The Potential Primary Care Crisis in Texas: A County-Based Analysis

Final Report by
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Executive Summary

Providing efficient and effective health care largely relies on the availability of primary care physicians and other clinicians at the front lines of care. But Texas has among the lowest availability of primary care physicians and other providers across the states. Many Texas counties have no primary care physicians at all and more than one-quarter of counties have fewer now than a decade ago. Texas' continuing population growth and the expansion of insurance coverage that will occur after the implementation of the Patient Protection and Affordable Care Act (ACA) could cause current shortages to deepen.

This study conducted a county-by-county analysis of the primary care capacity in Texas today and what could happen after the implementation of insurance expansions under the ACA.

- Texas' current primary care capacity is about 86% of the average level for the nation. But the typical (median) county in Texas has only 64% of the national primary care capacity. Shortages are far more acute in smaller and rural counties. Only 35 Texas counties have "adequate" primary care capacity (100% or more of the national level), while 149 are classified as "very" or "severely" underserved (less than 70%).

- The primary care capacity to serve low-income Texas adults and children is slightly lower, 85% of the normal American level. This measure would be worse if it were not for the presence of federally qualified health centers that focus on serving low-income patients.

- ACA implementation would lead millions of Texans to gain health insurance, which would in turn increase the demand for primary care. Uninsured people tend to use less than half the care received by those with insurance. The study projects that after the ACA expansion, the average primary care capacity of Texas would be about 80% of the national average, unless steps are taken to bolster the state's primary care capacity.

- Absent an increase in primary care resources, the primary care access capacity for low-income Texans will fall to 73% after ACA implementation. The ACA expansions will particularly help low-income residents gain insurance under Medicaid.

Regardless of what happens with federal health reform initiatives, Texas faces a primary care crisis. The Texas House Committee on Public Health is planning to review the adequacy of

the state's primary care workforce and offer recommendations. Working in conjunction with federal and local partners and with other organizations, Texas should take steps to expand the availability of primary care providers, particularly in underserved areas of the state. This includes efforts to expand the broad range of primary care professionals, including medical doctors, osteopathic physicians, nurse practitioners, physician assistants, registered nurses and others on the front lines of care.

Efforts to bolster the availability of primary care residencies in Texas, including residencies in community-based settings, can be an important step. It is also important to continue to stimulate the number of nurse practitioners and physician assistants who can be trained and deployed quickly and at a relatively low cost. Increasing the number or capacity of community health centers would also help, since they use staff efficiently and focus on meeting the needs of low-income people in underserved areas. Without such efforts, more Texans will face delays and problems getting routine and preventive medical care, will have a harder time getting immunizations or cancer screening and will have more difficulty getting help to control chronic diseases like diabetes or cardiovascular problems. In turn, this could lead more Texans to require more intensive and expensive care in emergency rooms and in hospitals. Expansion of primary care could also support growth in the number of good jobs in Texas.

The Potential Primary Care Crisis in Texas:
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While Texas is the home to ten medical schools and many leading medical facilities, in numerous parts of the state patients have difficulty finding a primary care physician or clinician who can offer them routine preventive and primary medical care. This is not just a problem for rural areas in North or West Texas; it affects parts of major cities and suburban areas as well. Texas has relatively weak primary care capacity compared with most other states in the nation. In 2008, only Nevada has fewer primary care clinicians per 1,000 state residents than Texas.[1] The federal government designates about half of Texas counties (125 out of 254 counties) as being Primary Care Health Professional Shortage Areas and 69 as including partial-county or population Health Professional Shortage Areas.[2] The number of licensed primary care physicians per 1,000 population in Texas has remained essentially flat over the past decade. Twenty-nine counties have no primary care physicians at all and 76 have fewer primary care physicians now than in 2000.[3] A task force on access to health care in Texas has noted that the state has a significant shortfall of primary care professionals who are needed to improve the efficiency and effectiveness of care for all Texans.[4]

