UTHealth™
The University of Texas
Health Science Center at Houston

UTHealth Population Health Strategic Plan

James Langabeer, EdD, PhD
Professor
Chair, Population Health Planning Initiative

Submitted to the Office of Health Affairs, UT System
Collaboration on Population Health Innovation and Improvement

Final Version: *January 30, 2017*

Giuseppe N. Colasurdo, MD
President

Michael Blackburn, PhD
Executive Vice President &
Chief Academic Officer

Developed with input from the following collaborators:

James Langabeer, EdD, PhD Professor, SBMI, McGovern Medical School and SPH		
SCHOOL OF BIOMEDICAL INFORMATICS Jiajie Zhang, PhD Dean	**SCHOOL OF PUBLIC HEALTH** Eric Boerwinkle, PhD Dean	**MCGOVERN MEDICAL SCHOOL** Barbara Stoll, MD Dean
Elmer Bernstam, MD Associate Dean	Joseph McCormick, MD Regional Dean	Jon Tyson, MD, MPH Vice Dean
Tiffany Champagne-Langabeer, PhD, RD	Melissa Valerio, PhD, MPH Regional Dean	Kevin Hwang, MD, MPH
	Susan Tortolero Emery, PhD Sr. Associate Dean	Thomas Murphy, MD Asst. Dean
SCHOOL OF DENTISTRY Muhammad Walji, PhD Associate Dean	Susan Fisher-Hoch, MD	Ryan Walsh, MD CMIO
Ana Neumann, DDS, PhD	Maria E. Fernandez, PhD	Eric J. Thomas, MD Associate Dean
	Steven Kelder, MPH, PhD Assoc. Regional Dean	
SCHOOL OF NURSING Diane Santa-Maria, DrPH, RN		
Jing Wang, PhD, MPH, RN		

Table of Contents

Executive Summary

As part of a UT System-wide initiative, the University of Texas Health Science Center at Houston (UTHealth) engaged in a comprehensive assessment and planning process to identify community needs, health outcomes, and priorities for an institutional population health strategic plan. This strategic plan outlines the data, needs, resources, and strategic priorities for improving regional health, in particular the health of the markets we serve as an institution. Population health is defined for these purposes as community and clinical collaboration that improves the health outcomes across a defined population. This includes both the patients[1] we currently serve as an institution, plus those that we could serve, but we do not currently. These "non-attributed" (i.e., those citizens in our region which currently are outside our financial and clinical influence), have wide disparities in health status and outcomes, and require targeted community interventions to improve the overall health of our community.

UTHealth has a statewide focus with its academic programs and regional campuses for the School of Public Health in Dallas, San Antonio, Austin, Brownsville, El Paso, as well as Houston. Plus, the School of Biomedical Informatics is partnering across the state to expand their statewide presence. The strength and infrastructure developed (e.g., dozens of DSRIP population-focused projects in the Rio Grande region), allow for population health improvements in multiple areas across the state. However, the largest concentration of faculty, students, and clinics are in the Houston region, and regional campuses are critical to supporting population health plans emerging from the other UT System components in their community, so the initial geographic focus of this current strategic plan is on the Greater Houston area (or Houston-Sugarland-Woodlands metropolitan statistical area). This will serve as a demonstration project and platform to support statewide deployment of population health plans over time.

At present, although there are hundreds of targeted public health and clinical interventions underway throughout the region, there is no comprehensive institutional approach to population health. Our primary strategic priority resulting from this plan is to develop an infrastructure that supports population health across all disciplines (e.g., medical, behavioral, technologic) and conditions (e.g., maternal and child health, cardiovascular). We will utilize *collaboration* and *synergy* among faculty across all 6

[1] The word "patient" is used here to embody the totality of words used to label individuals interfacing with health promotion, health care, and health services, broadly. It would include nearly all individuals in the population.

schools and five local campuses co-located near Schools of Medicine across the state of Texas, to *leverage* the assets, strengths and interests of faculty and the institution, and provide *value* to UTHealth and the community.

For this plan, we define population health internally as:

> *Improving the health of people surrounding our campuses and clinics, through targeted and novel interventions that integrate public health, research, education, dissemination, and clinical care.*

Introduction and Planning Approach

The University of Texas System in Austin developed a vision of Quantum Leaps to transform the System over the coming years. Within one of these, the UT Health Care Enterprise, is an initiative designed to improve the general health status across the state: Collaboration on Population Health Innovation and Improvement (CO-PHII). Each of the health institutions brought representatives to lead the effort for their campus, including MD Anderson Cancer Center, UTHSC-Tyler, UTHSC-SA, UT Southwestern, UT-RGV, and UTHealth.

The University of Texas Health Science Center at Houston (UTHealth) initiated our strategic planning process by forming a team to examine the needs of the communities we serve, and develop an approach to improve the health outcomes and disparities of this population. We sought to be inclusive of faculty across all areas and regions where we had campuses and faculty (e.g., Brownville, San Antonio). Key members of the 20+ member planning committee include the Dean of the School of Public Health (Eric Boerwinkle, PhD); Dean of the McGovern Medical School (Barbara Stoll, MD); and Dean of the School of Biomedical Informatics (Jiajie Zhang, PhD). Each of the Deans were asked to nominate other members, and we ended up with approximately 22 representatives. All 6 schools were represented in the planning process.

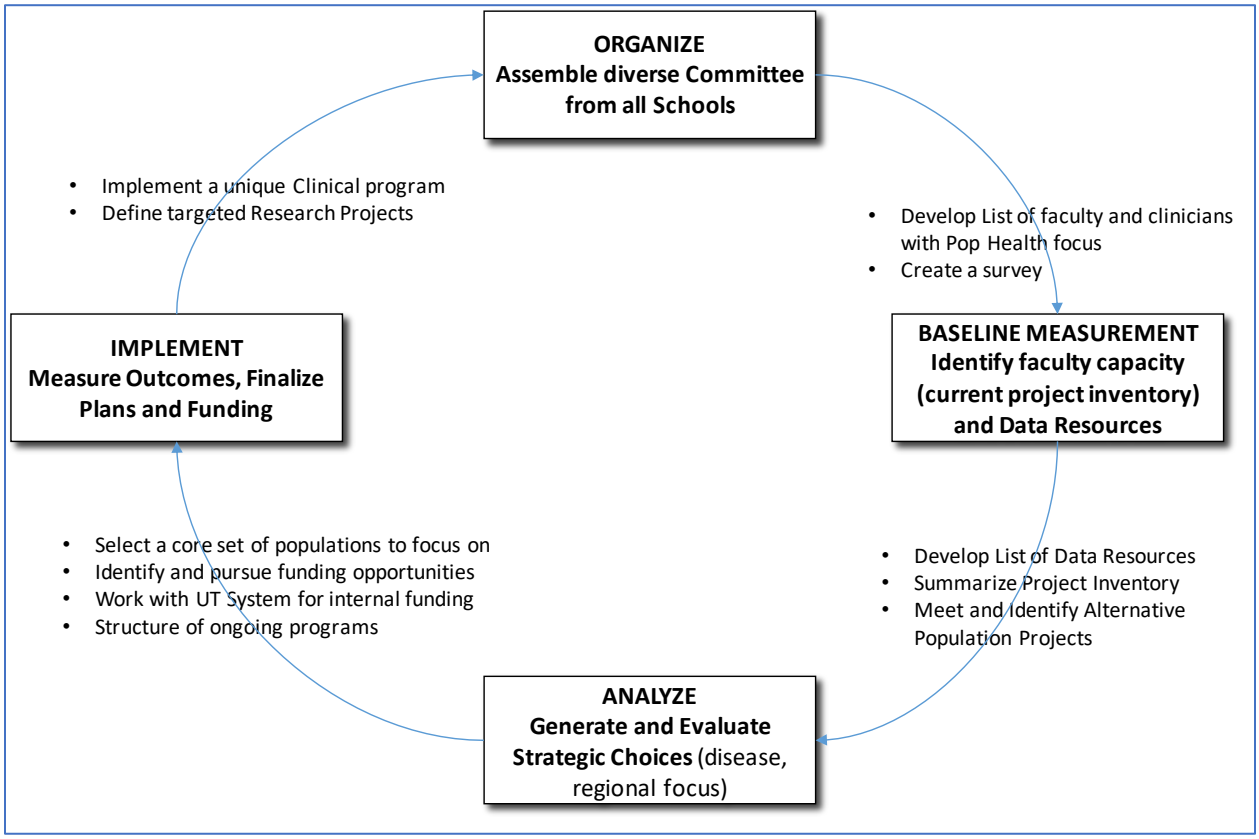
We followed a modified approach to community-based strategic planning, similar to that recommended by the National Association of County and City Health Officials (NACCHO, 2010). This involved addressing critical questions early on, such as "what population do we serve?" and "what are our UTHealth priorities?".

