



The Cost Savings of Investing in Chronic Disease Prevention and Health Promotion in South Dakota

Introduction

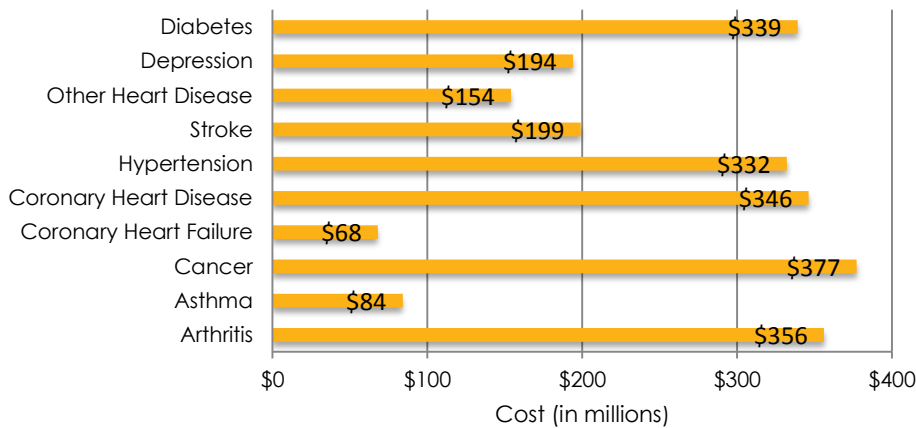
Investing in local resources to support and build a healthy community where people live, learn, work and play is integral to long term health promotion and prevention of chronic diseases. Chronic diseases and associated risk factors continue to be the leading causes of morbidity and mortality in South Dakota (S.D.) and the United States (U.S.). According to the Milken Institute, the projected annual costs attributable to chronic diseases in SD by 2023 will include \$2.7 billion in treatment expenditures and \$8.4 billion in lost productivity if the current trajectory of unhealthy behaviors continues.¹ While chronic diseases are largely attributable to individual health behaviors, there is a growing body of evidence that recognizes that multiple factors shape health.

Costs of Chronic Diseases to Community Health

According to the Centers for Disease Control and Prevention (CDC) chronic diseases and the health risk behaviors that cause them account for most health care costs.² Heart disease, cancer, COPD/asthma, diabetes, and hypertension cost the U.S. nearly \$347 billion, or 30 percent of total health spending in 2010.³ Obesity can lead to multiple chronic diseases and cost the U.S. \$147 billion annually in 2008. It is estimated that by 2030, medical costs associated with obesity are expected to increase by at least \$48 billion annually with

the annual loss in economic productivity totaling \$390 to \$580 billion.⁴

Figure 1: Estimated Cost of Chronic Diseases in South Dakota by All Payers, 2010 (Medicaid, Medicare, Private Insurers)



Source: Centers for Disease Control and Prevention

Chronic disease costs South Dakota billions of dollars. The costs of these chronic diseases highlighted in Figure 1, show that cancer cost the state approximately \$377 million, and all cardiovascular diseases combined cost \$981 million.⁵

By investing in prevention and treatment of the most common chronic diseases, the U.S. could decrease treatment costs by \$218 billion per year and reduce the economic impact of disease by \$1.1 trillion annually.¹

Chronic disease has become the most common cause of mortality in the U.S., with heart disease and cancer accounting for 31.4 percent and 23.4 percent of all U.S. deaths

“A healthy population is an engine for economic growth.”

World Health Organization Commission on Macroeconomics and Health

respectively.⁶ In 2015, nearly 500,000 people in S.D. had at least one chronic disease, and 190,000 had two or more chronic diseases.⁷ About 86 percent of all health care spending in the United States is used for treating patients with one or more chronic diseases.²

By 2030, if current trends continue for chronic diseases among all persons ages 45-64 in the U.S., one-third will have hypertension, more than one-quarter will have diabetes, more than 11 percent will have heart disease, and nearly 2 percent will suffer strokes.⁸ In addition, children and adolescents who are obese are also likely to be obese as adults and are at increased risk for adult health problems associated with chronic diseases.⁹ By 2030, the cost for South Dakota to treat these diseases is estimated at \$113 billion per year.⁷

[The Long-term Cost Savings of Investing in a Healthy Community](#)