Limited access to routine primary care services can prevent patients from obtaining timely medical care, so they may become sicker, eventually requiring emergency room or inpatient hospital care. Primary care shortages are expected to heighten in the coming years, as the Baby Boomers age, existing primary care clinicians retire, and new physicians continue to steer away from the practice of primary care. The current primary care shortages afflicting many regions of Texas may become more severe crises in the near future. Texas House Speaker Joe Straus has called upon the House Committee on Public Health to review the adequacy of Texas primary care capacity and to offer recommendations.[5, 6]

Insurance expansions planned under the Patient Protection and Affordable Care Act (ACA) could accelerate the problem. The ACA will expand health insurance expansion beginning in 2014 through: (a) an expansion of Medicaid for non-elderly adults with incomes below 138 percent of the poverty line,[7] (b) federal tax subsidies to help people with incomes below 400 percent of the poverty line buy private insurance at newly created health insurance exchanges, and (c) the requirement that most people either have health insurance or pay a tax penalty.[8]

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[1] Data are available in Ku L, et al. Technical Appendix to "The States' Next Challenge — Securing Enough Primary Care for an Expanded Medicaid Population." *New England Journal of Medicine* 364(6):493-95, Feb. 10, 2011. Available at http://www.nejm.org/doi/suppl/10.1056/NEJMp1011623/suppl_file/nejmp1011623_appendix.pdf.

[2] Health Professions Resource Center, Texas Dept. of State Health Services. "Supply Trends Among Licensed Health Professions: 1980-2011." Jan. 2012.

[3] *Ibid.*

[4] Code Red Task Force on Access to Health Care in Texas. Code Red: The Critical Condition of Health in Texas, 2012. Available at http://www.coderedtexas.org.

[5] Straus J. 82nd Legislature Interim Charges, Oct. 20, 2011.

[6] Ortolon K. "Making More Doctors." *Texas Medicine.* 108(1):31-36, Jan. 2012.

[7] The legislation expands Medicaid eligibility to those with incomes under 133 percent of the federal poverty line, but also includes a 5 percent standard deduction, effectively increasing the gross income limit to 138 percent of poverty.

[8] There are some exemptions from the requirements, such as for those too poor to pay federal income taxes.

> **Primary care capacity,** in this report, is based on the number of primary care clinicians in each county, compared to the number of insured and uninsured residents. *Primary care capacity* is related to, but not the same as *health care access*. The concept of capacity is akin to the number of beds in a hospital. Even if a hospital has empty beds, some patients might not be able to access care at the hospital because they are uninsured and cannot afford the costs, lack transportation to get to the hospital or encounter other barriers. But if 600 patients need to be in the hospital and the hospital only has 500 beds, the capacity limit means about 100 patients will not be able to get care. Insurance coverage helps facilitate access to medical care by reducing financial barriers to care, but may not help resolve other barriers, such as transportation problems or language barriers, and can be insufficient if there is not enough medical care capacity. Thus, people living in areas with limited primary care capacity are likely to encounter access problems, but even in areas with adequate primary care capacity, some residents may lack adequate access because they are uninsured, because some physicians do not accept the type of insurance they have, or because they encounter other barriers.

Due to Texas' current high uninsured rate, the insurance expansions will have a much larger effect in Texas than in other states. An analysis by the Urban Institute indicates that the percentage of state residents who will gain insurance will be higher in Texas than in any other state.[9] Recent estimates by Michael Cline and Steve Murdock, demographers from the Hobby Center at Rice University, indicate that about 2.9 million Texans could gain health insurance coverage under the ACA, including 1.4 million newly covered by Medicaid.[10]

As the number of people who are insured rises, the demand for health care services will also rise. Insurance reduces the financial barriers to medical care and when people gain insurance they tend to use more health care.[11] A substantial body of prior research shows that those who lack insurance use less health care services, have worse health, are more likely to experience serious financial difficulties and may die earlier.[12]

The combination of a large insurance expansion and low primary care capacity could lead to a particularly serious challenge for the Lone Star State. A recent analysis of the impact of the Medicaid expansion indicated that Texas would be among the most challenged states in meeting the primary care needs of its residents after the ACA is implemented.[13]

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[9] Buettgens M, Hall M. "Who Will Be Insured After Health Reform?" Urban Institute and Wake Forest University, Mar. 2011. Available at http://www.urban.org/uploadedpdf/1001520-Uninsured-After-Health-Insurance-Reform.pdf.