This process was organized around four critical phases:

- Assemble the right mix of faculty from across the institution
- Perform baseline measurement of existing programs in population health
- Develop a structure for analyzing strategic choices for moving forward
- Implementation of strategy

Figure 1 shows the planning process the institution followed.

Figure 1: UTHealth Strategic Planning Process



Defining Population Health

One of the first items the committee tackled was to understand the term "population health" and to fully appreciate the differences between current "public health" and "clinical care" that is performed daily by UTHealth faculty across all schools. When we examine the words individually, we get the following:

Population: a group of patients with some common characteristics

Health: complete state of well-being; not only the absence of disease or pain

Population Health: Improving the health needs of a defined group of people

More formal definitions are those offered by leading researchers in the field:

- "the distribution of health *outcomes* within a population, the *determinants* that influence distribution, and the *policies/interventions* that affect them…" (Nash et al, 2016)

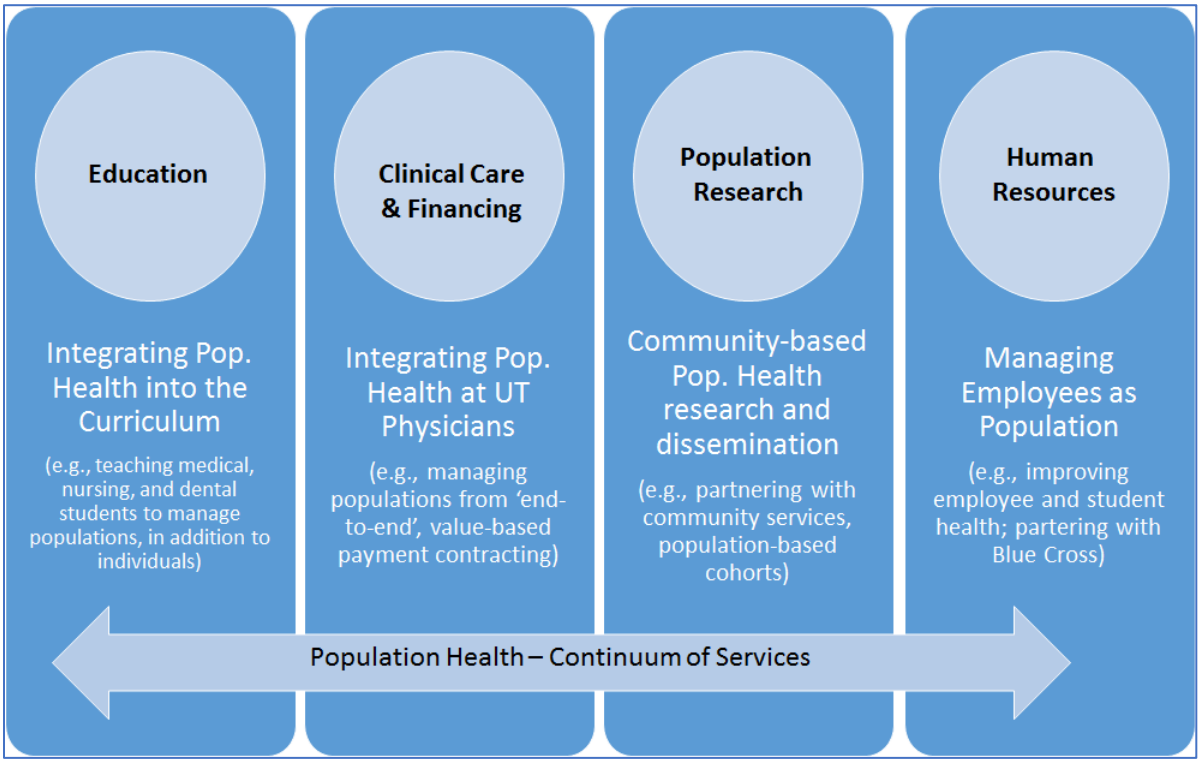
- "targeted interventions that improve the health outcomes" and impact the determinants of these outcomes (medical, societal, behavioral) for a specific group (Kindig & Stoddart, 2003).

Other researchers note that population health programs must

- *"foster collaboration between clinical providers and community/public health agencies"* (Hacker and Walker, 2013).

Population health initiatives can span across many areas, from managing clinics as populations to managing employees within the organization. From a health system perspective, the term is often used to focus on delivery of patient care in a more systematic process, using systems to track populations, conditions, and health measures. From an academic health center perspective however, we feel this should be much broader and incorporate aspects of public health as well as clinical care. Population health has roles in Education (integrating concepts of population health into the classroom and curriculum); Clinical Care (managing populations instead of patients; Community-Based Research (integrating community with public health); and Human Resources (improving an organization's employee and student health status). We developed the figure below to summarize the continuum of population health, to visualize the continuum of population health.

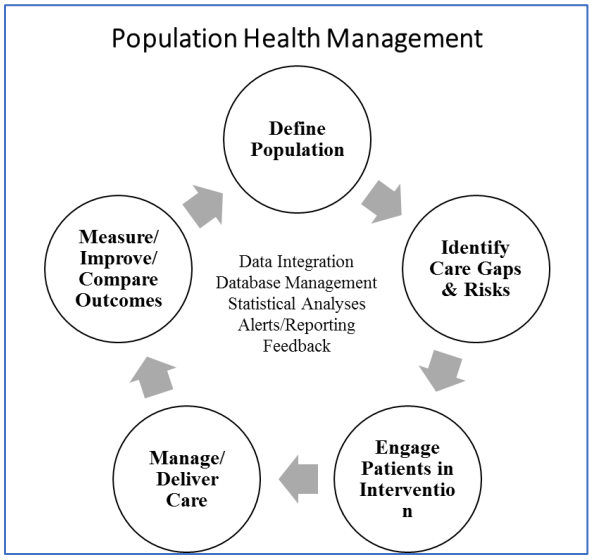
Figure 2: Population Health Continuum



From a practical perspective, the process of managing population health involves multiple steps, starting with defining unique populations and understanding their health status, to identifying determinants and risk, engaging patients in interventions, and managing care. Figure 3 summarizes the population health management process. Each of these process steps require infrastructure to perform.

We are proposing that our institutional population health initiative will focus on all of these areas over time.

Figure 3: Population Health Process



Based on the academic definitions of population health, UTHealth chose to adopt the perspective of population health characterized with the following components:

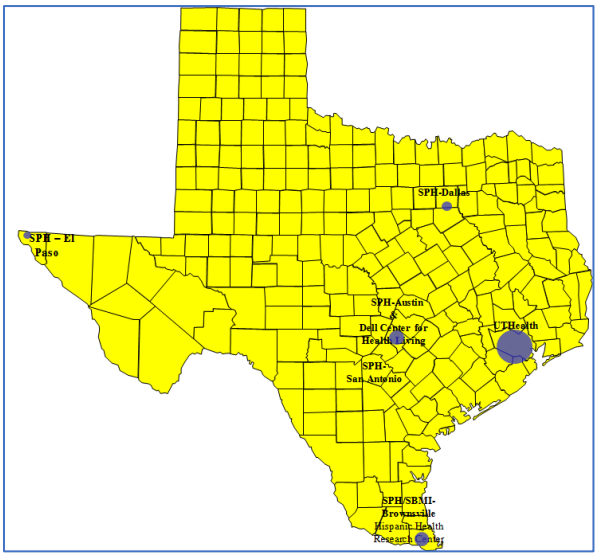
- Integrative of both clinical care and public health
- Involves research, care, dissemination, and training
- Is community-based and involves collaboration with partners
- Focuses on improving the health of the community, both for those patients we serve and those which we do not
- Utilizes team science and innovative techniques, data, systems, and processes perform all these functions.

Improving the health of people surrounding our campuses and clinics, through targeted and novel interventions that integrate public health, research, education, dissemination, and clinical care. Using team science, we will collaborate across schools and regions, and externally and with the community to provide value to UTHealth and impact to our populations.

1. Population Health Geographic Catchment Area

UTHealth has a statewide reputation and presence with its academic programs and School of Public Health campuses in Dallas, San Antonio, Austin, Brownsville, El Paso, as well as Houston. Plus, the School of Biomedical Informatics is partnering across the state to expand their statewide presence. The strength and infrastructure developed (e.g., dozens of DSRIP population-focused projects in the Rio Grande region; Clinical Translational Science Awards and Latino-based community research from San Antonio), allow for population health investigations and informed improvements to address health and health needs across the state. The current strategic plan presented will focus in the Houston region and will be rolled out across our campuses in the future.

