as "those that have a legal mandate or mission to offer medical care to all patients, regardless of their ability to pay, and have a substantial number of patients who are uninsured or qualify for Medicaid."[15] However, according to a study by the Urban Institute, safety net clinics are less likely to eliminate or narrow barriers to health care access than health insurance coverage.[20]

Prenatal Care in the First Trimester

Indicator: Prenatal Care in the First Trimester

Objective (16-6a): Increase the proportion of pregnant women who begin prenatal care in the first trimester of pregnancy.

Definition: The first trimester is defined as the period from conception through week 14.

Healthy People 2010 Target: 90 percent of pregnant females will begin prenatal care in the first trimester.

Baseline: (1998 National Vital Statistics):

- **Colorado**: 82.2 percent of pregnant females received prenatal care in the first trimester
- **National**: 83 percent

Local Public Health Context in Colorado[6]

Data available from the National Vital Statistics system indicate that, in 2002, 79.1 percent of pregnant women in Colorado initiated prenatal care during the first trimester.[21] This represented a slight decline from 1998. Inadequate and late initiation of prenatal care is associated with infant mortality. In 2001, Colorado's infant mortality rate of 5.8 per 1,000 population was lower than the national rate of 6.8 per 1,000 population.[22] However, in Colorado, mothers, regardless of race/ethnicity, are less likely to report initiating prenatal care in the first trimester than their peers nationally.

Nationwide, the most common reason women report for not receiving early prenatal care is that they do not realize they are pregnant. The second most cited barrier to receiving earlier prenatal care is not having the financial resources or health insurance to pay for the medical visit. Among women whose prenatal care was paid for by public assistance such as Medicaid and state programs, one-third still cited their inability to pay as a barrier to receiving early prenatal care. Another common reason for not receiving early prenatal care was the inability to get an appointment. These findings suggest the need to promote planned pregnancy, improved health education, expanded access to women's health services and enhanced insurance coverage of early prenatal services.[23]

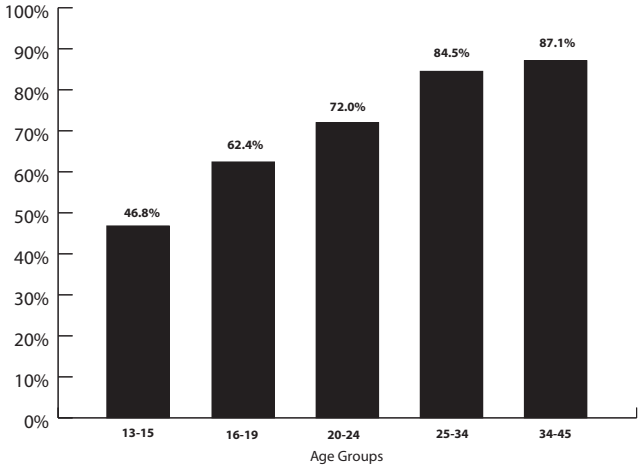
Demographic Trends and Health Disparities

Race/Ethnicity[21]

While 86.2 percent of non-Hispanic white women received prenatal care within 14 weeks of conception, by comparison only 70.7 percent of black and 65.9 percent of Hispanic women received early prenatal care. In fact, 7.9 percent of Hispanic mothers and 7.0 of black mothers reported receiving late or no prenatal care compared to 2.7 percent of non-Hispanic white mothers.

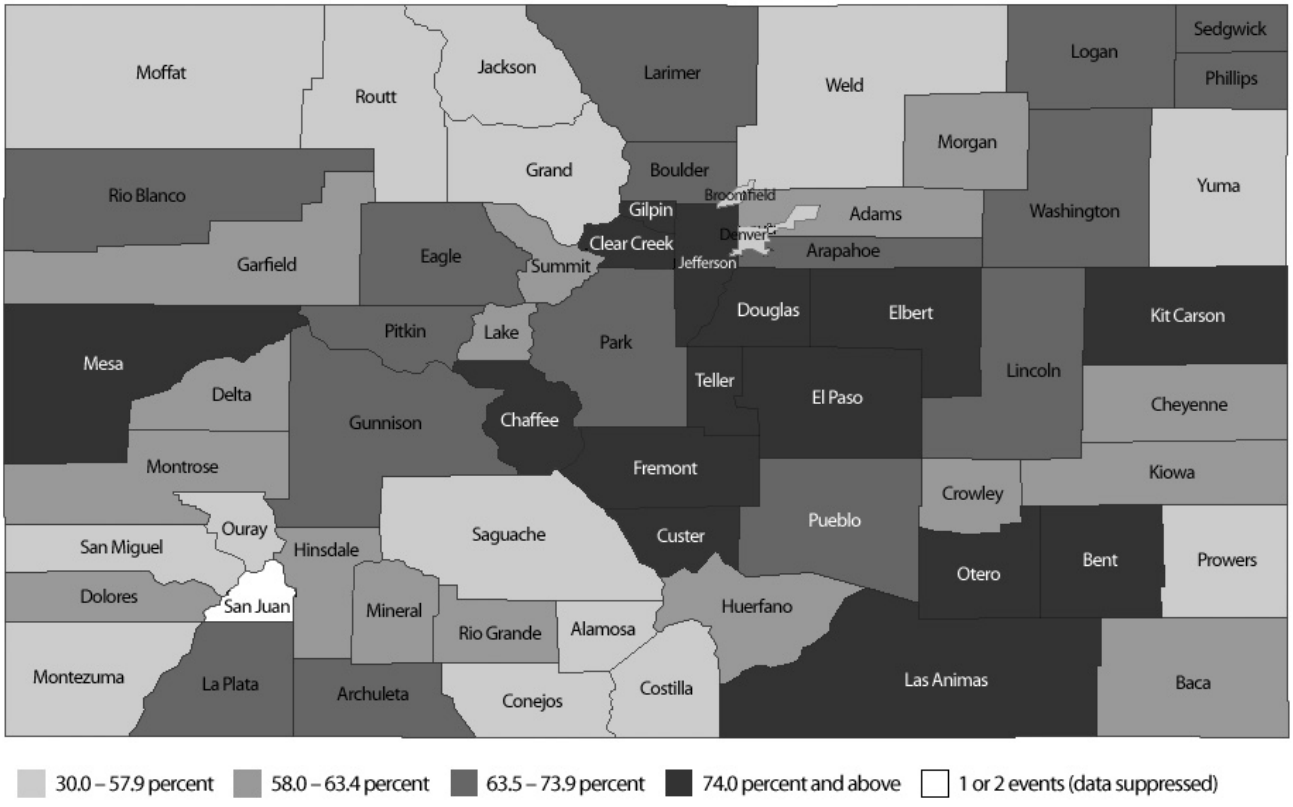
In Colorado, minority women are less likely to receive prenatal care during the first trimester and black mothers, in particular, experience a higher infant mortality rate, 12.8 per 1,000 population, than white non-Hispanic mothers, 5.5 per 1,000.[21,22]

Figure 7: Percentage of Colorado Females Who Began Care First Trimester by Age of Mother in 2002



Source: Colorado Vital Statistics, 2002

Figure 8: Rate of Adequate Prenatal Care by Colorado County 1997-2000



Source: Birth Records, Health Statistics Section, Colorado Department of Public Health and Environment, 1997-2000

Age[24]

According to data available from Colorado Vital Statistics, females ages 13-19 are least likely to receive prenatal care during the first trimester. The percentage of women who receive prenatal care in the first trimester increases incrementally with age. While age-related disparities regarding the receipt of adequate prenatal care have narrowed in recent years, in 2002, there was nearly a 40 percent difference that separated women in the youngest and oldest childbearing age groups who reported receiving prenatal care in their first trimester.

Multiple factors may contribute to the age-related disparities found with respect to receiving early prenatal care. First, adolescents in Colorado have the highest unintended pregnancy rate of all age groups followed by women aged 20- 24. Women not planning to become pregnant may become aware of conception somewhat later, on averge, than those women who intend to become pregnant. Younger women also may be less likely to have health insurance coverage or the resources needed to obtain prenatal care.

Geography[25]

The Kotelchuck Adequacy of Prenatal Care Utilization Index combines information about prenatal care initiation, number of prenatal visits and gestational age to determine the adequacy of prenatal care utilization for live births. In 2001, it indicated that prenatal care adequate in 66.5 percent of live births to Colorado residents. This percentage varied widely by county, from a low of 30.0 percent to high of 84.6 percent.

Major State Initiatives

Colorado Office of Health Disparities

In response to requests from minority citizens and state-specific data that document health disparities among minority communities, the Colorado Department of Public Health and Environment (CDPHE) established a state office of health disparities and a citizen's advisory commission on minority health. Initially, the creation of these structures will use existing resources available through the Colorado Turning Point Initiative, funded by the Robert Wood Johnson Foundation. The Office will report to the CDPHE Chief Medical Officer and members of the citizen's advisory commission will be appointed by the CDPHE Executive Director. Members are expected to include regional representation from around the state.

The Office will coordinate CDPHE's racial/ethnic and other health disparity reduction activities, serve as a point of contact for the public, provide technical assistance to communities, support research and provide relevant information and education. The Advisory Commission will serve as a resource to both CDPHE and communities to foster the development and implementation of culturally appropriate public health programming that is responsive to communities of color. It also will advise CDPHE on policies and procedures to assure inclusiveness and responsiveness to minority health needs and concerns.

School-Based Health Centers

Studies have indicated that adolescents have difficulty accessing health and mental health services regardless of their socio-economic status. School-based health centers support and expand services provided by school nurses. Services offered by the centers stress preventive and primary care, early intervention and mental health services. School-based health centers are located in schools with a high proportion of uninsured students and in communities with less access to care for this age group. Currently, there are 40 school-based health centers receiving funding and support from the Colorado Department of Public Health and Environment that provide access to services for about 55,000 students.

Reducing the Burden of Oral Diseases by Tracking Diseases and Targeting Programs
Cavities have declined in the United States because of preventive strategies such as community water fluoridation, use of fluoride toothpaste and mouth rinses, and application of dental sealants. Despite this progress, dental decay remains a significant problem for minority populations and people with low-incomes. According to the Colorado Basic Screening Survey, 46 percent of kindergarteners and 57 percent of third grade children already have had a cavity, and 26 percent have untreated dental decay.

In 2004, the Centers for Disease Control and Prevention (CDC) recognized the Colorado Department of Public Health and Environment's Oral Health Program for its exemplary work to prevent chronic disease and promote health. The Oral Health Program is establishing a surveillance system that will track oral health information on people of all ages in the state. The system is being developed through a cooperative agreement with the CDC. Colorado has developed a surveillance plan to identify which oral diseases, conditions and age-groups to track and how often the data will be collected. By collecting information on oral health and access to care, Colorado will be able to monitor trends over time and document improvements in oral health among state residents. These data will allow the state to target oral health services to those populations in greatest need and direct funds to programs that will reduce disparities and the burden of oral disease.

Emerging Best or Promising Practices

Research illustrates that the following best practices improve access to health care:

Elimination of the Medicaid assets test
Research suggests that money spent providing children with preventive care will be saved through reducing administrative costs generated by the assets test. States that eliminated the assets test reported increased enrollment, streamlined eligibility determination and improved worker productivity. In Oklahoma, $3.5 million was being spent to verify assets but after the asset test was dropped, the state spent only $2.5 million on benefits for people who otherwise would have been denied, resulting in a net savings of $1.2 million in state general funds.[10]

Create a medical home
Providing health insurance is not enough. The structure of the delivery system, and especially the availability of a medical home, must be assessed.[26] A medical home is not a building, house, or hospital, but rather an approach to providing health care services in a high-quality and cost-effective manner.

Implement open access patient scheduling systems
Open access patient scheduling systems have been shown to improve continuity of care for pediatric patients.[27]

Convene patient advisory counsels
Patient advisory counsels are effective in ensuring that family health care needs are met.[26]

Develop provider cultural competency
Providers must develop an understanding of issues related to race and ethnicity and knowledge of health disparities.[28] Mission statements and organizational leaders must reflect a commitment to cultural competence.[27] Also, program workers should accelerate their efforts to provide culturally appropriate outreach to low-income families to increase CHP+ and Medicaid enrollment. Effective programs define culture broadly, value and consider the belief systems of clients, and appreciate the intricacy of language interpretation.[27] Moreover, effective programs utilize multiple strategies to improve cultural competence.[27]

ACCESS TO HEALTH CARE

Local Story: Gunnison County Establishes a Multicultural Resource Office

GUNNISON COUNTY – Public health, health and human service agencies, county commissioners and private health care providers are working together in Gunnison to facilitate access to vital health care services for low-income and vulnerable populations in the county. In an effort led by the Gunnison Public Health Director, the county established a Multicultural Resource Office through its Public Health Nursing Service. The primary mission of the Office is to facilitate access to health care for immigrants and individuals with limited English proficiency.

Prior to the opening of the Multicultural Resource Office in 2001, local service agencies were collectively serving fewer than 30 immigrant families. Today, these providers serve more than 160. They are able to accommodate the increased demand for services through volunteers who provide case management services, translate resource materials and participate on community planning teams. The Office also utilizes 25 volunteers who speak some 10 different languages to meet interpretation demands.

The need for the Multicultural Resource Office was identified through a data-driven community assessment process. Over the course of a year, community forums were held with immigrants living in the area, 90 percent of whom were mono-lingual Spanish speakers. Surveys and other types of assessments also were conducted. The findings made a compelling case to county commissioners who authorized the new Office, as well as funders who supported the initiative financially. A prevention block grant available through the Colorado Department of Public Health and Environment provided start-up funding. A subsequent grant received from the Caring for Colorado Foundation provided an additional $20,000 over a two-year period.

The Office also served as a model for the creation of a second resource office designed to address the needs of senior residents in the community. The Senior Resource Office serves individuals 60 years of age and older and adults with disabilities. Gunnison County also formed a Dental Health Initiative for children 3-18 years of age. Families at or below 200 percent of Federal Poverty Level have their teeth cleaned for $10.00 and are referred, as appropriate, to one of four participating dentists who provide care at 10 percent of costs. Donations from community groups help to offset costs of the project. A similar model supports access to prenatal care for low-income women in the community.

ACCESS TO HEALTH CARE

Resources

Colorado Access
Phone: 720-744-5100
http://www.coaccess.com/

Colorado Association for School-based Health Care
Phone: 303-399-6380
http://www.casbhc.org
Email: info@casbhc.org

Colorado Coalition for the Medically Underserved
Phone: 720-858-6333
http://www.ccmu.org
Email: info@ccmu.org

Colorado Consumer Health Initiative
Phone: 303-839-1261
http://www.cohealthinitiative.org

Colorado Covering Kids and Families (CKF)
Phone: 303-861-5165
www.cchn.org/ckf

Colorado Minority Health Forum
Phone: 303-839-9422, extension 14
http://www.coloradominorityhealthforum.org
Email: info@coloradominorityhealthforum.org

Colorado Rural Health Center
Phone: 303-832-7493
Toll-free: 800-851-6782
http://www.coruralhealth.org/crhc
Email: info@coruralhealth.org

Colorado Community Health Network
Phone: 303-861-5165
http://www.cchn.org/

CDPHE Family Healthline
Assists individuals and families in accessing health care by providing program information, eligibility guidelines, and contact information.
Phone: 303-692-2229
Toll free: 800-688-7777
http://www.cdphe.state.co.us/ps/mch/famhealthline.asp
Email: family.healthline@state.co.us

National Assembly on School-based Health Care
Phone: 202-638-5872
http://www.nasbhc.org
Email: info@nasbhc.org

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Section VI

Vaccines are commonly referred to as one of the greatest public health achievements of the 20th century. Immunizations can prevent disability and death resulting from infectious disease and help control the spread of infections. With the advent of immunization, the incidence of diseases such as polio, measles and rubella have dropped dramatically.

HEALTHY PEOPLE 2010 GOAL: *Prevent disease, disability and death from infectious diseases, including vaccine-preventable diseases.*

Vaccines are commonly referred to as one of the greatest public health achievements of the 20th century. Immunizations can prevent disability and death resulting from infectious disease and help control the spread of infections.[1] Vaccines are biological substances that interact with an individual's immune system to trigger the production of antibodies identical to those produced by naturally-occurring bacteria or viruses. These antibodies arm the body against exposure to many preventable diseases.

With the advent of immunization, the incidence of diseases such as polio, measles and rubella has dropped dramatically. However, the organisms that cause these diseases have not disappeared, even in industrialized societies. Rather, they remain latent and can reemerge if preventitive measures are not taken. The measles outbreak of 1989–1991 in the United States provides a recent example of the serious public health consequences of failing to provide adequate immunization coverage. The outbreak resulted in more than 55,000 new cases of measles; 11,000 hospitalizations; 120 deaths; and $100 million in direct medical costs.[2]

Immunizations are recommended across the lifespan. The Centers for Disease Control and Prevention (CDC) recommends that children receive the following vaccines through a series of immunizations starting at birth:

- Hepatitis B (HepB) vaccine
- Diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine
- *Haemophilus influenzae* type b (Hib) conjugate vaccine
- Inactivated Poliovirus (IPV) vaccine
- Measles, mumps, and rubella (MMR) vaccine
- Varicella vaccine
- Pneumococcal conjugate vaccine (PCV).[3]

The CDC also recommends immunization against influenza and pneumococcal disease for adults over the age of 65. Although the CDC recommends vaccines for adults of all ages, this section focuses on individuals 65 years of age and older due to their vulnerability to these common, preventable diseases.

CHILDHOOD IMMUNIZATIONS

Indicator: Childhood Immunizations

Objective (14-24a): Increase the proportion of children aged 19 to 35 months who received all vaccines recommended for universal administration (4 DTaP, 3 polio, 1 MMR, 3 Hib, 3 hepatitis B).

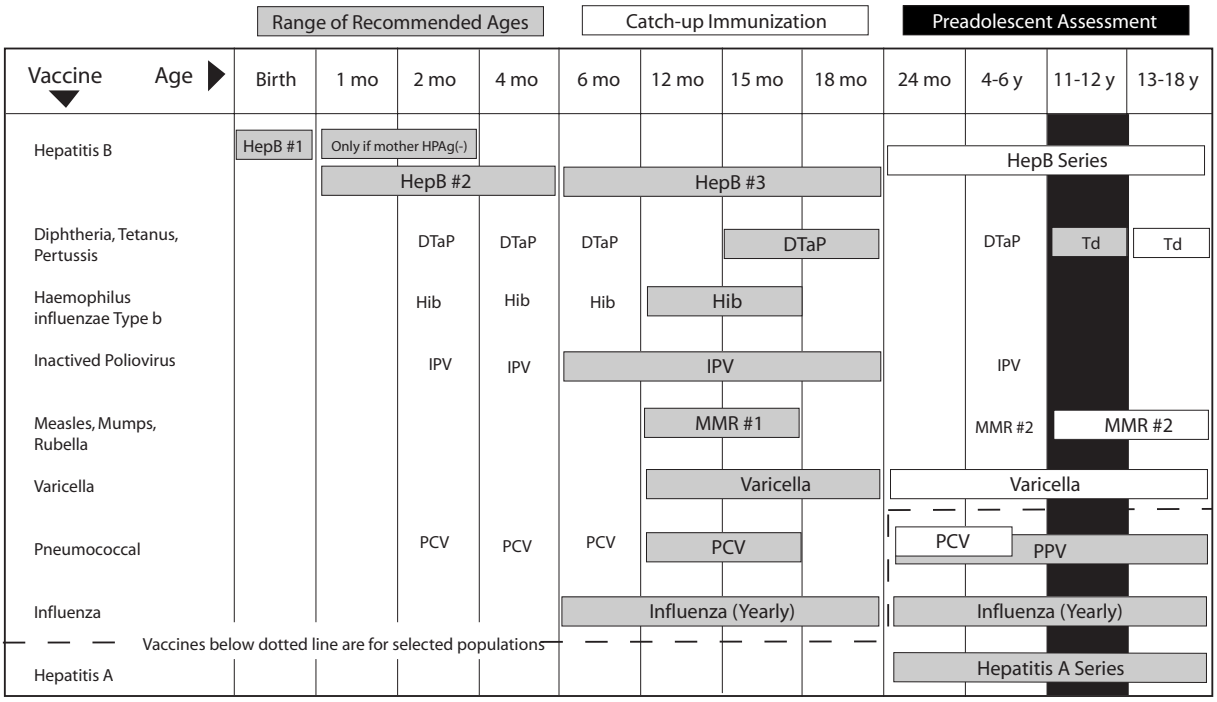
Definition: Immunization coverage of two-year-olds is a standard, national measure used to assess childhood immunization rates. Immunization coverage rates are determined by the proportion of children aged 19 to 35 months receiving the recommended 4:3:1:3:3 vaccine series of four doses of diphtheria-tetanus-acellular pertussis (DTaP), three doses of polio, one dose of measles-mumps-rubella (MMR), three doses of *Haemophilus influenzae* B (Hib) and three doses of hepatitis B antigens.

Healthy People 2010 Target: 80 percent of children 19 to 35 months will receive all DTaP, polio, MMR, Hib, and HepB vaccines (fully immunized with the 4:3:1:3:3 series).

Baseline: (1998 National Immunization Survey)

- **Colorado**: 68 percent of children 19 to 35 months were fully immunized with the 4:3:1:3:3 series
- **National**: 73 percent

Figure 1: Recommended Childhood and Adolescent Immunization Schedule, July –December 2004



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of April 1, 2004, for children through age18 years. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible. White boxed areas indicate age groups that warrant special effort to administer those vaccines not previously given. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturer's package inserts for detail recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Report System (VAERS). Guidance about how to obtain and complete a VAERS form can be found on the Internet: www.vaers.org or by calling 800-822-7967.

Source: American Academy of Pediatrics, the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention and the American Academy of Family Physicians, 2004

Local Public Health Context in Colorado[4]

Immunization coverage rates among young children vary on individual vaccines. Colorado nears the Healthy People 2010 target goal of 90% immunization coverage among young children in the *Haemophilus influenzae* type b (Hib) and hepatitis B vaccines, with coverage rates of 89% and 89.4% respectively. However, Colorado falls short of this target goal on the diphtheria-tentanus-acellular pertussis (DTaP) vaccine, which has a coverage rate of 73.1% among children under three years of age.

All three of these vaccines are a part of a recommended immunization series for children between 19 and 35 months of age, referred to as the 4:3:1:3:3 vaccination series for its enumeration of the number of doses of each of the five common vaccines recommended before the age of 3. Other vaccines in the series include the measles-mumps-rubella (MMR) vaccine and the polio vaccine.

The Centers for Disease Control and Prevention (CDC) utilize the coverage rate for the 4:3:1:3:3 series among 19 to 35 month olds as an indicator of immunization of young children. According to the National Immunization

Table 1: Percentage of Colorado Children Receiving Universally-Recommended Vaccinations in Colorado and the Nation, 2003 *(The Healthy People 2010 target for each vaccine is 90 percent)*

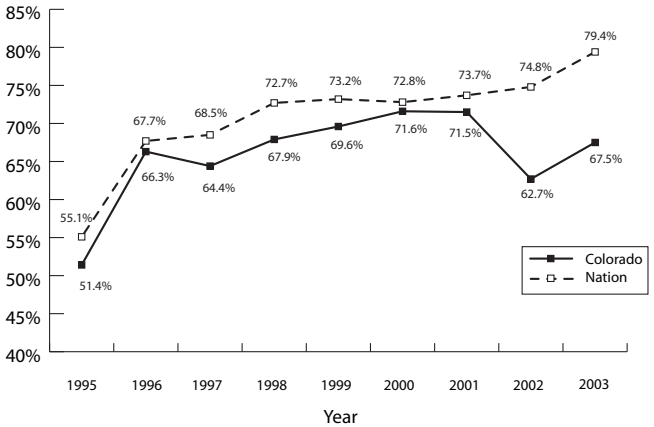
Objective	Universally-recommended vaccination	Colorado	United States
14-22a.	4 doses diphtheria-tetanus-acellular pertussis (DTaP) vaccine	73.1%	84.8%
14-22b.	3 doses *Haemophilus influenzae* type b (Hib) vaccine	89.0%	93.9%
14-22c.	3 doses hepatitis B (hep B) vaccine	89.4%	92.4%
14-22d.	1 dose measles-mumps-rubella (MMR) vaccine	85.6%	93.0%
14-22e.	3 doses polio vaccine	88.9%	91.6%

Source: National Immunization Survey (NIS), 2003

Survey (NIS) of the CDC, since 1995, Colorado has improved its immunization coverage rate among this age group. Although childhood immunization rates have improved in Colorado since 1995, the national rate has improved as well. Over time, Colorado has continued to fall below national coverage rates for this series.

