Acknowledgements

PROGRAM TEAM

Texas Health Institute (THI)
Camille D. Miller, MSSW  President/Chief Executive Officer
Nadia J. Siddiqui, MPH  Senior Health Policy Analyst
Susan Griffin, MPAff  Community Development Specialist

Montgomery County United Way (MCUW)
Bob Evans  Chair, Healthcare Steering Committee
MCUW Board of Directors
Vicky Shelledy  Director of Community Impact
Julie Martineau  President

The Program Team thanks the many partners and colleagues that contributed their time and resources to making this community health assessment a reality for Montgomery County.

STEERING COMMITTEE

Bob Abendshein  Anadarko Petroleum Corporation
Bob Evans  ExxonMobil Exploration Company (Retired)
Dr. David Gottlieb  Woodforest National Bank Foundation
Tom Holt  Conroe Regional Medical Center
Jay Jezierski  Stone Creek Wellness Center
Allen Johnson  Montgomery County Hospital District
Kelly Curry  Montgomery County Hospital District
Emily Llinas  Montgomery County Hospital District
Megan Marietta  Kingwood Medical Center
Jerry May  CB&I (Retired)
Dr. Stephen McKernan  Lone Star Family Health Center
Lucinda Owen  Community Volunteer
Dr. Peg Reiter  St. Luke’s The Woodlands Hospital
Steve Reiter  St. Dominic Village
Claudia Riedlinger  Community Volunteer
Dr. Janet Roberts  Interfaith Community Clinic
Dr. Roberto Rodriguez  Lone Star College - Conroe Center
Steve Sanders  Memorial Hermann The Woodlands
Lisa Schott  AAMA-Inspiring Latinos through Education
Ann Snyder  Interfaith Community Clinic
Karen Tomsu  Conroe Regional Medical Center
Josh Urban  Memorial Hermann The Woodlands
DATA WORKING GROUP

Denise Klein  Hospital Corporation of America
Jay Dutta  Hospital Corporation of America
Dr. Janet Roberts  Interfaith Community Clinic
Josh Jones  Lone Star Family Health Center
Caroline Champion  Memorial Hermann The Woodlands
Randy Reid  Memorial Hermann The Woodlands
Emily Llinas  Montgomery County Hospital District
Dr. Syed Ibrahim  Montgomery County Hospital District
Penny Wilson  Montgomery County Hospital District
Dr. Peg Reiter  St. Luke's The Woodlands Hospital

COMMUNITY ADVISORY COMMITTEE

Carolyn Bruton  State Representative Rob Eissler
Faith Casperson  Conroe Independent School District
Sue Davis  University of Texas Medical Branch
Carol Girocco  Lone Star College - Montgomery
Monica Grandinetti  Society of Samaritans
Tammy Grant  University of Texas Medical Branch-East County
Shirley Grimes  Tamina Community Center
Michael Hayles  Coat of Many Colors Ministries, Inc.
Nancy Heintz  First United Methodist Church Conroe
Trish Janek  Tri County Services
Dr. Jorge Jimenez  Physician
Dr. Nymudden Karimjee  Physician
Polo LaCoste  Home Instead
Pamela Munoz  Mayor, Patton Village
Jeanette Plowman  St. Vincent de Paul (Sacred Heart)
Leonard Reed  Mayor, Willis
Debbie Repka  Interfaith of The Woodlands
Rev. Cliff Ritter  The Woodlands United Methodist Church
Marlen Tejeda  Conroe Hispanic Task Force
Judy Tolleneare  Lone Star College-Montgomery
Rev. Dexter Upshaw  Rising Star Baptist Church
Dr. Wally Wilkerson  Physician

OTHER ACKNOWLEDGEMENTS

The Program Team would also like to thank Dr. Dennis Andrulis, Senior Research Scientist at Texas Health Institute, for his expert advice on study design and methodology, and Libby De Leon, Marlisa Allen, and Ana Zangeneh for their assistance on the project.
# Table of Contents

Executive Summary............................................................................................................................... 9  
Introduction.................................................................................................................................................. 17  
I. Background............................................................................................................................................... 19  
II. Methodology............................................................................................................................................. 20  
   A. Study Design ........................................................................................................................................... 20  
   B. Public Data and Analysis ....................................................................................................................... 21  
   C. Health Provider Data and Analysis ....................................................................................................... 24  
   D. Community Engagement and Feedback ............................................................................................... 28  
   E. Study Limitations .................................................................................................................................. 30  
III. Findings: Public Data............................................................................................................................. 31  
   A. Demographics ......................................................................................................................................... 31  
   B. Access to Care ....................................................................................................................................... 41  
   C. Health Status and Behavior .................................................................................................................... 44  
   D. Chronic Disease Prevalence .................................................................................................................... 46  
   E. Cancer Incidence and Mortality ............................................................................................................. 49  
   F. Births and Deaths .................................................................................................................................... 54  
   G. Communicable Diseases ......................................................................................................................... 58  
   H. Health Care Resources ............................................................................................................................ 59  
IV. Findings: Health Provider Data............................................................................................................. 61  
   A. Hospital Emergency Department Utilization .......................................................................................... 61  
   B. Safety Net Clinic Utilization .................................................................................................................. 70  
   C. Montgomery County Hospital District .................................................................................................. 80  
V. Community Feedback ............................................................................................................................. .87  
VI. Summary and Discussion......................................................................................................................... 91
Recommendation 1: Support programs that employ patient navigators and community health workers to provide community-tailored health information, health promotion, education and prevention in hospitals, clinics and trusted community settings. .................................................. 97

Recommendation 2: Expand services and operating capacity in existing clinics, and establish new clinics in underserved areas, including nurse-managed clinics. ................................................................. 104

Recommendation 3: Improve clinical and community care coordination through use of Information Technology. .................................................................................................................. 109

Recommendation 4: Improve access to dental health services for low-income communities....113

Recommendation 5: Establish a County Obesity Task Force to respond with community-based solutions to address improved nutrition and increased physical activity. ........................................115

Recommendation 6: Support community-based solutions to address cancer prevention and early detection, particularly for breast, skin and lung cancers. ................................................................. 118

Recommendation 7: Broadly disseminate findings of this report to assist community leaders and organizations in advocacy, policymaking, program development, and funding decisions to improve the health of Montgomery County residents. ................................................................. 123

References.................................................................................................................................124
# Table of Figures

Figure 1. Framework for Community Health Assessment ......................................................... 20
Figure 2. Total Population and Total Families Montgomery County, 2000 and 2009 .................. 31
Figure 3. Total Population by Zip Code, Montgomery County, Texas, 2000 .................................. 32
Figure 4. Total Population by Zip Code, Montgomery County, Texas, 2009 .............................. 32
Figure 5. Total Population by Race and Ethnicity, 2000 and 2009, Montgomery County, Texas .... 33
Figure 6. Percent Non-White Population by Zip Code, Montgomery County, Texas, 2000 ............ 34
Figure 7. Percent Non-White Population by Zip Code, Montgomery County, Texas, 2009 ............ 34
Figure 8. Percent Population by Sex, Montgomery County, Texas, 2000 and 2009 .................... 35
Figure 9. Percent Population by Age Category Montgomery County, 2000 and 2009 .................. 35
Figure 10. Percent Population by Educational Attainment Montgomery County, Texas, 2000 and 2009 36
Figure 11. Median Income, Unemployment & Families in Poverty Montgomery County, 2000 & 2009 ... 37
Figure 12. Percent Families at 100% Poverty by Zip Code, Montgomery County, Texas, 2000 .......... 38
Figure 13. Percent Families at 100% Poverty by Zip Code Montgomery County, Texas, 2009 .......... 38
Figure 14. Number of Families at 100% Poverty by Zip Code, Montgomery County, Texas, 2000 ........ 39
Figure 15. Number of Families in Poverty by Zip Code, Montgomery County, Texas, 2009 ............ 39
Figure 16. Distribution of Households by Household Income Montgomery County, 2000 and 2009 ...... 40
Figure 17. Owned Housing Units by Value Montgomery County, 2000 and 2009 ......................... 40
Figure 18. Number and Percent Uninsured (<65 years) in Greater Houston Region and Texas, 2007 ..... 41
Figure 19. Percent Uninsured (< 65 years) by Zip Code, Montgomery County, Texas, 2008 ............ 42
Figure 20. Number and Percent Uninsured at or below 200% FPL (< 65 years) in Greater Houston Region and Texas, 2007 .............................................................. 42
Figure 21. Percent with No Personal Doctor, Montgomery County, Texas, 2007-2009 ................... 43
Figure 22. Percent who Forgo Care due to Cost, Montgomery County, Texas, 2007-2009 .............. 43
Figure 23. Percent with Fair or Poor Health Status, Montgomery County, Texas, 2007-2009 .......... 44
Figure 24. Percent Smokers, Montgomery County, Texas, 2007-2009 ..................................... 44
Figure 25. Percent with No Flu Vaccine, Montgomery County, Texas, 2007-2009 ....................... 45
Figure 26. Percent Overweight or Obese Adults, Montgomery County, Texas, 2007-2009 .............. 46
Figure 27. Percent with Diabetes, Montgomery County, Texas, 2007-2009 ............................... 46
Figure 28. Percent with Coronary Heart Disease, Montgomery County, Texas, 2007-2009 ............ 47
Figure 29. Percent who Experienced a Heart Attack, Montgomery County, Texas, 2007-2009 .......... 47
Figure 30. Percent with Asthma, Montgomery County, Texas, 2007-2009 .................................. 48
Figure 31. Prevalence of Other Health Conditions, Montgomery County, Texas, 2007-2009 .......... 48
Figure 32. All Cancer Age-Adjusted Incidence Rate, Montgomery County and Texas, 2000-2007 ..... 49
Figure 33. All Cancer Mortality Rate, Montgomery County and Texas, 2000-2007 ....................... 49
Figure 34. Respiratory Cancer Incidence Rate Montgomery County and Texas, 2000-2007 ............. 50
Figure 35. Respiratory Cancer Mortality Rate Montgomery County and Texas, 2000-2007 ............ 50
Figure 36. Skin Cancer Incidence Rate, Montgomery County and Texas, 2000-2007 .................... 51
Figure 37. Skin Cancer Mortality Rate, Montgomery County and Texas, 2000-2007 ..................... 51
Figure 38. Breast Cancer Incidence Rate, Montgomery County and Texas, 2000-2007 ........................................ 52
Figure 39. Breast Cancer Mortality Rate, Montgomery County and Texas, 2000-2007 ................................. 52
Figure 40. Female Genital Cancer Incidence Rate Montgomery County and Texas, 2000-2007 .................. 53
Figure 41. Female Genital Cancer Mortality Rate Montgomery County and Texas, 2000-2007 ............ 53
Figure 42. Male Genital Cancer Incidence Rate, Montgomery County and Texas, 2000-2007 ............ 54
Figure 43. Male Genital Cancer Mortality Rate, Montgomery County and Texas, 2000-2007 .......... 54
Figure 44. Natality Data, Montgomery County, Texas, 2007 ................................................................. 55
Figure 45. Age-Adjusted Mortality Rates by Cause, Montgomery County, Texas, 2007 ................. 56
Figure 46. Infant Mortality Rate, Montgomery County, Texas, 1990-2006 ............................................ 56
Figure 47. Teen Violent Death Rate, Montgomery County, Texas, 1990-2006 ........................................ 57
Figure 48. Common Communicable Diseases, Montgomery County and Texas, 2007 and 2009 ......... 58
Figure 49. Sexually Transmitted Diseases, Montgomery County and Texas, 2007 and 2009 .......... 58
Figure 50. Number and Rate of Primary Care Providers, Montgomery County and Texas, 2009 ........ 59
Figure 51. Medically Underserved Areas (MUAs) and Health Professional Shortage Areas (HPSAs)
Montgomery County, Texas, 2010 ........................................................................................................ 60
Figure 52. All Emergency Room Visits to Four Major Acute Care Hospitals, 2007 and 2009 .......... 61
Figure 53. Emergency Room Visits by Montgomery County Residents to Four Major Acute Care
Hospitals, 2007 and 2009 .................................................................................................................... 61
Figure 54. Percent of All Emergency Room Visits by Sex and Age for Four Major Acute Care Hospitals,
2007 and 2009 .................................................................................................................................. 62
Figure 55. Percent of All Emergency Room Visits by Race and Ethnicity for Four Major Acute Care
Hospitals, 2007 and 2009 .................................................................................................................... 62
Figure 56. Percent of All Emergency Room Visits by Payer Source for Four Major Acute Care Hospitals,
2007 and 2009 .................................................................................................................................. 63
Figure 57. Percent of Emergency Room Visits by Montgomery County Residents for Four Major Acute Care
Hospitals, 2007-2009 .......................................................................................................................... 63
Figure 58. Top 10 Primary ED Diagnoses, 2007 & 2009, Montgomery County, Texas ................. 64
Figure 59. Total Emergency Department Visits by Zip Code, Montgomery County, Texas 2007 ........ 66
Figure 60. Total Emergency Department Visits by Zip Code, Montgomery County, Texas 2009 ........ 66
Figure 61. Total ED Visits and Distribution of ED Visits by Payer Source and Zip Code Montgomery
County, Texas, 2007 .......................................................................................................................... 67
Figure 62. Total ED Visits and Distribution of ED Visits by Payer Source and Zip Code Montgomery
County, Texas, 2007 .......................................................................................................................... 67
Figure 63. Percent ED Visits for All Ambulatory Care Sensitive Conditions by Payer Source Montgomery
County, Texas 2007-2009 .................................................................................................................. 67
Figure 64. Distribution of ED Visits by Payer Source and 10 Ambulatory Care Sensitive Conditions,
Montgomery County, Texas, 2007-2009 ......................................................................................... 68
Figure 65. Potentially Preventable Hospitalizations, Montgomery County, Texas, 2005-2008 .......... 69
Figure 66. Number and Percent of Patient Visits by Sex and Age Interfaith Community Clinic, 2007 &
2009 .................................................................................................................................................. 70
Figure 67. Number and Percent of Patient Visits by Race and Ethnicity Interfaith Community Clinic, 2007
& 2009 ................................................................................................................................................ 71
Figure 68. Number of Total Self-Pay Clinic Visits, Interfaith Community Clinic, 2007 ........................................... 72
Figure 69. Number of Total Self-Pay Clinic Visits, Interfaith Community Clinic, 2009 ........................................... 72
Figure 70. Distribution of Clinic Visits by Type of Service, Interfaith Community Clinic, 2007 and 2009 .. 73
Figure 71. Top 10 Primary Diagnoses, Interfaith Community Clinic, 2009 ................................................................. 73
Figure 72. Number and Percent Patients by Sex and Age, Lone Star Family Health Center, 2007 & 2009 74
Figure 73. Number and Percent of Patients by Race and Ethnicity Lone Star Family Health Center, 2007 & 2009 .................................................................................................................. 74
Figure 74. Number of Patients by Zip Code, Lone Star Family Health Center, 2007 ...................................................... 75
Figure 75. Number of Patients by Zip Code, Lone Star Family Health Center, 2009 ...................................................... 75
Figure 76. Percent of Patients by Payer Source, Lone Star Family Health Center, 2007 & 2009 .................. 76
Figure 77. Number of Self Pay Patients by Zip Code, Lone Star Family Health Center, 2007 ..................... 77
Figure 78. Number of Self-Pay Patients by Zip Code, Lone Star Family Health Center, 2009 ..................... 77
Figure 79. Distribution of Clinic Visits by Type of Service Lone Star Family Health Center, 2007 and 2009 ................................................................................................................................. 78
Figure 80. Top 10 Diagnoses, Lone Star Family Health Center, 2009 ................................................................. 78
Figure 81. Number of Patients with Child Exam by Zip Code, Lone Star Family Health Center, 2009 ...... 79
Figure 82. Number of Patients with Diabetes, Lone Star Family Health Center 2009 .................................................. 79
Figure 83. Number & Percent of Health Care Assistance Clients by Program, 2007 and 2009 .................. 80
Figure 84. MCHD’s Health Care Assistance Program Client Characteristics, 2007 and 2009 ............. 81
Figure 85. Distribution of MCHD’s Health Care Assistance Program Clients by Co-Pay and Federal Poverty Level, 2007 & 2009 ........................................................................................................ 82
Figure 86. Percent of MCHD’s Health Care Assistance Program Clients by Race and Ethnicity, 2007 & 2009 ........................................................................................................................................ 82
Figure 87. Number of MCHD’s Health Care Assistance Program Clients by Zip Code, 2007 .................. 83
Figure 88. Number of MCHD’s Health Care Assistance Program Clients by Zip Code, 2009 .................. 83
Figure 89. Top 20 Diagnoses by Count of Claims and Patients, 2009 MCHD Health Care Assistance Programs ................................................................................................................................................. 84
Figure 90. Number of MCHD HCAP Clients with Benign Hypertension by Zip Code, 2009 .................. 85
Figure 91. Number of MCHD HCAP Clients with Diabetes by Zip Code, 2009 ........................................ 85
Figure 92. Current and Potential Future Emergency Medical Service (EMS) Stations Montgomery County, Texas ........................................................................................................................................... 86
Figure 93. Top Health Care Priorities Discussed by the Community Advisory Committee .................. 87
Figure 94. Top Health Care Solutions Discussed by Community Advisory Committee .................. 87
Executive Summary

INTRODUCTION

In recognition of the growing health care concerns of low-income residents in the county, the Texas Health Institute (THI) was commissioned by Montgomery County United Way (MCUW) and a collaborative of six health care partner organizations to conduct a community health assessment of Montgomery County. The goals of this assessment were to:

- Understand the social and economic landscape of the community;
- Provide a portrait of health and health care needs of the community;
- Determine trends and emerging health and health care issues; and
- Engage the community and health care partners in identifying health and health care concerns, priorities, strengths and opportunities for future program and policy development.

BACKGROUND

In 2008, Montgomery County United Way (MCUW) commissioned a Priorities Task Force comprised of a cross section of Montgomery County residents to identify Montgomery County’s most critical social issues based on statistical and trend data compiled by the University of Houston Graduate School Of Social Work’s Office of Community Projects. The Task Force narrowed the top issues to five priorities where MCUW should focus resources in order to achieve the greatest impact on critical community issues. The report identified “Facilitating Access to Quality and Affordable Healthcare” as the number two priority for Montgomery County. This priority addresses physical health only; mental health is addressed in other priorities.

In February 2009 through MCUW’s regular funding process and in October 2009 through a Request for Proposals, MCUW solicited health care programs from nonprofit funded partners, clinics and service providers in the community. As proposals did not adequately address MCUW’s FQAH priority and because MCUW’s health care experts held differing opinions on health care priorities, MCUW’s Board approved funding for a Montgomery County Community Health Assessment. A 22-member Steering Committee was established. Texas Health Institute, a nonprofit organization that provides leadership in development of health care solutions for Texas, was commissioned to conduct the study. Six of the partner organizations agreed to join MCUW to fund the study and/or provide health care data.

METHODOLOGY

A multi-pronged approach was utilized to assess the community health needs and concerns of Montgomery County, drawing on a framework adapted from the Robert Wood Johnson Foundation’s Aligning Forces for Quality Initiative. To this end, multiple sources of public and private data along with diverse community voices were incorporated in the study to paint a complete portrait of Montgomery County’s health and health care landscape. Multiple methodologies, including ongoing community and stakeholder engagement, analysis of data, Geographic Information System (GIS) mapping, and content
analysis of community feedback, were utilized to identify key areas of priority and need. Specifically, the following data sources and measures were employed:

(1) Multiple public data sources on demographics, health and health care resources;
(2) Proprietary data on hospital emergency department, clinic, and hospital district health care assistance program utilization; and
(3) Community engagement and feedback.

DATA FINDINGS

Demographics

- In 2000-2009, Montgomery County grew much faster than the city of Houston and Texas. Regions with fastest population growth included: The Woodlands and Shenandoah; Conroe; Montgomery; and Magnolia and Decker Prairie.

- Montgomery County grew in racial/ethnic diversity at a much faster pace than the state. Asians, Hispanic/Latinos, and African Americans doubled and Whites represented a smaller proportion of the county by 2009. Regions with greatest growth in diversity included: The Woodlands and Shenandoah; Conroe and Cut and Shoot; Porter; Magnolia and Decker Prairie; Splendora and Pinehurst.

- Median income increased, as there was a significant growth in high-income populations in 2000-2009.

- In 2000-2009, the number of poor families grew and dispersed across the county. Areas with the largest increase in number of families in poverty included: The Woodlands and Shenandoah; Pinehurst; Willis; Montgomery; Conroe; Magnolia and Decker Prairie.

Access to Care

- In 2008, Montgomery County had the third largest number of uninsured in the Greater Houston Area, comprising one-fourth of the county’s population.

- In certain regions, especially Conroe, more than one-third of the population was uninsured.

- At least one in five persons in areas east of Shenandoah and The Woodlands and in and around Willis, Cut and Shoot, New Caney and Porter were uninsured.

- Over 50 percent of people under 65 years and with incomes at or below 200 percent FPL were uninsured.

- In 2007-2009, generally, one in five persons did not have a usual source of care. Among low-income populations (with income below $25,000), nearly one-third did not have a usual source of care.

- About 15 percent of the population delayed or did not obtain care due to cost in the county. Of low-income people, over one in three persons did not obtain care.
Health Status, Morbidity and Mortality

- In 2007-2009, over one in five persons reported having fair or poor health.
- Nearly seven in 10 persons were overweight or obese; and among low-income individuals about eight in 10 were overweight. These rates were higher than Texas’ average rate.
- Montgomery County had a larger percentage of population with high blood pressure, high cholesterol, arthritis, and adult asthma than the state.
- Rates of heart disease, diabetes, and tobacco use were comparable to the state.
- Rate of breast cancer mortality, respiratory cancer (including lung) incidence and mortality, and skin cancer incidence were higher in Montgomery County than Texas.
- The county had a higher death rate due to chronic lower respiratory disease.
- While Montgomery County’s rate of low-birth weight babies was comparable to the state, both county and state were performing below the national benchmark.
- Percent of pregnant women receiving prenatal care within first trimester was higher than Texas, however significantly lower than the nation.
- Rates of major communicable diseases and sexually transmitted diseases, appeared to be lower than the State of Texas, although this may be due to lower reporting rates.

Health Care Resources

- The county’s safety net primarily comprises a Federally Qualified Health Center (FQHC) located in Conroe, a nonprofit, volunteer-run clinic in The Woodlands, and a hospital district. In addition there are four acute care hospitals.
- Montgomery County has slightly more primary care physicians per 100,000 population than the state; however, it has far fewer nurses, including registered nurses, nurse practitioners, and licensed vocational nurses, than the state and the nation.
- The county also has fewer dentists per 100,000 population than the state.
- Much of East County has been designated as a Health Professional Shortage Area (HPSA). Lone Star Family Health Center has also received this designation for primary medical care. Furthermore, East County and Northwest County around Richards, Montgomery and Dobbin have been designated as Medically Underserved Areas (MUAs) for almost a decade now.
- Lone Star Family Health Center, the only FQHC in the county, served almost 19,000 residents in 2009, a 30 percent increase from 2007. In 2009, there were 3.0 visits per patient. Lone Star saw a majority of publicly-insured patients (about six in 10 in 2009). However, it grew in its self-pay or uninsured population, from representing 17 percent in 2007 to 21 percent in 2009. In 2009, Lone Star saw approximately 4,000 uninsured patients. The largest volume of uninsured patients to the clinic was from Conroe, Willis, and around Cut and Shoot.
• Interfaith Community Clinic (ICC), being a non-profit, volunteer clinic, saw only uninsured patients in 2007-2009. While ICC does not collect or report number of patients, the clinic estimates that it sees nearly 2,000 patients annually. Patient visit data for ICC show that the majority of visits were made by females, adults and racial/ethnic minorities. The largest volume of ICC patients was from Conroe, Spring and The Woodlands, although the clinic served patients from all across the county.

• In 2009, the four hospitals, combined, received just over 97,000 visits to their emergency department (ED) from Montgomery County residents. Publicly-insured patients (with Medicaid, Medicare or CHIP) accounted for the largest and growing proportion of ED visits (nearly 40 percent for in-county visits), and an even higher proportion of visits for potentially preventable conditions (nearly 50 percent). Publicly-insured ED visits were highest from Conroe, New Caney, Willis, and The Woodlands.

• Just over one-fourth of all hospital ED visits were made by self-paying or uninsured patients. One zip code in the city of Conroe accounted for the largest percent of self-paid ED visits—40 percent—a rate comparable to the actual percent uninsured in Conroe. Willis, New Caney and Porter were among other regions with a large percent of self-paid ED visits—i.e., at least 33 percent.

• In 2009, the hospital district covered nearly 1,500 individuals in their Health Care Assistance Programs (HCAP). The greatest concentration of clients was from Conroe and around Willis, with large numbers also from East County, Leonidas, Montgomery, and Magnolia.

Potential Areas of Need

This study revealed many geographic areas in the county with growing population, health and health care needs. Following is a list of potentially high-need areas, along with a summary of their demographic and health landscape:

• **Conroe**: After The Woodlands, Conroe has the largest and the fastest growing population. It is also home to the largest number of poor families, percent uninsured (almost 40%) and racially/ethnically diverse populations (70%). Parts of Conroe have also been designated as HPSA and MUA. In addition, Conroe accounts for the greatest proportion of ER visits and uninsured patients at clinics as well as the greatest proportion of the hospital district’s HCAP clients.

• **Willis**: Willis has the second highest uninsured rate in the county, and has also been designated as HPSA and MUA. Like Conroe, Willis houses a growing and large diverse population. In addition, only second to Conroe, Willis accounts for a large proportion of self-pay ED visits and clinic visits. A large number of HCAP clients are also from Willis. In addition, it includes a large proportion of patients with diabetes and hypertension.

• **East County, particularly New Caney, Porter and Cut and Shoot**: The East County region, particularly New Caney, Porter, and Cut and Shoot have seen considerable growth in population, as well as number of poor and racially- and ethnically-diverse populations. This region is also designated as HPSA and MUA. In addition, Porter and New Caney accounted for the third largest number of ED visits made by uninsured patients. The East County region also had a large
percentage of HCAP clients.

