South Billings Master Plan
Health Impact Assessment

Photo from draft South Billings Master Plan

RiverStone Health
Population Health Services
123 S. 27th Street
Billings, MT 59101
www.riverstonehealth.org

Created May, 2012

The South Billings Master Plan Health Impact Assessment was conducted by RiverStone Health, with assistance from the City of Billings Planning Division and technical assistance from the National Association of County and City Health Officials Health Impact Assessment Mentorship Project.

Project Staff

Alyssa Auvinen*
RiverStone Health

Hillary Hanson, MS, MPH, CPH
RiverStone Health

*Responsible for report preparation

Acknowledgments

Therese Madrigal, MTE
Deschutes County Health Services

City of Billings Planning Division

AECOM

Table of Contents

1. Executive Summary

The City of Billings, in conjunction with consultant firm AECOM, has created a 20 year Master Plan for the South Billings Boulevard Urban Renewal District (SBBURD). The South Billings Master Plan will provide a set of goals that will guide land use, transportation development, community design, and capital improvements through the year 2032. The goal of the proposed South Billings Master Plan is to set a long-term course for creating a vibrant community where residents can live, work, and go to school in neighborhoods that are strong, safe, prosperous, and connected.

To evaluate this goal from a health perspective, RiverStone Health, in collaboration with key community partners, was awarded a technical assistance grant from the National Association of County and City Health Officials (NACCHO) to conduct a Health Impact Assessment (HIA) of the South Billings Master Plan. The intent of the HIA is to ensure that health considerations are a part of the decision-making process as it relates to the adoption of the South Billings Master Plan. This is accomplished by assessing the draft South Billings Master Plan, informing decision-makers and stakeholders about potential health impacts, and providing recommendations for policies and programs that would mitigate negative impacts and support positive health outcomes. The South Billings Master Plan is an all-encompassing document that will be used to set the long-term course for the SBBURD, therefore, the completion of an HIA is a vital part of the development process. This report summarizes the findings of that HIA.

Health Impact Assessment (HIA)

HIA is a process whereby the health impacts, both positive and negative, of a proposed policy, program or plan are evaluated. The final product is a set of evidence-based recommendations intended to inform decision-makers and stakeholders about the potential health impacts associated with the proposed policy or project, and allow the findings and recommendations of the HIA to be considered *before* final decisions are made.

Steps in the HIA process

Screening	Determining whether an HIA is appropriate for a given project or decision
Scoping	Setting HIA study parameters and identifying the most relevant health outcomes
Assessment	Describing baseline conditions and estimating future impacts
Reporting	Disseminating findings and making recommendations
Monitoring	Reviewing the HIA effectiveness and evaluating actual health impacts of the policy or proposal

Methodology

This HIA encompassed an assortment of research, including quantitative and qualitative data collection and literature review to determine current conditions in the SBBURD and examine scientific evidence of the potential impact of the goals in the South Billings Master Plan. Three HIA priority health issues were chosen in the scoping stage of the HIA on which to focus. These three priority issues include:

- Access to Healthy Food
- Zoning
- Transportation and Mobility

Background

Although a person's health behaviors are shaped in part by personal characteristics, there is a growing body of evidence indicating that the social, physical, and economic conditions in which people live, work, and go to school, strongly influence the overall health of individuals and communities.

Access to Healthy Food

Increases in obesity and chronic diseases associated with poor diets have led to the realization that some communities lack access to affordable and nutritious foods, making it difficult for the residents to make healthy food choices. Neighborhood environments that have inadequate access to healthy and affordable food are considered food deserts, and may contribute to poor diets and a high prevalence of obesity and diabetes, specifically in disadvantaged populations[1]. Healthy diets are recommended for the prevention of chronic diseases, stroke, and certain types of cancer. Access to food stores and food service places, particularly grocery stores, differs by socioeconomic status, with grocers locating in wealthier neighborhoods and convenience stores and fast food establishments situating themselves in areas of lower socio-economic status. At present, the SBBURD has convenience stores, restaurants, fast food establishments, a membership-only bulk goods store, and one primary supermarket on the perimeter of the District. Incorporating into the South Billings Master Plan the establishment of more healthy food options (supermarkets and farmers' markets) will help ensure easier access to healthy foods for SBBURD residents.

Zoning

The zoning of a neighborhood also plays a role in the health of residents. Neighborhoods that have diverse functions—residential, commercial, institutional, and leisure—may be safer than single function areas (e.g. neighborhoods that are only residential). Multi-function areas attract a continual flow of people throughout the day and evening, providing a level of security. In contrast, criminal activity is more likely to occur in places where there is not continued activity throughout the course of the day (e.g. quiet and deserted). In addition, mixed-use neighborhoods allow residents easier access to work and services (e.g. grocery stores) via walking or biking, thereby decreasing auto dependency and increasing the physical activity level of the residents. Furthermore, residential neighborhoods that provide affordable and safe housing can promote a sense of security, stability, independence, and make important contributions to health. Zoning for multi-functional neighborhoods and safe, affordable

neighborhoods will allow more opportunities for SBBURD residents to incorporate physical activity into daily routines.

Transportation and Mobility

A key characteristic of today's growth and development can be seen in the relationship that has evolved between low density development and more automobile travel: vehicle miles traveled increases as neighborhood density decreases[2]. Automobiles offer tremendous personal mobility and independence; however, they are also associated with health hazards, including motor vehicle crashes and bicycle and pedestrian injuries and fatalities. While many factors contribute to the high rate of crashes and injuries, the increase in high-speed, pedestrian-hostile roads in expanding areas likely plays an important part. Walking and bicycling offer important health benefits, but safe and attractive sidewalks and paths are needed to attract pedestrians and bicyclists and ensure their safety[3]. It is essential the South Billings Master Plan maintain the components relating to the revamping of neighborhood streets and sidewalks as this has great potential to benefit the health of SBBURD residents.

Current Conditions and Recommendations

There are many policy and program recommendations within the South Billings Master Plan in relation to impacts on health, health equity, and broader quality of life. Listed below are recommendations for additional policies and strategies that pertain to the three HIA focus areas and if incorporated into the South Billings Master Plan will promote positive health outcomes.

Access to Healthy Food

Current Conditions

- There is one primary supermarket located on the perimeter of the District. Another primary supermarket is close in proximity to the District. Both supermarkets have bus routes that run along adjacent streets, but walking and bicycling to the supermarkets can prove difficult.
- Other food outlets that are available within the District tend to have low-nutrient, high-fat, high-calorie options (e.g. fast food and convenience stores).
- Two farmers' markets are located within two miles of the District; they operate during summer and early fall.

Key Recommendations

- Encourage the presence of another primary supermarket in the District, located closer to residential neighborhoods.
- Support community gardens in the District, particularly within existing social or spiritual circles.
- Improve pedestrian and bicycle accommodations to primary supermarkets, both inside and outside of the SBBURD.
- Promote the operation and expansion of local farmers' markets.

Zoning

Current Conditions	*Key Recommendations*
• The SBBURD has zoning for residential, commercial, and industrial uses. These uses do not always mix together well in the District (e.g. industrial next to residential). • Residents believe zoning modifications to allow live-work buildings would encourage business development. • Few multi-family units (i.e. apartments, condos) are available in the District. • Affordable housing is available, but some of the row houses are distasteful to residents (i.e. poor exterior image).	• Re-zone the District, allowing for live-work buildings and more cohesive mixed-use neighborhoods (i.e. residential and commercial). • Create mixed-use developments that offer convenient places to work and shop within walking distance of residences. • Promote the development of attractive affordable housing (i.e. provide development incentives).

