

# **Public Health Improvement Plan Garfield County, Colorado 2013-2017**



## **Garfield County Public Health**

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# **Garfield County Public Health Improvement Plan 2013-2017**

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## Acknowledgments

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Castle Valley Children's Clinic  
Children's Health Foundation  
City of Glenwood Springs  
City of Rifle  
CLEER (Clean Energy Economy for the Region)  
Colorado Mountain College  
Colorado State University  
Downtown Market Association  
Eagle Springs Organic  
Garfield County Government  
Garfield County School District #16  
Garfield School District Re-2  
Grand River Hospital District  
Manaus Fund  
Mind Springs Health (formerly Colorado West Regional Mental Health)  
Mountain Family Health Center  
Osage Gardens  
Roaring Fork School District  
Roaring Fork Food Policy Council  
Sonoran Institute  
The Gym  
Town of Carbondale  
Town of New Castle  
Town of Parachute  
Town of Silt  
Valley View Hospital  
Western Colorado Area Health Education Center (WCAHEC)

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## Executive Summary

Over a year ago, Garfield County Public Health and multiple stakeholders engaged in the process of developing the county's Public Health Improvement Plan (PHIP), a process that included collecting and analyzing data, gathering new information, and utilizing statistics provided by the Colorado Department of Public Health and Environment. This substantial task was accomplished through the committed work of the multi-agency team and the meticulous evaluation of data and statistics. The plan was developed through the eight phases of the Colorado Health Assessment and Planning System (CHAPS), including:

1. Plan the Process
2. Engage Stakeholders
3. Assess Community Health
4. Assess System Capacity
5. Prioritize Issues
6. Create a Local Public Health Plan
7. Implement and Monitor the Plan
8. Inform the Statewide Plan

CHAPS provides a standard process through which local public health agencies will meet the assessment and planning requirements of the Public Health Act of 2008. The process aligns with national standards and as such also assists agencies that want to prepare for voluntary accreditation by the national Public Health Accreditation Board. Within the context of this planning system, Garfield County has selected three top priorities upon which to focus throughout the next five years:

- **Internal priority – Public Health Strategic Plan:** This process will ensure that Garfield County Public Health is taking the steps necessary to reach the goals and objectives of the department. Strategies include an annual process to strengthen existing services and address gaps among staff and critical stakeholders; and staff development through training opportunities and team building.
- **Community priority – Healthy Eating and Active Living (HEAL):** The cross cutting effects that HEAL has on the public's health will help to reduce obesity and associated chronic diseases, including but not limited to: diabetes, heart disease, some forms of cancers, osteoarthritis, and mental health conditions. This will be addressed through participation in the LiveWell Garfield County Initiative.
- **Environmental health priority – Air Quality Management:** The Garfield County Air Quality Management Program's vision is to have clean air in Garfield County. Strategies to address air quality include: facilitating an effective information exchange between critical stakeholders, maintaining clean air, establishing a scientific basis for decision-making, and fostering a sustainable air quality management process.

Developing this plan and selecting these priorities will not change the work and commitment of Garfield County Public Health. The PHIP will provide a framework in which the department can identify areas of potential expansion and address the county's public health needs with focus. Plans such as this continue to evolve as more data becomes available. Goals, objectives, and

strategies will be consistently monitored and adjusted to assure that we are meeting the needs of our community.

## Introduction

The mission of Garfield County Public Health to prevent disease and promote healthy behavior is accomplished through the core Public Health functions of assurance, assessment and policy development. It is the responsibility of the Public Health organization to assess community health risks and needs; to assure accessibility of services that address those needs by working with direct service providers; and to create health policy that supports the improved health of community members.

This 2013-2017 Garfield County Public Health Improvement Plan has been developed as a result of stakeholder engagement, including the healthy eating active living (HEAL) coalition which represents many county stakeholder agencies and community members who played an important role in the development of the plan, community health data, and demographic information. This information was evaluated within the context of agency responsibility and capacity, and Public Health's vision that residents of Garfield County will have access to resources that promote optimal health, safety and well-being. Garfield County Public Health works diligently to partner with other public, private and nonprofit organizations to close identified service gaps. As such, the agency often serves in a supportive role to those who provide the direct services.

## Health Priorities

The State of Colorado has identified the top ten winnable health battles as:

- Clean air
- Clean water
- Infectious disease
- Injury prevention
- Mental health and Substance abuse
- Obesity
- Oral health
- Safe food
- Tobacco
- Unintended pregnancies

These areas were selected as winnable battles because they are public health and environmental priorities with large-scale impact on health and the environment, and with known, effective strategies to address them.

Determinants of health must also be considered when addressing the needs of a community. Determinants of health are factors that contribute to a person's current state of health.

Social determinants of health reflect social factors and the physical conditions in the environment in which people are born, live, learn, play, work and age, which has a large impact on health, functioning and quality of life outcomes. It is the interrelationships among these factors that determine individual and population health. Because of this, interventions that target multiple determinants of health are most likely to be effective. Determinants of health reach beyond the boundaries of traditional health care and public health sectors; sectors such as education, housing, transportation, agriculture, and environment can be important allies in improving population health (CDC.gov Social Determinants of Health definitions, Jan 24, 2013). Through consideration of these social determinants, health indicators derived from available

data and community perceptions, Garfield County Public Health prioritized three areas on which to focus during the next five years.

### Public Health Strategic Plan

Garfield County is a diverse community with varying perspectives on health and healthcare. To better align Garfield County Public Health with the health needs of its residents, an annual strategic planning process will be conducted using the core functions of public health and the ten essential services as a guide (Figure 1). This will help build internal capacity for the organization’s direction and define strategies that are needed to get there. The Public Health Accreditation Board (PHAB) standards will be used to develop and maintain an operational infrastructure. In addition, this plan will help define the objectives and strategies for addressing the work needed to promote health and prevent disease.

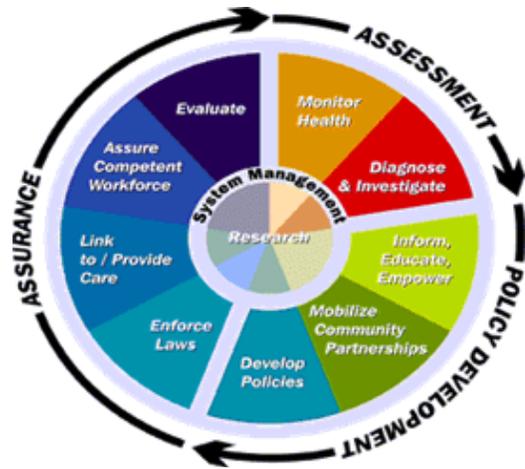


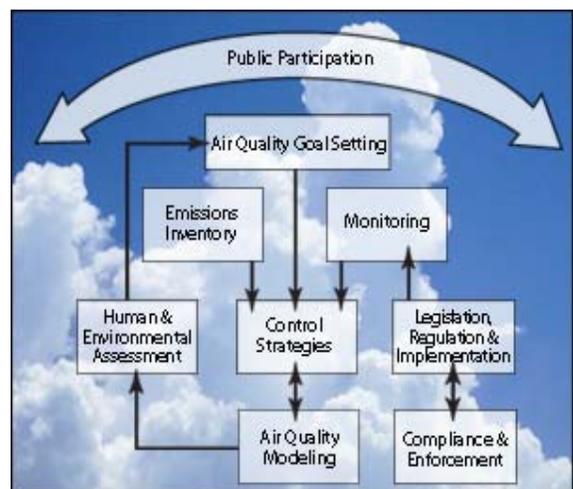
Figure 1. Core Functions of Public Health & 10 Essential Services

### Healthy Eating Active Living

Community health depends upon more than the absence of illness. In 2013, Garfield County was selected as a LiveWell Community Initiative site. Through this initiative, strategies will be developed that support environmental changes and encourage sustainable options for healthy eating and active living in Garfield County communities. By encouraging Garfield County residents to embrace a healthier lifestyle these efforts will address obesity reduction through nutrition, medical/dental care, and chronic disease prevention. In addition, by working on obesity reduction Garfield County Public Health will be contributing to the statewide plan and addressing a state top ten winnable battle.

### Air Quality Management

Garfield County Public Health is committed to addressing citizen concerns about activities in the community that affect air quality. There has been a great deal of technical and regulatory activity to support the development of air quality programs in Garfield County over the last several years, as well as clean air being a top ten winnable battle for the state. All air quality projects fit within an overall air quality program framework. This process has been implemented over the past several years through a variety of efforts, including ongoing ambient air monitoring, updates to local emissions inventories, the development of health risk assessments, an assortment of education and outreach efforts, and a variety of special collaborative air quality improvement projects and research. Though Garfield County does not have authority over every element of this process, it works closely with a diverse group of stakeholders to ensure that



Garfield County Air Quality Management Framework

every element of the process is addressed. During the term of this plan, the primary focus is to implement the community-based Air Quality Management Program Plan.

## Community Health Assessment and Planning System

The 2008 Colorado Public Health Reauthorization Act requires identified boards, agencies, and public officials to collaboratively develop state and local public health plans that set priorities for the public health system in Colorado. “The primary purpose of the Act is to assure that core public health services are available to every person in Colorado with a consistent standard of quality” (Colorado Public Health Reauthorization Act SB 08-194 Executive Summary, 2008). As a result the Colorado Department of Public Health and Environment developed a Community Health Assessment and Planning System (CHAPS) that provides a standard process to meet these requirements. The community health assessment process included results of participant survey of county stakeholder agencies and community members (HEAL Coalition), community health data, and demographic information. This plan was developed according to the guidance of CHAPS and aligns with the assessment and planning goal of the statewide health improvement plan.

