North Texas Alternative Futures

Health Research Team

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Introduction

Health is more than the absence of illness. Health is more than medical care. Health is even more than behavioral risk factors, morbidity and genetics. Health includes issues of aging, air and water quality, economics and environmental concerns. People are healthy when they live in nurturing environments and are involved in the life of their community, when they live in healthy cities.

This new view of health examines the interactions that affect people's lives. It takes into consideration the influence of the place, surroundings, relationships and opportunities individuals experience in every day life. The purpose is to examine the impact community design has on health.

The Health Research Team (HRT), composed of local, regional and state representatives, joined Vision North Texas (VNT) in 2009. Working side by side with urban planners the HRT crossed the boundaries of the sick care paradigm and contributed to the creation of a living environment that promotes health. The team examined the Vision North Texas concept and became familiar with the five scenarios, or community models. Through a process of meetings and information exchanges HRT selected six key health indicators. These six key health indicators cover behavioral risk factors, social, economic, environmental, and access to care issues.

Key Health Indicators

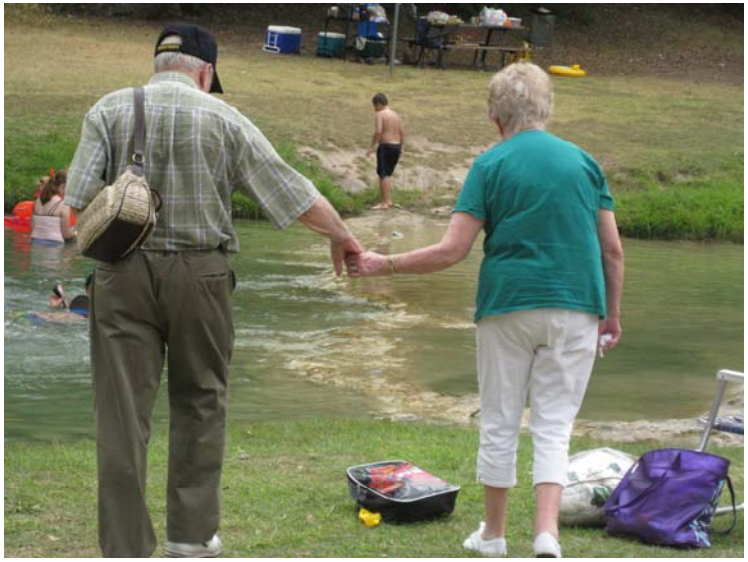
1. Access to affordable healthy foods
2. Access to affordable physical activity opportunities
3. Educational attainment
4. Air quality
5. Social connectedness
6. Access to primary care; medical, dental, mental health, and substance abuse

Promoting healthier lifestyles, affordable opportunities for physical activity and the consumption of nutritious whole foods are absolutely, necessary components of designing a healthy community. Because of their importance, a section is dedicated to nutrition and physical activity.

Research indicates that educational attainment and income are great predictors of health. An educated population tends to make better health choices resulting in improved health outcomes. Additionally, as wages of low income earners are increased so is the health of the workers.

Air and water quality are vital to health. Transportation systems and businesses can contribute to the air and water quality by lowering levels of admitted pollution. Fewer vehicle miles traveled, or less dependence on automobiles, reduces harmful emissions from cars and improves air quality and the ozone layer. The impact of these changes on the environmental quality is inextricably linked to health outcomes. Neighborhoods and schools located further away from major highways enjoy cleaner air.

Social connectedness is of great consequence to health. Social isolation has been shown repeatedly to predict mortality and serious morbidity both in general population samples and in individuals with established morbidity, especially coronary heart disease. The magnitude of risk associated with social isolation is comparable with that of cigarette smoking and other major biomedical and psychosocial risk factors.



Access to primary care; medical, dental, mental health, and substance abuse are taken for granted by many. However there is a need, particularly in underserved areas, to provide clinics and specialty care. In measuring access to primary care our experts considered the use of technology. Health care can be streamlined and more efficient with the use of electronic medical records and real time transfer of medical data. Technology allows medical assistance to reach patients even when physical access is limited.