Transportation and Mobility

Current Conditions	*Key Recommendations*
• Many parts of the District lack safe, pedestrian and bicycle-friendly sidewalks and paths. • There is a multi-use trail in the District, but there are no designated on-road bicycle lanes. • Many streets in the District are in grave need of repair, including streets near schools. • Three bus routes run throughout the District, each running approximately every hour from 6AM to 7PM.	• Encourage use and development of sidewalks, bicycle lanes, and multi-use trails. Improve bicyclist and pedestrian safety through design strategies. • Increase street connectivity. In new developments, favor street grid layout. • Explore avenues for expanding bus hours past 7pm to accommodate residents working past 7pm and to increase access to services. • Utilize the City of Billings Safe Routes To School study recommendations to improve accessibility to schools in the District.

Conclusion

Developing creative policy and programmatic approaches to address health issues in the context of the built social and natural environment is essential to achieving the objectives set forth in the draft South Billings Master Plan, and achieving improved health outcomes in the community. Overall, the draft South Billings Master Plan provides an effective approach to improving the District in ways that enhance health and strengthen positive influences of social determinants of health. The authors of this HIA hope that the recommendations above will serve to strengthen the South Billings Master Plan and improve quality of life and well-being for all SBBURD residents.

2. Introduction

The public's health is greatly impacted by multiple economic and community development sectors, projects, plans and policies. Economic development plans and land use policies can play a major role in the availability and accessibility of healthy food. For example, land use policies determine whether farmers' markets and supermarkets are permitted land uses; or where fast food establishments locate[4]. Furthermore, permitting service and retail stores to locate closer to residential neighborhoods may reduce dependency on automobiles and be more attractive to pedestrians and cyclists, thus encouraging people to become more physically active as part of their daily routines[4]. Community development plans that are designed with health in mind will help promote healthy behavior choices.

Health Impact Assessment (HIA) is an emerging practice in the United States and it is widely promoted by the Centers for Disease Control and Prevention (CDC) as a tool to influence decisions that have short and long-term health consequences. HIA is commonly defined as "a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population"[5].

2.1 What is Health?

Many people define health simply as the absence of disease—that living without chronic conditions, such as cardiovascular or respiratory disease—is to be healthy. However, a more complete definition of health recognizes the multiple characteristics that should be considered to encompass the concept of health. In 1948, the World Health Organization (WHO) Constitution defined health as "a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity"[6]. This definition was further expanded in the 1986 Ottawa Charter for Health Promotion to include the ability of an individual or group "to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment"[6].

2.2 Determinants of Health

It is important to recognize that numerous factors influence health outcomes. Known as health determinants, these factors include biological, social, economic, environmental, behavioral, and services[7]. Significant determinants of health are very individual, such as biological (i.e. sex, age, race) and behavioral (i.e. diet, activity level). However, external factors, like the environment—where we live, work, and go to school—considerably impact the health of individuals and whole populations.

2.3 How Might the South Billings Master Plan Affect Health?

To understand the role the South Billings Master Plan can play in health, it is necessary to explore the relationship between health and land use and the built environment. In the context of the relationship between land use and health the two areas of interest are the proximity and the mixing of different land uses. Two land use scenarios generally exist: those that are characterized by separated land uses, and those that mix the usage to include housing, schools, shopping areas, offices, and distribution centers. Land use determines the proximity of

different activity centers and spatially influences where we do things such as work, attend school, shop and other activities. The built environment refers to all of the physical structures engineered and built by people—the places we live, work, and go to school; including homes, workplaces, schools, grocery stores, parks, streets, sidewalks and transit services[8]. Put simply, land use helps to mold the built environment.

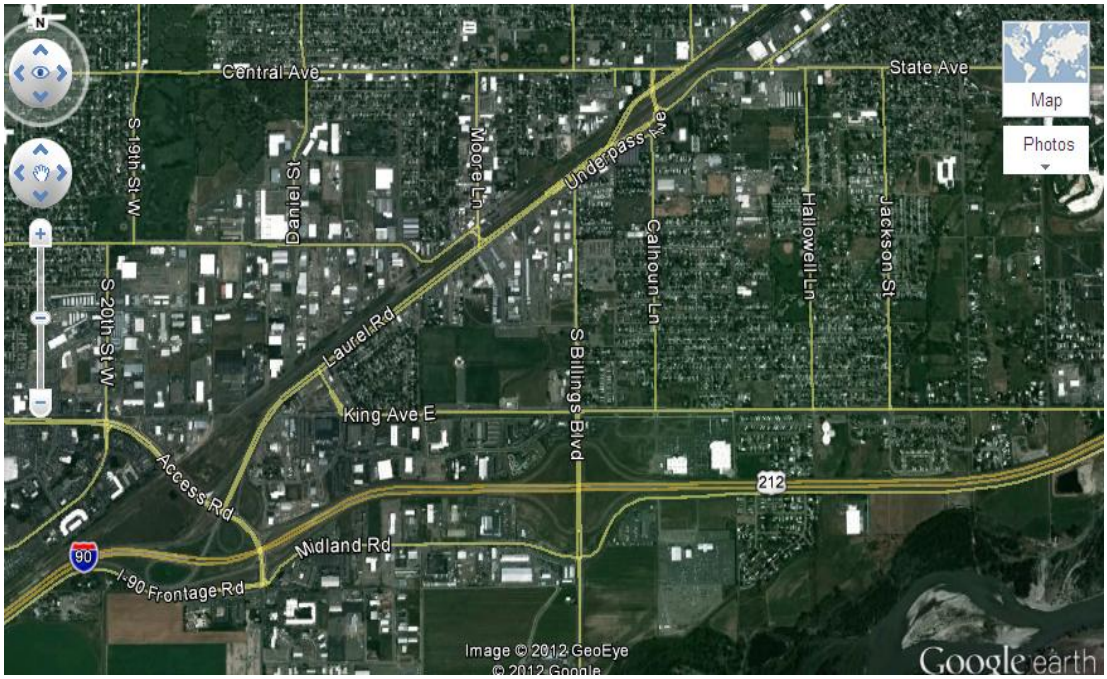
The built environment influences the public's health predominately in relation to chronic diseases (e.g. obesity and diabetes). There is good evidence to support that the burden of chronic disease can be reduced through an active lifestyle, proper nutrition and reduced exposure to toxins. Additionally, much research suggests a linkage between the characteristics of the built environment and human health[9].

The South Billings Master Plan has the potential to influence the health of those who live, work, and go to school in the area. Through well-coordinated economic and community development, the projects, programs, and policies the South Billings Master Plan intends to accomplish can provide a more health-oriented built environment for residents. An HIA of the South Billings Master Plan will help decision-makers weigh the benefits and cost of such development.

3. South Billings Boulevard Urban Renewal District (SBBURD)

In May, 2008, the City of Billings adopted an ordinance that created the South Billings Boulevard Urban Renewal District (SBBURD)[10]. The SBBURD is located in what is known as the Southwest Corridor of Billings, and is a main vein into the city due to its location directly adjacent to Interstate-90. The District includes commercial, industrial and residential zones, four schools, two City parks, and major retail stores.

Figure 1. Southwest Corridor and Surround Area



www.google.com/earth

3.1 Urban Renewal Plan

As part of the 2008 ordinance, the Urban Renewal Plan for the SBBURD was developed, which classified the area as "blighted" due to its poor infrastructure. The Urban Renewal Plan is the tool that originally governed what public improvements were needed in order to eliminate and prevent the spread of the blighted areas; particularly, conservation of existing affordable housing, enhanced transportation and pedestrian circulation, better public services and facilities, and improved infrastructure and utilities.