### Garfield County Overview

**Environment.** Garfield County, Colorado is located 200 miles west of Denver along the I-70 corridor, and includes the municipalities of Parachute/Battlement Mesa, Rifle, Silt, New Castle, Glenwood Springs and Carbondale. This unique county lies at the west edge of the Rocky Mountain region and spans several hundred square miles of high desert and mountainous terrain. Both the Colorado and Roaring Fork Rivers flow through this county that is 60-70% federally owned and/or public lands. According to the 2010 United States Census, the resident population of Garfield County is 56,389 (Garfield County Demographics, 2010). Population typically increases to include an additional 5,000-10,000 guests during peak tourist seasons. County attractions include an abundance of biking and hiking trails, skiing, natural hot springs, hunting and fishing.



Map of Colorado counties (Colorado Department of Local Affairs, 2013).

Residents benefit from access to educational, medical and other services within the county. Garfield County is home to three schools districts, including RE-1, RE-2 and District 16. Medical treatment for residents and visitors can be accessed at private practices and at two hospitals, one serving the Rifle area, the other serving the Glenwood Springs area. Mountain Family Health Center, the federally qualified community health clinic, is located in Glenwood Springs with a satellite branch in Rifle. Both locations provide high quality primary health care in the communities they serve, with special consideration for the medically underserved and uninsured. The clinics accept

most private insurances, Medicaid and Medicare, and offer sliding scale and other assistance programs for any person who is uninsured.

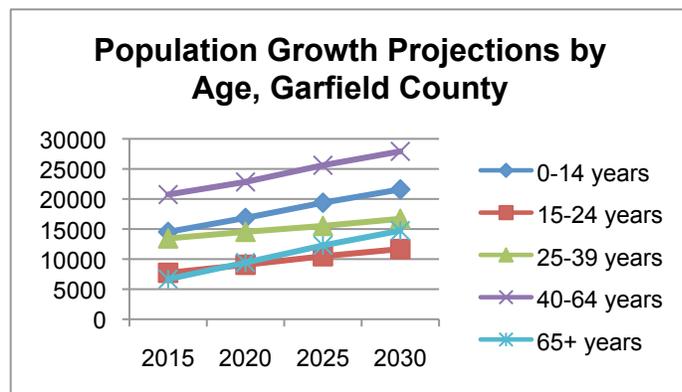
Situated along one of Colorado’s primary transportation routes, Garfield County industries include construction; oil and gas; and tourism. As a rural resort community with a more affordable cost of living, the county serves as a bedroom community for neighboring Pitkin and Eagle Counties. Socio-economic demography and attitudes vary from the east to west ends of the county, with industry and agriculture predominating the western end and tourism the eastern end.

**Population.** In 2010, Garfield County’s population was reported as 56,389; a 28.8% increase from the reported population of 43,791 in 2000. During that period, it is estimated that the county grew at an average annual rate of 2.6%, higher than Colorado’s annual growth rate of 1.6% (Colorado County Profile System, 2013). Further, it is estimated that the population of the county will increase another 29% to approximately 72,691 by 2020 (State Demography Office - Dashboard, 2013).

2010 Garfield County Population		
Age Range	Total	Percentage
0-14 years	12,839	22.77%
15-24 years	7,110	12.61%
25-39 years	12,842	22.78%
40-64 years	18,881	33.48%
65+ years	4,717	8.36%
Total Population	56,389	100.00%

The 2010 U.S. Census reports that the largest percentage of Garfield County’s population was between the ages of 40 and 64 years of age. The smallest percentage of the population was 65 years or older.

According to the Colorado Department of Local Affairs, population totals and forecasts for Garfield County indicate a continued upward trend in county growth through the year 2030, with

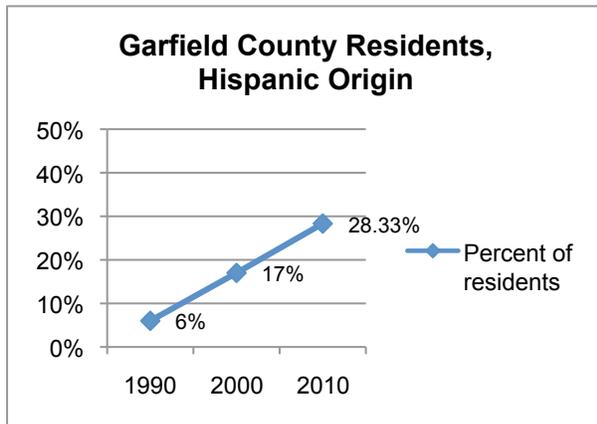


the most substantial increase expected in those aged 65 and older. Though there has been a 22.4% increase in that age group from 2000 to 2010, it is expected that the increase will be 99.4% from 2010 to 2020, and 211.7% from 2010 to 2030 (Population Totals for Colorado Counties, 2013). Estimates from the U.S. Census Bureau predict that the 65 and older population will increase more than 250% by 2030 (Population by Age and Gender - Results, 2013).

Gender data in Garfield County indicated a slightly higher male than female population in 2010. At that time, 27,292 county residents were female and 29,097 were male. At 48.4%, the female population of Garfield County is slightly lower than that of the State of Colorado (49.9%); and the male population of the county (51.6%) is slightly higher than that of the state (50.10%) (Population by Age and Gender - Results, 2013).

The United States Office of Management and Budget (OMB) requires that race and ethnicity be distinct categories. As defined by the OMB, ethnicity “can be viewed as the heritage, nationality group, lineage, or country of birth of the person or the person’s parents or ancestors before their arrival in the United States” (Humes, Jones, & Ramirez, 2011). Race, on the other hand, refers to differences and similarities in biological traits (Race and Ethnicity Defined, 2013). According to the 2010 census, Garfield County residents reported the following information concerning race (State and County QuickFacts, 2013).

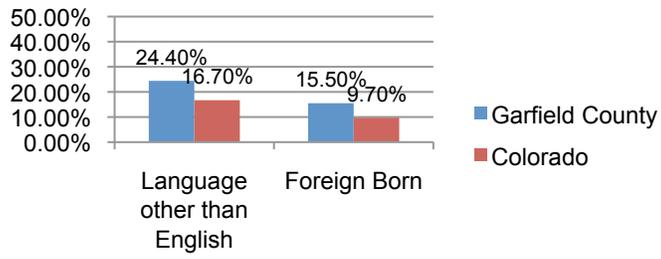
Percent Population by Race, 2011		
	Garfield County	Colorado
White	94.2%	88.3%
Asian/Pacific Islander	1.0%	3.1%
American Indian/Alaska Native	1.8%	1.6%
Black/African American	1.2%	4.3%
Two or More Races	1.9%	2.7%



The OMB specifically requires that “Hispanic origin” (or ethnicity) be delineated from race. According to the OMB, “Hispanic or Latino” refers to a person of Cuban, Mexican Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race” (Humes, Jones, & Ramirez, 2011). In the past two decades, Garfield County has experienced an 11% growth in residents who indicate they are of Hispanic origin. In 1990, residents of Hispanic origin comprised approximately 6% of the population; in 2000 that percentage increased to 17%. As of 2011, 28.6% of the population was Hispanic; 15.5% were foreign

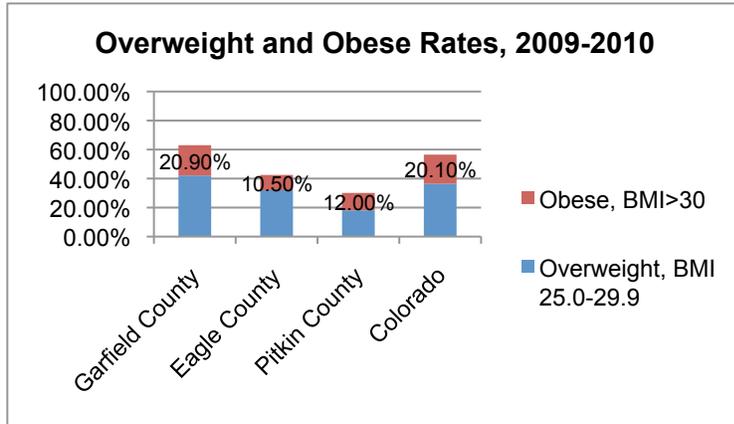
born; and 24.4% reported speaking a language other than English in the home (State and County QuickFacts, 2013).