Health can be influenced at the local level and community-based prevention and health promotion strategies are key drivers in supporting a healthy community. The World Health Organization defines a healthy city or community as, "one that is safe with affordable housing and accessible transportation systems, work for all who want to work, a healthy and safe environment with a sustainable ecosystem, and offers access to health care services which focus on prevention and staying healthy."¹⁰

[The Relationship between Chronic Disease Prevention and the Health of a Community](#)

According to Dr. Thomas Frieden, former director of the CDC, "Chronic diseases linked to obesity, poor nutrition, physical inactivity and tobacco use are the leading causes of death and disability in our nation."¹¹ Findings from the Trust for America's Health, a public health advocacy group, indicate that "programs that increase physical activity, improve nutrition, and prevent smoking and other tobacco use have a return on investment of \$5.60 for every \$1 invested and up to \$6.20 within 10 years."¹²

While personal choice is a driving factor in whether or not a person engages in healthy behaviors to prevent chronic diseases, "social and physical environments place major impediments in the paths of people attempting to lead healthier lives."¹³ Disproportionate access to goods and services, unhealthy environmental exposure, and poor quality and affordable housing often contribute to chronic disease.

“It is unreasonable to expect that people will change their behavior easily when so many forces in the social, cultural, and physical environment conspire against such change.”

*Institute of Medicine
Smedley and Syme, 2000*

A healthy community depends largely on the available human, institutional, organizational, and environmental resources. The University of Wisconsin Population Health Institute has identified that a population's health is shaped 30 percent by health behaviors, 20 percent by clinical care, 40 percent by social and economic factors, and 10 percent by the physical environment.¹⁴

Improving community conditions to support healthy behaviors and promote effective management of chronic conditions will deliver:

Healthier students to schools



Healthier workers to businesses and employers



A healthier population to the health care system



Healthier people with lower health care costs

Centers for Disease Control and Prevention

Approaches to chronic disease prevention are impactful when risk factors for chronic disease are addressed at the individual and population (community) level. Specifically, the Robert Wood Johnson Foundation found that for each 10 percent increase in local public health spending, there were significant decreases in infant deaths (6.9 percent drop), deaths from cardiovascular disease (3.2 percent drop), deaths from diabetes (1.4 percent drop), and deaths from cancer (1.1 percent drop).⁸

Numerous research studies focusing on the contributions of health determinants to health outcomes support the belief that “investments that directly or indirectly affect a small number of modifiable risk factors (e.g. tobacco use, poor diet, and physical inactivity) can have a large impact on mortality reduction and disease burden.”¹⁵ How conditions in the built environment are shaped in a

community is impacted by the decisions made by government, businesses, and institutions.

Population level interventions alone could save lives and provide good economic value.¹⁶ To address the risk factors for chronic disease at the community level, the CDC recognizes environmental approaches, health care system interventions, and community programs linked to clinical services as essential strategies. Changing policies, systems, and environments (PSE) in a community can also make a positive impact when there is limited time and resources. “The PSE in communities, schools, workplaces, parks, transportation systems, faith-based organizations, and healthcare settings can significantly shape lives and health. Partnerships with community leaders in education, government, transportation, and business are essential in creating sustainable change to reduce the burden of chronic disease.”¹⁷

Investing in Community-based Prevention

Changing the community and environment where people live can have broad impact and be cost effective. Investing in community-based prevention and health promotion is an integral factor in preventing chronic diseases and supporting a healthy community.

- The cost effectiveness of environmental approaches to disease prevention, such as creating enhanced access to places for walking, when compared to individual interventions, highlight initial costs followed by lasting effect and can generate government revenue and offset costs.¹⁸

“A 1% reduction in the following risk factors – excess weight and elevated blood pressure, glucose, and cholesterol – has been shown to save \$83 to \$103 annually in medical costs per person, much of which could accrue to employers in reduced premiums.”

Centers for Disease Control and Prevention

- Improving preventive screening and implementing programs that reduce risk factors could save \$26 billion in lost productivity costs from colorectal cancer deaths by 2020.¹⁹

Case Study: The Big Squeeze

Hypertension (high blood pressure) costs the state of South Dakota over \$300 million annually. Expenditures for those treated for hypertension averaged \$733 per adult in 2010.²⁰ Concerned with rates of hypertension in Sioux Falls, a local coalition came together to address awareness of high blood pressure through an initiative called The Big Squeeze. The coalition includes public health, hospitals, pharmacies, businesses, churches, and educational institutions, and it is the commitment from these partners that makes The Big Squeeze successful.

