POPULATION HEALTH STRATEGIC PLAN

UT HEALTH NORTHEAST - 2016

Submitted to the Associate Vice-Chancellor, UT System
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Section 1: UT Health Northeast - Catchment Area

Overview

The University of Texas Health Science Center at Tyler (UT Health Northeast) serves a geographic area roughly the size of West Virginia. The majority of the 1.3 million residents live in areas designated as rural. As the only university medical center in the region UT Health has achieved a presence throughout Northeast Texas with partnerships for graduate medical training, grant funded applied research and service projects, and demonstration projects for clinical care service delivery. UT Health Northeast has a long history of joint efforts with the Texas Department of State Health Services (DSHS) Health Service Region 4/5N (HSR 4/5N) in Tyler (Figure 1) and the network of public health departments. However, when Texas adopted the 1115 Waiver, the Texas Health and Human Services Commission (HHSC) established Regional Health Plan (RHP) designations that did not coincide with DSHS regions. UT Health Northeast was named as anchor for RHP 1, which encompasses three counties outside of HSR 4/5N and excludes ten southeastern counties of HSR 4/5N (Figure 2). As anchor for RHP 1, UT Health Northeast expanded its leadership role across the region. This involved establishing and strengthening relationships with healthcare providers, local mental health authorities, local government entities, and community leaders to assure a strong regional plan, reporting compliance, and sharing of lessons learned through Waiver activities. Therefore, RHP 1 is the catchment area to be addressed by the UT Health Northeast Population Health Strategic Plan. Available health status data is often reported for HSR 4/5N. Since these data are reflective of RHP 1, they will be cited as valid for the RHP 1 population in this report.

Figure 1. Health Service Region (HSR) 4/5N

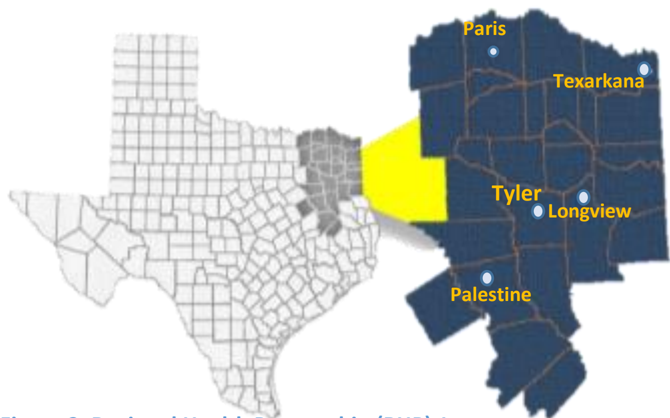


Figure 2. Regional Health Partnership (RHP) 1

Direct Clinical and Behavioral Services UT Health Northeast provides inpatient and clinical specialty services on its main campus in Smith County. It maintains historical expertise in clinical care and research of pulmonary diseases such as tuberculosis, asbestosis, lung cancer, chronic obstructive pulmonary disease (COPD), pediatric asthma, and Cystic Fibrosis. Additional clinics in Lindale, on the UT-Tyler campus, and in North Tyler (Smith County); as well as Longview (Gregg County), and Overton (Rusk County) improve access to primary care.

Partnerships to deliver health education and clinical care continue to expand services to the Northeast Texas population. To strengthen cancer services for example, the UT Health Northeast Cancer Center is now UT Health Northeast MD Anderson Cancer Center. This formal partnership with MD Anderson makes it possible for area residents to benefit from emerging approaches to reduce cancer rates and improve outcomes when the disease is diagnosed. Occupational and Preventive Medicine is another clinical specialty that generates formal arrangements with diverse business and manufacturing enterprises throughout the region for medical residency training and the delivery pf total worker health care.

Behavioral health services have been expanded to include inpatient care for patients from Rusk State Hospital to provide the appropriate level of care needed for East Texas residents. Behavioral health assessments have been integrated into primary care services in Family and Internal Medicine clinics. Experienced behavioral health staff have been recruited for expansion of teaching, consultation, and counseling services.

Regional Engagement

UT Health Northeast faculty and staff have long standing partnerships across the region to carryout research and service projects supported through various funding mechanisms. As an example, Lamar County was selected as a research site to assure inclusion of a rural sample in The National Children's Study (NCS) pilot study. The NCS was a large-scale, long-term study of U.S. children and their parents to assess environmental influences on child health and development. Outreach and study enrollment was managed by UT Health Northeast faculty in collaboration with UT Southwestern. Numerous service and support projects have been implemented in partnership with the DSHS Region 4/5N office and local departments of health. Additional extramural projects have been undertaken in collaboration with local agencies such as Texas AgriLife Extension, post-secondary institutions, and diverse non-profit service organizations encompassing numerous counties in Northeast Texas.

Fifteen of the 90 RHP 1 DSRIP 1115 Waiver projects were designed and implemented by UT

Health Northeast (see Appendix A). Partnerships were formed with other health providers (Christus St. Michael, Palestine Regional Medical Center and Good Shepherd) to address common regional challenges such as care for pediatric asthma patients, tele-connectivity for psychiatric evaluation, quality improvement to reduce cardiac readmissions, supportive care for end of life, patient centered medical home certification, and residency training to integrate behavioral health assessment into primary care.

Section 2: Health of the Population and Health Disparities

The term "population health" is sometimes used interchangeably with public health. However, it is more expansive. Population health is a systems-based approach to improving health outcomes that incorporates strategies from public health, wellness promotion, chronic disease prevention and management, and clinical care into a cohesive discipline. Many sectors of a community must work together to leverage expertise, resources, and organizational connectivity to effectively influence factors that contribute to healthy lifestyles and positive health outcomes. This is particularly true when addressing traditional health disparities among ethnic, low-income, or disabled persons within a community and region.

The 2015 United Health Foundation report paints a picture of declining health for people in Texas (see Appendix A). In 2014 Texas ranked 31 among the 50 states in health status with a further decline in rank to 35 of 50 in 2015[1]. Multiple modifiable and preventable risk factors may have contributed to this decline including high levels of tobacco use, obesity, and physical inactivity present in Texas.

Social Determinants of Health

The social determinants that contribute to optimal health outcomes are multi-faceted. Figure 3 is a graphic representation of the four factors that influence the health of populations. Of the four, social and economic have the largest impact on health status. Social and economic factors include but are not limited to education, employment, income, support systems, and community safety.

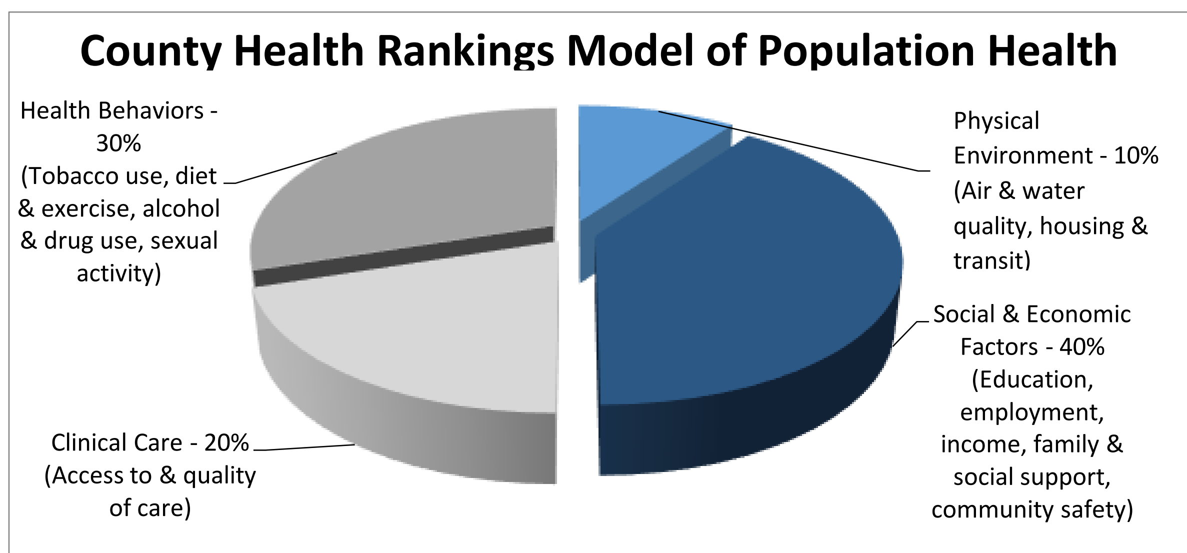


Figure 3. County Health Rankings Model of Population Health, 2014

The Northeast Texas Counties

The University of Texas System (UT System) in collaboration with UT Health Northeast recently published the *Health Status of Northeast Texas-2016* Report which analyzes data regarding the health status of the HSR 4/5N population. [1] Figure 4 depicts the 2015 county health rankings for the state of Texas showing that 23 of the 28 counties in RHP 1 are in the worst two quartiles for health outcomes. [1]

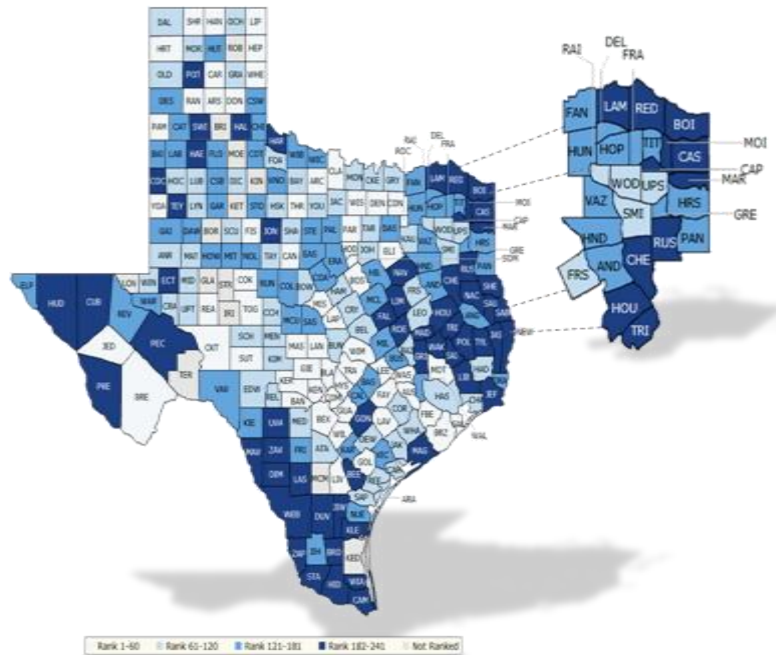


Figure 4. County Health Rankings for RHP 1

The leading causes of premature death in Northeast Texas are heart disease, cancers (lung, colorectal, breast, and prostate), chronic lower respiratory diseases, stroke, and unintentional injuries (such as motor vehicle accidents and falls). These conditions, along with personal health behaviors (tobacco, drug, or alcohol use, diet, physical inactivity, and high risk sexual behaviors) have a significant impact on population health outcomes. Obesity is a known risk factor for diabetes, heart disease, stroke, and cancer, all of which are over represented in the region's high mortality rates. Table 1 shows modifiable behaviors that contribute to the five leading causes of premature death in Northeast Texas.

NTX Health Status	
Top Causes of Premature Death	Modifiable Behavior
Heart Disease	o High Blood Pressure o High Blood Cholesterol o Cigarette Smoking o Diabetes o Physical Inactivity o Obesity
Lung & colorectal cancer and melanoma	o Cigarette Smoking o Diet – red & processed meats o Physical inactivity o Obesity o Sun exposure protection
Chronic Lower Respiratory Disease	o Cigarette Smoking o Air Quality o Particulate Exposure
Stroke	o High fat diets o Physical inactivity o Obesity o Heavy alcohol consumption o Tobacco use
Unintentional Injuries (MVA)	o Speeding o DUI o Inattentive driving

Table 1. Modifiable Behaviors Related to Key Health Issues

Demographic and Socioeconomic Summary RHP 1

Population

The largely rural population of Northeast Texas is primarily White (71.4%). African American/Black (AA/B) residents account for 13.5% of the population and 12.9% are Hispanic. Houston County has the highest percent of AA/B residents at 25.2% while Van Zandt County has the

lowest at 2.9%. The highest percent of Hispanic residents reside in Titus County (41.5) with Marion County hosting the fewest number of residents reporting Hispanic ethnicity (4.1%). Selected socioeconomic indicators are presented for each county in Table 2 below.

Educational attainment is an important determinant of health. The percent of individuals in the region who completed high school (82.3%) is slightly higher than Texas (81.6%) but it is lower than the U.S. (86.3%). Completion of post-secondary education is much lower for the region (16.9%) compared with TX (27.0%), and the U.S. (29.3%).

	County Population	% Rural	Race			Educational Attainment		Median Household Income	% In Poverty
			% White	% Black	% Hispanic	% High School	% Bachelors		
Anderson	57,580	67.0%	60.0%	21.0%	17.0%	80.2%	11.3%	$ 42,471	20.4%
Bowie	93,389	35.4%	66.0%	24.2%	7.3%	87.0%	18.8%	$ 41,883	20.0%
Camp	12,682	61.5%	57.3%	16.4%	23.4%	76.2%	14.3%	$ 37,801	24.0%
Cass	30,313	74.0%	76.3%	17.0%	4.3%	84.5%	12.7%	$ 39,256	19.0%
Cherokee	51,542	63.0%	81.0%	15.0%	22.0%	78.0%	16.0%	$ 38,465	20.0%
Delta	5,217	100%	80.5%	7.8%	7.2%	86.0%	17.0%	$ 38,304	20.0%
Fannin	33,693	70.0%	79.4%	6.7%	10.0%	81.9%	15.6%	$ 43,211	17.0%
Franklin	10.651	69.0%	79.0%	4.2%	13.7%	84.3%	22.0%	$ 42,099	16.4%
Freestone	19,691	66.0%	67.0%	16.0%	14.8%	79.3%	12.1%	$ 46,526	16.7%
Gregg	124,108	13.4%	58.8%	20.0%	18.0%	82.9%	19.9%	$ 50,020	18.2%
Harrison	66,746	56.0%	63.2%	22.0%	12.3%	84.0%	18.6%	$ 48,461	17.0%
Henderson	79,545	60.0%	79.0%	6.4%	12.0%	81.6%	15.5%	$ 40,921	20.2%
Hopkins	36,223	59.6%	74.2%	7.1%	16.2%	81.0%	15.2%	$ 44,076	20.3%
Houston	22,785	73.5%	62.0%	25.2%	11.0%	81.1%	13.9%	$ 33,698	25.9%
Hunt	89,844	56.6%	73.4%	8.0%	14.9%	83.0%	17.4%	$ 43,385	20.5%
Lamar	49,440	47.1%	74.8%	13.2%	7.5%	85.0%	16.2%	$ 41,009	18.6%
Marion	10,160	100%	70.7%	21.9%	4.1%	83.9%	14.5%	$ 34,452	23.1%
Morris	12,516	78.4%	65.1%	22.5%	9.1%	83.0%	12.8%	$ 37,954	18.6%
Panola	23,766	72.2%	73.1%	15.8%	9.1%	83.4%	11.4%	$ 48,822	15.5%
Rains	11,161	93.2%	86.2%	2.7%	8.2%	83.3%	11.4%	$ 47,834	14.9%
Red River	12,455	75.7%	73.1%	17.0%	7.2%	77.7%	14.2%	$ 34,340	20.1%
Rusk	53,070	65.8%	64.3%	17.3%	16.1%	81.0%	13.3%	$ 46,427	16.6%
Smith	222,936	31.6%	60.7%	17.4%	18.7%	85.2%	25.2%	$ 45,363	18.1%
Titus	32,623	50.5%	46.8%	9.4%	41.5%	72.5%	14.2%	$ 40,680	20.6%
Trinity	14,402	77.0%	78.7%	9.7%	9.2%	83.0%	10.8%	$ 36,645	19.9%
Upshur	40,603	79.3%	80.8%	8.3%	7.9%	82.5%	14.3%	$ 46,346	14.6%
Van Zandt	53,547	75.0%	84.4%	2.9%	10.2%	81.5%	14.9%	$ 43,377	15.9%
Wood	43,356	74.2%	83.3%	4.8%	9.6%	84.0%	17.9%	$ 42,753	15.4%

Table 2. Socioeconomic Indicators for RHP 1[2]

On average, Northeast Texas residents are poorer than other areas of the state. The median household income for the 28 counties in RHP1 ($42,021) is below that of Texas. Residents of Houston County have the lowest median household income at $33,698 and Gregg County residents have the highest at $50,020. The average unemployment rate for HSR 4/5N is 4.6% and the average poverty rate is 18.7% [1] which is higher than the state (17.7 %) and U.S. (15.6 %). Also, more people receive the Texas Supplemental Nutrition Assistance Program (SNAP) food benefits in this region compared to other parts of the state [1].

Health Disparities

> *The CDC states, "Health disparities (or health inequalities) are gaps in health outcomes or determinants between segments of the population."*

Northeast Texas has some of the worst health outcomes compared with other regions of the state and country [1]. Examination of data related to the five major causes of mortality in the region shows that African American/Black (AA/B) have the highest age-adjusted rate for all-cause mortality, followed by Whites; Hispanics have the lowest rates [1]. Of the five leading causes of death, the mortality rate from coronary heart disease, colorectal cancer, female breast cancer, stroke, diabetes, and kidney disease are highest among AA/B residents. Regardless of which data are examined, minority populations show the greatest disparities in health outcomes for heart disease, stroke, diabetes, and cancer. However, this does not mean that White populations in Northeast Texas fare much better. Mortality rates due to COPD, suicide, and motor vehicle accidents are higher among Whites than AA/B.

> *"Health starts in our homes, schools, workplaces, neighborhoods, and communities. The conditions in which we live explain in part why some Americans are healthier than others and why Americans more generally are not as healthy as they could be."[1]*

Research has shown that living in a rural environment reinforces negative health behaviors such as smoking and physical inactivity [3]. Well over half of the population of Northeast Texas lives rurally which can impact availability of health care providers and access to care. Although lack of access to providers often contributes to disparate health outcomes, health care provider ratios in Northeast Texas are similar to the state as a whole and do not explain the poor regional health outcomes [1]. Other factors that contribute to health disparities in the region include lack of public transportation, increased substance abuse, and age [4]. The population of Northeast Texas, with a median age of 39, is older compared to Texas as a whole with the median age of 34. For example, the number of Smith County residents over the age of 55 is expected to increase by 18% over the next ten years. In comparison, the population younger than 55 is expected to experience an 11% increase [5].

Section 3: Community Needs and Priorities Assessment

The UT Health Northeast Population Health team is a multi-disciplinary group assembled to participate in the development of the institutional strategic plan. The team chose to augment regional mortality and health status data with community-based input to guide interventions responsive to local priorities. Data regarding perceptions of important health issues were collected from community members in the 28-county region. Data collection methods were qualitative, engaging community partners in facilitated discussion of health issues; and quantitative using a survey to document community and personal health status, challenges, and needs. This survey data will be compared with results from the East Texas Community Health Needs Assessment survey conducted by the DSHS Region 4/5N office in 2007, to be reported elsewhere.