**Residents who Speak a Language Other than English at Home and are Foreign Born, 2011**



## Social Determinants of Health

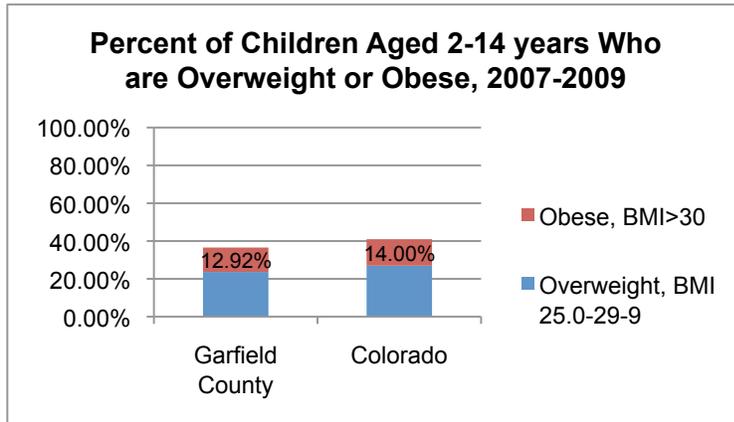
**Behavioral and Health Risks.** Behavior and health risks are factors that put an individual at a higher risk for suffering from a particular condition, such as a chronic illness or increased morbidity. These can include, but are not limited to: obesity, tobacco use, cancer, teen fertility, and binge drinking; and all serve as community health indicators. The following information



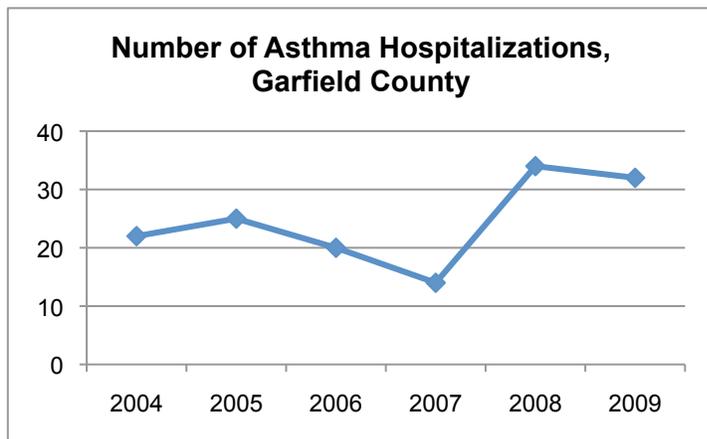
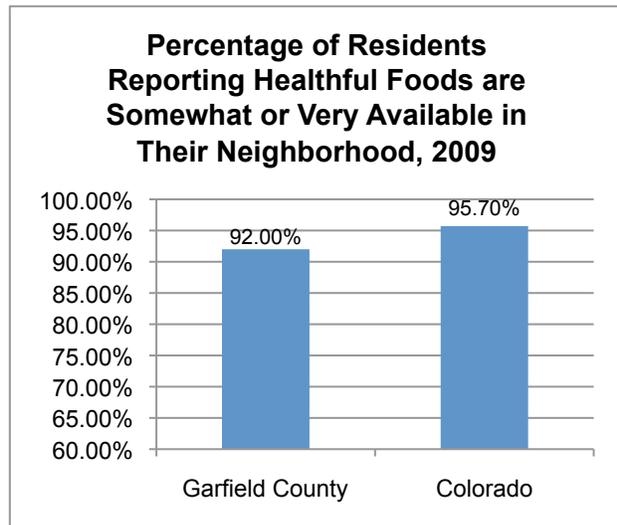
represents the behavioral and health risk data for Garfield County as compared with the State of Colorado.

**Overweight and Obesity Rates.** A body mass index (BMI) range is used to determine if an individual is overweight or obese. According to the National Institutes of Health, the BMI range for an individual who is overweight is 25.0-29.9; for obesity the score is greater than 30. As of 2010, Garfield County reported that 42.10% of its population was overweight, and 20.90% was obese. A comparison of these rates with those of adjacent counties and the State of Colorado is found to the left. Both the overweight and obesity rates were higher for Garfield County than those for the State of Colorado in 2009-2010. However data from 2007-2009 indicated that Garfield County children age 2-14 had slightly lower rates of overweight and obesity than Colorado as a whole (Colorado Health Indicators, 2013).

42.10% of its population was overweight, and 20.90% was obese.

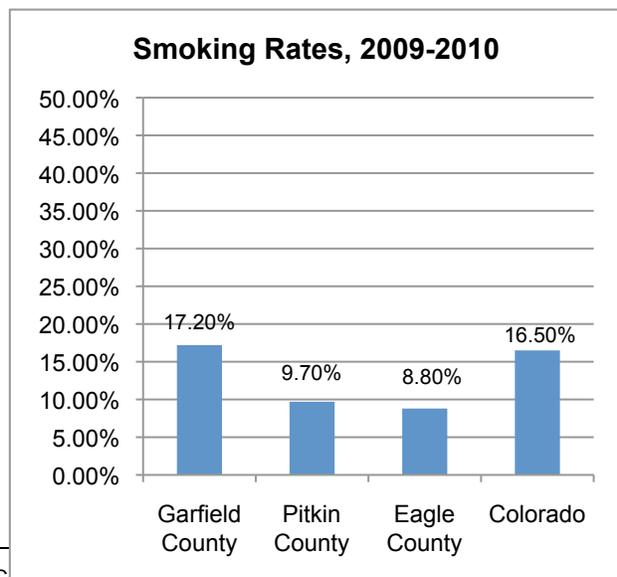


**Access to Healthful Foods and Exercise Facilities.** According to the Behavioral Risk Factor Surveillance System (BRFSS), 92.00% of Garfield County residents reported that fresh fruits, vegetables and other healthful foods such as whole grain breads or low fat dairy products, are somewhat or very available in their neighborhood. This is slightly lower than the 95.70% of Colorado residents who reported that healthful foods are somewhat or very available in their neighborhoods. Additionally, 81.12% of residents state they have access to public exercise facilities in their neighborhood, such as walking or running tracks, basketball or tennis courts, swimming pools, and/or sports fields (Colorado Health Indicators, 2013).



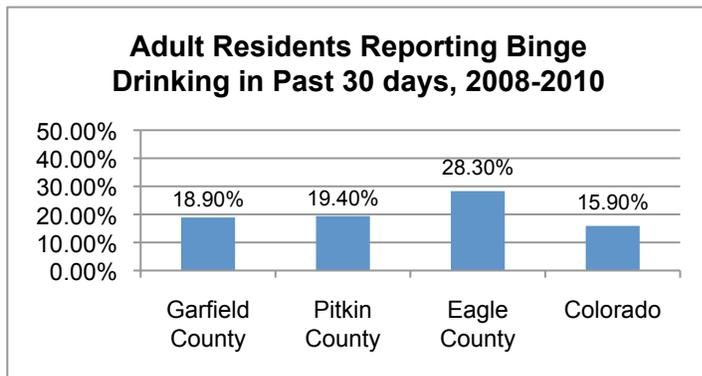
**Asthma Hospitalization Rates.** Asthma can result from allergies, environmental factors, and tobacco smoke (All About Asthma, 2013); and hospitalization rates can be used to identify trends in asthma occurrence and treatment (Asthma Indicators Available on the Tracking Network). Between 2004 and 2009, Garfield County reported an increase of 45% in the number of residents hospitalized for asthma (Colorado Environmental Public Health Tracking, Asthma, 2013).

**Tobacco Use and Binge Drinking.** Tobacco use is the leading cause of preventable illness and death in the United States and causes cancer, chronic lung diseases, heart disease, pregnancy-related problems, and many other serious health problems (Tobacco Facts and Figures, 2013). Tobacco use by Garfield County residents as of 2010 is 17.20%, higher than the State of Colorado's resident use of 16.50%. In addition, it is higher than that of adjacent counties with rural resort characteristics.



According to the Centers for Disease Control and Prevention, "excessive alcohol use,

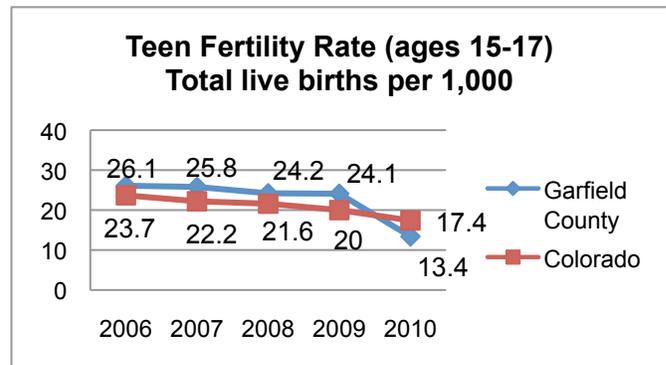
including underage drinking and binge drinking (drinking 5 or more drinks on an occasion for men or 4 or more drinks on an occasion for women), can lead to increased risk of health problems such as injuries, violence, liver diseases, and cancer” (Alcohol and Public Health, 2013). While Garfield County adults who reported binge drinking (18.90%) was higher than that of Colorado (15.90%), this percentage is lower than those reported in Pitkin (19.40%) and Eagle Counties (28.30%) (Colorado Health Indicators,



2013).

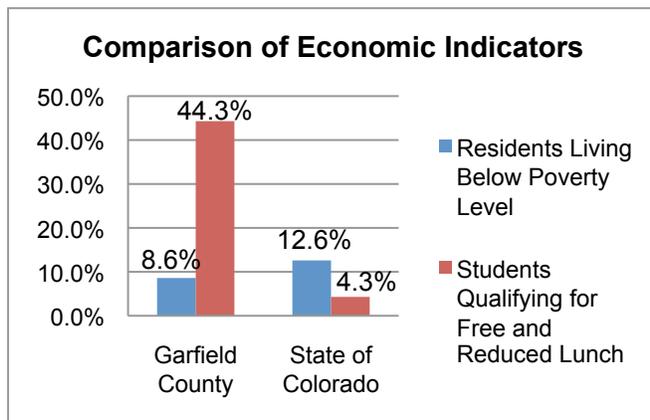
2013).