Another important indicator of immunization levels is the incidence of vaccine-preventable diseases. The American Academy of Pediatrics cites sources that estimate Colorado children are nearly three times more likely to get whooping cough than children nationwide. Whooping cough is caused by the *Bordetella pertussis* bacterium and Colorado's low immunization rate is considered to be a factor in the higher incidence of this childhood disease. Researchers at The Children's Hospital in Denver estimated that it cost $13.6 million for hospitals to treat Colorado children for vaccine-preventable diseases such as whooping cough and measles in 2002.[5] The total cost associated with the treatment of vaccine-preventable diseases is unknown; however, it was estimated that the cost of treating children whose parents lacked private insurance represented $5 million.[5]

Figure 2: Percentage of Children (19-35 months of age) Immunized in the 4:3:1:3:3 Vaccination Series, Colorado and the United States: 1995-2003



Source: National Immunization Survey, 1995-2003

Data Trends[6]

Data from the National Immunization Survey (NIS) show that Colorado's immunization coverage among 19 to 35 month olds has increased from 51.4% in 1995 to 67.5% in 2003. Between 1998 and 2001, Colorado's immunization coverage within this age group was even higher, ranging from 67.9% in 1998 to a high of 71.6% in 2000. Despite long-term progress, Colorado appears to have lost some of the gains made in the late 1990s. Nationally, immunization rates have steadily improved. By 2003, Colorado was ranked last among states by the NIS for its immunization coverage of the 4:3:1:3:3 series among 19 to 35 month olds.

Table 2: Percentage of Children Ages 19-to-35 Months Immunized in the 4:3:1:3:3 Series by Race/Ethnicity in 2003

Race/Ethnicity	Colorado	United States
Average	67.5%	79.4%
White	71.1%	82.5%
Black	Insufficient Data	73.0%
Hispanic	Insufficient Data	77.0%
American Indian/Alaskan Native	Insufficient Data	74.9%
Asian	Insufficient Data	78.8%

Source: National Immunization Survey (NIS), 2003

Demographic Trends and Health Disparities

Race/Ethnicity[6]

Although childhood immunization coverage for the 4:3:1:3:3 series in the United States has reached an all-time high at 79.4 percent for 19-35 month olds, racial/ethnic disparities persist at the national and state levels, regardless of socioeconomic status. Reasons for racial disparities in immunization coverage are not completely understood. Some contributing factors may include: limitations regarding access to primary care; reported distrust of the health care system; misconceptions about the risks and benefits of vaccination; and the need for culturally responsive and population-specific interventions designed to increase immunization coverage.

In 2003, the immunization rate for the 4:3:1:3:3 series among non-Hispanic, white children in Colorado was 71.1 percent. Although state immunization rates of two year-olds are not available for racial/ethnic minority groups in Colorado, much lower rates for these populations can be inferred based on the discrepancy between the 2003 state average of 67.5 percent and the immunization rate for non-Hispanic, white children of 71.1 percent for this same year.

Geography

County level data on immunization coverage levels among two year-olds is not currently available. However, "pockets of need" have been identified and targeted by state initiatives and funding streams. Among those areas targeted by private and public immunization efforts are the City of Aurora and the following counties: Bent, Crowley, El Paso, Huerfano, La Plata, Las Animas, Montezuma, Otero and Weld.

Adult Vaccinations

Indicator: Adult Vaccinations

Objective (14-29): Increase the proportion of adults 65 years of age and older who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease.

Definition: Percentage of adults 65 years of age and older who report receiving an influenza vaccination or "flu shot" in the past 12 months. Percentage of adults 65 years of age and older who report ever receiving a pneumococcal vaccination.

Healthy People 2010 Target: 90 percent of non-institutionalized adults 65 years of age and older will have received an influenza vaccine in the past 12 months and will report having received at least one pneumococcal vaccine.

Baseline: (1997 Behavioral Risk Factor Surveillance System (BRFSS))[i]

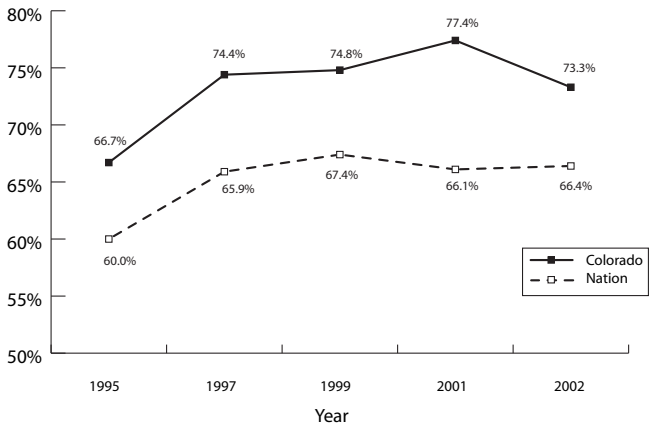
	Influenza vaccine in past 12 months	Pneumococcal vaccine ever
Colorado	74.4%	53.3%
Nation	65.9%	45.7%

Local Public Health Context in Colorado[7]

In 2002, a higher percentage of Colorado adults 65 years of age and over received a flu shot and had ever received a pneumococcal vaccine than their peers nationally. Specifically, 73.3 percent of adults aged 65 and over reported receiving an influenza vaccine in the last 12 months, compared to 68.4 percent nationally. Also, 68.1 percent of Colorado adults aged 65 and over reported ever receiving a pneumonia vaccination compared to 62.9 percent nationally.

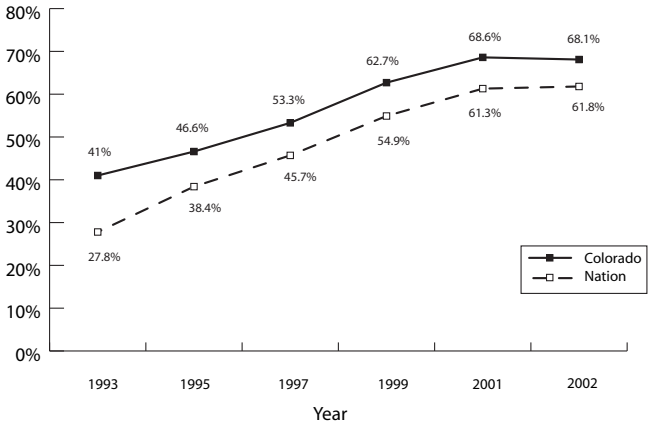
Still, Colorado falls short of the national Healthy People 2010 target of 90 percent. The public health significance of flu and pneumonia vaccination among mature adults in Colorado is clear from statistics which show that, from 1990 to 2002, 4,397 Coloradans between 65 and 84 years of age died from pneumonia and 63 Coloradans in this age group died due to complications associated with influenza.[8] Almost all deaths resulting from these vaccine-preventable diseases occur in adults aged 65 and over.

Figure 3: Percentage of Adults (aged 65 and over) Who Have Received an Influenza Vaccine in the Past 12 Months, Colorado and the Nation, 1995-2002



Source: Behavioral Risk Factor Surveillance System, 1995-2002

Figure 4: Percentage of Adults Aged 65 and Over Who Have Ever Received a Pneumococcal Vaccine, Colorado and the Nation: 1993-2002



Source: Behavioral Risk Factor Surveillance System, 1993-2002

Data Trends[7]

Colorado has consistently led the nation in the percentage of adults 65 years of age and over who have been vaccinated against influenza and pneumonia. In 2001, Colorado boasted the 2nd highest influenza vaccination rate among adults in the nation and in 2002 it ranked 10th highest in influenza vaccinations. Colorado ranked 4th highest in the nation in 2001 for its immunization rate for the pneumococcal vaccine and 5th in 2002.

Demographic Trends and Health Disparities[7]

Race/Ethnicity

Data from the 2001 and 2002 Behavioral Risk Factor Surveillance System (BRFSS) indicated that 79.6 percent of non-Hispanic, white adults 65 years and older in Colorado

[i]Healthy People 2010 utilized the 1998 National Health Interview Survey (NHIS) to establish national baseline estimates. No state data are available, however, from this source. In order to establish comparable national and state baseline estimates, 1997 Behavioral Risk Factor Surveillance System (BRFSS) were utilized (1998 data are not available). One important difference between NHIS and BRFSS is that the NHIS divides the targeted age group into institutionalized and non-institutionalized adults. Thus, BRFSS addresses immunization rates in the population overall, rather than that specifically targeted by the Healthy People 2010 objective.

reported receiving a flu shot in the last 12 months. This was the highest rate of influenza vaccination among this racial/ethnic group in the nation. In contrast, only 54.4 percent of Colorado Hispanics of this same age group reported receiving the vaccine. Only four reporting states had lower influenza immunization coverage rates among Hispanics 65 years and older than Colorado. Nationally, this disparity between non-Hispanic whites and Hispanics 65 years and older is smaller--although this reflects a lower immunization rate among non-Hispanic whites.

Gender

In 2002, a higher percentage of males than females 65 years and older reported receiving an influenza vaccine in Colorado, 76.7 percent and 70.8 percent, respectively. The opposite is true for the pneumococcal vaccine: a slightly higher percentage of females, 69.4 percent, than males, 66.4 percent, reported ever having been immunized against pneumonia.

Evidence of Effectiveness[9]

Based on an assessment of quality-adjusted life years gained, adult immunization has been shown to be cost-effective and cost-saving.

- **Influenza Vaccine:** In uncontrolled studies of influenza vaccination, vaccinated persons were found to be 70 to 90 percent less likely than otherwise healthy adults over 65 years of age to have clinical symptoms associated with the flu. Among the elderly in nursing homes, vaccinated persons experienced a 30 to 40 percent reduction in the incidence of illness, a 50 to 60 percent reduction in hospitalization and pneumonia and a 70 to 100 percent reduction in mortality.

- **Pneumococcal Vaccine:** The estimated effectiveness of the vaccine in preventing morbidity is 60 to 64 percent for all age groups, but 44 to 61 percent in persons over 65 years of age.

Age

In Colorado, as well as the United States, adults aged 75 and over are more likely to report ever having received a pneumococcal vaccine and having received a flu shot in the last 12 months than individuals aged 65 to 74. Specifically, with respect to the pneumococcal vaccine, 73.6 percent of Colorado adults aged 75 and over report ever having received this vaccination compared to 65.9 percent of adults aged 65 to 74. A similar percentage, or 73.9 percent, of adults aged 75 and over report having been immunized against influenza in the last year compared to a slightly smaller proportion of adults aged 65 to 74, 72.8 percent.

Major State Initiatives

Colorado Department of Public Health and Environment's Legislative Decision Item to Improve Colorado's Immunization Rates Among 2 Year Olds

The intent of the Colorado Department of Public Health and Environment's request to the State Legislature was to obtain funding to support three projects: 1) an outreach project to improve the delivery of immunization services by supporting enhanced outreach activities targeting under immunized children in each region of the state, 2) a "pockets of need" project to ensure an ongoing analysis of statewide immunization coverage so that efforts can continue to target the most under immunized populations, and 3) a media project to improve public awareness of the importance of ensuring children are up-to-date on their immunizations and where to receive low/no cost vaccines. The Department was awarded $498,928 in funding for State Fiscal Year 2004-05 to support these activities.

Federal Jobs and Growth Tax Relief Reconciliation Act of 2003

In May 2004, Governor Owens allocated $500,000 in one-time funds to improve Colorado's immunization rate. These funds were invested at the local level to enhance the services provided to the community by local public health agencies. These additional monies supported the provision of immunization clinical services, expanded clinic hours and the availability of additional low and no cost vaccines to private physicians as well as local community health centers.

The Colorado Trust's Immunization Initiative

The Colorado Immunization Initiative focuses on the immunization of both children and adults. As a part of this effort, The Colorado Trust committed more than $3.3 million over eight years (1996-2004) to support the Colorado Children's Immunization Coalition in significantly improving the immunization coverage of Colorado children. Specifically, the Coalition was funded to provide immunization specialists to five regions of Colorado: the City of Aurora; El Paso County; La Plata and Montezuma counties; Weld County; and the Arkansas Valley of southeastern Colorado, comprised of Bent, Crowley and Otero counties. Immunization specialists worked with 1) local community groups to raise awareness and provide outreach and 2) public and private clinics to implement best practices for increasing immunization coverage among patients. Best practices implemented as part of the initiative included reminder recall systems, the assessment of immunizations at every clinic visit and the development of parent education materials.

The Colorado Trust also has funded a $460,000, three-year effort (2001-2004) to help vaccinate racial/ethnic minorities living in the Denver area against influenza and pneumonia. The Visiting Nurses Association was funded to provide vaccinations to at least 7,500 people and to increase the number of health screenings, health education classes and health information offered to adults in minority communities.

Prevention Block Grant Funding Targets Childhood Immunization

In January 2004, the state health director ordered that $388,355 in federal grant monies be redirected to provide immunization program enhancements for 15 local health departments across Colorado. Funding supported the following activities:

- **Broomfield Health and Human Services Department:** With funding, the agency provided 624 children with recommended vaccines. It also formed an immunization task force and offered immunizations at off-site clinics and during extended hours at existing clinics.
- **El Paso County Department of Health and Environment:** This agency focused on recruiting new physicians to provide immunizations to low-income children. In addition, it expanded its distribution of immunization information to reach a greater number of parents of newborns and children in day-care centers. Also, links were established with local school districts to make immunization information more readily available.
- **Las Animas-Huerfano Counties District Health Department:** The health department utilized funding to immunize 123 children in Huerfano and 353 children in Las Animas counties.
- **Otero County Health Department:** The agency expanded immunization clinics and provided vaccinations at off-site locations and during extended hours to reach children of working families.
- **San Juan Basin Health Department:** Funds were used to enhance phone follow-up and to send reminder cards to parents. As a result, 96 percent of children up to 24 months of age served by the department were fully immunized.

Colorado Influenza and Pneumococcal Alert Coalition

The mission of the Colorado Influenza and Pneumococcal Alert Coalition (CIPAC) is to decrease vaccine-preventable respiratory disease in Colorado through collaborative efforts in education and immunization. Since its establishment in 1984, CIPAC has worked to educate the public and physicians on the importance of influenza and pneumococcal

immunization. CIPAC is currently housed within the Immunization Program at the Colorado Department of Public Health and Environment. Members of CIPAC include over 30 health-related organizations in Colorado that work together to carry out the following activities:

- Community outreach
- Public awareness
- Data collection
- Provider education
- Addressing pockets of need.[10]

Emerging Best or Promising Practices

Recommended Standards for Child and Adolescent Immunization Practices from the National Vaccine Advisory Committee (NVAC)[11]

Availability of Vaccines

- Vaccination services are readily available.
- Vaccinations are coordinated with other health care services and provided in a medical home when possible.
- Barriers to vaccination are identified and minimized.
- Patient costs are minimized.

Assessment of Vaccination Status

- Health care professionals review the vaccination and health status of patients at every encounter to determine which vaccines are indicated.
- Health care professionals assess for and follow only medically indicated contraindications.

Effective Communication about Vaccine Benefits and Risks

- Parents/guardians and patients are educated about the benefits and risks of vaccination in a culturally appropriate manner and in easy-to-understand language.

Proper Storage and Administration of Vaccines and Documentation of Vaccinations

- Health care professionals follow appropriate procedures for vaccine storage and handling.
- Up-to-date, written vaccination protocols are accessible at all locations where vaccines are administered.
- Persons who administer vaccines and staff who manage or support vaccine administration are knowledgeable and receive ongoing education.
- Health care professionals simultaneously administer as many indicated vaccine doses as possible.
- Vaccination records for patients are accurate, complete and easily accessible.
- Health care professionals report adverse events following vaccination promptly and accurately to the Vaccine Adverse Events Reporting System (VAERS) and are aware of a separate program, the National Vaccine Injury Compensation Program (NVICP).
- All personnel who have contact with patients are appropriately vaccinated.

Implementation of Strategies to Improve Vaccination Coverage

- Systems are used to remind parents/guardians, patients and health care professionals when vaccinations are due and to recall those who are overdue.
- Office- or clinic-based patient record reviews and vaccination coverage assessments are performed annually.
- Health care professionals practice community-based approaches.

IMMUNIZATION

Recommended Standards for Adult Immunization Practices from the National Vaccine Advisory Committee (NVAC)[11]

Availability of Vaccines

- Adult vaccination services are readily available.
- Barriers to receiving vaccines are identified and minimized.
- Patient "out-of-pocket" vaccination costs are minimized.

Assessment of Vaccination Status

- Health care professionals routinely review the vaccination status of patients.
- Health care professionals assess for valid contraindications.

Effective Communication about Vaccine Benefits and Risks

- Patients are educated about risks and benefits of vaccination in easy-to-understand language.

Proper Storage and Administration of Vaccines and Documentation of Vaccinations

- Written vaccination protocols are available at all locations where vaccines are administered.
- Persons who administer vaccines are properly trained.
- Health care professionals recommend simultaneous administration of indicated vaccine doses.

Local Story: Aurora Firefighters Shots for Tots Program

ARAPAHOE COUNTY – Research conducted in 2002 found that one-third of early childhood education participants in Aurora Public Schools were missing at least one universally-recommended immunization. Pockets of need were identified in two specific areas of Aurora where just over half of children were up-to-date on their immunizations. Identified barriers included the location of clinic; cost; clinic hours; transportation; fear of the health care system; language; and lack of information concerning the availability of immunizations. In response, the Tri-County Health Department, in partnership with the Aurora Fire Department and the Colorado Children's Immunization Coalition, implemented the *Aurora Firefighters Shots for Tots* program.

To address identified barriers, partners hold low-cost, weekend immunization clinics at fire departments near communities with need. Parents are asked to bring a copy of their child's immunization record; nurses screen patients and complete registration forms; and the appropriate vaccines are provided by paramedics. Parents are given post-immunization information and children receive a fire department teddy bear and a picture of themselves taken with an Aurora firefighter. They can also tour a fire engine during the immunization clinic. Immunization information is entered into a centralized database that makes it possible to generate reminder postcards. Parents can return to the Saturday immunization clinics, offered twice a month at the same location for the additional immunizations. Clinics are publicized by school nurses and local organizations as well as through radio public service announcements, television spots and flyers.

The overwhelming majority, or 88.3 percent, of children receiving immunizations through the *Shots for Tots* program do not have a regular healthcare provider. Over three-fourths, or 76 percent, of participants are Hispanic and twenty-two percent have made a return visit for updated immunizations. These findings suggest that the *Aurora Firefighters Shots for Tots* program is addressing a number of the barriers to childhood immunization in Aurora.

- Vaccination records for patients are accurate and easily accessible.
- All personnel who have contact with patients are appropriately vaccinated.

Implementation of Strategies to Improve Vaccination Coverage

- Systems are developed and used to remind patients and health care professionals when vaccinations are due and to recall patients who are overdue.
- Standing orders for vaccinations are employed.
- Regular assessments of vaccination coverage levels are conducted in a provider's practice.
- Partner with the community.
- Patient-oriented and community-based approaches are used to reach the target population.

For more information and a complete listing of recommended standards of immunization practice for children and adults, please refer to http://www.cdc.gov/nip/recs/rev-immz-stds.htm.

Resources

Clinic Assessment Software Application (CASA)
CASA, which stands for Clinic Assessment Software Application, is a database developed by the National Immunization Program, Centers for Disease Control and Prevention (CDC), as an assessment tool for immunization clinics and providers. CASA helps providers understand current vaccination coverage levels and immunization practices in their clinics, including up-to-date status of children at critical age markers, the proportion of children who drop out of the vaccination schedule, the rate of missed opportunities to provide immunizations and reminder and recall letters and postcards. CDC now offers a version of the database designed specifically for monitoring adult immunization coverage, the Adult Clinical Assessment Software Application (ACASA). These applications are available for download from http://www.cdc.gov/nip/casa/Default.htm.

Colorado Children's Immunization Coalition
Phone: 303-864-5340
Email: CCICOffice@tchden.org
http://www.childrensimmunization.org/contact.htm

Colorado Immunization Manual
A comprehensive source of information concerning vaccine management; vaccine documentation requirements; treatment of vaccine reactions; parent and patient information; administration techniques; contraindications; reporting vaccine preventable diseases; and strategies to improve vaccine coverage is available from: http://www.cdphe.state.co.us/dc/Immunization/immunmanual/immunmanual.asp.

Colorado Influenza and Pneumococcal Alert Coalition (CIPAC)
Phone: 877-462-2911
http://www.immunizecolorado.com/

Immunization Program, Colorado Department of Public Health and Environment
Phone: 303-692-2650
Email: cdphe.psimmun@state.co.us
http://www.cdphe.state.co.us/dc/Immunization/immhom.asp

National Immunization Program
Centers for Disease Control and Prevention
http://www.cdc.gov/nip/

National Network for Immunization Information
http://www.immunizationinfo.org/

Vaccines for Children Program
Phone: 303-692-2650
Email: cdphe.psimmun@state.co.us

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Section VII

Mental illness affects people of all different backgrounds. According to Epidemiologic Catchment Area estimates, approximately 40 million people aged 18 to 64 years, or one in five Americans, has a mental health disorder (also commonly referred to as a mental illness). A major goal of Healthy People 2010 is to improve the mental health status of U.S. Americans by expanding treatment access.

HEALTHY PEOPLE 2010 GOAL: *Improve mental health and ensure access to appropriate, quality mental health services.*[i]

Mental illness affects people of all different backgrounds. According to National Institute of Mental Health's Epidemiologic Catchment Area study estimates, approximately 40 million people aged 18 to 64 years, or one in five Americans has a mental health disorder (also commonly referred to as a mental illness).[1] Assuming national estimates hold true for Colorado, one in five or more than 900,000 Coloradans have a mental health disorder.[2]

Worldwide, mental health disorders are a leading cause of disability. 1990 estimates from the World Health Organization (WHO) indicate that five of the ten leading causes of disability are mental health disorders including mood disorders, schizophrenia and obsessive compulsive disorders.[3] Untreated, mental illness contributes to a myriad of individual and society-wide problems such as substance abuse, poverty, engagement in justice systems, homelessness and, in some cases, even suicide.[4, 5, 6] Further, untreated mental illness is associated with a higher rate of physical diseases. Healthy People 2010, for example, reports that depression is associated with medical conditions, ranging from cancer and diabetes to eating disorders.[6]

Even though mental illness may be incapacitating when untreated, misunderstanding about the nature of mental illness and its stigmatization pose significant treatment barriers.[6] Access to healthcare, including issues related to insurance coverage, also play a significant role. According to the Surgeon General's report *Mental Health: Culture, Race, and Ethnicity*, insurance coverage is one of the most important determinants as to whether those in need of mental health treatment seek it.[7]

A major goal of Healthy People 2010 is to improve the mental health status of U.S. Americans by expanding treatment access. Nationally, it is estimated that 25 percent of all individuals with a mental disorder obtain help for their illness in the healthcare system. In comparison, 60 to 80 percent of persons with heart disease seek and receive care.[8] Treatment access rates remain relatively low even among those with severe mental illness. It is estimated that only 40 percent of individuals living with a severe mental illness, that is, those with the most severe mental health need, seek treatment.

Mental Health Treatment Expansion

Indicator: Mental Health Treatment Expansion

Objective (18-9a): Increase the proportion of adults aged 18 and older with Serious Mental Illness (SMI) who receive treatment.

Definition: Healthy People 2010 defines mental health as the successful mental functioning of an individual that results in productive activities, fulfilling relationships and the ability to adapt to change and cope with adversity. Serious mental illness (SMI), in contrast, was defined by the Center for Mental Health Services (CMHS) as a condition affecting "…persons 18 years and older who, at any time during a given year, had a diagnosable mental, behavioral, or emotional disorder that met the criteria of DSM-III-R [Diagnostic and Statistical Manual Version Three Revised] and … that has resulted in functional impairment which substantially interferes with or limits one or more major life activities.…" [9, ii]

Healthy People 2010 Target: 55 percent of adults aged 18 to 54 with a Serious Mental Illness will report receiving treatment.

[i] A major source of information utilized in the development of this section was *The Status of Mental Health Care in Colorado* report, prepared by TriWest for the Mental Health Funders Collaborative.[2] Where possible, original data sources were referenced.

[ii] Serious Emotional Disturbance (SED) is used to refer to children and adolescents.

MENTAL HEALTH

Baseline: (1991 National Comorbidity Survey (NCS))

- **Colorado**: Healthy People 2010 has not identified a source of state level data to use in measuring progress towards the target objective[iii]
- **National**: 47 percent of adults aged 18 to 54 and older with a Serious Mental Illness report receiving treatment.

Local Public Health Context in Colorado[10]

According to the Division of Mental Health Services of the Colorado Department of Human Services, over 250,000 Coloradans each year meet the established criteria for severe mental health need. Estimates also suggest that less than a third of Coloradans in need of mental health services receive them.