Figure 4: UTHealth Statewide Presence

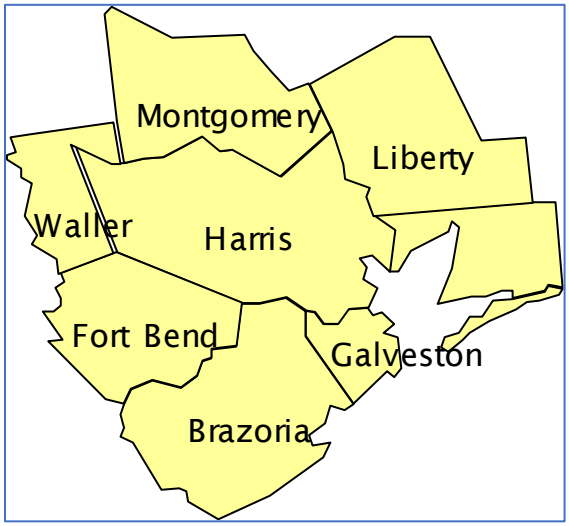


Given that the largest concentration of faculty, students, and clinics are in the Houston/Harris County region, and the potential collaboration of UTSPH campuses in supporting population health plans emerging from the other UT System components in their community, the initial geographic focus of this strategic plan is on the Greater Houston area (or Houston-Sugarland-Woodlands metropolitan statistical area). This will be a platform to support the statewide deployment and replication of the UTHealth System population health plan over time.

We will start with an initial geographic focus on the greater Houston region and southeast Texas, stretching from Katy to Beaumont and the Woodlands towards

Galveston. Then, as population health infrastructure develops, we will extend this statewide through our regional campus network and determine how best to integrate with co-located Schools of Medicine partners. The focus in Houston and surrounding area covers 7 counties (Figure 5). This Houston-Sugar Land-Baytown metropolitan statistical area has a high per capita income ($54,000) which makes it the 19th highest MSA in the country, and 35% higher than the state of Texas average (US Bureau of Economic Analysis, 2015). The population density is roughly 2,402 people per square mile. Approximately 17% of the population is below the federal poverty level.

Figure 5: Initial Geographic Catchment Area



The region is extremely diverse with nearly identical numbers of both males and females (US Census Bureau, 2016). Approximately 18% of the population is African American, and 36% identify as Latino. There are roughly 8% Asian. Approximately 10% of the population is >65 years of age, and 27% <18 years of age. These statistics are comparable to the overall state of Texas population.

In terms of medical care, there are 120 hospitals in the region with varied bed capacity and service specialties. This equates to nearly 17,000 beds providing over 4 million patient days per year (American Hospital Directory, 2016). There are roughly 1,730 people for every 1 primary care physician (County Health Rankings, 2016). This is

approximately 3% fewer physicians per capita than elsewhere in Texas. Table 1 summarizes the number of hospitals, beds, and patient days by county in this metropolitan area.

Table 1: Hospital Capacity in Metropolitan Area

County	***Est. Population***	***# Hospitals***	***# of Beds***	***# of Patient Days***
Harris	4,092,000	85	14,000	3,352,000
Fort Bend	585,000	10	1,000	220,000
Montgomery	455,000	13	1,200	278,000
Brazoria	313,000	4	162	22,000
Galveston	291,000	4	863	211,800
Liberty	75,000	1	25	550
Waller	43,000	0	0	0
Chambers	35,000	2	39	1,650
Austin	28,000	1	32	900
Total	**5,917,000**	**120**	**17,321**	**4,086,900**

Source: American Hospital Directory (AHD.com), 2016

2. Health Outcomes and Disparities

Although there is a very large concentration of medical providers, the health outcomes of the Houston region are below the state of Texas in many areas. For example, these are some of the leading health indicators and factors for the region.

- Estimated **uninsured** rate between **26-32%** across the counties in the region, ranking it the among the highest in the nation (Texas Medical Association, 2015).
- **50%** of adults in the region have no **dental insurance** (Health of Houston, 2011)
- **Vaccination** rates for school-age children (e.g., for poliovirus, MMR, Hep. A and B, etc.) averages **70%**, below the national average. As a state, Texas is ranked **48th** (near the bottom) for combined vaccinations (Hill et al., CDC, 2014).

- Prevalence of **hypertension** and cardiovascular disease is highest in the state for our region, at approximately **30%** of the population (Texas Center for Health Statistics).
- **Obesity** levels in Texas are **32.4%** for all adults (State of Obesity, Robert Wood Johnson, 2016).
- Levels of obesity for African American teens is 4% higher than the county-wide averages (15%) (Health of Houston Survey, 2011).
- Adult **smoking** rates are around **14%** (County Health Rankings, 2016)
- **Ozone** levels make the Houston region the **16th most polluted** in the country (American Lung Association, 2016).
- There are roughly 3,600 homeless persons in the region (Coalition for the Homeless, Houston, 2016)
- Significant **disparities** between Caucasian, African American, Latino and other groups across all measures of health outcomes. Most notable disparities exist in prevalence of hypertension, diabetes, and obesity.

The most comprehensive source of data for all counties across the US comes from the County Health Rankings (a Robert Wood Johnson funded program developed by the University of Wisconsin Population Health Institute; available at www.countyhealthrankings.org).

Table 2: County Health Rankings

County	Health Outcomes	Length of Life	Quality of Life	Health Factors
Harris	56	46	121	96
Fort Bend	5	5	19	4
Montgomery	19	37	20	20
Brazoria	26	34	39	30
Galveston	46	72	T7	35
Liberty	152	169	135	213
Waller	68	49	152	175
Chambers	52	95	42	68
Austin	17	35	18	24

Source: County Health Rankings (2016)

The table below summarizes the key health outcomes across Harris County (the largest of the counties in the catchment area), which ranks the county 56th in the nation for overall health outcomes (of 241 counties evaluated in Texas). Despite the size, available resources, and access to more clinical providers than anywhere else, the overall health outcomes and health status need improvement.

Table 3: Regional Health Status and Outcomes

	HARRIS COUNTY	ERROR MARGIN	NATIONAL BENCHMARK*	TEXAS	RANK (OUT OF 221)
Health Outcomes					53
Mortality					39
Premature death	7,099	7,010-7,189	5,466	7,186	
Morbidity					97
Poor or fair health	19%	17-20%	10%	19%	
Poor physical health days	3.6	3.2-3.9	2.6	3.6	
Poor mental health days	3.1	2.8-3.3	2.3	3.3	
Low birth weight	8.45	8.3-8.5%	6.00%	8.20%	
Health Factors					160
Health Behaviors					38
Adult smoking	17%	15-18%	14%	19%	
Adult obesity	29%	27-31%	25%	29%	
Physical inactivity	23%	21-25%	21%	25%	
Clinical care					48
Uninsured	29%	28-29%	11%	26%	
Social & Economic Factors					187
High school graduation	81%			84%	
Some college	53%	53-54%	68%	56%	
Unemployment	8.50%		5.40%	8.20%	
Children in poverty	27%	26-28%	13%	26%	
Inadequate social support	25%	23-27%	14%	23%	
Children in single-parent households	34%	33-34%	20%	32%	
Violent crime rate	851		73	503	
Physical Environment					221
Air pollution-particulate matter days	3		0	1	
Air pollution-ozone days	41		0	18	
Access to recreational facilities	7		16	7	
Limited access to healthy foods	8%		0%	12%	
Fast food restaurants	52%		25%	53%	

Source: City of Houston Health Equity Assessment, 2012 (which was adapted from the Univ. of Wisconsin Population Health Institute/RWJ)

3. Community Needs and Priorities Assessment

There have been several extensive community health needs assessments conducted in the Harris County area over the last few years. The most comprehensive e was conducted by the City of Houston Health and Human Services and the Harris County Public Health and Environmental Services in 2012 as part of an initiative to pursue Centers for Disease Control and Prevention (CDC) Community Transformation Grant funding. The needs assessment pointed to four priorities for public health (City of Houston, 2012):