- West County, particularly Montgomery and Magnolia: Magnolia has seen considerable growth in population, number of poor families and percent uninsured. At the same time, it has accounted for a growing percentage of uninsured patients at the safety-net clinics. Similarly, Montgomery generally resembles Magnolia in its demographic dynamics and health care utilization patterns by uninsured. In addition, however, Montgomery has been federally designated as MUA.

COMMUNITY FEEDBACK

An Advisory Committee, comprised of 22 community leaders and representatives, was engaged over the course of four in-person meetings to identify priorities, react to data findings and offer solutions for major health care concerns in the county. Listed below are the major themes that emerged.

A common thread among these themes and an issue raised at all of the Advisory Committee meetings was the need to educate both communities and providers around existing safety net resources and programs for primary care, health promotion, prevention and healthy living.

- **Transportation.** Transportation was the single most commonly discussed barrier to accessing health care in Montgomery County. Respondents spoke at length about the lack of public transportation and the challenges it poses for low-income, senior and homeless populations trying to access primary care.

- **Ability to Pay.** The Advisory Committee identified a number of barriers related to cost, affordability and ability to pay for health care, including high deductibles or co-payments, expensive prescriptions, tests, and specialty and follow up care. The Committee discussed ad hoc solutions taken in the community including home remedies, traveling out of the country for cheaper care (e.g., to Mexico), and obtaining medications from abroad.

- **Primary Care Capacity.** Primary care, particularly for low-income and uninsured populations, was cited as a major void in the county. Community representatives discussed that clinics seemed to be operating at full capacity, with long waits in waiting rooms and appointments being booked far out. They also spoke at length about the need to expand clinic hours, particularly for day-time hourly wage workers, families needing assistance with child care, and families navigating with no or only one form of transport.

- **Trust and Related Issues.** Several representatives shared perspectives from within their individual communities regarding lack of trust in certain providers, perception of disrespect for low-income and racial/ethnic minority patients and fear among undocumented immigrants. The Committee spoke about the importance of a racially- and ethnically-diverse workforce, and the potential role of community health workers in promoting health and providing health education in culturally and linguistically appropriate ways in trusted community settings.

- **Dental Care.** There was almost unanimous consensus that dental care is "non-existent" in Montgomery County for the uninsured and under-insured. A general lack of dental services was discussed for adults, children, homeless and other populations.
• **Obesity.** Community participants discussed health concerns related to poor diet, lack of physical activity and obesity. They cited the problem of poor nutritional choices in low-income neighborhoods, such as ease of access to fast food chains and liquor stores, few grocery stores with fresh and healthy foods, and unhealthy options at food banks and pantries.

• **Cancer.** The Committee discussed the challenge that low-income and underserved populations face in obtaining needed screening or early detection of cancer. They pointed to the need for health education on screening and detection, particularly targeting minority populations who are reluctant to get screenings.

• **Other Areas of Concern.** Beyond lengthy discussions of the previously mentioned health care priorities, the Committee spoke about asthma in children and the challenge that parents face in keeping up with its management. They also spoke about air quality concerns and that while this issue must be addressed, it may be out of the scope of this study and initiative. Furthermore, the high teen violent death rate raised concerns around prevention, education and counseling among adolescents.

**RECOMMENDATIONS**

The Texas Health Institute (THI) has developed a set of recommendations to guide Montgomery County United Way and its health care partners in leveraging resources to establish programs and policies to improve health care and outcomes for Montgomery County.

**Recommendation 1:**

**Support programs that employ patient navigators and community health workers to provide community-tailored health information, promotion, education and prevention in hospitals, clinics, and trusted community settings.**

This recommendation addresses multiple barriers to accessing care, as identified in this assessment. These include: lack of public transportation; lack of trust in providers; culture and limited English proficiency; lack of knowledge about existing primary care resources; and limited education and prevention opportunities in underserved communities. It also offers an opportunity to address healthy behaviors, chronic care and disease management. In addition, with the shortage of primary care health professionals in Montgomery County who provide care to indigents and persons with publicly-funded health coverage, the utilization of patient navigators, Community Health Workers (CHWs), or *promotores* extends the quantity and quality of health care and social services available; improves access and connectivity to existing resources; and addresses trust and cultural competency issues identified through the study. Following are specific ways in which Recommendation 1 could be implemented:

A. Supporting community-based organizations, safety-net clinics or hospitals in hiring community health workers and *promotores* to provide health information, education and services within trusted community settings.

B. Supporting safety-net clinics or hospitals in hiring patient navigators to connect low-income and minority patients with needed health services, education and information.
C. Establishing a regional or county-based Hub-and-Spokes Model, such as the Pathways Community HUB Model, for creating a central entity that coordinates health and social services for low-income populations and offers health education and information through patient navigators, community health workers, and promotores.

**Recommendation 2:**

Expand services and operating capacity in existing clinics, and establish new clinics in underserved areas, including nurse-managed clinics.

This recommendation addresses gaps in the primary care safety net in Montgomery County, offering solutions that enhance existing clinic infrastructure and services as well as providing insight into high-need areas for the addition of new clinics. The following three actions are discussed as potential ways to achieve Recommendation 2:

A. Supporting future capital and operational expansion in high-need areas of Montgomery County.

B. Supporting expansion of operational capacity of existing clinics, including provision of more weekend and evening service hours and expanding service lines.

C. Improving clinic workforce and expanding nurse-managed clinics.

**Recommendation 3:**

Improve clinical and community care coordination through effective use of information technology.

Information technology, also referred to as Health Information Technology (HIT) in the health care field, has the potential to transform health care by reducing costs and improving quality of care through care coordination, service efficiencies, reduction in duplication of efforts and connectivity to resources. This recommendation describes two approaches for improving the coordination of primary care resources in the community to improve health and health outcomes:

A. Health Information Exchanges.

B. Social Marketing and Mobile Phone Applications.

**Recommendation 4:**

Improve access to dental health services for low-income populations.

One of the priorities established through the data analysis and community feedback was the lack of available dental services for low-income populations, particularly for children, non-elderly adults and the homeless. This section offers three approaches to expanding dental care:

A. Provide oral health preventive care education in schools and community settings;

B. Provide training to general dentists to see pediatric patients; and
C. Train other health professionals on how to integrate basic oral health practices into regular services for children.

Recommendation 5:

Establish a County Obesity Task Force to respond with community-based solutions to address improved nutrition and increased physical activity.

Data from this study point to an epidemic of overweight and obese residents in the county--i.e., nearly seven out of 10 Montgomery County adults was overweight or obese in 2007-2009. THI recommends the establishment of a County Obesity Task Force to determine priorities specific to the needs of Montgomery County residents, take account of existing efforts and programs, and develop evidence-based solutions and interventions.

Recommendation 6:

Support community-based solutions to address cancer prevention and early detection.

Age-adjusted cancer data suggest that mortality rates are especially high for lung and breast cancer, and incidence is higher for lung and skin cancer in Montgomery County as compared to the state. This recommendation is divided into three components, each corresponding to a specific cancer of concern in the community:

A. Supporting community-based solutions to address breast cancer mortality.

B. Supporting community-based solutions to address lung cancer incidence and mortality.

C. Supporting community-based solutions to address skin cancer.

Recommendation 7:

Broadly disseminate findings of this report to assist community leaders and organizations in advocacy, policymaking, program development, and funding decisions to improve the health of Montgomery County residents.

There are several other health care concerns that were raised from the data analysis and community feedback that will warrant more focused research and understanding for future planning and action. These include, for example:

- Transportation;
- Air quality;
- Asthma;
- Arthritis;
- Mortality due to chronic lower respiratory infection; and
- Prenatal care in first trimester.
Introduction

Recent U.S. Census Bureau estimates have ranked Montgomery County, Texas among the 30 fastest-growing counties in the nation in the past decade.\(^1\) However, health care resources, particularly for low-income, poor and uninsured populations have not kept pace. A recent Greater Houston Partnership report cited a "huge dichotomy" in the Greater Houston Area, which includes Montgomery County.\(^2\) The report stated that "the very place that provides world-class care" is "in the midst of a health care crisis" with the highest rates of uninsured in the nation and an over-burdened, fragmented health care safety net. In recognition of this dichotomy and the growing health care concerns of low-income in the county, The Texas Health Institute (THI) was commissioned by Montgomery County United Way (MCUW) and a collaborative of six health care partner organizations to conduct a community health assessment of Montgomery County. The goals of this assessment were to:

- Understand the social and economic landscape of the community;
- Provide a portrait of health and health care needs of the community;
- Determine trends and emerging health and health care issues; and
- Engage the community and health care partners in identifying health and health care concerns, priorities, strengths and opportunities for future program and policy development.

This report is organized into the following seven sections:

I. **Background.** The Background section offers a brief context and history on this study, including its founding, funding and program partners.

II. **Methodology.** The conceptual framework, design and detailed methods for data procurement and analysis are described in this section, as are study limitations.

III. **Findings: Public Data.** Data findings from publicly available national, state and county sources are presented here for demographic, health status, morbidity, mortality, and health workforce measures.

IV. **Findings: Health Provider Data.** This section presents findings from utilization data provided by health care providers in the community, including four acute care hospital emergency departments, two primary care safety net clinics, and the hospital district.

V. **Community Feedback.** Findings from four community engagement meetings are presented in this section, highlighting health care priorities and solutions as identified by community leaders and stakeholders.

VI. **Summary and Discussion.** This section provides an overall summary of major findings from this assessment comparing data points and trends to Texas and national rates. It also integrates

---


findings from the community engagement sessions to paint a more complete portrait of health care concerns and priorities in Montgomery County.

VII. **Recommendations.** Based on major findings of this study and feedback from the Community Advisory and Steering Committees, this section presents a set of recommendations for MCUW and its partners to consider in addressing the county's health care challenges. For each recommendation, a data-based rationale is provided along with examples of successful models and best-practices that have been implemented in communities across Texas and the nation.
I. Background

In 2008, Montgomery County United Way (MCUW) commissioned a Priorities Task Force comprised of a cross section of Montgomery County residents to identify Montgomery County’s most critical social issues based on statistical and trend data compiled by the University of Houston Graduate School Of Social Work’s Office of Community Projects.

The Task Force narrowed the top issues to five priorities where MCUW should focus resources in order to achieve the greatest impact on critical community issues. For a more detailed explanation and to see the trends and statistics that were used to develop the report, please go online to www.mcuw.org, click on Community Impact and then Community Priorities Report.

The report identified "Facilitating Access to Quality and Affordable Healthcare" as the number two priority for Montgomery County. This priority addresses physical health only; mental health is addressed in other priorities.

In February 2009 through MCUW’s regular funding process and in October 2009 through a Request for Proposals, MCUW solicited health care programs from nonprofit-funded partners, clinics and service providers in the community. Because none of the proposals adequately addressed the priority and because MCUW’s health care experts held differing opinions on health care priorities, MCUW’s Board approved funding for a Montgomery County Community Health Assessment. The following months were devoted to developing a scope, inviting partners to join the Steering Committee and agreeing on funding.

On March 11, 2010, the 22-member Steering Committee agreed that Texas Health Institute (THI), a nonprofit organization that provides leadership in development of health care solutions for Texas, would be commissioned to conduct the study, based on THI’s experience and track record of conducting similar assessments across the state. Six of the partner organizations agreed to join MCUW to fund the study and/or provide health care data.

A kick-off meeting was held on June 11, 2010. During the data collection and analysis, a Community Advisory Committee made up of community members representing various demographic and ethnic groups throughout Montgomery County met on a regular basis to provide feedback on the data collected and conclusions drawn as well as their insights on the health care issues faced by their communities. They essentially “put a face” to the data.

In January 2011, a joint meeting of the Healthcare Study Steering Committee and the Community Advisory Committee identified possible solutions and made recommendations for addressing some of the findings coming out of the study. These recommendations were the basis of the recommendations put forth in this report.
II. Methodology

A. Study Design

THI utilized a multi-pronged approach to assess the community health needs and concerns of Montgomery County, drawing on a framework adapted from the Robert Wood Johnson Foundation’s Aligning Forces for Quality Initiative, which profiled 22 regions across the nation on measures ranging from broader population characteristics to more specific health, health care capacity, and health outcomes indicators to identify programmatic priorities (Figure 1). To this end, multiple sources of public and private data along with diverse community voices were incorporated in the study to paint a complete portrait of Montgomery County’s health and health care landscape. Multiple methodologies, including ongoing community and stakeholder engagement, descriptive analysis of data, Geographic Information System (GIS) mapping, and qualitative analysis of community feedback, were utilized to identify key areas of priority and need. The following sections describe the measures and methods utilized in the analysis of: (1) public data on demographics, uninsured, health status and behavior, morbidity, mortality and health workforce; (2) proprietary data on the utilization of hospital emergency departments, clinics, and hospital district’s programs; and (3) community engagement and feedback.

Figure 1. Framework for Community Health Assessment

B. Public Data and Analysis

THI obtained publicly available data from a number of online databases as well as through public health and hospital partners in the community. The following sections describe the datasets and measures analyzed in this study.

**Demographic and Socioeconomic Measures**

THI extracted data on key population characteristics from the U.S. Census Bureau’s 2000 Census and 2009 American Community Survey for Montgomery County. Data were obtained by zip code for the following measures:

- Total population
- Total number of families
- Population by sex
- Population by age
- Population by race/ethnicity
- Hispanic/Latino population by origin
- Population by educational attainment
- Per capita income
- Population below poverty
- Families below poverty
- Families by poverty status
- Percent unemployed
- Total housing units
- Owner occupied housing units
- Owner occupied housing units by value
- Renter occupied housing units
- Households by household income
- Households by household size

Data from the U.S. Census Bureau were analyzed descriptively and presented in tabular form. For select measures, such as poverty and diversity, THI mapped distributions by zip code. Microsoft Map Point 2010 software was utilized for mapping.

**Health Insurance Measures**

Health insurance data, specifically the number of uninsured adults (< 65 years), were obtained through the U.S. Census Bureau’s 2006 Small Area Health Insurance Estimates (released in August 2009) for the general population and for those at or below 200 percent of the Federal Poverty Level (FPL) in Montgomery County. Proportions were calculated for the county and compared with the State of Texas.

In addition, the St. Luke’s Episcopal Health Charities contributed data on the uninsured in Montgomery County. Specifically, they provided the number and percent uninsured adults (< 65 years) by census tract. These data were analyzed as a whole for the county as well as in clusters of zip codes to identify cities or towns with concentrations of uninsured.
Health Status, Morbidity and Mortality Measures

Behavioral Risk Factor Surveillance System (BRFSS). The Community Assessment Team at the Texas Department of State Health Services' Center for Health Statistics provided health status and behavior data for the county from the Centers for Disease Control and Prevention's BRFSS for combined years, 2007, 2008 and 2009. The total sample of Montgomery County was 366 for 2007-2009. Prevalence rates for the county overall and by household income were obtained for the following measures for adults (18 years or older):

- Fair or poor health status
- No personal doctor or health care provider
- Could not see doctor due to cost
- Diabetes
- High blood pressure
- High cholesterol
- Heart attack
- Angina
- Smoking
- Overweight or obese
- No flu vaccine
- Arthritis
- Cancer

Household income was categorized as: less than $25,000; $25,000 to less than $50,000; and $50,000 or more. Where available and appropriate, a comparison to state (2007-2009) and national (2009) data were also provided.

Texas Cancer Information. Annual age-adjusted cancer incidence and mortality data were obtained from Texas Cancer Information for Montgomery County for 2000 to 2007. For each year, number of cancer cases, deaths and rates were obtained and compared to identify trends over time. Texas Cancer Information provided rates as per 100,000 and age-adjusted to 2000 Standard Population.

Montgomery County Hospital District (MCHD). MCHD Public Health Department provided data on common communicable diseases in the county for 2007 and 2009. Incidence rates were calculated per 100,000 based on county population estimates for 2007 and 2009. Communicable diseases included in this study were: Varicella (Chickenpox); Pertussis (Whooping Cough); Tuberculosis; Hepatitis A, B and C; Salmonellosis; Strep Pneumoniae, Invasive; Lyme Disease; Campylobacteriosis; Shigellosis; West Nile Virus; Viral Meningitis; and Legionellosis. Note: Data on communicable disease incidence were provided to MCHD Public Health Department by providers reporting cases. As such, there may be a possibility that incidence for communicable disease is under-reported depending on whether providers reported or did not report cases.

In addition, MCHD Public Health Department provided data on common Sexually Transmitted Diseases (STDs) for 2007 and 2009. These data originate from the Texas Department of State Health Services. Following STDs were included in the study: Chlamydia; Gonorrhea; Syphilis; and HIV/AIDS. Incidence rates were calculated based on county population estimates for 2007 and 2009.

Finally, MCHD provided summary information on its Emergency Medical Services (EMS).
Texas Health Currents. THI obtained latest mortality and natality data for the county from Texas Health Currents, an online database provided by the Texas Department of State Health Services. Mortality rates per 100,000 population were provided for deaths due to: all-causes; heart disease; stroke; lung cancer; female breast cancer; chronic lower respiratory disease; diabetes; infant or fetal mortality; unintentional injury, homicide and suicide. Mortality rate was age-adjusted to the 2000 Standard Population.

Natality measures included: live births; adolescent mothers; reported pregnancies to adolescents; unmarried mothers; low birth weight babies; onset of prenatal care within first trimester and fertility rate.

For further details on methodology for data obtained from Texas Health Currents, see: http://www.dshs.state.tx.us/chs/healthcurrents/sources.shtm#mort_age

Kids Count Data Center. Infant mortality (per 1,000 population) and violent teen deaths (per 100,000) were obtained from Annie E. Casey Foundation’s Kids Count Data Center for Montgomery County and the State of Texas for each year in 1990-2006. Line graphs for the county and state for 1990-2006 were generated online through the Kids Count Data Center query system. Data from 2007 were later obtained at the close of the study and included in this report given their relevance; however these data points were not plotted.
C. Health Provider Data and Analysis

To understand current utilization of hospital emergency care and primary care safety net clinics in Montgomery County, THI obtained data from four acute care hospitals and two safety net clinics (all members of the Steering Committee). Following is a summary of data collected and included in this study from hospitals and clinics for calendar years 2007 and 2009.³

Hospital Data Measures

The following four acute care hospitals provided their emergency department (ED) data:

- Conroe Regional Medical Center
- Kingwood Medical Center
- Memorial Hermann The Woodlands
- St. Luke’s The Woodlands Hospital

THI requested each hospital to provide data on the following sets of measures:

- **ED Utilization.** To understand who is generally using the ED, for what purpose, and where they are coming from, THI requested total ED visits for calendar years 2007 and 2009 by:
  - Sex, categorized as Male and Female.
  - Age Group, categorized as 0 - 4 years, 5 -17 years, 18 - 64 years, and 65+ years.
  - Race or Ethnicity, categorized as Non-Hispanic White, Non-Hispanic Black or African American, Non-Hispanic Asian, Hispanic or Latino, and Other.
  - Payer Source, categorized as Self-Pay, Private Insurance, Public Insurance (Medicaid, Medicare or CHIP) and Other Payer.
  - Top 20 Primary Diagnoses reported as ICD-9 Codes.
  - Zip Code, as reported for in-county zip codes including, 77301, 77302, 77303, 77304, 77305, 77306, 77316, 77318, 77333, 77353, 77354, 77355, 77356, 77357, 77362, 77365, 77372, 77378, 77380, 77381, 77382, 77384, 77385, 77386, 77387, 77393, and out-of-county zip codes.

- **ED Utilization by Zip Code and Payer Source.** Hospitals were asked to provide total visits by payer source for each in-county zip code and an aggregate for out-of-county zip codes. These data were also provided for calendar years 2007 and 2009. Payer source was categorized as follows:
  - Private: Private or commercial insurance payer.
  - Public: Medicaid, Medicare or Children’s Health Insurance Program (CHIP).
  - Self-Pay: Patients without private, public or other form of health coverage at time of visit. It is assumed in this study that self-paying patients are uninsured.
  - Other: Worker’s Compensation or other federal, state and county program.

---

³ Calendar years 2007 and 2009 were selected based on availability of data (i.e., some hospitals could not access files from prior years).
• **Potentially preventable ED utilization for ACS conditions.** The Agency for Healthcare Research and Quality (AHRQ) has identified a set of diagnoses which if treated appropriately in ambulatory or primary care settings, can prevent hospitalization and unnecessary ED use. These are often referred to as Ambulatory Care Sensitive (ACS) conditions or Prevention Quality Indicators (PQIs). Hospitals were asked to provide combined 2007, 2008 and 2009 data on number of ED visits for adults (18 years and older) for a list of 10 ACS/PQI diagnoses. These 10 ACS/PQI diagnoses include:
  - Bacterial Pneumonia
  - Dehydration
  - Urinary Tract Infection
  - Angina without Procedure
  - Congestive Heart Failure
  - Hypertension
  - Asthma
  - Chronic Obstructive Pulmonary Disease
  - Diabetes with Short Term Complications
  - Diabetes with Long Term Complications

Data on ED visits were aggregated across the four hospitals. Descriptive analyses, including percents and proportions, were calculated based on the aggregate totals. To preserve the individual identity of hospitals, this study only reports aggregated hospital ED data. Data are presented in tabular form and where possible, mapped by zip code using Microsoft Map Point 2010. Only the in-county zip codes provided by hospitals are mapped.

**Clinic Data**

The following two primary care safety net clinics provided data:

- Interfaith Community Clinic (ICC)
- Lone Star Family Health Center (Lone Star)

THI requested each clinic to provide data on the following sets of measures:

• **Unduplicated Count of Patients.** To understand who is generally using the safety net clinics, for what purpose and where they are coming from, THI requested patient counts for calendar years 2007 and 2009 by:
  - Sex, categorized as Male and Female.
  - Age Group, categorized as 0 - 4 years, 5 -17 years, 18 - 64 years, and 65+ years.
  - Race or Ethnicity, categorized as Non-Hispanic White, Non-Hispanic Black or African American, Non-Hispanic Asian, Hispanic or Latino, and Other.
  - Payer Source, categorized as follows:
    - Private: Private or commercial insurance payer.
    - Public: Medicaid, Medicare or Children’s Health Insurance Program (CHIP).
    - Self-Pay: Patients without private, public or other form of health coverage at time of visit. It is assumed in this study that self-paying patients are uninsured.
    - Other: Worker’s Compensation or other federal, state and county program.
  - Top 20 Primary Diagnoses reported as ICD-9 Codes.
• **Patient Count by Zip Code.** Both ICC and Lone Star were asked to provide their patient count by zip code.
  
  o ICC provided data on the following zip codes: 77301, 77302, 77303, 77304, 77305, 77306, 77316, 77318, 77333, 77353, 77354, 77355, 77356, 77357, 77362, 77365, 77372, 77378, 77380, 77381, 77382, 77384, 77385, 77386, 77387, and 77393. They also provided an aggregate of out-of-county patients.

  o Lone Star provided a patient count for all zip codes in their service area, including the following: 77301, 77302, 77303, 77304, 77305, 77306, 77316, 77318, 77333, 77354, 77353, 77354, 77355, 77356, 77357, 77358, 77362, 77365, 77372, 77375, 77377, 77378, 77379, 77380, 77381, 77382, 77383, 77384, 77385, 77386, 77387, 77393, and 77429.

• **Total Number of Visits.** THI requested the clinics to report on the total number of patient visits for calendar years 2007 and 2009 by type of clinic service, defined as medical, dental, social service, or mental health.

• **Total Patient Count by Zip Code and Payer Source.** To identify where pockets of low-income or uninsured patients accessing care at these clinics are located, we asked clinics to provide a count of patients by payer source for each in-county zip code and an aggregate for out-of-county zip codes. These data were also provided for calendar years 2007 and 2009.

• **Total Patient Count by Zip Code and Diagnoses.** To identify whether certain zip codes had higher prevalence of diagnoses or disease conditions, THI requested clinics to provide a count of patients by payer source for each in-county zip code and an aggregate for out-of-county zip codes, for calendar years 2007 and 2009.

• **Clinic Services and Capacity.** Clinics were also asked to report on types of services they provide (e.g., acute care, screenings, diabetes care, case management, immunizations, etc) and their capacity in terms of staffing, number of exam rooms, total hours of operation, and average wait time for next available appointment for new and returning patients. These were also obtained for calendar years 2007 and 2009.

Clinic data were not aggregated given the stark difference between the two clinics. Lone Star is a Federally Qualified Health Center (FQHC), whereas Interfaith Community Clinic (ICC) is a smaller, mainly volunteer-run facility. In addition, ICC did not collect or report data by patient count. As a result, all data for this clinic were provided by patient visit. THI conducted a descriptive analysis of data, calculating percents and proportions. Data are presented in tabular form for each clinic. Where possible, a count of patients was mapped by zip code using Microsoft Map Point 2010 for each clinic. Both clinics gave THI permission to publish their name in this report.

**MCHD Health Care Assistance Programs**

The Montgomery County Hospital District (MCHD) provided data on clients enrolled in their Health Care Assistance Programs (HCAP) in 2007 and 2009. HCAP programs included the Medical Assistance Program (MAP), Montgomery County Indigent Care Plan (MCICP) and Jail/Inmate Program.
Client data were provided by the following measures:

- Age of client.
- Sex, categorized as male or female.
- Race and ethnicity, categorized as White, African-American, Hispanic or Other.
- Income as percent of Federal Poverty Level (FPL): 0-21 percent; 21-50 percent; 50-100 percent; 100-150 percent.
- Marital Status, categorized as single, married, divorced, widowed or separated.
- Zip code.
- Top 20 primary diagnoses, reported as ICD-9 Codes.

A count of clients for the following zip codes were provided: 77301, 77302, 77303, 77304, 77305, 77306, 77316, 77318, 77327, 77328, 77331, 77333, 77339, 77353, 77354, 77355, 77356, 77357, 77358, 77362, 77365, 77367, 77373, 77377, 77378, 77380, 77381, 77382, 77383, 77384, 77385, 77386, 77387, 77393, 77447, 77833, 77873, 77995, 75662, 75862, and 76520.