In 1981, a Colorado General Assembly advisory statement prioritized certain populations in order to ensure that public funding reached those most in need of mental health services. The populations considered to be most in need of mental health treatment were children with a Serious Emotional Disturbance (SED) and adults with a Serious Mental Illness (SMI) living in poverty. Colorado's public mental health system, therefore, has targeted these populations.

The mental health system in Colorado is made of many systems, including (1) public mental health providers, largely funded by the government; (2) private mental health providers, which are compensated through private insurance and by individuals who pay for their own care; and (3) other systems of care that are not designated

Mental Health Systems in Colorado

Public Mental Health System

Colorado's publicly funded mental health system provides mental health services to Coloradans of all ages who do not have mental health insurance coverage or who have Medicaid. These services are paid for with state fund dollars, federal grant dollars, state and federal Medicaid dollars, local government dollars and private donations and grants monitored by the Colorado Department of Human Services and the Colorado Department Of Health Care Policy and Financing. Colorado state government agencies support community-based mental health treatment through 8 Mental Health Assessment and Services Agencies (MHASA), 17 community mental health centers (CMHC) and 6 specialty clinics. CMHCs and MHASAs are responsible for serving individuals in defined geographic service areas throughout the state. MHASAs manage the delivery of mental health services to the Medicaid population; CMHCs plan and provide services to individuals who are not Medicaid eligible; and the speciality clinics serve special populations such as members of ethnic/linguistic minority groups.[11] All services are overseen by the Colorado Mental Health Services and the Colorado Mental Health Institutes within the Colorado Department of Human Services (CDHS), Office of Behavioral Health and Housing.

Private Mental Health Services

Coloradans can access private mental health services from the two Veterans' Administration Medical Centers, the two Colorado Mental Health Institutes, in addition to 20 other Colorado hospitals that provide inpatient psychiatric care to people with insurance. There are also 12,360 licensed, certified and registered mental health and substance abuse service providers in the state that provide out-patient treatment.

[iii]In *The Status of Mental Health Care in Colorado* report, prepared by TriWest for the Mental Health Funders Collaborative, state estimates combined the prevalence of Serious Emotional Disturbance (SED) and Serious Mental Illness (SMI); therefore, baseline for the age group, 18 to 54 were not available. In addition, estimates for unmet treatment need for individuals with SED or SMI served by the private mental health system were combined with the unmet treatment need of individuals with all other diagnosable mental disorders. As a result, the unmet need for individuals with SED or SMI could not be determined. These data are presented later in this section but could not be used to establish comparable national and state baseline.

mental health systems. These other systems include the primary health care system and other human service systems, such as substance abuse, child welfare, schools and corrections.

One issue that has concerned mental health professionals is that data indicate more individuals receive mental health services through these primary health and human service systems than through private and public mental health systems combined.[2] Ideally, mental health services are provided by specialists with mental health training. There are likely a number of factors contributing to the over-reliance on other systems for mental healthcare, including stigmatization, insurance coverage levels and the level of public health funding.

For a more in-depth review of mental health resources within Colorado, refer to the mental health needs assessment conducted for the Mental Health Funders Collaborative, accessible on-line at http://www.colorado_trust.org/ repository/publications/pdfs/MHCC/MHCC_finalreport.pdf.

Data Trends

In 2002, the National Survey on Drug Use and Health (NSDUH), formerly the National Household Survey on Drug Abuse) included questions regarding Serious Mental Illness (SMI). The NSDUH estimated that 7.38 percent of Coloradans suffered from SMI in the past year.[12] This percentage is statistically equivalent to the national rate.[iv]

Colorado estimates of the proportion of individuals with SMI and Serious Emotional Disturbance (among children) that do not access mental health services through public and private sectors were published in the Colorado mental health needs assessment conducted by TriWest for the Colorado Mental Health Funders Collaborative.[13] These data indicated that 39 percent of those with SMI and who met eligibility requirements were not served by the public mental health system.

Table 1: Annual Levels of Mental Health Need Compared to Annual Levels of People Served

Level of Need	People in Need	People Served in Mental Health Settings	People Served in Other Settings	People in Need Who Are Not Served
Severe Disorders (SMI/SED) Under 300% FPL–Public Sector Need	168,878	77,138	25,287	66,453
Percentages	100%	46%	15%	39%
Severe Disorders (SMI/SED) Over 300% FPL–Private Sector Need	93,909	50,797 (7%)	134,920 (18%)	548,670 (75%)
Percentages	100%			
Other Diagnosable Disorders	640,478			
Percentages	100%			
Total	**903,265**	**127,935**	**160,207**	**615,123**
Percentages	100%	14%	18%	68%

Source: The Status of Mental Health Care in Colorado (2003) report, prepared by TriWest for the Mental Health Funders Collaborative[2]

[iv] The national estimate of Serious Mental Illness (SMI) is 8.3 percent. This estimate is not statistically significantly different from Colorado's estimate for the same year.

In addition, it was estimated that 68 percent of individuals with severe and other diagnosable disorders, and who did not meet income eligibility requirements, did not receive any known treatment through the private system.[v] Another issue identified in this report was the proportion of individuals with severe disorders that, although served by the public health system, received treatment services outside of a mental healthcare setting. It was estimated that 15 percent of individuals with severe disorders in the public health system received treatment services in other settings. Researchers and professionals in the field find this problematic since providers outside of a mental health setting may not have the time or capacity to recognize, diagnose and appropriately treat mental illness.[14]

No longitudinal state level data are available to measure Colorado's progress towards the Healthy People 2010 objective of expanding treatment access to adults 18 to 54 with Serious Mental Illness.

Demographic Trends and Health Disparities

The Status of Mental Health Care in Colorado reported that Colorado has more psychiatrists, social workers and psychologists per capita than most states.[2] Despite this, the report identified a number of treatment access issues. The report indicated that relatively few providers:

- Receive training in child psychiatry
- Work in rural areas of the state
- Are bilingual (e.g., Spanish or an Asian language) or fluent in American Sign Language[vi]
- Are members of racial/ethnic minorities.[2]

Race/Ethnicity[14]

National data indicate that the prevalence of mental illness is statistically equivalent across racial/ethnic groups.[vii] However, as the Surgeon General's Office documented in *Mental Health: Culture, Race, and Ethnicity*, there are significant treatment access disparities among racial/ethnic groups. Asian Americans and Pacific Islanders have the lowest rate of mental health service use of any racial/ethnic group. Access disparities also are evident among blacks and Hispanics. Blacks, for example, are less likely to use mental health clinics and professionals and more likely to access other human service settings for mental health treatment. According to the National Comorbidity Survey, only 16 percent of blacks with a diagnosable mood disorder saw a mental health specialist and less than one third consulted a health care provider of any kind. Data also indicate that Hispanics are more likely to access primary care than mental health services.

No state level data are available on the prevalence of Serious Mental Illness or on treatment access among different racial/ethnic groups. National, leading research, however, suggests a number of factors that may pose treatment barriers for racial/ethnic minorities:

- Racial/ethnic minorities are less likely to have adequate health insurance coverage than non-Hispanic whites (see Section V: Access to Health Care for more information).
- Racial/ethnic minorities are underrepresented among mental health providers.[14]
- Racial/ethnic minorities may be more vulnerable to both non-detection and misdiagnosis of mental illness in primary care settings.[14]
- There may be language barriers for Spanish and Asian language-speaking populations.[14]

[v] TriWest did not provide separate estimates for adults with SMI and children with Serious Emotional Disturbance (SED). Also, separate estimates for individuals with these severe disorders and those with other diagnosable disorders also were not available.

[vi] For example, only 12.5 percent of therapists in Colorado report competency to conduct treatment in Spanish.[1]

[vii] Because of the small percentage of American Indians in the population and the social differences found between the 561 federally recognized tribes, little is known about rates of mental health service use and need for this population. According to the report published by the Surgeon General, there is good reason to suspect that the history of American Indians and Alaskan Natives in the United States would contribute to a high need for mental health care within these populations.[14]

Table 2: The Racial/Ethnic Composition of Colorado's Population and the Percent of Mental Health Providers by Race/Ethnicity

Racial/Ethnic Group	Percent of Colorado Population[15]	Percent of Mental Health Providers of the Same Race[2]
Hispanics	17.1	8
Blacks	3.8	1.4
Asian Americans	2.2	almost 1
American Indians	1.0	almost 3

Source: The Status of Mental Health Care in Colorado Report, 2003, prepared by TriWest for the Mental Health Funders Collaborative

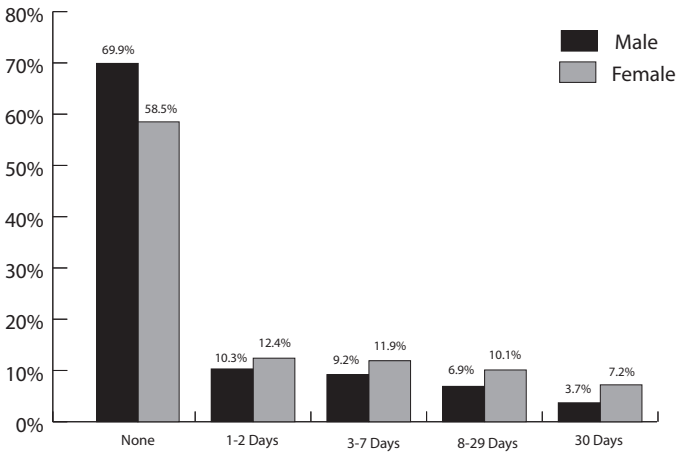
For a more in-depth presentation of mental health treatment barriers for racial/ethnic minorities, refer to the Surgeon General's report, *Mental Health: Culture, Race, and Ethnicity*, accessible on-line at http://www.surgeongeneral.gov/reportspublications.html#public.

Gender

According to 2001 Behavioral Risk Factor Surveillance Survey (BRFSS) data, 41 percent of females and 30 percent of males in Colorado reported experiencing poor mental health for one or more days during the past month. Seven percent of females and 4 percent of males reported feeling poor mental health every day during the past 30 days.[16] No state data, however, are available regarding the prevalence of Serious Mental Illness by gender.

According to the National Survey on Drug Use and Health in 2002, females were more likely to receive mental health treatment than males, 17 percent compared to 8.7 percent, respectively. When broken down by type of treatment, females and males were equally likely to receive inpatient care, 0.7 percent, but females were more likely than males to receive outpatient therapy, 9.9 percent compared to 4.7 percent and prescription medication, 13.9 percent and 6.7 percent, respectively.

Figure 1: Percent of Colorado Males and Females Who Reported Poor Mental Health in the Past 30 Days by Number of Days, 2001



Source: Behavioral Risk Factor Surveillance Survey, 2001

Age[12, 17]

According to the 2002 National Survey on Drug Use and Health, approximately 13 percent of young adults in Colorado aged 18-25 indicated that they suffered from a Serious Mental Illness. This proportion is slightly over two times larger than the percentage of adults over the age of 26, 6.42 percent. Given the relatively low rate of insurance coverage for this population (See Section V: Access to Health Care), young adults may face a greater barrier to treatment access than other age groups.

Another disparity is treatment access among older adults aged 65 and over. This population has a lower rate of treatment access than other adults 64 and under, 47 percent and 67 percent, respectively. At the same time, older adults may have unique mental health needs due to the process of aging. Both generational beliefs about mental illness and Medicare coverage may affect treatment access within this population. Less than 7 percent of psychiatrists and 4 percent of other mental health providers in private practice accept Medicare. Moreover, healthcare providers may overlook symptoms of mental illness due to myths regarding aging. Despite these barriers, research shows that approximately 80

percent of older adults with depression improve when they receive treatment with antidepressant medication, psychotherapy or a combination of both.[18]

Geography

Overall, prevalence rates of mental illness in rural communities are similar to those in urban communities.[19] However, levels of severe mental health needs vary by region of the state, with rates in Denver and the Western Slope estimated to be the highest and those in the metro area surrounding Denver the lowest.[2]

Rural residents tend to be served in primary care or social service settings, rather than specialty mental health centers.[20] The following serve as barriers to treatment access in rural areas: accessibility (getting there and paying), availability (someone there when you are in need) and acceptability (choice, quality and knowledge).[21, 22, 23] For example, one issue in regions of the state is access to and availability of psychiatrists. Northeast Colorado (6.1 per 100,000) and the Western Slope (8.7 per 100,000), in particular, have fewer psychiatrists than federal standards (10 per 100,000) suggest are needed.

Other Disparities

No state level data on the prevalence of Serious Mental Illness or on treatment access is available for the following highlighted groups. National, leading research concerning mental health access issues facing these populations is presented in lieu of these data.

Table 3: Colorado Mental Health Providers by Location, 2003

Types of Providers	Denver Metro	Southeast	Northeast	Western Slope	Total
2003 Population	**2,537,027**	**805,001**	**557,110**	**676,806**	**4,575,944**
Psychiatrists	522	98	34	59	713
per 100,000 population	**20.6**	**12.2**	**6.1**	**8.7**	**15.6**
Licensed Psychologists	1,245	230	189	148	1,812
per 100,000 population	**49.1**	**28.6**	**33.9**	**21.9**	**39.6**
Licensed Social Workers	1,753	429	224	250	2,656
per 100,000 population	**69.1**	**53.3**	**40.2**	**36.9**	**58.0**
Licensed Marriage & Family Therapists	227	115	68	66	476
per 100,000 population	**8.9**	**14.3**	**12.2**	**9.8**	**10.4**
Licensed Professional Counselors	1,502	553	244	425	2,794
per 100,000 population	**59.2**	**66.2**	**43.8**	**62.8**	**59.1**
Certified Addictions Counselors	1,268	401	192	344	2,205
per 100,000 population	**50.0**	**49.8**	**34.5**	**50.8**	**48.2**
Registered Unlicensed Therapists	1,114	279	167	234	1,794
per 100,000 population	**43.9**	**34.7**	**30.0**	**34.6**	**39.2**
Total	7,631	2,085	1,118	1,526	12,360
per 100,000 population	**300.8**	**259.0**	**200.7**	**225.5**	**270.1**

Source: The Status of Mental Health Care in Colorado Report, 2003, prepared by TriWest for the Mental Health Funders Collaborative

Lesbian Gay Bisexual Transgender (LGBT)[2]

National research indicates that gay, lesbian, bisexual and transgender people, particularly youth, are at higher risk for stress-related disorders and suicide. At the same time, research has suggested that sexual minority communities may have more positive community norms toward therapy, since a larger proportion of gay, lesbian and bisexual adults access treatment than the heterosexual population.[24] Sixteen percent of mental health providers report that they provide culturally specialized treatment for sexual minorities.[2] Most of these providers served the Denver Metro area, 22 percent, with the fewest located in the northeast and southeast regions of the state, 13 percent each.

People with Disabilities[2]

Individuals with developmental and physical disabilities represent other groups for whom mental health service access has important implications. Although most people with developmental disabilities (e.g., cerebral palsy, epilepsy, autism, or other neurological conditions) do not have a mental illness, this population tends to have more mental health needs than the general population. It is generally accepted that the prevalence rate of co-occurring developmental disabilities and mental illness is 30-35 percent. It also has been found that individuals with physical disabilities, such as problems with hearing, mobility and vision, are at greater risk for depression than the general population. Although there is a greater risk of mental illness within physically disabled populations, the majority of these individuals do not suffer from mental health disorders. Treatment access, however, may be of particular concern for these populations, given higher rates of prevalence than among other populations and given treatment barriers. For example, according to the state needs assessment conducted by TriWest, a relatively small number of mental health providers, 4.2 percent, indicated providing culturally specialized treatment to people who are deaf or hard of hearing and even fewer, 1 percent, reported being able to provide treatment in American Sign Language.

Did You Know?

- It is estimated that 1 out of 5 (over 900,000) people in Colorado need mental health services each year.
- In 2002, more than 67,000 Coloradans with Serious Emotional Disturbance (SED) or Serious Mental Illness (SMI) did not receive needed services.[13]
- Northeast Colorado and the Western Slope have a shortage of licensed, certified, and registered mental health and substance abuse providers in Colorado.

Major State Initiatives[11]

Colorado Mental Health Planning and Advisory Council

The Colorado Mental Health Planning and Advisory Council advises the Colorado state government concerning mental health service planning and coordination. It also monitors the allocation and adequacy of mental health services in Colorado and develops advocacy positions concerning mental health legislation and regulations. Currently, the Council has three, primary objectives:

- To address the unmet mental health needs of under-served populations
- To prevent further cuts in mental health services
- To develop a long-term strategy to minimize the number of persons with mental disorders in the criminal and juvenile justice systems.

WE CAN! Consumer Advocates Changing the Status of Mental Health Care in Colorado

The Wellness & Education Coalition and Advocacy Network of Colorado (WE CAN!) is Colorado's only statewide mental health consumer organization and operates in partnership with the Mental Health Association of Colorado. In the course of advocacy training and through regional networking meetings,

members of WE CAN! have educated consumers about their rights and ways to impact the mental health system. Five WE CAN! members serve as representatives to the State Mental Health Planning and Advisory Council and the Governor-appointed committee on involuntary commitment.

Family-to-Family Program and Visions for Tomorrow Education and Support Program of National Alliance for the Mentally Ill (NAMI) of Colorado

The NAMI Family-to-Family education program is a volunteer-driven peer education program designed to foster learning, healing, and empowerment among families of consumers. Initiated in Colorado in May of 1999, it is a comprehensive 12-week program typically taught by a two-person team of family member volunteers to other family members impacted by mental illness. The program encompasses current information about major brain disorders, provides updates on medication and treatment options, teaches coping skills for family members and offers advocacy training on local, state and federal policies and services. A new focus of this program is to train teachers and students in rural and frontier areas of Colorado. The Visions for Tomorrow Education and Support Program provides six to twelve weeks of education and support to the parents and caregivers of children and adolescents with mental illness and serious emotional disorders.

Colorado Mental Health Funders Collaborative[2]

The Colorado Mental Health Funders Collaborative was established by eight Colorado foundations to better understand and respond to the status of mental health care in Colorado. The partnership includes Caring for Colorado Foundation, The Colorado Trust, Daniels Fund, The Denver Foundation, First Data Western Union Foundation, HealthONE Alliance, Rose Community Foundation and Rose Women's Organization. In 2002, the Collaborative commissioned the TriWest Group to conduct an extensive assessment of the public and private mental health systems in Colorado. Findings from this statewide assessment were released in *The Status of Mental Health Care in Colorado* (2003) and will be used to inform future grantmaking efforts of the eight foundations.

Crisis Intervention Training for Law Enforcement

Crisis Intervention Training (CIT) is a multi-jurisdictional initiative in Colorado that has been led by the Division of Criminal Justice since 2000. It is modeled on a program created by the Memphis, Tennessee Police Department in 1981, which has been replicated in over 24 major cities across the country. CIT develops a corps of police officers specially trained to handle calls for service for persons who suffer from mental illness and other disabilities. The program is designed to decrease arrest and injury rates for people with mental illness, increase officer and citizen safety and enhance public involvement in law enforcement efforts.

Fifteen Colorado law enforcement agencies have trained CIT officers: Denver, Arvada, Wheat Ridge, Westminster, Lakewood, Golden, Cherry Hills, Littleton, Englewood, Fountain and Durango police departments and the Jefferson, Douglas, Arapahoe and La Plata county sheriff's departments. In addition to the police and sheriff's departments, community agencies are engaged in the planning and development of Crisis Intervention Teams (CITs). Leading organizations include: The Mental Health Corporation of Denver, Jefferson Center for Mental Health, Arapahoe Douglas Mental Health Network, Pikes Peak Mental Health Center, HealthOne, Exempla Lutheran Hospital, St Anthony's Hospital, the National Alliance for the Mentally Ill of Colorado, Denver Probation Office, Community Intersections, Jefferson County Corrections, Jefferson County District Attorney's Office, Colorado Mental Health Services and the Denver Department of Public Safety.

Colorado Work Group for Evidence Based Mental Health Practices[25]

The Colorado Work Group for Evidence Based Mental Health Practices was formed in 2002 as part of a state-wide initiative of the Division of Mental Health Services to promote evidence-based mental health practices. The group's goals include identifying key evidence-based practices for the public mental health system; developing priority recommendations for these practices; and identifying opportunities, barriers and strategies for practice dissemination. The work group consists of key stakeholders, including Mental Health Services, the Colorado Behavioral Healthcare Council, provider agencies and individuals, and consumers, family members and advocates.

Early Childhood Initiatives

Cornerstone: The Colorado Cornerstone Mental Health Initiative was established through a six-year grant from the federal Center for Mental Health Service to create a system of care that integrates the services of mental health, juvenile justice, education, child welfare, health, alcohol and substance abuse and other community resources to meet the needs of children with Serious Emotional Disturbances and their families in Denver, Clear Creek and Jefferson counties. The project focuses on children involved in or at risk for juvenile justice involvement.

Family Nexus: Family Nexus is a collaboration project of the Federation of Families for Children's Mental Health-Colorado Chapter (FFCMHCC), the Mental Health Association of Colorado (MHAC) and NAMI-Colorado. The goal of this collaboration is to better educate and empower families who have children with mental illnesses and co-occurring substance abuse problems and are involved, or at risk of involvement, in the juvenile justice system.

Project BLOOM: Project BLOOM (Building Leveraged Opportunities and Ongoing Mechanisms) targets children ages 0-5 with severe emotional disturbances in El Paso, Fremont and Mesa counties, in addition to the Aurora Mental Health Center service area, in order to address mental health issues that interfere with school readiness. The project is supported through a cooperative agreement with the federal Center for Mental Health Services and involves matching funds from the state.

Emerging Best and Promising Practices[25, 2]

The Colorado Work Group of Evidence Based Mental Health Practices convened to identify, compile and disseminate information regarding mental health practices and programs proven effective through evaluation. The Work Group observed that despite the knowledge available, most services delivered in Colorado – like the nation as a whole – do not incorporate these practices. According to the *Colorado Work Group for Evidence Based Mental Health Practices Final Report*, there are a number of recommended best and promising practices to effectively treat adults with severe mental illness

Another available resource on effective mental health practices is the TriWest report commissioned by the Mental Health Funders Collaborative (see the *Status of Mental Health Care in Colorado* report available at: http://www.coloradotrust.org/repository/publications/pdfs/MHCC/MHCCfinalreport.pdf). This resource lists specific mental health programs in early childhood prevention, intervention and treatment; community-based child, youth, family, and older adult services; diagnosis-specific interventions; and outpatient psychotherapy interventions that have been shown to be effective.

Mental Health Treatment Approaches

The following practices are evidence based and were identified by the Colorado Work Group for Evidence Based Mental Health Practices as a top priority for Colorado.

Assertive community treatment (ACT): Intensive comprehensive services provided in community settings, involving a clearly defined and well studied model, have been shown to be effective for persons with severe mental illness.

Supported employment: The integration of mental health services in work settings, through programs that facilitate job acquisition and provide ongoing support have been shown to be effective for wide range of persons with mental illness across various community settings.

Integrated substance abuse treatment and mental health services: Approaches that combine and integrate mental health and substance abuse interventions in a single setting have been found to be effective for persons with co-occurring severe mental illnesses and substance use.

Cognitive behavioral therapies (CBT): CBT approaches include the Lieberman model, individual cognitive behavioral therapy and dialectical behavior therapy. They have been successfully combined with psychiatric medication services.

Electro-convulsive therapy: Strong evidence supports use in severe and treatment-related depression, mania and treatment-resistant schizophrenia, when provided in hospital settings, either on an inpatient or outpatient basis. Although these conditions describe a relatively small proportion of individuals with mental illness, access to this treatment option may be critical for some.

Other Mental Health Service Approaches

Integrated care is an approach to treating mental health problems within primary care settings that focuses on "the delivery of physical and behavioral care in a way that meets the comprehensive mental health needs of each individual and family. From the patient's perspective, this care is delivered seamlessly, without regard to funding sources, organizational structures, policy and practice differences, and other barriers." [26] Integrated care programs employ a range of practices, including:

- Mental health consultation to primary care physicians and staff
- Mental health education of primary care staff emphasizing the importance of adequate psychopharmacological interventions and psycho-therapy treatment
- Mental health and primary care providers involved in combined or alternating follow-up sessions with patients
- Follow-up with patients to assess medication side effects, adherence to treatment and improvement in symptoms
- General coordination of care, including coordinated treatment planning and regular case conferences.

Improved psychiatric medications are widely available and increasingly so. Emerging prescription guidelines are available for specific subtypes of medications (particularly, antidepressant and antipsychotic) and age groups (including adults with Serious Mental Illness, children and youth).