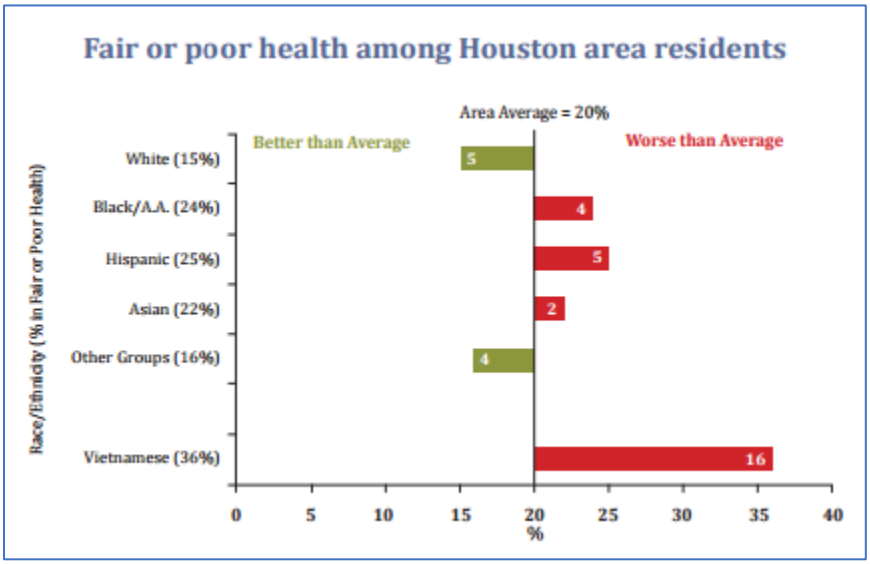
- **Reduce tobacco usage**
- **Encourage active living and healthy eating**
- **Improve access to prevention and care for hypertension**
- **Enhance mental, social and emotional wellness in children**

In addition, based on the data on the health status, there is a demonstrated need for programs targeted at children and mothers. A recent Houston Chronicle newspaper article describes that 20% of the nation's uninsured children live in Texas (Houston Chronicle, 2016), making Texas home to more uninsured children than anywhere else in the U.S. Georgetown University's Health Policy Institute Center for Children and Families, ranks Texas as dead last with 682,000 uninsured children statewide (Alker and Chester, 2016). Meanwhile, the rest of the country now has achieved historically high insurance rates for children, everywhere else. Based on population prevalence and overall uninsured rates for adults, many of these likely live in Houston.

Episcopal Health Foundation has performed several independent community needs assessments the last few years (www.episcopalhealth.org). They have recommended geographic focus on Southwest Houston, Beaumont, and Baytown (for its ethnic and income disparities). Their community assessments surmised the need for a) enhanced comprehensive community-based primary care, b) increased access to mental health services; and c) focus on early childhood development, among others.

The Health of Houston Survey (last conducted in 2010 by Dr. Stephen Linder of the UT School of Public Health), pointed out a number of areas where Houston and the surrounding region lag in healthcare. Specifically, findings from the representative sample pointed to significant disparities in health between different race and ethnicities.

Figure 6: Disparities in Health in Houston



Source: Health of Houston Survey, 2011

4. Identified Community Partnerships and Resources

There are a tremendous number of community organizations in this region. Some target specific health factors (such as Healthcare for the Homeless), while others are very comprehensive in their scope (such as the City and County Health departments). Many existing research projects have already created relationships with some of these agencies and organizations.

Our goal as we move forward with a population health initiative, would be to formalize these resources into a comprehensive, fully-functioning advisory group. The organizations we would target include:

- City of Houston Health and Human Services
- Harris County Public Health
- Texas Department of State Health Services, Region 6/5
- Episcopal Health Foundation
- Gateway to Care
- The network of federally qualified health centers and other community centers (including Legacy, Good Neighbor, Spring Branch Community

Health Center, El Centro de Corazon, Harris Health System, HOPE Clinic, Healthcare for the Homeless)

- Houston Independent School District, Fort Bend ISD, and other surrounding school districts
- Houston Galveston Area Council
- Texas Medical Center
- Community-based insurance companies, such as Texas Children's Health Plan and Community Health Choice
- UTHealth-affiliated hospitals, including the Memorial-Hermann Hospital and LBJ Hospital

These are just a few of the community based resources that are available to support population health initiatives and will be contacted. An advisory board will be assembled of representatives of many of these organizations.

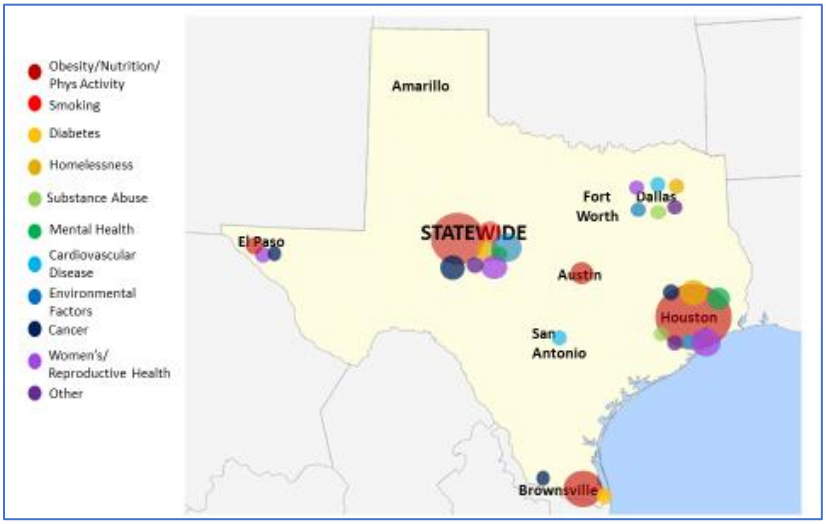
5. Identified Institutional Priorities and Resources

We developed a survey instrument to help identify the types of population health related programs underway at UTHealth, and to begin to create an inventory of faculty and programs focused on population health. The survey instrument was created in Qualtrics, with 25 questions. We distributed it electronically to all faculty members across the institution. The survey included geographic focus, disease conditions, health outcomes, type of programs, funding levels, and funding sources.

We discovered that there were **301** active projects which had some type of population health focus. In total, there was **72** faculty members leading these initiatives, with over **$60 million** in funding (although a large percentage of these came from only a few projects). There was also at least one project from each of the schools, although the School of Public Health and the McGovern Medical School was responsible for >75% of the population health initiatives reported in the preliminary assessment. The projects included collaborators from local and state agencies, including the City of Houston Health and Human Services, Centers for Disease Control and Prevention, and the Texas Department of State Health Services to name a few. There were also considerable differences in the types of populations being served (both geographically and disease-focus). The figure below summarizes the projects reported that are underway across the state. The larger the bubble, the larger the number of programs underway. The data

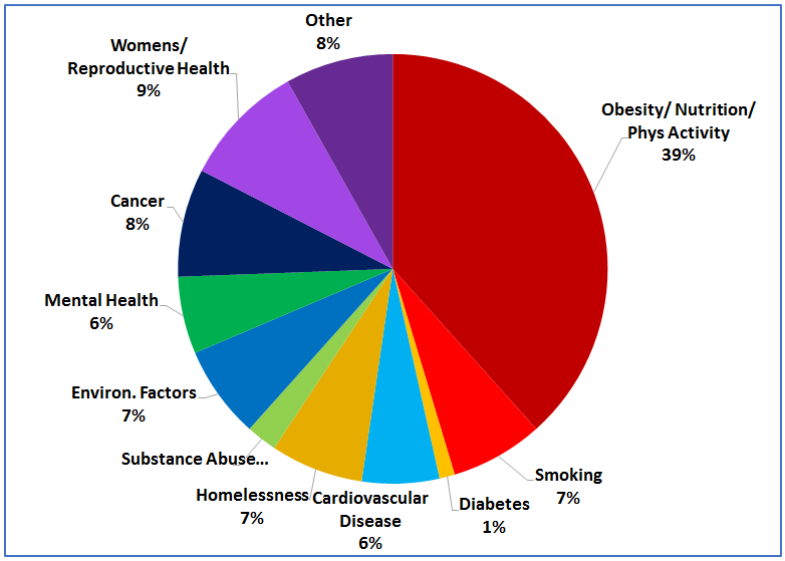
reported likely do not represent the entirety of our reach and service to the region and may not represent all efforts across schools of the UTHealth.

Figure 7: Pop. Health Projects by Region



In addition, there are also a number of different health conditions currently focused on in these projects. Obesity and women's health had the greatest overall activity. It should be noted however that this is only a snapshot in time, since research programs change frequently and may not have been reported by the investigator.