3.2 Tax Increment Finance District

Another part of the city ordinance established the SBBURD as a tax increment finance district. According to the Montana Department of Transportation, tax increment financing is a technique that allows local government "to generate revenues for a group of blight properties targeted for improvements (known as a TIF district). As improvements are made within the district, and as property values increase, the incremental increases in property tax revenue are earmarked for a fund that is used for improvements within the district"[11]. For example, if street improvements attract a business to build on vacant land, the property taxes generated from that development would be allocated as TIF district money and only be able to be spent in the district.

3.3 South Billings Master Plan

The Urban Renewal Plan for SBBURD identified the need to create a neighborhood plan, which would be used as a tool to recommend general and specific recommendations for projects and policies to address within the District.

The South Billings Master Plan was drafted in 2011-12 by planning consultants, AECOM, under the direction of the City of Billings Planning Division. Multiple public meetings and community workshops allowed AECOM to solicit resident and service provider input to help create a cohesive Master Plan. A major driving force for the creation on the Master Plan was the South Billings Urban Renewal Association (SBURA), an association of property owners and residents in the SBBURD.

The document creates four neighborhoods (Optimist, Orchard, Amend Village, Four Corners) within the larger SBBURD—each emphasizing either employment opportunities, diverse housing, regional services, community services, neighborhood services, or signal family housing. Stated goals of the South Billings Master Plan are: 1) to become a destination for reinvestment; 2) make more walkable neighborhoods and greenways; 3) provide better streets and more diverse housing choices; 4) develop high-quality community with character; 5) engage people who live, work, and go to school in the district; 6) integrate sustainability; 7) reinvest and expand infrastructure; and 8) reduce blight and encourage reinvestment. These goals and projects, policies, and programs that result from the South Billings Master Plan have the potential to impact the health of the SBBURD community and individuals.

4. SBBURD Community Profile

The SBBURD has been formally defined as "blighted" due to its poor infrastructure. The below demographics also illustrate that the SBBURD experiences social and economic disparities. This is a concern as the data indicates that social and economic disparities often translate to lower health status.

4.1 Demographics

The South Billings Boulevard Urban Renewal District is home to 7,209 residents, approximately 7% of the total population of Billings[12]*.

The SBBURD has relatively more young people and fewer older people than the City of Billings.

- 26% are 18 years and under; higher than the City of Billings (22.6%)
- 11% are 65 years and over; lower than the City of Billings (15%)

The SBBURD is more racially diverse than Billings as a whole.

- 81% identify as white; lower than the City of Billings (90%)
- 8.5% identify as American Indian; higher than the City of Billings (4.4%)

4.2 Socio-Economic Status

The socio-economic status of the SBBURD and its residents is relatively lower than the City of Billings[13]**.

- 10% have Bachelor's degree or higher; lower than the City of Billings (28%)
- 60 % have a high school diploma or less educational attainment; higher than the City of Billings (39%)
- 65% of households earn less than $50,000; lower than the City of Billings (52%)
- 10.9% of families below the federal poverty line; higher than the City of Billings (7.7%)

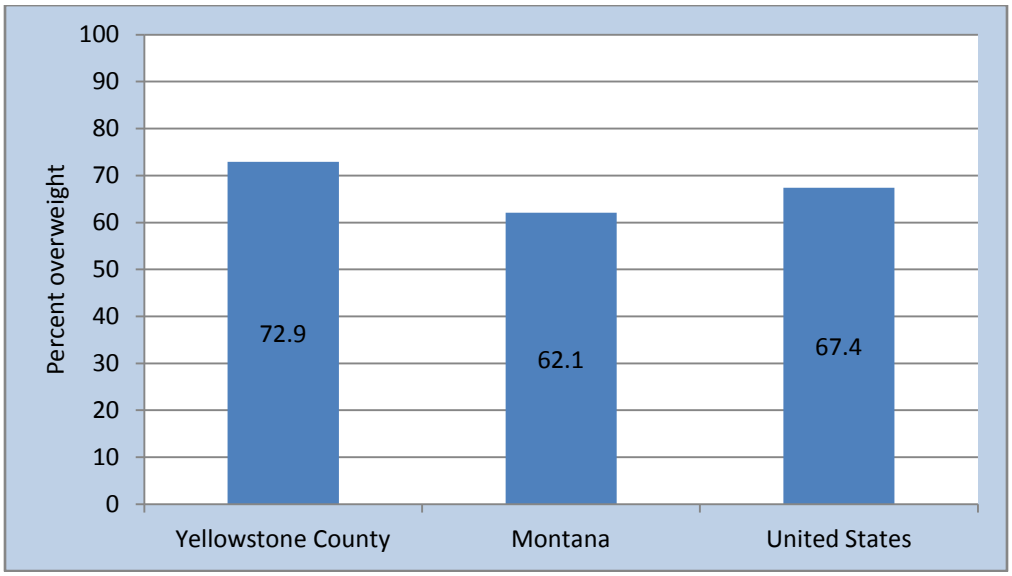
4.3 Health Indicators

Health data is not available for the specific area of the SBBURD; however, the 2010 Community Health Assessment for Yellowstone County contains health data for all residents in Yellowstone County. Given what is known about the social and economic disparities of the SBBURD it can be reasoned that the health status of these residents is equivalent or worse than that of the broader Yellowstone County[14].

- 72.9% of Yellowstone County adults are overweight or obese (body mass index of 25 or greater); higher than the U.S. (67.4%)
- 24.3% of Yellowstone County youth (ages 6-17) are overweight; lower than the U.S. (42.7%)

*It should be noted that U.S. Census block groups were used to compile demographics. These block groups do not completely overlap with the SBBURD area. These block groups are part of census tracts 000901 and 000902.
**It should be noted that socio-economic data comes from a report completed by ECONorthwest. This report analyzed data by using a 2-mile and 8-mile radius based on a central point south of the city.

Figure 2. Prevalence of Overweight Adults (BMI 25.0 or Higher)



- 12.1% of Yellowstone County adults have diabetes; this increases to 18.7% for low-income adults
- 28.6% of Yellowstone County adults have high cholesterol; this increases to 32.8% for low-income adults
- 87.4% of Yellowstone County adults have one or more risk cardiovascular risk factors
- 17.1% of Yellowstone County adults self-report their health status as "fair" or "poor"; this increases to 24.7% for low-income adults

5. Health Impact Assessment (HIA) Methodology

5.1 Guiding Principles

Among standard HIA procedures, an overarching set of principles are adhered to throughout each step of the process; the following principles adapted by HIA Practice Standards Workgroup[15]:

Democracy – emphasizing the right of people to participate in the formulation and decisions of proposals that affect their life, both directly and through elected decision makers. In adhering to this value, the HIA method should involve and engage the public, and inform and influence decision makers. A distinction should be made between those who take risks voluntarily and those who are exposed to risks involuntarily.

Equity – emphasizing the desire to reduce inequity that results from avoidable differences in the health determinants and/or health status within and between different population groups. In adhering to this value, HIA should consider the distribution of health impacts across populations, paying specific attention to vulnerable groups and recommend ways to improve the proposed development for affected groups.

Sustainable development – emphasizing that development meets the needs of the present generation without compromising the ability of future generations to meet their own needs. In adhering to this value, the HIA method should judge short and long-term impacts of a proposal and provide those judgments within a time frame to inform decision makers. Good health is the basis of resilience in the human communities that support development.