**Teen Fertility.** There are substantial economic, social, and health care costs associated with teen pregnancy and childbearing (Teen Pregnancy, 2013). According to the Pregnancy Risk Assessment Monitoring System (PRAMS), as of 2010 the teen fertility rate in Garfield County has decreased by 48.6% since 2006. In 2010, Garfield County’s teen fertility rate was 22.99% lower than the State of Colorado (Pregnancy Risk Assessment Monitoring System, 2012).



### Economic Indicators

As of 2009, the median household income of residents of Garfield County was \$62,716, 12.5% higher than that of the State of Colorado. The median value of owner-occupied housing units during that same period was \$334,700, 42.9% higher than the state. In 2009, 8.6% of Garfield

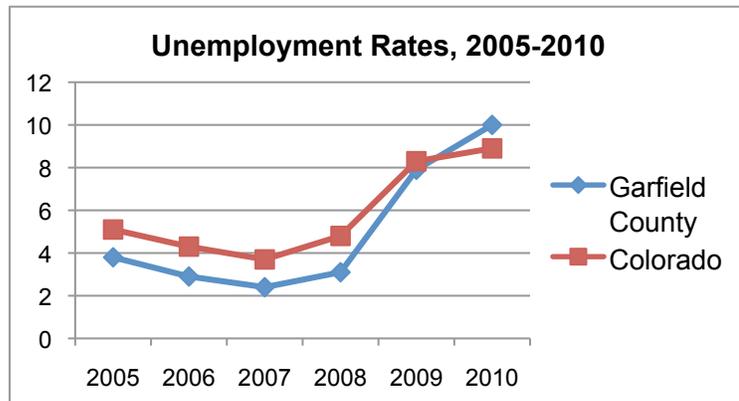


County residents were reported to be living below the poverty level. Poverty levels vary throughout the county as well, with the highest levels reported in Parachute, Carbondale and Glenwood Springs, and the lowest reported in New Castle and Silt. Though higher than the adjacent counties of Pitkin and Eagle, Garfield County’s poverty rate is 8.6%, which is lower than the 12.6% reported by the State of Colorado. In 2010, it was reported that 44.3% of Garfield County students qualified for free and reduced lunch as compared with the state’s average of 4.3% (State and County

QuickFacts, 2013).

The number of Garfield County residents completing high school remains high. According to the United States Census Bureau, from 2007 through 2011, 85.3% of Garfield County's residents aged 25 and older reported their education as high school graduate or higher. Those reporting a Bachelor's degree or higher is 24.8% (State and County QuickFacts, 2013).

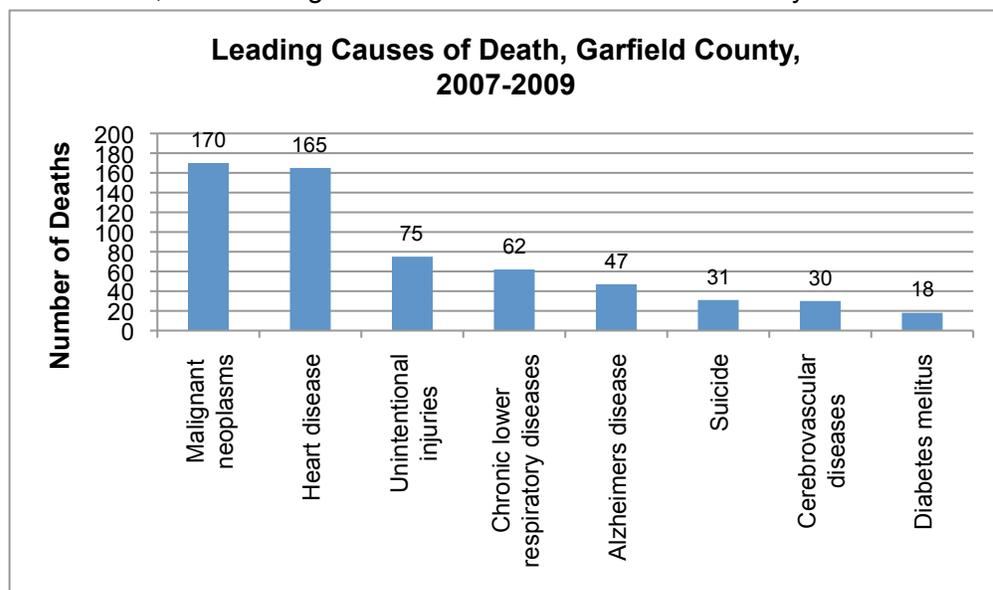
Unemployment rates in Garfield County have seen a steady increase between 2007 and 2010. Though this is consistent with that experienced by the State of Colorado, Garfield County experienced a greater increase in unemployment during that time. While the county's unemployment rate in 2007 was lower than that of the state, by 2010 it had risen higher (United States Unemployment Rates and Statistics ).



## Health Outcomes

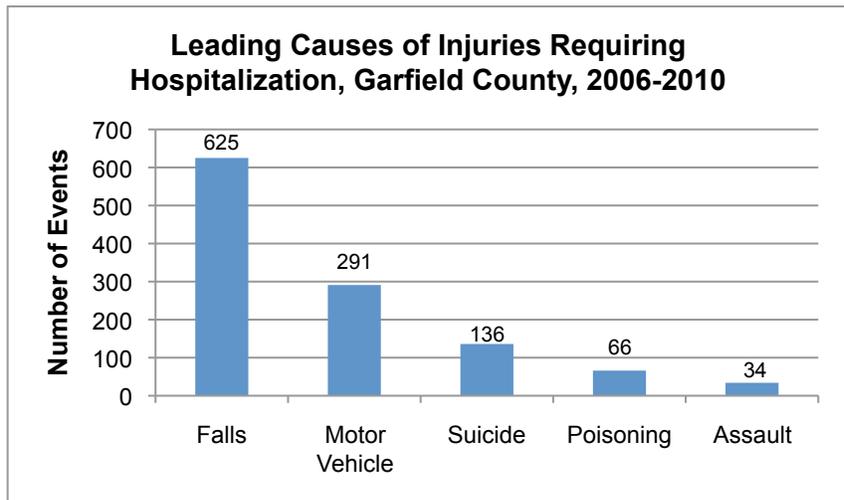
**Causes of Death.** According to the Colorado Department of Public Health and Environment (CDPHE), from 2007 to 2009, the leading cause of death for Garfield County residents was malignant neoplasms

(cancer); the second leading cause was heart disease. Of the types of cancers that caused death, the highest mortality rate resulted from trachea, bronchus and lung cancer; and the second highest mortality rate resulted from breast cancer (Colorado Health Indicators, 2013).



**Causes of Injuries Requiring Hospitalizations.**

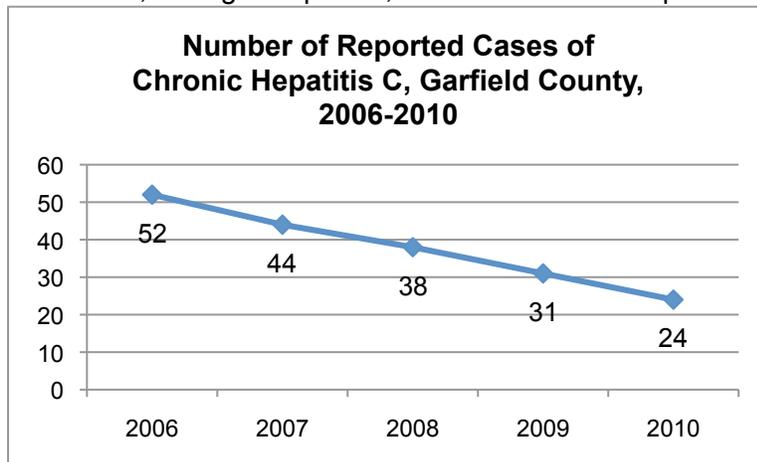
Types of injuries in Garfield County that required hospitalization between 2006 and 2010 are consistent with those recorded in both Eagle and Pitkin Counties. The primary cause of injury requiring hospitalization in Garfield County is falls, followed by motor vehicle caused injuries. Of the 625 falls resulting in hospitalization, 363 of them involved individuals over 60 years of age (Colorado Health Indicators, 2013).