Methods

Community Stakeholder Forums

UT Health Northeast staff identified contacts across the region to assist with local meeting logistics and to invite people within their networks to represent their county in a community health forum. Sixteen stakeholder forums were conducted over a four-week period with 298 people participating (see Table 3). A cross-section of community stakeholders included public health, health care providers, mental health providers, government and social service agencies, businesses, and faith-based groups for discussion about community-level health issues. Forum hosts publicized the meetings and promoted participation from across their county (Appendix B, Table B.1). These community stakeholders shared information about demographics, knowledge of health-related resource availability, and health resources lacking in their community. Based on their understanding of the community, forum participants were asked to rate identified health problems and community populations with greatest unmet health needs. The priority issues identified by consensus in forum discussions were used to

Counties Represented in Community Forum	N	%
Anderson/Freestone/Henderson	16	5.4
Bowie/Cass	21	7.0
Camp/Morris	22	7.4
Cherokee	14	4.7
Delta/Lamar	15	5.0
Gregg/Upsher	16	5.4
Harrison/Marion/Panola/Rusk	24	8.1
Hopkins/Rains	10	3.4
Houston	24	8.0
Hunt/Fannin	20	6.7
Red River	16	5.4
Rusk	32	10.7
Smith	24	8.0
Titus/Franklin	19	6.4
Trinity	12	4.0
Wood/Van Zandt	13	4.4
Total	**298**	**100**

Table 3. County Stakeholder Participation per Community Forum

develop the East Texas Community Health Survey (ETCH Survey), a survey tool used to quantify issues and needs at the county level and guide the development of a regional profile.

East Texas Community Health Survey (ETCH Survey)

The ETCH Survey consisted of 40 questions about health status and concerns in residents from the 28-county region. The ETCH Survey was available in both English and Spanish for completion online or in paper format. Local announcements about the survey and its purpose were disseminated via social media, newspaper, radio, and television throughout the catchment area during the six-week data collection period. Community stakeholders and health services providers helped promote participation. Only responses from people living within RHP 1 aged 18 and older, were included in the analysis. Twenty-seven of the 28 counties in the region submitted at least 20 completed surveys for a total sample of 2,363 responses. As shown in Table 4, Franklin County submitted the fewest surveys (13) and Smith County submitted the most (586). The survey included questions about demographics, personal health status, perceived community health problems, substance abuse concerns, health-related resources, and community populations at risk.

County	N	%
Anderson	70	3
Bowie	93	3.9
Camp	60	2.5
Cass	187	7.9
Cherokee	48	2
Delta	24	1
Fannin	25	1.1
Franklin	13	0.6
Freestone	23	1
Gregg	149	6.3
Harrison	84	3.6
Henderson	55	2.3
Hopkins	38	1.6
Houston	67	2.8
Hunt	103	4.4
Lamar	46	1.9
Marion	39	1.7
Morris	40	1.7
Panola	70	3
Rains	38	1.6
Red River	37	1.6
Rusk	124	5.2
Smith	586	24.8
Titus	121	5.1
Trinity	60	2.5
Upshur	49	2.1
Van Zandt	46	1.9
Wood	68	2.9
Total	2363	100

Table 4. East Texas Community Health Survey Respondents by County

ETCH Forum & Survey Results

Results from the forum responses were compared with the survey data (see Table 5). Diabetes was identified in both data sets as the priority health concern in the region. While priority ranking varied, both forum and survey respondents included adult obesity, mental illness, and substance abuse among the top five priority health issues. Forum participants rated mental illness and heart disease/stroke among the region's top five health issues. In comparison, those who completed the survey rated cancer and high blood pressure among their top five most important regional health issues. The top community population groups with unmet health needs identified by both forum and survey respondents were un-/underinsured, working poor, those with mental health issues, and low income households. Forum respondents identified people with substance abuse issues among their top five, compared with survey participants who ranked the

homeless as one of the top five populations with unmet health care needs. Combined forum and survey data identified the availability of a) mental health-related services (inpatient and outpatient), b) substance abuse services (inpatient and outpatient services and substance abuse education), c) dental services, d) access to physician/specialist services, and e) transportation as services insufficient to meet the needs of the region's population.

Top 5 Health Problems Identified				**Top 5 Community Populations in Need**			
Forum		**Survey**		**Forum**		**Survey**	
Diabetes	55%	Diabetes	39.1%	Uninsured/ Underinsured	48%	Low Income Groups	35.8%
Substance Abuse	51%	Obesity (Adult)	38.1%	Working Poor	43%	Working Poor	32.4%
Mental Health Problems	49%	Cancer	36.2%	Persons with Mental Illness	42%	Uninsured/ Underinsured	30.7%
Obesity (Adults)	46%	High Blood Pressure	32.5%	Substance Abuse Populations	37%	Persons with Mental Illness	30.5%
Heart Disease/Stroke	29%	Substance Abuse	32.2%	Low Income Groups	35%	Homeless	28.9%

Table 5. Comparison of the Top 5 Priorities of Forum and Survey Respondents

Educational attainment is a strong predictor of health literacy [6]. Evidence-based educational interventions have successfully demonstrated improvement in personal health behaviors. Therefore, to help guide intervention planning, the top health concerns and community populations at risk identified in the survey data were stratified by educational attainment; low (high school graduate/GED or less; N = 576), middle (some college, trade school, or associate's degree; N = 790) and high (Bachelor's or advanced degree; N = 951) as detailed in Appendix B, Tables 2 - 5.

Forum participants rated certain health concerns higher than survey responses to comparable questions. Cancer was among the top health concerns identified by survey respondents but was not among the top concerns cited by forum participants (Table 5 above). While smoking was top priority health concern among survey respondents with low educational attainment (Appendix B, Table B.5), it was not identified as an issue in the forum discussions (Table 5 above). Current tobacco use was reported by 12.8% of all survey participants (Appendix B. Table B.4). Another interesting comparison of the two datasets shows that community stakeholder forum participants did not identify medication cost assistance or a comprehensive list of area health resources as a priority issues but survey respondents did. Although transportation was identified as a need during stakeholder forums, it was not among the top 5 community needs in the survey data.

ETCH survey respondents self-reported prevalence rates of mental health diagnosis such as depression as two to three times (10.8% -19.8%) higher than national averages (6.7%) [7]. However, ETCH survey respondents did not report mental health as a top priority health concern. This may indicate that survey participants with a diagnosis of a mental health issue have received treatment and may be unaware there is an unmet need in the region. Poor mental health is a risk factor for smoking, poor quality of life, chronic conditions such as heart disease and high blood pressure, poor treatment adherence, and suicide [8-12].

Preventive health care is a cornerstone of population health. Annual physical exams are critical to early identification of emerging physical and mental health issues which may then be addressed with education, remediation, referral, treatment, and/or management. About 35% of respondents did not receive annual physical exams despite 83.5% of respondents having health insurance. Among those with low educational attainment, 41.8% reported not having an annual health exam.

Table 6 below reports the top five health concerns expressed by survey respondents for each county in RHP1. It is important for these issues to be considered when strategies and programs are developed by community members to address and overcome the significant health challenges facing them.

The rural nature of the region includes challenges both in the availability of needed services and access to the resources that do exist. Services including mental health counseling and a comprehensive list of local resources (such as clinics that accept Medicaid/Medicare and have extended care hours) were identified in the community health survey as strongly needed and most difficult to obtain.

Discussion

The results of the community stakeholder forums and East Texas Community Health Survey offer data about the health concerns of communities and individuals in RHP 1. The results of this survey are largely consistent with health concerns reported by others, supporting congruency of community concerns with larger, standard data sets. Though the rate of tobacco use in East Texas is high 23.4% [1] survey data did not support tobacco use as a priority health concern. These results may suggest that the community views tobacco use as a normal behavior and may be unaware of its contribution to disease risk. The significant number of respondents that reported a diagnosis of depression and/or anxiety is an unexpected finding of concern. Outreach and health improvement intervention programs can be difficult to develop, implement, and maintain for rural populations. To be successful, program intervention efforts need to be developed by or in partnership with the community leaders so that

select approaches are acceptable, achievable, address issues of concern to the communities, and assure local commitment to achieve desired outcomes.

	Diabetes	Obesity (Adults)	Cancer	High Blood Pressure	Substance Abuse	Heart Disease / Stroke	Smoking	Aging Problems	Mental Health	Asthma / Allergies	Sexually Transmitted Infections	Child Abuse	Obesity (Children)
Anderson	47.1%	31.4%	32.9%	32.9%	30.0%	31.4%	12.9%	20.0%	25.7%	8.6%	11.4%	14.3%	12.9%
Bowie	37.6%	34.4%	31.2%	29.0%	41.9%	18.3%	19.4%	16.1%	37.6%	5.4%	11.8%	15.1%	12.9%
Camp	35.0%	38.3%	56.7%	35.0%	31.7%	36.7%	23.3%	30.0%	8.3%	25.0%	8.3%	20.0%	1.7%
Cass	49.7%	41.7%	36.9%	38.5%	28.3%	34.2%	26.7%	24.6%	10.2%	11.2%	12.3%	17.1%	5.3%
Cherokee	52.1%	37.5%	29.2%	20.8%	16.7%	14.6%	16.7%	25.0%	31.3%	14.6%	8.3%	22.9%	8.3%
Delta	37.5%	25.0%	33.3%	29.2%	16.7%	37.5%	45.8%	8.3%	20.8%	16.7%	0.0%	0.0%	4.2%
Fannin	0.0%	32.0%	24.0%	24.0%	48.0%	36.0%	28.0%	32.0%	32.0%	12.0%	36.0%	8.0%	0.0%
Franklin	38.5%	15.4%	69.2%	23.1%	23.1%	53.8%	23.1%	23.1%	15.4%	30.8%	15.4%	7.7%	0.0%
Freestone	43.5%	34.8%	47.8%	17.4%	34.8%	39.1%	17.4%	17.4%	8.7%	17.4%	17.4%	21.7%	4.3%
Gregg	36.9%	34.2%	30.9%	31.5%	32.2%	23.5%	13.4%	21.5%	26.2%	8.7%	10.7%	18.1%	16.1%
Harrison	35.7%	38.1%	40.5%	35.7%	38.1%	32.1%	11.9%	26.2%	22.6%	22.6%	17.9%	17.9%	16.7%
Henderson	16.4%	40.0%	20.0%	21.8%	52.7%	16.4%	20.0%	32.7%	34.5%	7.3%	21.8%	14.5%	1.8%
Hopkins	31.6%	55.3%	47.4%	31.6%	39.5%	31.6%	26.3%	26.3%	26.3%	21.1%	13.2%	15.8%	2.6%
Houston	40.3%	26.9%	37.3%	40.3%	28.4%	25.4%	22.4%	23.9%	25.4%	3.0%	16.4%	6.0%	14.9%
Hunt	40.8%	40.8%	22.3%	25.2%	35.9%	29.1%	19.4%	31.1%	15.5%	14.6%	10.7%	35.0%	35.0%
Lamar	34.8%	30.4%	34.8%	13.0%	45.7%	39.1%	28.3%	21.7%	21.7%	8.7%	6.5%	17.4%	10.9%
Marion	33.3%	28.2%	46.2%	30.8%	33.3%	48.7%	38.5%	23.1%	20.5%	20.5%	2.6%	5.1%	5.1%
Morris	25.0%	45.5%	50.0%	20.0%	50.0%	35.0%	22.5%	25.0%	15.0%	12.5%	12.5%	25.0%	2.5%
Panola	38.6%	45.7%	45.7%	41.4%	35.7%	25.7%	24.3%	34.3%	25.7%	18.6%	8.6%	14.3%	7.1%
Rains	18.4%	18.4%	34.2%	31.6%	34.2%	15.8%	26.3%	11.0%	2.6%	26.3%	23.7%	15.8%	2.6%
Red River	67.6%	29.7%	32.4%	35.1%	37.8%	35.1%	48.6%	24.3%	10.8%	2.7%	16.2%	16.2%	2.7%
Rusk	37.1%	33.1%	29.8%	33.9%	22.6%	25.8%	19.4%	25.0%	21.8%	9.7%	10.5%	17.7%	15.3%
Smith	42.2%	42.2%	33.8%	34.5%	24.6%	35.2%	18.6%	24.2%	29.9%	15.9%	8.2%	21.7%	6.5%
Titus	40.5%	47.9%	57.0%	35.5%	34.7%	43.8%	18.2%	22.3%	14.9%	10.7%	10.7%	20.7%	1.7%
Trinity	28.3%	26.7%	41.7%	26.7%	53.3%	30.0%	33.3%	25.0%	13.3%	8.3%	20.0%	5.0%	0.0%
Upshur	38.8%	38.8%	38.8%	26.5%	40.8%	30.6%	20.4%	10.2%	24.5%	18.4%	8.2%	16.3%	4.1%
Van Zandt	23.9%	41.3%	34.8%	34.8%	32.6%	17.4%	17.4%	17.4%	23.9%	4.3%	17.4%	17.4%	4.3%
Wood	32.4%	36.8%	29.4%	41.2%	38.2%	32.4%	30.9%	26.5%	16.2%	8.8%	5.9%	14.7%	0.0%

Table 6. Priority Health Concerns by County

Section 4: Community Resources

The availability of health education, clinical care, research findings, and community services are important components that affect health outcomes. A review of community health resources in RHP1 includes key UT Health Northeast institutional commitments that address population health status as well as individual community level resources and programs that are available to respond to local needs.

Institutional Commitments and Programs

UT Health Northeast provides a wide range of services that support its academic, clinical, and research mission. UT Health Northeast's most significant commitment to population health improvement is the creation of the School of Community and Rural Health (The SCRH), the realization of a long-term vision to address the public health workforce shortage. The SCRH will train professionals in public health disciplines, support applied community research projects and create numerous opportunities for community service through partnerships with local agencies. Successful candidates will receive the Master of Public Health (MPH) degree. The SCRH will also serve as a catalyst for community initiatives that apply evidence-based practices while expanding the workforce for community, population, and government health service.

Accredited graduate medical education programs in family, internal, and occupational & preventive medicine have been expanded to include clinical psychology and psychiatry. The family medicine residency program recently added a three-year Rural Practice specialty track. Accredited continuing education programs are routinely offered for physicians, nurses, pharmacists, and allied health professionals including Community Health Workers (CHW). Regularly scheduled Advanced Cardiac Life Support, Pediatric Advanced Life Support, Basic Life Support/CPR are available to all health professionals in the region.

The Northeast Texas Consortium of Colleges and Universities (NETnet) is a connectivity network managed by UT Health Northeast for the delivery of medical, nursing, and other health care-related training for hospitals and institutions of higher education in this region. More recently, NETnet established high quality video/audio connectivity to support the delivery of clinical mental health assessment of individuals in remote locations.

UT Health Northeast has been the host campus for Texas Area Health Education Center (AHEC) East - Northeast Region since 1995. The AHEC mission is to facilitate workforce development through promotion of health careers and delivery of important health literacy programs on population health

issues. The Texas AHEC East curriculum for CHW training has been approved by DSHS. Enrollment and course completion in Northeast Texas is processed by the local AHEC office for DSHS certification of successful CHW candidates.

Significant grant funded projects are currently in process at UT Health Northeast to address primary/population health care issues. Current awards that address population health issues include:

- Healthy Texas Women - DSHS grant to deliver Women's Health Services. $800K for the project period 2016 – 2017
- Family Planning Program - DSHS program of residency funding that supports provision of family planning services to Medicaid eligible patients. $416K for the project period: 2016 – 2017
- Texas Home Visiting Program, Health Resources and Services Administration (HRSA) $1.3 million January 2016 – August 2017
- Primary Healthcare Program, DSHS $107K 2016 – 2017
- CPRIT funded program to provide colonoscopies or FIT screening tests for uninsured residents across 19 counties of Northeast Texas. $1.5 million for 2016 – 2019.

UT Health Northeast DSRIP projects implemented independently and in partnership with other health care organizations have demonstrated improved access to care, innovative clinical, mental and behavioral health service delivery, and patient/community education outreach (see Table C.2 in Appendix C).

Community Resources and Programs

Despite the poor health status of the Northeast Texas population, many community organizations, healthcare professionals, federal/state/local assistance, non-profit and faith-based organizations work diligently to address and improve the health of at risk populations. A coordinated effort of collaborative initiatives could leverage these resources to improve health outcomes in the region. A preliminary catalog of county level resources has been compiled (Appendix C) as an impetus for consortium development at the community, county, multi-county, and regional level.

Federally Qualified Health Centers (FQHCs) provide primary health care services in underserved communities. These centers serve the indigent, uninsured, and underserved. In addition to primary care, FQHCs may also offer dental, mental health, or substance abuse treatment services. RHP 1 has 31 FQHC sites in 10 counties. Local or state public health clinics are available in some counties. They provide immunizations, WIC, and communicable disease services; some offices also coordinate emergency preparedness training.

Emergency Medical Services (EMS) for RHP 1 include those that serve cities, have full county coverage, and/or are available for intrastate transport. Every county within the region except Franklin County has at least one EMS service provider.

The Local Mental Health Authorities (LMHAs) support a range of mental health services for specific geographic areas designated by DSHS. Six LMHAs manage a variety of in-patient and outpatient services in RHP 1 counties. In addition to the Regional Crisis Response Center in Kilgore, several public and private organizations offer Crisis Stabilization Services for acute mental health and/or substance abuse events. Twelve of the 28 counties have public and/or private substance abuse facilities. The only DSHS State Hospital in RHP 1 is Rusk State Hospital in Cherokee County. Gregg, Smith, and Hunt counties have private psychiatric hospitals prepared to handle substance abuse treatment in addition to mental health care.

Most counties have at least one city/town that offers bus services yet throughout the region public transportation is very limited. Some counties offer "reserved" transportation which allows people to make a travel appointment however, users report this service can be unreliable or entails a significant amount of time.

There are 16 colleges and universities and 9 community/junior colleges in RHP 1. Most offer degree or certificate programs in nursing or other health related careers including the newly established School of Pharmacy at The University of Texas at Tyler (UT Tyler). Each of the 146 Independent School Districts (ISDs) in Northeast Texas is supported by 1 of 4 Education Service Centers (ESC). The ESCs provide a range of resources to school districts among them legal compliance, federal program funding opportunities and management, School Health Advisory Committee (SHAC) guidance and resources, school nursing training and support, and curriculum development. In small rural communities, the ISD is a hub of activities and information. Civic and health organizations have demonstrated success working with local ISDs to engage community members in a variety of issues beyond education. This represents a potential resource and opportunity to deliver innovative population health activities.

Other community resources that provide infrastructure components for population health endeavors exist across the region. Texas AgriLife Extension offices provide a range of services in every county. The staff are known and trusted resources in rural and agricultural communities. Each office is staffed by a county agent and administrative staff; all but four counties in RHP 1 also have dedicated Family and Consumer Science staff that includes health and nutrition education among their areas of expertise. The agency sponsors health and nutrition programs and 4-H clubs with experiential learning

opportunities for young people. Not-for-profit health and service agencies support a variety of services in locations across the region and are potential partners to address population health status.

Local governments and community agencies receive important resources and support through Regional Councils of Government membership. Six regional council offices serve RHP 1 counties. All counties in the catchment area offer housing assistance; thirteen of the counties have both low rent and Section 8 options available. Public Housing offices are responsible for providing appropriate and safe rental housing for eligible low-income families, the elderly, and persons with disabilities. Community organizations including faith-based groups engage volunteer support to sponsor food banks, assist with Meals-on-wheels, provide transportation services and other local needs.

Some communities, independently or in concert with local non-profit organizations, have created safe walking areas, implemented community safety projects, and sponsor organized activities to increase physical activities. Some of these models could be replicated in other communities if the processes, challenges, and lessons learned were easily accessible or if a platform for regional sharing were hosted to explore community improvement initiatives.

Section 5: Identified Health Priorities

The Northeast Texas region currently experiences an unacceptable level of poor health outcomes. Mortality data reported in the *Health Status of Northeast Texas–2016* indicates a higher rate of premature death due to heart disease & stroke; cancers: lung, colorectal, and skin; chronic lower respiratory diseases and unintentional injury compared with Texas as a whole [1]. The ETCH Survey augments these findings with additional local information about personal health status, modifiable health behaviors, and perceptions of priority issues that can guide strategic actions to improve the overall health of the region.