Data were aggregated for all clients and descriptively analyzed. Proportions and percents were calculated for the client population by measures listed above. Additionally, clients by zip code were mapped using Microsoft Map Point 2010 software to identify where clients (and clusters of clients) were located in the county. All zip codes provided by MCHD were mapped, including both, in- and out-of-county zip codes.

In addition, MCHD provided summary information on the county’s Emergency Medical Services (EMS).
D. Community Engagement and Feedback

With assistance from THI and the Steering Committee, MCUW formed a Community Advisory Committee for the purpose of engaging community members to provide feedback on health care concerns, priorities and findings from this study as well as to inform future programs and interventions. Members of the Community Advisory Committee were selected to ensure broad representation of:

- Different regions in the county;
- Diverse cultures and faiths; and
- A range of local social services and health care resources.

In addition, individuals were selected based on their intimate knowledge of community social and health care needs and their commitment to improving the health of Montgomery County.

A total of 22 individuals agreed to serve on the Community Advisory Committee. The Committee convened four times over a period of five months. Following is a summary of each community meeting:

- **Meeting 1. Orientation and Listening Session.** The first meeting was devoted to introducing the study and committee members, and importantly, listening to individual representatives discuss their community's health-related needs and concerns.

- **Meeting 2. Feedback on Socio-demographic Data.** The second meeting presented data findings on the social, economic and demographic landscape of Montgomery County and engaged committee members to offer feedback, reactions and insight related to findings.

- **Meeting 3. Feedback on Health and Health Care Data.** The third meeting presented health status, disease prevalence, hospital and clinic data. The committee was again asked to provide feedback and reactions to findings.

- **Meeting 4. Engaging Community Leaders to Set Priorities.** In the fourth, and final meeting, both the Community Advisory and Steering Committees, along with the Data Work Group, were brought together to discuss study findings, set priorities and develop potential solutions. This community and stakeholder engagement process was held at the Anadarko facilities in The Woodlands, January 25, 2011.

Utilizing a THI-developed strategic brainstorming tool, known as the Healthcare Quilt, the group came to consensus around several innovative and creative recommendations or solutions to address identified needs and priorities, including access to care, obesity, and cancer.

**Background on Healthcare Quilt.** Quilts are made of pieces of cloth stitched together. As a whole, these pieces make beautiful and practical objects for living. In this exercise, we have made our quilt with pieces that represent different categories of health care needs.

An effective health care system must serve the needs of its citizens from birth (or before) to death. Some needs are occasional and preventive, other needs are urgent and life threatening, or ongoing and necessary in order to maintain a reasonable quality of life.
The purpose of this exercise was to encourage creative thinking on the part of group members in considering how health care needs can best be met.

The *Healthcare Quilt* is a matrix of five age categories and three types of health care. The age categories, which have distinctly different health care needs within the population, include:

- Expectant Mothers and Babies (aged 0-4);
- Children (aged 4-12);
- Adolescents and Teens (aged 13-17);
- Adults (aged 18-64); and
- Seniors (aged 65+).

The three main categories or types of health care needs in the matrix were:

- Health promotion and disease prevention;
- Urgent and acute care; and
- Chronic or ongoing care.

Participants were divided into several groups, asked to select specific “quilt” squares, and to brainstorm health care solutions for a specific priority area and population. The resulting solutions were then incorporated into the recommendations section of this report.
E. Study Limitations

This Community Health Assessment offers for the first time in many years a baseline report on the social, health and health care landscape of Montgomery County, charting trends over time as well as sub-county level patterns for a broad set of measures. As with any study, however, this assessment has limitations. First, “health” in this study refers mainly to the “physical” state of well-being. Other dimensions, such as the mental and social state of well-being, are not considered as these are areas addressed through other programmatic priorities at the Montgomery County United Way. Secondly, this assessment assumes that self-paying patients are uninsured. While this is mostly the case, not all self-paying patients are uninsured. Therefore, estimates for uninsured may be slightly over-estimated.

In addition, health status, behavior and morbidity data from the Behavioral Risk Factor Surveillance System (BRFSS) were self-reported through telephone-based surveys. First, there is a possibility some respondents may have over- or underestimated true measures. Secondly, because BRFSS data are collected through telephone-based surveys, there is a possibility that less affluent populations, particularly those without telephones, may be under-represented.

Furthermore, while GIS mapping at the zip code level is a helpful way of showing data graphically, in particular for displaying geographic trends and patterns, it has limitations. First, given the sheer size of zip codes, they can cover more than one county. For example, in Maps 87-91 for the Montgomery County Hospital District, zip codes such as 77358, 77327, 77339, 77377 and 77447 only cover a minuscule area within Montgomery County that is not easily seen on the maps and a larger out-of-county region. Secondly, there was variability in how zip code level data were provided across hospitals, clinics and the hospital district. This study maps all zip codes that were reported individually with patient counts by each provider. In addition, zip codes with no data or no patients reported are displayed in gray. Finally, it is important to note that even if a zip code accounts for a small number of patients (i.e., only one or two patients), the entire zip code is highlighted. This was especially the case for many zip codes covering only a small portion of Montgomery County. These zip codes should be interpreted with caution.
III. Findings: Public Data

A. Demographics

TOTAL POPULATION

Based on estimates from the U.S. Census Bureau Montgomery County’s population was 446,237 in 2009, up from 299,776 in 2000 (Figure 2). Between 2000 and 2009, the county’s population grew by 49 percent, a rate of growth almost three times the City of Houston (16 percent) and the State of Texas (17 percent). In 2009, Montgomery County was home to 119,329 families, up from 81,846 families in 2000.

Whereas in 2000, The Woodlands and Conroe were areas where the majority of county residents settled, by 2009, the population had grown widely across the region, with areas such as Spring Hills, Magnolia, Montgomery, Porter, New Caney, and Leonidas seeing considerable increases (Figures 3 and 4). Between 2000 and 2009, The Woodlands and Conroe experienced the greatest population growth, as populations tripled and doubled, respectively. Similarly, Montgomery and Magnolia witnessed population increases of more than 50 percent. In 2009, cities/towns and zip codes with the largest populations (greater than 30,000) included The Woodlands (77381, 77382), Conroe (77301), and the Spring Hills area (77386).
Figure 3. Total Population by Zip Code, Montgomery County, Texas, 2000

Source: U.S. Census Bureau’s 2000 Decennial Census.

Figure 4. Total Population by Zip Code, Montgomery County, Texas, 2009

Source: U.S. Census Bureau’s 2009 American Community Survey.
RACE & ETHNICITY

Montgomery County's population has grown in racial and ethnic diversity (Figure 5). Whereas in 2000, about 82 percent of the population was white, by 2009 that proportion dropped to nearly 74 percent.

All racial and ethnic minority groups, including Hispanic/Latinos, African-Americans and Asian or Pacific Islanders, have at least doubled in population since 2000. This rate of growth in diversity is significantly higher for the county as compared to Texas or even the nation as a whole. For example, in Texas, between 2000 and 2008, Hispanic or Latino populations grew by 33 percent, as compared to 116 percent in Montgomery County. For the same period, African-Americans grew by nearly 16 percent in Texas, as compared to about 91 percent in the county. Asian or Pacific Islanders grew by 67 percent, whereas this population grew by 136 percent in Montgomery County.

While in 2000, Conroe and the region around Willis primarily housed the county's racial/ethnic minorities, by 2009, much of East County had experienced a significant growth in diversity (Figures 6 and 7). In 2009, seven out of 10 residents in Conroe (77301) were non-white and approximately 42 percent of Willis (77378) was non-white. Other regions with large racial/ethnic minority populations included Shenandoah (77385), Porter (77365), Spring (77386), areas near Cut and Shoot (77303), areas around Leonidas (77304) and Cleveland (77328).

Figure 5. Total Population by Race and Ethnicity, 2000 and 2009, Montgomery County, Texas

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>246,664</td>
<td>82.3%</td>
<td>328,443</td>
<td>73.6%</td>
<td>33.2%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>37,784</td>
<td>12.6%</td>
<td>81,565</td>
<td>18.3%</td>
<td>115.9%</td>
</tr>
<tr>
<td>African American</td>
<td>10,954</td>
<td>3.7%</td>
<td>20,880</td>
<td>4.7%</td>
<td>90.6%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>3,244</td>
<td>1.1%</td>
<td>7,659</td>
<td>1.7%</td>
<td>136.1%</td>
</tr>
<tr>
<td>Other</td>
<td>14,957</td>
<td>5.0%</td>
<td>7,690</td>
<td>1.7%</td>
<td>-48.6%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau's 2000 Decennial Census and 2009 American Community Survey
Figure 6. Percent Non-White Population by Zip Code, Montgomery County, Texas, 2000

Source: U.S. Census Bureau's 2000 Decennial Census.

Figure 7. Percent Non-White Population by Zip Code, Montgomery County, Texas, 2009

Source: U.S. Census Bureau's 2009 American Community Survey.
**SEX**

The male and female population in Montgomery County was nearly evenly distributed, and between 2000 and 2009, the county did not see a significant change in the proportion of males and females (Figure 8). These data and trend generally resemble the State of Texas.

**AGE**

The age distribution of Montgomery County's population generally resembles the State of Texas (Figure 9). Nearly two-thirds of the population is adult (18-64 years), one out of five is a child or teen (5-17 years), nearly one in 10 is senior (65 years or older) and about eight percent are infants and toddlers (0-4 years). Between 2000 and 2009, Montgomery County saw a slight increase in adults and seniors.
EDUCATION

Montgomery County generally resembles the State of Texas in educational attainment, and between 2000 and 2009, no major changes were seen (Figure 10). Approximately 81 percent of Montgomery County residents in 2009 had at least a high school diploma and 24 percent had at least a bachelor’s degree, as compared with 80 and 25 percent respectively, in Texas, in 2008.

Figure 10. Percent Population by Educational Attainment
Montgomery County, Texas, 2000 and 2009

MEDIAN INCOME, UNEMPLOYMENT AND POVERTY

The median family income in Montgomery County rose from $52,712 in 2000 to $69,464, representing a 32 percent increase. At the same time, percent unemployed decreased in half, from 4.8 percent in 2000 to 2.3 percent in 2009. Percent families in poverty did not change, however, the number of families with incomes at or below 100 percent of the Federal Poverty Level (FPL) grew by approximately 45 percent in the county, from 6,110 in 2000 to 8,841 in 2009. See Figure 11.

Figures 12 and 13 map percent families with income at or below 100 percent FPL by zip code for 2000 and 2009, respectively. These maps portray that over the past decade, percent poverty within zip codes in the county generally did not change. In both 2000 and 2009, Conroe housed the greatest percent of poor families, followed by areas in East County and Willis.
Figures 14 and 15 map number of families with income at or below 100 percent FPL by zip code for 2000 and 2009, respectively. These maps show that the county has seen a growth and dispersion in number of families in poverty. Whereas in 2000, Conroe (77301) and New Caney (77357) housed the greatest number of poor, by 2009 large numbers of families in poverty could also be found in areas beyond Conroe and New Caney, including Magnolia (77354), Porter (77365), Cleveland (77328), and Spring (77380).

**Figure 11. Median Income, Unemployment & Families in Poverty**
**Montgomery County, 2000 & 2009**

<table>
<thead>
<tr>
<th></th>
<th>MC 2000</th>
<th>MC 2009</th>
<th>MC % Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Family Income</td>
<td>$52,712</td>
<td>$69,464</td>
<td>31.8%</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>4.8%</td>
<td>2.3%</td>
<td>-112.5%</td>
</tr>
<tr>
<td>No. of Families in Poverty*</td>
<td>6,110</td>
<td>8,841</td>
<td>44.7%</td>
</tr>
<tr>
<td>% Families in Poverty*</td>
<td>7.5%</td>
<td>7.4%</td>
<td>-1.4%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau's 2000 Decennial Census and 2009 American Community Survey
Figure 12. Percent Families at 100% Poverty by Zip Code, Montgomery County, Texas, 2000

Source: U.S. Census Bureau’s 2000 Decennial Census.

Figure 13. Percent Families at 100% Poverty by Zip Code Montgomery County, Texas, 2009

Source: U.S. Census Bureau’s 2009 American Community Survey.
Figure 14. Number of Families at 100% Poverty by Zip Code, Montgomery County, Texas, 2000

Source: U.S. Census Bureau’s 2000 Decennial Census.

Figure 15. Number of Families in Poverty by Zip Code, Montgomery County, Texas, 2009

Source: U.S. Census Bureau’s 2009 American Community Survey.
The distribution of households by household income between 2000 and 2009 reveals that Montgomery County’s high income households are growing at a much faster pace than those at lower income brackets (Figure 16). Number of households earning at least $100,000 has more than doubled between 2000 and 2009, representing nearly 29 percent of all households in 2009, as compared to 19 percent in 2000.

While the number of households at lower income brackets continue to increase, such as households earning $50,000 or less, by 2009 they represented a shrinking, nonetheless sizeable percentage of all households (approximately 50 percent in 2000 vs. 40 percent in 2009). Given that there is an average of three individuals in each household, it is estimated that nearly 180,000 people fall into this bracket of low-income households.

**Figure 16. Distribution of Households by Household Income Montgomery County, 2000 and 2009**

<table>
<thead>
<tr>
<th>Income Bracket</th>
<th># Households 2000</th>
<th>% Households 2000</th>
<th># Households 2009</th>
<th>% Households 2009</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; $25 K</td>
<td>23,653</td>
<td>22.5%</td>
<td>26,100</td>
<td>17.0%</td>
<td>10.3%</td>
</tr>
<tr>
<td>$25 K - $50 K</td>
<td>28,525</td>
<td>27.2%</td>
<td>34,027</td>
<td>22.2%</td>
<td>19.3%</td>
</tr>
<tr>
<td>$50 K – 75 K</td>
<td>20,608</td>
<td>19.6%</td>
<td>28,536</td>
<td>18.6%</td>
<td>38.5%</td>
</tr>
<tr>
<td>$75 K - $100 K</td>
<td>12,892</td>
<td>12.3%</td>
<td>20,965</td>
<td>13.7%</td>
<td>62.6%</td>
</tr>
<tr>
<td>&gt; $100 K</td>
<td>19,539</td>
<td>18.6%</td>
<td>43,693</td>
<td>28.5%</td>
<td>123.6%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau’s 2000 Decennial Census and 2009 American Community Survey

**HOUSING**

Between 2000 and 2009, Montgomery County saw a significant growth in middle- to high-income housing units (i.e., greater than $150,000) and a shrinking proportion of lower-income housing (i.e., below $100,000) (Figure 17). Whereas lower-income housing units represented over 50 percent of all housing in the county in 2000, by 2009, they accounted for only 33 percent, a significant drop over the years despite growing numbers of low-income and poor families. In contrast, middle- to high-income housing grew from about 27 to 45 percent between 2000 and 2009. In particular, very high income housing units nearly tripled in Montgomery County.

**Figure 17. Owned Housing Units by Value Montgomery County, 2000 and 2009**

<table>
<thead>
<tr>
<th>Value Range</th>
<th>No. Units 2000</th>
<th>% Units 2000</th>
<th>No. Units 2009</th>
<th>% Units 2009</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $50,000</td>
<td>13,258</td>
<td>16.0%</td>
<td>15,635</td>
<td>12.8%</td>
<td>17.9%</td>
</tr>
<tr>
<td>$50,000 - $99,999</td>
<td>31,355</td>
<td>37.9%</td>
<td>24,481</td>
<td>20.1%</td>
<td>-21.9%</td>
</tr>
<tr>
<td>$100,000 - $149,999</td>
<td>16,221</td>
<td>19.6%</td>
<td>26,984</td>
<td>22.1%</td>
<td>66.4%</td>
</tr>
<tr>
<td>$150,000 - $199,999</td>
<td>8,791</td>
<td>10.6%</td>
<td>16,932</td>
<td>13.9%</td>
<td>92.6%</td>
</tr>
<tr>
<td>$200,000 - $299,999</td>
<td>7,457</td>
<td>9.0%</td>
<td>19,292</td>
<td>15.8%</td>
<td>158.7%</td>
</tr>
<tr>
<td>$300,000 or more</td>
<td>5,706</td>
<td>6.9%</td>
<td>18,606</td>
<td>15.3%</td>
<td>226.1%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau’s 2000 Decennial Census and 2009 American Community Survey
B. Access to Care

UNINSURED

Montgomery County has the third largest uninsured population among eight counties in the Greater Houston Area (Figure 18). Based on 2007 Census estimates, nearly 97,892 or 25 percent of the population was uninsured, a rate much higher than the national average (15.4%)\(^4\).

While the overall percent uninsured in the county is below the state (26.8%), uninsured rates largely vary across the county, with certain census tracts (6934, 6931, 6939) in Conroe having between 33-37 percent uninsured (see map in Figure 19). Other areas where at least one-fifth of the population is uninsured in the county include Willis, Leonidas, Cut and Shoot, Magnolia, New Caney, and Porter.

Figure 18. Number and Percent Uninsured (<65 years) in Greater Houston Region and Texas, 2007

<table>
<thead>
<tr>
<th>County</th>
<th>No. Uninsured</th>
<th>% Uninsured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harris</td>
<td>1,141,903</td>
<td>31.3%</td>
</tr>
<tr>
<td>Fort Bend</td>
<td>112,590</td>
<td>22.8%</td>
</tr>
<tr>
<td>Montgomery</td>
<td><strong>97,892</strong></td>
<td><strong>25.1%</strong></td>
</tr>
<tr>
<td>Brazoria</td>
<td>67,263</td>
<td>25.3%</td>
</tr>
<tr>
<td>Galveston</td>
<td>55,032</td>
<td>21.5%</td>
</tr>
<tr>
<td>Liberty</td>
<td>16,102</td>
<td>25.7%</td>
</tr>
<tr>
<td>Waller</td>
<td>9,167</td>
<td>31.0%</td>
</tr>
<tr>
<td>Chambers</td>
<td>6,064</td>
<td>22.8%</td>
</tr>
<tr>
<td>TEXAS</td>
<td><strong>5,765,132</strong></td>
<td><strong>26.8%</strong></td>
</tr>
</tbody>
</table>


Figure 19. Percent Uninsured (< 65 years) by Zip Code, Montgomery County, Texas, 2008

Among population at or below 200 percent FPL, Montgomery County had one of the highest rates of uninsured in the region, and a higher percentage than the State of Texas (Figure 20). Over 50 percent (or 47,789) of county residents at or below 200 percent FPL were uninsured in 2007, as compared to 43 percent in Texas.

Figure 20. Number and Percent Uninsured at or below 200% FPL (< 65 years) in Greater Houston Region and Texas, 2007

<table>
<thead>
<tr>
<th>County</th>
<th>No. Uninsured</th>
<th>% Uninsured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harris</td>
<td>711,420</td>
<td>51.4%</td>
</tr>
<tr>
<td>Fort Bend</td>
<td>57,811</td>
<td>57.7%</td>
</tr>
<tr>
<td>Montgomery</td>
<td>47,789</td>
<td>51.1%</td>
</tr>
<tr>
<td>Brazoria</td>
<td>34,219</td>
<td>50.0%</td>
</tr>
<tr>
<td>Galveston</td>
<td>33,156</td>
<td>43.3%</td>
</tr>
<tr>
<td>Liberty</td>
<td>7,424</td>
<td>31.7%</td>
</tr>
<tr>
<td>Waller</td>
<td>5,444</td>
<td>44.7%</td>
</tr>
<tr>
<td>Chambers</td>
<td>3,778</td>
<td>51.9%</td>
</tr>
<tr>
<td><strong>TEXAS</strong></td>
<td><strong>3,375,458</strong></td>
<td><strong>43.4%</strong></td>
</tr>
</tbody>
</table>

USUAL SOURCE OF CARE

About one-fifth of Montgomery County's population reported not having "one person [they] think of as [their] personal doctor or health care provider" in 2007-2009 (Figure 21). In comparison, approximately 27.3 percent of Texas residents do not have a personal doctor. This question from the Behavioral Risk Factor Surveillance System (BRFSS) is often asked to assess whether individuals have a "usual source of care" or "medical home".

Not having a usual source of care is positively associated with income. In 2007-2009, nearly 33 percent of the population with an income less than $25,000 reported not having a personal doctor, as compared to 43 percent in Texas. Similarly, 29 percent of people with an income between $25,000 and $50,000 reported not having a personal doctor, comparable to 30 percent in Texas.

Figure 21. Percent with No Personal Doctor Total and by Income Level, 2007-2009
Montgomery County, Texas (N = 365)

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>21.0</td>
</tr>
<tr>
<td>&lt; $25K</td>
<td>32.9</td>
</tr>
<tr>
<td>$25K - $50K</td>
<td>28.5</td>
</tr>
<tr>
<td>&gt; $50K</td>
<td>18.2</td>
</tr>
</tbody>
</table>

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined

DELAY IN CARE

Overall, in 2007-2009, about 15 percent of Montgomery County residents reported that "in the past 12 months when [they] needed to see a doctor [they] could not because of cost", compared to approximately 20 percent in Texas (Figure 22). This BRFSS measure is often used to estimate the proportion of population that delays or forgoes needed care because of cost.

Delaying or forgoing care is positively associated with income, where very low-income populations are more likely to delay or forgo care. In 2007-2009, in both the county and Texas overall, 37 percent of people with income below $25,000 did not obtain the care that they needed because of cost.

Figure 22. Percent who Forgo Care due to Cost Total and by Income Level, 2007-2009
Montgomery County, Texas (N = 365)

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>14.9</td>
</tr>
<tr>
<td>&lt; $25K</td>
<td>36.6</td>
</tr>
<tr>
<td>$25K - $50K</td>
<td>12.7</td>
</tr>
<tr>
<td>&gt; $50K</td>
<td>8.2</td>
</tr>
</tbody>
</table>

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined
C. Health Status and Behavior

HEALTH STATUS

Approximately 15 percent of Montgomery County residents reported their health as fair or poor (Figure 23), as compared to 18 percent in Texas and 15 percent in the U.S. However, a larger percentage of lower income people in Montgomery County reported fair or poor health as compared to the state. Approximately 45 percent of Montgomery County residents with income below $25,000 reported fair or poor health, as compared to 33 percent of residents in this income bracket in Texas.

Figure 23. Percent with Fair or Poor Health Status Montgomery County, Texas, 2007-2009 N = 360

![Bar chart showing health status by income bracket]

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined

SMOKING

The prevalence of smoking among adults in Montgomery County and Texas was nearly the same (19 percent) in 2007-2009, as compared to 18 percent nationally in 2009. Smoking prevalence was highest among county residents with income between $25,000 and $50,000; over two-thirds of this group reported being a current smoker and smoking at least 100 cigarettes in their entire lifetime (Figure 24). In comparison, approximately 22 percent of Texas adults in this income bracket were current smokers.

Figure 24. Percent Smoking, Montgomery County, Texas, 2007-2009 N = 360

![Bar chart showing smoking prevalence by income bracket]

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined
FLU VACCINATION

As reported in 2007-2009, nearly two-thirds of Montgomery County and Texas adults did not get a seasonal flu vaccine in the past 12 months (Figure 25), a rate lower than the U.S. in 2009 (70 percent). The proportion of adults forgoing their flu vaccine was generally consistent across income brackets, with individuals earning greater than $50,000 only slightly more likely to be vaccinated.

Figure 25. Percent with No Flu Vaccine, Montgomery County, Texas, 2007-2009 N = 360

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined
D. Chronic Disease Prevalence

OVERWEIGHT OR OBESE

Approximately 69 percent of Montgomery County adults were overweight or obese in 2007-2009 (Figure 26), as compared with 66 percent of Texas adults and 63 percent of U.S. adults. While being overweight or obese is associated with income, the problem is serious and pervasive across all income brackets. Approximately 84 percent of Montgomery County residents with income below $25,000 were overweight or obese in 2007-2009, higher than Texas where 70 percent of residents in this income bracket were overweight or obese.

![Figure 26. Percent Overweight or Obese Adults (18 + Years) Montgomery County, Texas, 2007-2009 N = 349](source)

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined

DIABETES

Nearly nine percent of Montgomery County adults were diagnosed with diabetes in 2007-2009 (Figure 27), as compared to about 10 percent of Texas adults and eight percent of U.S. adults. Having diabetes is associated with income, such that approximately 17 percent of county adults with income below $25,000 have diabetes as compared to 14 percent of adults in the same income bracket in Texas.

![Figure 27. Percent Adults (18+ years) with Diabetes, Montgomery County, Texas, 2007-2009 N = 366](source)

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined
CORONARY HEART DISEASE

Approximately 4 percent of both Montgomery County (Figure 28) and Texas adults were diagnosed with Coronary Heart Disease or Angina in 2007-2009, a rate comparable to the U.S. in 2009. Heart disease is associated with income, where eight percent of county adults and nearly six percent of Texas adults with income below $25,000 were diagnosed.

Figure 28. Percent with Coronary Heart Disease, Montgomery County, Texas, 2007-2009 N = 365

HEART ATTACK

Nearly four percent of Montgomery County (Figure 29) and Texas adults had a heart attack or myocardial infarction in 2007-2009, a rate comparable to the U.S. in 2009. Heart attack was associated with income. Nearly eight percent of county adults and six percent of Texas adults with income below $25,000 experienced a heart attack in 2007-2009.

Figure 29. Percent who Experienced a Heart Attack, Montgomery County, Texas, 2007-2009 N = 365

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined
ASTHMA

The prevalence of asthma among Montgomery County adults was nearly nine percent (Figure 30), as compared to seven percent for Texas adults in 2007-2009 and nine percent for U.S. adults in 2009. For county residents, the prevalence was slightly higher for adults earning $25,000-$50,000—nearly 10 percent of this group had asthma.

Figure 30. Percent with Asthma (Adult), Montgomery County, Texas, 2007-2009 N = 364

OTHER HEALTH CONDITIONS

Montgomery County adults have a higher prevalence of high blood pressure, high cholesterol, arthritis and cancer as compared to State (Figure 31) and U.S. adults. Approximately 35 percent of Montgomery County residents have high blood pressure as compared with almost 29 percent of Texans and Americans. Whereas 47 percent of county residents have high cholesterol, about 40 percent of Texans and 38 percent of Americans have it. In addition, nearly 28 percent of county residents have arthritis as compared to 23 percent of Texans and 26 percent of Americans. The prevalence of cancer is nearly 12 percent in Montgomery County as compared to about eight percent in Texas.