Ethical use of evidence – emphasizing that transparent and rigorous processes are used to synthesize and interpret the evidence, that the best available evidence from different disciplines and methodologies is utilized, that all evidence is valued, and that recommendations are developed impartially. In adhering to this value, the HIA method should use evidence to judge impacts and inform recommendations; it should not set out to support or refute any proposal, and it should be rigorous and transparent.

Systems approach to health – emphasizing that physical, mental and social well-being is determined by a broad range of factors from all sectors of society (known as the wider determinants of health). In adhering to this value, the HIA method should be guided by the wider determinants of health.

5.2 Project Staff

To conduct an HIA of the draft South Billings Master Plan, a team of people with expertise in public health was assembled and supported by experts in the field of planning. The purpose of the multidisciplinary interaction was to have a better understanding of the issues of city planning, including land use, economic development, and public policy, as well as public health. The public health experts were staff from RiverStone Health (the local public health agency in Yellowstone County), and planning expertise was provided by staff from the City of Billings Planning Department. Additional expertise in both public health and the process of conducting an HIA was provided through a technical assistance grant from the National Association of County and City Health Officials.

5.3 HIA Components

HIA uses quantitative, qualitative and community participatory techniques to help decision-makers make choices about alternatives and improvements that can prevent disease and injury and actively promote health[16]. HIAs are implemented including the following five steps:

1) Screening – Determining the need and value of a HIA.
2) Scoping – Determining which health impacts to evaluate, the methods for analysis, and the plan to complete the assessment.
3) Assessment – Using data, research, expertise, and experience to judge the magnitude and direction of potential health impacts.
4) Reporting – Communicating the results to stakeholders and decision-makers.
5) Monitoring – Tracking the effects of the HIA recommendations and the decision on health.

5.3.1 Screening

Screening was conducted during a meeting of the HIA team members. The process brought together members of RiverStone Health and the City of Billings Planning Division, as well as planning consultants, to apply their knowledge and experience to assess whether the South Billings Master Plan had the potential to impact health. These groups determined that the South Billings Master Plan did have the potential to impact health as it pertains to smart growth and economic development strategies. It should be noted that the South Billings Master Plan draft process began in April, 2011; however, RiverStone Health was initially uninvolved, and so began the HIA screening and scoping phases in September, 2011.

5.3.2 Scoping

Scoping strives to highlight the key issues that should be considered to define the HIA and establish the parameters under which the HIA will be conducted. For the South Billings Master Plan HIA, RiverStone Health concentrated on disparate areas that were identified through the 2010 Community Health Assessment (e.g. nutrition and physical activity). Themes were also identified at two public meetings held September and November, 2011 that were convened by the City of Billings Planning Division, as well as a service provider meeting held in September, 2011. These themes were access to healthy food, zoning, and transportation and mobility.

5.3.3 Assessment

Part of HIA methodology is to examine existing conditions, as well as establish any connections that may exist between proposed plans, policies and programs, and positive or negative health outcomes. Following is a summary of the review conducted for this HIA and an assessment of local conditions by proximal health impact area.

5.3.3.1 Access to Healthy Foods

The benefits of good nutrition are multiple—besides helping one maintain a healthy weight, good nutrition is essential for the body and all of its systems to function optimally for a lifetime. However, many adults and children have unhealthy eating habits, particularly those that lack access to affordable and nutritious foods. Areas with little or no access to healthy and fresh foods—often referred to as food deserts—pose serious barriers to the health of individuals living within those spaces[17]. Paradoxically, in the past 30 years, "the amount of calories people consume in the United States has increased across the entire population," likely due to the rise of people eating unhealthy, processed foods[18]. Many barriers prevent people from accessing healthy and fresh food, while simultaneously allowing unhealthful, high-fat and high-sugar content foods to be more readily available. An ICMA Active Living Report identifies multiple barriers to accessing health and fresh foods, including[18]:

- ***The Grocery Gap***: low-income areas typically have one-third fewer grocery stores than middle and high-income neighborhoods. Corner stores and gas stations are often the only close food options and typically cost 50 percent more for the same foods and rarely offer fresh foods.
- ***Can't Get There from Here***: people may not have access to a car or adequate public transportation to reach grocery stores that sell affordable healthy foods.

- ***What's on the Kids Menu?***: children often have limited food choices and depend on their parents or caregivers to provide healthy food.
- ***Cheap Eats***: people on a strict budget are not able to spend a large amount of money on food; unfortunately, cheaper foods are often high in calories, fat and sugar.
- ***The Microwave Effect***: limited time for knowledge or food preparation can increase consumption of highly processed food.

Proximity to fresh fruits, vegetables and other health foods has repeatedly shown to be a factor in better and more healthful diets. One study showed that among adults in Baltimore, New York City, and North Carolina, "those with no supermarkets within one mile of their homes were 25-46 percent less likely to have a healthy diet than those with the most supermarkets near their homes"[19]. Another study found that in New Orleans, proximity to stores that carried more fresh produce was associated with increased vegetable consumption[20].

Although physical distance to healthy food outlets can be a barrier to healthy food availability, one study from New York City showed that there are more factors that may inhibit access[1]. This study found that personal mobility (i.e. vehicle ownership) and environmental facilitators and barriers to travel (i.e. public transit service and poor safety) were major obstacles as well. The study also notes that households without vehicles are disproportionally low-income, and that "environment measure that do not adjust for the variation in vehicle ownership likely understate disparities by income" when it comes to accessing healthy food.

Along with physical and transportation barriers to healthy food, economic factors must be considered as an inhibitory aspect to some individuals accessing fruits, vegetables, and other healthy foods. Low-income households will not be able to spend much money on food, especially more costly healthy, fresh food. Often times, the quick and affordable defaults are fast food restaurants or highly processed foods at convenient stores or gas stations. Unfortunately, such food tends to have high fat, sugar, and calorie contents—which contribute to weight gain. In fact, a study in *Preventive Medicine* showed that increased consumption of commercially prepared foods led to more caloric intake[21].

Many studies have also shown that the presence of supermarkets correlates with lower rates of obesity and diet-related disease (e.g. diabetes)[22]. This is unsurprising given the improved variety and availability of fruits and vegetables at supermarkets that can absorb the cost of stocking shelf-limited foods—unlike many small corner stores and gas stations.

Local conditions

The SBBURD is a unique district in that it connects Billings to Interstate-90 and also serves as a connector for outlying communities (e.g. Blue Creek and Briarwood) to the heart of Billings. This would make the SBBURD an ideal area for food retails (e.g. supermarkets) to be located, though this is has not been the case. The District lacks healthy food retailers that could positively impact the nutrition of residents. Specific rates on fruit and vegetable consumption for residents in the SBBURD have not been established, however, extrapolation of data from the 2010 Community Health Assessment for Yellowstone County and data from the Billings

Area Food Policy Council (see Appendix) indicate that accessibility to healthy foods may be a barrier to consumption of fruits and vegetables[23].

- 40.6% of Yellowstone County adults consume 5 or more fruits and vegetables each day; this decreases to only 37% for low-income adults.
- 12.1% of Yellowstone County adults have diabetes; this increases to 18.7% for low-income adults.