Figure 8: UTHealth Existing Pop. Health Research



Using these existing programs, the institutional committee performed a decision analysis of the highest priority programs. Criteria were weighted, and include potential

Table 4: Decision Analysis for Institutional Priorities

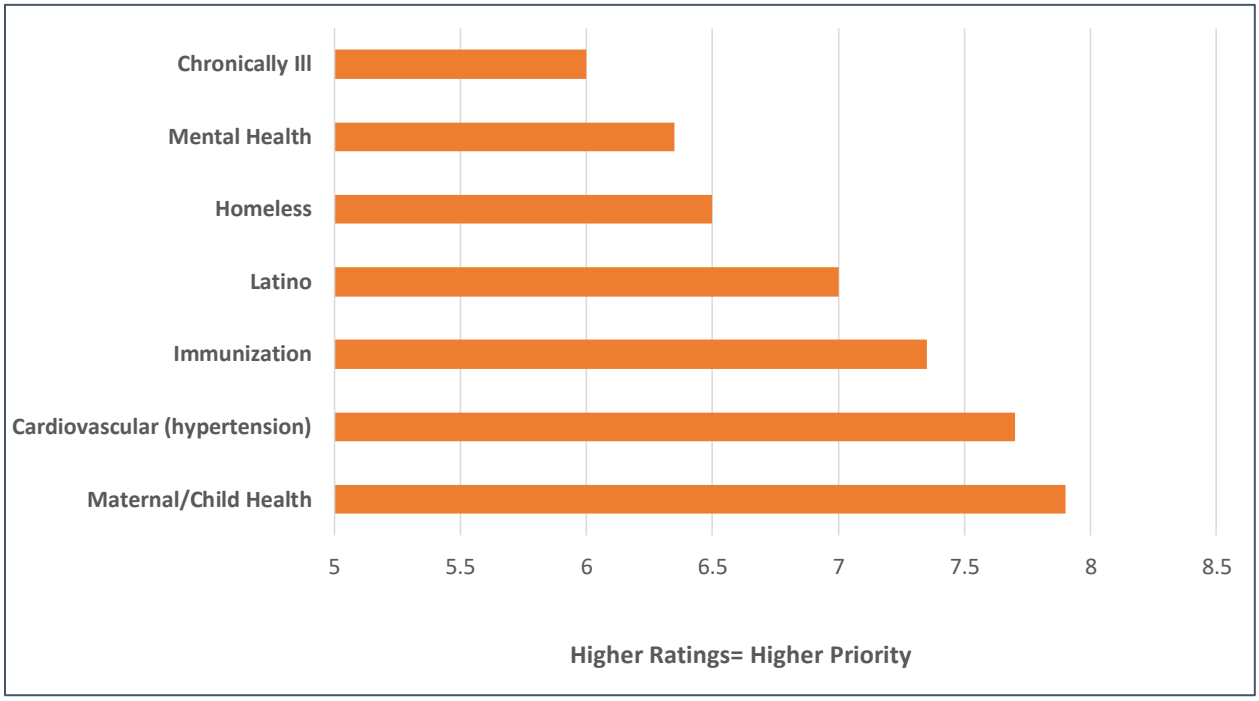
Criteria	Weight	Health Priority A	Health Priority B	C
Faculty Skills/ Interests	.20			
Impact on Population	.30			
Value to UTHealth Community (Strategic Alignment)	.15			
Potential Funding/ Financial Value	.20			
Data Availability	.10			
Probability of Success/Ease of Implementation	.05			
Total Weighted Score				

Based on the completion of the decision analyses, the following were identified as the top 7 health priorities (starting with the top priority):

- ***Maternal and child health*** (including both women's health, quality and safety of maternal care, and infant/child health)
- ***Cardiovascular health*** (reducing hypertension with a focus on secondary and tertiary prevention)
- ***Children's vaccination*** (for necessary and recommendation immunizations
- ***Latino health*** (improving the health of Latino and Hispanic populations in Texas)

- ***Vulnerable and Homeless populations*** (improving access to care for homeless youths and adults; people with disabilities)
- ***Mental health*** (e.g. reach of rural and underserved populations)
- ***High-risk chronically ill*** (e.g., COPD, type 2 diabetes, and hypertension)

Figure 9: Highest Priority Health Areas



6. Availability and Gaps in Data and Infrastructure

Population health initiatives require significant infrastructure to assess and improve the health of the populations. Three primary parts of the infrastructure include: collaborative faculty and staff; data and systems; and organizational focus.

Collaborative Faculty

The first part of this infrastructure will involve assembling a team of faculty and staff that will be focused on population-based initiatives. Many of the authors of this strategic plan will likely continue to be involved. We will use this team to identify and target specific funding opportunities around community projects.

Data and Systems

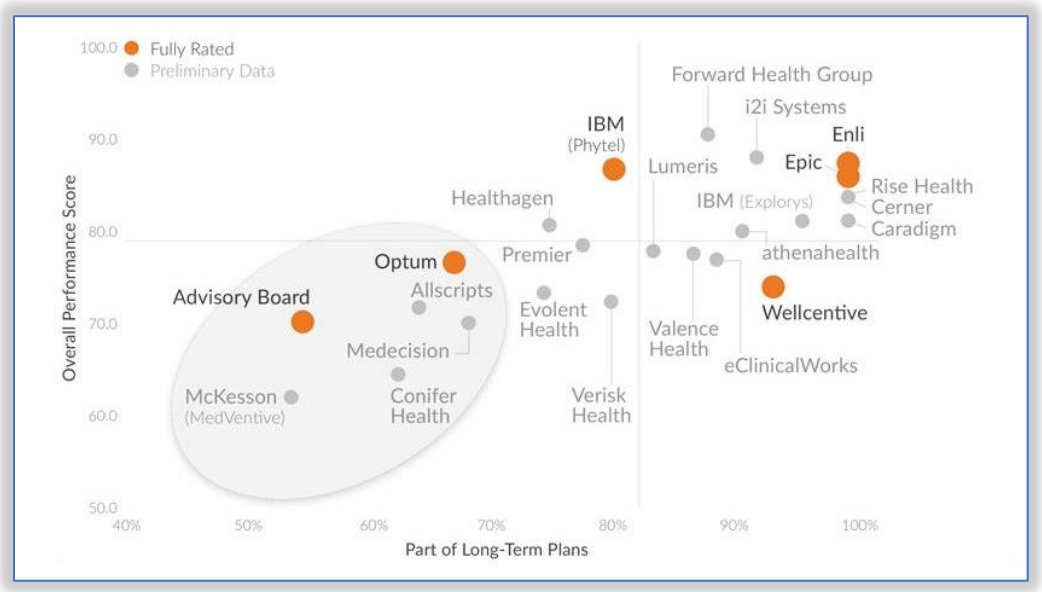
The UT School of Biomedical Informatics should play a significant role in developing improved data and systems for population health management. As part of building the strategic infrastructure, there needs to be consideration of utilizing more advanced systems to:

- Identify at-risk and high-risk patients,
- Measure population changes in outcomes
- Provide comparison of populations by "measures" or outcomes. These include developing measures for chronic, primary, and acute care from a variety of different accrediting organizations.
- Support providers and researchers targeting and evaluating efficacy of programs
- Measure organizational impacts and changes related to specific programs
- Engage patients

In order to accomplish this, UTHealth will likely need to invest further in data and systems. The "Clinical Data Network" that UT School of Biomedical Informatics (SBMI) is developing, will likely support aggregate measures and provide data on patients that can be used for populations. Quality performance measures can identify areas/regions/patients that are more vulnerable and need the greatest improvement. In addition, the use of other key databases owned or licensed by UTHealth (such as Truven Health Analytics, the Blue Cross sponsored "all-payer" claims database, RedCap, and Cerner Healthfacts to name a few) will need to be in-place and able to be mined for relevant data across populations.

Since population health will extend into our clinical practice at UT Physicians, then additional systems should also be considered to augment the Allscripts environment. There are a variety of population health software that should be considered, that will help in the management of our clinical populations. The figure below summarizes these vendors, plotted by overall performance and vision.

Figure 10: Pop. Health Systems



Source: KLAS Rankings, 2016; Population Health Management 2015: How Far Can Your Vendor Take You?

Organized Institute

A formal academic center or institute, that is shared amongst all regions and schools, would foster collaborative community-based research. More details on this institute will follow in the strategy section.

7. Population Health Workforce

The UT School of Public Health has been educating leaders and specialists in community and public health for decades. Nearly 1,000 students are currently enrolled in public health degree and certificate programs statewide at the UT School of Public Health and over 5,000 total student headcounts at all combined schools including Nursing, Medicine, Dental, GSBS, and SBMI. These programs emphasize critical skills needed for managing population health, including epidemiology, health promotion, biostatistics, leadership, and informatics. A key program is the MD/MPH program that extends to co-located Schools of Medicine across the state of Texas and provides an opportunity for providers to gain insight into social determinants of health and how to best address these in practice.

From the schools perspective, there are a number of faculty with interests and skills in community and population-based initiatives. The challenge we will face is bringing these faculty together with little or no initial funding, to get their involvement in organized, community-based research. Resources and dedicated time for these folks is essential to getting commitment.