Many factors contribute to the health status of this region as discussed in Section 2 of this report (Figure 3). Public awareness of health issues, knowledge of conditions that contribute to poor health, familiarity with local resources, and the ability to access preventive and medical services all influence health status. Other issues such as geographic isolation, a culture of independence, and lifestyle traditions must be considered in approaches that promote improved health behaviors and outcomes for the population. Typically, determinants of geographic health disparities include access to general care, and prevalence of obesity and physical inactivity. While these indicators are high for the Northeast region, they are similar to the state profile for Texas and do not explain the geographical disparities for causes of premature death [1].

Physical Health Priorities

The health priorities brought to the forefront in the community stakeholder forums, the ETCH Survey, and those documented in the *Health Status Report of Northeast Texas–2016* [1] will be addressed in this strategic plan. The UT Health Northeast goal for population health improvement in Northeast Texas will focus on specific disease prevention and management strategies to improve outcomes for heart disease, stroke, and cancers, specifically lung, colorectal, breast, prostate, and skin cancers. It will also provide the framework to address chronic lower respiratory diseases (CLRD) including COPD and asthma.

Maternal - infant health status is a key population health indicator. Even though not cited among the priority health issue in the community forums or ETCH Survey, regional data suggest otherwise [1]. The Health Status of Northeast Texas – 2016 presents the following maternal and child health issues. The Northeast Texas region has poorer outcomes than other regions and the entire state. Factors that contribute to poor outcomes for pregnant women and infants include the lack of early

prenatal care; nearly half of the pregnant women in the region do not have a prenatal visit during their first trimester of pregnancy. Smoking during pregnancy results in risks for both mother and fetus. In 2013 the percent of Northeast Texas women who smoked during pregnancy was 3 times higher than Texas overall. Obesity prior to or during pregnancy creates physical stress for mother and fetus; in 2013 25.0% of all births in Northeast Texas were to obese women. These health factors are associated with poor outcomes for babies and mothers resulting in the increased risk of infant death. Education about the importance of prenatal care and improved access to care for women during their first trimester will be established in collaboration with other partners throughout the region.

To effectively improve health status indicators, planned strategies will primarily address modifiable behaviors that cause and/or contribute to preventable chronic diseases and expand the public health workforce in the region to champion those messages. Modifiable health behaviors include smoking prevention, reduction, and cessation to reduce chronic lower respiratory disease and cancers. Reducing obesity prevalence through improved eating patterns, better nutrition/food choices, and increased physical activity will help prevent and improve diabetes, heart disease, and pregnancy outcomes. Among all cancer types, age adjusted mortality rates for three are higher for Northeast Texans compared with state rates; these include lung cancer, colorectal cancers, and melanoma [1]. Education about behaviors to reduce cancer risk as well as increased availability of screenings for colorectal, prostate, and breast cancer for early detection and treatment will be addressed, especially among high risk populations. Innovative skin cancer prevention and screening education will be explored for delivery through various venues such as AgriLife Extension programs in addition to education for primary care providers.

Specific strategic objectives and actions targeting smoking cessation will build on the model demonstrated in the UT System's statewide Eliminate Tobacco Use Initiative. As a result of this initiative, UT Health Northeast updated its tobacco policy to include the prohibition of electronic cigarette/electronic nicotine delivery systems use on campus. The local UT Health Northeast Tobacco Cessation Committee drafted a tobacco free hiring policy for adoption by institutional leadership. It also hosted a College Tobacco Summit at Tyler Junior College to recognize representatives from the region's colleges and universities that have strong tobacco cessation policies. The conference encouraged academic institutions without a

Unfortunately, Northeast Texas greatly exceeds the state average in patients suffering from mental health diseases. More than 14% of respondents to the ETCH Survey of 2016 self-reported being diagnosed with depression. This is more than twice the rate for TX and U.S.[3]

"tobacco-free" policy to adopt one. The UT Health Northeast Tobacco Cessation Committee remains available to provide technical assistance for policy development and adoption. Conference publicity increased awareness and discussion of ramifications of tobacco use beyond the campuses.

Behavioral and Mental Health Priorities

Both forum and survey participants identified persons with mental illness among the top populations in need of services. However, respondents to the ETCH Survey did not cite mental health as a priority health issue however, the self-reported health status of survey respondents indicates otherwise. Table 7 presents the per county frequency of ETCH Survey participants who reported having a diagnosis of depression or anxiety from a medical doctor.

	Depression	Anxiety		Depression	Anxiety
Anderson	21.4%	15.7%	**Hunt**	10.7%	14.6%
Bowie	25.8%	20.4%	**Lamar**	13.0%	19.6%
Camp	10.0%	11.7%	**Marion**	10.3%	15.4%
Cass	18.2%	15.0%	**Morris**	17.5%	17.5%
Cherokee	8.3%	10.4%	**Panola**	11.4%	12.9%
Delta	8.3%	16.7%	**Rains**	10.5%	13.2%
Fannin	8.0%	4.0%	**Red River**	21.6%	10.8%
Franklin	7.7%	7.7%	**Rusk**	20.2%	21.0%
Freestone	8.7%	13.0%	**Smith**	13.1%	14.3%
Gregg	16.8%	14.8%	**Titus**	8.3%	9.1%
Harrison	20.2%	15.5%	**Trinity**	6.7%	8.3%
Henderson	16.4%	14.5%	**Upshur**	28.6%	24.5%
Hopkins	13.2%	7.9%	**Van Zandt**	10.9%	17.4%
Houston	17.9%	17.9%	**Wood**	16.2%	11.8%

Table 7. Self-Reported Depression and Anxiety Rates from the ETCHS

These numbers are especially concerning given the trend of increasing age-adjusted suicide rates for Northeast Texas since 2005. In 2014 these rates were 17.4/100,000 for Northeast Texas residents compared with 12.2/100,000 for TX and 13/100,000 for the U.S. Among non-Hispanic Whites the rate is 21.2 per 100,000 Northeast Texas population, 18.4 per 100,000 for Texas, and 16.4 in the U.S. [1] Lack of mental health counseling services was indicated as one of the greatest community needs.

Data from the 2015 County Health Rankings [7] is summarized in Table 8 below. The number of poor mental health days and poor physical health days are reported for the previous month.

	Mental Health Provider Ratio	Poor mental health days	Poor physical health days		Mental Health Provider Ratio	Poor mental health days	Poor physical health days
Texas	990:1	3	3.5	**Hunt**	1,300:1	3.3	3.7
Anderson	2,400:1	3.3	3.6	**Lamar**	1,010:1	3.3	3.6
Bowie	970:1	3.4	3.6	**Marion**	10,150:1	3.4	3.8
Camp	2,520:1	3.4	3.8	**Morris**	6,370:1	3.3	3.5
Cass	5,040:1	3.3	3.6	**Panola**	23,770:1	3	3.2
Cherokee	1,110:1	3.5	4	**Rains**	2,760:1	3.1	3.2
Delta	2,620:1	3.3	3.5	**Red River**	4,150:1	3.4	3.8
Fannin	800:1	3.2	3.5	**Rusk**	4,150:1	3.1	3.5
Franklin	3,530:1	3.1	3.3	**Smith**	960:1	3.2	3.5
Freestone	4,940:1	3.1	3.4	**Titus**	1,910:1	3.4	3.9
Gregg	720:1	3.3	3.7	**Trinity**	7,110:1	3.4	3.8
Harrison	4,490:1	3.3	3.6	**Upshur**	3,100:1	3.1	3.3
Henderson	1,980:1	3.4	3.8	**Van Zandt**	3,310:1	3.2	3.4
Hopkins	1,710:1	3.3	3.6	**Wood**	2,520:1	3.2	3.4
Houston	4,550:1	3.4	3.8				

Table 8. Mental Health Providers and Status from 2015 County Health Rankings for RHP 1

Among behavioral health-related issues reported, substance abuse was cited. Survey respondents indicated the top three substances abused within the region are methamphetamine, prescription drugs, and marijuana. A lack of alcohol/drug counseling and treatment ranked as the fifth most difficult service to access. A better understanding of the local factors that contribute to these population health issues is needed to guide strategic interventions.

Co-morbidities of chronic mental and physical health conditions frequently occur. Therefore, a more holistic approach to health and well-being is indicated. UT Health Northeast has implemented programs to train professionals in behavioral health specialties, integrate behavioral and mental health assessment and treatment with primary care and has engaged with Local Mental Health Authorities to facilitate primary care in mental health clinics.

Section 6: Availability and Gaps in Technology and Infrastructure to Support Population Health

Background

The implementation of health information technology (HIT) is among the most important components of institutional planning for a Population Health Strategy (PHS). Adoption of an electronic medical record (EMR) is a key element for the requisite data infrastructure to support population health. A wide range of other applications will be required to properly engage patients in their own care so that collectively, the health of the regional population is improved and validated with health data. Moreover, systems must be constantly reevaluated in response to or in anticipation of rapid changes in technology, new government regulations and new clinical practice guidelines.

Technology can play a key role in population health at the patient level by improving access to care using telemedicine, improve individual care through coordination of services supported by an integrated and comprehensive EMR. The ability to easily generate accurate data for required and benchmark reports would benefit the financial and quality improvement status of the institution. At the community level, technology can support improved health outcomes by delivering access to broad spectrum health and wellness information of local relevance.

Available Technology

UT Health Northeast has implemented an integrated EMR system and has an active EMR Leadership committee of physicians, clinical staff, and IT personnel that oversee modifications, expansion, integration, and training processes to optimize care delivery. This active committee is continually assessing opportunities to strengthen data collection, evaluation, and reporting to improve patient outcomes and thereby population health.

NETnet provides a significant connectivity hub across the region for educational programming and more recently demonstrating telemedicine support for effective clinical assessment of patients in locations remote from the UT Health Northeast. A DSRIP project was designed to establish video connectivity between healthcare providers, mental health providers, and law enforcement to deliver psychiatric assessment of individuals for appropriate placement, either for mental health care or incarceration. This model could be expanded to provide a range of services in underserved communities across the region. Project reports to the Centers for Medicare and Medicaid indicate that roughly 650 encounters using the telemedicine network were made for mental health assessment per project year

that would not have otherwise been available. The program has garnered a high level of satisfaction by all parties engaged in the process.

Gaps

Routine assessment of information technology capabilities and gaps is an important process within each health care organization to keep current with innovations and changing reporting requirements. The UT Health Northeast EMR platform is striving for uniform data capture of patient information, service utilization, and coordination of care between the in-patient care and outpatient settings. This comprehensive EMR will reduce fragmented services, support proactive management of co-morbidities, and enable health analytics to stratify patients for appropriate levels of intervention including preventive care. For population health benefit, care management stratification allows providers to allocate resources appropriately for disease remediation with increased focus on keeping relatively healthy patients well by attending to preventive care and education. The Agency for Health Research and Quality (AHRQ) describes segmenting patients for quality purposes in which providers must be able to identify subpopulations of patients who might benefit from additional services. Examples of these groups include: patients needing reminders for preventive care or tests; patients overdue for care or not meeting management goals; patients who have failed to receive follow-up care after being sent reminders; and patients who might benefit from discussion on risk reduction.

At UT Health Northeast coordination and continuity of care that could be provided through automated reminders to clinicians and patients is not currently available. The ability to generate data in support of program metrics, predictive analytics, and financial reporting is not easily produced and currently requires manual validation. Integration of a comprehensive patient information platform would improve care through enhanced efficiency, quality, and value for patients. The ability of healthcare providers to share de-identified patient data in a uniform format (per available Health Information Exchange [HIE} protocols) can facilitate population health monitoring for the region. The UT Health Northeast EMR system does not include a mechanism to pool de-identified patient data. Thus, UT Health Northeast has the opportunity to lead in working with the region's health providers in adopting secure HIE protocols and creation of a regional data repository to support health status analytics. It is yet to be determined whether the expertise needed to design, implement, and

Healthcare data systems often operate independently without a mechanism to link patient care information. This often results in inaccurate and incomplete information about patients who may receive care from multiple providers.

manage a regional HIE is locally available. UT Health Northeast has access to resources within the UT System to help guide the strategies necessary to address this technology gap.

An institutional scan of information technology capabilities and infrastructure was recently completed to support institutional and regional health analytics for initiatives in population health, health data reporting, and data capture. Table 9 is a snapshot of key population health indicators, technology gaps, and their relative importance in monitoring population health status.

#	Population Health Initiative	Population Health Strategy	Gaps in Technology	Population Health Benefit	Impact H=High M=Med L=Low
1	Patient Care Coordination	Selfcare - happens away from Hospital/clinic	Integrated EMR	Total Patient Care, improved outcomes	H
2	Patient Assessment	Stratify population by risk group, disease status, treatment compliance	Fragmented EMR systems	Target resources, early intervention, improve resource coordination	M
3	Patient Engagement	Monitor patient adherence to care plan, promote preventive & wellness services	EMR template lacks population health indicator tracking or follow-up prompts	Provide patient support, reduce hospital readmission, increase immunization & screenings	H
4	Quality outcomes	Clinically appropriate use of diagnostic tests, adherence to evidence based standards	EMR lacks auto data report for national registries	Providers follow quality care guidelines, over processing waste is reduced	L
5	Telemedicine	Access to care, continuity & coordination of care health & wellness education, health professions training	Limited connectivity sites, secure patient portal for electronic media	Continuity of care, improved health outcomes, opportunity to engage community resources	M
6	Community Partnerships	Health status data for planning and evaluation of health interventions, health screening results linked to EMR	Population health website, processes to support social media campaigns	Reliable source of health and wellness information, community service to support community intervention efforts	H
7	Predictive Analytics	Predict no show rates and length of hospitalization	Currently not in place	Flag at risk patients for intervention & support	H
8	Health Status Indicators	Monitor patient population against targeted outcomes	Not currently included in EMR, unable to de-identify care profile	Contribute to regional data repository to monitor population health status	M
9	IT Readiness	IT preparedness to adapt to upcoming quality outcomes reporting	Task group assigned to assess & recommend compliance upgrades	Achieve compliance with reporting requirements of various agencies	L

Table 9. Population Health Indicators, Technology Status, and Urgency to Address Gaps

Section 7: Population Health Workforce at UT Health Northeast - Availability and Gaps

Availability

With the mission to serve Northeast Texas and beyond through excellent patient care and community health, comprehensive education, and innovative research, UT Health Northeast is well positioned to focus on Population Health in Northeast Texas.

Education: UT Health Northeast values education and invests in providing Northeast Texas with quality graduate programs and training. Most recently, UT Health Northeast opened the School of Community and Rural Health (The SCRH). Existing faculty specialized in Occupational Health and Preventive Medicine combined with newly recruited, renowned faculty establishes the foundation for this new school. A Masters in Public Health (MPH) will be the first degree awarded, with more degree programs to follow. The MPH will focus on applied principles ensuring students first-hand experience in public health. Epidemiology; biostatistics; community health; occupational and environmental health; healthcare policy, management, and economics; and rural health combined with other public health disciplines fulfill the educational components of the MPH program. Experts in these fields will assist UT Health Northeast and partners across the region with data collection, data analysis, and program evaluation. The first cohort of students matriculated in January of 2017.

UT Health Northeast provides excellent residency training programs in Family Medicine, Rural Family Medicine, Internal Medicine, Occupational Medicine, and Clinical Psychology. A Psychiatry residency program will be added in 2017. Family Medicine and Internal Medicine Residents receive extensive training in diagnosing and treating patients with diabetes and other chronic diseases. These residents practice in clinics either currently recognized as Patient Centered Medical Homes (PCMH) through National Committee for Quality Assurance (NCQA), or clinics working towards NCQA recognition. The UT Health Northeast Family Medicine Residency Program has the highest retention rate of Texas Family Medicine physician post-graduation and, a high rate of retention in East Texas. Occupational Medicine residents are trained in Total Worker Health which builds on the recognition that work is a social determinant of health. Health status is important to worker safety and productivity; the work environment can influence health status. As such, residents learn first-hand the importance of treating the whole patient.

UT Health Northeast acknowledges the significant behavioral health issues plaguing Northeast Texas. Mental health and substance abuse inundate the region and a majority of communities lack the

resources needed to care for these substantial health issues. Recognizing that the family physician may be the only available provider, UT Health Northeast has integrated behavioral health training into its Family and Internal Medicine residency training programs and respective continuity clinics. Behaviorists work alongside primary care providers to assist patients with mental health issues. The addition of a psychiatry residency program will expand the infrastructure by producing more primary care physicians trained in behavioral and mental health. In turn, these physicians are more likely to remain in the Northeast Texas region after completion of their residency training.

Community Health Workers make home visits to assist patients with practical solutions needed to comply with chronic disease management plans.

In 2013, UT Health Northeast embraced the role of the Community Health Worker (CHW) and began a training program in partnership with Texas East AHEC. This program produced more than fifty DSHS certified CHWs that year. UT Health Northeast also partners with Tyler Junior College to offer a CHW certification program. The training program team continues to promote the benefits of CHWs as health care extenders and reinforces to providers the positive impact CHWs have on population health. This team has worked with the Department of Labor to establish apprenticeship sites to expand the CHW model throughout Northeast Texas. In total, UT Health Northeast has trained more than 100 CHWs since 2013 and works with community partners to offer continuing education and job placement. Many of these CHWs teach diabetes education classes within communities at local centers and churches. They also make home visits to help patients identify practical solutions needed for chronic disease management compliance.

Research: UT Health Northeast places great emphasis on research. Focal areas of basic research include, but are not limited to, lung injury and repair, infectious lung disease, and cancer (including lung and breast). The work done by more than 26 researchers, many of whom are nationally known, contributes to innovative disease treatment and prevention.

UT Health Northeast participates in a variety of applied research projects. One such hub for this activity is the Northeast Texas Center for Rural Community Health. The Center manages UT Health Northeast DSRIP projects as well as other population health initiatives, and implements evidence-based interventions throughout the Northeast Texas region. These projects, discussed in Section 4, range from home visiting programs designed to provide parents with tools to become their child's first teacher to palliative inpatient and outpatient services. These evidence-based interventions are routinely evaluated

using specific metrics and outcomes designed into the projects. The efficacy of each program is monitored, and lessons learned are compiled to assist with replication of the projects across the state.

Gaps

While UT Health Northeast provides education and research in a multitude of areas, gaps still remain within the Northeast Texas Population Health workforce. The ability to select, interpret and apply health data from a variety of sources is integral to planning, program assessment, and quality improvement processes. Epidemiologists and biostatisticians are the public health professionals trained in research methodology, data analysis, and report development. There is a shortage of epidemiologists and biostatisticians at UT Health Northeast and across the region.

> *The gaps in population health are expanded by additional variables such as access to care, cost of care, and the lack of collaboration, coordination, and communication between the populations*

Northeast Texas also has a shortage of mental health professionals. More than 85% of counties in the region have a shortage of mental health providers [13]. The ETCH Survey results indicate a prevalence of diagnoses depression/anxiety two to three times higher than the national average of 6.7% [14]. This higher incidence of mental health diseases combined with a provider shortage exposes a great need in the region for expansion of training and retention of mental health providers.

Another workforce gap is the lack of formal public health training among executive and director level administrators at local health departments, hospital systems, and state health agencies. Education and training on the core disciplines of public health are crucial to understanding and ultimately addressing, population health needs. Furthermore, even for those who do possess some form of public health training, the issues specific to rural populations may not have been addressed during training. The School of Community and Rural Health will address this gap by incorporating rural health perspectives and applied learning experiences in all course offerings.