The annual initiative has seen an increase in the number of sites offering free blood pressure screenings over the past six years. In 2015, the fifth year of the program, The Big Squeeze saw its first measurable increase in the number of individuals with normal blood pressure and decrease in the number of those in the at-risk category

(Figure 2). Considering the cost of treatment for hypertension, continuing to move people into the normal range not only benefits health, but also can provide cost savings.

Figure 2: Percentage of Blood Pressure Readings Normal, At-Risk and Hypertensive by Big Squeeze Participants, 2011-2015

	Normal	At-Risk	Hypertensive
	Systolic less than 120	Systolic 120-139	Systolic 140+
	Diastolic less than 80	Diastolic 80-89	Diastolic 90+
2015	40%	41%	19%
2014	35%	45%	19%
2013	36%	41%	23%
2012	35%	48%	17%
2011	41%	41%	17%

*We tracked critically high-risk individuals in 2013, 2014, and 2015. Approximately one percent of those screened were in this category.

Source: City Of Sioux Falls

Effectiveness of Prevention Strategies and Factors that Impact Quality of Life in South Dakota

Increased awareness about the health and economic costs of chronic disease is prompting communities to support residents to make healthy choices where they live, learn, work, and play. Communities are implementing sustainable changes that address the major chronic disease risk factors—tobacco use, physical inactivity, and unhealthy eating. “The Robert Wood Johnson Commission to Build a Healthier America advises that collaboration between public and private-sector policymakers is essential to foster a health-promoting environment, including integration of safety and wellness into every aspect of community life, including schools, workplaces, and neighborhoods.”¹²

Workplace Wellness

On average, Americans spend more than one-third of their day, five days per week at the workplace.²¹ The workplace is an important setting in a community to provide employees the opportunity to enhance their health through health promotion and disease prevention programs.

“Employees with more risk factors, including being overweight, smoking, and having diabetes, cost more to insure and pay more for health care than people with few risk factors.”²¹

Over half of South Dakota residents (439,000) are employed, and an estimated one third of S.D. adults have more than one chronic condition such as heart disease, cancer, or diabetes.²² Nationwide, more than 75 percent of medical care costs are attributed to largely preventable chronic diseases.²¹

The workplace is a setting where strategies to address and improve chronic disease prevention and control have proven successful by focusing on modifiable risk factors and creating a culture of health focused on making the healthy choice the easy choice. Strategies can range from disease management programs to lifestyle management services, such as tobacco cessation and health education classes that ease long-term health risks. In addition, policy, systems, and environment changes such as healthy vending machines, tobacco-free campus, or insurance coverage for cancer screenings can improve health in the workplace.

Workplace wellness not only improves employee health, but can also improve a company's bottom line, through increased employee productivity and decreased health care costs. The Altarum Institute found that for every one dollar spent on workplace wellness, medical costs decrease by about \$3.27 and productivity increases, with absenteeism costs decreasing by about \$2.37.²⁴ A report from the Rand Corporation, which investigated the characteristics of workplace wellness programs, found that lifestyle management programs and disease management programs reduced employer's average health care costs by about \$30 per member per month.²⁵ In addition, workplace disease management programs and lifestyle management programs provide a total return on investment (ROI) of \$1.50 to employers. The redesign of conditions at the workplace has yielded important benefits, both for workers and employers.¹³ Collaboration of the workplace sector with other sectors such as education and health care, can help create an overall community environment that promotes health.

Case Study: Falcon Plastics

Falcon Plastics is a South Dakota-based manufacturer that employs 260 individuals across three South Dakota workplaces and a fourth in Tennessee. Employees were offered a discounted preferred member benefits program for completing all program requirements, including receiving a preventive exam. Falcon Plastics saw a 72% increase in employee participation and since 2009, workplace strategies implemented have reduced the number of employee members with two or more risk factors from 80% to 39%.