Telemedicine can help extend provider resources in rural and frontier areas. Telemental health and telehealth technologies have become increasingly effective and more widely disseminated over the past 10 years. This technology entails having a mental health professional in a more urban area communicate with a mental health professional or consumer in a rural area via video-conference, as if the two were face-to-face in the same location.

MENTAL HEALTH

Programmatic Recommendations Developed for the Mental Health Funders Collaborative

- Implement empirically-based practices known to improve coordination—such as wraparound planning and school-based services for children; Assertive Community Treatment (ACT) and Integrated Dual Disorders Treatment for adults; and primary care initiatives for all ages, particularly older adults
- Use evidence based treatment approaches—implemented with fidelity to program models, but allowing for some modification where there are cultural differences and where resources are limited (such as in rural areas).

Policy Recommendations Developed for the Mental Health Funders Collaborative

- Promote blended funding strategies that integrate funding and services for populations with multiple needs
- Build awareness and understanding among lawmakers, employers, and other health care funding decision-makers regarding the extent of Colorado's unmet mental health needs and mental health funding challenges
- Recruit specialized providers, such as child psychiatrists and competent providers for underserved cultural groups
- Pursue strategies to extend existing resources, such as telemedicine for rural areas, training for primary care physicians to improve their diagnostic and prescribing practices, and training in cultural competency

Local Story: Mental Health Specialist Enhances Client Assessment and Communication

JEFFERSON COUNTY –With a two-year grant from the Caring for Colorado Foundation, the Community Health Services Division of the Jefferson County Department of Health and Environment funded a mental health specialist to provide staff training, education and client outreach. The mental health specialist coordinates the following with Division staff:

- Monthly or quarterly staff consultation and strategic planning meetings
- Monthly brown bag educational presentations on mental health topics
- Ongoing staff collaboration to identify and address clients' mental health challenges through consultation and referral
- Brief intervention with clients and the provision of referrals via telephone or through office or home visits.

Staff has reported that the mental health specialist has enhanced assessment and communication skills with clients. Furthermore, a follow-up telephone survey conducted with 34 clients who were referred for treatment showed promising progress in their mental health.

The Community Health Services Division plans to sustain the mental health specialist position beyond grant funding. It found that this position increased its capacity to address the health needs of Jefferson County residents and facilitated coordinated efforts with the Jefferson Center for Mental Health, a key community partner that provides emergency and crisis intake and treatment to Jefferson County residents.

Contact Information: Cynthia Farkas, CHN Supervisor • The Jefferson County Department of Health and Environment (JCDHE) • 303-239-7003

- Support empirically-based service approaches that are consumer- and family-driven, and that provide informal supports beyond traditional mental health services
- Promote efforts to involve consumers, youth, parents, and families at multiple levels in mental health initiatives, including oversight, provision of services, and evaluation of service effectiveness.

Resources

Asian Pacific Community Mental Health Clinic
Phone: 303-365-2959
www.apdc.org

Colorado Department of Human Services, Division of Mental Health Services
For more information about how to access mental health services outside of Medicaid, or to file a complaint about a service, a provider or access to services:
Toll free: 800-811-7648, TDD 303-866-7471
http://www.cdhs.state.co.us/ohr/mhs/

Department of Health Care Policy and Financing
To learn more about Medicaid eligibility, Medicaid application procedures, or file a complaint:
Toll free: 800-221-3943; TTY 303-866-3883
http://www.chcpf.state.co.us/HCPF/MedElig.asp

Colorado Department of Regulatory Agencies (DORA), Division of Insurance
Consumers needing information about the impact of Colorado legislation on mental health benefits should contact: Phone: 303-894-7490

The Federation of Families for Children's Mental Health
http://www.coloradofederation.org

Harambe Colorado
Harambe integrates Colorado's early childhood mental health and supports adequate and sustainable funding for services.
http://www.harambecolorado.org/

The Mental Health Association of Colorado (MHAC)
MHAC provides free mental health services to low-income youth, families, older adults, and homeless individuals. For more information about the Pro Bono Mental Health Program, including volunteer opportunities for mental health professions, contact:
Phone: 303-377-3040
Toll free: 800-456-3249
http://www.mhacolorado.org

Mental Health: Culture, Race and Ethnicity
A report of the U.S. Surgeon General's Office is available from: http://www.surgeongeneral.gov/reportspublications.html#public

Mile High United Way Services Locator
Access the following website for mental health and substance abuse treatment resources:
http://www.unitedwaydenver.org/home/gethelp_search.shtml

National Alliance for the Mentally Ill (NAMI), Colorado Chapter
Phone: 303-321-3104; Toll free: 888-566-6264
http://www.nami.org

National Institute of Mental Health
http://www.nimh.nih.gov
Phone: 866-227-NIMH (6464)
Toll free: 800-456-3249

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Section VIII

Injuries are the third leading cause of death among Coloradans. Among adolescents in Colorado, injuries are the leading cause of death. Each year, approximately 2,700 injury deaths occur across all age groups.

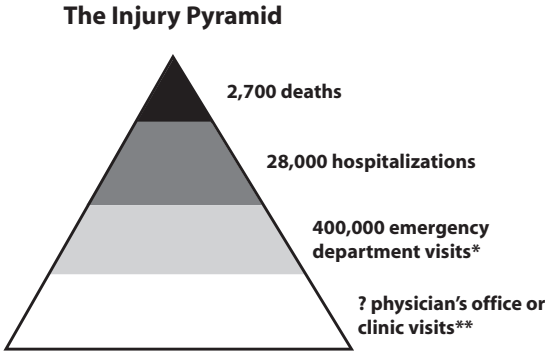
HEALTHY PEOPLE 2010 GOAL: *Reduce injuries, disabilities and deaths due to injuries and violence.*

The primary source of information and figures for this section was the *Injury in Colorado Report*, released by the Colorado Department of Public Health and Environment (CDPHE) in 2002. This report is available for download at http://www.cdphe.state.co.us/pp/injepi/InjuryinColorado/injuryincolorado.html. In addition, this section cites more recent data compiled for the purposes of this report by the Injury Epidemiology Program of CDPHE. Original data sources used to develop the *Injury in Colorado Report* and to provide updated data in this section included the Colorado Trauma Registry; death certificate data compiled by the Health Statistics Section of the Center for Health and Environmental Information and Statistics of CDPHE; hospital discharges compiled by the Colorado Health and Hospital Association; case abstracts from trauma centers in the state; the Traumatic Brain Injury Surveillance System; the Colorado Child Fatality Review Committee; the Behavioral Risk Factor Surveillance System and the Youth Risk Behavior Survey. For more information about these data sources, please refer to the *Injury in Colorado Report*.[1]

Injuries are the third leading cause of death among Coloradans overall. Among adolescents in Colorado, injuries are the leading cause of death.[2] Each year, approximately 2,700 injury deaths occur across all age groups.

In addition to premature death, severe injuries may cause lifelong disability or chronic pain and have profound social and economic costs for family, employers, communities and society. It is estimated that nearly one in 10 Coloradans seeks medical treatment for injuries each year. Injury requires more than 28,000 Coloradans to be hospitalized and thousands more to be treated in emergency rooms and physicians' offices annually.

Figure 1: Estimates of Death and Medical Treatment Due to Injuries



**Based on national estimates for emergency department visits*

***This is an unknown number. However, it is estimated that physician offices and clinics experience the largest volume of patient visits due to injury.*

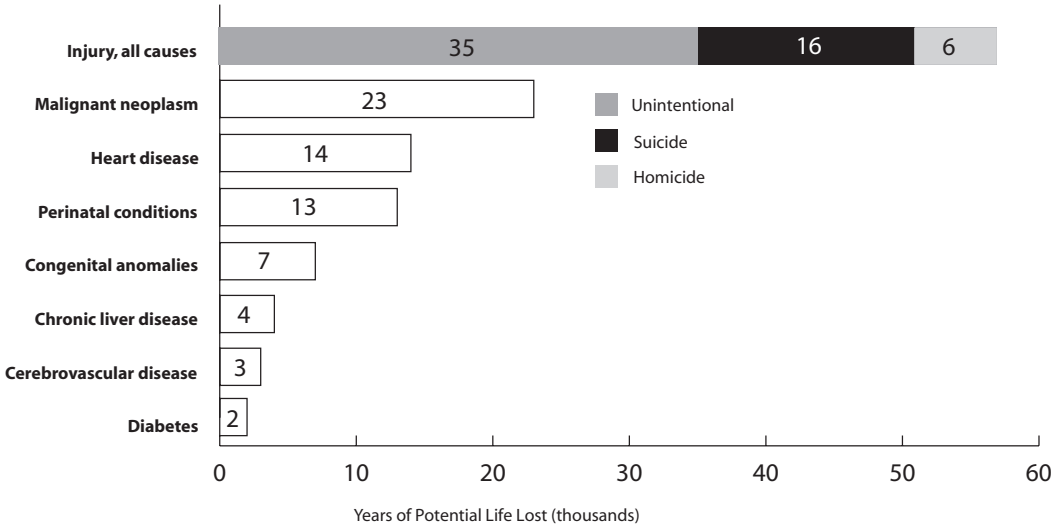
Source: Colorado Department of Public Health and Environment, Injury Epidemiology Program [i]

The Years of Potential Life Lost (YPLL) is a commonly used measure that calculates the number of productive years up to age 65 that have been lost due to death from different causes. Based on this method, in Colorado, more years of potential life are lost due to intentional and unintentional injury than to any other cause of death. Injuries are commonly categorized as *unintentional* to describe injuries and deaths, for example, from motor vehicle traffic crashes and as *intentional* to describe those resulting from such causes as suicide.

Motor vehicle traffic crashes and suicide are the leading causes of injury death in Colorado. When combined, these leading causes of death account for 55 percent of all injury deaths.

[i] The original figure appeared in the *Injury in Colorado Report (2002)*, developed by the Colorado Department of Public Health and Environment (CDPHE). The Injury Epidemiology Program updated the figure to reflect the newest available information.

Figure 2: Years of Potential Life Lost (YPLL) Before Age 65 by Causes of Death: Colorado Residents, 2000-2002



Source: Colorado Department of Public Health and Environment, Injury Epidemiology Program[ii]

MOTOR VEHICLE TRAFFIC CRASHES

Indicator: Motor Vehicle Traffic Crashes

Objective (15-15a): Reduce the motor vehicle traffic crash death rate.[iii]

Definition: Motor vehicle traffic crashes are defined as collisions occurring on public highways and roadways involving drivers and passengers, pedestrians, bicyclists or motorcyclists.

Healthy People 2010 Target: Reduce deaths caused by motor vehicle traffic crashes to 9.2 deaths per 100,000 population.

Baseline: (1998 National Vital Statistics System—Mortality)[3, IV]

- **Colorado**: 15.7 deaths per population of 100,000 were caused by motor vehicle traffic crashes
- **National**: 15.6 per population of 100,000

Local Public Health Context in Colorado

In 2002, more than 749 Coloradans were killed and nearly 4,200 were hospitalized for injuries sustained in motor vehicle traffic crashes. From 2000 to 2002, motor vehicle traffic-related deaths accounted for approximately 27 percent of all injury deaths (including intentional and unintentional injury death) and 41 percent

[ii]The original figure appeared in the *Injury in Colorado Report (2002)*, developed by the Colorado Department of Public Health and Environment (CDPHE). The Injury Epidemiology Program updated the figure to reflect the newest available information.

[iii]Healthy People 2010 identifies other traffic safety objectives as well, including objective 15-19 (increase use of safety belts) and objective 15-20 (increase use of child restraints).

[iv]Although the national Healthy People 2010 uses 1999 as the baseline year for this indicator, discussions with the director of the Colorado Injury Epidemiology Program suggested that 1998 data provided a stronger, comparable baseline for the state and the nation. A decision was made for the purposes of this report to use 1998 as the baseline year.

Seat Belt Protection and Use Patterns in Colorado

According to the National Highway Traffic Safety Administration's (NHTSA) National Center for Statistics and Analysis, "Lap/shoulder safety belts reduce the risk of fatal injury to front-seat passenger car occupants by 45 percent and the risk of moderate to critical injury by 50 percent."[6] Depending on the vehicle, seat belt use may reduce the risk of injury and death by an even greater amount. For occupants of light trucks (which NHTSA defines as pickups, vans and Sports Utility Vehicles), safety belts reduce the risk of fatal injury by an estimated 60 percent and nonfatal injury by 65 percent.[6]

The Colorado Department of Transportation (CDOT) estimates that the state's overall seat belt use rate in 2004 was 79.3 percent.[7] However, seat belt use varies somewhat by region. According to the annual statewide survey, seat belt use varies from a low rate of 61.0 percent in the Eastern Plains to 78.2 percent along the Western slope to 81.2 percent along the Front Range.[7] Seat belt use also varied in Colorado by the type of vehicle driven. Drivers and front seat passengers in vans and Sport Utility Vehicles (SUVs) have the highest observed seat belt use rate, 82.8 and 83.7 percent respectively. Drivers and front seat passengers of cars use seatbelts at a rate of 80.7 percent. Seat belt use, however, had a much lower rate among drivers and front seat passengers in trucks, where seat belt use averaged 68.3 percent.[7]

of all unintentional injury deaths in Colorado. Consequently, reducing motor vehicle traffic crashes provides an important strategy for reducing overall injury and death in Colorado.

An important method for decreasing injury death resulting from motor vehicle traffic crashes is the use of child and seatbelt restraints. The Colorado Department of Transportation (CDOT) estimates that 66 percent of drivers and passengers killed in Colorado in 2002 were not restrained. Seventy-one percent of these deaths, where restraints were not used, involved males.[4]

The Behavioral Risk Factor Surveillance System (BRFSS) in Colorado surveyed adults on seatbelt use while driving.[5] The percent of Colorado adults who report "always" and "almost always" using their seatbelts, however, has increased significantly since the mid-1990s. In 1995, 64.4 percent of adults reported "always" using a seatbelt when they drove or rode in a car and another 18 percent reported "almost always." In 1997, adults reporting "always" increased to 71.4 percent and another 16 percent reported "almost always." Finally, in 2002, 78.8 percent of adults reported "always" using seatbelts and another 11.6 percent reported "almost always."

Data Trends

The rate of motor vehicle traffic-related deaths in Colorado decreased significantly from 24.5 per 100,000 in 1980 to 16.2 per 100,000 in 1988.[1] Since 1988, however, the death rate has not declined significantly despite the passage of additional occupant protection laws, the increase in seatbelt use and vehicle safety improvements, such as air bags. Between 2000 and 2002, on average, 721 Coloradans were killed in motor vehicle traffic crashes each year, for an age-adjusted death rate of 16.4 per 100,000.

Demographic Trends and Health Disparities

Race/ Ethnicity

A 10-year annual average and age-adjusted death rate indicates that Hispanics are more likely to die in motor vehicle traffic crashes than other racial/ethnic groups in Colorado. Hispanics had a motor vehicle traffic crash death rate of 25.5 per 100,000, compared to a rate of 15.1 per 100,000 among blacks, 15.4 per 100,000 among American Indians, 16.4 per 100,000 among Asians and 16.7 per 100,000 among non-Hispanic whites.[1] Information obtained from the Fatality Analysis

A Closer Look at Children, 0-14 Years of Age[1]

Motor vehicle traffic crashes are the leading cause of injury death for children ages 1-14. For infants less than a year old, motor vehicle crashes are the third leading cause of injury death.[12] On average, 41 Colorado children ages 0-14 die in motor vehicle traffic crashes each year. This represents 37.5 percent of all injury deaths and 52.4 percent of all unintentional injury deaths in this age group.

The hospitalization rate for 5-14 year olds, 36.8 per 100,000, is significantly higher than the hospitalization rate for 0-4 year olds, 19.0 per 100,000. Males aged 5-14 have a significantly higher hospitalization rate than females, although the rates are similar for males and females ages 0-4. Based on an annual average for 2000 and 2002, 58 percent of the Colorado children ages 0-14 who were hospitalized for injuries from a motor vehicle traffic crash were vehicle occupants; 24 percent were pedestrians; 10 percent were bicyclists; and 5 percent were riders on a motorcycle.

Riding unrestrained puts a child at significantly greater risk for death and injury. Fifty-two percent of children ages 0-14 who were killed in a motor vehicle in 2000-2001 were unrestrained, putting them at twice the risk of death as those riding restrained.[13] In addition, 58 percent of children ages 0-13 who were injured in a motor vehicle traffic crash and treated at a Level I, II or III trauma center from July 1997 to February 2000 were unrestrained.[1]

Reporting System (FARS), which collects information on all fatal motor vehicle traffic crashes nationwide, suggests factors that may contribute to these higher death rates. Specifically, FARS data indicated that Hispanics involved in fatal traffic accidents tended to have a greater number of passengers and were less likely to be restrained with safety devices such as seat belts.[11]

Gender

After age 15, death rates resulting from motor vehicle traffic-related injuries are significantly higher for males than females. Data indicate that between 2000 and 2002, the death rate from motor vehicle traffic crashes for males, 23.2 per 100,000, was more than twice that for females, 10.4 per 100,000. In addition, the age-adjusted hospitalization rate for injuries due to motor vehicle traffic crashes indicates the disproportionate involvement of males. The injury rate was 120.9 per 100,000 males versus 82.3 per 100,000 females.[1]

Age

From 2000-2002, motor vehicle traffic crashes were the leading cause of injury death for Coloradans under the age of 75. The death rate resulting from motor vehicle traffic crashes was highest among adolescents and young adults ages 15-24 and for adults 75 years of age and older, 28.5 and 30.1 per 100,000, respectively. The rate of hospitalization for motor vehicle traffic-related injuries also is highest for these age groups: 186.0 per 100,000 for ages 15-24 and 159.3 per 100,000 for adults 75 years of age and older.

Among adolescents and young adults ages 15 to 19, more than three-quarters of unintentional injury deaths are

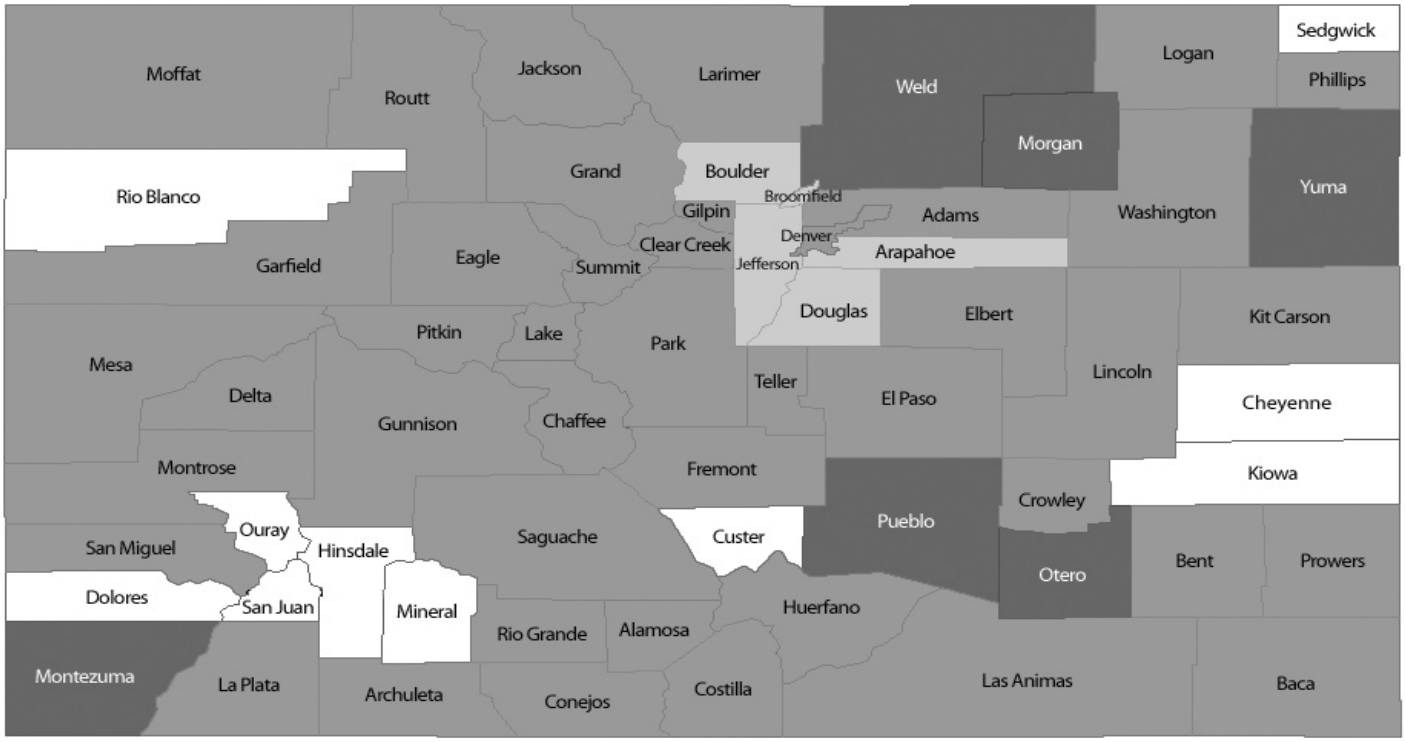
motor vehicle-related. This age group is involved in three times as many fatal crashes as all drivers collectively, when miles driven is controlled.[2]

Geography

Twenty-six percent of all motor vehicle traffic-related deaths and 19 percent of motor vehicle traffic-related hospitalizations occur in rural areas of the state. Thus, nearly three-quarters of all injury deaths resulting from motor vehicle traffic crashes occur in urban areas of the state. However, death and hospitalization rates for the residents of rural counties are significantly higher than for urban and suburban county residents, given the proportion of the overall resident population affected.

Based on county of residence from 2000-2002, six of Colorado's 64 counties have a mortality rate attributable to motor vehicle traffic-related incidents that is higher than the state rate of 16.4 per 100,000.[vi] Only one of these counties, Pueblo, is categorized as urban. In addition, 13 counties have hospitalization rates for motor vehicle traffic related injuries that are higher than the state rate of 101.8 per 100,000.[vii] Only two of these counties are urban.

Figure 3: Age-adjusted Motor Vehicle Traffic Death Rates by County of Residence 2000-2002



Source: Colorado Department of Public Health and Environment, Injury Epidemiology Program [v]

[v]The original figure appeared in the *Injury in Colorado Report*, developed by the Colorado Department of Public Health and Environment (CDPHE). The Injury Epidemiology Program updated the figure to reflect the newest available information.

[vi]The six counties with rates exceeding the state rate of injury death resulting from motor vehicle traffic crashes were Montezuma, Morgan, Otero, Pueblo, Weld and Yuma.

[vii]The thirteen counties were Adams, Chaffee, Clear Creek, Delta, Denver, Elbert, Grand, Kiowa, Lake, Morgan, Park, Prowers and Weld.

Colorado Occupant Protection Laws

- Child Passenger Safety Law (CRS 42-4-236): Children ages one to four years who weigh 20 to 40 pounds must be restrained in a forward-facing child safety seat, in effect since January 1, 1984.[8]
- Safety Belt Law (CRS 42-4-237): Driver and front seat passengers must wear belts, secondary enforcement, in effect since July 1, 1987.
- Child Passenger Safety Law (CRS 42-4-236(2) and (5)): Children under age 16 are required to wear seat belts/car seats in front and back seats, primary enforcement, in effect since July 1, 1995.
- Colorado's Booster Seat Law (CRS 42-4-236): Children over 40 pounds, who are less than 6 years old, must continue to ride in a child car seat (unless they are 55" tall). Typically, this is a booster seat.[9, ix] A child, who is at least six years old or is at least 55 inches tall, must be properly restrained with the motor vehicle's safety belt. Infants under 12 months old or at least 20 lbs. must ride in a rear-facing child safety seat. These new provisions have been in effect since August 2003.
- Primary enforcement laws permit law enforcement to stop motorists solely for being unrestrained. Secondary safety belt laws permit police to ticket motorists for violating laws only if they are stopped for other reasons such as speeding. The Task Force of Community Preventive Services, an independent, non-federal pubic health group, found primary laws to be most effective in increasing safety belt use and reducing fatalities.[10]

Suicide Deaths and Prevention

The primary source of information and figures for this section was the *Injury in Colorado Report,* released by the Colorado Department of Public Health and Environment (CDPHE) in 2002. This report is available for download at http://www.cdphe.state.co.us/pp/injepi/InjuryinColorado/injuryincolorado.html.
In addition, this section cites more recent data compiled for the purposes of this report by the Injury Epidemiology Program of CDPHE. Original data sources used to develop the *Injury in Colorado Report* and to provide updated data in this section included the Colorado Trauma Registry; death certificate data compiled by the Health Statistics Section of the Center for Health and Environmental Information and Statistics of CDPHE; hospital discharges compiled by the Colorado Health and Hospital Association; case abstracts from trauma centers in the state; the Traumatic Brain Injury Surveillance System; the Colorado Child Fatality Review Committee; the Behavioral Risk Factor Surveillance System and the Youth Risk Behavior Survey. For more information about data sources, please refer to the *Injury in Colorado Report.*

Indicator: Suicide Deaths and Prevention

Objective (18-1): Reduce the suicide rate.