Perhaps the greatest gaps in population health across the nation exist between health care providers and the communities they serve. Although the goal of healthcare is patient health, the majority of healthcare providers remain focused on treating illness and chronic disease management in an acute care setting, rather than through preventive services and health promotion in communities or populations. These gaps in population health are expanded by additional variables such as access to care, cost of care, and the lack of collaboration, coordination, and communication between the populations served, providers, programs, and payers. Additionally, the lack of a standardized electronic health record or data repository to track and trend populations, contributes to waste, variation in care

and treatment, and fuels the fragmentation of care. Healthcare systems typically operate independently of each other, resulting in inaccurate and incomplete information about patients. This fragmentation has resulted in duplicated efforts, lack of continuity of care, inflated cost of care and inability to manage the health of populations across the span of life.

UT Health Northeast is focused on closing the gap between existing health care delivery systems and promoting health of populations. Our goal is to develop strategies and build the infrastructures necessary to support a new environment of healthcare which promotes health across the continuum of life. The School of Community and Rural Health will provide education and research to address rural populations and provide training in practical applications to improve the health status of East Texas and beyond. The success of the program begins with bringing together the expertise of faculty with diverse educational backgrounds and experience in public health. Additional contributing resources include Family and Internal Medicine faculty, Psychiatric Residency and Psychology faculty, and Tyler Junior College faculty in the community health worker program. UT Health Northeast also has strong collaborative relationships with the Tyler Junior College nursing and dental programs. UT Health Northeast maintains significant collaborations with faculty at the UT Tyler campus who have expertise in the areas of undergraduate health studies (including health and kinesiology, nursing, biology, and psychology), as well as graduate programs such as pharmacy, health care management specialization, executive business healthcare management, nursing, health sciences, kinesiology, clinical mental health counseling, and clinical psychology. Each discipline is impactful on the current and future state of population health in the East Texas region. Additional relationships with faculty at other colleges in the region that offer health related programs further expand the robust scope of knowledge, diversity, and expertise available to the new Master's in Public Health program.

Although the faculty of the School of Community and Rural Health represent a vast range of expertise, there are opportunities to strengthen and formalize relationships with other colleges, universities, and healthcare organizations across the region. Building and solidifying these relationships will help achieve the goal of providing excellence in education and research for the health care leaders of tomorrow. Inclusion of experts from neighboring academic and clinical institutions will help to bring a unique perspective and applied knowledge and experience to the rural setting of East Texas.

Another area of opportunity is improvement in the cohesiveness of information technology in health management systems. The fragmented information technology infrastructure and a lack of expertise required to support a more global effort of population health management across the region is

a critical gap. Health Information Technology education and infrastructure support is essential to provide accurate baseline information for the evaluation of evidence based population health programs. This is not unique to this region, but is pervasive across the nation. Currently, there is no consistent health record, data repository or health information exchange (HIE) that meets this critical need. Nor is there sufficient expertise in the regional workforce to evaluate and recommend essential changes. The challenge of tracking health maintenance activities, minimizing redundancy, reducing variability and sharing best practice in care across the region is limited. As a leader in this region, UT Health Northeast is in a strategic position to have a profound impact on solving this dilemma. UT Health Northeast could spearhead stimulating dialogue across academic and healthcare organizations throughout the region, challenging them to collaborate in designing a systematic methodology for sharing health information while maintaining the integrity and privacy of the system.

UT Health Northeast will be instrumental in embedding evidence- based community, public health, clinical and leadership program models, theories and practices into action with a goal of changing the dynamics of health care delivery and population health management in East Texas. However, fulfillment of this goal will require UT Health Northeast to play a leadership role in managing the health of populations by addressing 1) access to patient-centered care, 2) team based care, 3) population management, care management and support, 4) care coordination and transition, 5) performance improvement, 6) evidence-based practices and healthcare research across communities, 7) community agencies providing health care or associated services, 8) public health boundaries, 9) educational institutions, health care providers and organizations across the region and beyond.

The potential impact of The School of Community and Rural Health to improve population health of this region is not based on the shortages or gaps but in the ability to maximize the expertise of internal and external resources to structure a highly-integrated curriculum. The SCRH is a catalyst to bring a cohesion to the myriad population health resources in the region to produce graduates who demonstrate a holistic and systematic approach to managing the health of populations across the life span.

UT Health is in a pivotal position as the only academic and research health care institution in this region to focus on population health from a research, educational and applied frame of reference.

Section 8: Assessment of Additional Needs to Address Population Health Priorities

The Health Status of Northeast Texas–2016 provides an excellent analysis of standardized datasets and establishes a baseline against which to measure future population health status. This information has been augmented by community-based input gathered through forums and the ETCH Survey.

Research

Further research is needed to understand and address the barriers and challenges to healthy living in East Texas communities. Research will be needed to validate the effectiveness of interventions designed to address specific health priorities. Continued data collection could provide additional information on the needs and challenges of specific population as access to nutritious food, the built environment, technology access, transportation services, and local policies that impact health. Targeted surveys of stakeholders in city and county government, managed care organizations, and service groups could provide key information documenting service access challenges, need for better communication about available services or point to opportunities for complementary efforts to address needs.

Future surveys should assess the health status of services available for children and adolescents in the region. A focus on youth health status, risks, physical activity, obesity, behavioral risks, and mental health assessment is needed. For example, childhood obesity was not identified as a significant health issue in the ETCH although is it a widespread problem that contributes to early onset Type II diabetes and other chronic diseases.

Although the goal of healthcare is stated to be health, most healthcare providers remain focused on treating illness and chronic disease management in acute care settings, rather than preventive services and health in communities or populations.

Centers for Medicare and Medicaid Services (CMS) requires hospitals to conduct community assessments every three years. Under the aegis of The SCRH, a single survey tool could be developed and administered on behalf of all hospitals as a research project jointly funded by the hospitals and the regional consortium (see Section 9). This would facilitate development of a collaborative, region-wide assessment tool to meet CMS requirements and encourage jointly developed responses to population health needs.

Community Health Services

A complete inventory of available resources within each community and county would identify gaps and opportunities for collaboration, and maximize effectiveness of responses to priority needs. Identification of local services, groups, and faith-based organizations could further expand opportunities for preventive health care delivery and public access to health information for disenfranchised community members. For example, adult day care and drug and alcohol recovery support is an unmet need in many communities. These could be addressed with greater awareness of existing services, support groups, and/or assistance programs. More than 45% of ETCH Survey respondents indicated that they did not know where to find help in their area. Thus, there is a need to widely and consistently disseminate information about available services.

Models for the creation of effective public health teams are available to help community leaders accurately identify and manage population health risks [15]. Community leaders must be made aware of and be provided with access to evidence-based publicly available toolkits, health statistics data, and health improvement strategies designed specifically for rural areas. For example, data suggests that the creation of safe neighborhoods improves public health outcomes [16]. Evidence-based models and best practices are publicly available. These resources should be shared with community groups to facilitate adoption of policies and programs to influence positive health outcomes. Each community should have a designated safe place to demonstrate and encourage safe physical activity areas for rural residents of all ages. Availability of these resources should be widely disseminated to facilitate use [16]. Other successful interventions include mobile technology (text messaging reminders) for diabetic weight management [19] and texting to promote use of perinatal care resources [20].

Opportunities for innovative approaches exist to address unmet community needs. For example, EMS providers contribute valuable services throughout many rural areas in East Texas. EMS services were rated as accessible by 73% of respondents. As demonstrated in a DSRIP project, law enforcement is often the first contact to report public disturbances even when it is known locally that an underlying mental health issue exists. This creates an inappropriate use of resources. EMS field personnel might receive additional training to become first responders for certain mental health situations. This model has been documented and could reduce the burden for law enforcement officers [21]. Another approach to explore is innovative use of existing facilities. As publicly funded entities, libraries and schools could serve as community hubs for health education programs and preventive care such as immunization or pre-natal education centers.

Given the rural and often isolated character of the region, public transportation as traditionally provided may not be feasible or effective. Lack of transportation was identified by 61% of the respondents as a major health concern for this region. Although some transportation services are available, eligibility is confusing and often entails extended wait times for the patient involved. More information is needed about local transportation initiatives, publicly funded transportation programs, unmet needs and innovative approaches since limited transportation can impede access to health care, nutritious food, and other services that impact health status.

Education & Clinical Care

The Patient Centered Medical Home model promotes coordination of care and whole person treatment. Interdisciplinary team practice and population health principles should be incorporated into all residency, accredited training, and certificate programs.

Depression and anxiety exceeded the national norms in health problems experienced by ETCH Survey respondents. Depression was self-reported by 14.9% of survey respondents; the 2015 National Survey on Drug Use and Health results estimated that 6.7% of U.S. adults experienced at least one major depressive episode in the past year [22]. Anxiety was reported by 14.6 percent of survey respondents. This compares with a 12-month prevalence rate of 3.1% of U.S. adult population [23]. In addition to the high rate of depression and anxiety, the survey identified mental health counseling, adult day care for those mentally impaired, and drug and alcohol counseling as the most difficult services to find in East Texas. This shortage of mental health professionals is being addressed by UT Health Northeast through a Psychiatry Residency in the fall of 2017. In five years, the Psychiatry Residency program will be eligible to add a child/adolescent program which is being pursued proactively. The UT Heath Northeast already has a Clinical Psychology Residency program which in conjunction with the new Psychiatry program should be leveraged to gain accreditation for the training of other mental health professionals (Nurse Practitioners and Physician Assistants) and to attain mental health specialty status. Community Health Workers are able to take additional training in order to provide mental health support for clients; promotion of this training program should be expanded.

In addition to the residency programs designed to help address the shortage of mental health professionals in the region, The SCRH should recruit students interested in delivering population based mental and behavioral health services. Given the shortage of public and mental health professionals in East Texas, UT Health Northeast must make an effort to recruit SCRH students that reflect regional demographics. This will help ensure that future health professionals appropriately represent the diverse

population in the region. Scholarship support for students pursuing advanced degrees in public and mental health may be an essential recruitment tool. Additional degree emphasis should include a mental health track for MPH and future doctoral degree candidates.

The SCRH is an important strategy to improve population health. The founding faculty has deep roots in East Texas with credentials and experience to provide students with the skill set necessary to address the needs of rural East Texans. Expertise in community-based participatory research and rural public health principles should be augmented with course work in health informatics and health analytics to meet the current demand. These topics should be offered as degree emphasis topics for MPH students and doctoral program initiates as soon as possible. Health informatics should also be a required competency skill for all MPH, PhD public health graduates and all UT Health Northeast residency training programs.

As a model of expanding access to preventive services currently lacking in many of our rural communities, the Rural Health track for Family Medicine residents is a successful program that could be expanded and adopted by the Psychology and Psychiatry Residency programs. UT Health Northeast could also explore innovative models of delivery of primary health care in small rural communities. This might entail use of telehealth/telemedicine. Another innovation might be the staffing of a mobile clinic(s) using the "Traveling Doctors model" of providing bi-annual clinics in unserved communities of East Texas.

Population health status of the region is influenced by individual health practices. Models exist that use bio-feedback technology for weight management, blood pressure, and smoking cessation. Smart scales, blood pressure devices, smart health kiosks, and specially configured iPads and tablet computers are already available in urban areas for patient follow-up care [24]. Demonstration projects should be pursued to determine whether these are effective tools for use in rural populations.

To help facilitate collaboration and community level activities to address health and wellness, a Population Health website with readily available health data, community health resource inventory, program grants and contracts, community partnerships, population health initiatives, publicly available toolkits, and resources available through Medical Libraries would significantly contribute to the promotion of a culture of wellness. An electronic newsletter for internal and external distribution focused on population health matters across the region is a tool that should be implemented by UT Health Northeast.

UT System - Additional Support for Population Health Initiative

To help improve the health of communities, several actions could be taken by UT System that would greatly impact health across the state, and establish the UT System as a national leader in population health. These include 1) implementation of a uniform, comprehensive EMR/HIE system that links data from all UT Health Northeast campuses to support population health analytics, 2) continuity of care, and 3) uniform data reporting. UT System could create a website dedicated to population health with resources for professionals and the public that are easily accessible. To foster system-wide collaboration among the health science and academic campuses, learning collaboratives should be convened to share cross-disciplinary approaches to problem-solving, innovative approaches to population health issues, and encourage cross-disciplinary training, mentoring, and research.

To support local population health improvement efforts, multi-level collaborations such as the Eliminate Tobacco Program could be accelerated with access to program resources. Development of similar system-wide campaigns to address modifiable health behaviors would elevate the importance of targeted health issues. The production of good quality UT System webinars for easy and universal access by sister institutions addressing a variety of population health issues and detailing successful programmatic models would be a significant and credible contribution to the promotion of health and wellness.

There are many challenges to creating a unified focus on population health. However, there are many resources currently in existence. The region has a corps of individuals and institutions dedicated to being change agents for the improved health of their communities. Building relationships, providing data, supporting innovative use of available resources, and a shared vision of a health outcomes driven system are essential elements to which the UT System and UT Health Northeast can contribute to the benefit of Northeast Texas residents.

Section 9: Plan and Strategy to Implement Population Health

Strategic Plan Development Process

The UT Health Northeast Population Health team was assembled to guide the development of a population strategic plan for the institution in a format complementary to those from other UT System Health Centers. The planning committee consisted of physicians, nurses, public health specialists, and allied health professionals. The team met regularly over a nine-month period to develop components of this plan for review and approval by the Executive Leadership of UT Health Northeast. Information gathered from area stakeholders and UT staff was considered to identify community priorities and determine the role that UT Health Northeast could adopt to improve the health status of Northeast Texans in the RHP 1 28-county area defined by the 1115 Waiver.

Population Health Focus Areas

Data from multiple sources substantiate the poor and declining quality of health among residents of Northeast Texas. Age-adjusted mortality rates for the leading cause of premature death in the region are attributable to heart disease, cancers, chronic lower-respiratory disease, strokes, and unintentional injuries. Congestive heart failure is the primary cause of death among heart disease patients. It is higher for males than females and higher among AA/B than white members of the population. Cancers contribute to the second most frequent mortality rates in the region. Lung cancer death is the most common; with the highest mortality rates in Trinity, Marion, and Bowie counties. Colorectal cancer is a leading cause of death for AA/B males compared with other races and females in the region, while breast cancer is the second leading cause of cancer deaths among women. Although female breast and male prostate cancers have the highest incidence rates, the highest percent of new cancer cases in the region is lung cancer [1].

The third leading cause of age-adjusted mortality for this area of the state is chronic lower respiratory disease which includes COPD: white males experience the greatest rate of death due to this disease. Deaths resulting from stroke, the fourth leading cause of death, are substantially higher in Northeast Texas compared to the state with AA/B males in the region are over-represented. Unintentional injury is the fifth leading cause of death in the region. Motor vehicle accidents (MVA) are the major contributor to this category. Age-adjusted mortality rates show that the population at greatest risk for MVA death is white males. Deaths attributable to mental and behavioral health issues include suicides. Since 2005, suicide rates in Northeast Texas have been consistently higher than in

Texas overall and the U.S. Suicide rates are nearly double among Whites compared to AA/B and there is an upward trend in deaths from suicide [1].

The high prevalence of chronic diseases in Northeast Texas that contribute to poor health status include diabetes, kidney disease, HIV-AIDS, and tuberculosis. Each of these diseases and the overall health of the population can be influenced by addressing modifiable health behaviors.

Community Needs and Priorities

A major health data resource for the region became available with the publication of the *Health Status of Northeast Texas–2016* report, which profiles morbidity and mortality outcomes for HSR 4/5N. Local data were collected by UT Health Northeast in the summer of 2016 to better understand county level perceptions of priority health issues, populations in need, and identified barriers to healthy lifestyles. Although there was some variance across counties the top health/disease concerns reported were diabetes, heart disease, cancer, high blood pressure, adult obesity, and substance abuse.

> ***UT Health Northeast***
>
> ***Mission***
>
> *To serve Northeast Texas and beyond through excellent patient care and community health, comprehensive education, and innovative research.*
>
> ***Vision***
>
> *We will be a great institution, unified in common purpose, to benefit human health and to improve quality of life.*

UT Health Northeast Commitment to Population Health

As the sole university medical center in the region, UT Health Northeast is well-positioned to lead efforts, in partnership with other organizations and communities, to facilitate and support development of regional collaborative efforts to improve the poor health status of the Northeast Texas population. Several critical developments for the UT Health Northeast campus provide a foundation and framework to support its regional leadership role in population health. UT Health Northeast has served as the anchor institution for the Medicaid 1115 Waiver since 2011. Collegial relationships have been formed with physical and mental health care providers for the 28-county region of RHP1. As part of the 1115 Waiver, UT Health Northeast developed and implemented Delivery System Reform Incentive Payment (DSRIP) partnership projects with Christus St. Michael Medical Center in Texarkana, Good Shepherd Medical Center in Longview, and Palestine Regional Medical Center in Palestine. Mental Health projects were also planned and implemented with Local Mental Health Authorities (the Andrews Center and Community Healthcore), Palestine Regional Hospital Behavioral Health Unit, and Good Shepherd Medical Center ER.

In line with our institutional commitment to population health improvement, other partnerships have been established through robust research and service projects and diverse regional initiatives with other UT campuses. Most notable are joint efforts with UT System, MDACC, UTMB, UTSPH-Houston, UT Southwestern, and UT-San Antonio campuses. Other significant and long-standing collaborative efforts include partnerships with DSHS and its regional office, local health departments, Texas AgriLife Extension Service offices, and Educational Service Centers. The UT Health Northeast biomedical, occupational health and preventive medicine, and clinical researchers have an outstanding track record of securing extramural funding for basic and applied research.

In support of improving the health of communities, UT Health Northeast is preparing the next generation of healthcare professionals. Innovative training exists in the Graduate Medical Education (GME) approved residency training programs in family practice (including a rural medicine practicum), occupational medicine, internal medicine, and psychiatry. These programs include practical clinical experience that expands access to care. A clinical psychology internship expands access to much needed mental health services for patients in the communities hosting the intern. UT Health Northeast has the infrastructure, credentials, and expertise to sponsor and endorse continuing education programs for physicians, nurses, and allied health professionals. It houses the only medical library in the region providing access to a national network of resources. The hospital provides state-of-the-art cancer screening, diagnostic, and treatment services. Through a formal partnership between UT Health Northeast and MD Anderson Cancer Center, Northeast Texas residents now have convenient access to MD Anderson's treatment protocols, standards of care, extensive clinical trials, and translational research delivered by the excellent faculty and staff of the UT Health Northeast Cancer Center.

UT Health Northeast clinics have instituted the Patient-Centered Medical Home model of team care delivery that is an important element of a population health approach to care. UT Health Northeast is home to the only Occupational Health Clinic in the state recognized by the Association of Occupational and Environmental Clinics. Behavioral and Mental Health care services include resident and out-patient psychiatric care, psychological/behavioral counseling, and integrated behavioral medicine training for family and internal medicine residents implemented as a DSRIP project. UT Health Northeast has a long history of innovative pulmonary disease research, clinical trial participation, and treatment of lung diseases including COPD, TB, and asthma.

To expand the academic enterprise of the institution the UT Board of Regents approved degree-granting status to UT Health Northeast. The first educational program accredited by the Southern

Association of Colleges and Schools Commission on Colleges (SACSCOC) was the Master of Science degree in Biomedical Technology. This paved the way for subsequent program offering of the Master of Public Health degree to be granted through the School of Community and Rural Health.

The Population Health Strategic Plan below will describe the role of UT Health Northeast as a leader and active collaborator building and expanding partnerships that contribute to improving the population health status of the region.