Workplace Wellness Cost Savings

Making all workplaces smoke-free would save almost \$60 million in direct medical costs, generate about 1.3 million new quitters in one year, and prevent about 1,500 heart attacks and 350 strokes.²³

Walkable, Bikeable Community

Walkable and bikeable communities provide residents accessible, cost-effective opportunities to increase physical activity. Unfortunately, few communities are designed to offer safe and effective modes of active transportation such as walking and bicycling. The 2011-2012 National Survey of Children's Health found only 58.3 percent of S.D. youth (≤17 years old) have access to parks and sidewalks in their neighborhood.²⁶ Additionally, recent data from the 2010-2014 American Community Survey found only 4.7 percent of S.D. adults

Case Study: City of Huron

The city of Huron recognized the need for safe and accessible methods for walking. The city partnered with the South Dakota Department of Health and South Dakota State University and conducted a Built Environment Assessment to understand the needs and opportunities around walkable transportation. The results of the assessment identified six areas in which changes could be made, including alterations to active transportation infrastructure and the addition of a bike share program.

had reported walking or biking to work in the previous week.²⁷ These statistics underscore the need for changes in the built environment that foster active transportation. Decisions made by government, business, and institutions have an important impact on shaping conditions in the built environment to promote active transportation.²⁸

The rural and frontier nature of S.D. provides some challenges to increasing the number of walkable and bikeable communities, but it is attainable. Characteristics of the built environment, such as close proximity to desirable destinations that are well connected and pedestrian and bicycle friendly, encourage and support walking and biking as a means of transportation.²⁸ Research conducted by Smart Growth America of 37 complete streets projects – those designed and operated to enable safe access for all users and all abilities – found that the projects

tended to increase walking and biking, improve safety for everyone, and result in broad economic gains such as increased employment and property values. Specifically, the projects encouraged more multimodal travel, were affordable to implement, and avoided a total of \$18.1 million in collisions and injury costs in one year due to the safer conditions created by these projects.²⁹

Socioeconomic Impact on Health

Social and economic factors such as income, housing, education, and access to care directly influence one's health and wellbeing and can place major barriers in the paths of people attempting to lead healthier lives. The social conditions in which people are born, live, and work are the single most important determinants of one's health status.³⁰

Income level is a predominant socioeconomic status (SES) factor that influences health outcomes. Persons of lower SES are found to have more health problems due to various factors, such as lack of access to goods and services and substandard housing.³¹ In S.D., the highest percentage of adults who report an annual income of less than \$15,000 also represent the highest percentage of adults with chronic disease.³² While low income status increases the risk of suffering poor health outcomes, the risk can be lessened when basic needs are met through services like financial assistance, safe housing, and the availability of employee benefits.³³

Access to goods and services, as well as safe and quality housing are significant factors within one's community which also affect health outcomes. Access to healthy foods, physical activity opportunities, health care, and transportation are all factors that promote and sustain health. In addition, unsafe and substandard housing presents barriers for residents attempting to live healthier lives. Good health depends on safe homes, free of physical hazards; however, poor quality housing contributes to health problems, including increased rates of infectious and chronic diseases, injuries and poor child development.³⁴

The socioeconomic factors that contribute to poor health outcomes vary and are significant to influencing the health of an individual and a community:

- **Access to Food:** Food insecurity and the existence of food deserts reduce access to healthy food and influence health outcomes. Approximately 12 percent of S.D. households are food insecure, defined as having limited or uncertain access to adequate food due to household-level economic and social conditions.³⁵ Food insecurity has also been directly linked to postponing medical care and increased emergency department usage.³⁶ In addition to the food insecure population, approximately 38 percent (297,620) of S.D. residents live in a food desert, which is a low-income census tract where a substantial number of residents have low access to supermarkets or large grocery stores. This population is at increased risk for developing heart problems and diabetes, due to the availability of largely unhealthy foods.³⁶ Foods affordable to lower income families are often high in fat, sugar, and salt.³⁷
- **Access to Transportation:** Access to transportation is a significant factor for the utilization of health care services. More than two million health care appointments are missed annually because of transportation issues.³⁸ In turn, South Dakota's largely rural and frontier geography presents challenges to accessing transportation as well as other essential goods and services to support positive health outcomes. Approximately five percent of households in the state do not have a motor vehicle. Those living in rural areas may experience more transportation barriers due to the distance of travel and amount of time it takes to travel in order to receive medical care.³⁹ Transportation barriers result in increased risk of missing medical appointments and delaying care or treatment, which can in turn lead to poorer health outcomes.
- **Housing:** Approximately 12 percent of S.D. households have severe housing problems, including at least one of the following: overcrowding, high housing costs, or lack of kitchen or plumbing facilities.⁴⁰ Children living in disadvantaged neighborhoods are also more likely to be exposed to pollution and allergens, which can make chronic conditions such as asthma worse.³³ Poor housing conditions, such as exposed lead, can lead to cognitive and physical development impairments when children are exposed. These neighborhoods also have lower availability of fresh produce, combined with concentrated fast-food outlets and few recreational opportunities, which can lead to poor nutrition and limited physical activity.³³ The fear of crime also keeps people indoors in disadvantaged neighborhoods, as does the lack of safe and pleasant green spaces and quality sidewalks.¹³