The two U.S. census tracts that include the SBBURD are designated a food desert[24]. There is one primary supermarket located on the perimeter of the roughly 1,600 acre SBBURD, and another primary supermarket is close in proximity to the District. Both supermarkets have bus routes that run along adjacent streets. It should be noted buses do not run on Sundays or major holidays, and typically run from 6am-7pm. The supermarkets are also fairly difficult to get to via foot or bicycle. For transit disadvantage populations (i.e. senior citizens, people with disabilities, children and youth, and lower socio-economic individuals), these may be big barriers to accessing healthy foods. One bulk food store is located in the District, however, a membership fee may be inhibitory to low-income households from shopping there. Two farmers' markets that operate during the summer and early fall are within two miles of the SBBURD. These markets offer fresh produce, and some vendors at both markets accept WIC (Women, Infants and Children) checks. The markets are currently unable to accept SNAP (Supplemental Nutrition Assistance Program) benefits, so lower-income households may be less likely to access them. The cluster of fast food restaurants next to the Interstate-90 exchange offers quick food to people traveling. However, this also makes cheap, high-calorie, high-fat food options more available to SBBURD residents too.

5.3.3.2 Zoning

The original goal of zoning was to protect "public health and welfare" by separating healthy and unhealthy land uses – for example, separating industry and manufacturing from where people lived and went to school[25]. Today, "public health and welfare" encompasses much more than it used to—from food access to safe transit to mental health—however, zoning is still used as an indicator of a healthy (or unhealthy) community.

Zoning is one of the most important tools available to shape land use – where things are located and what happens there. It also has a direct impact on the "livability" of neighborhoods and the health of the people who live, work or go to school there[26]. Many of the goals and principles of healthy living are interrelated with those of *smart growth*. Smart growth strategies help communities develop in such a way that supports economic, social and environmental goals[4]. Some smart growth principles include: 1) utilize mixed land use; 2) create walkable neighborhoods; and 3) provide a variety of transportation choices[27].

A citizen's physical living environment, comprised of housing and the neighborhood where they reside, has a critical impact on one's health and well-being. "Links between zoning and health are complex and non-linear," making the assessment of zoning on health difficult[28]. However, public health practitioners view updating "zoning policies as one important way to increase physical activity and access to health food among this country's large overweight population"[4].

A case study from Baltimore suggests that zoning code can be used as a tool to improve the health of a community and the individuals within the community. For example, "walkability and access to daily services could be promoted by allowing more mixed-use areas (a combination of retail and residential uses)"[28]. In fact, there are many benefits to mixed-use neighborhoods, including:

- Activates urban areas during more hours of the day
- Increases housing options for diverse household types
- Reduces auto dependence
- Increases travel options
- Creates a sense of place

Zoning for mixed-use can also address crime and safety issues. Research indicates that the physical characteristics of neighborhoods and the residences are more important than the demographic characteristics of the people living in the neighborhood in predicting levels of crime[29]. Neighborhoods that are busy with people in parks, businesses, shops, and streets have lower levels of crime and fear of crime.

Another way in which zoning can affect the public health and welfare of a community is by ensuring that healthy housing is available to those most vulnerable. Three inter-related aspects of residential housing have an overall affect on the health of families: the physical conditions within homes, conditions in the neighborhood surrounding the homes, and housing affordability. When adequate housing protects individuals and families from harmful exposures and provides them with a sense of security, privacy, stability and control, it can make important contributions to health. Good physical and mental health depends on having homes that are safe and free from physical hazards. The shortage of affordable housing limits families' and individuals' choices about where they live[30]. Inclusionary zoning is a tool that allows local jurisdictions to require that affordable housing units be built along with market-rate housing. In return, cities can provide developers with benefits, such as density bonuses, fee waivers and permit expedition in order to offset the cost of including housing units at affordable levels. "The appeal of inclusionary zoning is that it allows local communities to customize a housing policy that meets the needs of their residents"[31].

By enabling the design of healthy environments in the first place, the zoning code and mapping process can take a proactive approach to addressing public health issues and health inequities, such as accessibility to goods and services and well-designed affordable housing.

Local Conditions

The draft South Billings Master Plan recognizes the need to make zoning changes in order to encourage new development in selected areas of the SBBURD, while also protecting established single-family neighborhoods. The SBBURD currently includes residential, commercial and industrial zones[10]. The draft South Billings Master Plan states that new development will allow for a broader range of housing, including live/work buildings. The hope is that mixed-use development will attract small businesses that may desire space in which they can live and

work. It also suggests that development of affordable housing should be promoted and incentivized.

- 6% of the housing in the SBBURD is multi-family housing (e.g. apartments); lower than the City of Billings (22%)[13].
- 64% of the housing in the SBBURD is single-family detached housing; similar to the City of Billings (62%)[13].

When polled in November, 2011 at a public meeting for drafting of the South Billings Master Plan[32]:

- 42% of attendees thought that zoning changes to provide more options for live/work arrangements would encourage entrepreneurs and innovation.
- 83% of attendees supported zoning modifications were needed to encourage small local businesses within walking distance of single-family housing.
- 80% of attendees supported zoning modifications were needed to encourage mixed-use buildings.
- 73% of attendees supported zoning modifications to allow attractive, well-managed and safe apartments or townhomes in select areas.

Row houses and some trailer park housing in the SBBURD have been described as "awful" because they look distasteful. This is likely the reason that high-density housing units have been rejected in previous years by the community[33,34]. In public and neighborhood task force meetings, as well as during stakeholder interviews, there seems to be a perception that the District has more criminal activity than other areas of town. According to the police records for calls for service, the area encompassing SBBURD does not have an elevated crime rate relative to other districts in Billings. In fact, calls for service saw a slight decrease from 2008 to 2010 (8,117 and 6,888 calls, respectively)[35].

5.3.3.3 Transportation and Mobility

Transportation significantly affects the public's health through air pollution, traffic crashes, access to healthy foods and services, access to physical activity, and economic opportunity[36]. Transportation funding and decision-making over the past 40 years have focused primarily on moving people, goods and services across longer distances. Extensive funding has been pour into creating a network of asphalt, bridges and lane miles to support freight and vehicle mobility with little or no attention being paid to meeting the needs of rural and/or underserved communities. While this strategy helps fuel the nation's economic engine, there are unintended consequences. According to Congressman James Oberstar, Chairman of the House Transportation and Infrastructure Committee, "The failure to link transportation and land use decision-making, and to consider the public health effects of these choices, has led to a tilted playing field that has made driving the easiest—and often the only—option available in many parts of the country"[37]. Improving and encouraging the use of public transportation, and "integrating it into community development plans can make Americans healthier by reducing per capita automobile travel and associated risks," while simultaneously improving mobility for increasing walking and bicycling. Enhancing street infrastructure and public transportation may

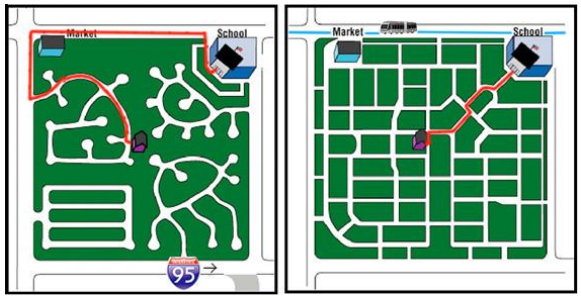
have considerable effects on groups that traditionally don't have reliable access to a personal vehicle (i.e. "transit disadvantaged"). The "transit disadvantaged" include:

- Senior citizens
- Lower socio-economic communities
- People with disabilities
- People living in rural and/or isolated areas
- Children and youth under the age of 16

People have always moved about as part of everyday living—as part of doing their jobs, taking care of their homes and families, and to travel from place to place. In general, the trend has been that few people try walking, bicycling or commuting by way of public transit because distances between destinations and poor infrastructure do not warrant those modes of transportation. The shift from dense neighborhoods to more spread out, automobile-dependent neighborhoods has lead to a decline in daily physical activity[38]. The design of city neighborhoods street and transportation systems often discourage walking, bicycling and other activity that would help adult Americans reach the recommended 30 minutes each day of moderately intense physical activity. Physical inactivity causes numerous physical and mental health problems, is responsible for an estimated 200,000 deaths per year, and contributes to the obesity epidemic[39].