**Communicable Diseases.**

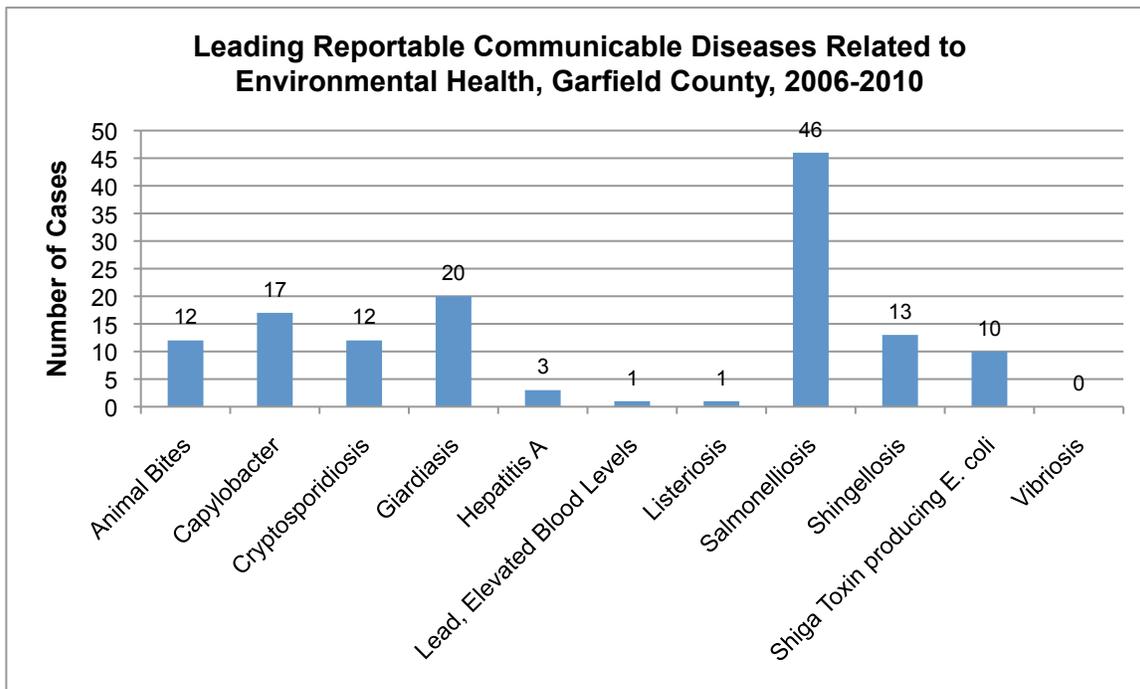
Communicable diseases are infections that are transmissible by direct contact with an affected individual or the individual's discharges or by transmission through indirect means. (communicable disease, 2013). Transmission to a person may result from contact with an infected person, animal, inanimate object, or environmental factor such as food or water. Communicable diseases include sexually transmitted diseases (STD) and infections (STI).

Chlamydia is the most commonly reported STD in Garfield County with 670 cases from 2006 to 2010. Substantially more cases were reported in women than men, with 507 cases reported in females. The second most reported STD in the county is Gonorrhea, with 45 reported cases. In addition, during that period, there were 7 new reports of STI/HIV (Colorado Health Indicators, 2013).



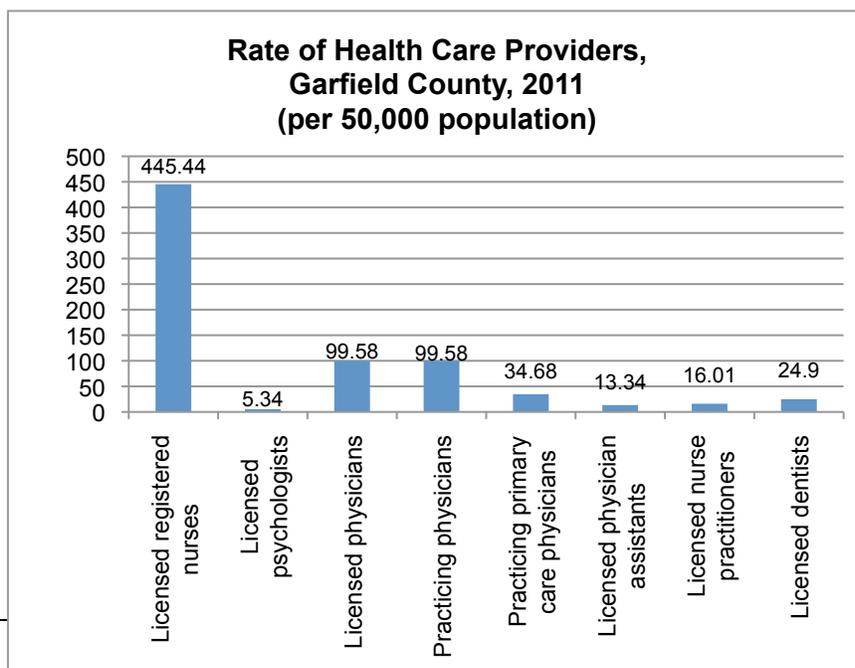
Chronic Hepatitis C is an infection by the hepatitis C virus and results in inflammation of the liver (Chronic Hepatitis C, 2013). Chronic Hepatitis C cases in Garfield County have reduced 54% from 2006 to 2010. In 2010 there were 24 reported cases, down from the 52 that were reported in 2006 (Colorado Health Indicators, 2013).

The leading reportable communicable disease related to environmental health in Garfield County is Salmonellosis with 46 cases from 2006 to 2010. The following chart includes additional communicable disease data for Garfield County during that period (Colorado Health Indicators, 2013).



### Access to Health Care

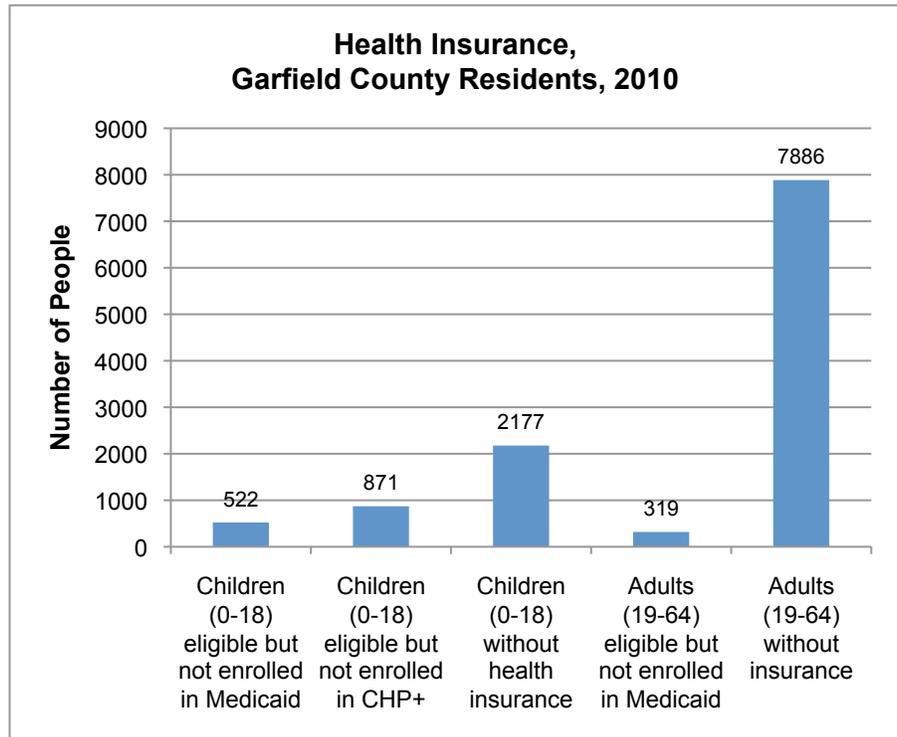
**Rate of Health Care Providers.** Increasing access to quality health care is of primary concern to public health agencies. The rate of health care providers per 50,000 population in Garfield County in 2011 is provided in the chart below.



Further, CDPHE reports that 68.1% percent of Garfield County adults aged 18 and older reported having one or more health care provider in 2008-2010. During that same period, 60.38% of adults reported visiting a dentist within the past 12 months. That said, however, 16.15% of adults have been told by a health care provider that they have high blood pressure; and 44.63% of adults have lost one or more teeth due to

decay or periodontal disease (Colorado Health Indicators, 2013).

**Health Insurance.** The percentage of Garfield County residents with health insurance in 2009-2010 was 68.20%. This is markedly lower than the 84.60% average of insured Colorado residents. According to the 2011 Colorado Health Access Survey, the health region including Garfield County reported the highest uninsured rate in the state at 25%. CDPHE reports that in 2010, 12.86% of children and 32.76% of adults in the county were eligible for but not enrolled in Medicaid. Data on uninsured numbers of county residents are provided below (Colorado Health Indicators, 2013).



## Environmental Health

The central region of Garfield County has become “ground zero” for the growing energy development industry, with natural gas among the primary resources of interest. In direct response to concerns about the rapid expansion of the oil and gas industry, the county reinvested in an environmental health program in 2005. Currently, county programs have a very limited regulatory role in which professional staff protects public health from detrimental conditions in the environment through promotion, education, collaboration, and the evaluation of environmental health risks. Though active in many areas of environmental health (e.g. indoor air, water quality, land use, consumer protection, etc.), the Board of County Commissioners has made the greatest investment of resources to the air quality management program which continues to be the most visible environmental health initiative.