- **Health Care:** A lack of access to care presents barriers to good health. The supply and accessibility of facilities and physicians, rates of uninsured individuals, financial hardship, transportation barriers, cultural competency, and coverage limitations all affect access.¹⁴ Approximately 24 percent of South Dakota residents live in a health professional shortage area and 44 of the state's 66 counties are designated as medically underserved areas, which contributes to low access and poorer health outcomes.^{41,42}
- **Education:** Education provides opportunities to improve health status, break the poverty cycle, and reside in safer areas. In S.D., the high school graduation rate is 83 percent, compared to the national average of 79 percent. However, S.D. falls below the national average for college graduation rates with only 48 percent of South Dakotans graduating from a four-year college, compared to the national average of 56 percent.⁴³ Higher education leads to jobs with a stronger likelihood of having health benefits and a higher income, which in turn leads to a healthier lifestyle.³⁶ In lieu of these opportunities, Americans with less education have lower life expectancies than those with more education.³⁶ For example, the risk of developing diabetes is two-fold for those with less than a college degree.³⁶

In order for a community to reduce health disparities and improve population health outcomes, it must take steps to address factors that affect SES. Reducing health disparities must focus on elements such as living conditions, education from infancy to adulthood, economic development, and poverty reduction.⁴⁴ Strategies shown to address factors that affect SES include:

- Improving access to food by partnering with community organizations to deliver healthy foods to those in need, offering nutrition education that includes how to cook healthfully, mobilizing farmer's markets to bring healthy produce to low-income communities, or assisting residents in growing their own produce and eggs.³⁶ Feeding South Dakota is an organization that operates stationary food pantries, mobile food pantries, food banks, free or reduced fee meals to school-aged children, and monthly food boxes to income qualifying seniors.⁴⁵
- Improving access to transportation through coordinated state and local community efforts that increase access to and use of public transportation. The S.D. ON-TRACK program (Treatment Appointments Consistency Kept) offers transportation at a reduced rate to medical appointments across S.D. and transports passengers (both patient and family member/caregiver) to all healthcare facilities in Sioux Falls, Mitchell, and Rapid City, with other communities available upon request.⁴⁶
- Addressing housing quality to ensure residents are not exposed to allergen and toxins or offering housing subsidy vouchers to low-income families.^{36, 43} South Dakota offers a variety of statewide housing programs including: Community Action Agencies, Habitat for Humanity, South Dakota Housing Development Authority, The Governor's House Program, and Tribal Housing Authorities. City and county programs are also available in Northeastern South Dakota, Sioux Falls, Sisseton, and Yankton.⁴⁷

- Implementing education interventions focusing on early childhood education programs improves the quality of K-12 education and leads to higher educational attainment.⁴⁴ Providing youth development programs for disadvantaged youth is also recommended.⁴⁴ The Birth to Three program provides services to children with developmental delays and its service area covers all of S.D.⁴⁸ In addition, the Head Start Program provides many resources to income qualifying S.D. families, including educational services to children under age five. Grant funding opportunities are available for communities who wish to host a Head Start Program.⁴⁸

School Health

Schools represent a key sector in a community which serve as important settings to influence the health of children and adolescents to become healthy adults. "About 95 percent of the nation's children and adolescents are enrolled in schools, typically spending six hours a day for up to 13 years in school."⁴⁹ The health risk behaviors that contribute to the leading causes of morbidity and mortality in adults in the United States are often developed during childhood.⁵⁰ "Schools have been identified as some of the most effective settings in the community to address preventable health problems among children and adolescents."⁵¹