In addition, education across the other schools will need to continue to evolve to manage populations versus treating patients. A population health-focused curriculum emphasizing "inter-professional collaboration" and population-based care is needed. This will involve expansion of population health tools and skills into the curriculum across all schools, from dentistry to nursing and medicine. This has already begun. For instance, the School of Nursing has a Nursing Systems division that incorporates population and community health into nursing practice. That same philosophy will be integrated throughout all schools and campuses to prepare the future generation of Texas practitioners and providers to best address population health.

8. Assessment of Additional Needs

The primary needs we face are two-fold: one is funding and the other is community resources. We anticipate that funding will be secured through research grants that are submitted around population-based themes. In addition, we anticipate some level of funding from the institution and from the UT System to get this program initiated.

The other need is to get the community involved. We will work on bringing together the advisory board and other community partners (covered in section 4) to ensure tight collaboration and coordination both at the strategy and execution level.

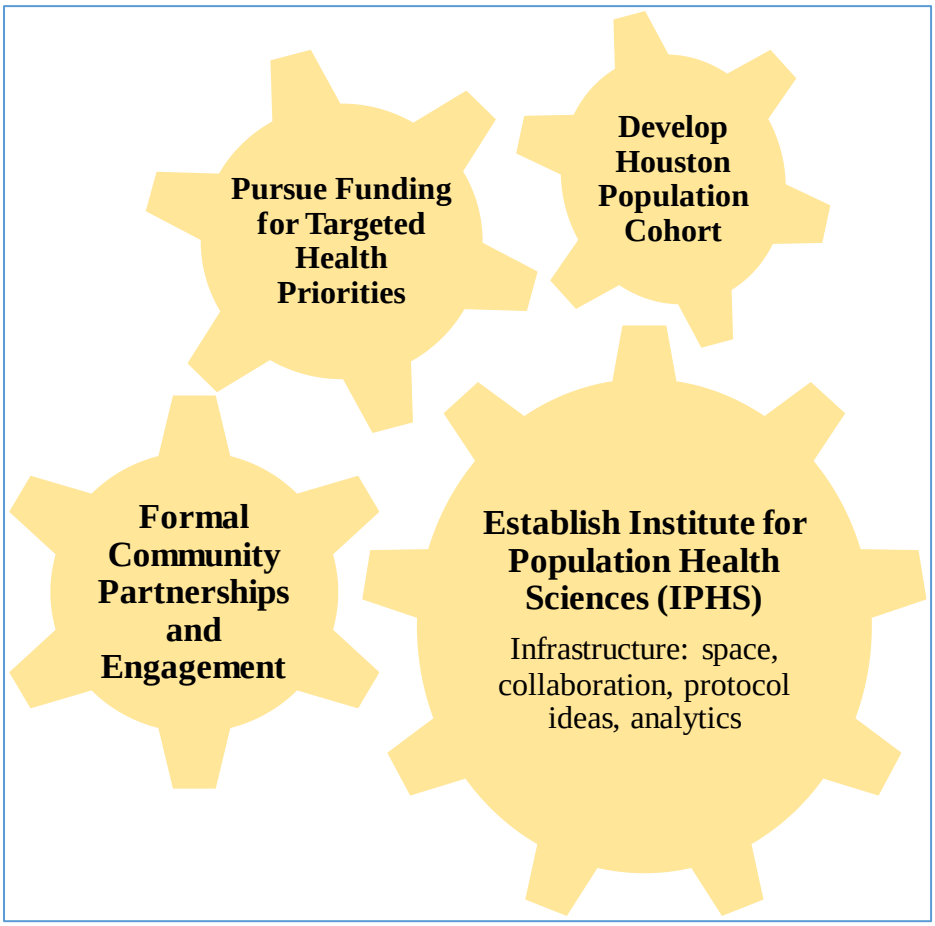
Other needs include:

- Recruitment of population health faculty to assist in teaching and research
- Developing a process for recruiting patients into initiatives
- Developing a coordinated process for engaging the community
- Developing a true focus for the university around population health

9. UTHealth Strategy and Approach

In order to develop population health capabilities, we envision 3 tiers for this strategic plan, which build upon each other and are inter-connected. These are summarized in the figure, and will be completely described below.

Figure 11: Tiers of Infrastructure Development



Tier 1. Develop Infrastructure: Institute for Population Health Sciences (IPHS)

Develop the infrastructure for a comprehensive institutional approach to population health management and improvement. We will establish an "Institute for Population Health Sciences" (IPHS) with multidisciplinary institution and statewide collaborators and advisors. The institute will utilize a "team science" approach, and ensure collaboration amongst multiple disciplines to address community-based research problems. The institute will fulfill the vision outlined in this strategic plan.

All schools should play a role in this Institute: The School of Public Health should provide leadership for program design, epidemiological studies, and outcome analyses. The School of Biomedical Informatics should lead data management, systems design, and programming. The McGovern Medical School should provide clinical study ideas and leadership of the UT Physicians network. The Schools of Nursing and Dentistry should provide faculty with clinical and population health expertise. Together, all schools will make this Institute successful.

Vision:

Improving the health of people surrounding our campuses and clinics, through targeted and novel population-based interventions that integrate public health, research, education, dissemination, and clinical care. Using team science, we will collaborate across schools and regions, and externally and with the community to provide value to UTHealth and impact to our populations.

The goals of the IPHS initially will be to:

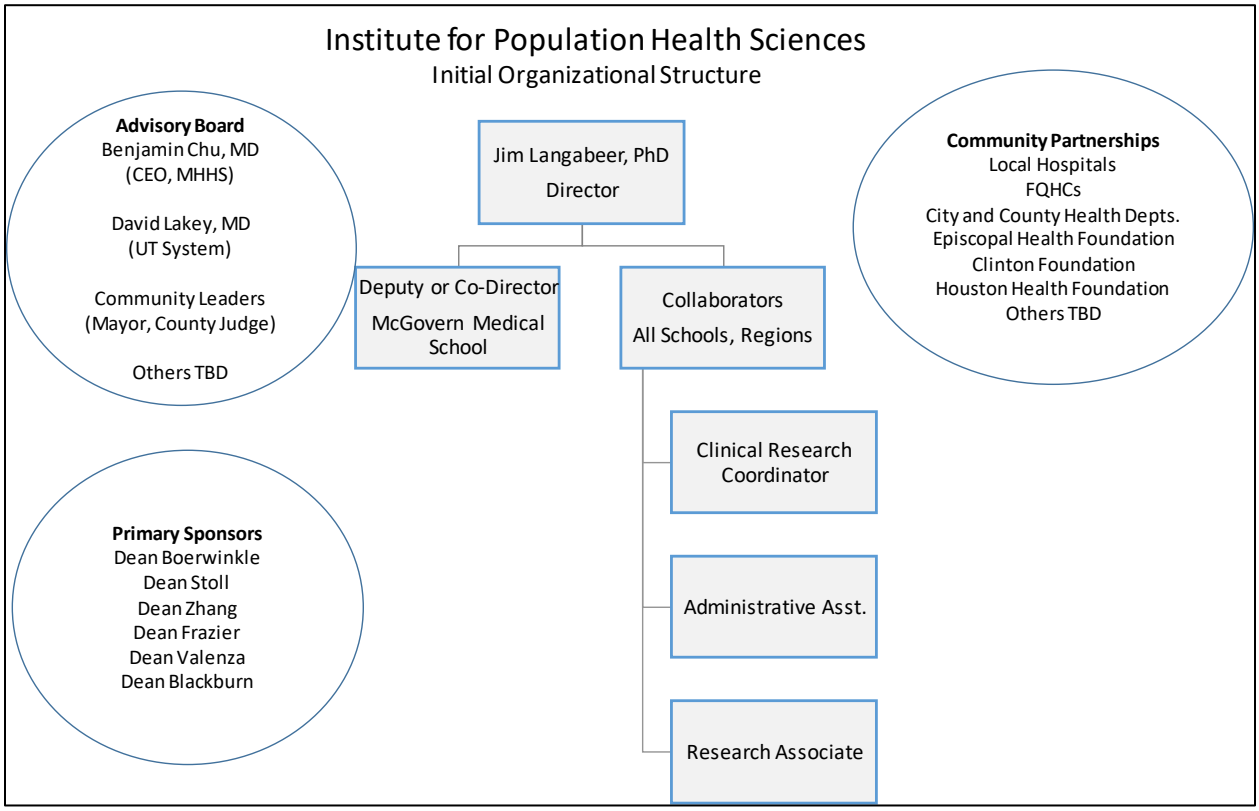
a. Create and grow population health expertise within the institution, integrating clinical care and public health.
b. Develop a formal team science approach to address population-based research in the communities we serve.
c. Lead transformative population health programs across the continuum, including education, clinical care and financing, research, and human research.
d. Build a robust analytical infrastructure and capabilities, including expertise in: data, systems, and analytics (e.g., outcomes analyses, geospatial analyses, economic evaluation). This includes integrating the large disparate data repositories (registries, databases), such as the all-payer claims database and UT System clinical data network.
e. Develop and conduct programs to improve the health status of our communities around core health priorities.
f. Incorporate principles of “team science” and “innovation” in all community-based research initiatives.