Figure 31. Prevalence of Other Health Conditions, Montgomery County, Texas, 2007-2009

Source: Texas Behavioral Risk Factor Surveillance System, 2007 to 2009 combined
E. Cancer Incidence and Mortality

ALL CANCER

Between 2000 and 2007, Montgomery County's age-adjusted cancer incidence was consistently higher than the State of Texas (Figure 32). And while the incidence rate slightly declined from 2000 to 2007, it fluctuated considerably from year to year during this period. The most recent data points from 2007 show that the rate of cancer incidence in Montgomery County was significantly higher than Texas (488 vs. 454 per 100,000 population).

All cancer age-adjusted mortality was also consistently higher in Montgomery County than Texas as a whole (Figure 33). While mortality from all cancers declined between 2000 and 2007 for the county, its rate in 2007 was still higher than Texas (214 per 100,000 deaths in Montgomery County vs. 196 per 100,000 deaths in Texas).

Figure 32. All Cancer Age-Adjusted Incidence Rate, Montgomery County and Texas, 2000-2007


Figure 33. All Cancer Mortality Rate, Montgomery County and Texas, 2000-2007

RESPIRATORY CANCER

Age-adjusted respiratory cancer incidence and mortality, mainly including lung cancer, but also cancers of the nose, nasal cavity, middle ear, larynx, and other respiratory sites, was consistently higher in Montgomery County than the State of Texas. In 2007, the age-adjusted incidence rate for respiratory cancer was 81 per 100,000 in the county, significantly higher than Texas where the rate was 67 per 100,000. The age-adjusted mortality rate from respiratory cancer was also significantly higher in Montgomery County as compared to Texas (64 vs. 49 per 100,000). See Figures 34 and 35.

Figure 34. Respiratory Cancer (includes Lung Cancer) Incidence Rate
Montgomery County and Texas, 2000-2007


Figure 35. Respiratory Cancer (includes Lung Cancer) Mortality Rate
Montgomery County and Texas, 2000-2007

SKIN CANCER

The age-adjusted incidence of skin cancer, including Melanoma, was consistently higher in Montgomery County as compared to Texas between 2000 and 2007 (Figure 36). Whereas the trend in skin cancer incidence has been fairly stable in Texas, this rate has fluctuated in the county. Since 2004, however, Montgomery County has faced a steep increase in its skin cancer incidence, peaking in 2007 at 26 cases per 100,000 population as compared with 15 per 100,000 in Texas, a difference that is statistically significant.

Age-adjusted mortality for skin cancer has generally remained stable between 2000 and 2007 (Figure 37). In stark comparison, Montgomery County’s mortality rate has varied widely through these years, almost reaching the Texas rate in 2007. In 2007, the rate of skin cancer mortality in Montgomery County was 4.2 per 100,000 population as compared to 3.6 in Texas.

Figure 36. Skin Cancer Incidence Rate, Montgomery County and Texas, 2000-2007


Figure 37. Skin Cancer Mortality Rate, Montgomery County and Texas, 2000-2007

BREAST CANCER

Age-adjusted breast cancer incidence declined significantly in Montgomery County from 2000 to 2007, reaching a rate comparable to the State (Figure 38). In 2007, the breast cancer incidence rate for the county was 59 per 100,000, as compared to 61 in Texas.

Age-adjusted breast cancer mortality, on the other hand, has varied widely in this period, outpacing the Texas rate in 2007 (Figure 39). In 2007, Montgomery County's breast cancer mortality rate was 16 per 100,000 as compared to 13 in Texas.

Figure 38. Breast Cancer Incidence Rate, Montgomery County and Texas, 2000-2007


Figure 39. Breast Cancer Mortality Rate, Montgomery County and Texas, 2000-2007

FEMALE GENITAL CANCER

The age-adjusted incidence of female genital cancer, including cancer in the cervix uteri, ovary, and vagina, in Montgomery County decreased between 2001-2005, starting an upward trend into 2005 and reaching a rate slightly higher than Texas in 2007 (Figure 40). In 2007, the female genital cancer incidence was 25 per 100,000 population in Montgomery County as compared to 23 in Texas.

On the other hand, Montgomery County's age-adjusted mortality rate from genital cancer for women was lower in Montgomery County (6 per 100,000) than Texas (8 per 100,000) (Figure 41).

Figure 40. Female Genital Cancer (includes Cervical Cancer) Incidence Rate
Montgomery County and Texas, 2000-2007


Figure 41. Female Genital Cancer (includes Cervical Cancer) Mortality Rate
Montgomery County and Texas, 2000-2007

MALE GENITAL CANCER

The age-adjusted incidence of male genital cancer, consisting of prostate cancer, was on an upward trend between 2000 and 2007, whereas mortality declined, particularly between 2006 and 2007. In 2007, the incidence rate of genital cancer for men in Montgomery County (83 per 100,000) was significantly higher than Texas (71 per 100,000). However, Montgomery County's mortality rate due to genital cancer for men was lower than Texas (i.e., 7 per 100,000 in Montgomery County vs. 9 per 100,000 in Texas). See Figures 42 and 43.

Figure 42. Male Genital Cancer (includes Prostate Cancer) Incidence Rate

![Graph showing male genital cancer incidence rates for Montgomery County and Texas, 2000-2007.]


Figure 43. Male Genital Cancer (includes Prostate Cancer) Mortality Rate

Montgomery County and Texas, 2000-2007

![Graph showing male genital cancer mortality rates for Montgomery County and Texas, 2000-2007.]

F. Births and Deaths

BIRTHS

In 2007, there were a total of 6,396 births in Montgomery County (Figure 44). The percent of adolescent mothers under 18 years of age was lower in the county (3.1%) as compared to Texas (4.9%). The rate of reported pregnancies to adolescents was also lower in Montgomery County than in Texas (12.7 vs. 25.8 per 100,000). Percent of low birth weight babies were comparable in Montgomery County and Texas (8.7% vs. 8.4%, respectively), also resembling the national rate (8.2%). Percent of mothers receiving prenatal care within the first trimester was only slightly higher in the county (64.6%) as compared to Texas (62.1%), but much lower than the national rate (83.2%).

Figure 44. Natality Data, Montgomery County, Texas 2007

<table>
<thead>
<tr>
<th></th>
<th>Montgomery County</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Live Births</td>
<td>6,396</td>
<td>407,453</td>
</tr>
<tr>
<td>Adolescent Mothers Under 18 Years of Age</td>
<td>197</td>
<td>19,863</td>
</tr>
<tr>
<td>Adolescent Mothers Under 18 Years of Age (%)</td>
<td>3.1%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Reported Pregnancies to Women Age 13-17</td>
<td>223</td>
<td>22,899</td>
</tr>
<tr>
<td>Reported Pregnancies to Women Age 13-17 (Rate)</td>
<td>12.7</td>
<td>25.8</td>
</tr>
<tr>
<td>Unmarried Mothers</td>
<td>2,075</td>
<td>166,707</td>
</tr>
<tr>
<td>Unmarried Mothers (%)</td>
<td>32.4%</td>
<td>40.9%</td>
</tr>
<tr>
<td>Low Birth Weight</td>
<td>557</td>
<td>34,241</td>
</tr>
<tr>
<td>Low Birth Weight (%)</td>
<td>8.7%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Onset of Prenatal Care within First Trimester</td>
<td>3,908</td>
<td>231,284</td>
</tr>
<tr>
<td>Onset of Prenatal Care within First Trimester (%)</td>
<td>64.6%</td>
<td>62.1%</td>
</tr>
<tr>
<td>Fertility Rate</td>
<td>74.6</td>
<td>78.3</td>
</tr>
</tbody>
</table>

Source: Texas Health Currents--Montgomery County.

DEATHS

The age-adjusted all-cause mortality rate was lower in Montgomery County (775.7) as compared to Texas (805.1) per 100,000 population in 2007 (Figure 45). Death rates due to lung cancer and breast cancer were particularly higher in the county than Texas (59.5 vs. 48.2 for lung cancer; 28.0 vs. 23.0 for female breast cancer). These data reaffirm cancer incidence and mortality findings presented in the previous section. Chronic Lower Respiratory Disease death rate was also slightly higher in the county (46.0) as compared to the State (42.5). Suicide rate was also slightly higher in the county than Texas (11.1 vs. 10.5).

5 National data for comparison purposes is provided for 2008 and were obtained from Kaiser Family Foundation’s State Health Facts site.
6 Ibid.
Table 1. Age-Adjusted Mortality Rates by Cause, Montgomery County, Texas, 2007

<table>
<thead>
<tr>
<th>Cause</th>
<th>Montgomery County</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths from All Causes Rate</td>
<td>775.7</td>
<td>805.1</td>
</tr>
<tr>
<td>Cardiovascular Disease Death Rate</td>
<td>262.7</td>
<td>268.6</td>
</tr>
<tr>
<td>Heart Disease Death Rate</td>
<td>203.0</td>
<td>202.7</td>
</tr>
<tr>
<td>Stroke Death Rate</td>
<td>45.3</td>
<td>49.8</td>
</tr>
<tr>
<td>All Cancer Death Rate</td>
<td>163.8</td>
<td>173.7</td>
</tr>
<tr>
<td>Lung Cancer Death Rate</td>
<td>59.5</td>
<td>48.2</td>
</tr>
<tr>
<td>Female Breast Cancer Death Rate</td>
<td>28.0</td>
<td>23.0</td>
</tr>
<tr>
<td>Chronic Lower Respiratory Disease Death Rate</td>
<td>46.0</td>
<td>42.5</td>
</tr>
<tr>
<td>Diabetes Death Rate</td>
<td>14.9</td>
<td>25.5</td>
</tr>
<tr>
<td>Infant Death Rate</td>
<td>5.6</td>
<td>6.2</td>
</tr>
<tr>
<td>Fetal Death Rate</td>
<td>3.6</td>
<td>5.4</td>
</tr>
<tr>
<td>Unintentional Injury Rate</td>
<td>41.7</td>
<td>42.2</td>
</tr>
<tr>
<td>Motor Vehicle Injury Rate</td>
<td>15.3</td>
<td>15.8</td>
</tr>
<tr>
<td>Homicide Rate</td>
<td>--</td>
<td>6.1</td>
</tr>
<tr>
<td>Suicide Rate</td>
<td>11.1</td>
<td>10.5</td>
</tr>
</tbody>
</table>

*All rates are per 100,000 population. Source: Texas Health Currents–Montgomery County.

INFANT MORTALITY

Between 1990 and 2006, the rate of infant mortality had severely fluctuated in Montgomery County, increasing to a rate higher than Texas in 2006. As shown in Figure 46, whereas the infant mortality rate in Montgomery County was 8.4 per 1,000 in 2006, for Texas it was 6.2 per 1,000. Recently released data (not plotted) show that infant mortality in Montgomery County declined to 5.6 in 2007, also lower than Texas’ rate in the same year (6.4).

Figure 46. Infant Mortality (Rate per 1,000), Montgomery County, Texas, 1990-2006

Source: Data provided by the Center for Public Policy Priorities through the Annie E. Casey Foundation’s Kids Count Data Center
Teen violent deaths considerably fluctuated between 1990 and 2006, as displayed in Figure 47. In 2006, the rate of teen violent deaths in Montgomery County was significantly higher than Texas (70.0 vs. 45.9 per 100,000). Recently released data (not plotted) show that by 2007, teen violent death rate significantly declined in the county and fell below the state rate (37.5 vs. 45.4 per 100,000).

**Figure 47. Teen Violent Death (Rate per 100,000 teens ages 15-19)**

Montgomery County, Texas, 1990-2006

Definitions: Number and rate per 100,000 of deaths of teens ages 15-19 by homicide, suicide, and accident.

Source: Data provided by the Center for Public Policy Priorities through the Annie E. Casey Foundation’s Kids Count Data Center.
G. Communicable Diseases

The rate of reported cases for chickenpox, whooping cough, and tuberculosis were all lower in Montgomery County as compared to Texas in 2009 (Figure 48). The rates of major Sexually Transmitted Diseases (STDs) and HIV/AIDS were also lower in the county than Texas in 2009 (Figure 49).

**Figure 48. Common Communicable Diseases - Reported Cases and Rate**

<table>
<thead>
<tr>
<th>Disease</th>
<th>MC 2007 #</th>
<th>MC 2007 Rate</th>
<th>MC 2009 #</th>
<th>MC 2009 Rate</th>
<th>Texas 2009 Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varicella (Chickenpox)</td>
<td>79</td>
<td>19.1</td>
<td>59</td>
<td>13.2</td>
<td>17.9</td>
</tr>
<tr>
<td>Pertussis (Whooping Cough)</td>
<td>4</td>
<td>1.0</td>
<td>17</td>
<td>3.8</td>
<td>13.5</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>20</td>
<td>4.8</td>
<td>19</td>
<td>4.2</td>
<td>6.0</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>365</td>
<td>88.5</td>
<td>307</td>
<td>68.6</td>
<td>n/a</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>60</td>
<td>14.5</td>
<td>106</td>
<td>23.7</td>
<td>n/a</td>
</tr>
<tr>
<td>Salmonellosis</td>
<td>67</td>
<td>16.2</td>
<td>63</td>
<td>14.1</td>
<td>n/a</td>
</tr>
<tr>
<td>Strep. Pneumoniae, Invasive</td>
<td>21</td>
<td>5.1</td>
<td>33</td>
<td>7.4</td>
<td>n/a</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>12</td>
<td>2.9</td>
<td>26</td>
<td>5.8</td>
<td>n/a</td>
</tr>
<tr>
<td>Campylobacteriosis</td>
<td>21</td>
<td>5.1</td>
<td>24</td>
<td>5.4</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Source: Data for communicable disease cases in Montgomery County provided by the Montgomery County Hospital District's Public Health Department for 2007 and 2009. Data for communicable disease rates in Texas obtained from Texas Health Currents, Texas Department of State Health Services. Note: Rates calculated per 100,000 population based on Montgomery County's Population in 2007 (412,630) and 2009 (447,718).

**Figure 49. Sexually Transmitted Diseases - Reported Cases and Rate**

<table>
<thead>
<tr>
<th>Disease</th>
<th>MC 2007 #</th>
<th>MC 2007 Rate</th>
<th>MC 2009 #</th>
<th>MC 2009 Rate</th>
<th>Texas 2009 Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia</td>
<td>666</td>
<td>161.4</td>
<td>828</td>
<td>184.9</td>
<td>417.4</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>167</td>
<td>40.5</td>
<td>150</td>
<td>33.5</td>
<td>115.7</td>
</tr>
<tr>
<td>Syphilis</td>
<td>36</td>
<td>8.7</td>
<td>19</td>
<td>4.2</td>
<td>6.6</td>
</tr>
<tr>
<td>New HIV/AIDS Cases</td>
<td>24</td>
<td>5.8</td>
<td>20</td>
<td>4.5</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Source: Data for STD cases in Montgomery County provided by the Montgomery County Hospital District's Public Health Department for 2007 and 2009. Data for STD rates in Texas obtained from Texas Health Currents, Texas Department of State Health Services. Note: Rates calculated per 100,000 population based on Montgomery County's Population in 2007 (412,630) and 2009 (447,718).
H. Health Care Resources

HEALTH PROFESSIONALS

Figure 50 provides the number and rate of primary care providers in Montgomery County, Texas and the U.S. for 2009. Montgomery County had 71 primary care physicians per 100,000, a rate only slightly higher than Texas (68 per 100,000). The county had slightly fewer dentists than the State (41 vs. 44 per 100,000), but both the county and state had half as many dentists as the nation as a whole. In addition, Montgomery County had fewer nurse practitioners (NPs), licensed vocational nurses (LVNs) and registered nurses (RNs) as compared to Texas, and particularly the nation. The rate of NPs per 100,000 in Montgomery County was 17, as compared to 23 in Texas and 51 in the U.S. The rate of LVNs per 100,000 in the county was 171, as compared to 278 in Texas and 249 in the U.S. Furthermore, Montgomery County had 505 RNs per 100,000 population as compared to 681 in Texas and 842 in the U.S.

Figure 50. Number and Rate (per 100,000) of Primary Care Physicians, Nurses and Dentists

Montgomery County and Texas, 2009

<table>
<thead>
<tr>
<th>Professional</th>
<th>MC* #</th>
<th>MC* Rate</th>
<th>TX* #</th>
<th>TX * Rate</th>
<th>US #</th>
<th>US* Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Care Physicians§</td>
<td>325</td>
<td>71</td>
<td>16,830</td>
<td>68</td>
<td>269,000</td>
<td>79</td>
</tr>
<tr>
<td>Dentists¥</td>
<td>184</td>
<td>41</td>
<td>10,997</td>
<td>44</td>
<td>247,767</td>
<td>80</td>
</tr>
<tr>
<td>Nurse Practitioners¥</td>
<td>79</td>
<td>17</td>
<td>5,745</td>
<td>23</td>
<td>157,782</td>
<td>51</td>
</tr>
<tr>
<td>Licensed Vocational Nurses^</td>
<td>777</td>
<td>171</td>
<td>69,152</td>
<td>278</td>
<td>572,718</td>
<td>249</td>
</tr>
<tr>
<td>Registered Nurses^</td>
<td>2,295</td>
<td>504</td>
<td>169,446</td>
<td>681</td>
<td>2,583,770</td>
<td>842</td>
</tr>
</tbody>
</table>

*County and State statistics were obtained from: TX DSHS. Supply and Distribution Tables for State-Licensed Health Professions in Texas. 2009.
§National data for Primary Care Physicians obtained from the American Academy of Family Physicians, see: http://www.aafp.org/online/en/home/policy/policies/w/workforce.html.
Notes: Rate calculated per 100,000 population. Primary care physicians defined as MDs for General Practice, Family Practice, Internal Medicine, General Pediatrics, and General Obstetrics/Gynecology.

HEALTH PROFESSIONAL SHORTAGE AREAS (HPSAs)

Health Professional Shortage Areas (HPSAs), as defined by the Public Health Service Act and designated by the Health Resources and Services Administration (HRSA), are areas having shortages of primary medical care, dental or mental health providers and may be geographic (a county or service area), demographic (low-income population) or institutional (comprehensive health center, federally qualified health center or other public facility).

East Montgomery County is designated as an HPSA for primary medical care for the following census tracts: 6922; 6923; 6924; 6925; 6926; 6927; 6928; 6929; 6930; 6931; 6934; 6935; 6938; 6939; 6940; and 6941 (Figure 51). In addition, Lone Star Family Health Center is designated as an HPSA for primary medical care, dental care, and mental health.
MEDICALLY UNDERSERVED AREAS (MUAs)

Medically Underserved Areas (MUA), as defined by the Public Health Service Act and designated by HRSA, are service areas with a demonstrable shortage of primary health care resources relative to the needs of the entire population within the service area. It may be a whole county or a group of contiguous counties, a group of county or civil divisions, or a group of urban census tracts. Four variables are measured and scored in determining MUAs. These include: rate of primary medical care physicians per 1,000 population, the infant mortality rate, the percentage of the population with incomes below the poverty level, and the percentage of the population age 65 years or older.

Montgomery County has 19 census tracts which have been designated as MUA (Figure 51). In 1994, parts of west and northeast Montgomery County were designated as MUA, including the following six census tracts: 6939; 6940; 6941; 6945; 6946; and 6947. In 2002, an additional 13 census tracts in East County were designated as MUA, including: 6922; 6923; 6924; 6925; 6926; 6927; 6928; 6929; 6930; 6931; 6934; 6935 and 6938.

Figure 51. Medically Underserved Areas (MUAs) and Health Professional Shortage Areas (HPSAs)
Montgomery County, Texas, 2010

Source: Health Resources and Services Administration (HRSA) Shortage Designations, 2009.
IV. Findings: Health Provider Data

A. Hospital Emergency Department Utilization

Four acute care hospitals in Montgomery County contributed data on their emergency department (ED) utilization. These include Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands, and St. Luke’s The Woodlands Hospital.

EMERGENCY DEPARTMENT VISITS

In 2009, the four major acute care hospitals in the county received 158,301 ED visits, up by 21 percent from 130,789 in 2007 (Figure 52). Volume of ED visits varied by hospital and ranged between 28,500 and 38,500 visits per hospital. Nearly two-thirds of all ED visits to the four hospitals were made by Montgomery County residents in 2009. Although the number of ED visits by Montgomery County residents increased by nearly 15 percent, from 84,887 in 2007 to 97,490 in 2009 (Figure 53), county residents represented a declining percentage of total ER visits to the hospitals. Specifically, in 2009, Montgomery County residents comprised approximately 62 percent of ED visits as compared to 65 percent in 2007.

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands, and St. Luke’s The Woodlands Hospital.
ED UTILIZATION BY SEX & AGE

Females comprised a large and growing proportion of ED visits than males (Figure 54). In 2009, over 57 percent of ED visits were made by females, up by 55 percent in 2007. The largest proportion of ED visits were made by adults, ages 18-64 years, in both 2007 and 2009. Children and teens comprised just over one-fourth of ED visits, while seniors made up about 15 percent. No considerable changes in ED visits seen between 2007 and 2009 by age or sex.

Figure 54. Percent of All Emergency Room Visits by Sex and Age for Four Major Acute Care Hospitals, 2007 and 2009

<table>
<thead>
<tr>
<th>Sex</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>44.7%</td>
<td>42.8%</td>
</tr>
<tr>
<td>Females</td>
<td>55.3%</td>
<td>57.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 4 years</td>
<td>14.6%</td>
<td>13.7%</td>
</tr>
<tr>
<td>5 – 17 years</td>
<td>13.7%</td>
<td>13.7%</td>
</tr>
<tr>
<td>18 – 64 years</td>
<td>57.1%</td>
<td>57.9%</td>
</tr>
<tr>
<td>65+ years</td>
<td>14.7%</td>
<td>14.6%</td>
</tr>
</tbody>
</table>

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands, and St. Luke’s The Woodlands Hospital.

ED UTILIZATION BY RACE & ETHNICITY

Whites comprised a large, but declining proportion of ER visits between 2007 and 2009 (Figure 55). Whereas 75 percent of ED visits were made by whites in 2007, only 71 percent were made in 2009. Proportion of ED visits by racial and ethnic minorities increased between 2007 and 2009. For example, Hispanic or Latino patients accounted for nearly 13 percent of ED visits in 2009, up from 11 percent in 2007. African Americans also witnessed a slight increase in this period.

Figure 55. Percent of All Emergency Room Visits by Race and Ethnicity for Four Major Acute Care Hospitals, 2007 and 2009

<table>
<thead>
<tr>
<th>Race and Ethnicity</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>74.5%</td>
<td>70.9%</td>
</tr>
<tr>
<td>African American</td>
<td>10.1%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Asian</td>
<td>0.7%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Other</td>
<td>3.8%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>10.9%</td>
<td>12.7%</td>
</tr>
</tbody>
</table>

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands, and St. Luke’s The Woodlands Hospital.
ED UTILIZATION BY PAYER SOURCE

All ED Visits. Patients with public insurance, including Medicaid, Medicare and CHIP, accounted for the largest and growing proportion of all ED visits to the four acute care hospitals (Figure 56). Between 2007 and 2009, ED visits by publicly-insured patients grew from 34 to 36 percent. In contrast, the proportion of privately-insured patients coming through the ED declined from approximately 34 to 29 percent. Self-paying patients, considered to be uninsured in this study, comprised nearly one-fourth of ED visits in both 2007 and 2009 at the four hospitals. From 2007 to 2009, the hospitals generally saw an increase in percent of ED visits made by patients with other forms of health coverage.

Figure 56. Percent of All Emergency Room Visits by Payer Source for Four Major Acute Care Hospitals, 2007 and 2009

<table>
<thead>
<tr>
<th>Payer Source</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Pay</td>
<td>25.0%</td>
<td>25.6%</td>
</tr>
<tr>
<td>Public</td>
<td>34.4%</td>
<td>36.2%</td>
</tr>
<tr>
<td>Private</td>
<td>33.7%</td>
<td>29.1%</td>
</tr>
<tr>
<td>Other</td>
<td>6.8%</td>
<td>9.1%</td>
</tr>
</tbody>
</table>

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands, and St. Luke’s The Woodlands Hospital.

Montgomery County ED Visits Only. The proportion of ED visits by Montgomery County residents was highest among publicly-insured in both years (Figure 57). In addition, the county accounted for a higher percent of ED visits by publicly-insured as compared to all in- and out-of-county visits (e.g., 37.9% vs. 36.2% in 2009). Similar to trends in all ED visits made to the four hospitals, ED visits by privately-insured Montgomery County residents declined between 2007 and 2009, from 31.5 to 28.0 percent. Self-paying or uninsured from within Montgomery County accounted for a growing proportion of ED visits from 26.2 to 27.4 percent between 2007 and 2009. In addition, the proportion of self-pay ED visits from within Montgomery County was slightly higher (27.4%) than the proportion overall (25.6%) at these hospitals in 2009. From 2007 to 2009, the hospitals generally saw an increase in percent of ED visits made by county patients with other payer sources—e.g., Worker’s Compensation, Family Planning, Maternal and Child Health and other health and human service programs; however, this proportion was lower than ED visits by all in- and out-of-county patients with other payer sources.