Six critical types of adolescent health behavior contribute to the leading causes of death and disability among adults and youth, including substance use (alcohol, drug, and tobacco) and nutrition and physical activity behaviors.⁵² In 2015, less than half of S.D. high schools students were physically active for a total of at least 60 minutes per day on five or more of the past seven days, and only 11.9 percent ate vegetables three more times per day during the past seven days.⁵³ Tobacco use among teenagers in SD is concerning with 10.1 percent of high school kids and 2.8 percent of middle school kids reporting they smoke.^{52, 54}

Obesity is one of leading causes of morbidity among children and adolescents.⁵⁵ According to the South Dakota School Height and Weight Report, 2015-2016, 32.1 percent of children and adolescents were overweight and obese combined.⁵⁶ The current generation of children could be the first generation that fails to outlive their parents if the rising prevalence of childhood obesity continues. Research conducted within the past 10 years highlights the value of targeting health risk behaviors in children and adolescents to avoid a generation of unhealthy adults.

- A research study that evaluated the 2000 National Medical Panel Survey estimated the impact of lifetime costs and quality-adjusted life years after age 40, and found that a one percent reduction in both overweight and obese adolescents ages 16-17 years at present could reduce the number of obese adults by 42,821 in the future.⁵⁷
- The *Planet Health* program, a nationwide two-year intervention focused on physical activity and nutrition targeting ethnically diverse middle schools, was analyzed for its cost-effectiveness and showed a net savings of \$7,313 to society and a gain of 4.1 quality-adjusted life years for participants.⁵⁸

While health risk behaviors contribute to the health status of many children and adolescents, access to care also plays a factor. Nationwide, approximately five percent of children and adolescents have no usual source of health care. To curb this gap in care, the Guide to Community Preventive Services recommends implementation and maintenance of school-based health centers (SBHCs) in low-income communities to improve educational and health outcomes, including preventive services, asthma morbidity, and other health risk behaviors.⁵⁹ South Dakota currently has four school-based health centers, including General Beadle Elementary School in Rapid City and Terry Redlin Elementary School, Hawthorne Elementary School, and Hayward Elementary School in Sioux Falls.

Policy, systems, and environment changes in schools have shown to be effective in addressing the health risk behaviors of children and adolescents. School wellness policies and enhanced school-based physical education have been shown to improve student health status and physical activity levels. In addition, evidence supports implementing comprehensive smoke-free policies and evidence-based school programs (e.g. tobacco cessation, Teens Against Tobacco Use) to help tobacco users to quit and prevent non-users from starting.⁶⁰

“Professionals in all fields – from urban planners who can make neighborhoods safer for exercise to farmers who can improve access to healthy foods to economists who can make better investments in healthy choices – need to understand how important prevention is to America and their vocational goals. Quite simply, prevention must be an intentional focus of every sector of our society.”

*Jeffrey Levi, PhD, Executive Director
Trust for America's Health*

Next Steps: Keys to Driving Investment in Prevention Strategies

Without coordinated leadership and action, the costs and impact of chronic diseases — including cancer, diabetes, cardiovascular, and chronic respiratory diseases – will further burden future generations. The health of individuals and of communities must be embraced as a priority and as a core value in society.

Community

Advancing investment in prevention strategies requires the development of trusting partnerships among all sectors within a community. It requires a shift in resources to invest in strategies that focus on preventing disease. Investment also relies on employers placing value on their most important resource – a healthy workforce.

While the returns on investing in prevention may seem to come slowly, each improvement a community can make in the health of its residents creates a meaningful cultural shift that has potential to improve the health of this generation and generations to come.

A community's health is everyone's business. Sectors such as government, business, education, worksites, and other community groups must work together to support quality of life and well-being by considering the social, economic, environmental, and physical factors that influence health.

Local actions can support quality of life as well as create a long-term, stronger community. Roles of community partners may include the following:

- **Elected officials** have the ability to provide leadership, make funding decisions, and implement policy changes that affect health.
- **City planners and engineers** can adopt active living principles in community design, such as mixed land use, compact design, and promoting active transportation options.
- **Health professionals** can provide the public health evidence that supports the benefits of investing in prevention and can help implement prevention strategies.
- **Schools** at all levels of learning can promote health education, health professional training, and policies that support the health of students and staff.
- **Coalitions and advisory groups** can convene partners to consider health impacts when making decisions related to policy, systems, and environment.
- **Public and private-sector policymakers** can take a coordinated approach to improve the health of children and adolescents, including the involvement of public school systems.
- **Business leaders** can adopt policies and programs that promote health in the workplace, fostering a culture of health and benefiting from the prevention of chronic diseases.
- **Local chambers of commerce or economic development organizations** can develop financial and environmental incentives to promote the adoption of healthier products and services.
- **Media** can promote health and prevention by covering health-related stories and helping community partners share important health messages.