**Air Quality Monitoring.** Current information indicates that to date, over 10,000 natural gas wells and associated development and production facilities have been constructed in Garfield County. Industry projections predict that the county will be home to over 20,000 natural gas wells and associated infrastructure in the next 10-15 years. With oil and gas development predicted to increase at such rates, Garfield County Public Health is committed to addressing citizen concerns about activities in the community that affect air quality related values. The air quality data that is collected will be used to drive planning, mitigation, and policy development. The ambient air monitoring program was designed to meet the following six basic monitoring objectives:

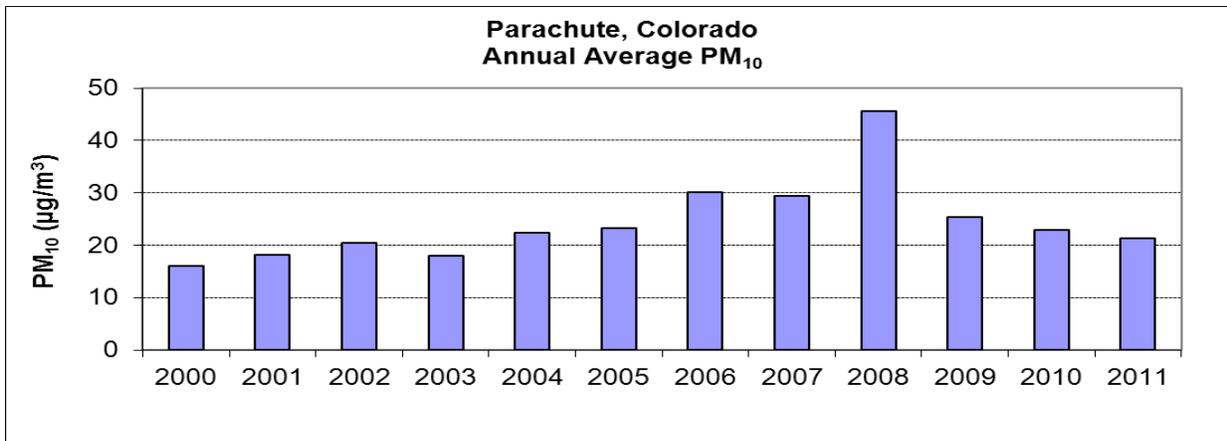
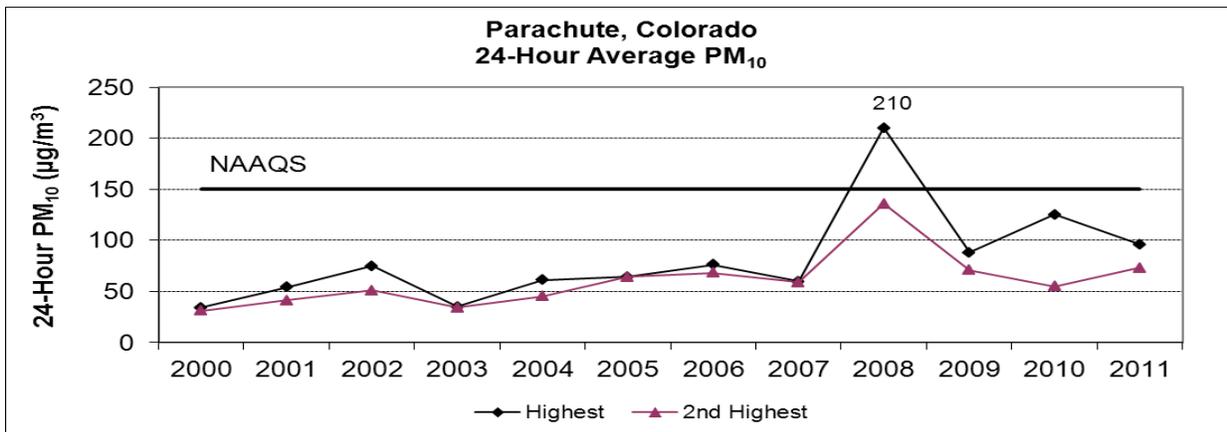
- Characterize what is in the air

- Determine quantities (how much) of several pollutants in the air
- Compare existing conditions versus added influences over time (trends)
- Identify pollution contributions from various sources
- Track air quality to ensure conditions are protective of health and welfare of residents
- Monitor aesthetic air quality conditions (visibility, etc.)

As of April 2013, Garfield County is monitoring a variety of air pollutants in Battlement Mesa, downtown Parachute, downtown Rifle, the Dry Hollow area (south of Silt), and Carbondale.

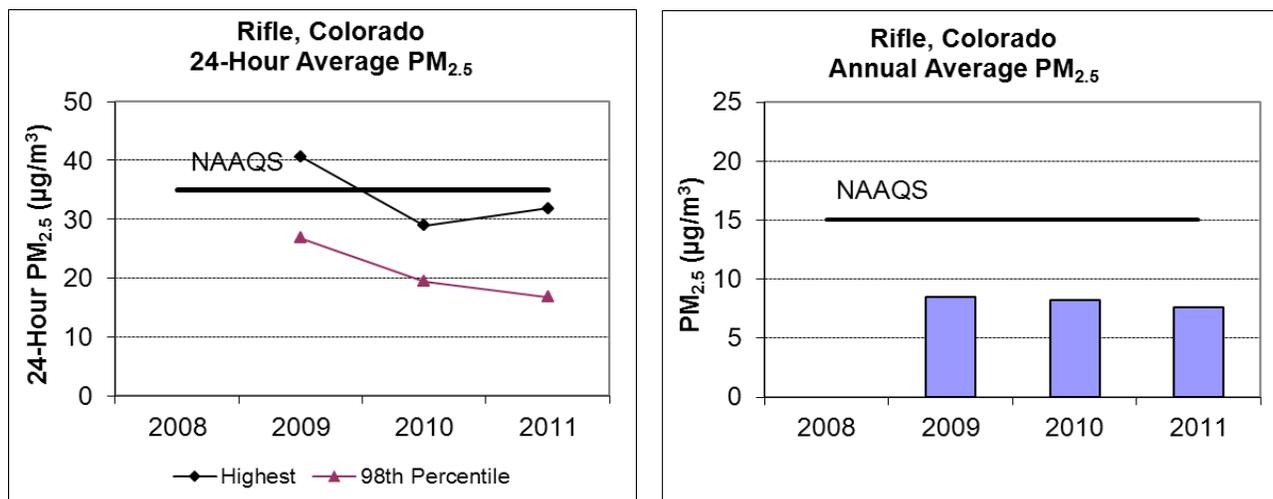
**Air Monitoring Results.** Criteria pollutants, pollutants subject to the National Ambient Air Quality Standards (NAAQS), include carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), lead (Pb), and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). The county does not monitor CO, SO<sub>2</sub>, or lead because there is not a significant source for these pollutants within Garfield County.

Particulate matter (PM<sub>10</sub>) is monitored in Battlement Mesa, Parachute, Rifle, and Carbondale. NAAQS for PM<sub>10</sub> is a daily maximum 24-hour average of 150 µg/m<sup>3</sup>. A violation occurs when the average is greater than 150 µg/m<sup>3</sup> in a three year period. The Parachute site has recorded one PM<sub>10</sub> exceedance (210 µg/m<sup>3</sup> measured in 2008), but no violations. In addition, PM<sub>10</sub> levels at the Parachute site were shown to increase from 2000 to 2008. Since 2008 PM<sub>10</sub> levels at the Parachute site have been showing signs of decreasing.



From 2005 to 2011, PM<sub>10</sub> levels in Rifle have remained relatively constant and have not shown signs of increasing or decreasing. PM<sub>10</sub> levels at Battlement Mesa and Carbondale have shown no exceedances or violations and have remained very low.

Particulate matter (PM<sub>2.5</sub>) is monitored in Battlement Mesa, Rifle, and Carbondale and a daily maximum 24-hour average of 35 µg/m<sup>3</sup> and an annual average of 15 µg/m<sup>3</sup> is acceptable. A violation occurs when the three-year average of the 98th percentile 24-hour average exceeds the 24-hour standard; or the three-year average of the annual mean exceeds that annual standard. The Rifle site has recorded one PM<sub>2.5</sub> exceedance (24HR of 41 µg/m<sup>3</sup> measured in 2009), but no violations. PM<sub>2.5</sub> levels at Battlement Mesa and Carbondale have shown no exceedances or violations and have remained very low.



Ground level ozone (O<sub>3</sub>) is monitored in Battlement Mesa, Rifle, and Carbondale. The NAAQS for O<sub>3</sub> is a daily maximum eight-hour average of 75 ppb. A violation occurs when the three-year average of the 4th highest daily maximum is greater than 75 ppb. The Rifle site has recorded two O<sub>3</sub> exceedances (76 ppb measured in 2008; 78 ppb measured in 2012), but no violations. O<sub>3</sub> levels at Battlement Mesa and Carbondale have shown no exceedances or violations and have remained very low.

At present, air quality measurements in Garfield County do not violate national ambient air quality standards for O<sub>3</sub>, PM<sub>10</sub>, or PM<sub>2.5</sub>.

**VOC Monitoring.** Volatile organic compounds (VOC) are emitted as gases from certain solids or liquids and include a variety of chemicals, some of which may have short- and long-term adverse health effects. VOC monitoring began in 2005, and since then the County has identified some toxic compounds of potential concern. In 2008, VOC monitoring was modified to serve a wider range of purposes including toxics assessments, source attribution, and ozone formation potential for VOCs. Overall, concentrations of some volatile organic compounds appear to have decreased over time or remained at very low concentrations and unchanged.

**Analysis of Current Emissions Inventories.** In recent years, emissions inventories have been developed by CDPHE and other stakeholders, including the Western Regional Air Partnership (WRAP) and Independent Petroleum Association of Mountain States (IPAMS). These inventories describe the largest sources of air pollution for each pollutant.