Strategic Aims

Goal 1. EDUCATION: Establish the School of Community and Rural Health (SCRH)

Objective A. Operationalize the UT Health Northeast School of Community and Rural Health

Start Date	Target Metric	Responsible Party
January 2017	Award M.P.H. degrees	Dean of the School

Practicum experiences provide key experiential learning opportunities for post-graduate students and applied training in rural venues. Partnerships for practicum placements will be arranged with DSHS, local health departments, community organizations, businesses, and others to provide a mutually beneficial and productive experience in the application of population health programs/initiatives.

It is anticipated that as The SCRH becomes established, an ongoing review of population health issues will guide additional degree emphasis options such as behavioral, mental, and health promotion tracks. The SCRH will also be responsive to opportunities such as developing an 'Executive' style course designed specifically for professionals in health departments, hospitals, and other agencies, who desire formal training in public health principles.

Objective B. Develop collaborative, community-based applied research projects to 1) understand factors that contribute to poor health outcomes, 2) assess and address local barriers to care and healthy lifestyles, and 3) promote the use and evaluation of evidence-based programs to promote healthy lifestyles.

Start Date	Target Metric	Responsible Party
March 2017	Establish 6 practicum placements with range of organizational partners	TBN
September 2017	Submit three community-based population health research proposals	SCRH Faculty

Using data from the East Texas Community Health Survey, faculty and students will engage community leaders to provide support for obtaining local data, application of data/research, research design and conduct, recommendations for potential evidence-based interventions, and assistance with the design interpretation, and evaluation of population health intervention programs.

Faculty members are expected to secure extramural funding for research and community service. Mutually beneficial opportunities may arise through work with community based agencies and community leaders. Identified needs for community based research or programs create an opportunity to match faculty expertise, students, and other resources to develop competitive funding proposals and potential funding sources.

Models of health intervention programs for rural population and evaluation of effectiveness is underrepresented in the academic literature. The applied rural focus of the M.P.H. program provides the opportunity for SCRH students and faculty to make a unique contribution to the literature and establish The School as a national leader in applied health interventions for rural populations.

Objective C. Expand UT Health academic programs and serve as a training site for students from other academic institutions.

Start Date	Target Metric	Responsible Party
September 2018	Develop the curriculum plan for one additional track for the MPH degree	SCRH Faculty

UT Health Northeast demonstrated its commitment and ability to respond to workforce gaps based on identified needs. Recent examples include a rural family medicine residency training program, establishing residency programs in psychiatric medicine and clinical psychology. An innovative partnership has been established to bring dental care to underserved patients. The East Texas Community Health Assessment highlighted workforce needs. The process of working with community leaders and providers enhanced opportunities for partnerships to expand training within the M.P.H. curriculum such as developing a mental health track.

A significant non-clinical workforce need is training in health information technology health analytics and IT program administration for rural populations. Academic offerings to provide M.P.H. students with these skills may be developed as a track. UT Health Northeast, independently and/ or in partnership with other academic centers such as UT Tyler or Le Tourneau University, could also offer courses in these topics for non-degree seeking students.

Objective D. Secure resources needed to fully implement objectives for this goal.

Start Date	Target Metric	Responsible Party
In progress	Incorporate 2 program initiatives into ongoing operations with institutional support	Chair, Dept. of Community Health
In progress	Secure formula funding for student enrollment	The Dean

Goal 2. COMMUNITY SERVICE & RESEARCH Establish a regional consortium to improve the health status of the RHP 1 population

Objective A. Convene a UT Population Health Leadership Team to manage the implementation of the approved Population Health Strategic Plan.

Start Date	Target Metric	Responsible Party
January 2017	Name UT Health Northeast Population Health Leadership Team	Chair, Dept. of Community Health
February 2017	Designate dedicated population health staff	Chair, Dept. of Community Health

To significantly improve the health of the region's population it is necessary to establish a framework for a coordinated population health effort within UT Health Northeast. The success of DSRIP project management serves as a model for coordination of internal and external population health activities to achieve measurable improvements in three to five years. Key elements are in place to support implementation of the Population Health Strategic plan. The UT Health Northeast Executive team is committed to improving the health status of the region. Formation of the SCRH has been fast-tracked with UT System support, and the Center for Rural Community Health (The Center) is organized to function as the liaison unit between the SCRH and communities for the initiation of population health activities. A population Health Leadership team will be named and a member of this team will staff the Community Health Improvement Consortium described below. Staff within The Center will be assigned responsibility for interfacing with the population health leadership, other UT Health Northeast

Departments, and external resources for the implementation of the action plan that underpins the strategic goals.

Objective B. Convene a regional Community Health Improvement Consortium

UT Health Northeast will lead the organizational development of a regional consortium for Community Health Improvement. The institution will serve as a founding member, develop a matrix for representative participation, identify and invite other founding members, and draft a membership "Charter" for review and approval by founding committee members. UT Health Northeast, will work with partners to secure program, data, and technical support resources needed to launch the NET Community Health Improvement Consortium.

Start Date	Target Metric	Responsible Party
August 2017	Convene Consortium and adopt a membership charter	Chair, Dept. of Community Health

Key partners will initiate formation of the regional consortium to include representatives from public health, Texas AgriLife Extension, academic/education institutions, LMHAs, health providers, and media in the region. Additional active participants in the consortium will include representatives from food systems, governmental agencies, commercial enterprises, non-profit organizations, and businesses among others.

A small leadership group will draft a consortium 'Charter' modeled after the Texas Health Improvement Network (THIN). This charter will describe the collaborative nature of the group with the purpose to discover/investigate, identify, research, analyze, acquire resources, and plan interventions to accomplish the collective goal of improved health of the regional population. The document will be reviewed annually and modified as needed.

Once convened, the Consortium will work with the public health departments to hold open, well-publicized community meetings to share and discuss the data from the *Health Status of Northeast Texas–2016* report and the East Texas Community Health Survey. This fulfills a commitment to regional partners and demonstrates UT Health Northeast's pledge to facilitate community engagement in response to their identified priority health issues. It is anticipated that local efforts will focus on coordinated interventions that address individual community priority health issues. As an example, some consortium members might address smoking cessation. Members could undertake a range of activities in selected communities, industry sectors, or professional groups and approach the issue from a policy, education, or service perspective to reduce tobacco use in the region.

Establishing and maintaining a focus on engaging children with healthy lifestyle information, best practices, and support is the ultimate strategy to improve population health over time. The four Education Service Centers in the region and Independent School Districts will be engaged by consortium members to plan and implement educational activities that address smoking prevention, food access and healthy food choices, physical activity, and coping skills using publicly available, evidence-based materials.

Objective C. Conduct a regional inventory with stakeholders to identify resources available and needed to address population health issues.

Start Date	Target Metric	Responsible Party
September 2017	Design and populate relational database	TBN

Central to the success of this strategic plan is the development of strong relationships built on mutual trust working to achieve a shared vision. Currently, institutions and communities sponsor activities, programs, and initiatives which sometimes duplicate efforts or miss opportunities. The process of completing an inventory of stakeholder resources for consortia members and communities can be a community building process. Once the inventory of a stakeholder's mission, affiliations, resources, and technology are cataloged, then gaps, duplications, unexpected resources, and opportunities will come to light. Information from this asset analysis can inform the work of consortia members and generate support to influence population health improvement. This resource inventory will be maintained and updated regularly to facilitate practicum, program, and resource development activities of the consortium. This information repository could be managed by the SCRH and hosted on a dedicated Population Health webpage accessible by consortia members and the public with approval of the consortia. Authorized stakeholder information will be regularly updated and accessible in a searchable database to facilitate collaboration and as a resource for partner engagement.

Objective D. Design, populate, and maintain a data repository of de-identified patient health indicators and population health improvement programs in the region.

Start Date	Target Metric	Responsible Party
April 2018	Form guidelines and appoint task force to establish parameters and protocols	TBN

UT Health Northeast, in its capacity as the only academic medical university in the region, will initiate dialog among academic and healthcare entities to collaboratively adopt an existing Health Information Exchange model and protocols to create a data repository of population health indicators. Standardized, current data is needed to analyze trends, evaluate program effectiveness, reveal unanticipated issues, and to guide strategies that address priority health and wellness issues.

Objective E. Secure resources required to achieve this goal.

Start Date	Target Metric	Responsible Party
September 2017	Identify existing and needed resources, cost projection, and potential funding sources	Chair, Dept. of Community Health

Goal 3. CLINICAL SERVICE Advance population health outcomes through clinical improvements

Objective A. Expand access to preventive and primary health care for underserved residents

Start Date	Target Metric	Responsible Party
September 2017	Expand residency placement and/or telemedicine services to 2 underserved areas	UT Health Northeast DIO and Chair, Dept. of Community Health

Public health is a cornerstone to achieve improved population health status. A majority of the counties in the region have no public health entity. Using existing resources, partnerships, and technology, innovative approaches will be pursued to assure access to public health services for residents in each county of the region. Distance learning classes for the public, individual consultations or facilitated group discussions staffed by public health department staff, health care providers, or other experts on the topic of interest could be offered. Shared staff from multiple institutions could provide periodic services in areas without full time providers. This local presence can serve as a source of information on preventive health recommendations such as immunization schedules for children and adults, prenatal care, health and wellness, cancer screening recommendations, and local resources. UT Health Northeast can contribute to clinical improvement by expanding rural residency training placements for medical and allied health personnel and expanding the model implemented in the community of Sulphur Springs.

Another innovative option for the region is to build on the NETnet connectivity and relationships with its academic members to organize and deliver telehealth programs to educate the population about health risk behaviors, disease prevention strategies and healthy lifestyle

recommendations. The interactive capacity of the connection could engage nursing, CHW, or post-graduate students to facilitate group or individual sessions. Partnering with other providers and educators, UT Health Northeast can facilitate the development of innovative approaches (telehealth/telemedicine, partnerships) to improve access to public health/population health in the region. Select school districts and academic campuses with health training programs may serve as service/education delivery sites to provide information and basic health services such as scheduled immunization clinics staffed by medical residents and nursing students.

Objective B. Improve cancer prevention, early cancer treatment, and decrease cancer mortality rates

Start Date	Target Metric	Responsible Party
March 2017	Increase colorectal, breast, prostate, and skin cancer screenings (per guidelines) for all UT Health Northeast clinic patients by 10% per year and for UT Health Northeast employees to 70% compliance	TBN
In progress	10% reduction in UT Heath Employees using tobacco	Tobacco Cessation Committee

Individual health outcomes can be improved with early detection and treatment of cancers. All UT Health Northeast patients will receive coaching on smoking cessation, receive counseling about cancer risk behaviors, and be scheduled for cancer screening per established guidelines. CHWs will be assigned to provide coaching and problem solving to help patients overcome identified barriers to healthy behaviors. Technology to send text message 'tips of the day', or other relevant reminders will be piloted and evaluated for effect on patient behaviors and outcomes.

Implement the partnership agreement with MDACC including the integration of the Tobacco Prevention Program into the UT Health Northeast cancer and pulmonary clinical care service centers. UT Health Northeast psychology and behavioral health faculty can serve as behavior change champions while engaging staff such as CHWs for patient follow-up and counseling.

The proposed Population Health website for access by the public is a tool to improve cancer outcomes. Information on cancer screening recommendations, cancer prevention immunizations (such as HPV), and smoking cessation strategies, would be readily accessible. Links to the Population Health website will be added to the homepage of NET Consortia members and other partners.

Objective C. Expand access to behavioral and mental health services for Northeast Texas residents.

Start Date	Target Metric	Responsible Party
July 2017	Implement schedule for clinical psychology interns and psychiatric residents to provide care for underserved clients	Chair, Behavioral Health

The provision of direct behavioral health services offered by UT Health Northeast can be made available through additional contracts to expand access to services and by increasing referrals to mental health professionals in supervised training programs.

Objective D. Improve the health status of the UT Health Northeast employee population.

Start Date	Target Metric	Responsible Party
May 2017	Initiate planning for UT Health Northeast employees to set personal goals for healthy behaviors.	Chair, Dept. of Community Health

The employee population of UT Health Northeast is a microcosm of the region. UT System makes available many free health promotion tools to encourage employees to adopt healthy lifestyles including daily physical activity, healthy eating, weight management, annual physical exams, and tobacco prevention and cessation. However, a more active promotion of healthy behaviors appears to be needed to improve the health status of UT Health Northeast employees. Therefore, Human Resources and Employee Health will collaborate with The Center and the SCRH faculty to develop, implement, and evaluate a variety of approaches to encourage and support employees to establish a health behavior target or sequential targets as appropriate, to improve their personal health status and that of their dependents. This might include tobacco use cessation, weight loss, increased physical activity, immunizations, or other personal health issues.

UT Health Northeast will promote the Non-smoking hiring policy as well as an internal, evidence-based campaign to urge and support tobacco cessation for employees. This program will include education on the associated health risks, the hazards of smoking while pregnant, available smoking cessation programs, and nicotine replacement therapy options.

Objective E. Secure resources required to achieve this goal.

Start Date	Target Metric	Responsible Party
September 2017	Plan developed and approved by Executive Leadership team	TBN

Implementation Strategy

No single organization can address all component factors that influence the health status of a population. However, an organizational leader can accelerate results by facilitating coordination of planning efforts, identifying collaboration opportunities, supporting coalition development, and assisting with ongoing evaluation processes to inform adjustments as needed. It is important to consider the UT Health Northeast organizational infrastructure and resources dedicated to population health improvement that can be mobilized to lead regional initiatives. The long term institutional commitment to this goal builds on previous successes and strategic growth that supports a unified commitment to promote health and wellness as integral to the health care continuum. UT Health Northeast is poised to be a change agent for population health improvement in Northeast Texas.

Infrastructure for Population Health

Executive Leadership: A Population Health Leadership Team will be formed to monitor and advise on the strategic plan implementation in coordination with other institutional plans and initiatives. It will be comprised of the Dean of the School, the Designated Institutional Officer, the Office of Planning and Public Policy, the Director of the Center for Rural and Community Health, Chief Medical Officer, Human Resources and IT. This leadership group will meet at least monthly to assure consensus on priorities, approaches to engage/enlist participation with key individuals, assure coordination of academic program development, and recommend strategies to garner financial support for population health. This team will review and decide on a course of action in response to UT System and institutional initiatives that may influence population health strategic plan implementation,

UT Health Northeast has experienced significant growth and institutional re-orientation over the past five years. This includes programmatic expansion the Center for Rural and Community Health, DSRIP project integration, creating the SCRH, new residency training programs, a range of grant-funded demonstration projects along with the addition of faculty and staff to successfully administer each. It is critical to the success of the UT Health Northeast Population Health leadership role to designate staff who are responsible for directing and managing the day-to day activities of implementing the population health strategic plan, maintain communication with internal and external partners to assure coordination of efforts, and provide staff support to the members of UT Health Northeast Population Health Executive Leadership team. Designated Population Health staff will also be instrumental in the development of the regional consortium.

Center for Rural and Community Health (The Center). Originally established as the umbrella for management of the 1115 Waiver DSRIP projects, The Center now resides within the SCRH to function as the liaison and outreach arm between The School and communities. The Center is currently staffed with professionals who have outstanding project management experience, have built and nurtured relationships with community partners, and are well-versed in population health principles. Some of these staff also have faculty appointments in The SCRH. Responsibility for directing and coordinating the day to day population health strategic plan activities with faculty, staff, and communities will reside with designated staff in The Center. An effort of this magnitude requires dedicated personnel who can work with UT Health Northeast resources to articulate the intermediate goals, objectives, and specific activities that engage available resources to achieve the strategic goals for population health. This staff must maintain the larger vision and effectively interpret proposed actions to various and diverse audiences across the region. Designated Population Health staff will have complementary skill sets and work together along with the Population Health Leadership Team, to deliver a unified message and maintain a leadership presence of UT Health Northeast for population health in the region. It is anticipated that two individuals will have primary responsibility for coordinating activities required to achieve the population health strategic goals. One position will focus on efforts with external partners such as fostering relationships with the multiple levels of program staff among consortium members and facilitate connections between community members and faculty/students to explore research and health program implementation opportunities. Initiatives may focus on healthy lifestyle choices (such as smoking cessation), fostering collaborative efforts to address population health priorities (transportation, knowledge of services, disease prevention education), and providing technical assistance to community partners/coalition to plan, implement, and evaluate their health improvement efforts. A strong skill set in health communications, program development and evaluation, health promotion strategies, public health principles, and social media strategies will be demonstrated. A second staff person will be responsible for managing the administrative functions necessary to support internal and external population health improvement efforts. Skills and experience for this position will include organizational development, budget/resource planning, sub-contract management, managing joint program/partnership guidelines, and internal marketing. This position will be actively engaged with UT Health Northeast departments to articulate population health indicators, promote adoption of population health awareness into clinical practices, and assist with building institutional efforts to move employees towards a state of wellness for themselves and their dependents. The positions with

assigned population health responsibilities will work together to jointly plan and develop a regular communication mechanism for internal and external distribution. They will coordinate interactions with UT Health Northeast departments as champions for population health initiatives and personal wellness promotion. Population health staff will be knowledgeable about and have experience in applied health research theory and health program development.

UT Health Northeast Personnel: The organization's approach to building external relationships especially in rural areas, is to come alongside community members, validate shared or complementary needs, provide new/potential partners with a benefit of working collaboratively, and jointly formulate specific plans for collaboration.

A similar approach will be used with current UT Health Northeast employees. Acknowledging this group as a special population is another tactic to expand adoption of healthy life styles while serving as a model for other businesses, agencies, and community groups. Small groups from a cross-section of departments will participate in facilitated discussions about perceptions of health priorities for the employee population. These employee groups will generate ideas to motivate adoption of personal health goals, identify potential barriers to goal achievement, as well as potential approaches to overcome those barriers. As an example, the campus already has a "no tobacco" policy; employees who still smoke may be willing to participate in a social marketing focus group to select Quit Smoking messages designed for East Texans.

A regular, structured communication tool such as an e-newsletter will be designed and implemented to keep employees informed of population health initiatives. This tool can also announce new faculty appointments, new or integration of demonstration programs. Newsletter updates about the population health strategic plan progress such as the East Texas Health Improvement Consortium activities, and community project partnerships can be shared efficiently. A systematic communication tool is a key strategy to promote acceptance of operational changes and engage employees in health improvement practices for themselves, their family members, and their community.

Progress on Metrics:

Strategic Goal 1. *Establish the School of Community and Rural Health (SCRH)*

The SCRH inaugural class is comprised of 18 M.P.H. candidates who attended the first course session on January 9, 2017.

Strategic Goal 2. *Establish a regional consortium to improve the health status of the RHP 1 population*

The Episcopal Health Foundation (EHF)serves the 57-county region of the Episcopal Diocese of Texas. Eleven of those counties are located in RHP1. The regional data generated by the ETCH community forums and survey served as a catalyst for the EHF to initiate a contract with UT Health Northeast (authorized January, 2017) to work collaboratively with each of these counties to develop, implement, and assess action plans in response to community priorities.

Strategic Goal 3. *Advance population health outcomes through clinical improvements*

With the support of UT System, a strategic partnership has been formalized to establish the UT Health Northeast MD Anderson Cancer Center. This arrangement makes it possible for the UT Health Northeast oncology team to provide East Texans with an expanded scope of cancer prevention, diagnostic, and treatment protocols developed and tested by MD Anderson, one of the premier cancer research institutions in the world.