Multiple factors determine whether it is possible to walk or bike to destinations near a home. The best-researched elements are proximity (i.e. having destinations nearby) and connectivity (i.e. safe and direct ways to make a trip)[40]. Proximity is usually measured by the mix of homes, workplaces, shops, schools, grocery stores and other destinations. Density is an important measure because more compact places support richer mix of destinations near home. Connectivity is measured by whether the street work provides direct routes and whether facilities allow for safe connections for pedestrians and bicyclists. Research shows that people are more likely to commute to their workplace on foot or bicycle if they live in a city center, live close to non-residential buildings, live very close to a grocery or drug store, and have reliable public transportation nearby[41]. Another study shows that people who live in neighborhoods with a mix of businesses and shops within easy walking distance are 35 percent less likely develop obesity than those who live in spread out neighborhoods[9]. Further research suggests grid street networks reduce trip distances and increase biking and walking within a community[42].

Figure 3. Discontinuous Streets vs. Street Grid



http://www.streetsblog.org/2009/03/26/back-to-the-grid-john-norquist-on-how-to-fix-national-transpo-policy/

The infrastructure of streets must also be suitable and safe for its users. Sidewalks that are cracked and overgrown with weeds are not appealing or safe for people to utilize, especially the transit disadvantaged. Utilizing "complete street" design principles (e.g. bike lanes and sidewalks) encourages pedestrians, bicyclists, public transit users, and motor vehicles to use streets and surrounding infrastructure safely.

The built environment and transportation have huge effects on the public's health. Although the automobile has transformed the way in which Americans live (e.g. making it easier to travel long distances), it is important to recognize how this has shaped a built environment that restricts easy and safe physical activity into everyday routines.

Local Conditions

Street safety is a main concern for residents of the SBBURD. Investments in street improvements could have a positive impact on the physical activity of residents in the SBBURD. Specific rates on physical activity for residents in the SBBURD have not been established, however, extrapolation of data from the 2010 Community Health Assessment for Yellowstone County and the Billings Area Bikeway and Trail Master Plan show that safe and accessible streets may be an inhibitory factor to physical activity[14,43].

- 47.2% of Yellowstone County adults meet physical activity recommendations (150 minutes of physical activity weekly); this decreases to only 40.7% for low-income adults.
- 22.4% of Yellowstone County adults reported no leisure-time physical activity in the previous month; this increases to 27.4% for low-income adults.
- 46% of the community felt that ease of walking in Billings was "excellent" or "good".
- 25% of the community felt that ease of bicycling in Billings was "excellent" or "good". It can be noted that household incomes making less than $25,000 seemed to have a more favorable opinion about ease of walking and bicycling in Billings than households with high incomes ($100,000 or more). The SBBURD does not currently have any designated on-road bike lanes, however there is a multi-use trail that runs adjacent to South Billings Boulevard.

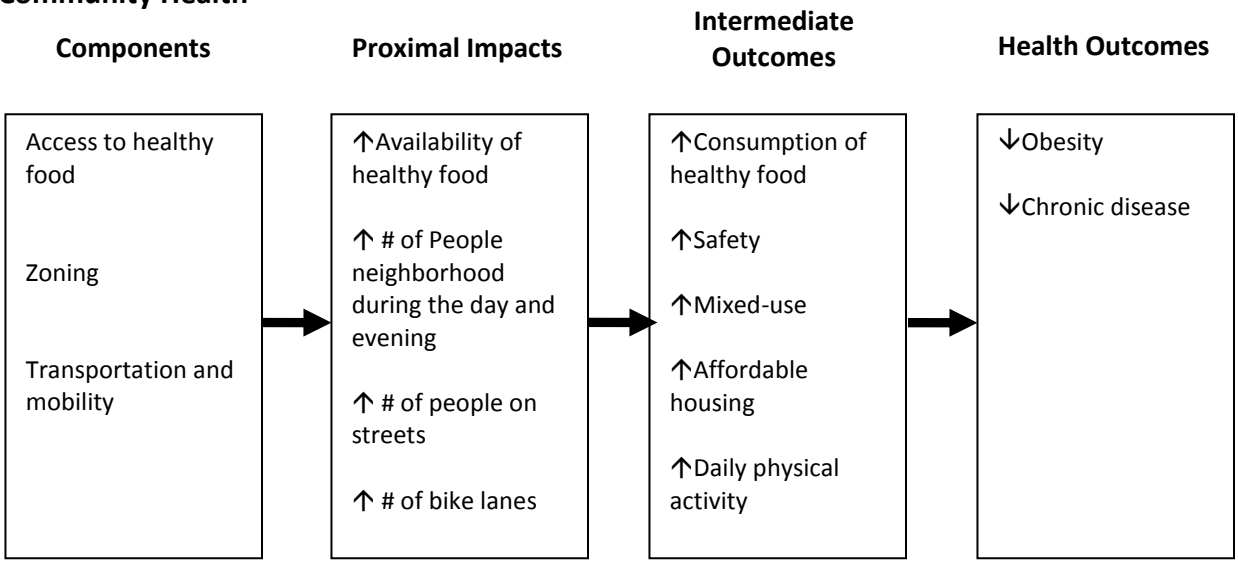
At a South Billings service provider meeting held in September, 2011 the topic of public transportation arose. Currently, MET Transit has three bus routes that encompass most of the SBBURD, each running about every hour from approximately 6am to 7pm. Some attendees believed that public transportation was not effectively reaching people that needed to use it. Service providers thought that expanding public transportation service would help instill independence and ownership for the "transit disadvantaged".

Another concern frequently discussed at South Billings Urban Renewal Association meetings is the poor condition of many of the neighborhood roadways. There is a great need for better street infrastructure in the District, especially around the schools.

6. Conclusion and Recommendations

The goal of the South Billings Master Plan HIA was to identify potential health impacts and make recommendations that can increase positive health outcomes and decrease or mitigate negative health outcomes. Through the HIA process, access to healthy food, zoning, and transportation and mobility proved to be important factors in the health of SBBURD residents. Making healthy and fresh food accessible may increase the consumption of health food by residents. Zoning for mixed-use neighborhoods may increase accessibility to goods and services and promote walking or bicycling. Also, incorporating attractive affordable housing helps create a more "liveable" neighborhood. Improving street infrastructure and safety and public transportation availability could encourage physical activity as a mode of transportation. All of these changes lead to a decrease in obesity and chronic disease resulting in improved health and quality of life for residents.

Figure 4. Pathway Between Access to Healthy Food, Zoning, Transportation and Mobility and Community Health



The following are recommendations for access to healthy food, zoning, and transportation and mobility in the SBBURD.

6.1 Access to Healthy Food

- Encourage the presence of another primary supermarket in the District, located closer to residential neighborhoods.
- Support community gardens in the District, particularly within existing social or spiritual circles.
- Improve pedestrian and bicycle accommodations to primary supermarkets, both inside and outside of the SBBURD.
- Promote the operation and expansion of local farmers' markets.
- Identify and utilize publicly-owned vacant land suitable for community gardening.
- Provide an expedited permit review process for all retail businesses providing a minimum of 10% shelf space for fresh produce.