[10] Cline M, Murdock S. "Estimates of the Impact of the Patient Protection and Affordability Act on Counties in Texas." Hobby Center for the Study of Texas, Rice University, Report to Methodist Healthcare Ministries, Oct. 2011.

[11] Baicker K, Finkelstein A. The effects of Medicaid expansion: learning from the Oregon experiment. *New England Journal of Medicine.* 365(8):683-5, Aug. 25, 2011.

[12] See, for example, Institute of Medicine. *Insuring America's Health: Principles and Recommendations.* Washington, DC: National Academy Press, 2004.

[13] Ku L, Jones K, Shin P, Bruen B, Hayes K. "The States' Next Challenge — Securing Enough Primary Care for an Expanded Medicaid Population." *New England Journal of Medicine* 364(6):493-95, Feb. 10, 2011. A supplementary

This report more closely examines current primary care capacity in Texas and its relationship to the planned expansions of insurance coverage under health reform. Specifically, we examine insurance coverage and current primary care capacity in all 254 Texas counties. We examine this in the context of the overall insurance expansions as well as the impact for low-income populations affected by the Medicaid expansions.

Finally, we discuss some of the steps that could be undertaken to help reduce the problem of primary care shortages in Texas. In light of the serious legal and political challenges that have been raised regarding the ACA, we realize that the federal health reform law may not be implemented as currently designed. Even so, the existing primary care shortages in Texas and the forces that are expected to exacerbate this problem should spur policy makers and the health care community in Texas to consider new ways to address these challenges, regardless of the fate of the ACA.

Methodology

This section briefly summarizes our data sources and methodology. A more detailed discussion of the methodology used is provided in a technical appendix to this report.

Sources of Data. We use the estimates of insurance expansions by Cline and Murdock for (a) the total number of people who gain health insurance under the ACA in each county and (b) the number of low-income children and adults affected by the Medicaid expansions.[14] They generated estimates based on data from the American Community Survey – one of the most detailed surveys in the nation -- about the characteristics of Texas residents. They offered three policy scenarios -- limited, moderate and enhanced – based on varying degrees of implementation of the ACA expansions. In this report, we use their "moderate" policy scenario, which is in between the others. To give a sense of the implications, the limited scenario indicates insurance coverage rises from 16.7 million non-elderly Texans insured now to 18.1 million insured after reform, while the moderate scenario estimates the number insured after reform is 19.7 million and the enhanced scenario estimates 21.1 million insured. We consider the Medicaid-related expansions as insurance expansions among children in families at or below 200 percent of poverty and non-elderly adults in families with incomes at or below 138 percent of poverty.

We develop measures of primary care capacity. In line with the Texas Department of State Health Services, we define primary care providers as active general practice physicians, family practitioners, internists, pediatricians, obstetricians/gynecologists and geriatricians involved in direct patient care, excluding federal, military, resident and fellow physicians. We also include, but at a discounted level, nurse practitioners, nurse midwives and physician assistants. These are based on 2011 data from the Department of State Health Services, which provides counts of licensed clinicians by their main county of practice.[15]

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appendix can be accessed at:
http://www.nejm.org/doi/suppl/10.1056/NEJMp1011623/suppl_file/nejmp1011623_appendix.pdf.
[14] Cline and Murdock, *op cit.*
[15] Some clinicians practice in multiple locations or counties, but the data associate them with a single county.