Implement Evidence-based Strategies

Prevention efforts rely on evidence-based strategies to help determine effectiveness of health interventions, obtain population specific guidance, identify economic considerations and return on investment, and measure benefits of the interventions. Investments in prevention evolve as scientific evidence, new reports, policy changes, and innovative partnerships emerge. Utilizing evidence-based strategies allows communities to prioritize needs and resources and ensure they are able to measure progress and cost savings.⁶¹ Across S.D., communities are seeing progress based on implementing evidence-based strategies, such as:

[*Preventing Dental Caries: School-Based Dental Sealant Delivery Programs - Delta Dental's Dakota Smiles Mobile Dental Program*](#): Dental disease, the single most common chronic disease of early childhood, affects a child's overall health and often leads to poor school performance. Over 40 percent of children in S.D. do not have dental sealants.⁶² Since 2004, Delta Dental of South Dakota has operated the Delta Dental Mobile Program including two trucks that serve as fully equipped mobile dental clinics to provide restorative and preventive dental care to underserved children across the state. In 2012, the mobile

program incorporated dental hygienists and community health workers based on the state's Native American reservations that provide preventive care, including dental sealants and oral health education. The Delta Dental Mobile Program has provided more than \$16 million in dental care to more than 32,000 children in 81 different South Dakota communities. For every \$1 spent on preventive oral health care, as much as \$50 is saved on future emergency and restorative services.⁶³

[Reducing Tobacco Use and Secondhand Smoke Exposure - Tobacco Prevention and Control:](#) Comprehensive, population-based tobacco control programs are designed to reduce disease, disability, and death related to tobacco use. The South Dakota Tobacco Control Program's comprehensive approach utilizes a mix of educational, clinical, regulatory, economic, and social strategies as identified in the CDC's Best Practices for Comprehensive Tobacco Control Programs, an evidence-based guide to planning and establishing effective tobacco control programs to prevent and reduce tobacco use.⁶⁰ By quitting tobacco use, an individual can save \$2,000 a year.⁶⁴ The South Dakota QuitLine offers phone-based support services, providing counseling and access to medications and other resources. The QuitLine is recognized as one of the most effective quitlines in the nation, with a quit rate of nearly 42 percent in 2014, significantly higher than the national rate of 31.6 percent.

[Increasing Appropriate Vaccination – The South Dakota Immunization Program:](#) Vaccination programs, particularly standardized immunization schedules delivered in childhood, save lives and money. According to the Healthy People 2020 initiative, "Vaccines are among the most cost-effective clinical preventive services and are a core component of any preventive services package."⁶⁵ The South Dakota Immunization Program aims to protect all South Dakotans against vaccine preventable disease by increasing immunization coverage levels of children and adults. The program provides vaccine, materials, training, and support to both public and private immunization providers throughout the state. The CDC estimates that vaccinations will prevent more than 21 million hospitalizations and 732,000 deaths among children born within the last 20 years.⁶⁶ That results in cost savings of nearly \$295 billion in direct costs and \$1.38 trillion in total societal costs. Recognizing the importance of vaccines, S.D. passed a law in 2016 requiring both Tdap and meningococcal vaccinations for 6th grade students beginning with the 2016-2017 school year. While not required, HPV vaccination is also important in cancer prevention. Childhood immunization programs provide a very high return on investment. For example, each birth cohort vaccinated with the routine immunization schedule saves 33,000 lives, prevents 14 million cases of disease, reduces direct health care costs by \$9.9 billion, and saves \$33.4 billion in indirect costs.⁶⁵

[Flu-FIT Programs:](#) Colorectal cancer is the second-leading cause of cancer-related death. In S.D., an average of 158 people died annually from colorectal cancer spanning the years from 2009 to 2013. In 2016, South Dakota expects 390 new colorectal cancer cases and 130 deaths due to this cancer.⁶⁷ Estimated treatment costs for colon cancer are approximately \$30,000 for early stage diagnosis and \$120,000 for late stage diagnosis.⁶⁸ FluFIT programs help clinics increase access to colorectal cancer screening by offering home tests to patients at the time of their annual flu shots. FluFIT is recommended by many national organizations including the National Colorectal Cancer Roundtable, National Cancer

Institute, and American Cancer Society. There have been several successful FluFIT clinics across South Dakota. Specifically, Horizon Health Care and Falls Community Health, both Federally Qualified Health Clinics in S.D., have held FluFIT clinics to successfully improve colorectal cancer screening rates in their setting.