Definition: The suicide rate refers to intentional injury deaths that occur as a result of self-inflicted harm with the intent of causing death. Data concerning suicide attempts, often resulting in hospitalization, may be presented in conjunction with, but separately from, suicide deaths.

Healthy People 2010 Target: Reduce the suicide rate to 5.0 deaths per 100,000 persons.

Colorado Interim Target: Reduce the suicide rate to 12.0 per 100,000[viii]

[viii]The Colorado interim target was developed by the Injury Epidemiology Program of the Colorado Department of Public Health and Environment to serve as a milestone marking progress towards the Healthy People 2010 target objective.

[ix]Safety advocates such as the American Academy of Pediatrics, the National Highway Traffic Safety Administration and the National SAFE KIDS Campaign recommend keeping children in booster seats until they are about 57" tall. A child's height is the best predictor of proper seat belt fit.

Baseline: (1998 National Vital Statistics System – Mortality)[3, x]

- **Colorado**: 15.3 suicide deaths per population of 100,000
- **National**: 11.3 per population of 100,000

Local Public Health Context in Colorado

Colorado had the fifth highest suicide rate in the United States in 2001, the last year for which state rankings were available.[14] In 2001, alone, the number of persons dying from suicide in Colorado equaled the number killed in motor vehicle crashes. Each year, an average of 684 Coloradans die and 2,500 are hospitalized as a result of suicide attempts.[xi]

Among the top ten states with the highest suicide rates in 2001, seven states, including Colorado, are located in the Rocky Mountain region (state-specific suicide rates per 100,000 population are presented in parentheses beside each): New Mexico (19.8), Montana (19.3), Nevada (18.4), Wyoming (16.8), Colorado (16.3), Idaho (15.9) and Arizona (14.5).[14] In 2001, this region had an average suicide rate of 16.2 per 100,000, while the national rate was 10.8 per 100,000.

Despite these high rates, there is reason to believe that suicide deaths and hospitalizations may be under-estimated nationally, as well as in the state. Each year, a number of deaths and hospitalizations are labeled of "undetermined intent." This means that no information clearly indicated that the event was intentional (i.e., resulting from a suicide or homicide) as opposed to unintentional injury. In Colorado, an average of 99 deaths and 399 hospitalizations of undetermined intent occur each year. Many of these deaths involve poisoning, hanging/strangulation or use of firearms. An unknown proportion of these deaths and hospitalizations may be attributable to suicide and attempts.

Data Trends

Since 1996, Colorado has ranked consistently among the top 12 states in suicide rates.[15] However, from 1996 to 2000, Colorado experienced a significant decrease in the age-adjusted suicide rate. In 1996, the rate was 18.2 per 100,000. By 2000, the rate had dropped to 14.1 per 100,000. As of 2002, however, the rate had increased to 16.0, with suicide remaining as the state's eighth leading cause of death.

Demographic Trends and Health Disparities

Race/ Ethnicity

For the past 15 years, suicide has been the second leading cause of death for all races ages 15-24.[1] However, the suicide rate among non-Hispanic whites has been significantly higher than among other racial/ethnic groups. Suicide death rates are 17.0 per 100,000 among non-Hispanic whites, compared to 9.7 per 100,000 among Hispanics, 9.1 per 100,000 among blacks, 7.1 per 100,000 among American Indians and 6.2 per 100,000 among Asians. Even though suicide death rates are higher for non-Hispanic whites than other groups, suicide death still occurs and is of concern with regards to other racial/ethnic groups as well.

Gender

Suicide is the leading cause of injury death for males and the third leading cause of injury death for females. Overall, males are more likely to die as a result of suicide, although females are more likely to attempt suicide. Among Colorado residents, the age-adjusted suicide rate in 2000-2002 was more than four times higher for males, a rate of 25.7 per 100,000, than for

[x]Although the national Healthy People 2010 uses 1999 as the baseline year for this indicator, discussions with the director of the Colorado Injury Epidemiology Program suggested that 1998 data provided a stronger baseline for the state and the nation. Due to limitations of the 1999 data, this report presents 1998 as the baseline.

[xi]The Colorado Health and Hospital Association (CHHA) compiles hospital discharge data from all acute care and many specialty hospitals in Colorado. Individuals who attempted suicide and were treated within 24 hours in the Emergency Room Department or were immediately admitted to the psychiatric unit are not included in these counts. Due to these limitations, available data underestimate the actual incidence of suicide attempts in Colorado.

females, a rate of 6.2 per 100,000. In contrast, the age-adjusted hospitalization rate for suicide attempts was significantly higher for females, 67.5 per 100,000, compared to males, 42.7 per 100,000. Among adults aged 75 and older, where the suicide rate is consistently the highest, Colorado males have a suicide rate that is nine times higher than the rate for females of the same age group.

Age

Suicide is the second leading cause of death among Coloradans aged 10 to 34. The relative risk of suicide death, however, increases with age. Starting at age 65, suicide death rates steadily increase. Adults aged 85 years and older are almost three times as likely to die from suicide as adolescents and young adults ages 15-24. This is particularly true for men. The highest rate of suicide in Colorado is among adult men aged 85 and older.

Geography

A 10-year annual average for the period, 1993-2002, shows significant differences in age-adjusted suicide rates by county of residence. Counties with the highest suicide death rates are scattered throughout the state, but are generally nonurban and located on Colorado's Western Slope. Five counties, Chaffee (25.3), Delta (27.1), Mesa (21.3), Montrose (21.7) and Pueblo (18.8) have age-adjusted suicide rates that are higher than the overall state rate of 16.0.[1]

While the counties listed above have the highest suicide rates, the largest number of suicide deaths occurs in counties located in the Denver metropolitan area. Adams, Arapahoe, Denver, El Paso and Jefferson counties each report between 53 to 92 suicide deaths annually.

Did You Know?

Motor Vehicle Traffic Safety

- According to the National Highway Traffic Safety Administration, in 2000, the estimated economic cost of motor vehicle traffic crashes in Colorado was $3.278 billion.[16]
- Both death and hospitalization rates for traumatic brain injuries resulting from motor vehicle traffic crashes are highest for Coloradans ages 15-24.[1]
- For most age groups, the hospitalization rate for motor vehicle traffic-related injuries is statistically higher for males than for females.

Suicide Prevention

- Non-Hispanic, white males account for almost 68 percent of all suicide deaths.[1]
- Suicide rates steadily increase starting at age 65 and are most concentrated among mature adults, 85 years of age and older.[1]
- The groups with the highest suicide death rate are males, non-Hispanic whites and individuals over 75 years of age. Females and individuals aged 15-44 have the highest rates for suicide attempts.[1]

Major State Initiatives

Motor Vehicle Traffic Safety

Graduated Driver Licensing

According to National Highway Traffic Safety Administration (NHTSA), "A significant percentage of young drivers are involved in traffic crashes and are twice as likely as adult drivers to be in fatal crashes. The problems contributing to their high crash rates include immaturity, inexperience and lack of adequate driving skills, driving during nighttime high-risk hours, risk-taking, and poor driving judgment and decision making."[17] Graduated Driver Licensing (GDL) is an evidence-based strategy for decreasing young driver crash rates; it is designed to extend supervision of novice drivers as they gain driving experience. States with graduated licensing programs have reported 5-26 percent reduction in crashes in the adolescent age group.[18]

In 1999, Colorado enacted GDL legislation for young drivers. This legislation introduced a Colorado minor driver license for young drivers under 18, as well as new driving restrictions. These restrictions included limiting the number of passengers in the front seat to one and the number of back seat passengers to the number of seat belts. Drivers under the age of 17 also were prohibited from driving between midnight and five in the morning unless accompanied by an adult or in possession of a note signed by an employer, parent, guardian or other responsible adult stating employment arrival and departure times.

In 2004, the Colorado Legislature mandated additional requirements. The new provisions raised the age at which a person is permitted to obtain an instruction permit. Adolescents who undertake qualifying training courses may apply for an instruction permit earlier. In addition, the new law requires young drivers to hold a learner permit for at least 12 months before qualifying for a minor driver license.

0.08 Blood Alcohol Concentration (BAC)

In May 2004, Colorado joined 47 other states in passing legislation that reduced the legal blood alcohol concentration while driving, or within two hours after driving, from 0.10 to 0.08 grams of alcohol per 100 milliliters of blood or per 210 liters of breath. According to NHTSA, "Laboratory and on-road research shows that the vast majority of drivers, even experienced drinkers, are significantly impaired at 0.08 with regard to critical driving tasks."[19] A BAC level of 0.08 represents a critical threshold, at which point the risk of being in a motor vehicle traffic crash rises very rapidly. Consistent and persuasive evidence shows that 0.08 BAC laws are associated with reduced incidence of alcohol-related fatal crashes.[20]

Colorado Department of Transportation State Initiatives

The Colorado Department of Transportation (CDOT) administers a number of safety education and enforcement programs designed to decrease injuries and death that result from motor vehicle traffic crashes. These programs include:

- Click It or Ticket, which is a national, evidence-based program promoting safety belt usage through message campaigns and law enforcement.
- Child Passenger Safety training for fire departments, law enforcement, hospital/ healthcare professionals and car dealerships and the establishment of statewide fitting stations to assist with proper installation of child restraints in motor vehicles.
- Bicycle and Pedestrian Safety programs that promote proper use of helmets and pedestrian safety among elementary and preschool children and parents.
- Impaired Driving programs that provide peer education and social norming programs, as well as community-based grants.

- Young Driver programs that provide public information and education about Colorado's new graduated licensing law.

Colorado Department of Public Health and Environment State Initiatives

The Injury and Suicide Prevention Program works with local programs and health agencies to promote motor vehicle safety. Activities funded by the Centers for Disease Control and Prevention include:

- Booster seat use among children ages 4-8 in El Paso County. The booster seat project involves training childcare center providers about the law and safe transport of children; distribution of booster seat information to all parents; and booster seat distribution and proper installation demonstration.
- Increase safety belt use in two rural counties, Prowers and Delta, through enhanced enforcement. The project involves formation of a community-based coalition to develop interventions, enlistment of local law enforcement agencies in the Click It or Ticket campaign, earned and paid local media coverage and targeted messages to key groups, such as young, Hispanic drivers and/or pick-up truck drivers.

Suicide Prevention

Colorado Office of Suicide Prevention

In 1998, in response to the consistently high rate of suicide among Coloradans, the Governor's Suicide Prevention Advisory Commission was formed. The Commission's report led to state legislation establishing the Office of Suicide Prevention (OSP) within the Colorado Department of Public Health and Environment in 2000. The OSP addresses suicide and suicidal behavior among Coloradans of all ages in order to reduce the suicide rate in Colorado. Serving as the statewide coordinator of suicide prevention programs, the OSP utilizes approaches that have been found to be effective or promising in the following program areas:

- Technical support and capacity building for local programs
- Statewide needs and resource assessment
- Gatekeeper and other training
- Public awareness and education campaigns
- Grant making to local suicide prevention efforts
- Management of cash funds of gifts, grants and donations.

Preventing Suicide in Colorado Initiative

The Colorado Trust and the Colorado Office of Suicide Prevention joined to collect and analyze information about suicide in Colorado. Published in 2002, the findings of the *Suicide in Colorado* report led The Colorado Trust to create a four-year (2003-2006), $2.55 million Preventing Suicide in Colorado Initiative.[21] The University of Colorado at Denver in partnership with the Mental Health Association of Colorado serves as the initiative's coordinating and managing agency. Through this initiative, 10 agencies throughout the state, eight of which serve rural areas, have been awarded grants to implement programs that prevent suicide locally. Programs supported by this initiative are designed to encourage people at risk of suicidal behaviors to seek treatment and improve the care at-risk individuals receive.

Emerging Best and Promising Practices

Motor Vehicle Traffic Safety

Legislation, combined with primary enforcement and education, has been shown to reduce injuries and fatalities resulting from motor vehicle traffic crashes. In addition, the national Task Force of Community Preventive Services developed the following set of recommendations for the implementation of effective, evidence-based strategies to prevent motor vehicle injuries and deaths:[10]

- Develop distribution and education programs for child safety seats and booster seats. This may

include safety seat checkpoints to promote the correct use of child safety seats, booster seats and seat belts.

- Support increased enforcement of seat belt and child safety seat laws, graduated licensing laws and impaired driving laws.
- Provide data and information to groups promoting stronger legislation regarding seat belt and booster seat laws, graduated licensing and impaired driving laws.
- Participate in community-wide programs to reinforce the proper use of seat belts, booster seats and car seats by all motor vehicle occupants.
- Develop specific messages for each target audience.

Seat Belts and Child Restraints Save Lives[22]

- Seat belts are 45-60 percent effective in preventing fatal injuries. Airbags, combined with lap/shoulder safety belts, offer the most effective safety protection for adults.[23]
- When correctly installed and used, child safety seats reduced the risk of death by up to 71 percent for infants and 54 percent for children ages 4 years and younger in passenger cars.[24]
- Children in booster seats (recommend for ages 4-8 years) have 45 percent fewer major injuries compared to those children in crashes who use seat belts only. Colorado's booster seat law requires children ages 4-5 years to be restrained in a booster seat unless the child is 55 inches in height.[25]

Suicide Prevention[22]

While there is a great deal of research on suicide risk factors, less is known about the strategies that are most effective in measurably reducing suicide. The strongest evidence available supports a comprehensive approach integrating the following components:

Promoting Public Awareness of Suicide

Research indicates that individuals with suicide plans do not seek professional help due to the stigma associated with suicide, depression and other mental health challenges. Public awareness can help address stigma by changing knowledge, attitudes, beliefs and behaviors. Preliminary evidence at a state level suggests that media campaigns may help reduce adolescent suicide rates. At the same time, the National Institute of Mental Health and other experts in the field caution that prevention messages should be carefully crafted as they may have deleterious effects.[26] (For a fuller discussion of this issue, please refer to the following working paper: http://www.nimh.nih.gov/SuicideResearch/suicprevmsgwkshop2p326.pdf).

Screening Programs

Screening programs use structured tools to identify high-risk individuals such as those with depression, other mental illness, substance abuse, stressors, suicidal thoughts or suicidal history. Since suicide is a relatively rare event, screening can help identify those individuals at higher risk of suicide and facilitate referral to specific interventions. Several potential screening instruments have proven valid and reliable for detecting suicide risk among adult and youth populations

Providing Gatekeeper Training

Gatekeeper training involves educating key lay and professional community members who may have contact with someone at risk of suicide. Gatekeeper training provides information about 1) the warning signs and risk factors associated with suicide, 2) referrals and resources and 3) how to access these important forms of

assistance. Participants of gatekeeper training programs have demonstrated enhanced readiness to intervene by increasing their comfort, competence and confidence in helping people at risk.

Continuing Support for Suicide Attempters

People who have attempted suicide are more likely to make another attempt. Hospital staff can help establish a therapy plan for survivors, offer family education, and provide referrals to mental health and other treatment facilities. Outpatient programs have shown success in increasing survivors' compliance with recommendations. However, not all such programs have demonstrated reductions in suicides.

Limiting Access to Lethal Means

There is evidence that impulsive suicides can be reduced by limiting access to lethal means and methods of self-harm. A study conducted by the Colorado Department of Public Health and Environment concluded that the presence of a gun in the home increased the risk of youth completing suicide. Strategies to restrict access to firearms include education of homeowners and youth, proper firearm storage (e.g., locked, unloaded and stored separately from ammunition), and product safety features on guns and legislative and enforcement enhancements.

The Surgeon General's *A Call to Action to Prevent Suicide* (http://www.surgeongeneral.gov/library/callto

Local Story: Motor Vehicle Traffic Safety[27]

MONTEZUMA COUNTY – The Montezuma County Clicks program, a four-year effort funded by the Colorado Department of Transportation (CDOT), has helped double seat belt use in the county. CDOT funded this pilot program through The Piñon Project from 2000 to 2003, in response to research that showed lower seat belt use in rural communities. During the first three years, efforts focused on building partnerships in the community and getting the message out that buckling up on every trip is important and saves lives. In its fourth year, The Piñon Project was instrumental in coordinating support from all local law enforcement agencies to participate in the 2003 May Mobilization Click It or Ticket statewide seat belt enforcement campaign. The effort resulted in a significant increase in seat belt use in the county.

In 1999, the year before the Montezuma County Clicks program started, the seat belt use rate in the county was 35.4 percent, according to CDOT's annual statewide seat belt survey. In four years, seat belt use increased to 73 percent. "When we started this program, Montezuma County had the worst seat belt use rate in the state," said Toleda Cluff, Montezuma County Clicks Coordinator. "Our greatest accomplishment was to bring seat belt use up to nearly equal the state rate." An advisory council comprised of community, civic and business leaders provided oversight for the project and gained widespread support for this program. The campaign featured personalized, distinctive turquoise seat belt highway signs, radio testimonials from community members and appearances at major special events throughout the county to build public awareness.

"Based on the success of the Montezuma County Clicks program, CDOT funded a similar education and seat belt enforcement program in La Plata County," said Steve Parker, Colorado Transportation Commissioner. The La Plata County seat belt program is in its second year and has received $75,000 in federal highway safety grants.

action/default.htm), released in 1999, and the *National Strategy for Suicide Prevention* (http://www.mentalhealth.samhsa.gov/suicideprevention/default.asp), released in 2001, are other important resources for the dissemination and implementation of emerging best practices in suicide prevention. Many of the recommendations in these reports focus on population-specific and community-based strategies.

Resources

Motor Vehicle Traffic Safety

Colorado Child Passenger Safety Team
http://www.carseatscolorado.com

Colorado Department of Transportation
http://www.dot.state.co.us

Injury Epidemiology Program
Colorado Department of Public Health and Environment
http://www.cdphe.state.co.us/pp/injepi/injuryepihom.html

Injury and Suicide Prevention Program
Colorado Department of Public Health and Environment
http://www.cdphe.state.co.us/pp/injuryprevention/

National Center for Injury Prevention and Control
Centers for Disease Control and Prevention
http://www.cdc.gov/ncipc

SafeUSA
http://www.cdc.gov/safeusa

National SAFE KIDS Campaign
http://www.safekids.org

National Highway Traffic Safety Administration
htpp://www.nhtsa.dot.gov

National Safety Council
http://www.nsc.org

Suicide Prevention

American Association of Suicidology
Phone: 202-237-2280
Email: info@suicidology.org
http://www.suicidology.org

American Foundation for Suicide Prevention
Toll free: 888-333-AFSP (2377)
Email: inquiry@afsp.org
http://www.afsp.org

Colorado Office of Suicide Prevention
Colorado Department of Public Health and Environment, Prevention Services Division
http://www.cdphe.state.co.us/pp/suicide/suicidehom.asp

National Organization for People of Color Against Suicide
Toll free: 866-899-5317
Email: nopcas@onebox.com
http://www.nopcas.com

Suicide Education and Support Services
http://www.endsuicide.org

Suicide Hotline
Kristin Brooks Hope Center
Phone: 800-SUICIDE (784-2433)
Email: info@hopeline.com
http://www.hopeline.com

Suicide Prevention Resource Center
Phone: 877-GET-SPRC (438-7772)
TTY: 617-964-5448
Email: info@sprc.org
http://www.sprc.org

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[27]Montezuma County Clicks Its Way to Higher Seat Belt Use. (February 23, 2004). Available at http://www.dot.state.co.us/communications/news/OP20040223-1.htm. Accessed August 26, 2004. Reprinted here with permission from the Colorado Department of Transportation.

Section IX

Substance abuse and its related problems are associated with some of society's most pervasive health and social concerns. Health officials and professionals involved in addressing suicide, criminal and antisocial behaviors, domestic violence, sexual assault, unintentional injuries, motor vehicle traffic accidents and mental illness recognize that substance abuse has a central role in these public health issues.

HEALTHY PEOPLE 2010 GOAL: *Reduce substance abuse to protect the health, safety and quality of life for all, especially children.*

Substance abuse and its related problems are associated with some of society's most pervasive health and social concerns. Health officials and professionals involved in addressing suicide, criminal and antisocial behaviors, domestic violence, sexual assault, unintentional injuries, motor vehicle traffic accidents and mental illness recognize that substance abuse has a central role in these public health issues.

In Colorado, there are an estimated 250,000 individuals, 12 years of age and older, who abuse alcohol or illicit drugs. This approximates 7 percent of the state's population.[1] However, the social cost of substance abuse affects families and communities as well. Further, the economic costs to Coloradans of untreated substance abuse have been estimated to total $4.4 billion per year.[2]

A review of substance abuse data suggests that special attention should be directed toward the treatment and prevention of the abuse and use of alcohol and illicit drugs, such as marijuana, cocaine and methamphetamines. Nationally, and within the state, alcohol and marijuana are the two non-tobacco substances that are most commonly used. However, Colorado also is ranked high for the prevalence of cocaine use. Overall, Coloradans' use rate of alcohol, illicit drugs overall, marijuana and cocaine is among the highest in the nation. Furthermore, the increase in admissions for methamphetamine treatment and methamphetamine lab seizures indicates that prevention and treatment efforts also should target this illicit drug.

Three leading health indicators serve as the focus of this section:

- Binge Drinking among Adults
- Illicit Drug Use among Adults
- Use of Alcohol and Illicit Drugs among Adolescents

Binge Drinking Among Adults

Indicator: Binge Drinking Among Adults

Objective (26-11c): Reduce the proportion of adults engaging in binge drinking of alcoholic beverages during the past month.

Definition: Binge drinking is defined as the consumption of five or more drinks on one occasion.

Healthy People 2010 Target: Only 6 percent of adults 18 years of age and older will report binge drinking in the past 30 days.

Colorado Interim Target:[i] Only 39 percent of young adults ages 18-25 and 17 percent of adults 26 and older will report binge drinking in the past 30 days.

Baseline: (1999 National Household Survey on Drug Abuse, NHSDA)[3, 4, ii, iii]

- **Colorado**: 42.3 percent of young adults (ages 18-25) and 21.0 percent of adults (ages 26 and older) reported binge drinking in the past 30 days

- **National**: 37.9 percent of young adults (ages 18-25) and 18.6 percent of adults (ages 26 and older)

[i]The Colorado interim target was developed by the Alcohol and Drug Abuse Division of the Colorado Department of Human Services to serve as a milestone marking progress towards the Healthy People 2010 target objective.

[ii]Although HP 2010 reports 1998 National Household Survey on Drug Abuse (NHSDA) as baseline and indicates an overall, national rate of 16.6 percent for adults aged 18 years and older, state level data was not available until 1999. In order to provide comparable baseline measures for the state and the nation, this report uses the 1999 NHSDA. Due to differences in the prevalence rates of illicit drug use among young adults ages 18-25 and adults 26 years of age and older (both nationally and in Colorado), separate baseline estimates are provided for these age groups.

[iii]Note that changes to data collection and quality control methods were introduced in 2002. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), improved data quality may make 2002 rates look larger than previous years, when, in actuality, they do not represent an increase, but rather a more sensitive and accurate measure. Thus, 2002 data are not directly comparable to 2001 and prior years. Future analysis of Colorado substance abuse trends may consider using 2002 survey estimates as baseline. In 2002, survey data indicated that 49.7 percent of young adults ages 18-15 and 23.4 percent of adults 26 and older reported binge drinking in the past 30 days.[5]

Local Public Health Context in Colorado

According to the 2002 National Survey on Drug Use and Health (NSDUH), formerly the National Household Survey on Drug Abuse, Colorado ranked in the top 20 percent of states for past month binge use of alcohol and past month use of alcohol, overall, for individuals aged 12 and older.[5] The per capita consumption of alcohol in Colorado is 16 percent higher than the national average.[1] In 2000-01, the National Household Survey on Drug Abuse (NHSDA)[iv] estimated that, in Colorado, 5.9 percent of young adults ages 18-25 and 2.0 percent of adults 26 years of age and older were alcohol dependent. These estimates represent approximately 80,000 adults in Colorado. According to the Alcohol and Drug Abuse Division of the Colorado Department of Human Services, alcohol abuse, dependence and its consequences create a financial burden in Colorado that greatly exceeds that of all other drugs combined.[1]

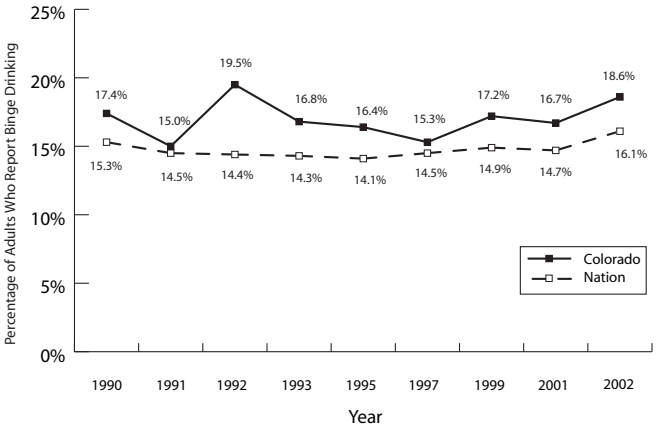
Drinking and Driving in Colorado[10]

Analysis of The Fatality Analysis Reporting System (FARS) data indicates that, both nationally and in Colorado, a significant proportion of motor vehicle traffic fatalities involves alcohol. However, in Colorado, the percentage of fatal crashes involving alcohol significantly declined from 1981 to 2002. In 1981, alcohol was involved in more than half, 54 percent, of the fatal crashes; by 2002, the percentage of fatal crashes that were alcohol related dropped to 34 percent. In 2003, according to FARS, 39 percent of individuals that died in motor vehicle traffic crashes were in alcohol-related traffic accidents, compared to 25 percent for the nation.