Figure 57. Percent of Emergency Room Visits by Montgomery County Residents for Four Major Acute Care Hospitals, 2007-2009

<table>
<thead>
<tr>
<th>Payer Source</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Pay</td>
<td>26.2%</td>
<td>27.4%</td>
</tr>
<tr>
<td>Public</td>
<td>36.4%</td>
<td>37.9%</td>
</tr>
<tr>
<td>Private</td>
<td>31.5%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Other</td>
<td>5.9%</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands, and St. Luke’s Woodlands Hospital.
ED UTILIZATION BY PRIMARY DIAGNOSES

Each of the four hospitals was requested to provide data on their top 20 primary diagnoses in their ED. A total of 39 diagnoses were reported, of which the top 10 for 2007 and 2009 are presented in Figure 58 (as a percentage of the total 39 diagnoses reported). The top diagnosis for all ED visits was chest pain in both, 2007 and 2009, accounting for nearly 6,353 visits in 2009. This finding is not unique to the County, but also true for the nation. Generally, chest pain, abdominal pain, urinary tract infection and headache all comprise top diagnoses among hospital ED visits nationally.\(^7\) Middle ear infections and acute respiratory infections, also among the top 10 ED diagnoses in Montgomery County, comprise the top two primary diagnoses for children, nationally.\(^8\) The section on page 68 discusses medical conditions diagnosed in the ED that could have been prevented if appropriate outpatient or primary care had been provided.

![Figure 58. Top 10 Primary ED Diagnoses, 2007 & 2009, Montgomery County, Texas](image)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Percent 2007</th>
<th>Diagnosis</th>
<th>Percent 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest Pain*</td>
<td>14.3%</td>
<td>Chest pain*</td>
<td>13.7%</td>
</tr>
<tr>
<td>Fever</td>
<td>9.8%</td>
<td>Urinary tract infection</td>
<td>8.3%</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>8.8%</td>
<td>Acute upper respiratory infection</td>
<td>8.2%</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>7.4%</td>
<td>Abdominal pain</td>
<td>6.7%</td>
</tr>
<tr>
<td>Middle ear infection</td>
<td>7.2%</td>
<td>Middle ear infection</td>
<td>6.7%</td>
</tr>
<tr>
<td>Acute upper respiratory infection</td>
<td>6.1%</td>
<td>Fever</td>
<td>6.4%</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>6.1%</td>
<td>Pneumonia</td>
<td>5.5%</td>
</tr>
<tr>
<td>Headache</td>
<td>5.7%</td>
<td>Headache</td>
<td>5.2%</td>
</tr>
<tr>
<td>Noninfectious gastroenteritis</td>
<td>5.2%</td>
<td>Viral infection</td>
<td>4.8%</td>
</tr>
<tr>
<td>Sprain of neck</td>
<td>5.1%</td>
<td>Acute pharyngitis</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands, and St. Luke’s The Woodlands Hospital.

*Chest pain is a combination of diagnoses codes for chest pain (otherwise not specified) and chest pain (not elsewhere classified).

ED UTILIZATION BY ZIP CODE

Figures 59 and 60 map total ED visits by zip code in Montgomery County for 2007 and 2009. In 2007, ED utilization was highest in Conroe’s 77301 zip code, accounting for 11,070 visits. Spring (77386), Conroe near Leonidas (77304), The Woodlands (77381), and Willis (77378) were also among zip codes with a high volume of ED visits (i.e., accounting for 5,000 to 7,500 visits). In 2009, Conroe (77301) continued to have the highest volume of ED visits, nearly 13,000, followed by Spring (77386), Porter (77365), Willis (77378), Conroe (77304, 77302, 77303) and New Caney (77357), all having between 5,000 to 7,500 visits.


Regions that experienced the greatest percentage increase (i.e., greater than 20%) in ED visits between 2007 and 2009 include Magnolia (77354, 77355), followed by New Caney (77357), Splendora (77372), Pinehurst (77362), Porter (77365), Montgomery (77316), and Conroe (77384). The Woodlands (77381) experienced the greatest decline (nearly 10%) in ED visits in this time period.

Figures 61 and 62 overlay the distribution of ED visits by payer source for 2007 and 2009 with total ED visits as mapped in Figures 59 and 60. In 2009, Conroe (77301) accounted for the largest percentage (40%) of self-paid ED visits. Willis (77378), New Caney (77357), and Porter (77365) accounted for approximately one-third of self-paid ED visits. Regions with the greatest percent of visits made by publicly-insured patients (i.e., 40 percent or more) in 2009 included: Conroe (77305, 77306, 77301, 77302, 77384); New Caney (77357); Willis (77378); and The Woodlands (77381).

In 2009, over three in four ED visits in Conroe (77306, 77301), Willis (77378), and New Caney (77357) were made by publicly-insured and self-paying patients, combined. Proportion of privately-insured patients (at least 50%) was highest in the The Woodlands and Spring area (77382, 77386).
Figure 59. Total Emergency Department Visits by Zip Code, Montgomery County, Texas 2007

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands and St. Luke’s The Woodlands Hospital.

Figure 60. Total Emergency Department Visits by Zip Code, Montgomery County, Texas 2009

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands and St. Luke’s The Woodlands Hospital.
Figure 61. Total ED Visits and Distribution of ED Visits by Payer Source and Zip Code Montgomery County, Texas, 2007

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands and St. Luke's The Woodlands Hospital.

Figure 62. Total ED Visits and Distribution of ED Visits by Payer Source and Zip Code Montgomery County, Texas, 2007

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands and St. Luke's The Woodlands Hospital.
ED UTILIZATION BY POTENTIALLY PREVENTABLE CONDITIONS

Ambulatory Care Sensitive (ACS) conditions are a set of medical conditions that if treated appropriately in outpatient or primary care settings, can prevent hospitalization and unnecessary ED utilization. ACS conditions included in this study are: Angina without Procedure, Asthma, Bacterial Pneumonia, Chronic Obstructive Pulmonary Disease (COPD), Congestive Heart Failure, Dehydration, Diabetes with long-term and short-term complications, Hypertension, and Urinary Tract Infection.

Nearly half of ED visits for ACS or potentially preventable conditions were made by patients with public insurance (Figure 63). Publicly-insured patients also represented a higher proportion of visits for ACS conditions as compared to overall ED visits (47% vs. 36%). In contrast, both privately-insured and self-pay patients comprised a lower proportion of visits for ACS conditions compared to overall ED visits in 2009 (26% vs. 29% for private and 21% vs. 25% for self-pay). Just over 5 percent of ED visits for ACS were made by patients with other forms of payment—e.g., Worker’s Compensation, Family Planning, Maternal and Child Health and other health and human service programs.

![Figure 63. Percent ED Visits for All Ambulatory Care Sensitive Conditions by Payer Source](image)

Montgomery County, Texas 2007-2009

Source: Conroe Regional Medical Center, Kingwood Medical Center, Memorial Hermann The Woodlands and St. Luke’s The Woodlands Hospital.

Note: Ambulatory Care Sensitive (ACS) conditions are a set of medical conditions that if treated appropriately in outpatient or primary care settings, can prevent hospitalization and unnecessary ER utilization. ACS conditions included in this study are: Angina without Procedure, Asthma, Bacterial Pneumonia, COPD, Congestive Heart Failure, Dehydration, Diabetes with long term and short term complications, Hypertension, and Urinary Tract Infection.

With the exception of asthma, publicly-insured patients accounted for the largest proportion of ED visits for the majority of potentially preventable conditions (Figure 64). These percentages were highest for congestive heart failure (80%), followed by dehydration (50%), COPD (49%), pneumonia (49%), angina (48%) and diabetes (47%). Among privately-insured patients, potentially preventable ED visits were highest for angina and asthma. In contrast, among self-pay patients potentially preventable ED visits were highest for urinary tract infection, asthma and COPD.
Figure 64. Distribution of ED Visits by Payer Source and 10 Ambulatory Care Sensitive Conditions, Montgomery County, Texas, 2007-2009

Note: COPD is chronic obstructive pulmonary disease; CHF is congestive heart failure; and UTI is Urinary Tract Infection.

POTENTIALLY PREVENTABLE HOSPITALIZATIONS

From 2005-2008, there were 16,772 potentially preventable hospitalizations among adult residents (18+ years) in Montgomery County. These residents received a total of $550 million in charges for hospitalizations that were potentially preventable (Figure 65).

Figure 65. Potentially Preventable Hospitalizations, Montgomery County, Texas, 2005-2008

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number of Hospitalizations</th>
<th>Charge</th>
<th>Charges</th>
<th>Average $ Impact for Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angina (without procedures)</td>
<td>125</td>
<td>$19,626</td>
<td>$2,453,211</td>
<td>$8</td>
</tr>
<tr>
<td>Asthma</td>
<td>954</td>
<td>$26,628</td>
<td>$25,403,127</td>
<td>$84</td>
</tr>
<tr>
<td>Bacterial Pneumonia</td>
<td>3,473</td>
<td>$36,942</td>
<td>$128,298,102</td>
<td>$423</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>3,170</td>
<td>$30,945</td>
<td>$98,094,100</td>
<td>$324</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>3,915</td>
<td>$36,910</td>
<td>$144,502,614</td>
<td>$477</td>
</tr>
<tr>
<td>Dehydration</td>
<td>799</td>
<td>$20,803</td>
<td>$16,621,946</td>
<td>$55</td>
</tr>
<tr>
<td>Diabetes Long-term Complications</td>
<td>1,060</td>
<td>$52,119</td>
<td>$55,246,416</td>
<td>$182</td>
</tr>
<tr>
<td>Diabetes Short-term Complications</td>
<td>384</td>
<td>$26,366</td>
<td>$10,124,492</td>
<td>$33</td>
</tr>
<tr>
<td>Hypertension</td>
<td>589</td>
<td>$25,511</td>
<td>$15,025,842</td>
<td>$50</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>2,304</td>
<td>$23,831</td>
<td>$54,906,321</td>
<td>$181</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>16,773</strong></td>
<td><strong>$32,831</strong></td>
<td><strong>$550,676,170</strong></td>
<td><strong>$1,816</strong></td>
</tr>
</tbody>
</table>

Source: Center for Health Statistics, Texas Department of State Health Services
B. Safety Net Clinic Utilization

Montgomery County has two vastly distinct primary care safety net clinics – Lone Star Family Health Center, a federally-qualified health center (FQHC) located in Conroe, and Interfaith Community Clinic, a volunteer clinic located in The Woodlands.

INTERFAITH COMMUNITY CLINIC

Established in November 1996, Interfaith Community Clinic (ICC) is a privately-funded, nonprofit health center run primarily by volunteers. The mission of the clinic is to "provide basic dental care, medical care, counseling and social services, to the working poor and uninsured living in the community." As such, ICC primarily sees adult patients with no form of health insurance.

Sex and Age. Based on adult patient visit data, the large majority of visits to ICC were made by adult women in both 2007 and 2009--i.e., seven out of 10 visits (Figure 66). Almost 90 percent of patients in 2009 were adults, and just over 10 percent were children, 5-17 years. As many low-income infants and toddlers as well as seniors are covered by public insurance (i.e., CHIP and Medicare, respectively) ICC reports seeing a very minimal number of such patients.

Race and Ethnicity. ICC collects and reports race and ethnicity data separately. These data are presented in Figure 67. Based on ethnicity data, in 2009, approximately two-thirds of visits to ICC were made by Hispanic or Latino individuals, up from 63 percent in 2007 (or nearly 1,000 additional visits). Based on race, whites comprise an overwhelming majority of visits to the clinic (note: it is likely a large majority of these patients are of Hispanic or Latino decent). African Americans comprised nearly 5 percent of visits to the clinic in both 2007 and 2009, and Asians comprised almost 2 percent of patients by 2009.

<table>
<thead>
<tr>
<th>Age</th>
<th>No. 2007</th>
<th>% 2007</th>
<th>No. 2009</th>
<th>% 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 4 years</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>5 – 17 years</td>
<td>988</td>
<td>13.8%</td>
<td>872</td>
<td>10.6%</td>
</tr>
<tr>
<td>18 – 64 years</td>
<td>6,190</td>
<td>86.2%</td>
<td>7,356</td>
<td>89.4%</td>
</tr>
<tr>
<td>65+ years</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>
**Figure 67. Number and Percent of Patient Visits by Race and Ethnicity**

*Interfaith Community Clinic, 2007 & 2009*

<table>
<thead>
<tr>
<th>Race</th>
<th>No. 2007</th>
<th>% 2007</th>
<th>No. 2009</th>
<th>% 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>6,568</td>
<td>91.5%</td>
<td>7,607</td>
<td>92.0%</td>
</tr>
<tr>
<td>African American</td>
<td>327</td>
<td>4.6%</td>
<td>386</td>
<td>4.7%</td>
</tr>
<tr>
<td>Asian</td>
<td>98</td>
<td>1.4%</td>
<td>153</td>
<td>1.9%</td>
</tr>
<tr>
<td>Other</td>
<td>185</td>
<td>2.6%</td>
<td>195</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>No. 2007</th>
<th>% 2007</th>
<th>No. 2009</th>
<th>% 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic or Latino</td>
<td>4,509</td>
<td>62.8%</td>
<td>5,456</td>
<td>66.0%</td>
</tr>
<tr>
<td>Not Hispanic or Latino</td>
<td>2,669</td>
<td>37.2%</td>
<td>2,813</td>
<td>34.0%</td>
</tr>
</tbody>
</table>

**Patient Visits by Zip Code.** Figures 68 and 69 map the total number of clinic visits to ICC made in 2007 and 2009. In both years, ICC served patients from all across the county. In 2009, largely resembling patterns from 2007, ICC received the greatest volume of visits from patients who were from Conroe (77301, 77385), Spring (77386), and The Woodlands (77380). Between 2007 and 2009, the clinic experienced not only a growth in patients from nearby Spring and The Woodlands (77387, 77382, 77386), but also farther regions including: Montgomery (77356); Magnolia (77355); New Caney (77357); and Willis (77318).
Figure 68. Number of Total Self-Pay Clinic Visits, Interfaith Community Clinic, 2007

Figure 69. Number of Total Self-Pay Clinic Visits, Interfaith Community Clinic, 2009
Services. ICC offers four major services – medical, dental, mental health, and social services as shown in Figure 70. In 2009, ICC provided these services through a total of 15,722 visits. Between 2007 and 2009, whereas the clinic's medical and mental health services expanded, dental care nearly halved and mental health services also declined substantially. By 2009, social services represented nearly half of all visits to the clinic. Medical care represented nearly 41 percent of operations and dental care about 11 percent in 2009.

Figure 70. Distribution of Clinic Visits by Type of Service, Interfaith Community Clinic, 2007 and 2009

Diagnoses. As shown in Figure 71, in 2009, hypertension and diabetes represented the top two primary diagnoses at ICC.

Figure 71. Top 10 Primary Diagnoses, Interfaith Community Clinic, 2009
LONE STAR FAMILY HEALTH CENTER

Lone Star Family Health Center (referred to as Lone Star in this report), was founded in 2002, becoming fully operational as an FQHC in 2004. Lone Star serves a nationally recognized family medicine residency program that graduates seven residents annually. In 2009, Lone Star saw 18,760 patients through 56,071 visits (3.0 visits per patient). Since 2007, the number of patients and patient visits grew by 29 and 21 percent, respectively.

Sex and Age. Nearly 6 out of 10 patients were female at Lone Star, both in 2007 and 2009 (Figure 72). In 2009, adults (18-64 years) comprised the largest proportion of Lone Star patients (48%), followed by children 17 years and younger (46%). Seniors represented the smallest proportion of patients at Lone Star in 2009 (6%).

Race and Ethnicity. Nearly 60 percent of Lone Star patients did not report their race or ethnicity (Figure 73). In 2009, of those that did report race/ethnicity, the large majority were White, followed by African American and Hispanic/Latino patients.

<table>
<thead>
<tr>
<th>Race</th>
<th>No. 2007</th>
<th>% 2007</th>
<th>No. 2009</th>
<th>% 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>6,447</td>
<td>44.4%</td>
<td>5,156</td>
<td>27.5%</td>
</tr>
<tr>
<td>African American</td>
<td>1,404</td>
<td>9.7%</td>
<td>1,338</td>
<td>7.1%</td>
</tr>
<tr>
<td>Asian</td>
<td>64</td>
<td>0.4%</td>
<td>75</td>
<td>0.4%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>n/a</td>
<td>n/a</td>
<td>969</td>
<td>5.2%</td>
</tr>
<tr>
<td>Other</td>
<td>88</td>
<td>0.6%</td>
<td>23</td>
<td>0.1%</td>
</tr>
<tr>
<td>Unreported</td>
<td>6,505</td>
<td>44.8%</td>
<td>11,199</td>
<td>59.7%</td>
</tr>
</tbody>
</table>

Note: 2007 data did not report Hispanic/Latino ethnicity; 2009 data breaks out race as Non-Hispanic White, Non-Hispanic African American, Non-Hispanic Asian, Non-Hispanic Other and Hispanic/Latino
**Patients by Zip Code.** Figures 74 and 75 map number of patients by zip code for 2007 and 2009. Lone Star served patients from all parts of the county, with a large concentration from within Conroe and Willis (at least 1,000 patients in zip codes 77301, 77378, 77306, 77303, and 77304). Between 2007 and 2009, regions which accounted for the greatest growth in Lone Star patients (i.e., 30% or greater), included Conroe (77385, 77301, 77305, 77306, 77302), Magnolia (77355, 77354), Spring (77386), and Willis (77378). In 2009, Lone Star saw an influx of patients from out of county, particularly around Cypress and Tomball.

**Figure 74. Number of Patients by Zip Code, Lone Star Family Health Center, 2007**

**Figure 75. Number of Patients by Zip Code, Lone Star Family Health Center, 2009**
**Payer Source.** In both 2007 and 2009, about six out 10 patients at Lone Star had public insurance—i.e., Medicaid, Medicare or CHIP (Figure 76). Whereas in 2007, 17 percent of patients were self paying (or uninsured), by 2009, that percentage grew to 21 percent. In contrast, the proportion of privately-insured patients at Lone Star declined from 24 percent in 2007 to about 19 percent in 2009.

Using U.S. Census Bureau’s estimate for number of uninsured in Montgomery County as a denominator, it is estimated that Lone Star saw about 4 percent of the county's uninsured population in 2009.

**Figure 76. Percent of Patients by Payer Source, Lone Star Family Health Center, 2007 & 2009**

![Figure 76](image)

Figures 77 and 78 map where self-paying patients to Lone Star came from in 2007 and 2009, respectively. While self-paying patients were from nearly all parts of the county, the largest concentration, in both years, came from within Conroe (77301), followed by Willis (77378), the area near Cut and Shoot as well as other parts of Conroe (77306, 77303, and 77304). Between 2007 and 2009, self-paying patients approximately doubled from within Conroe (77385, 77301, 77305, 77306), Magnolia (77355, 77354), and Spring (77386). In 2009, Lone Star saw an influx of self-paying patients from out of county, particularly around Cypress and Tomball.
Figure 77. Number of Self Pay Patients by Zip Code, Lone Star Family Health Center, 2007

Figure 78. Number of Self-Pay Patients by Zip Code, Lone Star Family Health Center, 2009
Services. The large majority of Lone Star's patient visits were for medical services, which comprised about 97 percent in both 2007 and 2009 (Figure 79). Dental and mental health services only represented close to three percent of services.

Figure 79. Distribution of Clinic Visits by Type of Service
Lone Star Family Health Center, 2007 and 2009

Diagnoses. Lone Star is a major source of child care, thus in 2009, routine child exam was the number one diagnosis, representing 40 percent of top diagnoses (Figure 80). In addition, however, nearly 25 percent of the top diagnoses at Lone Star were for hypertension and diabetes. Approximately 13 percent of top diagnoses were for prenatal care.

Figure 80. Top 10 Diagnoses, Lone Star Family Health Center, 2009

The next set of maps display the number of patients with select primary diagnoses by zip code for 2009. Figure 81 maps number of patients at Lone Star receiving routine child exam in 2009 by zip code. Conroe (77301) accounted for the largest number of patients receiving a child exam, followed by Willis (77378) and the area around Cut and Shoot (77306). Figure 82 maps number of patients at Lone Star with a primary diagnosis of diabetes in 2009 by zip code. These data also show that Conroe (77301)
accounted for the largest number of patients with diabetes, followed by Willis and regions around Cut and Shoot, Wigginsville, and Leonidas.

**Figure 81. Number of Patients with Child Exam by Zip Code, Lone Star Family Health Center, 2009**

![Map showing the number of patients with Child Exam by Zip Code.](image)

**Figure 82. Number of Patients with Diabetes, Lone Star Family Health Center 2009**

![Map showing the number of patients with Diabetes.](image)
C. Montgomery County Hospital District

HEALTH CARE ASSISTANCE PROGRAM

The Montgomery County Hospital District (MCHD) administers three major Health Care Assistance Programs (HCAPs) for low and very low-income individuals and families. Section 23A(b)(1) in MCHD’s enabling legislation authorizes the hospital district to “assume full responsibility for the furnishing of medical and hospital care for the needy residents of Montgomery County.” As such, MCHD’s HCAP served 1,474 low-income county residents in 2009, an increase from the 1,187 served in 2007. Following is a brief overview of each MCHD HCAP program:

- **Montgomery County Indigent Care Plan (MCICP)** – This program is designated for applicants that fall at or below 21 percent of the Federal Poverty Level (FPL). The eligibility criteria are similar to the State’s County Indigent Health care Program, except that all clients must be Resident Aliens or U.S. citizens to qualify for MCHD assistance. Copayments requested for MCICP services is $5.

- **Medical Assistance Plan (MAP)** – This program was designed to supplement the state county program by accommodating Montgomery County residents with incomes between 21-150% FPL. Applicants must be US Citizens, or have held Active Resident Alien status for at least five years. Copayments requested for MAP services are $10, $15, or $20, determined by the income level of the client.

- **Jail** - MCHD has a contract with the Montgomery County Jail that allows for the jail to help inmates apply for medical assistance through the MCHD Health Care Assistance Program. The eligibility criteria for this are that the inmate must meet the income and resource requirements for the program and prove intent to reside in the county. Upon release from the jail the inmate is terminated from the program but welcome to reapply as a regular citizen of the county.

In 2009, more than half of MCHD’s clients were enrolled in MAP, whereas just over one-third were enrolled in MCICP (Figure 83). A declining proportion of clients were enrolled in the inmate program.

![Figure 83. Number & Percent of Health Care Assistance Clients by Program, 2007 and 2009](image)

Note: One client may be enrolled in more than one program in a calendar year.
MCHD is the payer of last resort and provides assistance only if other adequate public or private sources of payment are not available to eligible individuals. In addition, MCHD is not secondary to any insurance benefits or exhausted benefits. As such, the Women’s Health Program is the only Medicaid program that a woman can be on and still qualify for HCAP.

Basic services that MCHD HCAP covers include: physician services; annual physical exams; immunizations; medical screening services; laboratory and x-ray services; family planning services; skilled nursing facility services; prescription drugs; rural health clinic services; inpatient hospital services; and outpatient hospital services. MCHD HCAP also covers several extended services, including: advanced practice nurse services; ambulatory surgical center services; catastrophic oncology services; colostomy medical supplies and equipment; mental health counseling services; diabetic medical supplies and equipment; durable medical equipment; emergency medical services; home and community health care services (in special circumstances with authorization); physician assistant services; and federally qualified health center services.

**HCAP CLIENTS**

*Demographic Characteristics.* Figure 84 provides an overview of MCHD HCAP clients by various demographic and socioeconomic variables. In 2009, the median age for HCAP clients had decreased to 50 from 53 years in 2007. Monthly median income in both years was about $800. Nearly two-thirds of clients were female, although the proportion of females enrolled in HCAP declined slightly between 2007 and 2009. Only about one in three clients was married in 2009, and average family size was 1.5.

![Figure 84. MCHD’s Health Care Assistance Program Client Characteristics, 2007 and 2009](image)

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Clients</td>
<td>1,187</td>
<td>1,474</td>
</tr>
<tr>
<td>Median Age</td>
<td>53 years</td>
<td>50 years</td>
</tr>
<tr>
<td>Monthly Median Income</td>
<td>$792</td>
<td>$800</td>
</tr>
<tr>
<td>% Female</td>
<td>66.4%</td>
<td>63.8%</td>
</tr>
<tr>
<td>% Married</td>
<td>27.8%</td>
<td>31.5%</td>
</tr>
<tr>
<td>Average Family Size</td>
<td>1.4</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*Poverty and Income.* The distribution of HCAP clients by income level did not change considerably between 2007 and 2009 (Figure 85). In 2009, 42 percent of HCAP clients had an income at or below 21 percent FPL, 11 percent had an income between 21-50 percent FPL, 27 percent had an income between 50-100 percent FPL, and about 20 percent had an income between 100-150 percent FPL.
Figure 85. Distribution of MCHD’s Health Care Assistance Program Clients by Co-Pay and Federal Poverty Level, 2007 & 2009

<table>
<thead>
<tr>
<th>Co-Pay</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 or $5</td>
<td>44.1%</td>
<td>42.1%</td>
</tr>
<tr>
<td>10-25%</td>
<td>10.6%</td>
<td>11.1%</td>
</tr>
<tr>
<td>15-50%</td>
<td>26.0%</td>
<td>26.9%</td>
</tr>
<tr>
<td>20-100%</td>
<td>19.3%</td>
<td>19.9%</td>
</tr>
</tbody>
</table>

Note: Income at 100% FPL for single person is $10,830 and for family of 4 is $22,050.

Race and Ethnicity. Whites represented the largest proportion of HCAP clients, however between 2007 and 2009, this percent declined from 72 to 66 percent (Figure 86). Hispanic clients, on the other hand, increased from representing 16 percent of all clients in 2007 to nearly 23 percent in 2009. In 2007, African-Americans comprised 10 percent of clients. By 2009, this proportion had slightly declined to nine percent.

Figure 86. Percent of MCHD’s Health Care Assistance Program Clients by Race and Ethnicity, 2007 & 2009

Location of Clients. MCHD’s HCAP serves clients from all across the county, as depicted in Figures 87 and 88. The largest concentration of clients in 2007 was from Conroe (77301), followed by Willis (77378), Porter (77365), other areas around Conroe such as Cut and Shoot and Leonidas (77303, 77306, 77302, 77304), New Caney (77357), and Magnolia (77354). In 2009, these regions continued to account for a large number of MCHD clients, with Conroe (77301) and Willis (77378) having the largest concentrations. Between 2007 and 2009, MCHD clients also grew in Splendora (77372), Magnolia (77355), Spring around Oak Ridge North (77386), and Montgomery (77356).
Figure 87. Number of MCHD’s Health Care Assistance Program Clients by Zip Code, 2007

Figure 88. Number of MCHD’s Health Care Assistance Program Clients by Zip Code, 2009
**Diagnoses.** As with the safety net clinics, diabetes and hypertension represented the top primary diagnoses among HCAP clients. See Figure 89.