The most current emissions inventory report describes both the natural and man-made emissions that contribute to the air quality in Garfield County. For a number of reasons, air pollutants that are transported into the county are not considered in our latest report. The air

pollutant inventory data in the report is based on 2010 Colorado Air Pollution Control Division data. This data was compiled using a variety of different methods, including required Air Pollutant Emission Notices (APENs), computer models, emission factors, and other reporting mechanisms (such as Hazardous Air Pollutant Addendum forms). The pollutants that were inventoried and are as follows:

- NO<sub>x</sub> (nitrogen oxides)
- PM<sub>10</sub> (particulate matter less than 10 microns in diameter)
- SO<sub>2</sub> (sulfur dioxide)
- VOC (volatile organic compounds)
- CO (carbon monoxide)
- Benzene

The report describes the largest sources of pollution by pollutant. In some cases the largest sources of emissions are natural or biogenic (e.g., decomposition, vegetation, biomass) which are not controllable sources of air pollution. This is particularly valid for volatile organic compounds. In many cases, man-made, or anthropogenic, emissions are the largest sources. Major man-made categories include:

- Point – Specific location, releases pollutants above certain threshold to require a permit (e.g., power plants, industrial facilities)
- Area – Numerous facilities or activities that individually release small amounts of given pollutant(s), but collectively can release significant amounts of pollution (e.g., wood burning)
- Oil and Gas – Can be both point and area sources (point – compressor stations, gas plants; area – wellheads, vents)
- Mobile – Wide variety of vehicles, engines, and equipment that move, or can be moved, from place to place (vehicles, construction, ATVs)

For nitrogen oxides, oil and gas activities are the primary contributors of emissions in Garfield County followed by highway vehicle emissions. Nitrogen oxide emissions, excluding fires, have increased 72% from 1996 to 2010. For PM<sub>10</sub>, construction and oil and gas activities are the largest sources. PM<sub>10</sub> emissions, excluding fires, have increased 28% from 1996 to 2010. For sulfur dioxide, oil and gas activities are the largest contributors. Sulfur dioxide emissions, excluding fires, have increased 29% from 1996 to 2010. For VOCs, oil and gas activities and biogenic sources are the primary contributors. VOC emissions, excluding fires, have increased 50% from 1996 to 2010. For carbon monoxide, highway vehicles and oil and gas activities are the largest source in Garfield County. Carbon monoxide emissions, excluding fires, have decreased 18% from 1996 to 2010.

## Community Perceptions

### C.A.R.E. Program

Garfield County Public Health received a Level One grant under the Environmental Protection Agency's (EPA) Community Action for a Renewed Environment (C.A.R.E.) Program (June, 2010). The intent of the C.A.R.E program is to help communities address its environmental health priorities through community-based action and partnerships. The environmental health issues raised by Garfield County residents were prioritized through a consensus developing process, and resulted in the following:

1. Response to environmental emergencies to protect human health should be part of emergency preparedness plans.
2. Not enforcing environmental laws and regulations leads to environmental health problems.
3. Bacteria and other contaminants in food, due to unsafe food handling in retail food establishments and homes may transmit illness.
4. Meth labs create risks of fire and explosion and toxic chemicals that contaminate the interiors or building where meth labs are located and are challenging to clean up.
5. Exposure to benzene from gas wells in proximity to residences may cause or worsen human health problems, such as nerve and bone marrow damage.
6. Chemicals used in hydraulic fracturing of natural gas wells may contaminate soil, ground water, and drinking water supplies.
7. Pollution of Colorado River water, used for human consumption, may occur if drilling takes place too close to the river.
8. Focus on sustainable community planning helps people take steps toward energy efficiency, zero waste, energy-conserving transportation, green building, and natural resource conservation.
9. Using radioactive mine tailings as construction fill allows leaching into soils and ground water with negative health impacts.
10. Drivers using cell phones or other distractions threaten the safety of others on the roadways.

The EPA's vision for the C.A.R.E. grant is that stakeholders in the community will become engaged as a force to address their own environmental health priorities. The final report recommendation includes empowering Garfield County residents to make informed decisions and adopt behaviors that protect and enhance the health of individuals, families, communities and the environment. Garfield County Public Health will be a credible, trusted source of information and coordination to promote change in the county.

### Community Needs Assessment

The 2006 Garfield County Public Health Community Resident Needs Assessment was performed to determine the most prevalent needs in 14 health and quality-of-life domains. Respondents reported that 15.3% of Garfield County households with member(s) affected by chronic disease presented with high blood pressure, 12.3% with asthma and 8.2% with diabetes. Of households with member(s) affected by mental health issues, 17.2% reported the presence of depression/anxiety and 15.4% reported stress. Further, of the households with

members unable to get enough physical activity, 22.6% reported that it was due to a lack of time, 10.0% reported it was due to a lack of recreation facilities and 8.1% reported that it was as a result of being overweight. Conversely, of the households with overweight members, 20.7% reported being affected by a lack of physical activity with 13.9% being affected by unhealthy eating habits. Finally, of households with members affected by safety issues, 11.5% of respondents were negatively impacted by the lack of bikes lanes on roads (Community Resident Needs Assessment, 2006). An analysis of this data identified the following unmet needs and concerns: access to medical and dental services; mental health and substance abuse services; disabilities and chronic illnesses; and lifestyles and behaviors that negatively impact health and quality of life (Appendix 1).

## Community Engagement

In February 2012 the Garfield County Healthy Eating Active Living (HEAL) Coalition was formed to strategically focus collaborative efforts around issues relating to obesity prevention in Garfield County. The HEAL Coalition represents a wide-ranging, multi-sector coalition including all six municipalities, the medical community, public and private organizations, the county's three school districts, food policy and nutrition, members of the recreation and planning communities, active transport, and county residents. Garfield County HEAL is a broad based community coalition that is committed to collaborating with our community to improve the places where we live, work, and play related to healthy eating and active living. Through a participant survey, this coalition was instrumental in the evaluation of what stakeholders viewed as priorities and the needs of their constituencies.

## Capacity Assessment

Garfield County performed a capacity assessment to determine the degree to which the public health system is able to address the priorities defined in this plan. Through feedback from stakeholders, the organization determined the level of community interest in addressing possible priorities and the available resources, including funding and desire, that can be committed to ensure success. Areas that were considered in the capacity assessment include: the ability of the organization to assure public health services; and the presence, gaps, or duplication of core services.

The three priorities identified in this plan were selected by answering the following questions:

- What is the baseline level of core public health and environmental health services being provided in the community?
- Given existing and potential resources, where do service gaps that can be mitigated and areas of strengths that can be leveraged exist?
- How and where can the effectiveness of core service delivery in the community be increased?
- How can capacity be built by influencing public health policy and resource allocation?

## Community Health Priorities for Garfield County

The determination of Garfield County's three priorities for the term of this plan resulted from a longitudinal environmental scan that included an analysis of the community needs assessment, an inventory of health determinants and the availability of services to address needs in those areas, and the organization's capacity to address the issues and make a positive impact. The county's health priorities were selected through consensus upon review of: data gathered through the community assessment; the capacity assessment; and input from the core management team comprised of two nurse managers, the environmental health manager, the pre-natal care manager, the public health director and the special projects manager. Community involvement began early on in the process and the input from them was taken into consideration through the entire process. Prioritization decisions were made based on the areas in which Public Health can take the lead role, have the greatest positive impact on the most people and has the most capacity to affect change. The following pages identify the goals, objectives, and action steps for this CHAPS Action Plan.

## Internal Priority: Strategic Plan

Strengthening existing services and addressing gaps and overlaps requires the strategic allocation of community resources. In order to determine the most effective means through which to accomplish this, Garfield County Public Health will engage in a strategic planning process. This plan will address the core public health services, including: assessment, planning and communication; vital records; statistics; communicable disease prevention; investigation and control; prevention and population health promotion; emergency preparedness and response; environmental health; and administration and governance.

CHAPS Action Plan					
Name of LPHA: Garfield County Public Health (GCPH)					
INTERNAL PRIORITY: Public Health Strategic Plan		STRATEGY: Engage critical stakeholders in the strategic planning process.			
Major Indicator: Planning process and identified strategies, goals, objectives and measures to be completed by January 2014.					
Five Year Goal	Objectives	Action Steps	Responsible Organization	Completion Date	Status
Evaluate the Public Health Department to keep us moving forward with the core functions and essential services of Public Health in Garfield County.		Conduct a yearly strategic planning session with the Garfield County Public Health Department	GCPH	Yearly, starting in January 2014 - 2018	
		Evaluate day to day operations	GCPH	Yearly starting January 2014 - 2018	
		Develop and maintain an operational infrastructure to support the performance of Public Health functions (using the PHAB Standards)	GCPH	2018	

## Community Priority: Healthy Eating Active Living

The Healthy Eating Active Living initiative was selected as a priority due to its cross-cutting nature and potential to result in the greatest positive impact on community health. Not only does this prevention initiative support policies and environmental changes that promote healthy eating and active living, “it also addresses community development, environmental sustainability, and neighborhood safety” (Community Health Initiative, 2012). Currently, 42% of adults in Garfield County are considered overweight and 21% are obese. 24% of children are overweight and 13% of children in Garfield County are obese. As these numbers continue to increase nationwide, it is likely we could see an increase in Garfield County, making it so important to take action now. Overweight and obesity-conditions that affect an estimated 97 million Americans, are the second leading cause of preventable death in the United States. This priority is consistent with the statewide plan to reduce obesity. While Garfield County Public Health will play a lead role, the initiative will be community driven. Its success is dependent upon the commitment of multiple stakeholders.