Summary

For a number of reasons, it is time to focus on health rather than disease and facilitate a paradigm shift to promoting wellness and prevention rather than emphasizing disease treatment and management. Creation of a health care system that is predicated on knowledge, life-style choices, a culture of wellness and social support represents a new way of thinking at the individual, agency, and community level. This strategic plan report is an initial effort to guide the discussions, collaborations, inclusiveness, and shared goals necessary to transform Northeast Texas from an area of the country with the worst health outcomes to a region that celebrates and supports healthy lifestyles and can stand as a model for improved rural health status in Texas and nationally.

Section 10: Environmental Impact Assessment

Education

The academic enterprise of UT Health Northeast provides an invaluable resource to address workforce gaps and it has the infrastructure to build capacity for population health. As the only university medical center in the region, UT Health Northeast is addressing specific regional workforce needs by preparing public and mental health professionals as well as training medical residents to adopt a holistic approach to health. High quality training that is relevant for rural populations must include practical experience within multiple community sectors. The experience of applying principles in real-life situations may include clinical care (preventive and disease management), patient instruction on practical health behavior adoption, and/or participatory research. The School of Community and Rural Health demonstrates the UT Health Northeast commitment to improve regional population health status by preparing professionals trained in epidemiology, biostatistics, health communication, health policy, program design, research, and program evaluation. These robust training experiences can only be provided in partnerships with health care providers, institutions, agencies, or community organizations. There is evidence that a substantial percentage of newly trained professionals will remain within the geographic area of training upon completion of their professional program or degree. Thus, the ongoing and emerging academic programs at UT Health Northeast will improve current workforce shortages with professionals trained in rural population health. Agencies and organizations throughout the region must be included in the education process in order to understand the value provided by these program graduates as employees. Jobs or career ladder opportunities need to be considered and established in recognition of the acquired skillset and the benefit to improved productivity, total worker health status, and improved community health status.

Research and Community Service

Successful population health strategies foster collaboration across diverse sectors. These include public and mental health, education, government agencies for housing, transportation, social welfare and community development, environmental protection, economic development, and the media among others. No single entity has all the needed resources or knowledge to achieve the targeted health improvement goals. For the most effective results, collaboration must happen at multiple levels. If UT Health Northeast continues as a regional leader and serves as the catalyst for population health initiatives, health outcomes in Northeast Texas can substantially improve within five years. The proposed Northeast Texas Community Health Improvement Consortium (The Consortium) provides a

framework for a participatory approach to address health issues of importance regionally and locally. The Consortium can bring together committed health and service professionals who have broad and diverse skills to address social determinants of health, improve access to care, and promote a culture of wellness all validated by research. A useful, health information exchange can only be effectively implemented through a consortium of organizations. Such a data repository is needed to support a unified and coordinated approach to monitor health status and provide the data necessary to perform effective analytics. A systematic method for sharing and interpreting health profile data for counties and the region is also needed to guide decisions to select and implement evidence-based actions. Without a Consortium to formalize collaborative agreements, it is unlikely that significant regional progress will be made to address the health care needs, cultural attitudes, and health behaviors that continue to result in poor health outcomes.

Clinical Care

Population health indicators can improve as each East Texan adopts a healthier lifestyle, recognizes the value of disease prevention and early screenings, and adheres to recommended treatment plans to manage disease processes for improved outcomes. A number of factors contribute to the region's current poor health status. Access to care – whether transportation, availability of services (such as mental health), provider location, service hours, or ability to pay for services are deterrents to improving outcomes. Innovative approaches can be developed through collaborative efforts between providers and communities.

Employees of UT Health Northeast can work together as a community of innovation and mutual support to demonstrate a paradigm shift from a focus on disease to an emphasis on well-being and disease prevention. A significant component of efforts will be the inclusion of children and other dependents in 'community' efforts to promote health and wellness behaviors.

Summary

Although the health profile of the region may improve without a unified and systematic approach to improve health status, the rate of change will be slower and it will be difficult to attribute outcome improvement to specific interventions. Also, health care costs for treatment and management of the major causes of morbidity and premature death in the region would continue to escalate due to care fragmentation, lack of adoption of preventive service utilization, and poor health behavior choices. Inattention to expanding technology infrastructure will delay sharing health-related information and

hinder disease management of individual patients thereby contributing to fragmented care and poor outcomes. The potential impact of UT Health Northeast to improve the population health status of this region is not based on shortages, gaps, or availability of faculty members, but on the ability of its programs to maximize the expertise of internal and external institutional resources toward common goals. UT Health Northeast has committed its educational, research, community engagement, and clinical expertise along with resources and support of the UT System, to lead the region toward significant improvements in the health status of the population.

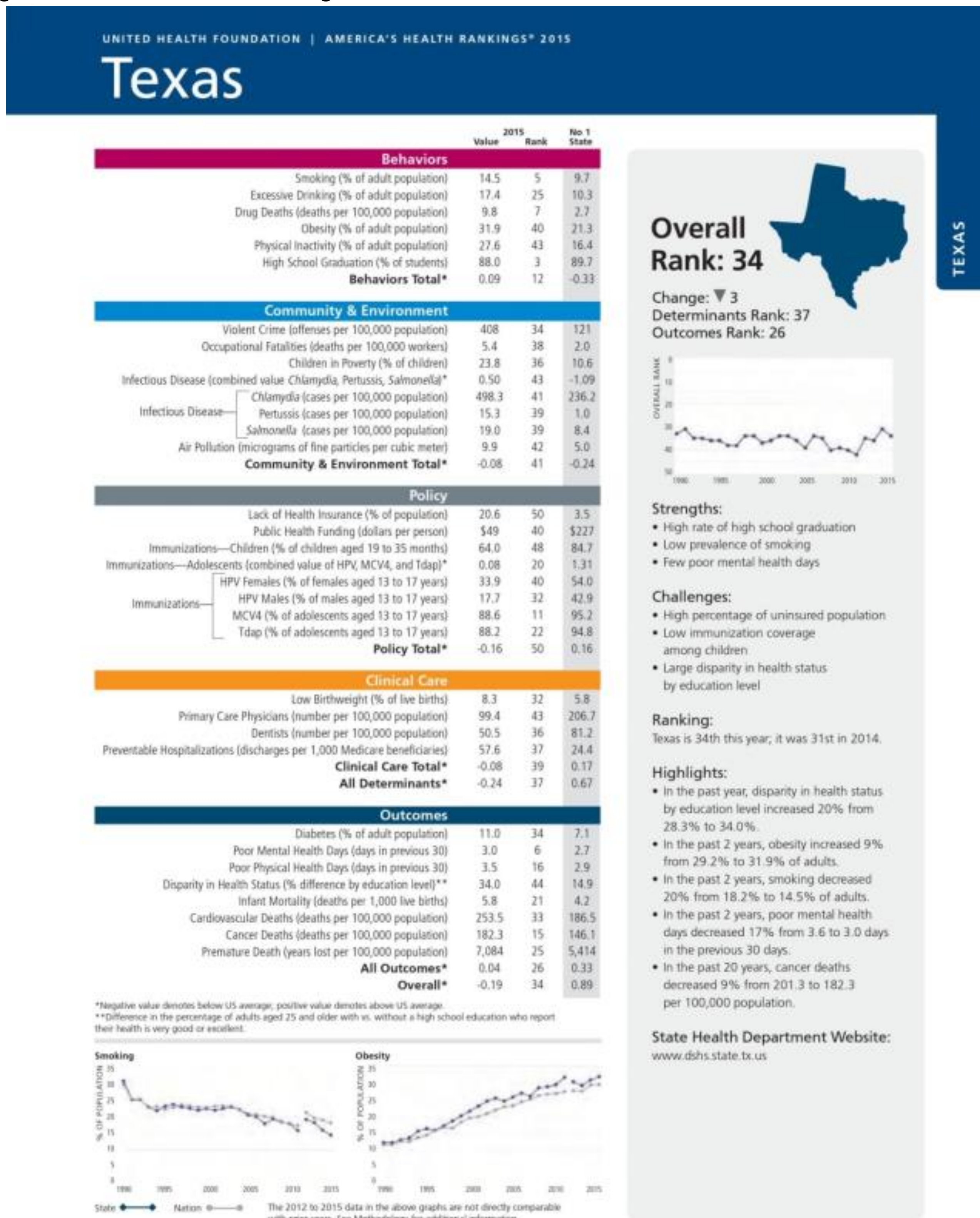
Appendix A. Health of the Population and Health Disparities

Table A.1 UT Health Northeast 1115 Waiver Delivery System Reform Incentive Program (DSRIP) Projects

Project Title (DSRIP)	Brief Project Description	Outcomes
Oral Health	Collaboration between UTHSCT and Tyler Junior College to enhance dental preventive services and train dental hygiene students	Increase access to dental services for chronic disease patients
Improve Access to Specialty Care	Expand selective specialty care services for referral from the PCMH to include podiatry, ophthalmology, nephrology and endocrinology	Diabetes care: Increase retinal eye exams, foot exams and microalbumin/neuropathy testing
Telepsych	Collaboration between UPA, Good Shepherd Medical Center and Palestine Regional Medical Center to increase access to integrated primary and behavioral health care services along with specialty consultation by psychiatry	Assess screening instrument for somatization syndrome in behavioral health patients
Community Health Worker Training	Establish CHW certification programs with specialty tracks for chronic disease self-management, behavioral health, and tele-health facilitation.	Increase Number of DSHS certified CHWs
PCMH - UTHSCT	Implement PCMH; expand primary care capacity; implement CHW chronic disease self-management, behavioral health, and tele-health facilitation.	Increase breast cancer screening Improve Pneumonia vaccination status for older adults Increase cholesterol abnormalities screening
PCMH- GSMC	Collaboration between UPA and Good Shepherd Medical Center to implement PCMH; expand primary care capacity; implement CHW chronic disease self-management, behavioral health, and tele-health facilitation.	Increase colorectal cancer screening Improve Pneumonia vaccination status for older adults Increase cholesterol abnormalities screening
Palliative/Supportive Care	Collaboration between UPA and Good Shepherd Medical Center where supportive care teams will use evidence-based models of effective advance care planning for patients with chronic, debilitating diseases to implement palliative care, reduce unnecessary ED visits and hospitalizations.	Percent improvement in pain assessment, treatment preferences, and discussion of spiritual/religious concerns
Breath of Life Mobile Pediatric Asthma	Collaboration between UPA, Christus St. Michael Health System and local independent school districts to deploy mobile units to facilitate early diagnosis and disease management for children with asthma throughout the region.	Improve Quality of Life/Functional Status

Project Title (DSRIP)	Brief Project Description	Outcomes
Colorectal Cancer	Launch an aggressive social marketing campaign to increase awareness and knowledge about colorectal cancer screening and increase access to specialty providers for gastroenterology and medical and surgical oncology.	Increase colorectal cancer screening utilization for high risk population
Quality Improvement (QI)	Through a collaboration facilitated by UPA, Palestine Regional Medical Center, Good Shepherd Medical Center, and Christus St. Michael Health System, use a learning collaborative format to select, implement and evaluate QI/E processes and meet regularly to share challenges, successes, lessons learned, and establish a compendium of best practices.	Decrease congestive heart failure 30 day readmission rate
Behavioral Health Integration	Through collaboration between UPA and Good Shepherd Medical Center, behavioral health professionals and CHWs will be added to primary care teams to foster integration of behavioral health services for patients in the primary care setting.	Depression management: screening & treatment plan for clinical depression Depression management: remission at twelve months
Patient Navigation	Train and deploy Patient Care Navigators to facilitate hospital discharge and partner with the PCMH team to prevent hospital admissions/readmissions.	Decrease in ED utilization
Pediatric Weight Management	Extend an evidence-based, multi-disciplinary pediatric weight management program to a rural county in Northeast Texas (Lamar).	Percent improvement over baseline of patient quality of life
North Tyler Clinic	Increase access to a largely minority, underserved area of Smith County by establishing an open access clinic within the community to provide basic care services and a referral channel to PCMH and specialty providers	Increase screening for high blood pressure and Type 2 diabetes mellitus in adults and increase screening for and management of obesity
Tuberculosis	Collaboration with DSHS to implement a strategy for comprehensive, cost-effective and integrated management of TB and LTBI.	Increase treatment rate for Latent Tuberculosis Treatment (LTBI)

Figure A.1 America's Health Rankings 2015 - Texas



UNITED HEALTH FOUNDATION | AMERICA'S HEALTH RANKINGS® 2015

Texas

	2015 Value	2015 Rank	No 1 State
Behaviors			
Smoking (% of adult population)	14.5	5	9.7
Excessive Drinking (% of adult population)	17.4	25	10.3
Drug Deaths (deaths per 100,000 population)	9.8	7	2.7
Obesity (% of adult population)	31.9	40	21.3
Physical Inactivity (% of adult population)	27.6	43	16.4
High School Graduation (% of students)	88.0	3	89.7
Behaviors Total*	0.09	12	0.33
Community & Environment			
Violent Crime (offenses per 100,000 population)	408	34	121
Occupational Fatalities (deaths per 100,000 workers)	5.4	38	2.0
Children in Poverty (% of children)	23.8	36	10.6
Infectious Disease (combined value *Chlamydia, Pertussis, Salmonella*)*	0.50	43	-1.09
Infectious Disease — *Chlamydia* (cases per 100,000 population)	498.3	41	236.2
Infectious Disease — Pertussis (cases per 100,000 population)	15.3	39	1.0
Infectious Disease — *Salmonella* (cases per 100,000 population)	19.0	39	8.4
Air Pollution (micrograms of fine particles per cubic meter)	9.9	42	5.0
Community & Environment Total*	-0.08	41	0.24
Policy			
Lack of Health Insurance (% of population)	20.6	50	3.5
Public Health Funding (dollars per person)	$49	40	$227
Immunizations—Children (% of children aged 19 to 35 months)	64.0	48	84.7
Immunizations—Adolescents (combined value of HPV, MCV4, and Tdap)*	0.08	20	1.31
Immunizations — HPV Females (% of females aged 13 to 17 years)	33.9	40	54.0
Immunizations — HPV Males (% of males aged 13 to 17 years)	17.7	32	42.9
Immunizations — MCV4 (% of adolescents aged 13 to 17 years)	88.6	11	95.2
Immunizations — Tdap (% of adolescents aged 13 to 17 years)	88.2	22	94.8
Policy Total*	-0.16	50	0.16
Clinical Care			
Low Birthweight (% of live births)	8.3	32	5.8
Primary Care Physicians (number per 100,000 population)	99.4	43	206.7
Dentists (number per 100,000 population)	50.5	36	81.2
Preventable Hospitalizations (discharges per 1,000 Medicare beneficiaries)	57.6	37	24.4
Clinical Care Total*	-0.08	39	0.17
All Determinants*	-0.24	37	0.67
Outcomes			
Diabetes (% of adult population)	11.0	34	7.1
Poor Mental Health Days (days in previous 30)	3.0	6	2.7
Poor Physical Health Days (days in previous 30)	3.5	16	2.9
Disparity in Health Status (% difference by education level)**	34.0	44	14.9
Infant Mortality (deaths per 1,000 live births)	5.8	21	4.2
Cardiovascular Deaths (deaths per 100,000 population)	253.5	33	186.5
Cancer Deaths (deaths per 100,000 population)	182.3	15	146.1
Premature Death (years lost per 100,000 population)	7,084	25	5,414
All Outcomes*	0.04	26	0.33
Overall*	-0.19	34	0.89

*Negative value denotes below US average; positive value denotes above US average.
**Difference in the percentage of adults aged 25 and older with vs. without a high school education who report their health is very good or excellent.

The 2012 to 2015 data in the above graphs are not directly comparable with prior years. See Methodology for additional information.

Overall Rank: 34

Change: ▼ 3
Determinants Rank: 37
Outcomes Rank: 26

Strengths:
- High rate of high school graduation
- Low prevalence of smoking
- Few poor mental health days

Challenges:
- High percentage of uninsured population
- Low immunization coverage among children
- Large disparity in health status by education level

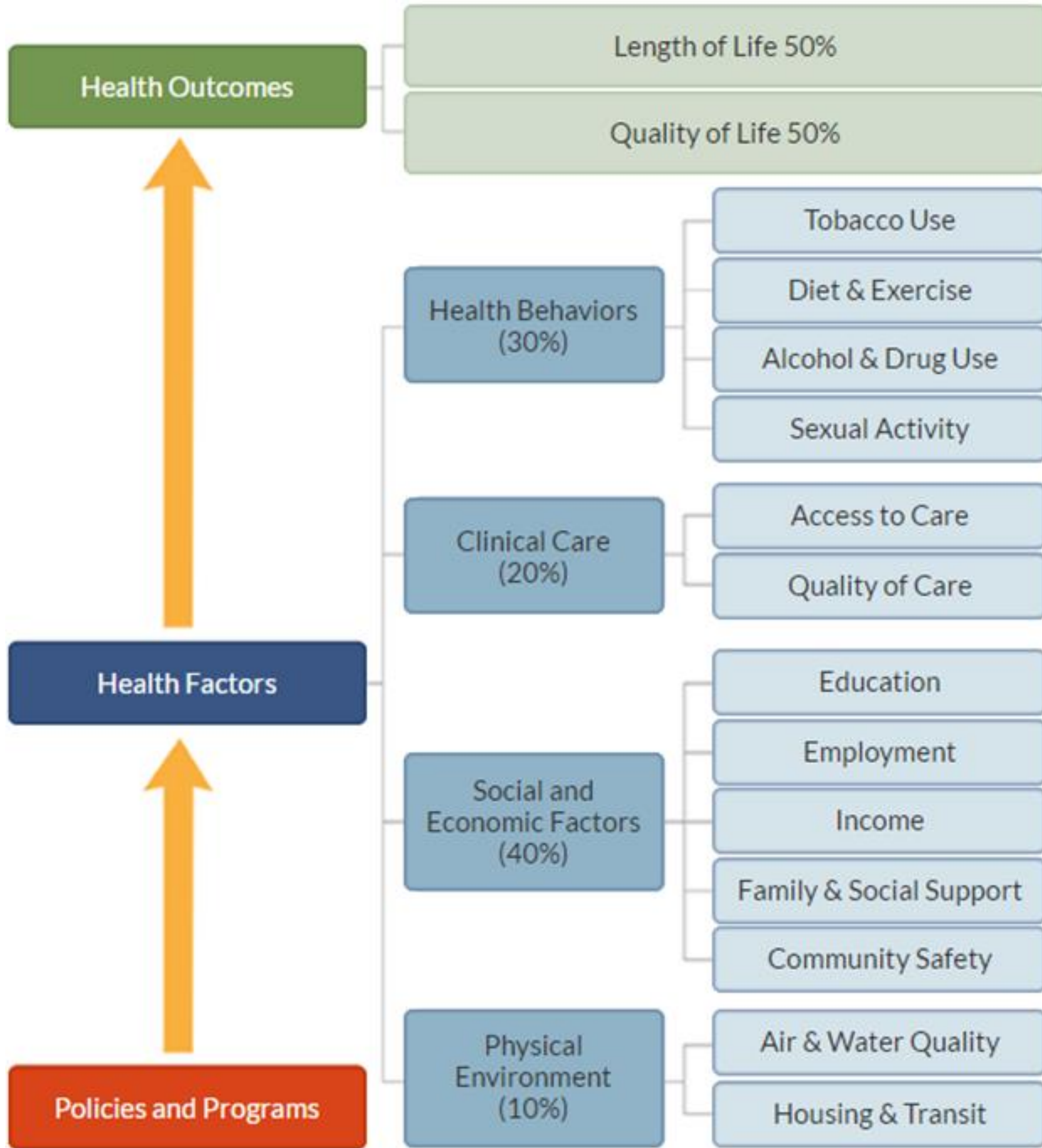
Ranking:
Texas is 34th this year; it was 31st in 2014.