[Chronic Disease Self-Management Programs – Better Choices, Better Health® South Dakota:](#)

The South Dakota Department of Health, South Dakota State University Extension Services, and South Dakota Department of Social Services have implemented Stanford University's Chronic Disease Self-Management Program (CDSMP), referred to as *Better Choices, Better Health® South Dakota*. This program is not disease specific and offers an interactive workshop once a week for six weeks in locations across South Dakota. Trained leaders – many of whom are volunteers and have a chronic illness themselves – facilitate the workshops. Program participants may be affected by arthritis, diabetes, heart disease, or breathing problems, as well as multiple chronic conditions. *Better Choices, Better Health® S.D.* is a program intended for participants seeking better ways to cope with chronic conditions and learn how to better care for themselves or a loved one. From October 2014 through May 2016, there have been 41 workshops held across South Dakota, with 407 workshop attendees and 249 workshop completers. Evidence highlights significant and measurable improvements in patient outcomes and quality due to CDSMP. In addition, CDSMP lowers health care costs, including \$740 per person savings in emergency room visits and hospital utilization and a potential saving of \$4.2 billion by reaching 10 percent of Americans with one or more chronic conditions. CDSMP saves enough through reductions in healthcare expenditures to pay for itself within the first year.⁶⁹

[Diabetes Prevention and Control: Combined Diet and Physical Activity Promotion Programs to Prevent Type 2 Diabetes Among People at Increased Risk – Diabetes Prevention and Control Program:](#)

In South Dakota, it is estimated that more than 200,000 adults over age 18 have prediabetes.⁷⁰ If left untreated, 15-30 percent of individuals with prediabetes will go on to develop type 2 diabetes within 5 years.⁷¹ Diabetes increases one's risk of developing high blood pressure, stroke, blindness, kidney failure, and amputation.⁷² The National Diabetes Prevention Program (NDPP), an evidenced-based lifestyle change program developed by the Centers for Disease Control and Prevention, guides participants in making healthy and sustainable long-term changes that reduce their risk of developing type 2 diabetes by up to 58-71 percent.⁷³ The NDPP is offered in many South Dakota communities, including Belle Fourche, Custer, Platte, Rapid City, Sioux Falls, Spearfish, Sturgis, and Yankton, with access continuing to spread to new communities. A study conducted on cost-effectiveness of the National Diabetes Prevention Program demonstrated a \$1,100 per quality-adjusted life year. The medical costs associated with managing diabetes may be up to 2.1 times as high as a person without diabetes.⁷⁴ Therefore, preventing or delaying the onset of type 2 diabetes is a financial cost savings, as well as quality of life cost savings.⁷⁴

Conclusion

Unlike treating diseases, prevention faces unique challenges in establishing its economic worth. Personal behavior change is difficult at best, and once modified, can take time to demonstrate health and economic impact. A core set of preventative services are effective and consistently offer high economic value.⁷⁵

To encourage investment in prevention and to build a culture of health, it is imperative to include health in all sectors and all policies. Communities will be successful if they ask questions such as: What do we want our community to be? How might health interventions provide benefits to our residents and reduce harm to them? What areas of collaboration have not been discovered yet? Asking these questions can create “win-win” opportunities among sectors of a community, which encourages collaboration as they share resources to promote health alongside other community partners.

Preventing disease is essential if we are to improve health in our communities and keep health costs under control. By investing in prevention, all sectors of the community share the benefits. Children grow up in communities, homes, and families that nurture a healthy development. Adults are productive and healthy, both in and out of the workplace. Businesses benefit from healthier workforces that result in reduced health care costs and increased stability and productivity. Most importantly, communities that offer a healthy, productive place to live, work, learn, and play can be more attractive places for families and for businesses to locate. Investment in local health promotion and chronic disease prevention strategies, as well as cross-sector collaboration is key to the long-term health of South Dakota communities.

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