**Figure 89. Top 20 Diagnoses by Count of Claims and Patients, 2009**  
MCHD Health Care Assistance Programs

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>No. Claims</th>
<th>%</th>
<th>No. Patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>3226</td>
<td>13.8%</td>
<td>216</td>
<td>14.0%</td>
</tr>
<tr>
<td>Benign hypertension</td>
<td>2733</td>
<td>11.7%</td>
<td>301</td>
<td>19.4%</td>
</tr>
<tr>
<td>Chest pain</td>
<td>1951</td>
<td>8.3%</td>
<td>228</td>
<td>14.7%</td>
</tr>
<tr>
<td>Diabetes uncomplicated type II, uncontrolled</td>
<td>1713</td>
<td>7.3%</td>
<td>139</td>
<td>9.0%</td>
</tr>
<tr>
<td>Abdominal/pelvic symptoms</td>
<td>1341</td>
<td>5.7%</td>
<td>145</td>
<td>9.4%</td>
</tr>
<tr>
<td>Encounter long term use OTH drugs</td>
<td>1311</td>
<td>5.6%</td>
<td>77</td>
<td>5.0%</td>
</tr>
<tr>
<td>Lumbago</td>
<td>1024</td>
<td>4.4%</td>
<td>146</td>
<td>9.4%</td>
</tr>
<tr>
<td>Routine gynecological exam</td>
<td>1017</td>
<td>4.3%</td>
<td>173</td>
<td>11.2%</td>
</tr>
<tr>
<td>Malignant neoplasm of ovary</td>
<td>963</td>
<td>4.1%</td>
<td>7</td>
<td>0.5%</td>
</tr>
<tr>
<td>Unspecified malignant neoplasm of colon</td>
<td>874</td>
<td>3.7%</td>
<td>4</td>
<td>0.3%</td>
</tr>
<tr>
<td>Malignant neoplasm of bronchus and lung</td>
<td>864</td>
<td>3.7%</td>
<td>16</td>
<td>1.0%</td>
</tr>
<tr>
<td>Mixed hyperlipidemia</td>
<td>858</td>
<td>3.7%</td>
<td>93</td>
<td>6.0%</td>
</tr>
<tr>
<td>Other convulsions</td>
<td>787</td>
<td>3.4%</td>
<td>52</td>
<td>3.4%</td>
</tr>
<tr>
<td>Other chest pain</td>
<td>771</td>
<td>3.3%</td>
<td>76</td>
<td>4.9%</td>
</tr>
<tr>
<td>Other malaise and fatigue</td>
<td>752</td>
<td>3.2%</td>
<td>82</td>
<td>5.3%</td>
</tr>
<tr>
<td>Pneumonia organism, unspecified</td>
<td>716</td>
<td>3.1%</td>
<td>37</td>
<td>2.4%</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>674</td>
<td>2.9%</td>
<td>95</td>
<td>6.1%</td>
</tr>
<tr>
<td>Hyperlipidemia, unspecified</td>
<td>638</td>
<td>2.7%</td>
<td>70</td>
<td>4.5%</td>
</tr>
<tr>
<td>Cardiovascular disease, unspecified</td>
<td>605</td>
<td>2.6%</td>
<td>28</td>
<td>1.8%</td>
</tr>
<tr>
<td>Disorders of urethra/urinary tract</td>
<td>597</td>
<td>2.5%</td>
<td>70</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

Note: Percent is calculated as percent of top 20 primary diagnoses and not all diagnoses.

The next set of maps display number of MCHD HCAP clients by zip code for select primary diagnoses from 2009. Figure 90 maps the 301 MCHD HCAP clients diagnosed with benign hypertension. The two regions with the largest concentration of clients with hypertension included Conroe (77301) and Willis (77378). In addition, a large number of clients from Montgomery (77356), Splendora (77372), Magnolia (77354), New Caney (77357), and the area around Cut and Shoot (77306) were also diagnosed with hypertension.

Figure 91 maps the 216 MCHD HCAP clients with diabetes. The three regions with the largest concentration of clients with diabetes included Conroe (77301), Splendora (77372), and area around The Woodlands (77380), followed by New Caney (77357), the area around Cut and Shoot (77303, 77306) and Porter (77365).
Figure 90. Number of MCHD HCAP Clients with Benign Hypertension by Zip Code, 2009

Note: In 2009, there were 2,733 claims and 301 patients with hypertension.

Figure 91. Number of MCHD HCAP Clients with Diabetes by Zip Code, 2009

Note: In 2009, there were 2,932 claims and 216 patients with diabetes.
EMERGENCY MEDICAL SERVICES

In addition to its legislative charge to provide indigent care, MCHD operates the county’s 9-1-1 emergency medical service and responds to over 42,000 calls for assistance each year. In order to keep its response times low, MCHD has positioned its emergency medical response resources at 21 fixed stations located around the 1,100 square mile county (Figure 92).

Figure 92. Current and Potential Future Emergency Medical Service (EMS) Stations
Montgomery County, Texas

Source: Montgomery County Hospital District, 2011
V. Community Feedback

The Community Advisory Committee, comprised of 22 members, was engaged over the course of three in-person meetings to identify priorities, react to data findings, and offer solutions for major health care concerns in the county. In addition, the Advisory Committee was brought together with the Steering Committee and Data Workgroup in a half-day Community Engagement Meeting to develop consensus around priorities and solutions for the county. Discussions were hand recorded at each meeting and engagement session. Major themes were distilled based on an iterative content analysis process. The following section discusses the top health care priorities (Figure 93) and solutions (Figure 94) discussed by the Advisory Committee in its first three meetings—topics which shaped the foundation for the fourth meeting and informed the collaborative process for developing solutions. It essentially offers a community voice and perspective to data presented in this report.

Figure 93. Top Health Care Priorities Discussed by the Community Advisory Committee

<table>
<thead>
<tr>
<th>Health Care Priority</th>
<th>Community Meeting 1</th>
<th>Community Meeting 2</th>
<th>Community Meeting 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ability to Pay*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Primary Care Capacity*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Trust Concerns</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cancer</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Obesity and Nutrition*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Diabetes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dental Care Capacity</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

*Priorities reiterated by the Steering Committee.

Figure 94. Top Health Care Solutions Discussed by Community Advisory Committee

<table>
<thead>
<tr>
<th>Health Care Solution</th>
<th>Community Meeting 1</th>
<th>Community Meeting 2</th>
<th>Community Meeting 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and Prevention*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Expanding Clinic Hours*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>School-based Programs</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Navigators or Community Health Workers*</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Church-based Programs</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Contracted Transportation</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Expanding Indigent Care Programs</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Expanding Primary Care Clinics/Staff</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

*Solutions reiterated by the Steering Committee.
TRANSPORTATION

Transportation was the single most commonly discussed barrier to accessing health care in Montgomery County. Respondents spoke at large about the lack of public transportation and the challenges it poses for low-income, senior and homeless populations trying to access primary care. Some respondents cited examples of challenges with Emergency Medical Services in areas such as Dobbin and Montgomery.

Discussions around solutions focused on short-term remedies to addressing transportation barriers such as contracting with shuttle, bus or van companies to transport ill patients to health care sites, particularly for certain specialty and tertiary services only available in downtown Houston. As one respondent stated and others reiterated, "there is a need to bring care to patients". As such, the Committee spoke about the promising role that community health workers can play in bringing basic health education and health screenings to communities. They also spoke about utilizing trusted and more convenient community-based sites, such as schools, churches and neighborhood events, for health prevention, screenings and education.

ABILITY TO PAY

The Community Advisory Committee identified a number of barriers related to cost, affordability and ability to pay for health care. There was general consensus among the Advisory Committee that the uninsured in the county were delaying or forgoing care due to inability to pay for primary care, medications, tests and related services. Some Committee members offered examples of uninsured individuals and families traveling out of the country (e.g., to Mexico) for more affordable or “cheaper” care and services, including primary and acute care, dental care and medications. A few members of the Committee also spoke about the use of “home remedies” in cases where individuals or families could not afford other care options.

In addition, the Committee reflected on difficulties faced by those who have insurance. As some cited, even people with private insurance delay or forgo care as health insurance plans have shifted costs to consumers. Difficulties in being able to pay for high deductibles and co-payments associated with medications, tests or even specialty and follow-up care were identified. Furthermore, many spoke about the declining number of providers accepting public insurance—Medicaid, Medicare and CHIP.

The Committee pointed to the importance of expanding the role of the health care safety net—including hospitals, clinics and the hospital district—to expand health care assistance to poor and low-income populations. As such, they spoke about connecting county residents to federal, state, and county programs, including providing education, information, and direction on eligibility for public programs. The Committee also discussed options for expanding free or discounted care for uninsured and other low-income populations. Finally, there was discussion of the potential role that community navigators or community health workers can play in connecting individuals and families with health insurance and safety net resources.

PRIMARY CARE CAPACITY

Primary care, particularly for low-income and uninsured populations, was cited as a major void in the county. Community representatives discussed that clinics seemed to be operating at full capacity, with long waits in waiting rooms and appointments being booked far out. The Committee spoke about the
general shortage of primary care providers in the community, including general practitioners, physician assistants and nurse practitioners, and the promising role they could play in expanding primary care access. There was also discussion that many private physicians in the county were increasingly not accepting Medicaid or CHIP, in some cases leading publicly-insured patients to access care in Emergency Departments or to travel to Houston or other regions for care.

The Committee suggested looking for solutions by drawing on models for school-based health clinics, private clinics that are able to offer discounted care to uninsured, and community health workers or promotores, to connect patients with appropriate primary care resources in the community. They also spoke about the need to extend clinic hours to nights and weekends.

**TRUST AND RELATED ISSUES**

Lack of trust was identified as a major barrier to accessing care in the community. Several representatives shared perspectives from within their individual communities regarding lack of trust in certain providers, perception of disrespect for low-income and racial/ethnic minority patients and fear among undocumented immigrants. The Committee spoke about the importance of a racially and ethnically diverse workforce, and suggested that lack of trust stemmed, in large part, from limited minority representation in the county’s health care workforce. In addition, there was some discussion around cultural practices and home remedies as being important reasons for why some communities did not obtain needed medical care and treatment on time.

The Committee sited community-based interventions and solutions as the single most important way to overcome barriers related to trust, culture and language. Employing community health workers or promotores in delivering health education and messages were identified as one solution, as was working with churches, schools, and other trusted institutions in the community. Furthermore, the Committee spoke about the importance of diversity in the health care workforce and the need to build cultural competency among providers of care.

**DENTAL CARE**

There was unanimous consensus that dental care for low-income populations is virtually "non-existent" in Montgomery County. Limited dental services were cited for adults, children, homeless, and other populations. The Committee pointed to the need to expand dental services and staffing at existing clinics providing this service to uninsured and underinsured in the county.

**OBESITY**

Community participants discussed health concerns related to poor diet, lack of physical activity and obesity. They cited the problem of poor nutritional choices in low-income neighborhoods, enhanced by ease of access to fast food chains and liquor stores, and few grocery stores offering fresh and healthy foods. In addition, it was mentioned on several occasions that food banks or food pantries often stored and offered unhealthy or unappetizing options for low-income people, being limited in nutritional options by the foods that are donated. Solutions to the obesity concern in the county were grounded in community efforts involving community health workers and trusted community sites, such as churches or schools, to offer health education, promotion, screening, and disease prevention.
CANCER: BREAST, SKIN AND LUNG

The Committee discussed the challenge that low-income and underserved populations face in obtaining needed screening or early detection of cancer. They pointed to the need for health education on screening and detection, particularly targeting minority populations who are reluctant to get screenings. Poor air quality was also cited as a major concern, particularly related to skin and lung cancer mortality.

OTHER AREAS OF CONCERN

Beyond lengthy discussions of the previously mentioned health care priorities, the Committee spoke about asthma in children and the challenge that parents face in keeping up with its management. They also spoke about air quality concerns and that while this issue must be addressed, it may be out of the scope of this study and initiative.
VI. Summary and Discussion

Findings from this assessment reveal that Montgomery County is a rapidly evolving suburban community, growing in population, diversity, and income. However, the health and health care situation of the county has not kept pace, with scant primary care resources and health outcomes across many measures dwindling below the state and national level.

**Changing Social and Economic Landscape.** Over the past decade, Montgomery County has grown in population at a much faster pace than the city of Houston, Texas and the nation as a whole. It has also seen steep increases in diversity, with Hispanic/Latino, African American and Asian communities all at least doubling in size. In addition, median income has grown significantly, outpacing both the state and nation. And while it seems poverty has remained fairly stable at seven percent of families living at or below 100% FPL in both 2000 and 2009, the number of poor families has grown and dispersed widely across the region. Whereas Conroe and New Caney primarily housed poor families in 2000, by 2009, large numbers of poor families emerged all across the county not only in and around East County, but reaching The Woodlands and Shenandoah, as well as western parts of the county such as Magnolia.

**Rising Uninsured.** In stark contrast to rising family incomes, declining unemployment rates and growing housing values, is a large uninsured population in the county. In 2007, Montgomery County had the third largest number of uninsured, nearly 98,000, among other counties in the Greater Houston area. Based on estimates from the U.S. Census Bureau, this assessment found that approximately 25 percent of Montgomery County residents below 65 years were uninsured, a rate that while lower than Texas (30%), was still significantly higher than the U.S. average (15%). And while Montgomery County was performing slightly better than the state, it is important to recognize that Texas was ranked by *America’s Health Rankings* in 2010 as having the worst uninsured problem in the nation. In addition, certain parts of the county face uninsured rates that far exceed the state rate. In one Conroe community, almost 40 percent of the population is uninsured. However, Conroe is not alone. Communities in Willis, Cut and Shoot, Magnolia, New Caney and Porter, all have high rates of uninsured—i.e., at least one in five individuals is uninsured. Among people with incomes at or below 200% FPL, over half are uninsured in the county.

**Challenges to Accessing Health Care.** Many Montgomery County residents do not have a medical home or regular primary care provider. As this study finds, in 2007-2009, nearly one in five residents did not have a medical home and about 15 percent of the population reported forgoing or delaying care due to medical costs. These rates jump to 33 and 37 percent, respectively, for people with income below $25,000. Community leaders and representatives reaffirmed these findings and cited a number of reasons for not seeking regular care, and in some cases delaying or forgoing care altogether. These included: lack of public transportation; inability to pay for care among uninsured as well as insured people with high co-payments and deductibles; limited knowledge of primary care resources in the community; limited or lack of trust in providers; cultural or linguistic barriers; and long work hours.

**Health and Outcomes.** The health of Montgomery County residents is worse than Texas and the nation for many morbidity and mortality measures. In 2007-2009, nearly 70 percent of Montgomery County residents were overweight or obese, a rate worse than the state and the nation. As it is, Texas is recognized among states with the highest obesity prevalence. *America’s Health Rankings* ranks Texas 35

---

for prevalence of obesity. While overweight and obesity is pervasive across income groups in the county, very low-income populations in Montgomery County are most severely affected, even more so than in the state. Specifically, 84 percent of Montgomery County residents with income below $25,000 were overweight or obese in 2007-2009, higher than Texas where 70 percent of residents in this income bracket were overweight or obese. In addition, about nine percent of the population has diabetes, a rate lower than Texas (10%) but higher than the nation (8%).

Cancer was also found to be a significant health concern in the county. Age-adjusted breast cancer mortality was higher in the county as compared to the state. Respiratory cancer (including lung cancer) incidence and mortality rates in Montgomery County were significantly higher than Texas, despite comparable rates of tobacco use in the county and state (20% vs. 22%, respectively, in 2007-2009). In addition, skin cancer incidence was significantly higher in Montgomery County as compared to Texas. While reasons are uncertain, the Steering and Community Advisory Committees both suggested the need for future research on this topic for Montgomery County, particularly in context of environmental conditions and their potential influence on lung and skin cancer.

The County Health Rankings 2010, released by the Robert Wood Johnson Foundation and the University of Wisconsin, ranked Montgomery County as 219th (out of 221 counties in Texas) for quality of physical environment. The County Health Rankings cite that Montgomery County has 21 annual unhealthy air quality days due to fine particulate matter, as compared to two days in Texas and a national target of zero days. In addition, the county has 16 annual unhealthy air quality days due to ozone, compared with two days in Texas and a national target of zero days. Community representatives offered an additional perspective to cancer-related findings, suggesting that lack of education, access barriers, and general reluctance to obtain cancer screenings may be contributing factors to rising cancer concerns, particularly mortality, in the community.

Other measures for which Montgomery County residents had poorer health behaviors and outcomes than Texas and the nation as a whole included: high blood pressure; high cholesterol; and arthritis. In addition, percent of population with adult asthma was higher in Montgomery County (9%) as compared to Texas (7%) and the death rate due to chronic lower respiratory disease was also higher in the county.

In terms of key natality measures, Montgomery County has comparable rates of low-birth weight babies as Texas (nearly 8%); however both state and county are performing worse than the national benchmark (6.0%). While Montgomery County is doing slightly better than Texas in percent of pregnant women receiving prenatal care within first trimester, this rate is significantly lower than the nation. In fact, America’s Health Rankings ranks Texas as number 50 on this measure—i.e., worst in the nation.

As for communicable diseases, Montgomery County appears to be doing better than the State, although these data depend on reporting by providers. The rate of reported cases for chickenpox, whooping cough, and tuberculosis were all lower in Montgomery County as compared to Texas in 2009. The rates of major STDs and HIV/AIDS were also lower in the county than Texas in 2009.

Health Care Landscape. Montgomery County’s safety net system generally has not kept pace with the changing population dynamics of the community, including growing poverty, diversity and uninsured populations. The county’s safety net primarily comprises a Federally Qualified Health Center (FQHC)

---

12 Ibid.
located in Conroe, a nonprofit volunteer clinic in The Woodlands, and a hospital district. In addition, there are four major acute care hospitals which play an important role in filling gaps in the safety net, particularly through their emergency departments.

- **Primary Care Providers.** In terms of primary care providers, Montgomery County has slightly more primary care physicians per 100,000 population than the state; however, it has far fewer nurses, including registered nurses, nurse practitioners, and licensed vocational nurses, than the state and the nation. The county also has fewer dentists per 100,000 population than the state and the nation. In addition, much of East County is designated as a Health Professional Shortage Area (HPSA). Lone Star Family Health Center also received this designation. Furthermore, East County and Northwest County around Richards, Montgomery and Dobbin are designated as Medical Underserved Areas (MUAs).

- **Lone Star Family Health Center.** Lone Star, the only FQHC in the county, served almost 19,000 residents in 2009, a 30 percent increase from 2007. Over the years, Lone Star has seen a growth in the number of female and child patients. The majority of patients did not report their race or ethnicity in 2009, so data on this measure could potentially be under-reported. Being an FQHC, Lone Star sees a majority of publicly-insured patients (about six in 10 in 2009). In 2007-2009, self-pay or uninsured patients grew from comprising 17 to 21 percent of all patients at Lone Star. In 2009, Lone Star saw just over 4,000 uninsured patients (or 4 percent of the uninsured in the county). The largest volume of uninsured patients to the clinic was from Conroe, Willis and around Cut and Shoot. Regions contributing to the greatest growth in self-pay or uninsured patients at Lone Star included Conroe, Magnolia, Spring and Willis. In terms of services, Lone Star provides mainly medical care (97%). Dental care represents only two percent of its services. Lone Star is a major provider of medical care for children, but also sees a sizeable adult patient population with chronic conditions including diabetes and hypertension.

- **Interfaith Community Clinic (ICC).** ICC, being a nonprofit, volunteer clinic, sees only uninsured patients. While it does not report number of patients, ICC estimates that it sees nearly 2,000 patients annually (or 2 percent of the uninsured in the county). Based on patient visit data, the majority of visits are made by females, adults and racial/ethnic minorities. In 2009, for example, nearly two-thirds of patients were Hispanic or Latino. The largest volume of ICC patients was from Conroe, Spring and The Woodlands, although the clinic serves patients from all across the county. Number of patient visits has particularly grown from not only nearby Spring and The Woodlands, but also Montgomery, Magnolia, New Caney and Willis. ICC offers a range of services. Social services represent the largest proportion of services provided by ICC (almost 50%), followed by 40 percent of medical care and 11 percent of dental care. Dental care, however, has declined over the years. Whereas in 2007, dental care represented 20 percent of ICC’s services, in 2009, it dropped to 11 percent. The top primary diagnoses at ICC in 2009 were hypertension and diabetes.

- **Hospital Emergency Departments.** In 2009, the four hospitals received just over 97,000 visits to their emergency department (ED) from Montgomery County residents. Resembling county demographic trends, racial/ethnic minority patients represented a growing percentage of ED visits, although whites still comprised the majority of visits. In addition, publicly-insured patients (with Medicaid, Medicare or CHIP) accounted for the largest and growing proportion of ED visits (nearly 40 percent for in-county visits), and an even higher proportion of visits for potentially preventable conditions (nearly 50 percent). Publicly-insured ED visits were highest
from Conroe, New Caney, Willis, and The Woodlands. Just over one-fourth of all ED visits were made by self-paying or uninsured patients and in 2007-2009, there was a slight increase in number and percent of self-paying patients. Conroe accounted for the largest percent of self-paid ED visits—40 percent—a rate comparable to the actual percent uninsured in the city. Willis, New Caney and Porter were among other regions with a large percent of self-paid ED visits—i.e., at least 33 percent.

- **Hospital District’s Health Care Assistance Program.** The hospital district plays an important role in providing health care assistance to poor and low-income U.S. citizens and legal residents in the county who do not have health insurance. In 2009, the hospital district covered close to 1,500 individuals in their Health Care Assistance Programs (HCAP). The greatest concentration of clients was in Conroe and around Willis, with large numbers also in East County, Leonidas, Montgomery, and Magnolia. Two-thirds of clients were white, with Hispanics and Latinos representing a growing number and proportion in 2009. As with the clinics, hypertension and diabetes represented the top primary diagnoses among clients.

- **Hospital District’s Emergency Medical Services.** The hospital district operates the county’s 9-1-1 emergency medical service (EMS) and responds to over 42,000 calls for assistance each year through its 21 EMS stations. While a few community respondents cited challenges with EMS in areas near Dobbin and Montgomery, a potential future EMS station is already being considered for this region.

**Regional Summary of Findings.** This study revealed many geographic areas in the county with growing population, health, and health care needs. Following is a list of such areas, along with a summary of their demographic and health landscape:

- **Conroe:** The city of Conroe has the second largest and the fastest growing population in the county. It is also home to the largest number of poor families, percent uninsured (40%) and racially/ethnically diverse populations (70% of people in parts of Conroe are non-white). Certain parts of Conroe have also been designated as HPSA and MUA. In addition, Conroe accounts for the greatest proportion of ED visits and uninsured patients at clinics, as well as the greatest proportion of the hospital district’s HCAP clients.

- **Willis:** Willis has the second highest uninsured rate in the county, and has also been designated as HPSA and MUA. Like Conroe, Willis houses a growing and large diverse population. In addition, only second to Conroe, Willis accounts for a large proportion of uninsured ED visits and uninsured patients to the clinics and hospital district’s HCAP program. It also includes a large proportion of patients with diabetes and hypertension.

- **East County, particularly New Caney, Porter and Cut and Shoot:** The East County region, particularly New Caney, Porter, and Cut and Shoot have seen considerable growth in population, as well as number of poor and racially- and ethnically-diverse populations. This region is also designated as HPSA and MUA. In addition, Porter and New Caney accounted for the third largest number of ED visits made by uninsured patients. The East County region also had a large percentage of HCAP clients.
• **West County, particularly, Montgomery and Magnolia**: Magnolia has seen considerable growth in population, number of poor families and percent uninsured. At the same time, it has accounted for a growing percentage of uninsured patients at the safety-net clinics. Similarly, Montgomery generally resembles Magnolia in its demographic dynamics and health care utilization patterns by uninsured. In addition, however, Montgomery has been federally designated as MUA.
VII. Recommendations

The Texas Health Institute (THI) has developed a set of recommendations to guide Montgomery County United Way and its health care partners in leveraging resources to establish programs and policies to improve health care and outcomes for Montgomery County. Proposed recommendations particularly seek to address barriers to care and shortfalls in the current primary care safety net, recognizing that “having health insurance does not guarantee access to care.”\(^\text{14}\) As such, each recommendation builds upon multiple pieces of information, including:

- Data and findings from this assessment;
- Feedback on priorities and solutions obtained by the ongoing engagement of community leaders and stakeholders;
- Evidence-based models and practices that have proven to improve access to care and health outcomes in communities across Texas and the nation; and
- Actions authorized by the Affordable Care Act of 2010 for improving access to care.

Where the Community Advisory and Steering Committees decided the health care challenges (e.g., air quality, public transportation) were outside the current scope of this study and initiatives, THI has offered recommendations to guide future efforts to address these issues in this county. These types of issues are primarily regulatory in scope, and there are some existing efforts to address them in Montgomery County. For example, solutions to transportation were not given extensive consideration since there is a county-wide taskforce commissioned to address this issue.

Under each recommendation is a list of evidence-based programs which serve as examples of initiatives that could be implemented or adapted for use in Montgomery County. Where possible, return on investment, staffing requirements, and cost estimates are given. In many cases, THI has contacts with persons involved in these programs and could assist Montgomery County in obtaining additional information or technical assistance about these programs or similar efforts which are of particular interest.

**Recommendation 1:** Support programs that employ patient navigators and community health workers to provide community-tailored health information, health promotion, education and prevention in hospitals, clinics, and trusted community settings.