CHAPS Action Plan					
		Name of LPHA: Garfield County Public Health			
COMMUNITY PRIORITY: Healthy Eating Active Living (HEAL)		STRATEGY: Pursue the LiveWell Initiative – 9 years of funding to support preventing and reducing obesity in Garfield County.			
Major Indicator: What will you measure?					
<ol style="list-style-type: none"> <li>1. Receive funding from LiveWell Colorado</li> <li>2. Number of participants in LiveWell Garfield County Coalition list serve</li> <li>3. Number of strategies developed and implemented from the LiveWell Garfield County Community Strategic Plan</li> <li>4. Number of Coalition and Steering Committee meetings held and attendance</li> <li>5. Measure obesity rates and chronic disease occurrence</li> </ol>					
Lead Entity: Garfield County Public Health		Supporting Entities: Castle Valley Children’s Clinic, Children’s Health Foundation, City of Glenwood Springs, City of Rifle, CLEER, Colorado Mountain College, CSU Extension, Colorado West Mental Health, Downtown Market Association, Eagle Springs Organic, Garfield County Government, Grand River Hospital District, Manaus Fund, Mountain Family Health, Osage Gardens, Re-2 School District, Roaring Fork School District, RF Food Policy Council, Sonoran Institute, The Gym, Town of Carbondale, Town of New Castle, Valley View Hospital, WCAHEC			
Five Year Goal	SMART Objectives	Action Steps (Activities)	Responsible Organization	Completion Date	Status
Become and remain a LiveWell Community	By December 2012 submit application for LiveWell Colorado Mobilization and Planning (1yr) phase of funding.	Hire a grant writer for the 2013 Mobilization & Planning Application	Garfield County Public Health (GCPH)	October 2012	Completed
		Sign LiveWell Colorado 2013 Community Investment	GCPH, LWC	December 2012	Completed

		Contract	GCPH, LWC	December 2012	Completed
	By October 2013, submit application for LiveWell Colorado Early Implementation	Expand participation in Garfield County LiveWell /HEAL Coalition	GCPH, LiveWell /HEAL Coalition	Ongoing	
		Create a Steering Committee for LWGC	GCPH, LiveWell Garfield County Coalition-LWGC	February 2013	Completed
		Assess drivers and barriers in the community related to HEAL – community engagement assessment	GCPH, LWGC Steering Committee	August 2013	
		Write a Community Strategic Plan (CSP) based on drivers and barriers	GCPH, LWGC Steering Committee	October 2013	
		Develop evaluation tool for obesity rates and chronic disease occurrence in Garfield County	GCPH	Ongoing	

## Environmental Priority: Air Quality Management

According to human health risk assessments performed from 2007-2009 by CDPHE, there is no public health crisis in Garfield County as a result of oil and gas operations; however there are gaps and uncertainties in the understanding of pollution from these operations and estimated cancer risks and non-cancer hazards. To assist us with filling such gaps, CDPHE has agreed to produce a compressive 5-year air monitoring summary report and a human health risk assessment both of which will include air quality data from 2008-2012. A first draft of these reports is expected by the end of 2013. In addition, The Garfield County Board of County Commissioners (BOCC) has signed a formal agreement with Colorado State University (CSU) to provide substantial funding for an academic study to collect data on air emissions surrounding well pad activities in Garfield County. The air emissions study will be conducted over a three-year period beginning in the fall of 2012, and concluding in the fall of 2015.

Garfield County Public Health's primary focus during the term of this plan will be the implementation of the community-based Air Quality Management Program Plan, including an overarching vision that includes: promoting innovative solutions, reducing public health risks, coordinating the use of resources, creating a dynamic comprehensive data plan, promoting leadership in regulatory clarity, promoting community engagement, and integrating air quality issues into community planning.

CHAPS Action Plan					
		Name of LPHA: Garfield County Public Health			
ENVIRONMENTAL PRIORITY: Air Quality Management		STRATEGY: Implement the community-based Air Quality Management Program Plan which focuses on monitoring air quality in Garfield County and communicating and educating Garfield County residents about these findings.			
Major Indicator: What will you measure?					
<ol style="list-style-type: none"> <li>1. Air Quality data of air pollutants at 5 locations throughout Garfield County (Battlement Mesa, Parachute, Rifle, Silt and Carbondale)</li> <li>2. Air Quality data of Volatile Organic Compounds (VOC) at the same locations listed above.</li> <li>3. Evaluation of the Air Quality Management Program Plan</li> </ol>					
Lead Entity: Garfield County Public Health		Supporting Entities: Colorado Oil and Gas Conservation Commission, Colorado Department of Public Health and Environment, EnCana, Bill Barrett			
Five Year Goal	SMART Objectives	Action Steps (Activities)	Responsible Organization	Completion Date	Status
Monitor and Maintain Clean Air in Garfield County.	Facilitating an Effective Information Exchange	Develop and implement a comprehensive education plan	GCPH-EH	2014	
		Develop and implement a comprehensive communication plan	GCPH-EH	2014	

		Engage community input and feedback mechanisms to ensure continuous improvement	Stakeholders, Community Residents, and GCPH-EH	Ongoing	
Maintaining Clean Air		Coordinate efforts regionally	GCPH-EH, Eagle County EH, and City of Aspen EH	Ongoing – starting 2012	
		Identify and leverage available resources	GCPH-EH	Ongoing	
		Identify and implement feasible clean air strategies	GCPH-EH	Ongoing	
Establishing a scientific basis for decision making		Develop and implement a comprehensive data management plan	GCPH-EH	2014	
Fostering a sustainable air quality management process		Sustain the air quality plan through coordinated stakeholder involvement	GCPH-EH and stakeholders	Ongoing - 2018	

## Conclusion

Garfield County Public Health is committed to fulfilling its responsibility of assessing community health risks and needs; assuring accessibility of services that address those needs by working with direct service providers; and creating health policy that supports the improved health of community members. The selection of the three identified priorities was a result of stakeholder input and the analysis of community need and health indicators. During the term of this plan, the organization will work with community stakeholders to address the goals defined in each priority, including:

- Public Health Strategic Plan
  - Evaluate the Public Health Department and continue to move forward with the core functions and essential services of Public Health in Garfield County
- Healthy Eating Active Living
  - Become and remain a LiveWell Community
  - Reduce obesity rates among all groups in Garfield County
  - Decrease chronic disease occurrence (diabetes and heart disease) among all groups in Garfield County
- Air Quality Management
  - Monitor and maintain clean air in Garfield County.

In addition to these above priorities, the agency will continue to address areas of need in Garfield County through the continuation of programs that provide core public health services. Existing initiatives include but are not limited to: the Women, Infants and Children Program (WIC); public health investigations; health education and outreach; chronic disease prevention; and immunizations.

Finally, this 2013-2017 Garfield County Public Health Improvement Plan is a working document and will undergo an annual evaluation. Amendments to this document will occur as needed and as a result of ongoing stakeholder engagement and discussion and continued community needs assessments.

## Appendix 1. 2006 Garfield County Public Health Community Resident Needs Assessment – Results.

<b>Most Prevalent Needs in 14 Health and Quality-of-Life Domains</b>		
<b>Health/Quality-of-Life Domain</b>	<b>Three Most Prevalent Conditions</b>	<b>% All Respondents</b>
1. Household with member(s) affected by chronic disease	a) High blood pressure	15.3%
	b) Asthma	12.3%
	c) Diabetes	8.2%
2. Household with member(s) affected by mental health issues	a) Depression/anxiety	17.2%
	b) Stress	15.4%
	c) Eating disorders	3.0%
3. Household with member(s) affected by substance abuse issues	a) Smoking using tobacco	10.4%
	b) Alcohol abuse	6.9%
	c) Drug abuse	1.5%
4. Household with member(s) having trouble getting medical care	a) High cost of medical care	19.2%
	b) Lack of insurance coverage	15.9%
	c) Cost of prescriptions	11.2%
5. Household with member(s) having trouble getting dental care	a) High of cost dental care	29.1%
	b) Lack of dental coverage	19.2%
	c) Time off work to get care	4.6%
6. Household with member(s) 65 and older with physical limitations	a) Hearing loss	3.9%
	b) Vision loss	2.0%
	c) Memory loss	2.0%
7. Household with member(s) 65 and older with needs for services	a) Assistance with routine chores	2.0%
	b) Transportation	1.6%
	c) Assisted living	1.4%
8. Household with member(s) affected by safety issues	a) Lack of bike lanes on roads	11.5%
	b) Sports injuries	6.2%
	c) Motor vehicle accidents	3.5%
9. Household with member(s) affected by infectious diseases	a) Influenza	8.8%
	b) Pneumonia	2.0%
	c) Hepatitis	1.8%
10. Household with member(s) affected by family planning issues	a) Teenage sexual activity	2.3%
	b) Unplanned pregnancy	2.3%
	c) Getting family planning services	1.8%
11. Household with member(s) unable to get enough physical activity because:	a) Lack of time	22.6%
	b) Lack of recreation facilities	10.0%
	c) Overweight	8.1%
12. Household with member(s) affected by environmental issues	a) Lack of affordable housing	13.1%
	b) Noise	6.2%
	c) Poor water quality	5.1%
13. Household with overweight member(s) affected by	a) Not getting enough physical activity	20.7%
	b) Unhealthy eating habits	13.9%
	c) Cost of healthy food	8.6%
14. Household with children (0-18 years of age) affected by	a) Development delays	3.2%
	b) Childhood obesity	2.0%
	c) Need for diagnostic screen	2.3%

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