In addition to provider estimates, we use information about patients served by federally-qualified community health centers (FQHCs), which are non-profit facilities that provide comprehensive primary care services in medically underserved areas and receive a portion of their funding from the federal Bureau of Primary Health Care. They are particularly important in providing care for low-income patients, particularly those on Medicaid and the uninsured, and patients living in areas with too few primary care providers. In 2010, there were 64 FQHCs in Texas, serving almost one million patients. The patient counts come from 2010 Uniform Data System, which tracks reports filed by health centers on an annual basis; the health centers report the number of patients served by zipcode.[16] We use these data to estimate the number of FQHC patients served in each county, based on the patients' county of residence.[17]

Key Measures. We use data about primary care clinician location and FQHC patients combined with data about population size and insurance coverage to generate estimates of a **Current Access Index** in each county. An index value greater than 100% means the county has more primary care capacity than is needed to meet the demand for care of its residents, compared to national norms about the level of care an average insured person uses.[18] A value below 100% means it has less primary care capacity than the national average.

It is important to understand that people may travel across county borders for care. For example, if County A has a current primary care access level of 110% and County B, which is just next door, has an access level of 90%, this does not mean that 10% of County B residents go without care, since some of them may cross the border to see a primary care provider in County A. Likewise, measures of over 100% do not indicate excess capacity since some of the providers in County A (with 110%) may actually serve residents of County B.

We use the Hobby Center's moderate estimates of the newly insured in each county to compute the growth in demand for care after the ACA expansions are implemented. We then compute the **Projected Access Index** for each county, based on its increased number of insured people which leads to an increase in the demand for care, compared to the county's current primary care capacity. Since the number of insured people rises in all counties, but we only have measures of current primary care capacity, the projected access level is always lower than the current access level. (If we used the Hobby Center's limited policy scenario our estimates of the impact of the ACA would be lower, while if we used their enhanced policy scenario, our estimates show even more change.)

We compute similar measures for the low-income population targeted by the Medicaid expansions, focusing on low-income adults with income below 138 percent of poverty and

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[16] The Texas Association of Community Health Centers (TACHC) kindly shared these data with us. The data were tabulated for them by the Robert Graham Center. We extend our thanks to Ashley Foster and Jose Camacho of TACHC and Jennifer Rankin of the Robert Graham Center.

[17] In 2010, FQHCs served 924,000 patients, or about 4% of all Texans, but the FQHC patients are mostly on Medicaid, uninsured or living in medically underserved areas where there are few other primary care providers. FQHCs help balance out the gaps in the availability of other primary care clinicians.

[18] Both insured and uninsured people require primary care but insured people are more likely to seek primary care. Based on analyses of the 2009 Medical Expenditure Panel Survey, we estimate that uninsured people use 40% of the average level of ambulatory care services used by those with insurance.

children with incomes below 200 percent of poverty. The primary care capacity for the Medicaid populations is relatively more affected by the capacity of FQHCs, since they predominantly serve low-income Medicaid and uninsured patients, but we also assume that most primary care physicians serve some Medicaid patients.

Limitations. The access index values are based on the current primary care capacity in Texas, based on 2010 and 2011 data. Primary care capacity may increase or decrease depending on policy choices made in at the state and federal levels or economic circumstances. In particular, increases in Medicaid payments for primary care providers, required in 2013-14 under the ACA, may increase the supply of primary care providers accepting Medicaid patients.

The access index values are approximations for a number of reasons. While we use the Hobby Center estimates of insurance expansions, actual expansion levels are likely to differ because of unexpected policy, economic or demographic changes. Moreover, the Hobby Center estimates were based on the population of Texas in 2010, but the population will be larger by 2014 when the ACA expansions will begin to be implemented, in which case primary care access might be somewhat less than we estimate.

We assume that all practicing physicians see patients at a similar rate, but in reality, this may differ, particularly because many clinicians do not see patients full-time. Many practice less than full time either because of other obligations (e.g., teaching, research, administration, etc.), because they work part-time, or because they are partly retired. This may be particularly true in metropolitan areas with medical centers, where a large number of physicians may be engaged in other professional activities other than full-time patient care. Some clinicians may practice in more than one county. Similarly, patients in low access counties may receive primary care by travelling to receive care from practitioners in other counties. Some Texas residents, particularly near state borders, may seek care in other states or Mexico, although residents of other states or Mexico may also obtain primary care from Texas clinicians.