Low-income populations often fail to obtain needed health care and social services and are at high risk of untreated health problems that may require expensive inpatient and emergency department (ED) care. Data from this assessment showed that approximately 37 percent of Montgomery County residents with incomes below $25,000 forgo care and that nearly three-fourths of ED visits for preventable conditions are made by uninsured or low-income populations. Several factors contribute to forgoing needed services, including: (1) Systemic barriers, such as policies excluding undocumented immigrants from social service programs, difficulties in obtaining employment, housing, and health insurance, and transportation challenges; (2) Barriers related to culture and language, such as limited English proficiency, or lack of trust in providers; and (3) Lack of coordination among providers to ensure persons receive needed services.

Furthermore, a common thread among all healthcare themes was the need to educate both communities and providers around existing safety net resources and programs for primary care, health promotion, prevention and healthy living.

THI recommends community-based organizations, clinics and health care providers utilize community health workers (CHWs) or patient navigators to provide health promotion and prevention education either in clinics and hospitals or trusted community settings. This approach not only addresses the barriers identified above--such as transportation, culture, language and trust--but also addresses concerns regarding the need for education on available resources, chronic care self-management and care coordination. In addition, with the shortage of primary care health professionals in Montgomery County who provide care to indigents and persons with publicly-funded health coverage, the utilization of patient navigators or CHWs extends the quantity and quality of health care and social services available; improves access and connectivity to existing resources; and addresses the trust and cultural competency issues identified through the study.

Interventions by patient navigators and CHWs promote continuity of care. Continuity of care is associated with better glucose control among people with diabetes. Additionally, continuity of care is associated with the quality of care received by patients with type 2 diabetes mellitus. In a 2003 RAND study involving almost 4,000 patients with diabetes, congestive heart failure (CHF), asthma and depression, patients provided chronic care management had significant decreases to their risk of cardiovascular disease; CHF pilot patients more knowledgeable and more often on recommended therapy, had 35% fewer hospital days; and asthma and diabetes pilot patients were more likely to receive appropriate therapy.

---

There are at least three ways in which CHW and/or navigator programs can be set up, based on time and resources:

A. Supporting community-based organizations, safety-net clinics or hospitals in hiring community health workers and promotores to provide health information, education, and services within trusted community settings.

B. Supporting safety-net clinics or hospitals in hiring patient navigators to connect low-income and minority patients with needed health services, education, and information.

C. Establishing a regional or county-based Hub-and-Spokes Model, such as the Pathways Community HUB Model, for creating a central entity that coordinates health and social services for low-income populations and offers health education and information through patient navigators and CHWs.

The following sections describe these approaches, offering examples of initiatives that have been implemented in other communities across the country and have shown promise in improving access to care and/or outcomes.

1. A. Supporting community-based organizations, safety-net clinics or hospitals in hiring community health workers and promotores to provide health information, education and services within trusted community settings.

Community health workers (CHWs), also referred to as promotores or trained bilingual/bicultural CHWs, are community members who promote health in their own communities. They provide peer education, support and resources to promote community empowerment. Many programs employ trained CHWs as full-time employees or volunteers as they have close ties to the local community and serve as important links between underserved communities and the health care system. They also possess the linguistic and cultural skills needed to connect with patients from underserved communities. CHWs are also known as community health advisors, lay health advocates, and promotores de salud.\(^{18}\)

There is promising research evidence that CHW or promotores programs assist in overcoming barriers to care, such as culture, language and trust, and promote preventive health and healthy behaviors. There is strong evidence that interventions provided by CHWs increase appropriate health care utilization for disease prevention, mammography, infectious diseases, and asthma when compared with a range of alternatives such as no intervention, mail, and print materials.\(^ {19}\) This approach is particularly effective in encouraging appropriate breast cancer care in many diverse settings and for many populations, a problem that the data has shown to be of specific concern in Montgomery County.\(^ {20}\)

Additionally, Texas was one of the first states to provide certification for CHWs. The Area Health Education Center (AHEC) covering the Montgomery County area has been successful in community


health worker training leading to certification. They can be a resource for these efforts. In addition, THI has served on the Advisory Councils of AHECs and can serve an important liaison role. Following are some examples of successful CHW models.

Model Programs and Outcomes

- **Memphis Healthy Churches:** The Memphis Healthy Churches Project, funded by the Robert Wood Johnson Foundation, provides education and case management in 81 African-American churches in the greater Memphis area. The focus is on the following diseases and conditions that particularly affect the African-American community: cancer, cardiovascular disease, obesity, diabetes, and HIV/AIDS. Trained community health volunteers work closely with their pastors to promote lifestyle changes and health behaviors in their congregations. Approximately 2,560 participants reported improvements in healthy behaviors, a combined total of 2,543 pounds lost and an average decrease in blood cholesterol, glucose and blood pressure by 25 percent.21

- **Aging Evidence-Based Prevention Programs for the Elderly:** The National Council on Aging’s (NCOA) Center for Healthy Aging has an issue brief that features 14 Agency on Aging Evidence-Based Prevention Programs for the Elderly. These community-based programs utilizing CHWs ran the gamut of programs on chronic disease self-management, care management, physical activity, nutrition, and fall prevention. All projects were implemented successfully among very diverse populations and had very high retention rates. Specific program outcomes reported include: increases in self-efficacy, more energy and less stress, increases in exercise and physical activity, improvements in fall management, and reductions in body weight, falls, and depression.22

- **Promotores de Salud,** Central Valley Health Policy Institute, California. Promotores de Salud, trained bilingual/bicultural community health workers, help to connect low-income Latino families in Fresno County, CA, to insurance and affordable health care services by delivering personalized education and assistance designed to improve participants’ knowledge and attitudes about health insurance, health care access, and preventive services. The program increased health insurance enrollment, use of preventive care services and a usual source of care, and self-efficacy among participants. The project employed one full-time project coordinator and 17 part-time promotores. Promotores received a fixed amount of compensation per participant recruited and served. The project cost approximately $200,000, including $175,000 for the initial study and $25,000 for the addition of 100 undocumented participants.23

---

23
1. B. Supporting safety-net clinics or hospitals in hiring patient navigators to connect low-income and minority patients with needed health services, education and information.

Similar to CHWs are patient navigators who assist patients and their families in accessing health care services and supports. Patient navigators often help by:

- Facilitating communication among patients, family members, and health care providers;
- Coordinating care among providers;
- Arranging financial support and assisting with paperwork;
- Arranging transportation and child care;
- Ensuring that appropriate medical records are available at medical appointments;
- Facilitating follow-up appointments; and
- Building partnerships with local agencies and groups.\(^{24}\)

Patient navigators include trained social workers, nurses and nurse practitioners as well as trained lay persons or volunteers. Successful navigators possess some of the following qualities:

- Compassion, sensitivity, and cultural competency and response for the people and community being served;
- Ability to communicate effectively;
- Knowledgeable about the environment and health care system; and
- Well-connected with critical decision makers inside the system, especially financial decision makers.\(^{25}\)

The following section provides a successful model for developing a patient navigator program.

**Model Programs and Outcomes**

- **Contra Costa Breast Cancer Partnership, California:** In California’s Contra Costa County, breast cancer services for underserved women were identified as a countywide priority. To address these concerns, a coalition of more than 400 medical providers, agencies, health advocates, local and state legislators, and breast cancer survivors formed the Contra Costa Breast Cancer Partnership, aimed at reducing breast cancer mortality and improving access to health care for low-income and minority women over age 40. Key steps in the planning and development process included:
  - Obtaining initial funding for the partnership;
  - Using existing networks and community relationships to recruit partnership members;
  - Establishing a structure and meeting schedule, which involved a steering committee to provide overall leadership and support and make recommendations regarding program

---


100
administration, policy, and services. Partnership members also formed a Community Outreach and Education Committee, an Evaluation Committee, a Continuous Quality Improvement Committee, and four individual task groups targeted at specific underserved areas. The partnership decided to hold quarterly meetings for all members, often featuring topical speakers and presentations;

- Developing a training program for the Patient Navigator Program, to prepare navigators to work with patients and introduce them to the breast health care system; and

- After having achieved sustained success in encouraging early breast cancer screening among underserved women, the partnership concluded its organized outreach efforts and formally ceased to exist. Several key partnership initiatives, including the Patient Navigator Program, became institutionalized at Contra Costa Health Services and therefore remain in operation today.

From 1995 through 2002, Contra Costa Breast Cancer Partnership employed four full-time personnel, including a project administrator, clinical services coordinator, health educator, and project assistant, along with a part-time planner evaluator and provider relations consultant. Four Spanish-speaking patient navigators (three full-time, one part-time) currently staff the Patient Navigator Program. The partnership’s annual budget between 1995 and 2002 averaged approximately $360,000. The Patient Navigator Program currently operates with an approximate annual budget of $266,000. 26

1.C. Establishing a county-based Hub-and-Spokes Model, such as the Pathways Community HUB Model, for creating a central entity that coordinates health and social services for low-income populations and offers health education and information through patient navigators, community health workers, and promotores.

Some communities across the country have established a regional Hub-and-Spokes Model, where a central entity known as a "hub" coordinates health and social services and the "spokes" consisting of Community Health Workers (CHWs), promotores or navigators provide education, health information, consultation and preventive health services in trusted community settings such as churches, schools, neighborhood fairs, and other community sites. This approach combines both CHWs and navigators as described in approaches 1.A. and 1.B., above.

A leading model that utilizes the Hub-and Spokes approach is known as a Pathways Community HUB, which brings together public- and private-community stakeholders—including health and social service providers, elected officials, businesses, and representatives of the at-risk population being served—to determine local health needs and to create the appropriate support, services, and interventions most effective for addressing those needs. Through coordination, communication, and built-in incentives, the hub strives to increase the effectiveness of care coordination services across multiple programs to ensure that those at risk are identified and connected to care in a timely manner. To accomplish this, the hub serves as a central clearinghouse that enrolls at-risk individuals and coordinates the care they receive, utilizing community health navigators and shared electronic information, making sure that
biological, psychological, and social needs are met. The hub does not support any single agency, but rather strengthens and supports all health and social service providers in the region. The hub eliminates duplication and waste and provides needed support services.27

This approach could be adapted in Montgomery County, whereby a centralized entity operates as the hub, employing two to three full-time employees to house and update information on education, prevention and resources. The “hub” could be connected with communities through “spokes” or 8-10 community health workers or patient navigators who are hired to deliver health education and promotion as well as connect uninsured, low-income and underserved populations with primary care resources. Following are examples of programs that have utilized this approach in their communities to expand access to care. Programs to complement the Hub-and-Spoke approach to improve coordination and efficiency are also offered--e.g., Health Information Exchange and Texas Benefit Bank.

Model Programs and Outcomes

- **Pathways to a Healthy Bernalillo County**: In the Pathways to a Healthy Bernalillo County project, many clients are enrolled through interagency referrals that occur between the 13 organizations participating in the project network. The ability of these partner organizations to identify at-risk community members stems from their diversity, ranging from health clinics to social support organizations such as food pantries and homeless service providers. While the program conducts selected outreach efforts, it has been able to reach its capacity without extensive use of formal marketing and promotion. A group of 22 community health navigators employed by the network members conduct a 45-minute assessment related to acute family issues, child and family care, diabetes, education, employment, general health and health limitations, medical services, mental and behavioral health, social issues, substance use, transportation, and other issues. After enrollment, clients are assigned to a navigator who helps them complete “pathways” that outline critical steps needed to achieve positive outcomes. The navigator works to build the client’s trust in the system of care, coordinates the services provided by participating community agencies, reports system barriers that are encountered, and documents all activities in the project’s database. The project "hub" provides technical support and training for the navigators, assists the partner organizations, and conducts the program evaluation. A database maintained by the hub allows navigators to avoid duplication of services, confirm that care pathways have been completed, and collect data for reporting purposes.28

- **Project Access Dallas**: Project Access Dallas’s hub serves Dallas County residents who are insured and have an income below 200 percent of poverty. The primary mission of the hub is to enhance access screenings, preventive health services, diabetes and depression care, and to reduce inappropriate care. Support services include helping to secure access to food stamps, transportation, housing, and child care. Results from the project include improved management of diabetes, reduced ED visits and hospital days, and generated significant cost savings and a positive return on investment, with $3 in savings for every $1 spent on the program. With a annual budget of $6 million, the project serves 2,500 patients a month or 4,000 unique patients


per year, with per-enrollee costs annually averaging approximately $1,400. Key expenses include approximately $2.6 million for diagnostic testing and imaging through partner hospitals, roughly $625,000 for pharmacy benefits for enrollees, and approximately $560,000 for the Community Health Navigation program. Funds are also allocated to utilization tracking and outcomes analysis.  

Complementary Programs

- **Medicaider™ Program**: Montgomery County is currently utilizing the Medicaider™ Program to enhance eligibility determination and enrollment in CHIP and Medicaid programs. This software is a web-based guided interview process that allows potential clients to provide their information only once. The software then auto-populates the application forms for various social services.

- **Texas Benefit Bank**: The Texas Benefit Bank (TBB), through its use of a volunteer workforce to assist families in determining eligibility for specific health and social service programs, would serve to complement the “hub and spoke” model of the Pathways Community Hub as well as the Medicaider™ Program. The Benefit Bank is an online web-based service which can be used by trained volunteers, community organizations, health care providers and congregations to connect low- and moderate-income Texans, along with the “new poor” (those suffering economic challenges they have never faced before) to work supports such as SNAP (food stamps), tax credits, prescription drugs, and other public benefits. The Benefit Bank, integrated into the community HUB utilizing navigators, community health workers, and promotores, would be a longer term effort, but would incorporate many of the solutions that were brought forward at the Community Engagement Meeting on January 25, 2011 and address many barriers of access to health care and social services as well as disease specific concerns.

- **Health Information Exchange**: The Houston Endowment has recently provided funding for the development of a Health Information Exchange (HIE) in Montgomery County. Such an HIE, coupled with the Pathways Community HUB Model, offers an opportunity to both centralize and improve health information collection and reporting, as well as to utilize data and information in HIE to develop and deliver health education, promotion and prevention in communities through navigators and community health workers. Ultimately, such an arrangement has the potential to enhance ability to connect low-income populations with a medical home.

---

http://www.innovations.ahrq.gov/content.aspx?id=2228
Recommendation 2: Expand services and operating capacity in existing clinics, and establish new clinics in underserved areas, including nurse-managed clinics.

Community health clinics are the cornerstone to a robust health care safety net system. While the Affordable Care Act of 2010 mandates an increase in funding to Federally Qualified Health Centers (FQHCs) across the country by $11 billion effective FY 2011, such funding is tied to stringent federal guidelines, often not extending to small, nonprofit or charity-run clinics. These opportunities are also not available to well-off regions with pockets of extreme medical need. Montgomery County United Way and its partners can serve to fill this void in many ways, as described in this section.

The benefits associated with access to primary care are well documented across the domains of improving health outcomes, controlling costs, and reducing health disparities. Studies have found that increases in primary care access are correlated with increases in individuals self-reporting their health status as “very good” as well as with reductions in low-birth weight, lowered rates of neonatal mortality, and higher life expectancy. Therefore, adding new clinics where none exist in high-need areas or enhancing the infrastructure of existing clinics is important to expanding access to primary care for all populations, and in particular the poor and underserved. This recommendation focuses on three approaches to improving access to primary care for low-income and underserved communities:

A. Supporting future capital and operational expansion of clinics in underserved and shortage areas of Montgomery County.

B. Supporting expansion of operational capacity of existing clinics, including provision of more weekend and evening service hours and expanding service lines.

C. Expanding primary care clinic workforce, drawing on nurse-managed clinic models.

2.A. Supporting future capital and operational expansion of clinics in underserved and shortage areas of Montgomery County.

As this assessment found, there are only two primary care safety net clinics in the county —Lone Star Family Health Center located in Conroe and Interfaith Community Clinic in The Woodlands—both serving populations from all parts of the county. Together, these clinics see approximately 6,000 of the 98,000—or six percent—uninsured in Montgomery County. Given the dispersion of the general population as well as low-income, very poor and uninsured communities, there is a need to expand clinic sites in areas with high need and few or highly strained resources. Following is a data-based summary of areas to consider for future capital and operational expansion of new clinics:

---

• **Conroe:** While Conroe has an acute care hospital (Conroe Regional) and an FQHC (Lone Star), its sheer size and rapidly growing population, diversity, and poverty dynamics warrant further expansion in primary care resources. Conroe has the highest uninsured population—about 40 percent—and it accounts for the greatest proportion of uninsured patients at clinics and EDs. It also accounts for some of the highest proportion of patients with diabetes and hypertension.

• **Willis:** North of Conroe, Willis is an area that has grown not so much in population, but significantly in terms of poverty and diversity. It is also home to a large uninsured population and accounts for a high percent of ED and clinic visits, particularly among uninsured patients. It also accounts for large percents of patients with diabetes and hypertension. Willis is also designated as a Health Professional Shortage Area (HPSA) and a Medically Underserved Area (MUA).

• **East County, particularly New Caney, Porter and Cut and Shoot:** East County has been designated as both, a HPSA and MUA. In addition, the region has recently expanded in population, diversity and poverty. While close to Kingwood Medical Center, New Caney and Porter in southeast Montgomery County are a distance away from safety net primary care resources. Another important note is that this region accounts for a large percent of ED visits generally, and also by self-pay patients.

• **West County, particularly, Montgomery and Magnolia:** Magnolia has seen considerable growth in population, number of poor families and percent uninsured. At the same time, it has accounted for a growing percentage of uninsured patients at the safety-net clinics. Similarly, Montgomery generally resembles Magnolia in its demographic dynamics and health care utilization patterns by uninsured. In addition, however, Montgomery has been federally designated as MUA.

2.B. **Supporting expansion of operational capacity of existing clinics, including provision of more weekend and evening service hours.**

While building new clinics and facilities for primary care is important in areas with few or no services, in many cases, enhancing and improving the infrastructure of existing facilities can improve access to and meet the unmet demand for primary care. This may include providing weekend and evening service hours to accommodate patients’ work, carpooling or child care situations as well as to provide additional appointment slots to raise capacity in specific clinic locations. Additionally, improved access to health services could result from expanding existing service lines with excessive demand or adding new lines to address unmet demand for certain conditions—e.g., dental care.

**Model Programs and Outcomes**

• **2007 Commonwealth Fund Study.** A 2007 national survey found that four indicators of improved access to care (regular source of care, easy phone access, weekend/evening access, and efficient, on-time visits) resulted in patients receiving an improved level of care.32

---

• Impact of Extended Primary Care Hours on Emergency Room Use – Houston TX: A study to evaluate the impact of a pilot project to reduce emergency department (ED) visits in a Medicaid/SCHIP population by increasing the availability of extended hours primary care was conducted in a Medicaid/SCHIP managed care plan in Houston, Texas. Funding support was provided to a primary care clinic in its network to operate extended business hours. Marketing and outreach campaigns were conducted to promote the increased availability of clinic services. A pre-post analysis comparing ED use rates of after-hours clinic users, non-users within the service area, and other enrollees in the health plan resulted in clinic users’ monthly ED visit rate being decreased 100 percent from 2.77 per 100 enrollees to 0 (p = .04), while ED use for non-users in the service area declined by 20 percent (2.14 to 1.72 per 100, p = .04) and the rate for all enrollees in the health plan declined by nine percent (1.84 to 1.68, p = .01).  

2.C. Expanding primary care clinic workforce, drawing on nurse-managed clinic models.

The number of providers willing to accept Medicaid patients is becoming even more limited, particularly in light of proposed reimbursement rate cuts due to the state budget deficit. To this end, making an explicit effort to expand the primary care workforce is essential.

Some clinics may already have physical capacity, but limited resources to hire and retain qualified staff, such as nurse practitioners, nurses, or physician assistants. In this case, funding should explicitly be provided to improve clinic workforce, including recruitment, retention, training, and education.

Currently, there are federal dollars available for nurse-managed health clinics. Nurse-managed health centers are community-based health clinics that are managed by nurses. Nurse-managed health centers serve patient populations who are least likely to receive consistent, coordinated care. This includes vulnerable people across the age continuum that are uninsured, underinsured, or living in poverty. As safety-net providers, nurse-managed health centers allow patients who are unable to pay for care, to be charged on a sliding scale or treated for free.

Nurse-managed health centers also serve the population of advanced practice nursing students, as well as students in other health care professions. They provide workforce training opportunities in community-based, primary care. Opportunities for community-based clinical education pose significant challenges for the health care educational system and the issue has often been identified as one barrier to the development of an adequate health care workforce for the future.

A national collection of quality measures for nurse-managed health centers indicates that these centers meet or exceed national quality benchmarks, based on Healthcare Effectiveness Data and Information Set (HEDIS) outcome data. In fact, nurse-managed health centers’ quality outcomes are particularly high in areas of chronic disease management. Evidence-based research has shown that the advanced practice nurse providers at nurse-managed health clinics provide high-quality primary care and women's

33 Fischer L, Begley C, Giardino A, (2007) The Impact of Extended Hours Primary Care on Emergency Department Use Among Medicaid/SCHIP Enrollees in Houston, TX. The University of Texas School of Public Health.

health with outcomes that are similar to, or better than, other primary-care and women's health providers.\textsuperscript{35}

The following section highlights models and outcomes related to this recommendation.

**Model Programs and Outcomes**

- **Institute of Medicine's *Crossing the Quality Chasm.*** The Institute of Medicine has identified “timeliness” of care as one of six priorities for improving quality in health care.\textsuperscript{36} While expanding the operational capacity of clinics is one method to reduce wait times, providing clinic administrators with training and tools to better monitor and predict trends in patient flow is an alternative strategy.\textsuperscript{37}

- **Navy Medical Home Clinics.** The National Naval Medical Center created integrated medical home teams within its internal medicine clinics to provide personalized, coordinated, and proactive care, and care management services to patients. The teams provide patient care, make appointments with offsite specialists, follow up with patients as needed, and integrate onsite behavior health specialists when appropriate. A robust online medical portal and personal health record support the care process, allowing patients to add information to their medical records and communicate via e-mail with team members, who in turn use the systems to identify patients needing follow up care and to conduct virtual office visits. The program has improved screening rates related to diabetes and breast cancer, enhanced provider continuity, and improved access to care and patient-provider communication. The program required no new permanent staff, as existing staff were retrained to work in the medical home clinic structure. Registered nurses, who perform much of the care coordination work, are critical to the program’s success. To ensure successful team-building, coaches and consultants are needed initially to promote collaboration and commitment to the new patient care model.\textsuperscript{38}

- **Larry Combest Community Health and Wellness Center, Lubbock, TX (Nurse-Managed Clinic).** Larry Combest Community Health and Wellness Center (LCHWC) is a nurse-managed clinic located in a medically underserved area in East Lubbock. This clinic provides health promotion and disease prevention activities within the city of Lubbock’s most economically deprived area. Clinic patients come from diverse backgrounds, but predominantly, the typical profile is that of a low-income, working family with members who do not have health insurance coverage. This academic nursing center, administered by the Anita Thigpen Perry School of Nursing at Texas Tech University Health Sciences Center provides services in the following areas: 1) the primary care clinic; 2) the American Diabetes Association-certified Diabetes Education Center; and 3) the Senior House Calls Program, a primary care service for home-bound elders. The LCHWC became a federally qualified health center in March 2009. Operations include home visitation


services through the Nurse-Family Partnership Program and the Patient Navigator Program for chronic disease self management.  

- **St. Vincent’s Nurse-Managed Health Center, Galveston, TX:** The St. Vincent’s Nurse-Managed Health Center (STV-NMHC) operated by the University of Texas Medical Branch (UTMB) School of Nursing provides comprehensive, quality primary care to uninsured residents of the Galveston community. Opened in the immediate aftermath of Hurricane Ike, the clinic is operated by UTMB on the assumption of decreased hospitalizations in the patients served resulting in cost savings to the hospital. Designed to serve adults with chronic health problems, nurse practitioners, in partnership with nurse case managers and a highly integrated staff, assess patients holistically and address barriers to care and self care. A comprehensive Quality Improvement Program using the Chronic Care Model is in place to address all aspects of care. A new electronic health record tracks outcomes, such as clinical status, functional status, patient satisfaction, self-management goals, access to care, and practice management functions such as the billable services, as well as cost effectiveness.  

---


**Recommendation 3: Improve clinical and community care coordination through use of Information Technology.**

Advances in Information Technology (IT) generally and Health Information Technology (HIT) specifically, offer unprecedented opportunities to transform health care by improving the coordination of care as well as information and resources. THI recommends at least two ways in which IT and HIT can be utilized to improve primary care access, coordination and care:

A. Health Information Exchanges.

B. Social Marketing and Mobile Phone Applications.

**3.A. Health Information Technology and Health Information Exchanges.**

Centralized health information, also known as Health Information Exchanges (HIEs), can improve not only efficiencies in the system, but also assist in better management and coordination of chronic conditions and care. Following are ways in which electronic health information can improve quality and access:

- Eliminate the use of medical transcription and allow a physician to enter notes about a patient’s condition and care directly into a computerized record;
- Eliminate or substantially reduce the need to physically pull medical charts from office files for patients’ visits;
- Prompt providers to prescribe generic medicines instead of more costly brand-name drugs;
- Reduce the duplication of diagnostic tests;
- Remind physicians and patients about appropriate preventive care;
- Identify harmful drug interactions or possible allergic reactions to prescribed medicines; and
- Help physicians and patients manage complex chronic conditions.41

The Montgomery County Health Information Exchange (MCHIE), a 501(c)(3), was formed to benefit the citizens of the state of Texas and promote the health of the Montgomery County and surrounding communities through facilitating the creation and operation of a health information exchange with the objective to increase access to care, quality of care, and efficiency in providing care, including for uninsured individuals. Members of MCHIE act together as a collaborative of physicians, hospitals, health departments, clinics, mental health authorities, other providers, and consumers through the secure exchange of privacy protected health information and the sharing of best practices for the improvement of care.

The MCHIE Board recognizes the following values from the secure exchange of electronic health information across organizations within a community:

- Supports accountability by measuring results;
- Decreases duplication of services;

Assists in coordinating care;
Improves service at the point of care by providing up-to-date patient information to physicians, nurses and other providers;
Aggregates data for member operations and community health measurement; and
Helps patients learn self-management strategies.