Data Trends[6]

Between 1990 and 2002, Colorado had a statistically equivalent or higher rate of adult binge drinking compared to the nation.[v] Despite this, according to 2003 Behavioral Risk Factor Surveillance System (BRFSS) data, the alcohol-related death rate in Colorado declined over this same 12-year period: 30.3 per 100,000 population 1990 to 24.1 per 100,000 population in 2002.

Figure 1: Percent of Adults (ages 18 and older) Who Report Binge Drinking in the Past 30 Days: Colorado and the Nation, 1990-2002



Source: Behavioral Risk Factor Surveillance System, 1990-2002

**Note: No Colorado or national data are available for 1994, 1996, 1998 or 2000*

Demographic Trends and Health Disparities[vi,6]

Race/Ethnicity

Adult binge drinking (i.e., having five or more drinks on a single occasion) in Colorado appears to be more prevalent among Hispanics than non-Hispanic whites and blacks. Data available from the 2002 Behavioral Risk Factor Surveillance System (BRFSS) indicates that 43.7 percent of Hispanics, 25.1 percent of non-Hispanic whites and 22.8 percent of blacks reported binge drinking

[iv] To obtain a sufficient sample size and therefore a meaningful estimate, state level estimates combine two years of data while national estimates are derived from one single year.

[v] Given confidence intervals, Colorado and the nation were not significantly different in years 1990, 1991, 1997 and 2001.

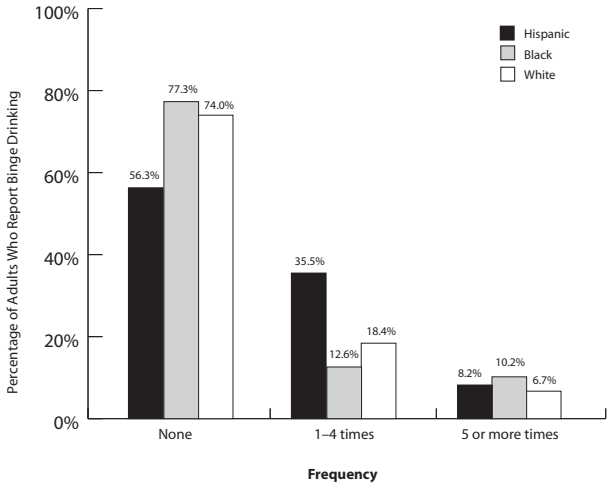
[vi] The National Household Survey on Drug Abuse (NHSDA) was used to establish a national and state baseline for adult binge drinking in the past month. Although the NHSDA provides prevalence estimates and state rankings, it does not provide estimates for sub-populations, such as race/ethnicity. Therefore, the Behavioral Risk Factor Surveillance System (BRFSS) is used in this section. BRFSS indicated an adult binge drinking baseline estimate of 17.2 for the state and 14.9 for the nation for the year, 1999.

on at least one occasion in the past month. Importantly, this gap between racial/ethnic groups narrows when one examines the population that engages in binge drinking five or more times in the past month. This population makes up 10.2 percent of blacks, 8.2 percent of Hispanics and 6.7 percent of non-Hispanic whites.

Gender

In 2002, more than a third, or 38.0 percent, of males in Colorado reported binge drinking on at least one occasion during the past month. This is significantly higher than the 15.8 percent of females who reported the same behavior. Males also were nearly three times more likely to report binge drinking on five or more occasions in the past month than females. In Colorado, males are nearly three times more likely to die from an alcohol-related cause, such as liver disease. In 2002, the mortality rate due to alcohol-related liver disease for males was 9.1 per 100,000 population, while the death rate for females was 3.3 per 100,000 population.[7]

Figure 2: Percent of Colorado Adults Who Report Binge Drinking in the Past 30 Days by Race/Ethnicity and Number of Drinking Occasions, 2002



Source: Behavior Risk Factor Surveillance System, 2002

Age

Binge drinking is most common among young adults between the ages of 18 and 25. Nationally, for the years 2000- 2001, 37.8 - 38.7 percent of young adults reported binge drinking in the past month.[8] In Colorado, for the same years, the percentage was even higher, totaling 46 percent. According to the BRFSS, as represented by Figure 3, binge drinking behavior decreases some with age, particularly after age 35.

Geography[14]

County-level prevalence data for adults reporting binge drinking are not available. However, treatment admissions provide some indication of the degree to which alcohol abuse may be occurring in certain areas of

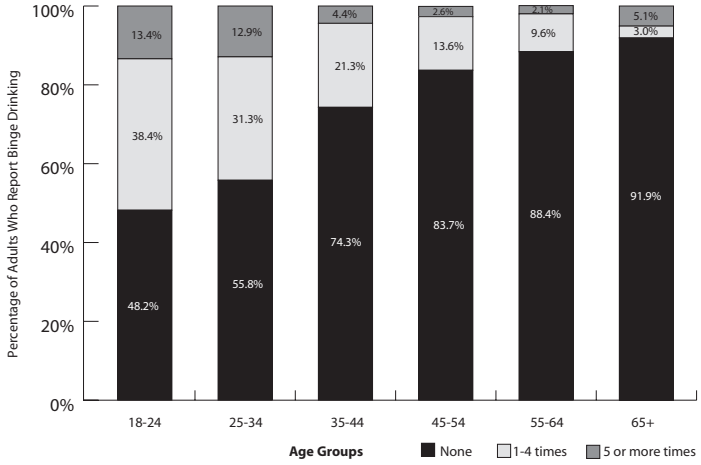
Fetal Alcohol Syndrome

Fetal Alcohol Syndrome (FAS) is a condition that affects infants through adulthood, caused by the consumption of alcohol by the biological mother during pregnancy. FAS is the leading preventable cause of birth defects and mental retardation in the nation.[1] Drinking rates among pregnant women in Colorado are higher than any of the other 15 states participating in the Centers for Disease Control and Prevention's (CDC) Pregnancy Risk Assessment Monitoring System (PRAMS).[7] It is estimated that each year in Colorado between 20 and 42 children are born with FAS. Nationally, the current lifetime institutional and medical costs associated with caring for each FAS child is $1.4 million. In addition, there may be social costs as well. Individuals with FAS are affected by impairments in reasoning, judgment and maintaining self-control, which may lead to antisocial behaviors, delinquency or crime.[9] In Colorado, $20,926,160 is spent annually providing special education and juvenile justice services for children with FAS, ages 5-18.[1]

the state. Figure 4 represents the rates of non-detoxification alcohol treatment admissions per county in 2003. Note, however, that rates reported for smaller or less densely populated counties are sensitive to small changes in annual numbers of admissions.

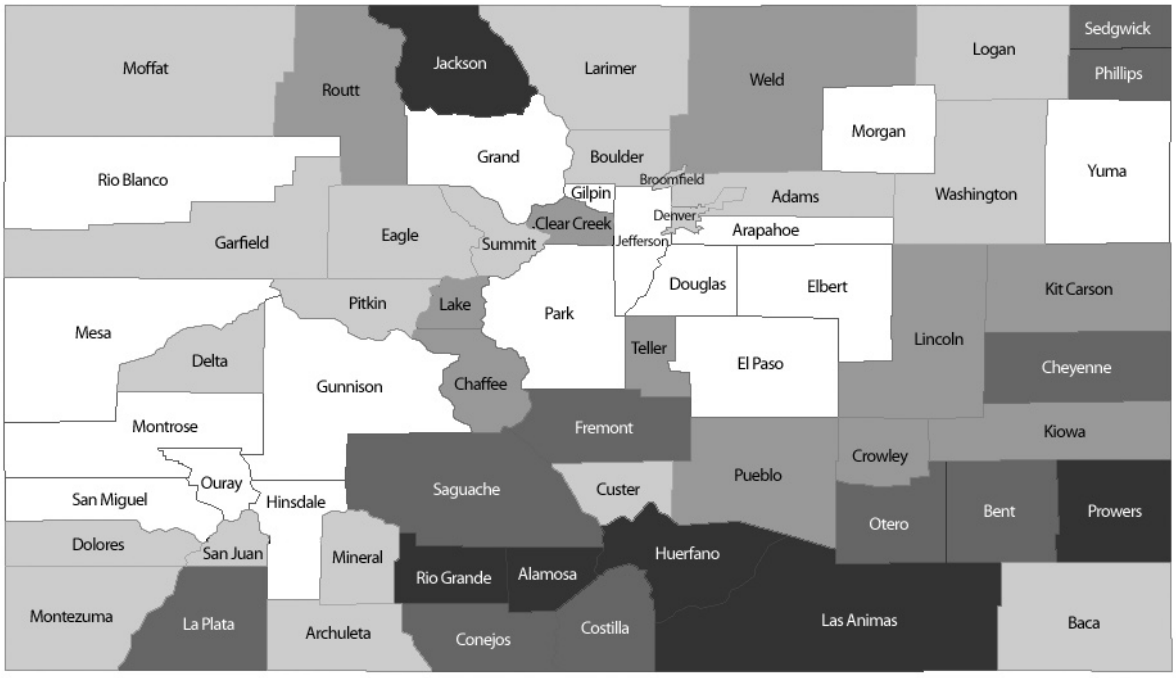
In general, counties along the southern border of Colorado tended to have the highest rates of alcohol treatment admissions per 100,000 individuals in 2003. Moreover, counties along the eastern border of Colorado tended to have moderately high treatment rates. In contrast to the geographic pattern found on the eastern and southern border, counties along the Front Range and the border of Utah tended to have the lowest rates of alcohol treatment admissions.

Figure 3: Percent of Colorado Adults Who Report Binge Drinking in the Past 30 Days by Age and Number of Drinking Occasions, 2002



Source: Behavior Risk Factor Surveillance System, 2002

Figure 4: County Level Rates of Alcohol Treatment Admissions in Colorado in 2003 per 100,000 Population



Source: Alcohol and Drug Abuse Division of the Colorado Department of Human Services, 2003

79–205 206–351 352–606 607–948 949–1814

ILLICIT DRUG USE AMONG ADULTS

Indicator: Illicit Drug Use Among Adults

Objective (26-10c): Reduce the proportion of adults using any illicit drug during the past 30 days.

Definition: Illicit drug use is defined as the use of illegal drugs such as marijuana, cocaine, heroin and hallucinogens as well as misusing (i.e., use for purposes other than intended) prescription pain relievers, tranquilizers, stimulants and sedatives.

Healthy People 2010 Target: Only 2 percent of adults 18 years of age and older will report illicit drug use in the past 30 days.

Colorado Interim Target:[vii] Only 20 percent of young adults ages 18-25 and 5 percent of adults 26 and older will report illicit drug use in the past 30 days.

Baseline: (1999 National Household Survey on Drug Abuse (NHSDA))[3, viii, ix]

- **Colorado**: 21.3 percent of young adults (ages 18-25) and 6.1 percent of adults (ages 26 and older) reported illicit drugs use in the past 30 days
- **National**: 16.4 percent of young adults (ages 18-25) and 4.1 percent of adults (26 and older)

Local Public Health Context in Colorado

Colorado adults report higher rates of illicit drug use, including both marijuana and cocaine, than the nation.[11] According to the 2001 National Household Survey on Drug Abuse (NHSDA), Colorado ranked in the top 20 percent of 50 states, in both past month use of marijuana and in past month use of any illicit drugs.[12] Colorado was only one of three states that ranked among the top 20 percent of states for both alcohol and illicit drug abuse.[x] Furthermore, Colorado has experienced a 24 percent increase in the drug-related death rate over the past 12 years.[1] According to the Alcohol and Drug Abuse Division (ADAD), an estimated rate of 9.3 individuals per population of 100,000 died as a result of a drug-related factor in 1990, for a total of 300 deaths, in contrast to 2002 when there were 11.5 individuals per population of 100,000, or a total of 515 deaths.[1]

[vii]The Colorado interim target was developed by the Alcohol and Drug Abuse Division of the Colorado Department of Human Services to serve as a milestone marking progress towards the Healthy People 2010 target objective.

[viii]Note that changes to data collection and quality control methods were introduced in 2002. According to SAMHSA, these improvements may make 2002 rates look much larger than previous years, when, in actuality, they do not represent an increase, but rather a more sensitive and accurate measure. Thus, 2002 data are not directly comparable to 2001 and prior years. Future analysis of Colorado substance abuse trends may consider using 2002 survey estimates as baseline. In 2002, the NSDUH reported that 26.7 percent of young adults ages 18-15 and 6.8 percent of adults 26 and older reported illicit drug use in the past 30 days.

[ix]Although Healthy People 2010 reports 1998 National Household Survey on Drug Abuse as the baseline year and indicates an overall, national rate of 5.8% for adults aged 18 years and older, state level data was not available until 1999. In order to provide comparable baseline measures for the state and the nation, this report uses 1999 data. Due to differences in the prevalence rates of illicit drug use among young adults ages 18-25 and adults 26 years of age and older (both nationally and in Colorado), separate baseline estimates are provided for these age groups.[3, 4]

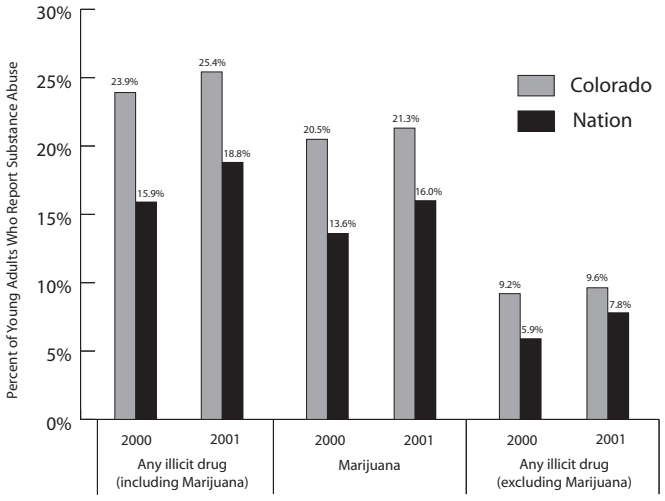
Data Trends[xi]

The following charts illustrate the prevalence of illicit drug[xii], marijuana and cocaine use for individuals in Colorado and the nation, ages 18-25 and 26 years and older, for the years 2000 and 2001.[xiii, 12, 13] As shown, illicit drug use appears to decrease after the age of 25, for Colorado as well as the nation. However, Colorado's rates for both adults 18-25 and adults 26 and older are notably higher than those for the nation.

Marijuana

From 1999-2001, Colorado ranked as one of the highest states with respect to the prevalence of past month use of marijuana.[12] In Colorado in 2001, 21.3 percent of young adults and 4.5 percent of adults over the age of 26 reported using marijuana in the past 30 days,[12] compared to 16.0 percent and 3.2 percent for the nation.[13]

Figure 5: Percent of Young Adults (ages 18-25) Who Report Using Substances in the Past 30 days: Colorado and the Nation, 2000 and 2001

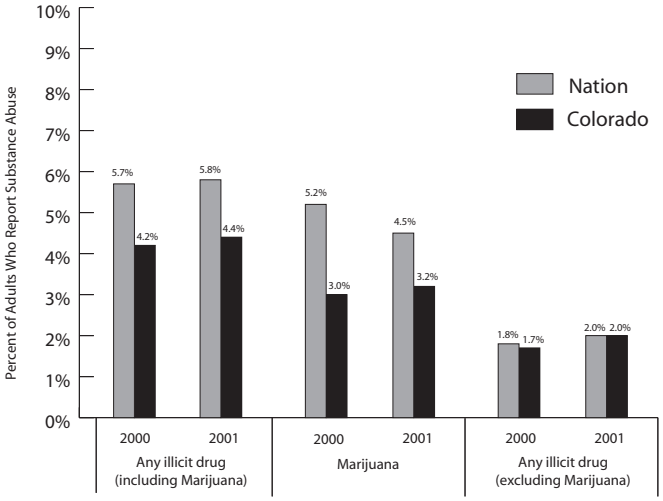


Source: National Household Survey on Drug Abuse, 2000 and 2001

Cocaine

Cocaine remains a serious problem in Colorado compared to other states. In 2001, Colorado had the highest rate of past year cocaine use among persons age 12 or older, with 2.8 percent of individuals reporting cocaine use in the past year compared to 1.9 percent nationally.[xiv, 12] In 2002, Colorado ranked in the top fifth for the highest rates of past year cocaine use for the following age groups: 12 to 17, 18 to 25 and 26 years of age and older.[5]

Figure 6: Percent of Adults (26 years of age and older) Who Report Using Substances in the Past 30 days: Colorado and the Nation, 2000 and 2001



Source: National Household Survey on Drug Abuse, 2000 and 2001

[xi]The data presented in this section comes from the Alcohol and Drug Abuse Division's annual *Patterns and Trends in Drug Abuse: Denver and Colorado* report. This report compiled data from the following sources: drug related emergency department mentions and drug related mortality data provided by the Substance Abuse and Mental Health Services Administration (SAMHSA) through its Drug Abuse Warning Network; death statistics from the Colorado Department of Public Health and Environment (CDPHE); Drug/Alcohol Coordinated Data System (DACODS) from the Alcohol and Drug Abuse Division (ADAD), Colorado Department of Human Services; and hospital discharge data from the Colorado Hospital Association, accessed from the Colorado Department of Public Health and Environment, Health Statistics Section.

[xii]Illicit drugs include marijuana and cocaine.

[xiii]To obtain a sufficient sample size and, therefore, a meaningful estimate, state level estimates combine two years of data while national estimates are derived from one single year.

[xiv]Colorado shared this ranking with New Mexico.

Methamphetamine[14]

Although there is a low base-rate of methamphetamine use in comparison to alcohol, marijuana and cocaine, there has been considerable attention and concern regarding the growing number of methamphetamine labs seized by law enforcement. In 1997, there were approximately 25 methamphetamine lab seizures. In 2002, this number jumped to 464. Methamphetamine treatment admissions also rose, representing 23.2 percent of drug treatment admissions in 2003. In addition, methamphetamine deaths (single and in combination with other drugs) in the Denver metropolitan area more than tripled from six in 1997 to 19 in 2001. While local treatment clinicians report that some stimulant users switched from cocaine to methamphetamine because of the lower price, greater availability and longer effects, the percent of individuals admitted for the first time for methamphetamine treatment, compared to other drugs, remained stable at 20.5 percent between 1997 and 2001.

Clandestine Methamphetamine Labs Pose a Risk[15]

In 2003, the National Jewish Medical and Research Center initiated a study to identify and measure potential chemical exposure and related hazards from the investigation of clandestine methamphetamine laboratories. Researchers concluded that over 50 percent of law enforcement officers involved in investigating such labs have experienced negative health effects resulting from those investigations. Chemical irritation was the most frequently reported cause of symptoms. Currently, a low percentage of first responders (e.g., law enforcement, paramedics, fire fighters, etc.) involved in investigating methamphetamine laboratories are decontaminated on site. Lack of protective equipment and adequate decontamination procedures may also result in methamphetamine contamination spreading outside of the laboratory, affecting co-workers and family members.

Demographic Trends and Health Disparities

Race/Ethnicity[6]

If all races/ethnicities were represented equally in treatment admissions, then population proportions and admission rates would be comparable. However, certain ethnic groups are under- or overrepresented in the percent of treatment admissions for specific drugs:

- Non-Hispanic whites account for approximately three quarters[16] of Colorado's population, but are disproportionately represented in methamphetamine admissions and underrepresented in marijuana and cocaine treatment admissions.
- Hispanics account for 17 percent[16] of Colorado's population and are disproportionately represented in individuals admitted for marijuana and cocaine treatment and underrepresented in methamphetamine admissions. Among cocaine treatment admissions, the proportion of Hispanic admissions increased from 17.5 percent in 1996 to 28.9 percent in 2003.
- Blacks account for 4 percent[16] of Colorado's population but are disproportionately represented in individuals admitted for marijuana and cocaine treatment. The percentage of blacks among those admitted for cocaine treatment, however, has decreased from 36.3 percent in 1996 to 23.3 percent in 2003.

SUBSTANCE ABUSE

Gender[14]

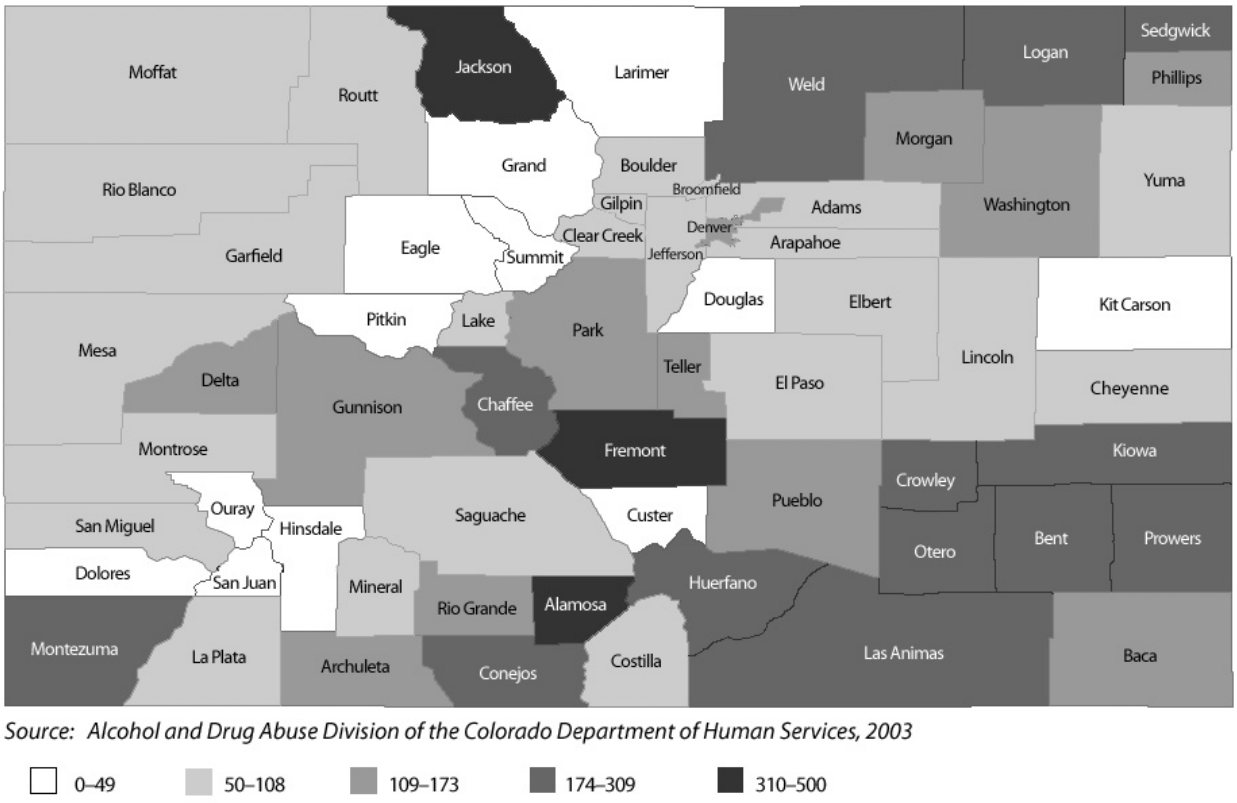
Males are more likely than females to die as a result of illicit drug use. In addition, more males present for treatment for marijuana and cocaine than females. Rates are as follows:

- Males presented for treatment for marijuana three times more often than females from 1996-2001.
- In 1998, the death rate related to illicit drug use was 17.4 per 100,000 population for males and 6.2 per 100,000 population for females.
- Males make up the majority of cocaine treatment admissions, representing 62.1 percent of cocaine treatment admissions in 2003.
- Although indicators for many substances (namely alcohol, marijuana and cocaine) document a disproportionate rate of use among males, over half or 53.3 percent of new methamphetamine users in 2003 were female. Local clinicians report that females use methamphetamine for both psychotropic and weight-loss effects.