6.2 Zoning

- Re-zone the District, allowing for live-work buildings and more cohesive mixed-use neighborhoods (i.e. residential and commercial).
- Create mixed- use developments that offer convenient places to work and shop within walking distance of residences.
- Promote the development of attractive affordable housing (i.e. provide development incentives and density bonuses).
- Implement land use regulations for fast food outlet density such as limits on formula, chain or non-sit down establishments.

6.3 Transportation and Mobility

- Build bike lanes and add transit amenities on streets adjacent to new development sites.
- Encourage use of bicycle lanes and multi-use trails and improve bicyclist safety through design strategies such as bike lane design, bicycle parking, on-street facilities, and shared use paths.
- Improve pedestrian safety through design strategies such as traffic calming and management treatments, roadway and sidewalk design, design for pedestrians with disabilities, and improved lighting.
- Increase street connectivity. In new developments, favor grid street layout.
- Utilize the City of Billings Safe Routes To School study recommendations to improve accessibility to schools in the District.
- Explore avenues for expanding bus hours past 7pm to make job opportunities and services more accessible.

6.4 Evaluation and Follow-up

The evaluation and follow-up stage has three components: process evaluation, impact evaluation and outcome evaluation. Process evaluation examines how the HIA was conducted for the purpose of learning from the experience and provides information that will be useful to future HIA theory and practice. Impact evaluation looks at the changes that took place as a result of the HIA and outcome evaluation looks at the actual health outcomes.

Process evaluation took place during the completion of the HIA and questions asked during this evaluation period included:

- How was the HIA undertaken?
- What resources were used?
- How were recommendations formulated and prioritized?
- How were recommendations delivered to decision makers?
- What did those involved in the HIA think of the process?

Answers to many of the process evaluation questions can be found in the body of this HIA text, including how the HIA was undertaken, resources used, and how recommendations were formulated. The information delivery to decision-makers was done in a variety of ways, including written summaries and conversationally. The response from the HIA partners

involved in the process has been very positive on the whole and there will continue to be increased collaboration on a variety of activities among these partners.

The second type of appraisal, impact evaluation, looks at the HIA's effect on the decision making process. The questions asked for this evaluation piece include:

- Were the recommendations implemented?
- Was the HIA able to support inclusive public engagement?
- Has the HIA led to new partnerships to influence healthy public policy?
- Has the HIA impacted changes in the way institutions frame health issues?
- Did the HIA lead to unexpected changes?

While the results of the impact evaluation are still ongoing at the time of writing this report there have been one primary impact already seen. The HIA has led to the strengthening of various relationships particularly between the health department and planning staff. Continued collaboration on a variety of activities among the partners continues to occur.

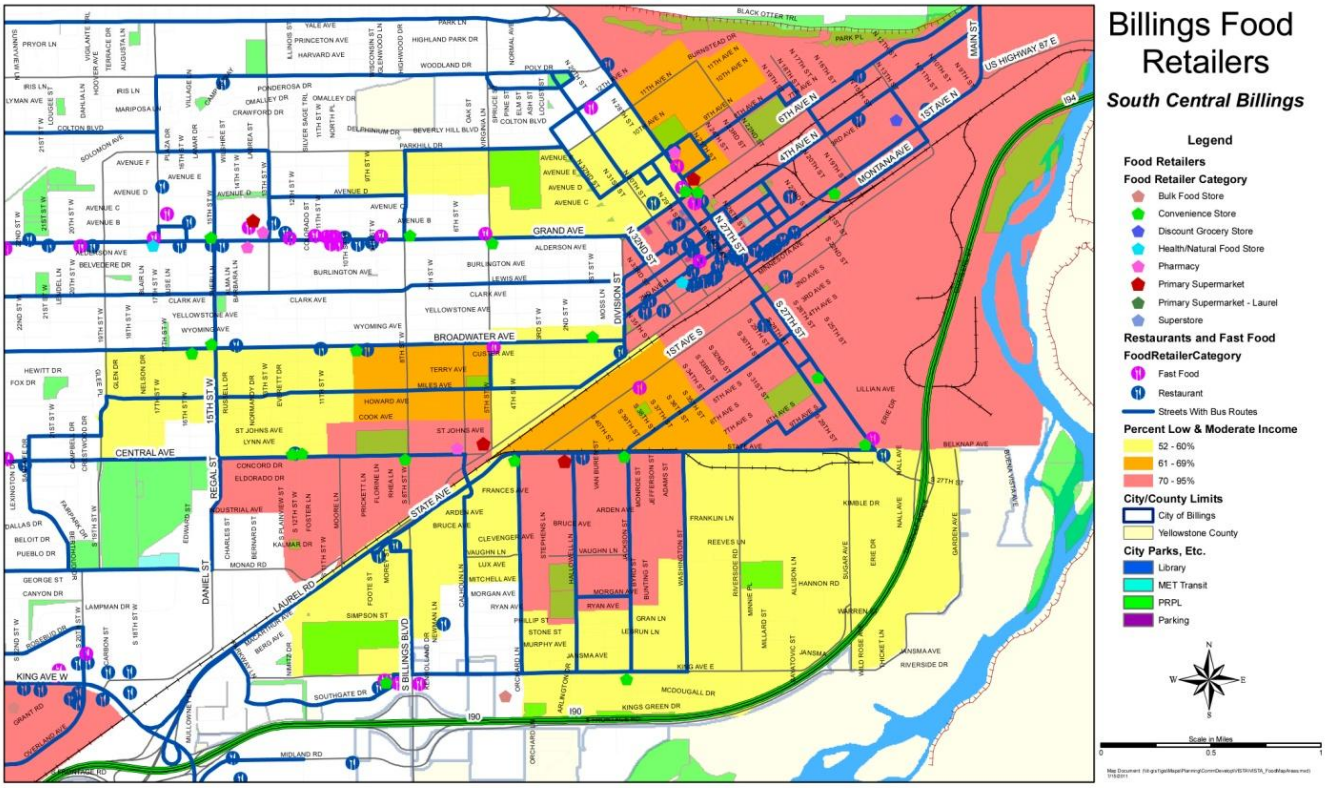
The third type of evaluation, outcome, evaluates the accuracy of the predicted health outcomes. There are a number of challenges faced in this evaluation including data availability and the timeline for seeing the outcomes is long term for this project.

Another community health assessment for Yellowstone County will be conducted in 2014. Although it is not anticipated that health results from many of the South Billings Master Plan HIA recommendations will be seen this quickly, future community health assessments may show long-term health impacts.

In addition, while the South Billings Master Plan HIA is just a guiding document some of the strategies recommended could be more widely implemented if they became a policy (e.g. zoning changes). Therefore, another outcome of the South Billings Master Plan HIA will be to see how many proposed strategies make it to the level of policy adoption.

7. Appendix

Map of the South Central Billings Food Retailers
Developed by the Billings Area Food Policy Council



8. References

[1] Bader, Michael, Marnie Purciel, Paulette Yousefzadeh, and Kathryn Neckerman. “Disparities in Neighborhood Food Environments: Implications of Measurement Strategies”. *Economic Geography* 86(4) (2010): 409-430.

[2] Holtzclaw J., Clear R., Dittmar H., Goldstein D., & Haas P. “Location efficiency: neighborhood and socio-economic characteristics determine auto ownership and use studies in Chicago, Los Angeles and San Francisco.” *Transportation Plan Technology* 25.1 (2002): 1-27.

[3] Frumkin, H. “Urban sprawl and public health.” *Public Health Reports* May-June 117(2002): 201-217.