In addition, MCHIE offers a number of community analytic capabilities, including:

- Member Reports – accessing data through member reports to monitor patients’ use of services or programs;
- Program Evaluations – data analyzed for utilization pre- and post-intervention to measure outcomes and calculate Return on Investment (ROI);
- Data Analytics – data used to identify, analyze service gaps and support design and evaluation of delivery system changes to address gaps;
- Dashboard – data used to track utilization trends and set community standards;
- Predictive Modeling – data used to predict and intervene prior to high use; and
- Research – data used for research that supports MCHIE members’ mission.

MCHIE will be operationally based at the Montgomery County Hospital District. The funding for startup comes from a grant from the Houston Endowment and the State of Texas through federal funds. The sustainability model will depend on proven ROI for the provider community. While this program is in its infancy today there is obvious energy and collaboration for the initiative to thrive and serve the health care system of Montgomery County and the citizens and guests it serves.

While a longer-term effort, many of the recommendations within this report could work to complement MCHIE in care coordination, service efficiencies, reduction in duplication of efforts, and connectivity to resources. Following are models and examples of HIEs in other communities.

Model Programs and Outcomes

- **Integrated Care Collaboration – Asthma Network, Williamson County TX.** An asthma network, funded through a grant to the Integrated Care Collaboration (ICC), to provide better disease management for asthma in uninsured or underinsured patients in Williamson County has resulted in significant improvements in terms of utilization of services and quality of life measures. Patients enrolled in the program for more than six months had a 40 percent decrease in Emergency Department visits and a 95 percent decrease in in-patient hospitalizations after the intervention. In addition, the length of stay for inpatient visits in these patients was reduced by 96 percent. The return on investment of the program for asthma patients comes out to $539,090. This means that for every dollar spent on the program, about $5.5 are saved in avoided medical services.\(^2\)

• **GRACE Model Utilizing EMRs.** The Geriatric Resources for Assessment and Care of Elders (GRACE) model uses nurse practitioners and social workers who work together as a support team, first meeting with low-income seniors to conduct a comprehensive geriatric assessment, and then with a larger interdisciplinary team to develop an individualized, integrated care plan based on a set of protocols for evaluating and managing common geriatric conditions. The support team works with the patient's primary care physician (PCP) to modify, finalize, and implement the plan. Supported by a common electronic medical record (EMR) and longitudinal tracking system, the team provides ongoing care management and coordination of care across conditions, providers, and sites of care. The GRACE program improved the provision of evidence-based care; led to significant improvements in measures of general health, vitality, social functioning, and mental health; reduced ED visits; and generated high levels of physician and patient satisfaction. Although overall hospital admission rates were not affected by the program, admission rates for high-risk participants were lower than for comparable patients in the usual-care group. A recent analysis found that the program was cost neutral over a two-year period, and yielded cost savings in the third year for high-risk enrollees.\(^4\)

• **Texas Hospital Study of HIT:** A recent study demonstrates that patients in Texas hospitals had fewer complications, lower death rates and reduced costs when the hospital employed health information technology to provide automated notes and records, order entry, and clinical decision support.\(^4\)

### 3.B. Social Marketing and Mobile Phone Applications.

One of the suggested solutions from the Community Engagement Meeting on January 25, 2011 was to utilize social marketing and/or cell phone technology to improve care coordination through the use of reminders, electronic messages and updates, health tips, and connectivity with other peer supports to improve patient outcomes for a variety of disease management and health promotion efforts. This is a relatively low-cost solution and is particularly effective with adolescents and young adults. This is a promising, timely and exciting use of technology that has the potential to engage younger (and older) members of the community to improve health and disease management.

**Model Programs and Outcomes**

• "**Sweet Talk**": A novel support network "Sweet Talk" provides text-messaging to mobile phones to support intensive insulin therapy for young people with diabetes.\(^4\) Tailored to patient profiles and diabetes self-management goals, scheduled messages and generic messages include topical "newsletters" and tips from other participants. The system also allows patients to submit data and questions to the diabetes care team. This system could be readily adapted to suit other chronic disease models and age groups, and the results of this study may help to inform the design of future text message support interventions. This type of system might work well

---


with the Pathways Community HUB model by coordinating the text messaging to patients from the central HUB.

- **University of North Carolina Text-Messaging Study**: A University of North Carolina conducted a study of the use of text messaging for monitoring sugar-sweetened beverages, physical activity, and screen time in children ages 5-13.\(^{46}\) Study results included greater adherence and lower drop-out rates with text messaging as compared to traditional paper-diary record keeping (28 percent drop-out rate in the text messaging group as opposed to 61 percent drop-out rate in the paper-diary group. In addition, the adherence to self-monitoring of behavior was 43 percent with the text messaging group compared to 19 percent with the paper-diary group. This system has great potential for improving prevention and monitoring of chronic health conditions, particularly among adolescents.

- **San Mateo Mobile Phone Disease Management Software**: San Mateo Medical Center distributed mobile phones with customized disease management software to young asthma patients, allowing them to communicate with and receive real-time feedback from providers on at least a daily basis. The initiative enhanced compliance with the daily diary and with medication regimens, which, in turn, led to better patient outcomes, less use of rescue medications, and fewer emergency department visits and missed school days.\(^{47}\)

- **Delaware Diabetes Monitoring Via Cell Phone Messaging**: A Delaware Medicaid managed care plan uses cell phone text messaging to send members with Type 2 Diabetes monthly automated educational messages and reminders to make and keep appointments for blood glucose testing. Results of a pilot study indicated that the percentage of participants receiving timely blood glucose tests rose from 52.3 percent at program inception to 70.5 percent six months later. This rate is much higher than the 45.4-percent compliance rate achieved by diabetic members not enrolled in the program. Based on this success, the organization expanded its use of text messaging to other diabetics and pregnant women and new mothers, sending them reminders about the need for prenatal and postnatal care. Estimated program costs for the pilot program in diabetes were $48,000 per year, or roughly four cents per member per month. Costs included phone cards, mailing recruitment and confirmation letters, software development, Web site hosting, and automated message texting. This figure does not include the cost of contacting and enrolling clients by telephone, which, as noted, has proven to be labor-intensive. These costs have remained stable for the diabetic program after the pilot study.\(^{48}\)


**Recommendation 4: Improve access to dental health services for low-income communities.**

One of the priorities established through the data analysis and community feedback was the lack of available dental services for low-income populations, including children, non-elderly adults and the homeless. Most of the research around evidence-based practices for oral health and dental care focus on children; however, many of these solutions can be applied to the general population. Following are three approaches to expanding access to oral health and dental care in the County:

A. Provide oral health preventive care education in schools and community settings;
B. Provide training to general dentists to see pediatric patients; and
C. Train other health professionals on how to integrate basic oral health practices into regular services for children.

All of these are relatively low-cost and short-term ways to improve the availability of dental services to populations in particular need.

**4.A. Provide oral health preventive care education in schools and community settings.**

Schools provide an important setting for promoting health, as through them, children, their families, school staff, and the community as a whole can benefit. THI recommends supporting school- and community-based programs for oral health education and prevention.

**Model Programs and Outcomes**

- **Task Force on Community Preventive Services – Dental Studies.** The Task Force on Community Preventive Services recommends school-based and school-linked dental sealant delivery programs based on strong evidence of effectiveness in preventing or reducing tooth decay among children. Ten studies qualified for the review showed the following results:

  - Dental outcomes: median 60 percent decrease in cavities on the top and bottom surfaces of molars and pre-molars among children six to 17 years old (inter-quartile interval: 5 percent to 93 percent; 10 studies)
  - Studies compared results from programs where sealants were applied to programs in which no sealants were applied.
  - Children were examined for tooth decay from two to five years after the program.
  - Applying sealants in school-based or linked programs was found to be effective among children at different risk of tooth decay and in families of varying economic means.
  - Six studies provided information on the economic efficiency of school-based or school-linked programs.  

---


4.B. Provide training to general dentists to see pediatric patients.

One way to address the general lack of pediatric dentists is to support the training of general dentists to see pediatric patients and provide funding for specialized pediatric equipment and supplies to encourage them to see pediatric patients and provide preventive varnishes and sealants to prevent tooth decay.

Model Program and Outcome

- **Institute of Medicine Report 2009**: A 2009 Institute of Medicine Report, “The U.S. Oral Health Workforce in the Coming Decade: Workshop Summary” calls for better education and training for general dentists regarding the care of special populations including children, patients with special care needs, older adults, and other vulnerable populations.\(^{51}\) A survey of general dentist practitioners indicated that they are not seeing children who are younger than 4 years of age, particularly children with high levels of dental cavities and children covered by Medicaid.\(^{52}\) There is a definite need to provide additional specialized training for general dental practitioners to increase access to dental services for children, geriatrics, and other vulnerable populations.

4.C. Train other health professionals on how to integrate basic oral health practices into regular services for children.

Another option is to support the training of primary care health professionals, including family physicians, pediatricians, nurses, physician assistants, and public health practitioners, on how to integrate oral health risk assessment, parent education, and varnish applications into other regular services for children.

Model Program and Outcome

- **Cavity Free at Three, Colorado**: Cavity Free at Three, a statewide initiative to prevent oral disease in children aged zero to three years of age in Colorado, provides education and training to health care providers (including family physicians, pediatricians, nurses, physician assistants, public health practitioners, dentists, and dental hygienists) on how to integrate oral health risk assessment, parent education, and fluoride varnish applications into regular services for young children. Particular emphasis is placed on training professionals serving low-income, uninsured children in safety net or public health clinics. The program employs two part-time staff, a program coordinator and a director of education and operates on an annual budget of $353,000.\(^{53}\)

---


Recommendation 5: Establish a County Obesity Task Force to respond with community-based solutions to address improved nutrition and increased physical activity.

Data from this study point to an epidemic of overweight and obese residents in the County—i.e., nearly seven out of 10 Montgomery County adults were overweight or obese in 2007-2009.

In 2009, the Centers for Disease Control and Prevention (CDC) released a guide to recommend community strategies and measurements to prevent obesity in the United States. There are 24 recommended strategies for communities. In the Model Programs and Outcomes section, examples of some community programs are described that address some of these strategies.

THI recommends that a County Obesity Task Force be established to determine priorities specific to the needs of Montgomery County residents, taking into account existing efforts and programs. For example, THI recommends that members of this Task Force participate in the annual 16-state Southern Obesity Summit to obtain updates on latest research, innovation, best practices and lessons learned on state and regional efforts to prevent and curtail obesity.

The CDC recommends communities:

1. Increase availability of healthier food and beverage choices in public service venues;
2. Improve availability of affordable healthier food and beverage choices in public service venues;
3. Improve geographic availability of supermarkets in underserved areas;
4. Provide incentives to food retailers to locate in and/or offer healthier food and beverage choices in underserved areas;
5. Improve availability of mechanisms for purchasing foods from farms;
6. Provide incentives for the production, distribution, and procurement of foods from local farms;
7. Restrict availability of less healthy foods and beverages in public service venues;
8. Institute smaller portion size options in public service venues;
9. Limit advertisements of less healthy foods and beverages;
10. Discourage consumption of sugar-sweetened beverages;
11. Increase support for breastfeeding;
12. Require physical education in schools;
13. Increase the amount of physical activity in physical education programs in schools;
14. Increase opportunities for extracurricular physical activity;
15. Reduce screen time in public service venues;
16. Improve access to outdoor recreational facilities;
17. Enhance infrastructure supporting bicycling;
18. Enhance infrastructure supporting walking;
19. Support locating schools within easy walking distance of residential areas;
20. Improve access to public transportation;
21. Zone for mixed-use development;
22. Enhance personal safety in areas where persons are or could be physically active;
23. Enhance traffic safety in areas where persons are or could be physically active; and
24. Participate in community coalitions or partnerships to address obesity.\textsuperscript{54}

**Model Programs and Outcomes**

- **Philadelphia Food Marketing Task Force – Increasing Supermarkets in Underserved Areas.** The Philadelphia Food Marketing Task Force investigated the lack of supermarkets in Philadelphia and released 10 recommendations to increase the number of supermarkets in Philadelphia’s underserved communities. A new funding initiative was created using public funds to leverage supermarket development. To date, the initiative has committed $67 million in funding for 69 supermarket projects in 27 Pennsylvania counties, creating or preserving 3,900 jobs.\textsuperscript{55}

- **NY Health Bucks Program – Making Fruits and Vegetables More Affordable.** The New York City Department of Health operates the Health Bucks Program to make fruits and vegetables more affordable to residents who receive food stamps. For every five dollars’ worth of food stamps spent at farmers’ markets, individuals receive a $2 Health Bucks coupon which can be redeemed year round at more than 30 farmers’ markets citywide. In 2007, the City Health Department reported that New Yorkers used more than 40% of the 9,000 Health Bucks distributed in 2006.\textsuperscript{56}

- **California Breastfeeding at Work Law.** In 1998, California passed the Breastfeeding at Work law, which requires all employers to ensure that employees are provided with adequate facilities for breastfeeding or expressing milk. In 2002, the State passed Lactation Accommodation, which expands prior workplace provisions to require adequate break time and space for breastfeeding or milk expression, with a violation penalty of $100.\textsuperscript{57}


• **Safe Routes to School.** The National Center for Safe Routes to School provides guidance and resources to hundreds of local communities throughout the Nation to promote walking and biking to school. Marin County, California, enlisted a traffic engineer to help schools identify and create safe bike routes between residential areas and participating schools. In the first two years of the program, the number of children walking to school increased 64 percent biking increased 114 percent, and carpooling increased 91 percent.  

• **Steps to Health King County – Community Coalition.** Steps to Health King County, a federally-funded coalition, sponsors integrated initiatives involving different organizations, including health organizations and community-based entities. The goal of these programs is to prevent the onset of diabetes, asthma, and obesity in at-risk populations and to improve the management of these conditions in those who have them. The coalition has funded more than 20 initiatives to date. The program has led to reductions in unhealthy behaviors and improvements in asthma and diabetes outcomes, including fewer hospitalizations and emergency department visits. While this program cost roughly $9 million over a five-year period, with funds used to support a core team of Steps to Health staff at the public health department and individual initiatives within the community, other successful coalitions at the community level can operate on approximately $75,000 per year.  

• **Bienestar Program – Comprehensive School Health Program.** The Texas-based Bienestar Program has been approved by the Texas Education Agency as one of the comprehensive coordinated school health programs and is being implemented in elementary schools across 27 Texas school districts, most of which are located in low-income neighborhoods in the cities of San Antonio and Laredo. This school-based behavior modification program is intended to prevent or delay the onset of Type 2 Diabetes among Mexican-American and other at-risk youth. The program uses multiple interventions across a variety of settings and audiences to enhance participants’ self-efficacy in making healthy choices around nutrition and physical activity. The program increases positive health behaviors and reduces risk factors for Type 2 Diabetes among participants. The cost is $12 per student to purchase the health education, physical education, and food service component workbooks and family education newsletter.
**Recommendation 6: Support community-based solutions to address cancer prevention and early detection, particularly for breast, skin and lung cancers.**

Age-adjusted cancer data suggest that mortality rates are especially high for lung and breast cancer, and incidence is higher for lung and skin cancer in Montgomery County as compared to the state. This recommendation is divided into three components, each corresponding to a specific cancer of concern in the community:

A. Supporting community-based solutions to address breast cancer mortality.

B. Supporting community-based solutions to address lung cancer incidence and mortality.

C. Supporting community-based solutions to address skin cancer.

The following sections discuss these three components in further detail, offering promising models and evidence on outcomes.

**6. A. Supporting community-based solutions to address breast cancer mortality.**

Data from this study show that while breast cancer incidence in Montgomery County is comparable to the State of Texas, the breast cancer mortality rate is significantly higher. THI recommends supporting the development of innovative community-based solutions to improve early screening, prevention and treatment of breast cancer.

Based on strong evidence, the CDC recommends the removal of structural barriers to increase screening for breast cancer. Structural barriers are non-economic burdens or obstacles that make it difficult for people to access cancer screening. Interventions designed to reduce these barriers may facilitate access by:

- Reducing time or distance between service delivery settings and target populations;
- Modifying hours of service to meet client needs;
- Offering services in alternative or non-clinical settings (e.g., mobile mammography vans at worksites or in residential communities);
- Eliminating or simplifying administrative procedures and other obstacles (e.g., scheduling assistance, transportation, dependent care, translation services, limiting the number of clinic visits).

Such interventions often include one or more secondary supporting measures, such as:

- Printed or telephone reminders;
- Education about cancer screening;
- Information about screening availability (e.g., group education, pamphlets, or brochures); and
- Measures to reduce out-of-pocket costs to the client (through interventions principally designed to reduce client costs are considered to be a separate class of approaches).

All of these recommended interventions may be components of the Pathways Community HUB model with the use of patient navigators, CHWs, or promotores as described in Recommendation 1.
Model Programs and Outcomes

- **Memorial Hermann The Woodlands and The Rose Mammography Program:** Through funds raised by the annual “In the Pink” event, Memorial Hermann The Woodlands provides mammography screening, diagnosis, early access to treatment and support to women regardless of their ability to pay. By funding The Rose, Texas’ leading nonprofit breast cancer organization, women in underserved areas of the county have access to these important services through The Rose’s mobile mammogram unit. Access to this vital program is coordinated through the Interfaith Community Clinic.

- **Keystone Mercy Health Plan’s Ministry Program for Women:** Keystone Mercy Health Plan’s Health Ministry Program for Women sponsors a series of health events aimed at promoting health education, health literacy, and preventive health care among low-income and African-American women. In partnership with local churches, the program provides free, interactive workshops and educational materials that address the health needs of women, along with individual health assessments and screenings. Preliminary data suggest that the program has enhanced access to health education and screenings and improved key health outcomes among a subset of participants with diabetes. The program’s annual budget runs approximately $100,000.

- **Native Sisters Program:** The Native Sisters program is a cultural adaptation of an existing model (known as the Patient Navigator) in which lay health advisers or advocates help urban American Indian women overcome barriers to breast cancer screening and treatment. These advisers, known as “Native Sisters,” use culturally-sensitive methods to provide breast cancer education, recruit American Indian women for breast cancer screenings, and offer as-needed advocacy and support throughout the screening and follow-up treatment process. The program increased access to cancer screenings for American Indian women living in urban areas. Lay health advisers initially earn up to $15 per hour. Salaries generally increase three percent each year. Additional costs include automobile insurance, which runs roughly $800 per person per year, plus expenses related to the development and printing of the educational materials, which tend to be minimal.

- **University of California Breast Care Center Decision Services – Personal Assistants:** The University of California San Francisco Breast Care Center Decision Services unit offers newly diagnosed patients a personal assistant to accompany them to key consultations with surgeons and oncologists. These premedical interns help patients develop a written list of questions and concerns for their providers, accompany patients to their medical appointments to take notes and record the visits, and make sure all patient questions are addressed by the attending physician. The goal is to help the patient communicate more effectively with his or her physician and hence improve patient decision-making. An evaluation of specific components of the program found that it has improved visit preparation, patient–provider communication, and patient decision-making and knowledge; similar findings have come out of meta-analyses and

---


other systematic evaluations of various aspects of the program that have been implemented in other settings. The estimated cost of providing the service ranges from $50 to $150 per patient visit, depending on the level of support offered and the utilization rate (higher utilization spreads the fixed costs over more patient visits).63


Both lung cancer incidence and mortality rates are higher in Montgomery County as compared to the State. Lung cancer is primarily linked to smoking and environmental factors, such as poor air quality.

**Tobacco.** Based on strong evidence, the CDC recommends the following interventions to address tobacco usage:

- Increasing the unit price of tobacco products;
- Utilizing mass media campaigns along with other interventions including contests, school-based education programs, community education programs, or excise tax increases on tobacco products;
- Provider reminder with and without provider education;
- Reducing out-of-pocket costs of nicotine gum/replacement;
- Providing multi-component interventions provide people who use tobacco products with cessation counseling or assistance in initiating or maintaining abstinence via telephone along with patient education, provider-delivered counseling, nicotine replacement, smoking cessation clinics, and televised cessation series; and
- Enacting and enforcing smoking bans and restrictions.

Montgomery County might consider encouraging local businesses and organizations to adopt smoke-free policies. Such policies might include preferential hiring of non-smokers, since tobacco users are not a “protected” class of employees. Employers might require higher employee contributions to health insurance plans for tobacco users; with the caveat that participating in tobacco cessation programs would lower insurance premiums.

**Air Quality.** Poor air quality is an issue in Montgomery County and may contribute to higher rates of asthma. Most interventions to affect air quality are primarily regulatory and would be outside the scope of interventions at the local level in Montgomery County. Air quality interventions are vested at the state and federal level. Additionally, participants in the community engagement session conducted January 25, 2011 concluded that the pollutants were coming from adjacent counties where winds bring them into Montgomery County.

---

Model Programs and Outcomes

- **WATCH – North Carolina Prevention Collaborative.** Wayne Action Teams for Community Health, or WATCH, a nonprofit organization that offers primary care to uninsured residents of Wayne County, NC, participated in a 12-month collaborative quality improvement initiative sponsored by the North Carolina Prevention Collaborative. As part of this collaborative, WATCH decided to focus on improving the provision of colorectal cancer screening and smoking cessation education to eligible patients. To that end, it created new processes to identify those in need of these services, formed partnerships with community-based organizations and providers to offer additional support to such patients, and participated in ongoing performance monitoring, reporting, and improvement. The program significantly increased the percentage of eligible patients receiving the targeted services, and convinced several patients to make important health-related decisions, such as quitting smoking and getting a colonoscopy after an abnormal screening result. Because of these successes, WATCH now routinely uses these new processes and partnerships as a routine part of patient care. Smoking cessation project materials were obtained at no cost from the American Cancer Society, including patient education materials. The Collaborative provided WATCH a small stipend to help offset some of the costs related to participation in the quality improvement initiative.  

- **Teens Against Tobacco Use.** The Teens Against Tobacco Use™ (TATU) program is a peer-to-peer mentorship program designed to educate youth on the dangers of tobacco use. In an effort to engage more youth and address cultural tobacco use, the American Lung Association of Washington collaborated with statewide organizations to adapt the curriculum for the Native American and Latino communities in Washington State. While the cultural adaptations of the curriculum have not yet been formally evaluated, they have been used widely throughout the state and received positive verbal feedback; moreover, the general TATU curriculum has been found to be an effective tobacco prevention program. The main costs associated with this program include staff time, travel, food, printing of manuals, and hiring a graphic design person.  

- **Tobacco-use Screening and Brief Intervention.** Tobacco-use screening and brief intervention is ranked among the most effective clinical preventive services. Strategies that create systems in health care settings are successful in helping improve the delivery of this service. One such strategy involves creating a system that prompts health care providers to identify tobacco-using patients and to advise those patients against tobacco use at every visit. Health care providers are educated on how to treat patients who use tobacco and patients receive materials to educate and motivate them to quit and remain abstinent. This strategy can be used in various health care delivery systems, such as private practices, managed care organizations, hospitals, or public health clinics, and can involve a variety of health care provider specialties.  

---


Recognizing that skin cancer incidence is higher in Montgomery County as compared to the state of Texas, THI recommends further investigation of skin cancer incidence at a sub-county level and solicit community-based programs and solutions to prevent its growing incidence.

The relationship between skin cancer and ultraviolet radiation is well established. Behaviors such as seeking shade, avoiding sun exposure during peak hours of radiation, wearing protective clothing, or some combination of these behaviors can provide protection. Sunscreen use alone is not considered an adequate protection against ultraviolet radiation. The Task Force on Community Preventive Services found that education and policy approaches to increasing sun-protective behaviors were effective when implemented in primary schools and in recreational or tourism settings. 67

Model Program and Outcome

- **Sun Safe Community-Wide Intervention:** Sun Safe is a multi-component community-wide intervention could alter the decline in sun protection that begins in early adolescence. The intervention sought to (1) educate and activate adults and peers to role model and actively promote sun-protection practices and (2) create a pro-sun protection community environment. It targeted school personnel, athletic coaches, lifeguards, and clinicians and enlisted teens as peer advocates. Annual observations of cross-sectional samples of teens at community beach/pool sites were used to assess the impact of one and two years of intervention exposure compared to grade-matched controls. The outcome was percent of body surface protected by sunscreen, clothing, or shade. After two years of intervention exposure, adolescents at the beach/pool in intervention communities were significantly better protected than those in control communities. 68

---

Recommendation 7: Broadly disseminate findings of this report to assist community leaders and organizations in advocacy, policymaking, program development, and funding decisions to improve the health of Montgomery County residents.

THI recognizes that health is influenced by a number of determinants beyond the health care system, including social, economic, environmental and political factors. As such, THI recommends the broad dissemination of this report among health professionals, researchers, policymakers, advocates, community organizations and service providers, to drive planning and action on topics beyond the scope of Montgomery County United Way and this report to improve the health of Montgomery County residents.

A number of health and health-related concerns were identified by this study that could be addressed by others in the community. These include, for example: lack of public transportation; air quality; high prevalence of asthma; high death rate from chronic lower respiratory infection; high prevalence of arthritis; and delayed onset of prenatal care. Many of the recommendations that have been described in this report, including community health workers, patient navigators, and care coordination, can also effectively address some of these concerns.
References


County Health Rankings report for Montgomery County, Texas at: [http://www.countyhealthrankings.org/texas/montgomery](http://www.countyhealthrankings.org/texas/montgomery). (page 97)


Fischer L, Begley C, Giardino A, (2007) The Impact of Extended Hours Primary Care on Emergency Department Use Among Medicaid/SCHIP Enrollees in Houston, TX. The University of Texas School of Public Health. (page 111)


Kaiser Family Foundation’s State Health Facts site. National Data for Comparison Purposes is Provided for 2008 1 Ibid. (page 55)


126
Parchman, Michael L., MD, MPH; Sandra K. Burge, PhD, on behalf of the Residency Research Network of South Texas Investigators, “Continuity and Quality of Care in Type 2 Diabetes,” *Family Practice*, January 2002, 51:7. (page 102)


Truman BI, Gooch BF, Sulemana I. et al. (2002), Dental Caries, Oral and Pharyngeal Cancers. (page 118)


U.S. Census Bureau. *Income, Poverty and Health Insurance Coverage in the U.S.: 2009*. (page 41)


127