As part of this infrastructure development, we will also conduct a comprehensive needs assessment (across campuses), systematic inventory of current metrics and data at each of the system's institutions, and prioritized list of unmet needs of the infrastructure necessary for a comprehensive coordinated institutional approach to population health. Anticipated unmet needs include: leadership, analysis, data management, space, IT systems, and strong collaborative interactions.

We will develop relationships with non-profit organizations, public health agencies, and other community groups to empower communities and get them involved in the process. We will develop a local community advisory board to share information and ideas and get their feedback and involvement, and provide feedback at meetings of community groups and others in targeted constituencies.

Full details around this joint Institute, program leadership, structure, and organizational structure will be finalized internally over the coming months. However, the proposed initial organizational chart which is being submitted for UTHealth review is shown below, with community partnerships and an advisory board being essential components to fulfilling this vision.

Figure 12: Preliminary Proposed Organizational Structure



Tier 2: Develop Community-Based Partnerships

We do not seek to improve the population health on our own. We will engage the community organizations and public health agencies mentioned earlier to help in this endeavor. There are already several partnerships in place (with Houston Independent School District and Harris County Public Health for example). We will continue to build a formal approach to engaging the community and working together in these initiatives. Many of the following organizations will be approached for potential partnerships:

- City of Houston Health and Human Services
- Harris County Public Health
- Texas Department of State Health Services, Region 6/5
- Episcopal Health Foundation
- Gateway to Care
- The network of federally qualified health centers and other community centers (including Legacy, Good Neighbor, Spring Branch Community

Health Center, El Centro de Corazon, Harris Health System, HOPE Clinic, Healthcare for the Homeless)

- Houston Independent School District, Fort Bend ISD, and other surrounding school districts
- Houston Galveston Area Council
- Texas Medical Center
- Community-based insurance companies, such as Texas Children's Health Plan and Community Health Choice
- UTHealth-affiliated hospitals, including the Memorial-Hermann Hospital and LBJ Hospital

Tier 3. Identify Projects to Improve Targeted Health Priorities

Although there needs to be a base level of funding to support the infrastructure in tier 1, we will also pursue additional funding for targeting health priorities. Seven (7) priorities have initially received high ratings from the planning committee.

To improve the population's health for our coverage area, we spent time selecting the highest impact (greatest value) target areas for population health. The committee evaluated choices and established some potential targeted programs for consideration.

The targeted health priorities (based on initial priority assignments) for the Institute will be as follows:

- *Maternal and child health (including both women's health, quality and safety of maternal care, and infant/child health)*
- *Cardiovascular health* (reducing hypertension with a focus on secondary and tertiary prevention)
- *Children's vaccination* (for necessary and recommendation immunizations
- *Latino health* (improving the health of Latino and Hispanic populations in Texas)
- *Homeless populations* (improving access to care for homeless youths and adults)
- *Mental health* (e.g. reach of rural and underserved populations)
- *High-risk chronically ill* (e.g., COPD, type 2 diabetes, and hypertension)

These targeted programs will be developed with a shared philosophy that helps ensure the infrastructure outlined above gets rolled out across the entire UTHealth Houston institution and regions. We do not seek to be limited to a single disease focus, but rather to incorporate multiple dimensions and conditions in a comprehensive community-based approach through collaboration and team science.

Funding for these research and community initiatives will be critical for building-out a comprehensive population health program. Funding will be secured through:

a. Establishing specific novel, targeted protocols with grant potential, based on risk factors identified in the growing cohort (see below). These will include population-based interventions including clinical trials and behavioral or environmental interventions.
b. Seeking funding from the institution and the UT System Board of Regents as well as research and foundation grants.
c. Based on available funding, continue developing and expanding the infrastructure began in the first tier and move towards dissemination and implementation of the protocols and framework to improve population health in the state of Texas and serve as a model for the nation.
d. Training and developing the Texas workforce in population health methods.

Tier 4. Expand Community Partnerships and Develop a Houston Area Cohort

Undertake a comprehensive institutional approach to developing a Houston-area cohort. This cohort needs to be reflective of the community demographics overall. A partnership with the Institute for Health Policy (who lead the Health of Houston Survey process), will help ensure a representative cohort.

a. Maintain community advisory board and strengthen community partnerships (with City of Houston HHS, County public health agencies; Memorial Hermann Health System and Harris Health; faith-based organizations; other local non-profit groups such as Healthcare For the Homeless; Houston Recovery Society). These will be our springboards for recruitment, enrollment and continued participation and will provide communication/information feedback loops to the institution for practice.

b. Develop workforce competencies aligned with accreditation at each institution around population health; expand training to community health workers and identify strategies for reimbursement related to population health. There is a current DSRIP project to build upon in this area to guide and serve as a framework.

Budget and Investment

There will need to be investments made to support population health described in this plan. To create an Institute with startup staffing for years 1 and 2, and provide some dedicated time for faculty leadership, the anticipated budget is approximately $800,000. This does not include funding for the population-based cohort, which will require additional funding through grants or other mechanisms. The Institute for Population Health Sciences will seek startup funding from the institutional leadership, Deans of each of the schools, and the UT System. In addition, targeted research grants will be pursued once the Institute is official. Sustainability of the Institute will be based on grants and contract revenue generated by collaborating faculty over the long-term. Space will be required for 3-5 people initially.

Table 6: Preliminary Budget

Budget Category	Annual	2-year
Salary/Personnel (3 FTEs)	$230,000	$460,000
Salary offset for leadership (10%)	$75,000	$150,000
Database Management/Systems	$75,000	$150,000
Travel/Operations	$20,000	$40,000
Total Requested Budget	$400,000	**$800,000**

We would be very interested in receiving guidance from UT System in the best mechanism to identify funding sources in Texas (Health and Human Services, UT System, etc.) which can help to meet this budget requirement.

Timeline

We anticipate that during this current fiscal year (through August 2017), we will focus our efforts on internal collaboration between faculty. The goal will be to finalized plans for targeted grant ideas, and pursue specific areas of this plan. There are a number of potential initiatives that will fit under this umbrella (a cohort being only one of those) and we will spend the next year developing out a research and programmatic agenda. During this time frame, we will also develop out protocols for a Houston-area cohort utilizing the UT Physicians clinic network.

We will target an internal date of April 1, 2017 for the approval of the Institute for Population Health Sciences. Other key dates are listed below.

Table 7: Milestone Timeline

Tier	Initiatives	Expected
1	Formalize the Institute for Population Health Sciences: *Infrastructure in place (recruiting, systems, plans)	April 2017
1	Establish infrastructure (recruiting, systems, plans, initial protocols)	Dec. 2017
2	Develop Community-Based Partnerships	Dec. 2017
3	Begin pursuing Funding for Targeted Health Priorities	May 2018
4	Develop a Houston Area Cohort	2018-2023
5	The Institute becomes sustainable	May 2020

Summary

Our proposed strategic plan and initiatives, if supported by institutional and future grant funding, will improve the population health Southeast Texas. Through engagement of local community partners and the development of the Institute for Population Health Sciences, the programs discussed here will focus on determinants of health, and introduce health strategies and interventions to improve the health status of Texans.

References

Alker J and Chester A (2016). Children's Health Coverage Rate Now at Historic High of 95 Percent. Research Report from Georgetown University, Institute for Health Policy, Center for Children and Family.

American Hospital Directory (2016). Hospital Profiles. Available at www.AHD.com.

American Lung Association. State of the Air (2016). Available at http://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/most-polluted-cities.html.

City of Houston (2012). Houston/Harris County Community Transformation Initiative Health Equity Assessment. Available at https://www.houstontx.gov/health/communitytransformation/HE_Assessmentt_Final.pdf.

Hacker K. & Walker DK. Achieving Population Health in Accountable Care Organizations. American Journal of Public Health, July 2013, Vol. 103, No. 7, pp. 1163-1167.

Health of Houston Survey (2011). Health of Houston Survey 2010 A First Look. Houston, TX: Institute for Health Policy, The University of Texas School of Public Health.

Hill HA, Elam-Evans L, Yankey D, Singleton J, Kolasa M (2014). National, State, and Selected Local Area Vaccination Coverage Among Children Aged 19–35 Months — United States, 2014. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report, 64(3), 889-896.