The key health indicators were assigned measurements, so that the reader might fully understand the definition of each, but more critically, so that they might see the trend for improvement or decline in health. At least two measurements were allocated to each indicator. The HRT then ranked how each community scenario impacted the health indicator measurements. The first version limited the ranking to (-) if the participants believed the community model would impact the health indicator in a negative way, a zero (0) if the scenario had no impact and a (+) if the impact was positive.

The HRT reconvened and discussed the strength of the measurements. Some of the measurements were eliminated and new measurements were created. The team ranked the health indicator measurements again. This time the ranking was refined by using a likert scale, with -5 representing the community having a very negative impact on the measurement, 0 representing no effect and +5 equaling a very positive impact on the health indicator. The results are displayed in Table 1: Vision North Texas Health Research Team Matrix.

Table 1: Vision North Texas Health Research Team Matrix

Likert Scale: -5 strong negative impact 0 no impact +5 strong positive impact						
Key Health Indicator Rankings		**Business As Usual (BAU)**	**Connected Centers (CC)**	**Return on Investment (ROI)**	**Diverse, Distinct Communities (DDC)**	**Green Region (GR)**
1. Access to affordable healthy foods - overall.	**Range**	**-5 to +3**	**-1 to +5**	**-5 to +3**	**0 to +5**	**0 to +5**
	Overall	**-1.7**	**1.7**	**-0.3**	**2.4**	**2.9**
Measurements						
1.a. Percentage consuming 5 vegetables/fruits per day.		-1.8	1.2	0.0	1.5	3.3
1.b. Number of whole food stores in an area.		-0.7	2.3	0.0	3.2	2.3
1.c. Percent consuming 'slow' cooking of whole foods		-2.7	1.5	-0.8	2.7	3.2
2. Access to affordable physical activity opportunities - overall.	**Range**	**-5 to +1**	**-2 to +5**	**-5 to +5**	**0 to +5**	**0 to +5**
	Overall	**-2.4**	**2.3**	**0.2**	**2.8**	**3.7**
Measurements						
2.a. Percentage participating in physical activity 30 minutes a day.		-3.0	2.5	-0.7	1.7	4.2
2.b. Number of community recreation centers in an area.		-1.2	1.8	0.3	3.0	2.3
2.c. Percent of neighborhoods that are walk-able, i.e. sidewalks, walking trails and walking paths.		-3.2	2.7	0.8	3.7	4.5
3. Educational attainment - overall.	**Range**	**-4 to +2**	**0 to +5**	**0 to +5**	**0 to +5**	**0 to +5**
	Overall	**-0.8**	**2.3**	**1.2**	**2.3**	**1.1**
Measurements						
3.a. Average Percentage with a college degree.		-1.2	2.8	0.8	1.8	1.7
3.b. Average Percentage with high school degree or equivalent GED.		-0.8	2.0	1.5	2.3	0.8
3.c. Average Number of affordable high quality day care.		-0.3	2.0	1.3	2.8	0.7