Age

- In 2000-2001 in Colorado, 25.4 percent of young adults ages 18-25 and 5.8 percent of adults 26 years of age and older reported using illicit drugs in the past 30 days.[12]

Figure 7: County Level Rates of Marijuana Treatment Admissions in Colorado in 2003 per 100,000 Population



Source: Alcohol and Drug Abuse Division of the Colorado Department of Human Services, 2003

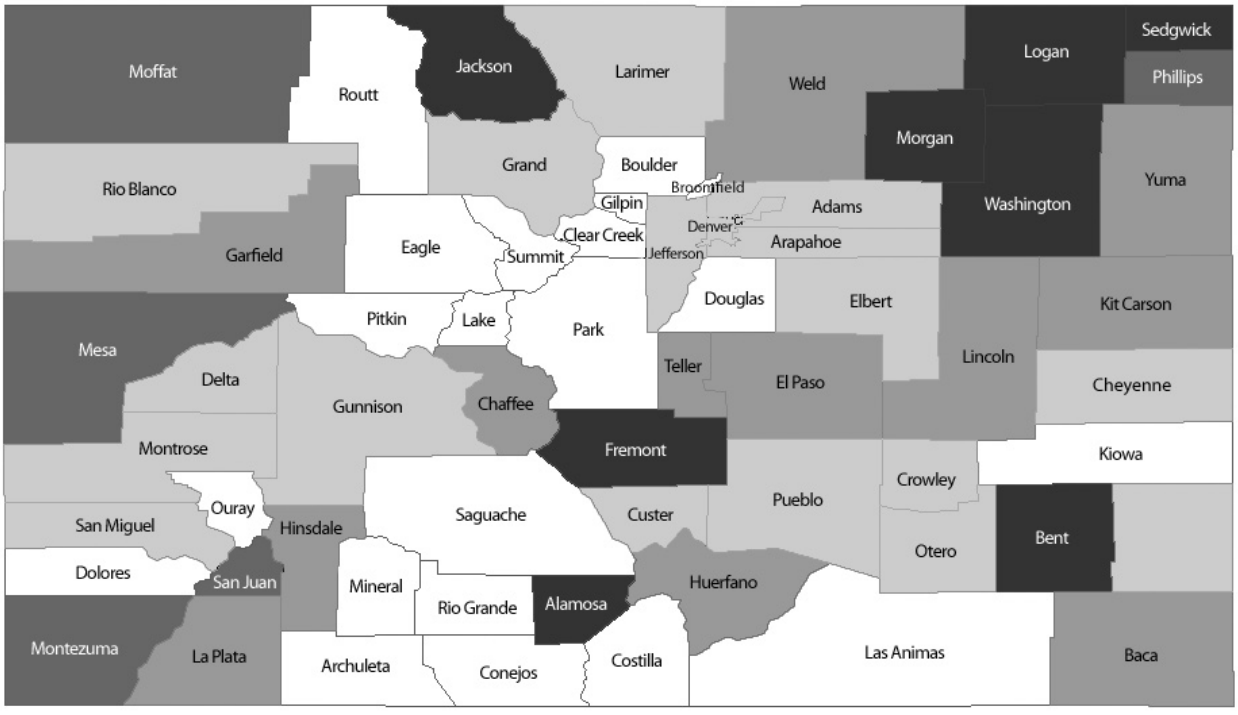
- In Colorado, marijuana is the most commonly used illicit drug among young adults, with 21.3 percent reporting use in the past 30 days compared to about 4.5 percent of Colorado adults age 26 and older.[12]
- According to the Alcohol and Drug Abuse Division (ADAD), half of the individuals admitted to treatment for cocaine and 71.3 percent of individuals presenting for methamphetamine treatment were 35 years of age and younger.[14]

Geography[14]

While prevalence data on drug use is not available at the county level, other data, such as treatment admissions, provide some indication of the prevalence of drug use across the state. Treatment admission rates suggest that some counties may have a greater issue with methamphetamine and marijuana use. The following counties were indicated for high rates of both methamphetamine and marijuana use: Jackson, Fremont, Alamosa, Logan, Sedgwick, Bent and Montezuma.

Note, however, that rates reported for smaller or less densely populated counties are sensitive to small changes in annual numbers of admissions. Specifically, Jackson and Sedgwick counties indicated high rates of marijuana and methamphetamine admissions but reported frequencies of less than 10.

Figure 8: County Level Rates of Methamphetamine Treatment Admissions in Colorado in 2003 per 100,000 Population



Source: Alcohol and Drug Abuse Division of the Colorado Department of Human Services, 2003

USE OF ALCOHOL AND ILLICIT DRUGS AMONG ADOLESCENTS

Indicator: Use of Alcohol and Illicit Drugs Among Adolescents

Objective (26-10a): Increase the proportion of adolescents not using alcohol or any illicit drugs during the past 30 days.

Healthy People 2010 Target: 89 percent of adolescents 12-17 years of age will report no use of alcohol or illicit drugs in past 30 days.

Colorado Interim Target:[xv] 40 percent of adolescents in grades 9-12 will report no alcohol use in the past 30 days and 61 percent of adolescents in grades 9-12 will report no marijuana use in the past 30 days.

Baseline:
1995 Youth Risk Behavior Survey (YRBS)[xvi, xvii, xviii]

- **Colorado**: 47.2 percent of adolescents in grades 9-12 reported no alcohol use and 71.4 percent reported no marijuana use in the past 30 days
- **National**: 48.4 percent reported no alcohol use and 74.7 reported no marijuana use

Local Public Health Context in Colorado

In Colorado, the non-tobacco drugs most frequently used by adolescents continue to be alcohol and marijuana. In Colorado, 7.2 percent of adolescents reported using some illegal substance.[12] This translates to an estimated 27,600 adolescents who are using or abusing drugs each year. However, between 1995-2001, most state indicators of alcohol abuse among adolescents improved or remained stable.

Representative state level data recently became available regarding alcohol and illicit drug use by adolescents ages 12-17 in 2002 from the National Drug Use and Health Survey (NDUHS),[5, 17] formerly the National Household Survey on Drug Abuse (NHSDA). According to this source, the following proportion of adolescents in Colorado ages 12-17 did not report using substances in the past 30 days:

Table 1: Percent of adolescents in Colorado and the nation, ages 12-17 who did not report use in the past 30 days

Substance	Colorado	Nation
Alcohol	80.5%	82.4%
Binge Drinking	87.6%	89.3%
Any illicity drug, including marijuana	85.9%	88.4%
Marijuana	90.1%	91.8%

Source: National Survey on Drug Use and Health, 2002

[xv]The Colorado interim target was developed by the Alcohol and Drug Abuse Division of the Colorado Department of Human Services to serve as a milestone marking progress towards the Healthy People 2010 target objective.

[xvi]Healthy People 2010 utilizes data from the 1998 National Household Survey on Drug Abuse to establish baseline estimates. For the year 1998 (the standard baseline year utilized by Healthy People 2010), the NHSDA reported that 79% of adolescents ages 12-17 did not use alcohol or illicit drugs during the past year.[4] However, state estimates are not available for youth alcohol and drug use prior to 2001. In order to have comparable data, the Youth Behavior Risk Survey (YRBS) was used to establish national and state baseline estimates. 1995 YRBS data, rather than data from the 1998 YRBS is utilized, because 1995 was the closest year for which weighted state estimates from the Colorado YRBS data were available.

[xvii]Colorado data for past month marijuana use is utilized to establish a baseline estimate, since marijuana is the most commonly used illicit drug. The YRBS did not employ a single item measure of illicit use.

[xviii]Since YRBS data are used the reported rates reflect 9th – 12th grade only, not the full range of the Healthy People target objective, 12- 17 years of age.

SUBSTANCE ABUSE

Data Trends

Alcohol[18]

Between 1995 and 2001, the nation experienced a slight decrease in the percentage of high school students, grades 9 through 12, reporting at least one drink of alcohol in their lifetime. In addition, there was a small decrease in the percentage of students who reported drinking alcohol before age 13, from 32.4 percent in 1995 to 29.1 percent in 2001. Moreover, there was a decrease in the percentage of students reporting at least one drink of alcohol on one or more of the past 30 days. No state level trend data, however, are available due to the relatively low participation rates of randomly selected schools in the Colorado Youth Risk Behavior Survey (YRBS) subsequent to 1995.[xix]

Marijuana[18]

Nationally, between 1995 and 2001, the percentage of students who reported ever having used marijuana remained relatively stable, at approximately 42 percent. No state level trend data, however, are available due to the relatively low participation rates of randomly selected schools in the Colorado Youth Risk Behavior Survey (YRBS) subsequent to 1995.[xx]

Demographic Trends and Health Disparities

Colorado Youth Risk Behavior Survey (YRBS) data have not been weighted since 1995.[xxi] Thus, no reliable and current data on alcohol and drug use are available, with the exception of recently released 2002 estimates from the National Survey on Drug Use and Health (NSDUH). Only estimates for age groups are available at this time.

Did You Know?

- The cost of alcohol abuse and dependence greatly exceeds that of all other abused drugs combined.[1]
- In Colorado, the number of treatment admissions for meth-amphetamine use has tripled from 1997 to 2001.[14]
- On average, 30 percent of adolescents in Colorado referred to substance abuse treatment from the justice system have co-occurring mental health and substance abuse disorders.[19]

Age

According to 2002 estimates from the National Survey on Drug Use and Health (NSDUH), illicit drug use and binge drinking begins in adolescence, peaks in young adulthood and begins to subside after age 26. Coloradan adolescents ages 12-17 were less likely to report illicit drug use than young adults ages 18-25, but more likely to report using illicit drugs than adults ages 26 and older.[5] Slightly over 14 percent of adolescents ages 12-17 reported using illicit drugs, as compared to 26.74 percent of young adults ages 18-25. Reported drug use, however, for the age group 26 and older was just 6.79 percent. The same patterns emerge when looking at past month use of marijuana. Alcohol use, however, not only increases significantly in young adults, when compared to adolescents, but also is maintained after age 26.

Geography

No county-level data are available addressing alcohol and illicit drug use among adolescents in the past 30 days.

[x]Due to a relatively low response rate in years subsequent to 1995, the Colorado Youth Risk Behavior Survey results are representative of only those students who took part in the survey and, therefore, cannot be generalized to all adolescents in grades 9-12 in Colorado.

[xx]Ibid.

[xxi]Ibid.

Major State Initiatives

Substance Abuse Prevention Block Grant

The Alcohol and Drug Abuse Division (ADAD) of the Colorado Department of Human Services funds local agencies and non-profit organizations to provide substance abuse prevention services across Colorado. In 2003, 47 local and six statewide projects were funded to provide a variety of prevention services to individuals, families, groups, institutions and communities. Special emphasis is placed on serving low-income and minority individuals, families, pregnant women, adolescents and high-risk populations. Prevention strategies include:

- Information dissemination (e.g., clearinghouse/ information resource centers, health fairs, health promotion, materials development, media campaigns, etc.)
- Education (e.g., children of substance abusers groups, classroom education, programs for adolescents groups and peer leader programs)
- Alternative, ATOD-free activities (e.g., community drop-in center activities, community service and adolescents/adult leadership functions)
- Community-based services (e.g., volunteer services, training and technical assistance)
- Problem identification and referral (e.g., employee assistance programs and student support programs)
- Environmental strategies (e.g., policy and broader state and community strategies)

Statewide projects funded with Block Grant dollars encompass monitoring and evaluation activities, as well as the provision of regional assistance to substance abuse prevention providers.

Drug-Free Communities Support Program

In June 1997, the federal Drug-Free Communities Act of 1997 became law. This Act served as a catalyst for increased citizen participation in efforts to reduce substance use among adolescents and provides community anti-drug coalitions with funding to support activities. The White House Office of National Drug Control Policy (ONDCP) directs the Drug-Free Communities Support Program in partnership with the Office of Juvenile Justice and Delinquency Prevention (OJJDP). This anti-drug program provides grants of up to $100,000 to community coalitions that mobilize their communities to prevent adolescent alcohol, tobacco, illicit drug and inhalant abuse. The grants support coalitions of adolescents; parents; media; law enforcement; school officials; faith-based organizations; fraternal organizations; state, local, and tribal government agencies; healthcare professionals; and other

Regional Prevention Services (RPS)

The Alcohol and Drug Abuse Division (ADAD) of the Colorado Department of Human Services funds an ongoing project to support prevention capacity building at the state and local levels through training and technical assistance services. The Regional Prevention Services project (RPS), which operates out of OMNI Research & Training, Inc. (OMNI), is dedicated to strengthening community and program responses to combat the abuse of harmful substances (alcohol, tobacco and other drugs).
Training and technical assistance services are provided by Regional Prevention Consultants (RPCs) located in each of ADAD's regions. Their expertise includes public health, HIV prevention, tobacco control, social work theory and community organizing.

The RPS project also develops products and tools that can be used by communities to support prevention planning and decision-making. For example, reports profiling alcohol, tobacco and other drug (ATOD) issues have been developed for each of Colorado's counties. These are used by community coalitions and service providers in planning efforts.

community representatives. The Drug-Free Communities Support Program enables the coalitions to strengthen their coordination and prevention efforts, encourage citizen participation in substance abuse reduction efforts and disseminate information about effective programs. Fourteen communities across Colorado received Drug-Free Communities funding between 1999 and 2003.

Safe and Drug-Free Schools and Communities Program (SDFSC)

Safe and Drug-Free Schools and Communities is a component of the Federal No Child Left Behind Act of 2001 and is administered by the Colorado Department of Education. The purpose of SDFSC is to support programs that prevent the illegal use of alcohol, tobacco and drugs and prevent violence in and around schools. These prevention programs are enhanced by involving parents and coordinating efforts and resources with other federal, state and community entities. Funding is made available to school districts to establish, operate and improve local programs of school drug and violence prevention, early intervention, rehabilitation referral and education in elementary through secondary schools. Funding amounts are based on poverty rate and student population size. In Colorado in FY 2003-2004, funds were provided to 122 school districts, to Boards of Cooperative Educational Services for the other 56 districts and to the Colorado School for the Deaf and Blind.

Emerging Best and Promising Practices

Research suggests that the positive effects of single-year, school-based prevention programs do not extend beyond five years.[20] Comprehensive drug abuse prevention programs that span multiple years, target multiple domains of prevention (e.g., individuals, parents and communities), and utilize multiple channels for the delivery of programs and prevention messages, such as schools and the mass media, have been shown to yield more enduring effects.[21] The strongest evidence available supports a comprehensive approach that incorporates the following prevention components:

Information dissemination

- Providing awareness-raising activities at multiple levels (adolescents, parents, teachers and community leaders)
- Combining information dissemination with other prevention strategies

Prevention education

- Teaching critical life and social skills (e.g., decision making skills, refusal skills, cultural pride)

Alternative drug-free activities

- Providing a place for individuals to enhance skills and knowledge, opportunities for community service and activities to occupy unstructured time (voluntary participation in these activities is essential for successful implementation)
- Establishing mentors in the community

Policy and program approaches

- Emphasizing early substance abuse intervention for deterring future use (referrals can take place on a school, community or family level)
- Creating policies and programs that recognize and respond to the understanding that high-risk adolescents will need more aggressive interventions

Community based interventions

- Changing standards, policies and attitudes that influence systemic and individual substance-abuse problems
- Enforcing stricter laws regarding the purchase of alcohol among minors
- Working with families, communities and schools to implement policies that support substance abuse reduction.

For information concerning best practices for alcohol use prevention, please visit http://www.cdphe.state.co.us/ps/bestpractices/topicsubpages/alcohol.html.

Resources

Alcohol and Drug Abuse Division (ADAD)
Colorado Department of Human Services
http://www.cdhs.state.co.us/ohr/adad/index8.htm

Substance Abuse and Mental Health Services Administration (SAMHSA)
Center for Substance Abuse Prevention (CSAP)
http://www.prevention.samhsa.gov
Center for Substance Abuse Treatment (CSAT)
http://csat.samhsa.gov/

Colorado Fetal Alcohol Syndrome/Alcohol, Tobacco and Other Drug Prevention Program
Area Health Education Center
University of Colorado Health Sciences Center
http://www.uchsc.edu/ahec/fas/index.htm

Drug-Free Workplace Alliance
Toll free: 866-369-0039
http://www.codrugfreeworkplace.org

Office of Drug Strategies
City and County of Denver
http://www.denvergov.org/Drug_Strategies/

Peer Assistance Services, Inc.
Toll free: 866-369-0039
Phone: 303-369-0039
http://www.peerassist.org

Regional Prevention Center Services
OMNI Research and Training, Inc
Phone: 303-839-9422; Toll free: 800-279-2070
http://www.omni.org
(see web site for regionally designated consultants)

Southwest Center for the Application of Prevention Technologies (SWCAPT)
College of Continuing Education
University of Oklahoma-Norman
http://www.swcapt.org/
Colorado State Liaison: Joan Liebman
Phone: 303-839-9422; Toll free: 800-279-2070
(Offices at OMNI Research and Training, Inc.)
Email: jliebman@omni.org

For a complete list of treatment facilities located in Colorado, click on:
http://www.theagapecenter.com/Treatment-Centers/Colorado.htm

Local Story: Meth-wise Program of Northeast Colorado[23]

NORTHEAST COLORADO – Due to the increase in the number of methamphetamine treatment admissions, lab seizures and the potential for exposure to toxic chemicals, the Northeast Colorado Health Department initiated an awareness campaign targeting schools, governmental agencies, communities, retailers, first responders and other businesses in Logan, Morgan, Washington, Yuma, Phillips and Sedgwick counties. Known as Meth-wise, this program involves making presentations and disseminating resource materials that educate the public about how to recognize:

- Methamphetamine use
- Clandestine methamphetamine lab facilities
- Waste dumped after methamphetamine manufacturing
- The ingredients used to manufacture methamphetamine
- Signs of unusual and suspicious sales.

Meth-wise has provided clandestine lab awareness training to law enforcement and volunteer fire departments. Informational materials that describe the problem and consequences of methamphetamine manufacturing and use are available in both Spanish and English. Brochures include "Methamphetamine is a Northeast Colorado Problem," "Tips to Avoid Anhydrous Ammonia Theft," "Overnight Lodging and Methamphetamine," "Methamphetamine: What is it doing to the Children of Northeast Colorado," "Rental Property Owners and Agents" (English only) and "Beware When You're in the Outdoors" (English only).

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Section X

Tobacco use is the leading cause of preventable death and disability in the United States. More people die from tobacco related illnesses than from AIDS, drug and alcohol abuse, homicide, suicide, car accidents, fires, drowning, diabetes, flu and Alzheimer's disease combined.

HEALTHY PEOPLE 2010 GOAL: *Reduce illness, disability and death related to tobacco use and exposure to secondhand smoke.*

Tobacco use is the leading cause of preventable death and disability in the United States. More people die from tobacco related illnesses than from AIDS, drug and alcohol abuse, homicide, suicide, car accidents, fires, drowning, diabetes, flu and Alzheimer's disease combined. An adult who smokes throughout his/her life has a 50 percent chance of dying from a tobacco-caused disease.[1]

Annually, approximately 130,000 Coloradans develop tobacco-related illnesses and 4,200 die prematurely due to tobacco use.[2] Cigarette smoking is a direct cause of heart disease, chronic lung disease and several kinds of cancers (lung, larynx, esophagus, pharynx, mouth and bladder), as well as a contributing factor in cancers of the pancreas, kidney and cervix. Moreover, *exposure* to secondhand smoke has been found to cause cancer, heart disease and asthma.[3] Twenty-three percent of adult *nonsmokers* are exposed to secondhand smoke at home or other places they frequent.[1] Altogether, annual healthcare costs from tobacco use exceed $1 billion in Colorado.[1]

ADULT SMOKING

Indicator: Adult Smoking

Objective (27-1a): Reduce cigarette smoking by adults.

Definition: Smoking prevalence among adults (individuals aged 18 years and older) is defined as lifetime smoking of 100 cigarettes or more or having smoked some or all days in the past month.

Healthy People 2010 Target: Only 12 percent of adults 18 years of age and older will have smoked more than 100 cigarettes in their lifetime or smoked on some or all days in the past month.

Colorado Interim Target: Only 10 percent of adults 18 years of age and older will have smoked more than 100 cigarettes in their lifetime or smoked on some or all days in the past month.[i]

Baseline: (1998 CDC Wonder Healthy People 2010 Database)[4]

- Colorado: 23 percent of adults 18 years and older smoked more than 100 cigarettes in their lifetime or smoked on some or all days in the past month.
- National: 24 percent

Local Public Health Context in Colorado[5]

According to data on tobacco use available from the 2003 Behavioral Risk Factor Surveillance System (BRFSS), smoking prevalence among Colorado adults has dropped to a record low. In 2002, Colorado (along with the District of Columbia) was ranked 6th lowest in the nation for its rate of current adult smokers at 20.4 percent.

Despite these positive trends, an estimated 677,000 Colorado residents continue to smoke cigarettes (based on the 18 and older population estimate, 2000 Census). In addition, approximately 9 percent of Colorado adults use a tobacco product other than cigarettes, such as smokeless tobacco, cigars, pipes and bidi cigarettes.[1] According to the results of the state Tobacco Attitudes and Behaviors Survey (TABS), approximately 85 percent of Colorado's adult smokers reported wanting to quit smoking and over 53 percent have made at least one attempt in the past year. Only 4.5 percent of adult smokers, however, reported successful attempts.[6] Nearly half of current smokers that had seen a doctor in the last year indicated that they were not advised to stop smoking.[7]

[i] The Colorado State Tobacco Education and Prevention Partnership (STEPP) developed this interim target for the state. Since the state rate was lower than the nation at baseline in 1998, the interim target also was set at a lower rate.

TOBACCO USE

Data Trends[5]

Between 1990 and 2002, Colorado's rate of current smokers ranged from a low of 20 percent in 2000 to a high of 24.2 percent in 1994. Until 2000, the prevalence of current smoking in Colorado was statistically equivalent to the national average. In 2003, smoking prevalence among Colorado adults dropped to 18.6 percent, while the national prevalence rate remained at 23.0 percent. This represented a 22 percent decrease in the prevalence of current smoking among Coloradans over the ten-year period of 1994–2003.[1]

Demographic Trends and Health Disparities

While the rate of smoking prevalence has decreased overall in the state, some groups are more likely to smoke and to be exposed to secondhand smoke than others. In Colorado, racial/ethnic minorities, unmarried adults and adults with an annual household income of less than $25,000 are much more likely to smoke than other Colorado adults.[8]

Race/Ethnicity[9]

According to the Behavior Risk Factor Surveillance System (BRFSS) the prevalence of current smoking among racial/ethnic groups is statistically equivalent.[1] However, the Colorado Tobacco Attitudes and Behaviors Survey (TABS), collected in 2001, indicates that minority communities are disproportionately affected by certain tobacco burdens, including daily smoking, less likelihood of quitting and exposure to secondhand smoke.

TABS data indicate that Hispanic adults are more likely than their white, non-Hispanic counterparts to smoke on a daily basis. Forty-seven percent of Hispanic adults that were current smokers smoked on a daily basis compared to 33 percent of white, non-Hispanic adults.[8] In addition, compared to their same-sex counterparts, minority women and Hispanic men are less likely to quit smoking. Minority men and Hispanic women also reporte that they are less likely to use or have access to proven medicines in trying to quit. Over half, 56 percent, of Hispanic smokers say they have not been advised by a doctor or other health care professional to quit smoking compared to 28 percent of non-Hispanic whites.

Racial-ethnic minorities also are more likely to be exposed to secondhand smoke in the workplace and at home. TABS data indicate that Hispanic men are more likely to have smoking permitted in their work areas. In addition, TABS finds that black or African American households are more likely to report that smoking occurs in a home with children present.