Finally, although we call our measures "access indices", it is more accurate to consider them capacity measures. They do reflect the actual access that people in the county have, but the capacity to provide care, relative to the demand for care. Even in areas with adequate capacity, many patients may be unable to obtain adequate access to care because they are uninsured, because they lack transportation or face language barriers. In fact, our demand measures assume that uninsured people only use about half as much primary care as those with insurance and that the transition from being uninsured to insured leads to increases in the demand for care. Moreover, there may be discrepancies for subpopulations in counties that our county-wide measures do not capture. For example, consider Bexar County. A dominant share of clinicians practice in the north side of the county, while disadvantaged families cluster in the south side. It reasonable to expect that access is poorer in the south side of the county where there are more low-income, uninsured and Spanish-speaking residents and stronger in the north side, but our measures only show county-wide capacity, not the access of more vulnerable subpopulations.

Findings

Overall Access. Table 1 provides some key statistics about the Current Access Index for Texas counties. Figure 1 is a map of the counties' with their Current Access Indices separated into three classifications:
- *Adequate* (index equals 100% or more),
- *Underserved* (index is less than 100% but greater than or equal to 70%)
- *Very Underserved* (index is less than 70% but greater than or equal to 50%) and
- *Severely Underserved* (index is less than 50%).

Appendix Table A-1 shows the actual levels for every county, plus other key data. As discussed above, our data are based on where primary care providers' main practices are located and could therefore over-exaggerate access differences for some counties. Since patients may travel from one county to another for primary care, actual access differences between two adjacent counties may not be as stark as they appear to be.

The statewide average Current Access Index is 86%, meaning that Texas residents have, in general, somewhat lower access to primary care than national norms. The median (or 50th percentile) county has a Current Access Index of 64%.

Table 1. Current and Projected Access Indices for Primary Care in Texas: Key Statistics	
Current Access Measures	
Statewide Average Current Access Index	86%
Median County Current Access Index	64%
# Counties with "Adequate" Current Access (100% or More)	35
# Counties with "Underserved" Current Access (70% to 99%)	70
# Counties with "Very Underserved" Current Access (50% to 69%)	67
# Counties with "Severely Underserved" Current Access (Below 50%)	82
Post-ACA Access Measures	
Statewide Average Projected Access Index (after ACA implementation)	80%
Median County Projected Access Index	59%
# Counties with "Adequate" Projected Access (100% or more)	24
# Counties with "Underserved" Projected Access (70% to 99%)	63
# Counties with "Very Underserved" Projected Access (50% to 69%)	72
# Counties with "Severely Underserved" Projected Access (Below 50%)	98