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Key Health Indicator Rankings		**Business As Usual (BAU)**	**Connected Centers (CC)**	**Return on Investment (ROI)**	**Diverse, Distinct Communities (DDC)**	**Green Region (GR)**
4. Reduced contribution to climate change – improve air quality - overall.	**Range**	**-5 to 0**	**-4 to +4**	**-5 to +4**	**0 to +4**	**+3 to +5**
	Overall	**-3.7**	**1.1**	**-0.6**	**2.2**	**3.3**
Measurements						
4.a. Number of particle matter.		-4.5	2.0	-0.6	2.8	4.8
4.b. Housing proximity to major highways		-3	1	-1	3	3
5. Social connectedness - overall.	**Range**	**-5 to +3**	**-2 to +5**	**-5 to +3**	**0 to +5**	**-1 to +4**
	Overall	**-0.9**	**1.4**	**0.2**	**2.6**	**1.5**
Measurements						
5.a. Number of neighbors known by name.		-2	1	-1	4	2
5.b. Number of church or community gatherings attended weekly.		-1.5	2.2	-0.8	3.2	1.8
5.c. Use of emerging technology, i.e. facebook, medical monitoring, twittering.		0.2	1.2	1.8	1.0	0.7
6. Access to primary care –medical, dental, mental health, substance abuse - overall.	**Range**	**-5 to +3**	**-3 to +5**	**-5 to +5**	**0 to +5**	**-1 to +5**
	Overall	**-1.4**	**1.4**	**0.7**	**2.0**	**0.9**
Measurements						
6.a. Primary Care Physician : Population Ratio.		-2.2	1.5	0.8	2.3	1.2
6.b. Number of structured health promotion programs (medical and community).		-0.8	1.3	1.3	1.8	1.5
6.c. Immunization rates.		-1.2	1.8	1.0	2.0	0.5
6.d. Wait times for doctors appointments new, routine, etc.		-1.0	1.2	0.5	1.3	0.0
6.e. Number of medical homes in a community with a NCQA recognized physician practice for primary care.		-0.7	1.3	1.2	1.8	1.3
6.f. Amount of time to travel to a primary care physician.		-2.5	1.5	-0.7	2.7	1.0

Nutrition and Physical Activity

Healthy diets and regular, adequate physical activity are major factors in the promotion and maintenance of good health throughout the entire life course. Unhealthy diets and physical inactivity are two of the main risk factors for raised blood pressure, raised blood glucose, abnormal blood lipids, overweight/obesity, and for the major chronic diseases such as cardiovascular diseases, cancer, and diabetes. There are 2.7 million deaths attributable to low fruit and vegetable intake and 1.9 million deaths to physical inactivity (World Health Organization, Global Strategy on Diet, Physical Activity and Health, May, 2004).

Unhealthy diets and physical inactivity are risk factors for chronic diseases. Diet recommendations for populations and individuals include achieving a balance between energy and a healthy weight, reducing the intake from saturated fats, increasing the consumption of fruits and vegetables, and legumes, whole grains and nuts, limiting the intake of free sugars and sodium consumption. These recommendations need to be considered when preparing national policies and dietary guidelines.

For physical activity, it is recommended that individuals engage in adequate levels throughout their lives. Additionally, being physically active has social and mental health benefits. Different types and amounts of physical activity are required for different health outcomes; at least 30 minutes of regular, moderate-intensity physical activity on most days reduces the risk of cardiovascular disease, diabetes, colon cancer and breast cancer. Muscle strengthening and balance training can reduce falls and increase functional status among older adults. More activity may be required for weight control.

Improving nutritious eating habits and physical activity demands a population-based, multi-sector, multi-disciplinary, and culturally relevant approach. This is why the Health Research Team rated nutrition and physical activity as the top two key health indicators.

Access to affordable healthy food is measured by the percent consuming five fruits and vegetables per day, number of whole food stores in an area, and percent consuming slow cooking of whole foods. For our purpose, “whole food” is defined as non-processed food and slow cooking is defined as the conventional method of cooking versus microwave and fast foods. The best possible scenario would be locally grown vegetables and fruits or sharing vegetables from a community garden. Access to affordable physical activity is measured by the percentage participating in physical activity 30 minutes a day, number of community recreation centers in the area, and percent of neighborhoods that are walk-able. Walk-able communities consist of neighborhoods that have sidewalks, walking trails, walking paths, and bike lanes.

Access to affordable foods:
"Nutritional factors contribute substantially to the burden of preventable illnesses and premature deaths in the United States. A primary concern is consuming too much saturated fat and too few vegetables, fruits, and grain products that are high in vitamins, minerals, carbohydrates, fiber, and other substances that are important to good health" (U. S. Department of Health and Human Services, *Healthy People 2010*).

Once every four years the local public health departments conduct a Behavioral Risk Factor Surveillance System (BRFSS) survey. The BRFSS is a state-based system of health surveys that generate information about health risk behaviors, clinical preventive practices, and health care access, and used primarily in relation to chronic diseases and injury.