Gender

Nationally, more men are current smokers than women. In Colorado, however, the difference between men and women's rates of smoking prevalence is much smaller

Tobacco Use Among Pregnant Women

According to the Pregnancy Risk Assessment Monitoring System (2001), 11 percent of Colorado women smoked during pregnancy. Women who smoke during pregnancy are up to three and a half times more likely to deliver a low birth weight infant than non-smoking women, and smoking is the second highest risk factor for the delivery of a low birth weight baby.[10,11] Eliminating or reducing smoking among pregnant women would have a larger impact on reducing deliveries of low-birth weight babies than any other single intervention.[12] In Colorado, the following counties have the highest rates of smoking during pregnancy: Chaffee, Crowley, Custer, Huerfano, Lincoln, Mesa, Moffat, Phillips and Sedgwick.

and is not statistically significant. In 2003, BRFSS data found smoking prevalence among males to be 19.6 percent and females 17.6 percent.[1]

In addition, among Coloradans, little difference is observed by gender with respect to the percentage of men and women who continue to smoke, intend never to quit, do not use proven medicines when trying to quit and do not receive medical advice to quit.[8] However, adult males are more likely to use snuff or chewing tobacco than adult females, 8 percent compared to 0.1 percent respectively. In addition, adult males in Colorado are more likely to be exposed to tobacco smoke in work areas and to doubt that tobacco harms children.[8]

Age[9]

Although cigarette use has declined significantly over the past ten years, the prevalence rate among Colorado young adults is concerning. Cigarette smoking is more common among young adults, aged 18-24, than among adults 25 and older. This is particularly true among young adults who are not in school. Slightly over 35 percent of young adult non-students smoke as compared to 23.8 percent of young adult students and 18.8 percent of adults over the age of 25. In addition, young adults are less likely to quit smoking and less likely to use proven medicines to quit. Young male smokers also are less likely to be advised to quit smoking when they see a doctor.

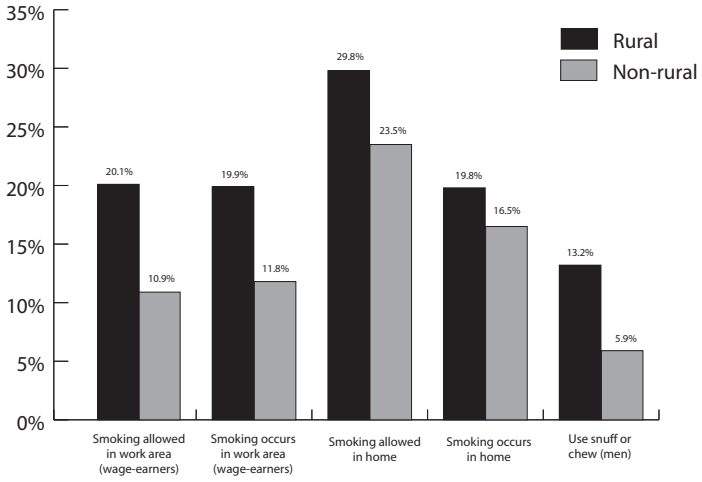
Further, young adults are more likely than other adults to be exposed and to expose others to secondhand tobacco smoke. They are more likely to have smoking occurring inside their homes, in homes where children live and in their workplaces. Household smoking is more widespread in the homes of young adult non-students, 27.5 percent, and young adult students, 21.1 percent, than in other adults' homes, 16 percent. Indoor work area smoking is more common for young adult non-students, 23.9 percent, and young adult students, 15.1 percent, than for other adult workers, 11.9 percent.

Geography

Nearly 200,000 Colorado adult smokers, or 31.2 percent, live in rural counties.[ii] Rural Coloradans are more likely than non-rural residents to report being exposed to secondhand tobacco smoke at work or home.[9] In addition, rural men are more likely than non-rural men to use snuff or chewing tobacco. This is especially true on the Western Slope and in the southeastern corner of the state.[9]

The Colorado counties of Baca, Cheyenne, Costilla, Custer, Hinsdale, Jackson, Kiowa, Mineral, San Juan and Sedgwick have the highest number of tobacco retail sales outlets per capita (see map next page).

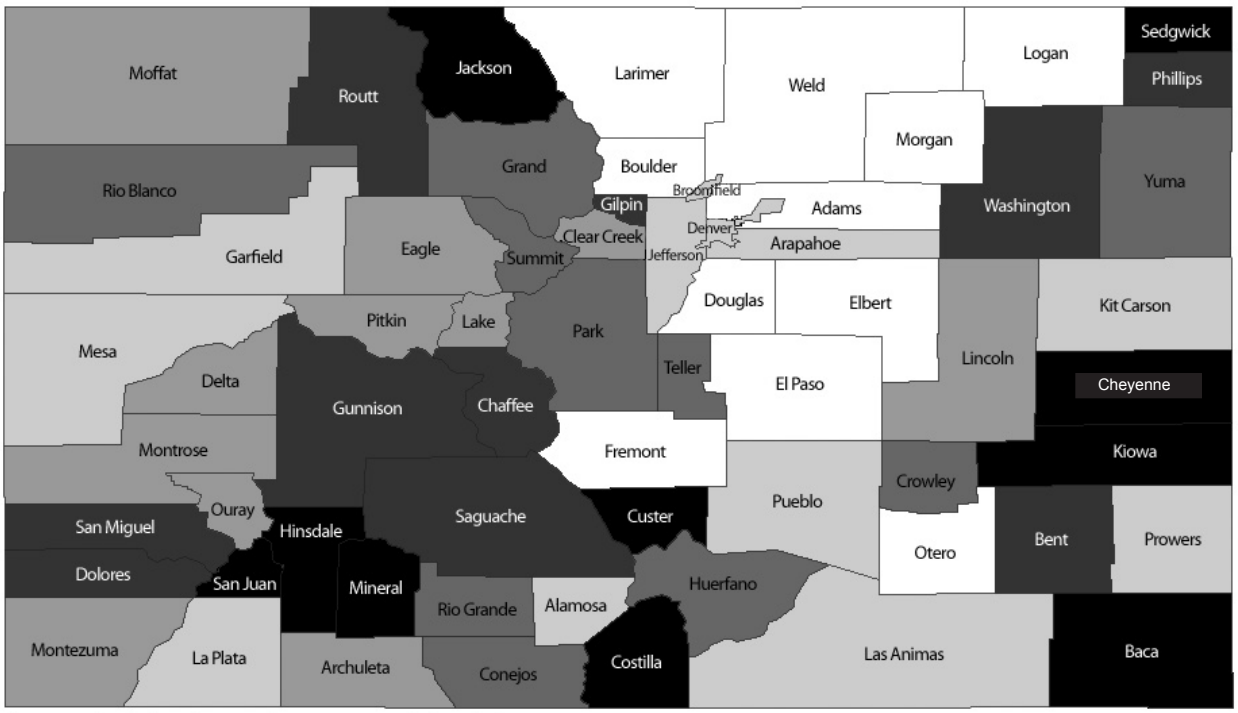
Figure 1: Tobacco Burdens Experienced in Rural Areas of Colorado in 2001



Source: Tobacco Attitudes and Behaviors Survey, 2001[9]

[ii]Rural counties are defined as counties with population density less than 50 people per square mile, and includes 54 Colorado counties. Non-rural counties are Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson, Larimer and Pueblo.

Figure 2: Tobacco Sales Outlets per 100,000 Population by Colorado County in 2004



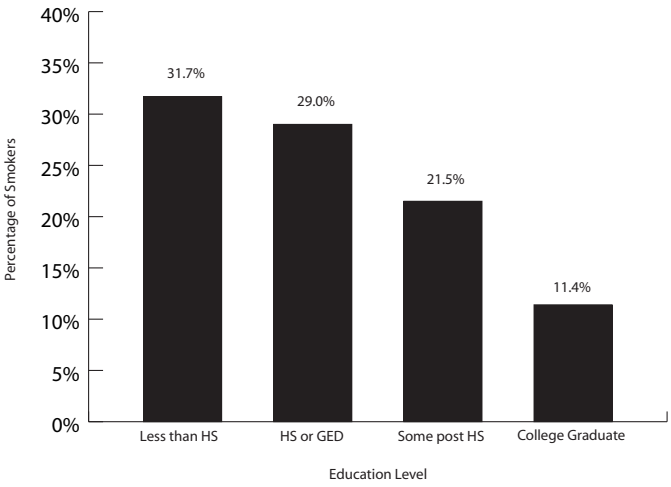
Source: Alcohol and Drug Abuse Division Colorado Synar Report, 2004

Other Disparities[9]

More than 220,000 Colorado smokers, 36.4 percent of adult smokers, report one or more social disadvantage—they started but didn't finish high school, live in poverty, lack health insurance or have a disability. Having just one of these disadvantages is linked with higher odds of smoking, lower odds of quitting and greater likelihood of exposure to secondhand smoke. People with one of these social or economic disadvantages are two and a half times more likely to be current smokers than people with none of these disadvantages.

In Colorado, as well as the nation, an inverse relationship is consistently found between education and rates of smoking. The highest smoking levels are found among the 5 percent of Colorado adults who attended but did not complete high school. These individuals are twice as likely to be current smokers and are less likely to quit.[7]

Figure 3: Percentage of Adult Smokers in Colorado by Education Level in 2002



Source: Behavioral Risk Factor Surviellance System, 2002

YOUTH TOBACCO USE

Indicator: Youth Tobacco Use

Objective (27-1b): Reduce cigarette smoking by adolescents.

Definition: Smoking prevalence is defined as the rate of adolescents in grades 9-12 who have smoked one or more cigarettes in the past 30 days.

Healthy People 2010 Target: Only 16 percent of adolescents in grades 9-12 will have smoked one or more cigarettes in the past 30 days.

Colorado Interim Target: Only 4 percent of adolescents in grades 9-12 will have smoked one or more cigarettes in the past 30 days.[iii]

Baseline (1995 YRBS***)[iv]:***

- **Colorado**: 33.7 percent of adolescents in grades 9-12 have smoked one or more cigarettes in the past 30 days.
- **National**: 34.8 percent

Local Public Health Context in Colorado

Preventing tobacco use among youth has emerged as a major focus of comprehensive tobacco control efforts because tobacco use and subsequent addiction often take root in adolescence. According to the Colorado State Tobacco Education and Prevention Partnership (STEPP), approximately 111,000 Colorado youth 15-19 years of age are smokers. Further, high school students are more likely to be current smokers than adults, 24.7 percent and 19.7 percent respectively.[13]

Most Colorado youth who smoke had their first cigarette when they were 10 years of age or younger. This is particularly concerning since among adults who ever smoked on a daily basis in the United States, 82 percent tried their first cigarette, and 53 percent became daily smokers, before age 18.[14] In addition, current use of smokeless tobacco is almost twice as common among male high school students as it is among adult men.[15] Moreover, estimates available for 2004 from the Centers for Disease Control and Prevention indicate that, without intervention, a projected 99,751 current youth smokers will die prematurely in their lifetime from a tobacco-caused illness.[16]

Data Trends

Nationally, the percentage of high school students who reported smoking decreased from 34.8 percent in 1995 to 28.5 percent in 2001.[17] Longitudinal data, however, are not available on tobacco use among youth in Colorado. The Youth Risk Behavior Survey (YRBS) is

[iii]The Colorado State Tobacco Education and Prevention Partnership (STEPP) developed this interim target for the state. Since the state rate was lower than the nation at baseline in 1998, the interim target also was set at a lower rate.

[iv]1995 is used as the baseline year because a statewide, weighted estimate for 1998 is not available from the data source, the Youth Risk Behavior Survey. Administered during odd calendar years only, the Colorado YRBS yielded an insufficient sample for establishing a reliable estimate of youth smoking for either 1997 or 1999.

administered in public schools throughout Colorado every two years; however, a weighted estimate of state-wide use has not been available since 1995. In addition, data from the Tobacco Attitudes and Behaviors Survey (TABS) on youth are available only for 2001. These data are not directly comparable to YRBS figures and, therefore, trends can not be examined.

Demographic Trends and Health Disparities

In 2001, the Tobacco Attitudes and Behaviors Survey (TABS) was administered to Colorado students in grades 6–12. TABS serves as the basis for the following examination of tobacco use patterns by demographic sub-populations.

Race/Ethnicity and Age[18]

Based on the 2001 administration of TABS, multi-racial, Hispanic and American Indian middle school students were most likely to report being current smokers, with more than 10 percent reporting to have smoked at least one cigarette in the past 30 days (15 percent, 12 percent and 11 percent, respectively). By high school, over 50 percent of American Indian youth in grades 10 and 11 reported being current smokers.

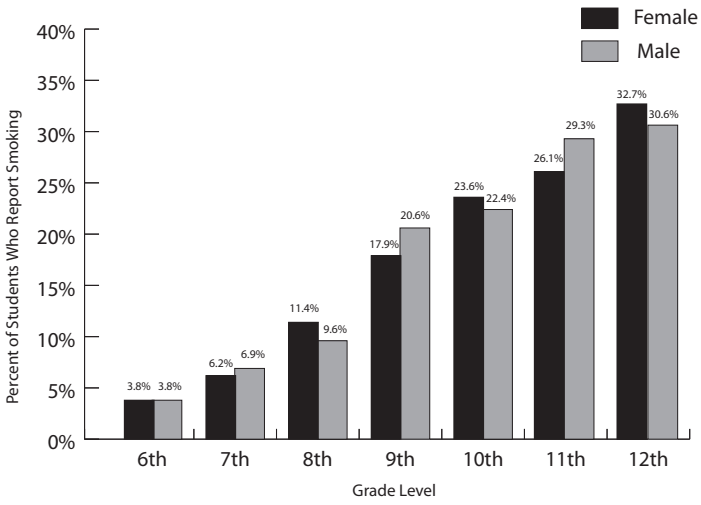
On average, Colorado black students were among the least likely to report smoking at least one cigarette in the past 30 days in both middle school and high school. Percentages for black youth, however, fluctuated substantially from 6th to 7th grade and during high school which may reflect the relatively small number of black students sampled. Estimates from the National Youth Tobacco Survey, conducted by the American Legacy Foundation, suggest higher use rates among black high school students. National use estimates were 15.8 and 14.3 percent for the years 2002 and 2000.[19] The percentage of Asian/Pacific Islander youth who reported current smoking is lower than any other racial/ethnic group until 9th grade. However, after 9th grade, the percentage of Asian/Pacific Islander youth who reported being current smokers was second only to American Indian 9th graders, at 32 percent.

Gender[18]

Rates of use in the past 30 days are close for males and females, grades 6–12. In sixth grade, exactly the same percentage of male and female students reported smoking in the past 30 days, 3.8 percent. By twelfth grade, use had grown considerably among both females and males, with 32.7 percent of females and 30.6 percent of males reporting use in the past 30 days. While similar rates were found in the percentages of males and females reporting to have smoked at least one cigarette in the past 30 days, male students were more likely than female students to report having smoked 100 or more cigarettes in their lifetime (i.e., to be established as smokers) and to be frequent smokers (i.e., to have smoked on 20 or more of the past 30 days).

Three times as many male as female high school students report ever having used smokeless tobacco (27 percent compared to 9 percent).[20]

Figure 4: Past 30 Day Cigarette Use by Gender and Grade Level in Colorado, 2001



Source: Tobacco Attitudes and Behaviors Survey, 2001

TOBACCO USE

Geography
TABS data indicate that middle school and high school students living in suburban areas of the state are the least likely to report having smoked, even a puff, or to be current smokers when compared to students in rural and urban areas of the state. Middle school students living in areas other than the Front Range, such as the Eastern Plains or Western Slope, are more likely to report ever smoking, even a puff. In addition, high school students living in these regions are more likely to report being current smokers.[18]

In Colorado, 17 percent of high school male students living in rural areas reported currently using smokeless tobacco compared to their urban and suburban counterparts, 8 percent and 13 percent, respectively. This geographic trend also emerges among adult males. Specifically, 19 percent of adult males living in rural areas report currently using smokeless tobacco, compared to 11 percent of urban and 7 percent of suburban adult males.[20]

Major State Initiatives

A percent of the Colorado Master Settlement Agreement (MSA) is appropriated annually to provide funding for comprehensive tobacco education, prevention and cessation programming through the State Tobacco Education and Prevention Partnership (STEPP).[1] Consistent with national objectives, the three major goals of STEPP programs are to:

- Reduce initiation of tobacco use by youth
- Promote cessation among youth and adults
- Reduce exposure to environmental tobacco smoke, especially among children.

In addition, the Prevention Unit of the Colorado Alcohol and Drug Abuse Division also has the goal of decreasing initiation and use among Colorado youth.

Did You Know?

- Tobacco use is the leading cause of preventable death—contributing to a death rate that is higher from that of many diseases and injuries combined.
- 90 percent of adult smokers started smoking before the age of 18;[21] many Colorado youth who smoke had their first cigarette when they were 10 years old or younger. [22]
- By twelfth grade, nearly two-thirds of Colorado public school students have tried cigarettes and nearly one-third are currently smoking.[18]
- 17 percent of all Colorado Medicaid expenditures are for smoking-related illnesses. Of $1,026,000,000 in smoking-related health care costs, $249,000,000 is covered by Colorado's Medicaid program.[23]

Adult Smoking Cessation Programs of the State Tobacco Education and Prevention Partnership (STEPP)
The Colorado Quitline and Colorado QuitNet are programs of the State Tobacco Education and Prevention Partnership at the Colorado Department of Public Health and Environment that are designed to support cessation primarily among adult smokers. Services provided through the Colorado Quitline and the Colorado QuitNet are free to all Colorado residents.

The Colorado Quitline (1-800-639-QUIT)
The Colorado Quitline is a confidential, toll-free telephone counseling service that connects people who want to quit using tobacco with trained counselors who can guide and support them through the quitting process—whether this involves quitting cigarettes, cigars or smokeless tobacco products. Individuals who call the Quitline receive:

- A personalized quit plan
- Up to five individualized counseling sessions that include relapse prevention techniques

- Printed resource materials
- Information on medications that can help individuals quit
- Coordination with insurance companies for pharmaceutical benefits
- Information about face-to-face classes available in the caller's area.

To date, approximately 14,000 residents have enrolled in the cessation program provided by the Colorado Quitline; nearly a third (28 percent) report remaining smoke-free after six months.[24] In 2001, 4 percent of Quitline callers were referred by physicians; in 2003, this percentage increased to 14 percent.[25]

Quitline Counselors are available seven days a week during the following hours:

- Monday- Thursday: 7am- 9pm
- Friday: 7 am- 7pm
- Saturday- Sunday: 8 am- 4:30 pm

The Colorado QuitNet (www.co.quitnet.com**)**
The Colorado QuitNet puts individuals attempting to quit in immediate contact with hundreds of people in various stages of the quitting process who share their experiences and support others online 24 hours a day, seven days a week. Just like the Quitline, this service is free and confidential. The QuitNet puts at an individual's fingertips:

- A quitting calendar that outlines day-to-day steps
- Information about medications that make quitting easier
- Chat rooms and forums where fellow quitters can celebrate their successes and provide and receive support
- Experts who can answer questions about quitting
- The Q-Gadget, which tracks time added to your life and money saved by not smoking
- Quit tips and anniversary e-mails that offer ongoing support.

More than 13,000 residents have used the internet-based cessation program available through The Colorado QuitNet. Nearly half (48 percent) of respondents to a follow-up survey were still smokefree six months after using the services available through QuitNet compared to 4.5 percent of all Colorado adult smokers.[25]

K-12 Tobacco Prevention Initiative
STEPP has provided funding to 167 schools in 38 school districts to implement the *Centers for Disease Control and Prevention Guidelines* for School Health Programs to Prevent Tobacco Use and Addiction. To date, this initiative has served 46,800 students.

Get R!EAL (Resist! Expose Advertising Lies)
Get R!EAL is a state initiative to promote youth involvement in tobacco prevention. Get R!EAL is a youth movement against tobacco marketing for teens ages 12 to 18, designed to promote educated decisions about tobacco use. More than 1,200 youth from 35 Colorado counties have participated in local coalition activities throughout the state.

STEPP Youth Smoking Cessation Programs
To improve quitting rates among high school students, STEPP has funded a smoking cessation program that is offered on school grounds during school hours throughout the state. The "Not-on-Tobacco" (NOT) program has served more than 2,200 teenagers at more than 70 schools. Of these, 28 percent have reported quitting smoking and 60 percent have reported reducing tobacco consumption.

STEPP has also developed and implemented a program called "Second Chance: A Self-Directed Alternative to

Suspension Program for Tobacco-Free Schools Policy Violators," designed to increase student compliance with the law, increase their awareness of the benefits of not using tobacco and increase their interest in reducing or quitting smoking. To date, "Second Chance" kits have been distributed to over 100 Colorado high schools.

Preventing the Sale of Tobacco Products to Minors
Colorado statute and federal regulations prohibit the sale of tobacco products to minors under the age of 18. It is estimated, however, that between 8 and 18 percent of Colorado middle and high school smokers purchase cigarettes illegally. Well over half of all youth smokers are not asked to show proof of age when buying tobacco products and more than 3 million packs of cigarettes are illegally sold to youth in Colorado each year.[22] To prevent the illegal sale of tobacco products to minors, the Colorado Department of Revenue's Liquor and Tobacco Enforcement Unit conducts compliance checks, inspections and merchant education. These efforts are funded through the Colorado Alcohol and Drug Abuse Division and the STEPP program.

Informing College Students
To address concerns about smoking prevalence in this age group, STEPP has funded 18 Colorado institutions of higher learning to implement tobacco prevention and cessation programs on college and university campuses.

Reducing Exposure to Secondhand Smoke
STEPP addresses this priority primarily through educational campaigns conducted as a part of comprehensive tobacco control programs operated by local health departments and county nursing services. Efforts at the local level have resulted in the adoption, by local municipalities, of ordinances that protect restaurant and bar patrons and workers in over 18 Colorado communities and counties.

Emerging Promising and Best Practices

The table below summarizes the intervention strategies recommended for the promotion of tobacco use prevention and cessation by the Task Force on Community Preventive Services, a 15-member, non-federal group with expertise in areas of public policy, behavioral and social sciences and epidemiology. Complete recommendations are published by the Centers for Disease Control and Prevention and may be accessed at http://www.thecommunityguide.org.

CDC Recommendations

Goal	Approach
Reducing tobacco use initiation by children, adolescents and young adults	■ Increasing the unit price of tobacco products ■ Mass media campaigns combined with other interventions
Increasing tobacco cessation	■ Increasing the unit price of tobacco products ■ Mass media campaigns combined with other interventions ■ Health care provider advice to quit in combination with provider education ■ Patient telephone support (quit lines) when combined with other interventions
Reducing exposure to Environmental Tobacco Smoke (ETS) or secondhand smoke	■ Smoking bans and restrictions (smoking bans prohibit smoking in specified areas; smoking restrictions limit smoking to designated areas)

Local Story: Compliance Checks to Limit Youth Access

MOFFAT COUNTY –The Grand Futures Prevention Coalition, in partnership with the Craig Police Department, conducts compliance checks of tobacco retail sales outlets in Moffat County in order to enforce legal restrictions on the sale of tobacco products to youth. Members of the *Citizens Against Youth Tobacco Use Task Force* and local law enforcement officials have been conducting tobacco ordinance compliance checks annually since 1996. Compliance among eight major retailers in the county steadily improved from 1996 to 2002. Specifically, in the first year that compliance checks were conducted, seven out of eight establishments in the county sold tobacco to a minor; this number dropped to five out of eight establishments in the second year. In 2001 and 2002, the sixth and seventh consecutive years of conducting compliance checks, 100 percent of retailers demonstrated compliance with laws governing the sale of tobacco to minors.

According to the director of the Grand Futures Prevention Coalition, when retailers were not compliant, "A coalition member took information about tobacco laws and health issues to the clerk who sold the tobacco and explained that they had broken the law but were not going to be penalized." Compliance checks, therefore, provided important opportunities to increase knowledge and awareness among local retailers about laws regulating tobacco product sales to minors. The task force has awarded compliant retailers certificates of appreciation and recognized them in the local newspaper.

Resources

American Cancer Society
Use the following URL to locate a local American Cancer Society office near you:
http://www.cancer.org/asp/search/mla/mla_global.asp?navToScreen=mla_0

American Lung Association of Colorado
http://www.alacolo.org/tobacco.cfm

American Heart Association
http://www.americanheart.org

The Colorado Quitline
Toll free: 800-639-Quit

The Colorado QuitNet
http://www.co.quitnet.com

Colorado's Tobacco-Free Schools Law
http://www.cdphe.state.co.us/pp/tobacco/pdfs/tfslaw.pdf

GASP of Colorado (Group to Alleviate Smoking Pollution)
http://www.gaspforair.org/

K-12 Tobacco Prevention Initiative
http://www.cdphe.state.co.us/pp/tobacco/schoolbasedprograms.asp

Rocky Mountain Center for Health Promotion and Education
http://www.rmc.org/index.html

State Tobacco Education and Prevention Partnership
Phone: 303-692-2510
http://www.cdphe.state.co.us/pp/tobacco/tobaccohom.asp

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