Of Texas' 254 counties, 35 currently have adequate access, as defined above, while 70 are underserved, 67 are very underserved and 82 are severely underserved. As shown in Figure 1, many of the areas with the weakest current access are located in North Texas, South Texas and West Texas as well as in some of the counties that fall between the Dallas, Houston and San Antonio-Austin areas, in areas that have lower populations and lower average incomes.
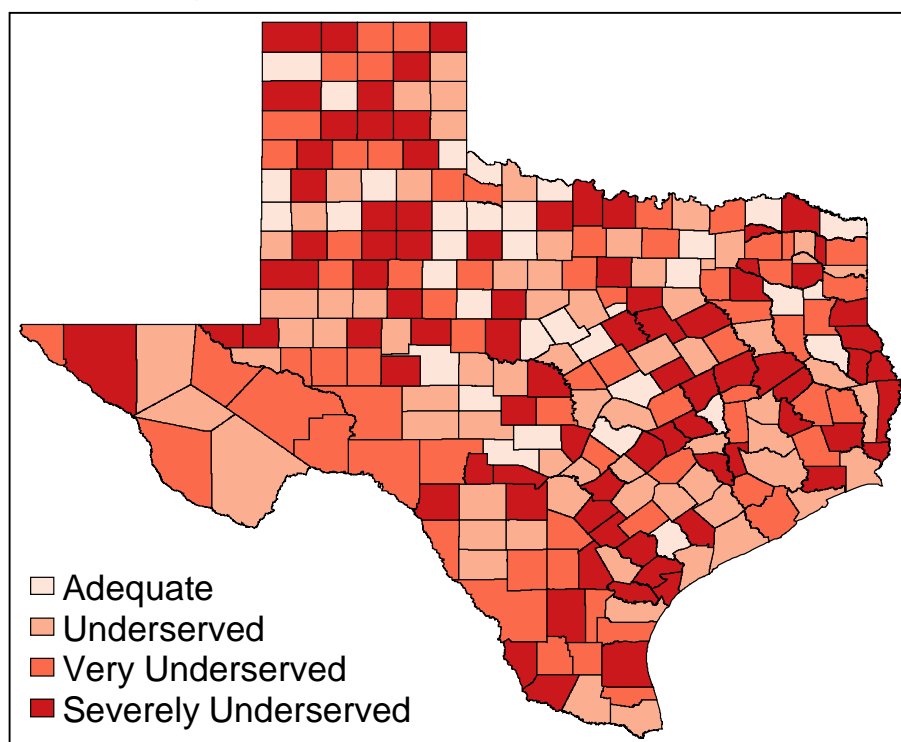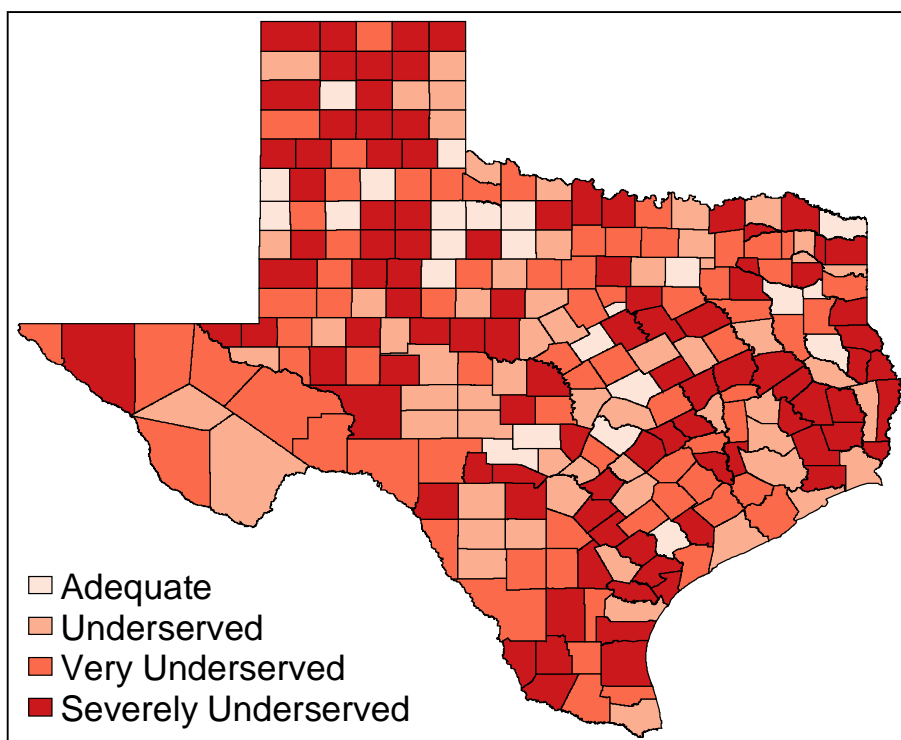
Figure 1: Current Access Index