Highlights:
- In the past year, disparity in health status by education level increased 20% from 28.3% to 34.0%.
- In the past 2 years, obesity increased 9% from 29.2% to 31.9% of adults.
- In the past 2 years, smoking decreased 20% from 18.2% to 14.5% of adults.
- In the past 2 years, poor mental health days decreased 17% from 3.6 to 3.0 days in the previous 30 days.
- In the past 20 years, cancer deaths decreased 9% from 201.3 to 182.3 per 100,000 population.

State Health Department Website:
www.dshs.state.tx.us

TEXAS

Figure A.2 County Health Rankings Model



Appendix B. East Texas Community Health Assessment

Table B.1 Community Stakeholder Forum Participants

	N	%
Community Sector		
Public Health	62	20.8%
Business	7	2.3%
Healthcare	95	31.9%
Educator	27	9.1%
Community Development	6	2.0%
Nonprofit Organizations	31	10.4%
Community Member	14	4.7%
Faith-Based Community	8	2.7%
Government	23	7.7%
Prefer not answer	25	8.4%
Gender		
Female	222	74.5%
Male	67	22.5%
Prefer not answer	9	3.0%
Race/Ethnicity		
White	202	67.8%
African American	65	21.8%
Hispanic	20	6.7%
Other	11	3.7%
Age	Med = 53 years	SD = 21.52
Educational attainment		
Less than high school	1	0.3%
High school graduate/GED	12	4.0%
Trade/technical school	1	0.3%
Some college, no degree	1	0.3%
Associate's degree	101	33.9%
Bachelor's degree	76	25.5%
Advanced degree (Masters, PhD, MD)	98	32.9%
Prefer not answer	8	2.7%

Table B.2 Educational Attainment of ETCH-Survey Respondents

Educational attainment	N	%
Low educational attainment (high school graduate/GED or less)	576	24.3%
Middle educational attainment (some college, trade school, or associate's degree)	790	33.4%
High educational attainment (Bachelor's or advanced degree)	951	40.2%
Prefer not answer	46	1.9%

Table B.3 Demographic Distribution of ETCH-Survey Respondents by Educational Attainment

	All respondents		Low educational attainment		Middle educational attainment		High educational attainment	
	N	%	N	%	N	%	N	%
Gender								
Female	1799	76.10%	444	77.10%	633	80.10%	691	72.70%
Male	527	22.30%	123	21.40%	149	18.90%	251	26.40%
Prefer not answer	27	1.10%	8	1.40%	4	0.50%	5	0.50%
Age								
18-24	154	6.50%	56	9.70%	70	8.90%	26	2.70%
25-34	350	14.80%	90	15.60%	118	14.90%	137	14.40%
35-44	381	16.10%	78	13.50%	113	14.30%	181	19.00%
45-54	483	20.40%	98	17.00%	166	21.00%	208	21.90%
55-64	575	24.30%	131	22.70%	189	23.90%	249	26.20%
65-74	293	12.40%	74	12.80%	98	12.40%	115	12.10%
75 or older	100	4.20%	40	6.90%	29	3.70%	30	3.20%
Prefer not answer	27	1.10%	9	1.60%	7	0.90%	5	0.50%
Gender								
Female	1799	76.1%	444	77.1%	633	80.1%	691	72.7%
Male	527	22.3%	123	21.4%	149	18.9%	251	26.4%
Prefer not answer	27	1.1%	8	1.4%	4	0.5%	5	0.5%
Age								
18-24	154	6.5%	56	9.7%	70	8.9%	26	2.7%
25-34	350	14.8%	90	15.6%	118	14.9%	137	14.4%
35-44	381	16.1%	78	13.5%	113	14.3%	181	19.0%
45-54	483	20.4%	98	17.0%	166	21.0%	208	21.9%
55-64	575	24.3%	131	22.7%	189	23.9%	249	26.2%
65-74	293	12.4%	74	12.8%	98	12.4%	115	12.1%
75 or older	100	4.2%	40	6.9%	29	3.7%	30	3.2%
Prefer not answer	27	1.1%	9	1.6%	7	0.9%	5	0.5%

Table B.4 ETCH Survey Respondent Self-Reported Health Status by Educational Attainment

	All respondents		Low educational attainment		Middle educational attainment		High educational attainment	
	N	%	N	%	N	%	N	%
Current smokers	302	12.8%	122	21.2%	150	19.0%	64	6.7%
Receive annual exams	1546	65.4%	335	58.2%	510	64.6%	680	71.5%
Uninsured	275	11.6%	130	22.6%	85	10.8%	45	4.7%
Respondent comorbidities								
	High blood pressure	29.9%	High Blood pressure	38.4%	High blood pressure	30.1%	High blood pressure	24.5%
	Obesity	17.8%	Arthritis	21.9%	Obesity	21.5%	Obesity	15.9%
	Arthritis	17.8%	Depression	19.8%	Arthritis	18.9%	Arthritis	15.5%
	Depression	14.9%	Anxiety	19.3%	Depression	15.8%	Anxiety	12.4%
	Anxiety	14.6%	Diabetes	18.1%	Anxiety	13.8%	Depression	10.8%

Table B.5 ETCH Survey Respondent Ranking of Health Problems, Community Populations in Need, and Services Most Difficult to Access by Educational Attainment

	All Respondents		Low Educational Attainment		Middle Educational Attainment		High Educational Attainment	
	Top 5 Health Problems							
1	Diabetes	36.1%	Diabetes	40.6%	Cancer	40.5%	Obesity	46.7%
2	Obesity (Adult)	38.1%	High Blood Pressure	31.6%	Diabetes	39.6%	Diabetes	38.6%
3	Cancer	36.2%	Cancer	31.3%	Obesity (Adult)	36.6%	Cancer	36.1%
4	High Blood Pressure	35.5%	Heart Disease/Stroke	25.3%	Substance Abuse	35.3%	Heart Disease/Stroke	35.9%
5	Substance Abuse	32.2%	Smoking	24.3%	High Blood Pressure	31.3%	Substance Abuse	35.3%
	Top 5 Community Populations In Need							
1	Low Income Groups	35.8%	Low Income Groups	35.1%	Working Poor	36.3%	Persons With Mental Illness	41.5%
2	Working Poor	32.4%	Homeless	31.1%	Low Income Groups	35.2%	Low Income Groups	36.9%
3	Un/Underinsured	30.7%	Unemployed	27.4%	Un/Underinsured	31.6%	Un/Underinsured	34.5%
4	Persons with Mental Illness	30.5%	Working Poor	26.4%	Persons with Mental Illness	28.5%	Working Poor	33.8%
5	Homeless	28.9%	Un/Underinsured	24.5%	Homeless	28.1%	Homeless	27.9%
	Top 5 Services That Are Most Difficult To Get							
1	Mental Health Counseling	16.2%	Dental Care	18.6%	Daycare for Adults	17.1%	Mental Health Counseling	22.5%
2	Health Insurance	15.7%	Health Insurance	16.1%	Health Insurance	16.1%	Daycare For Adults	17.9%
3	Daycare for Adults	15.2%	Medication Cost Assistance	13.4%	Medication Cost Assistance	14.6%	Health Insurance	15.0%
4	Medication Cost Assistance	14.3%	Weight Loss Support Programs	13.2%	Alcohol/ Drug Counseling & Treatment	14.4%	Medication Cost Assistance	14.9%
5	Alcohol/Drug Counseling & Treatment	14.3%	Housing Assistance	13.2%	A List of Health Resources	14.1%	A List Of Health Resources	14.9%

Table B.6 ETCH Survey - Community Populations in Need by County

	Homeless	Children /Teens	Sub-stance Abuse	Persons with No Source of Transportation	Persons w/Mental Illness	Unem-ployed	Veterans	Low Income Groups	Un/Under-insured	Working Poor	Retirees	Senior Citizens
Anderson	45.7%	7.1%	25.7%	25.7%	28.6%	37.1%	15.7%	51.4%	38.6%	30.0%	2.9%	14.3%
Bowie	43.0%	10.8%	18.3%	24.7%	35.5%	20.4%	21.5%	40.9%	30.1%	41.9%	10.8%	26.9%
Camp	15.0%	26.7%	25.0%	21.7%	20.0%	18.3%	16.7%	35.0%	36.7%	31.7%	6.7%	31.7%
Cass	21.9%	8.0%	21.4%	25.7%	18.2%	28.3%	20.3%	33.2%	33.7%	38.5%	5.9%	29.4%
Cherokee	12.5%	16.7%	18.8%	25.0%	22.9%	20.8%	12.5%	37.5%	18.8%	35.4%	12.5%	18.8%
Delta	20.8%	0.0%	29.2%	25.0%	12.5%	45.8%	8.3%	29.2%	25.0%	29.2%	29.2%	37.5%
Fannin	36.0%	20.0%	4.0%	40.0%	40.0%	12.0%	8.0%	44.0%	48.0%	40.0%	8.0%	36.0%
Franklin	7.7%	15.4%	30.8%	15.4%	15.4%	7.7%	30.8%	15.4%	21.3%	38.5%	30.8%	46.2%
Freestone	8.7%	21.7%	26.1%	26.1%	13.0%	13.0%	21.7%	30.4%	26.1%	26.1%	21.7%	43.5%
Gregg	57.0%	16.8%	21.5%	10.7%	30.2%	18.1%	22.1%	31.5%	20.8%	26.2%	3.4%	21.5%
Harrison	42.9%	20.2%	19.0%	15.5%	32.1%	23.8%	21.4%	35.7%	32.1%	31.0%	2.4%	27.4%
Henderson	23.6%	21.8%	29.1%	20.0%	41.8%	10.9%	23.6%	43.6%	30.9%	21.8%	3.6%	20.0%
Hopkins	10.5%	13.2%	28.9%	26.3%	36.8%	13.2%	13.2%	39.5%	34.2%	36.8%	7.9%	23.7%
Houston	23.9%	22.4%	17.9%	31.3%	17.9%	26.9%	10.4%	29.9%	20.9%	28.4%	3.0%	23.9%
Hunt	38.8%	12.6%	20.4%	18.4%	13.6%	37.9%	17.5%	44.7%	34.0%	34.0%	10.7%	19.4%
Lamar	39.1%	10.9%	21.7%	17.4%	23.9%	17.4%	17.4%	30.4%	28.3%	30.4%	4.3%	26.1%
Marion	5.1%	12.8%	30.8%	23.1%	23.1%	23.1%	15.4%	46.2%	53.8%	33.3%	7.7%	20.5%
Morris	5.0%	17.5%	30.0%	17.5%	32.5%	30.0%	22.5%	42.5%	25.0%	45.0%	10.0%	35.0%
Panola	18.6%	18.6%	21.4%	30.0%	37.1%	17.1%	20.0%	48.6%	37.1%	37.1%	5.7%	32.9%
Rains	15.8%	21.1%	18.4%	13.2%	21.1%	21.1%	18.4%	34.2%	23.7%	31.6%	2.6%	18.4%
Red River	8.1%	16.2%	27.0%	35.1%	32.4%	43.2%	8.1%	40.5%	13.5%	43.2%	2.7%	21.6%
Rusk	25.0%	8.9%	8.9%	17.7%	28.2%	20.2%	19.4%	25.0%	31.5%	25.0%	6.5%	19.4%
Smith	36.7%	9.7%	12.8%	19.8%	43.0%	16.7%	19.1%	34.3%	32.8%	33.1%	5.1%	19.3%
Titus	18.2%	9.1%	15.7%	15.7%	28.1%	20.7%	26.4%	36.4%	28.9%	30.6%	8.3%	24.0%
Trinity	8.3%	5.0%	35.0%	31.7%	23.3%	23.3%	16.7%	33.3%	30.0%	25.0%	8.3%	40.0%
Upshur	26.5%	14.3%	24.5%	26.5%	34.7%	28.6%	12.2%	26.5%	26.5%	34.7%	2.0%	26.5%
Van Zandt	10.9%	21.7%	19.6%	21.7%	28.3%	23.9%	15.2%	28.3%	34.8%	26.1%	8.7%	13.0%
Wood	11.8%	16.2%	16.2%	30.9%	19.1%	10.3%	20.6%	41.2%	23.5%	27.9%	4.4%	22.1%

Table B.7 ETCH Survey Responses - Priority Services Most Difficult to Access by County

	Daycare for Adults	Mental Health Counseling & Treatment	Health Insur-ance	Transportation Assistance	Access to Bicycle Trails	Dental Care	Specialized Medical Care	Weight Loss Support	Alcohol / Drug Counseling	Hospital Services	Emergency Medical Care	A list of Health Resources	Safe Neighbor hoods
Anderson	14.3%	11.4%	22.9%	11.4%	12.9%	37.1%	11.4%	14.3%	17.1%	4.3%	4.3%	11.4%	10.0%
Bowie	15.1%	24.7%	21.5%	11.8%	4.3%	16.1%	7.5%	5.4%	7.5%	0.0%	4.3%	12.9%	24.7%
Camp	23.3%	13.3%	6.7%	5.0%	11.7%	3.3%	10.0%	13.3%	18.3%	0.0%	3.3%	10.0%	5.0%
Cass	19.3%	11.2%	13.9%	10.7%	13.4%	10.7%	17.6%	13.9%	11.8%	11.2%	11.2%	11.8%	4.3%
Cherokee	14.6%	8.2%	8.3%	16.7%	20.8%	27.1%	6.3%	18.8%	10.4%	2.1%	0.0%	10.4%	4.2%
Delta	12.5%	16.7%	8.3%	0.0%	4.2%	4.2%	25.0%	8.3%	16.7%	4.2%	16.7%	0.0%	0.0%
Fannin	32.0%	20.0%	20.0%	20.0%	12.0%	12.0%	8.0%	8.0%	4.0%	4.0%	0.0%	0.0%	0.0%
Franklin	30.8%	7.7%	7.7%	0.0%	15.4%	0.0%	15.4%	15.4%	15.4%	30.8%	23.1%	7.7%	0.0%
Freestone	13.0%	13.0%	13.0%	13.0%	13.0%	0.0%	30.4%	0.0%	8.7%	0.0%	4.3%	0.0%	0.0%
Gregg	6.7%	19.5%	24.2%	8.1%	8.7%	10.1%	6.0%	12.8%	6.7%	2.0%	2.7%	11.4%	12.8%
Harrison	8.3%	25.0%	13.1%	8.3%	16.7%	7.1%	15.5%	8.3%	16.7%	1.2%	4.8%	13.1%	16.7%
Henderson	14.5%	14.5%	9.1%	7.3%	12.7%	5.5%	7.3%	14.5%	23.6%	1.8%	0.0%	12.7%	0.0%
Hopkins	18.4%	7.9%	13.2%	7.9%	13.2%	5.3%	5.3%	15.8%	18.4%	0.0%	0.0%	21.1%	0.0%
Houston	14.9%	16.4%	20.9%	22.4%	3.0%	13.4%	14.9%	6.0%	7.5%	1.5%	9.0%	10.4%	6.0%
Hunt	17.5%	13.6%	15.5%	11.7%	11.7%	9.7%	10.7%	16.5%	6.8%	2.9%	4.9%	12.6%	24.3%
Lamar	15.2%	17.4%	19.6%	6.5%	4.3%	4.3%	8.7%	15.2%	8.7%	4.3%	0.0%	21.7%	10.9%
Marion	20.5%	15.4%	17.9%	20.5%	7.7%	10.3%	17.9%	5.1%	15.4%	20.5%	15.4%	20.5%	2.6%
Morris	20.0%	30.0%	15.0%	7.5%	15.0%	7.5%	5.0%	12.5%	22.5%	15.0%	5.0%	15.0%	5.0%
Panola	20.0%	15.7%	11.4%	15.7%	18.6%	4.3%	18.6%	21.4%	24.3%	1.4%	1.4%	10.0%	2.9%
Rains	18.4%	7.9%	7.9%	7.9%	7.9%	2.6%	10.5%	13.2%	13.2%	15.8%	18.4%	10.5%	2.6%
Red River	10.8%	21.6%	2.7%	8.1%	8.1%	24.3%	16.2%	5.4%	8.1%	32.4%	29.7%	10.8%	2.7%
Rusk	6.5%	12.9%	14.5%	12.1%	12.1%	14.5%	8.9%	16.1%	9.7%	4.0%	3.2%	8.9%	7.3%
Smith	13.8%	21.2%	18.3%	12.5%	7.0%	14.0%	7.8%	9.4%	13.1%	2.7%	2.4%	15.0%	6.5%
Titus	22.3%	8.3%	16.5%	5.8%	24.0%	1.7%	12.4%	14.9%	12.4%	0.0%	0.8%	14.0%	5.0%
Trinity	8.3%	10.0%	6.7%	11.7%	16.7%	15.0%	11.7%	6.7%	33.3%	8.3%	8.3%	13.3%	6.7%
Upshur	14.3%	6.1%	10.2%	4.1%	12.2%	2.0%	14.3%	10.2%	14.3%	14.3%	20.4%	10.2%	4.1%
Van Zandt	15.2%	10.9%	17.4%	13.0%	17.4%	8.7%	10.9%	4.3%	10.9%	19.6%	15.2%	10.9%	2.2%
Wood	23.5%	11.8%	8.8%	10.3%	7.4%	8.8%	11.8%	10.3%	11.8%	1.5%	4.4%	16.2%	0.0%

Appendix C. Identified Community Resources by County

Table C.1 County Level Resource List

	Anderson	Bowie	Camp	Cass	Cherokee	Delta	Fannin
General Population information							
Population	58,458	92,565	12,401	30,464	50,845	5,231	33,915
Public Health Services							
DSHS Regional Office location	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 Not Tyler	HSR 3 Arlington
Local Health Department	0	1	0	0	1	0	0
WIC Program Offices (# of Offices)	1	1	0	2	2	0	1
SNAP Offices (# of Offices)	1	2	1	0	2	0	1
DSHS Clinics (PHC/CH/CD/PN)	0	2 (PHC)	0	0	1 (PHC)	0	1 (PHC)
Health Care Access							
FQHC (# listed in county)	0	3	0	1	0	1	1
Hospital (# in county)	2	6	1	1	2	0	1
Ambulatory Surgical Center (Yes/No)	2	3	0	0	0	0	0
Emergency Room Trauma Level	Level III	Level III	Level IV	Level IV	Level IV	0	Level IV
Free Standing ER's (# in county)	0	0	0	0	0	0	0
Urgent Care Centers (# in county)	2	2	0	1	1	0	2
Physicians per 100,000 (2015 Merritt-Hawkins)	39	201	5	9	33	1	8
Specialists							
Cardiology (# in county)	0	3	0	0	1	0	0
Pediatrics (# in county)	3	20	2	0	5	0	0
Dentists (# in county)	15	52	4	10	9	1	7
Pharmacies (# in county)	14	38	4	9	14	1	8
HPSA Mental Health (Yes/No)	Yes	Yes	Yes	Yes	Yes	No	Yes
HPSA Primary Care (Yes/No)	No	No	No	Yes	No	Yes	Yes
HPSA Dental Health (Yes/No)	No	No	No	No	No	Yes	Yes
Renal Centers (# in county)	1	1	0	1	1	0	1
Nursing Homes (# facilities in county)	6	9	1	5	8	1	6
Nursing Homes (# of beds total)	727	920	104	488	818	100	633
Low Income Care Clinics (# in county)	0	1	0	0	0	1	3
EMS Services (# in county)	9	5	2	9	4	3	8