The 2004-2005 Dallas/Tarrant Bi-County BRFSS reported that although there was a four percent difference in the weighted proportions of Tarrant County and Dallas County residents who met the recommendations for consumption of five servings of fruits and vegetables, the difference was not statistically significant (Tarrant County 25.9% in 2004 and Dallas County 21.8% in 2005). While the number of residents in Tarrant County, who met the recommendations for consumption of five servings of fruits and vegetables a day, was higher than Texas and the United States, the percent in Dallas County was lower.

There are fourteen goals related to nutrition in the Healthy People 2010 publication. Two of these goals are applicable to our purposes. They are; to increase the proportion of persons aged two years and older who consume at lease two daily servings of fruit to 75 percent; and to increase the proportion of persons aged 2 years and older who consume at least three daily servings of vegetables, with at least one-third of those being dark green or orange vegetables to 50 percent.

Access to affordable physical activity:
Research supports the findings that regular physical activity reduces the risk of premature death; reduces the risk of death due to heart disease; reduces the risk of developing diabetes, high blood pressure and colon cancer; reduces blood pressure in people who already have high blood pressure; reduces feelings of depression and anxiety, and promotes psychological well-being; helps control weight, builds and maintains healthy bones, muscles and joints; and helps older adults become stronger and better able to move about without falling (U. S. Department of Health and Human Services *Physical Activity and Health*).

The Healthy People 2010 document currently has fifteen goals targeting physical activity, of which three are related to our measurements.

1) To increase the proportion of adults who engage in vigorous physical activity that promotes the development and maintenance of cardio-respiratory fitness three or more days per week for 20 or more minutes per occasion to 30 percent

2) Increase the proportion of adolescents who engage in moderate physical activity for at least 30 minutes on five or more of the previous 7 days to 35 percent,

3) To increase the proportion of adolescents who engage in vigorous physical activity that promotes cardio-respiratory fitness 3 or more days per week for 20 or more minutes per occasion to 85 percent.

Policies and Implications

Senate Bill (SB) 343:
Senate Bill 343 requires the creation of an advisory committee to study and provide recommendations to the legislature regarding the areas of Texas that are underserved in the retail availability of healthy foods and the impact of the limited availability on nutrition, obesity, and chronic illnesses.

SB 343 became effective as of June 19, 2009. The passage of this legislation will be essential in addressing Vision North Texas' key health indicator of access to nutritious and affordable foods. The findings from the study will help to identify those communities in greatest need. Thereby, opportunities for regular, proper nutrition are increased and obesity and chronic diseases are reduced. SB 343 also addresses issues identified in the Food, Conservation and Energy Act of 2008 – Farm Bill and positively impacts WIC and Food Stamp participants.

Implementation of SB 343 findings will positively impact health in the connected centers scenario if the legislative report includes plans to fund existing or future retail stores (including grocery stores) and/or farmers markets in close proximity to public transportation in underserved areas. Thus, if the retail stores and farmers markets are not located in their neighborhood but near public transportation, then there are increased opportunities for individuals in underserved areas to have regular and easy access to fresh, healthy nutritious foods.

Implementation of SB 343 findings will have the greatest impact in the green region scenario if the legislative report includes plans to fund existing or future retail stores (including grocery stores) and/or farmers markets in walk-able communities or the built environment design. Thus, the initial community design creates access to affordable, fresh fruits and vegetables and other healthy foods.

Senate Bill (SB) 891:
Senate Bill 891 creates a consistent standard of physical education curriculum across the state. This bill requires that the mandatory physical education curriculum for public schools be sequential, developmentally appropriate, and designed, implemented, and evaluated to enable students to develop the motor, self-management, and other skills, knowledge, attitudes, and confidence necessary to participate in physical activity throughout life.

The bill extends the existing requirement for students in kindergarten through grade five to participate in moderate or vigorous daily physical activity for at least 30 minutes throughout the school year either as part of the district's physical education curriculum or through structured daily recess activity to a student enrolled in full-day pre-kindergarten and, to the extent practicable, to a student enrolled in prekindergarten on less than a full-day basis in the same manner and degree as a student in full-day prekindergarten.