[4] *Creating a Regulatory Blueprint for Healthy Community Design: A Local Government Guide to Reforming Zoning and Land Development Codes*. Rep. Washington, D.C.: International City/County Management Association, 2005.

[5] *Gothenburg Consensus Paper. Health Impact Assessment: Main Concepts and Suggested Approach*. Rep. European Centre for Health Policy, WHO Regional Office for Europe, 1999. Web. 6 May 2012. http://www.euro.who.int/document/PAE/Gothenburgpaper.pdf.

[6] "Trade, Foreign Policy, Diplomacy and Health." *World Health Organization*. 2012. Web. 7 May 2012. http://www.who.int/trade/glossary/story046/en/index.html.

[7] Kindig, David, Abbey Cofsky, and Julie Willems Van Dijk. "Roadmaps to Health Prize Informational Webinar." 24 Apr. 2012. Webinar.

[8] Dearry, Allen. “Impacts of Our Built Environment on Public Health.” *Environmental Health Perspectives* 112.11 (2004): A600-A601.

[9] Frank, L., Andersen, M., and Scmid, T. “Obesity relationships with community design, physical activity and time spent in cars.” *American Journal of Preventive Medicine* 27.2 (2002): 87-96.

[10] *Urban Renewal Plan for the South Billings Boulevard Urban Renewal Area*. Rep. Billings: Planning & Community Services Department, December 2008.

[11] "Tax Increment Financing." *Montana Department of Transportation*. Web. 27 Feb. 2012. http://www.mdt.mt.gov/research/toolkit/m1/ftools/fd/tifd.shtml.

[12] "2010 Census Interactive Population Map." U.S. Census Bureau. Web. 21 Dec. 2011. http://2010.census.gov/2010census/popmap/.

[13] *South Billings Boulevard Urban Renewal District: Market Conditions, Funding, and Barriers to Redevelopment*. Rep. ECONorthwest, Portland, OR, November, 2011.

[14] Professional Research Consultants, Inc. *2010 PRC Community Health Report Yellowstone County, Montana*. Rep. Omaha, Nebraska, 2010.

[15] Quigley R., den Broeder L., Furu P., Bond A., Cave B., Bos R. “Health Impact Assessment International Best Practice Principles. *Health Impact Assessment International Best Practice Principles*. Rep. International Association of Impact Assessment, Fargo, USA, 2006.

[16] "Health Impact Assessment." *World Health Organization*. 2012. Web. 7 May 2012. http://www.who.int/hia/en/.

[17] "Community Food Assessment." *Healthy Places*. Centers for Disease Control and Prevention, 03 June 2010. Web. 8 May 2012. http://www.cdc.gov/healthyplaces/healthtopics/healthyfood/community_assessment.htm.

[18] *Community Health and Food Access: The Local Government Role*. Rep. Washington, D.C.: International City/County Management Association, 2006.

[19] Moore, L. et al. “Associations of the Local Food Environment with Diet Quality—A Comparison of Assessments Based on Surveys and Geographic Information Systems: The Multi-Ethnic Study of Atherosclerosis.” *American Journal of Epidemiology* 25 (2008): 917-924.

[20] Bodor, J.N. et al. “Neighbourhood Fruit and Vegetable Availability and Consumption: The Role of Small Food Stores in an Urban Environment.” *Public Health Nutrition* 11 (2008): 413-420.

[21] Kant, Ashima and Barry Graubard. “Eating out in America, 1987-2000: trends and nutritional correlates.” *Preventive Medicine* 38 (2004): 243-249.

[22] Flournoy, Rebecca. *Healthy Food, Healthy Communities--Promising Strageies to Improve Access to Fresh, Healthy Food and Transform Communities*. Rep. PolicyLink, 2011.

[23] Billings Area Food Policy Council. "Billings Food Retailers South Central Billings." Map. July 2011.

[24] Designated Food Desert Census Tracts." U.S. Department of Agriculture. Web. 3 May 2012. http://apps.ams.usda.gov/fooddeserts/TractBreakdown.pdf.

[25] Feingold, Beth. "Transforming and Rewriting Baltimore: How the City’s New Zoning Code May Affect Your Health and What You Can Do about It." Weblog post. *Center for a Liveable Future*. 14 June 2010. Web. 30 Apr. 2012. http://www.livablefutureblog.com/2010/06/transforming-and-rewriting-baltimore-how-the-city%e2%80%99s-new-zoning-code-may-affect-your-health-and-what-you-can-do-about-it.

[26] Miller, Steve. "ZONING REFORM: Unlocking Investment in Transportation, Health, and Livable Communities." Weblog post. *The Public Way: Transportation, Health, and Liveable Communities*. 4 Aug. 2011. Web. 30 Apr. 2012. http://blog.livablestreets.info/?p=463.

[27] "About Smart Growth." *EPA*. U.S. Environmental Protection Agency. Web. 7 May 2012. http://www.epa.gov/dced/about_sg.htm.

[28] Ransom, Montrece, Amelia Greiner, Chris Kochtitzky, and Kristin Major. "Pursuing Health Equity: Zoning Codes and Public Health." *Journal of Law, Medicine & Ethics* Spring (2011): 94-97.

[29] Schweitzer, J., Kim, J., & Mackin, J. (1999). "The impact of the built environment on crime and fear of crime in urban neighborhoods." *Journal of Urban Technology* 6.3 (1999): 59-73.

[30] *Alliance for Healthy Homes*. National Center for Healthy Housing. Web. 8 May 2012. <http://www.afhh.org/.

[31] Ostar, Jon. "Inclusionary Zoning Combines Social Justice, Community Health." Web log post. *Street Roots*. 16 June 2011. Web. 30 Apr. 2012. http://streetroots.wordpress.com/2011/06/16/inclusionary-zoning-combines-social-justice-community-health/.

[32] Public Meeting #4 for the *Draft South Billings Master Plan*. 17 Nov. 2011. Results available at: http://www.southbillings.com/system/assets/19/original/111117_draft_plan_and_poll_results.pdf?1321923525.

[33] "South Billings Master Plan." Interview with Steve Zeier. 16 Nov. 2011.

[34] "South Billings Master Plan." Interview with Jim Ronquillo. 1 Dec. 2011.

[35] "Billings Police Department Calls for Service by Beat." Message to Officer Kevin Iffland. 17 Nov. 2011. E-mail.

[36] Transportation and Health Toolkit." Convergence Partnership, 2010. Web. 8 May 2012. http://www.convergencepartnership.org/site/c.fhLOK6PELmF/b.4950415/k.4FF7/Transportation_and_Health_Toolkit.htm

[37] "Transit Equity Resources." Twin Cities Streets for People, 1 Jan. 2012. Web. 8 May 2012. http://tcstreetsforpeople.org/node/1497.

[38] McCann, BA, & Ewing, R. *Smart Growth America: Surface transportation policy project*. Rep. 2003.

[39] *Physical activity and health: A report of the Surgeon General.* Rep. Washington D.C.: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1996.

[40] *Designing for Active Transportation* Rep. Active Living Research, February 2005.

[41] Cervero R. "Mixed land-uses and commuting: Evidence from the American Housing Survey." *Transportation Research Part A* 30 (1996): 361-377.

[42] Frank, L.D. and P. Engelke. "The built environment and human activity patterns: Exploring the impacts of urban form on public health." *Journal of Planning Literature* 16 (2001): 202-218.

[43] Alta Planning + Design. *2011 Billings Area Bikeway and Trail Master Plan*. Rep. Billings, MT, 2011.