Houston Chronicle (2016). One in Five Uninsured Children Live in Texas. Available at http://www.houstonchronicle.com/business/medical/article/One-in-five-uninsured-children-live-in-Texas-10416345.php.

Kindig, DA, Stoddart G. (2003). What is population health? American Journal of Public Health, 93, 366-369.

NACCHO (2010). Developing a Local Health Department Strategic Plan: A How-To Guide. The National Association of County and City Health Officials.

Nash, D. (2016) et al. Population Health: Creating a Culture of Wellness. Burlington: MA, Jones and Bartlett Publishing.

Robert Wood Johnson Project on Obesity (2016). State of Obesity. Available at http://stateofobesity.org/states/tx/.

Texas Behavioral Risk Factor Surveillance System, Center for Health Statistics (2016). Available at https://www.dshs.texas.gov/chs/.

Texas Department of State Health Services. Health Status of Texas 2014, Data Supplement.

Texas Medical Association (2016). The Uninsured in Texas. Available at https://www.texmed.org/uninsured_in_texas/.

US Bureau of Economic Analysis (2015). Houston-The Woodlands-Sugar Land, TX (MSA) Per Capita Personal Income. Available at www.bea.gov/regional/bearfacts.

United States Census Bureau (2016). Quick Facts. Available at http://www.census.gov/quickfacts.

Appendix 1: Data Sources for Risks and Health Status

	Name	Year	Website/Location
General Health Information	Houston Community Health Improvement Plan	2013	http://www.houstontx.gov/health/reports/Houston_CHIP_2013.pdf
	Health of Houston Survey	2010	https://sph.uth.edu/content/uploads/2011/12/Methodology-Report-HHS-092011_FINAL.pdf
	Harris Health Factors	2015	http://www.countyhealthrankings.org/app/texas/2015/rankings/harris/county/outcomes/overall/snapshot
	The State of Health in Harris County	2015-2016	http://houstonstateofhealth.org/wp-content/uploads/2015/02/Houston_Harris_County_State_of_Health_2015-20161.pdf
	Health Equity Assessment		
	Houston/Harris County Community Transformation Initiative Health Equity Assessment	2012	https://www.houstontx.gov/health/communitytransformation/HE_Assessmentt_Final.pdf
	The Health Status Texas (Texas DSHS)	2014	In Pop Health folder
	Community Health Needs Assessment Summary: 2014/2015 Houston Methodist Hospital	2014-2015	saved in Pop Health folder
	The State of Asian & Pacific Islander Health in Houston/Harris County	2015-2016	http://www.houstontx.gov/health/chs/Asian.pdf
	Community Assessment and Maps (Harris Health)	2012	https://www.harrishealth.org/SiteCollectionDocuments/community-assessment/medically-underserved-areas-population-2012.pdf
	County Health Data- Harris (Episcopal Health Foundation)	2014	http://www.episcopalhealth.org/files/2014/2990/6721/Harris_SNAPSHOT_2015.pdf
	County Health Data- Fort Bend (Episcopal Health)	2014	http://www.episcopalhealth.org/files/6214/2990/6705/Fort_Bend_SNAPSHOT_2015.pdf
	Baytown (Episcopal Health Foundation)	2015	http://www.episcopalhealth.org/files/6214/4797/2904/Baytown_Short_ENG.pdf
	Sharpstown/Alief/Gulfton Needs Assessment (Episcopal Health Foundation)	2015	http://www.episcopalhealth.org/files/9414/4803/6366/FINAL_SAG_Short_Report_ENG.pdf
	Birth and Death Data	2014	http://soupfin.tdh.state.tx.us/
Homelessness	Coalition for the Homeless Houston	2015	http://www.homelesshouston.org/wp-content/uploads/2015/06/2015-PIT-Fact-Sheet.pdf

	Perceived Needs of Homeless Persons in Houston/Harris County	2012	http://www.homelesshouston.org/wp-content/uploads/2012/12/2012NeedsAssessmentReport-Aug23.pdf
	Capacity and Gaps in the Homeless Residential and Service System, Harris and Fort Bend Counties	2011	http://www.homelesshouston.org/wp-content/uploads/2012/08/Capacity-and-Gaps-in-the-Homeless-Residential-and-Service-System-Harris-and-Fort-Bend-Counties.pdf
	Geographic Origin of the Users of the Houston/Harris County-based Homeless Services	2011	http://www.homelesshouston.org/wp-content/uploads/2012/08/Geographic-Origin-of-Houston-Homeless-Population-v9FINAL.pdf
	Healthcare for the Homeless (Houston)	2014	http://www.homeless-healthcare.org/research-publications/
Smoking	Behavioral Risk Factors Surveillance*		http://www.dshs.state.tx.us/chs/brfss/query/brfss_form.shtm
	Smoking in the Hispanic Community (Houston Chronicle)	2015	http://www.houstonchronicle.com/local/prognosis/article/Hispanic-paradox-linked-to-smoking-rates-6244361.php
Substance Abuse	Substance Abuse Trends in Texas: June 2014 (UT Austin)	2014	https://www.drugabuse.gov/sites/default/files/texas2014a.pdf
	Regional Needs Assessment: Youth substance abuse- Texas Gulf coast (Council on Recovery Prevention and Resource Center)	2015	http://www.prc6.org/wp-content/uploads/2015/11/PRC6_RNA-2015_Final_11.pdf
	Multiple Fact sheets about Texas Gulf Coast Region - Drug specific	2015	http://www.prc6.org/data/reports/
	Houston Area Substance Abuse Rehab Admission Rates and Usage Statistics (Health Grover)	2013	http://drug-abuse-rates.healthgrove.com/l/69/Houston-Texas
Obesity	Behavioral Risk Factors Surveillance*		http://www.dshs.state.tx.us/chs/brfss/query/brfss_form.shtm
	County Health Rankings (Robert Wood Johnson)		www.countyhealthrankings.org
	Cities Changing Diabetes		www.http://citieschangingdiabetes.com/cities/houston/
Environmental Factors	Preliminary Epidemiologic Investigation Of The Relationship Between The Presence Of Ambient Hazardous Air Pollutants (HAPs) And Cancer Incidence In Harris County.	data from 1995-2003	http://www.houstontx.gov/health/hazardous.pdf
	HCPHES Biennial Report	2011	http://www.hcphes.org/UserFiles/Servers/Server_72972/File/HCPHES%20AnnualBi

			ennial%20Reports/BiennialReport2010-11.pdf
	Harris County Pollution Control	2016	http://www.harriscountytx.gov/pollutioncontrol/ozone.aspx
Heart Disease	Chronic Disease in Harris County, Texas	2014	http://www.hcphes.org/UserFiles/Servers/Server_72972/File/Chronic.pdf
	Community Health Needs Assessment Summary: 2014/2015 Houston Methodist Hospital	2014/2015	saved in Pop Health folder
	Centers for Disease Control and Prevention	2016	http://www.cdc.gov/heartdisease/statistics.htm
Mental Health	Mental Health Local Service Plan (MHMRA Harris County)	2010	http://www.mhmraharris.org/LocalPlan/documents/LPND%20FY%2010%20Plan/MHMRA%20Local%20Plan%20FY%2010.pdf
Cancer	Assessment of the Occurrence of Cancer East Harris County, Texas Dept. of State Health Services	2015 (data from 1995-2012)	In pop health folder
	Texas Cancer Registry (DSHS)	2015	https://www.dshs.state.tx.us/tcr/data.shtm
Diabetes	Chronic Disease in Harris County, Texas (HCPHES)	2014	http://www.hcphes.org/UserFiles/Servers/Server_72972/File/Chronic.pdf
	Cities Changing Diabetes	2016	http://citieschangingdiabetes.com/cities/houston/
Preventative Care	HCPHES Biennial Report	2011	http://www.hcphes.org/UserFiles/Servers/Server_72972/File/HCPHES%20AnnualBiennial%20Reports/BiennialReport2010-11.pdf
	Texas Immunization Registry (Texas DSHS)	2014	http://www.dshs.state.tx.us/immunize/immtrac/default.shtm
HIV/STDs	Houston Hits Home With Youth and HIV/STD Testing (Big Cities Health Coalition)	2015	http://www.bigcitieshealth.org/case-study-houston-hiv-std-testing
1115 Waiver	Harris Health System Strategic Plan 2012-2016	2013	https://www.harrishealth.org/SiteCollectionDocuments/annual-reports/harris-health-strategic-plan-2012-2016.pdf
	UTHealth DSRIP (Transformational Initiatives)	2016	Projects saved in Pop Health folder