SB 891 is needed in Texas; since we have the sixth-highest percentage of obese and overweight children ages 10-17, in the country. Approximately 40 percent of Texas children are overweight or obese, compared to the national average of 16 percent. The Texas Department of State of Health Services Strategic Plan for the Prevention of Obesity in Texas: 2005-2010 stated that the prevalence of obesity among children aged 6 to 11 more than doubled in the past 20 years, going from 6.5% in 1980 to 17.0% in 2006. The rate among adolescents aged 12 to 19 more than tripled, increasing from 5% to 17.6%. The annual costs associated with excess weight in Texas are projected to reach $15.6 billion by 2010 and could skyrocket to $39 billion by the year 2040. In 2001, 38.7% of 4th graders, 37.1% of 8th graders, and 29.4% of 11th graders were overweight in Texas.

SB 891 became effective as of June 19, 2009 and will be applied beginning with the 2009-2010 school year. The passage of this legislation will be instrumental in addressing Vision North Texas' key health indicator - access to affordable physical activity opportunities.

Implementation of this legislation will positively impact health in the return on investment scenario if the funds are used to expand and upgrade existing school facilities and equipment, particularly, the gymnasiums, playgrounds and sports equipment. Thus, the existing infrastructure is utilized to improve the health of the children.

SB 891 will also positively impact health in the diverse, distinct community scenario by considering the effect that gender and cultural differences might have on the degree of student interest in physical activity or on the types of physical activity in which a student is interested. Thus, the schools will build connections with the students by working with them to understand the diverse cultures that they represent and creating physical activities that meet their needs.

Article 33 Open Spaces Sub-district (Boston, MA):
The primary purpose of Article 33 is to create land use regulations that permanently protect and conserve open space areas used for community gardens, parklands, and other recreational spaces to enhance the quality of life of the city's residents. The policy:

1) Creates specific sub-districts for land designated as open space for community gardens, parkland, recreation, shore land, urban wild, waterfront access area, cemetery and urban plaza purposes;
2) Sets forth criteria that define how the sub-districts may be used;
3) Allows for the best use of the land based on topography, water, flood plain, forest cover, urban edge, unusual geological features, and scenic value;
4) Imposes land use restrictions so that if a sub-district is zoned as a community garden, the land may only be used for the cultivation of herbs, fruits, flowers, or vegetables;
5) Establishes that vacant public land, which is not in use for an essential public purpose, may be zoned for community gardens.

Implementation of this policy would positively impact health in the connectedness centers scenario and increase access to both affordable healthy foods and physical activity opportunities. Each of the previously mentioned sub-districts promotes utilization of various mobility choices within and between the residential, office, retail, restaurants, community gardens, parks and plazas by walking and biking on trails and pathways. The use of parks and open spaces define and identify particular centers.

The return on investment scenario would positively impact health with the establishment of the sub-districts that would either develop vacant properties or revitalizes underutilized properties. Thus, the existing infrastructure is utilized to improve the health of the community.

This policy would positively impact health in the diverse, distinct community scenario with the development of the sub-districts which would conserve the heritage of special areas, promote and maintain the visual identity of separate and distinct districts and enhance the appearance of neighborhoods through preservation of natural green spaces; therefore, enhancing the quality of life of the residents and diverse cultures that they represent by creating opportunities for physical activities and healthy foods that meet their unique needs.

Implementation of this policy will have the greatest impact in the green region scenario and significantly increase access to both affordable healthy foods and physical activity opportunities if the creation of the sub-districts is incorporated during the initial planning phase of the built environment design.

How Would the Five Community Scenarios Change From Business as Usual?