	Anderson	Bowie	Camp	Cass	Cherokee	Delta	Fannin
Behavioral Health Services (Yes/No)							
LMHA (city located serving that county)	Jacksonville	Longview	Terrell	Longview	Jacksonville	Terrell	Sherman
Behavioral Health Specialty Hospital	No	No	No	Yes	Yes	No	Yes
Substance Abuse Services	Yes	Yes	No	No	Yes	No	No
Alcoholics Anonymous	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Transportation							
Bus Service (Yes/No)	Yes	Yes	Yes	No	Yes	No	No
Private Taxi (Yes/No)	Yes	Yes	Yes	No	No	No	No
Academics							
NETnet connectivity sites	0	0	0	2	4	0	0
University	0	1	0	0	0	0	0
Nursing RN, BSN, LVN		RN/LVN/BSN/MSN/Doc					
Nurse Practitioner		N/A					
Pharmacy		N/A					
Health Education		N/A					
Public Health MPH/BPH		N/A					
Junior/Community College	0	1	0	0	1	0	0
Nursing		LVN/AAS			N/A		
Community Health Worker (Yes/No)		No			No		
Dental Hygiene AAS/BA/BS		No			No		
Dental Assistant (Yes/No)		No			No		
Certified Health Aide (Yes/No)		Yes			No		
Public Schools (# of ISD's in the county)	7	13	1	7	5	2	8
Educational Service Center	Region 7	Region 8	Region 8	Region 8	Region 7	Region 8	Region 10
Community/Social Services							
America Cancer Society	Dallas	Dallas	Tyler	Tyler	Tyler	Tyler	Dallas
Lions Club (# of clubs)	2	2	0	2	3	0	0
Meals on Wheels (Yes/No)	Yes	Yes	Yes	Yes	Yes	N/A	Yes
Food Banks (# in the county)	7	10	3	7	7	10	8
Civic							
Chamber of Commerce (# per county)	1	3	1	1	3	1	3
Dept. Parks/Recreation	Palestine	Texarkana	Pittsburg	Linden	J'ville, Rusk	N/A	Bonham
Housing Authority (type, # participating cities)	Section 8	Section 8	Section 8 Low Rent	Low Rent (4)	Section 8 (3) Low Rent	Low Rent	Low Rent
AgriLife Office city location	Palestine	New Boston	Pittsburg	Linden	Rusk	None	Bonham
Smoking Ordinances 1 or more (Yes/No)	Yes	Yes	No	Yes	Yes	No	No

	Franklin	Freestone	Gregg	Harrison	Henderson	Hopkins	Houston
General Population information							
Population	10,605	19,816	121,730	65,631	78,532	35,161	23,732
Public Health Services							
DSHS Regional Office location	HSR 4/5 N Tyler	HSR 7 Temple	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 7 Austin
Local Health Department	0	0	1	1	0	0	0
WIC Program Offices (# of Offices)	0	1	1	1	2	1	0
SNAP Offices (# of Offices)	0	1	1	1	1	1	1
DSHS Clinics (PHC/CH/CD/PN)	0	0	4 (PCH, CH, CD, PN)	1 (PHC)	0	0	0
Health Care Access							
FQHC (# listed in county)	0	0	10	3	0	0	0
Hospital (# in county)	0	1	4	1	1	1	1
Ambulatory Surgical Center (Yes/No)	0	0	2	1	0	1	0
Emergency Room Trauma Level	0	0	(2) Level III	0	Level IV	0	0
Free Standing ER's (# in county)	0	0	3	0	0	0	0
Urgent Care Centers (# in county)	0	0	6	1	1	2	0
Physicians per 100,000 (2015 Merritt-Hawkins)	4	8	271	45	56	22	10
Specialists							
Cardiology (# in county)	0	0	3	0	2	1	0
Pediatrics (# in county)	1	0	34	6	4	4	0
Dentists (# in county)	4	8	138	32	44	21	27
Pharmacies (# in county)	2	5	48	12	16	10	6
HPSA Mental Health (Yes/No)	No	Yes	No	No	Yes	No	Yes
HPSA Primary Care (Yes/No)	Yes	Yes	No	Yes	Yes	No	Yes
HPSA Dental Health (Yes/No)	No	No	No	No	No	No	No
Renal Centers (# in county)	0	0	3	2	1	1	1
Nursing Homes (# facilities in county)	1	3	12	3	6	4	4
Nursing Homes (# of beds total)	101	283	1302	422	632	487	390
Low Income Care Clinics (# in county)	0	0	5	2	1	0	0
EMS Services (# in county)	0	8	9	3	8	2	7
Behavioral Health Services (Yes/No)							
LMHA (city located serving that county)	Terrell	Waco	Longview	Longview	Tyler	Tyler	Lufkin
Behavioral Health Specialty Hospital	No	No	Yes (5)	No	No	No	No
Substance Abuse Services	No	No	Yes	Yes	No	No	No
Alcoholics Anonymous	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Franklin	Freestone	Gregg	Harrison	Henderson	Hopkins	Houston
Transportation							
Bus Service (Yes/No)	No	No	Yes	Yes	Yes	Yes	No listing
Private Taxi (Yes/No)	No	No	Yes	Yes	Yes	No listing	Yes
Academics							
NETnet connectivity sites	1	0	3	2	3	2	0
University	0	0	1	1	0	0	0
Nursing RN, BSN, LVN			N/A	BSN			
Nurse Practitioner			N/A	N/A			
Pharmacy			N/A	N/A			
Health Education			BA/BS	BSN			
Public Health MPH/BPH			N/A	N/A			
Junior/Community College	0	0	0	1	1	0	0
Nursing				No	LVN, ADN		
Community Health Worker (Yes/No)				No	No		
Dental Hygiene AAS/BA/BS				No	No		
Dental Assistant (Yes/No)				No	No		
Certified Health Aide (Yes/No)				No	Yes		
Public Schools (# of ISD's in the county)	1	4	8	6	8	7	5
Educational Service Center	Region 8	Region 12	Region 7	Region 7	Region 7 & 10	Region 8	Region 6
Community/Social Services							
America Cancer Society	Tyler	Waco	Tyler	Tyler	Tyler	Tyler	Tyler
Lions Club (# of clubs)	0	1	5	1	1	1	2
Meals on Wheels (Yes/No)	N/A	Yes	Yes	Yes	Yes	Yes	N/A
Food Banks (# in the county)	1	2	15	7	8	6	4
Civic							
Chamber of Commerce (# per county)	2	2	2	1	1	1	1
Dept. Parks/Recreation	Mt Vernon	Fairfield	Longview	Marshall	Athens Gun Barrel City	Sulphur Springs	Crockett Grapeland
Housing Authority (type, # participating cities)	Low Rent (2)	Low Rent	Section 8 Low Rent	Section 8 (2) Low Rent (4)	Section 8 Low Rent (3)	Low Rent (2)	Low Rent (2)
AgriLife Office city location	Mt Vernon	Fairfield	Longview	Marshall	Athens	Sulphur Springs	Crockett
Smoking Ordinances 1 or more (Yes/No)	No	No	Yes	Yes	Yes	Yes	Yes

	Hunt	Lamar	Marion	Morris	Panola	Rains	Red River
General Population information							
Population	86,129	49,793	10,546	12,934	23,796	10,914	12,860
Public Health Services							
DSHS Regional Office location	HSR 2/3 Arlington	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler
Local Health Department	1	1	0	0	0	0	0
WIC Program Offices (# of Offices)	3	1	1	1	1	0	1
SNAP Offices (# of Offices)	1	1	0	1	1	0	1
DSHS Clinics (PHC/CH/CD/PN)	2 (CD, CH)	1 (PHC)	1 (PHC)	0	0	0	0
Health Care Access							
FQHC (# listed in county)	5	0	1	0	0	0	0
Hospital (# in county)	1	3	0	0	1	0	0
Ambulatory Surgical Center (Yes/No)	0	2	0	0	0	0	0
Emergency Room Trauma Level	Level IV	0	0	0	Level IV	0	0
Free Standing ER's (# in county)	0	0	0	0	0	0	0
Urgent Care Centers (# in county)	2	1	0	0	0	0	1
Physicians per 100,000 (2015 Merritt-Hawkins)	52	8-	1	2	11	1	3
Specialists							
Cardiology (# in county)	1	0	0	0	0	0	0
Pediatrics (# in county)	12	9	0	0	2	0	0
Dentists (# in county)	41	40	2	7	8	2	5
Pharmacies (# in county)	22	21	7	4	6	1	3
HPSA Mental Health (Yes/No)	No	No	No	No	Yes	Yes	Yes
HPSA Primary Care (Yes/No)	Yes	No	Yes	Yes	Yes	Yes	Yes
HPSA Dental Health (Yes/No)	No	No	No	No	Yes	No	Yes
Renal Centers (# in county)	2	2	0	0	0	0	0
Nursing Homes (# facilities in county)	5	5	1	1	4	1	2
Nursing Homes (# of beds total)	585	577	116	117	305	68	252
Low Income Care Clinics (# in county)	6	1	1	0	0	0	0
EMS Services (# in county)	5	3	3	1	2	3	2
Behavioral Health Services (Yes/No)							
LMHA (city located serving that county)	Richardson	Terrell	Longview	Terrell	Longview	Tyler	Tyler
Behavioral Health Specialty Hospital	Yes	Yes	No	No	Yes	No	Yes
Substance Abuse Services	Yes	Yes	No	No	No	No	Yes
Alcoholics Anonymous	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Hunt	Lamar	Marion	Morris	Panola	Rains	Red River
Transportation							
Bus Service (Yes/No)	Yes	Yes	Yes	No	Yes	Yes	No listing
Private Taxi (Yes/No)	Yes	Yes	No listing	No listing	No listing	No listing	No listing
Academics							
NETnet connectivity sites	2	1	N/A	N/A	3	N/A	N/A
University	1	0	0	0	0	0	0
Nursing RN, BSN, LVN	BSN						
Nurse Practitioner	N/A						
Pharmacy	N/A						
Health Education	BA/BS						
Public Health MPH/BPH	BA/BS						
Junior/Community College	0	1	0	0	1	0	0
Nursing		LVN, ADN			LVN, ADN		
Community Health Worker (Yes/No)		No			No		
Dental Hygiene AAS/BA/BS		No			No		
Dental Assistant (Yes/No)		No			No		
Certified Health Aide (Yes/No)		No			No		
Public Schools (# of ISD's in the county)	10	5	1	2	4	1	4
Educational Service Center	Region 8 & 10	Region 8	Region 8	Region 7	Region 7	Region 7	Region 8
Community/Social Services							
America Cancer Society	Dallas	Tyler	Tyler	Tyler	Lufkin	Tyler	Tyler
Lions Club (# of clubs)	4	1	1	0	1	0	1
Meals on Wheels (Yes/No)	Yes	Yes	Yes	N/A	Yes	Yes	N/A
Food Banks (# in the county)	4	3	4	8	3	1	4
Civic							
Chamber of Commerce (# per county)	1	1	0	2	1	1	2
Dept. Parks/Recreation	Commerce Greenville	Paris	N/A	N/A	N/A	N/A	Clarksville
Housing Authority (type, # participating cities)	Section 8 Low Rent (4)	Section 8 Low Rent (3)	Section 8 Low Rent	Low Rent (4)	Section 8 (2) Low Rent (2)	Low Rent	Section 8 Low Rent (4)
AgriLife Office city location	Greenville	Paris	Jefferson	Daingerfield	Carthage	Emory	Clarksville
Smoking Ordinances 1 or more (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Rusk	Smith	Titus	Trinity	Upshur	Van Zandt	Wood
General Population information							
Population	53,330	209,714	32,334	14,585	39,309	52,579	41,964
Public Health Services							
DSHS Regional Office location	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler	HSR 4/5 N Tyler
Local Health Department	0	1	0	0	0	1	1
WIC Program Offices (# of Offices)	2	2	1	1	1	1	1
SNAP Offices (# of Offices)	1	3	1	1	1	2	2
DSHS Clinics (PHC/CH/CD/PN)	1 (PHC, CH, CD)	2 (PHC)	1 (PHC)	N/A	1 (PHC, CH, CD, PN)	0	0
Health Care Access							
FQHC (# listed in county)	2	6	0	0	1	0	0
Hospital (# in county)	1	8	1	1	0	1	2
Ambulatory Surgical Center (Yes/No)	0	9	1	0	0	0	0
Emergency Room Trauma Level	Level IV	Levels I/II/IV	Level III	Levels IV/IV	0	Level IV	Level IV
Free Standing ER's (# in county)	0	4	0	0	0	0	0
Urgent Care Centers (# in county)	0	8	0	0	0	0	1
Physicians per 100,000 (2015 Merritt-Hawkins)	30	680	33	2	14	10	21
Specialists							
Cardiology (# in county)	1		0	0	0	0	0
Pediatrics (# in county)	3		4	1	0	2	1
Dentists (# in county)	24	209	24	2	15	28	20
Pharmacies (# in county)	10	87	10	4	2	11	11
HPSA Mental Health (Yes/No)	Yes	No	No	Yes	No	Yes	Yes
HPSA Primary Care (Yes/No)	No	No	Yes	Yes	No	Yes	Yes
HPSA Dental Health (Yes/No)	No	No	Yes	Yes	No	No	No
Renal Centers (# in county)	1	6	1	0	3	1	1
Nursing Homes (# facilities in county)	4	16	3	2	4	7	5
Nursing Homes (# of beds total)	413	1900	368	165	444	639	541
Low Income Care Clinics (# in county)	1	5	0	0	1	0	0
EMS Services (# in county)	2	12	4	4	3	4	3
Behavioral Health Services (Yes/No)							
LMHA (city located serving that county)	Longview	Tyler	Terrell	Lufkin	Longview	Tyler	Tyler
Behavioral Health Specialty Hospital	No	Yes	No	Yes	No	No	No
Substance Abuse Services	Yes	Yes	Yes	No	No	Yes	No
Alcoholics Anonymous	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Rusk	Smith	Titus	Trinity	Upshur	Van Zandt	Wood
Transportation							
Bus Service (Yes/No)	Yes	Yes	No listing	No listing	Yes	Yes	Yes
Private Taxi (Yes/No)	No listing	Yes	No listing	No listing	No listing	No listing	No listing
Academics							
NETnet connectivity sites	5	12	1	2	4	4	3
University	0	2	0	0	0	0	1
Nursing RN, BSN, LVN		RN, BSN, MSN-MBA					N/A
Nurse Practitioner		MSN					N/A
Pharmacy		Pharm D					N/A
Health Education		BA/BS/MS					N/A
Public Health MPH/BPH		N/A					N/A
Junior/Community College	0	1	1	0	0	0	0
Nursing		LVN/ADN	LVN				
Community Health Worker (Yes/No)		Yes	Yes				
Dental Hygiene AAS/BA/BS		AAS/BS	No				
Dental Assistant (Yes/No)		Yes	No				
Certified Health Aide (Yes/No)		Yes	Yes				
Public Schools (# of ISD's in the county)	8	10	4	4	7	8	6
Educational Service Center	Region 7	Region 7	Region 8	Region 6	Region 7	Region 7 & 10	Region 7
Community/Social Services							
America Cancer Society	Tyler	Tyler	Tyler	Austin	Tyler	Tyler	Tyler
Lions Club (# of clubs)	0	1	0	2	3	1	0
Meals on Wheels (Yes/No)	Yes	Yes	N/A	N/A	Yes	Yes	Yes
Food Banks (# in the county)	4	22	1	0	3	7	7
Civic							
Chamber of Commerce (# per county)	2	1	1	1	1	1	1
Dept. Parks/Recreation	Henderson	Tyler Lindale Bullard	N/A	Trinity	N/A	Canton Van	Mineola Quitman
Housing Authority (type (# participating cities)	Section 8 Low Rent (2)	Section 8	Low Rent (2)	Low Rent	Low Rent (3)	Section 8 Low Rent (5)	Low Rent (2)
AgriLife Office city location	Henderson	Tyler	Mt. Pleasant	Groveton	Gilmer	Canton	Quitman
Smoking Ordinances 1 or more (Yes/No)	Yes	Yes	Yes	No	Yes	No	Yes

Appendix D. Logic Model for UT Health Northeast Population Health Strategic Plan

Situation	Inputs	Activities	Outputs	Intermediate Outcomes	Impact
• NeTX has among the worst health status indicators in the state and nation • Population health outcomes can be improved through partnerships to address needs & support healthy lifestyles • Community Leaders want to be responsive to health issues/needs of citizens • UT Health NE is well-positioned to work collaboratively with partners and community leaders to provide meaningful population health data, bi-directional education/training, resource identification, intervention planning and evaluation, and other expertise available through the UT System	• UT CoPHII – UT Health NE PHSP • Regional Population Health Council • Regional Health Status data • SCRH faculty, staff, & students • Medical residents • UT Health NE Office of Planning • UT Health NE Clinical Faculty • UT Health NE Medical Library • Existing and expanded regional partnerships • UT System & network of health campuses • Regional collaborators • Evidence-based population health intervention resources • Population health applied research projects	• Operationalize the School of Community and Rural Health • Establish Master & PhD programs • Conduct collaborative applied research projects • Expand academic offerings • Establish regional Consortium • Designate UT Health NE Population Health Leadership Team • Convene chartered Population Health Consortium • Create and manage a regional population health inventory • Advance population health outcomes through clinical improvements • Expand access to preventive & primary care • Expand cancer prevention & early detection • Expand behavior & mental health services & outcomes • Implement population health strategies for UT Health NE employees • Secure resources needed to achieve planned activities	• Campus-wide knowledge of PHSP • Expanded network of UT Health NE partners • County level health status indicators & resources report • Regular PHSP progress reports • UT Health NE Hosted meetings and conferences on population health topics • Region-wide smoking cessation campaign • Region-wide Behavioral health program • Regional Population Health e-newsletter • Electronic Resource List by county • UT Health NE expert/committee of advisors identified to serve as community resource • Population Health link on UT Health NE	• NeTX residents know behavioral risk factors associated with leading causes of chronic disease and premature death in the region • Regional residents understand that tobacco use contributes to chronic health problems • Tobacco use is reduced in all age categories • Regional residents engage in lifestyle changes to improve personal and population health status • UT Health faculty & staff know population health issues & adopt healthy lifestyle practices to improve individual health status, and serve as role models for their personal & professional networks	• NeTX Population Health status indicators achieve CDC Healthy People 2020 goals • Cancer prevention, early detection, and treatment are improved • Mental & behavioral health indicators are improved Unintentional injury rates – MVAs & suicides are reduced • Rates for preventive health measures - immunizations, early prenatal care, good nutrition, obesity, and exercise are improved for the region • Communities adopt a culture of wellness

Appendix E. Abbreviations

Abbreviation	Meaning
UT Health Northeast	The University of Texas Health Science Center at Tyler
DSHS	The Texas Department of State Health Services
HSR 4/5N	Health Service Region 4/5 North, consisting of 35 counties
HHSC	Health and Human Services Commission
RHP 1	Regional Health Partnership 1, part of the 1115 waiver consisting of these 28 counties:
COPD	Chronic Obstructive Pulmonary Disease
AA/B	African American/Black
SNAP	Supplemental Nutrition Assistance Program
ETCH	East Texas Community Health Survey
MPH	Master of Public Health
CHW	Community Health Worker
AHEC	Area Health Education Center
DSRIP	Delivery System Reform Incentive Payment
FQHC	Federally Qualified
EMS	Emergency Medical Service
LMHA	Local Mental Health Authority
UT TYLER	The University of Texas at Tyler
ISD	Independent School District
ESC	Education Service Center
SHAC	School Health Advisory Committee
CLRD	Chronic Lower Respiratory Disease
HIT	Health Information Technology
MVA	Motor Vehicle Accidents
GME	Graduate Medical Education

Appendix F. References

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