Key Indicator	Connected Centers	What Strategies/tools in this scenario caused the change?
Access to affordable healthy foods.	+ Improves Slightly	Investment in a framework that emphasizes mobility will improve the access to affordable healthy foods for people who do not currently have access.
Access to affordable physical activity opportunities.	++ Improves	Access to affordable physical activities is expected to improve slightly if individuals have access to additional ways of transportation and mobility.
Educational attainment	++ Improves	If individuals have access to education establishments they are more likely to attend and attain additional education.
Reduced contribution to climate change – improve air quality	+ Improves Slightly	If people were within walking or biking distance from their work and school it is likely they would refrain from using a vehicle which would improve our air quality.
Social connectedness	+ Improves Slightly	When people live and work close to each other there is a greater likelihood that they will run into each other and eventually become connected socially.
Access to primary care – medical, dental, mental health, substance abuse	+ Improves Slightly	The mix of residential, office, retail, and public uses along with improved mobility will allow people greater access to health care services.

Key Indicator	Return on Investment	What Strategies/tools in this scenario caused the change?
Access to affordable healthy foods	- Worsens Slightly	Agricultural use would stay the same as the population and demand for healthy foods would increase causing a shortage of healthy foods.
Access to affordable physical activity opportunities	+ Improves Slightly	Reinvesting in existing infrastructure and changing that to meet new needs may benefit recreation facilities and trails that are already establish to improve opportunities for physical fitness.

Educational attainment	+ Improves Slightly	Investing in educational systems that already exist may give the institution an opportunity to expand and offer additional degree or classes.
Reduced contribution to climate change – improve air quality	- Worsens Slightly	Investing additional money into roadways will only increase the number of cars on the road and continue to create air pollution.
Social connectedness	+ Improves Slightly	Stable single family neighborhoods would assume that people would be more likely to stay in their homes longer which would increase the likelihood of knowing their neighbors.
Access to primary care – medical, dental, mental health, substance abuse	+ Improves Slightly	Expansion of services in locations that appear to have a need for the service would improve the access to primary care.

Key Indicator	Diverse, Distinct, Communities (DDC)	What Strategies/tools in this scenario caused the change?
Access to affordable healthy foods	++ Improves	DDC allows support for reinvestment and development in downtown areas. The scenario also allows for new developments near transit/employment.
Access to affordable physical activity opportunities	++ Improves	Communities are designed with accessibility in mind. Mobility choices such as walking & biking in downtowns and new centers around the region.
Educational attainment	++ Improves	Development with accessibility and diversity in mind may allow for different routes to educational facilities, and the convenience of proximity.
Reduced contribution to climate change – improve air quality	++ Improves	Development with accessibility in mind would allow for less traffic congestion, meaning less idle vehicles (air/ozone pollution) and thus improved air quality.

Social connectedness	++ Improves	The DDC model emphasizes on mobility choices between centers using trails/paths, public transportation and others. Strengthens traditional feeling.
Access to primary care – medical, dental, mental health, substance abuse	+ Improves Slightly	DDC allows for extension of urban services and facilities to new areas where this infrastructure can be clustered efficiently. Increased mobility and options for routes to primary care facilities.

Key Indicator	Green Region	What Strategies/tools in this scenario caused the change?
Access to affordable healthy foods	++ Improves	Community gardens, support for "green jobs", and continuing agricultural uses. Keep supply high and costs should be proportionally low.
Access to affordable physical activity opportunities	+++ Improves Significantly	Green regions often offer a scenic incentive to participate in physical activity. Ex: Montgomery Farm with gorgeous greenery and walking/hiking paths.
Educational attainment	+ Improves Slightly	Has small impact on educational attainment. However strategic placement and development may place a spotlight on neighboring schools and increase reputation. Ex: A middle and elementary school border Montgomery Farm.
Reduced contribution to climate change – improve air quality	++ Improves	The Green Region model affects air quality through trees and greenery that act as filters for pollutants in the air.
Social connectedness	+ Improves Slightly	People living in a Green Region type environment report a safe and traditional feeling. Ex: Montgomery Farm residents enjoy talking and meeting passer-bys.
Access to primary care – medical, dental, mental health, substance abuse	+ Improves Slightly	The GR model would not have a strong positive impact on access to primary care facilities. One scenario would be to develop the primary care facilities on the Green Region itself or in proximity.

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This important discussion about the best futures for North Texas would not be possible without the expertise and involvement of the individuals who serve on the Alternatives Research Team and of the organizations they represent. These contributors are listed below.

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