Legend:
- Adequate
- Underserved
- Very Underserved
- Severely Underserved

Figure 2: Projected Access Index

Legend:
- Adequate
- Underserved
- Very Underserved
- Severely Underserved

Using the Hobby Center's moderate scenario that the number of insured Texans rises by 2.9 million people, we expect the average statewide Projected Access Index will be 80%. Primary care access for an average Texan would fall by about 6 percentage points if there is no change in the supply of primary care. The median Projected Access Index will fall by 5 percentage points, from 64% to 59%. As seen in Figure 2, the number of counties classified as having Adequate capacity falls from 35 to 24 counties, the number considered Very Underserved rises from 67 to 72 and the number classified as being Severely Underserved rises from 82 to 98 counties.

While Texas has 254 counties, more than half of the state's population (13.3 million out of 25 million) resides in eight counties, including Harris County (Houston), Dallas County (Dallas), Tarrant County (Ft. Worth), Bexar County (San Antonio), Travis County (Austin), El Paso County (El Paso), Collin County (near Dallas-Ft. Worth) and Hidalgo County (McAllen). As seen in Table 2, of these eight counties, three have Current Access Indices higher than 100%, but one (Collin County) will shift into Underserved status (between 70% and 100%) after health reform. Harris, Tarrant, Bexar and Hidalgo Counties currently are considered Underserved, but Hidalgo County would slip into Very Underserved status. El Paso County has the weakest primary care capacity of these large counties and is classified as Very Underserved both now and after health reform. Access is expected to decline in each county. In most cases, these larger counties have greater primary care access than smaller Texas counties. This is not surprising; metropolitan areas typically attract more providers and medical facilities than rural areas.

Table 2. Key Overall Access Measures for the Eight Largest Counties						
County Name	Population	Projected Reduction in # Uninsured	Adjusted Primary Care Providers	Current Access Index	Projected Access Index	Percentage Point Change
Harris	4,092,459	441,081	4,390	97%	90%	-7%
Dallas	2,368,139	260,022	2,872	109%	102%	-8%
Tarrant	1,809,034	189,809	1,820	88%	82%	-6%
Bexar	1,714,773	212,458	1,806	97%	90%	-8%
Travis	1,024,266	109,094	1,251	114%	106%	-8%
El Paso	800,647	104,931	539	60%	55%	-5%
Collin	782,341	69,104	923	101%	95%	-6%
Hidalgo	774,769	103,194	597	75%	68%	-7%

At the other end of the spectrum, slightly more than half of Texas counties have populations below 20,000 and the smallest (Loving County) has less than 100 residents. For these smaller counties, the weighted average Current Access Index is much lower, 58%, and the average Projected Access Index will be 53%. These small counties are much more likely to be considered Very or Severely Underserved.

Another way to interpret these data is by classifying counties by four categories, as defined by Census Bureau data:
- Metropolitan counties with a central city, such as Bexar or Harris Counties, have an average current access index of 96%. (27 counties)
- Metropolitan suburban counties, such as Collin, Denton orWilliamson Counties, have an average current access index of 68%. (50 counties)

- Non-metropolitan counties adjacent to a metropolitan area, such as Washington or Fannin Counties, have an average current access index of 66%. (127 counties)
- Non-metropolitan counties that are not adjacent to a metropolitan area, such as Sabine or Val Verde Counties, have an average current access index of 72%. (50 counties)

There is some variation within each county type, but generally the metropolitan counties with central cities are the most likely to have adequate primary care capacity, while the other types of areas are generally underserved.

Medicaid Access. The next set of analyses focus on access among the population targeted by the Medicaid expansion: adults with incomes at or below 138 percent of poverty and children with incomes at or below 200% of poverty. We combine the low-income insured and uninsured patients since they are ultimately drawn from the same population group and more likely to seek primary care at an FQHC (or other health care safety net providers) than are other patients.

Under Texas' current Medicaid eligibility policies, adults without dependent children are not eligible for Medicaid at any income level (unless they are disabled or elderly) and non-elderly, non-disabled parents are eligible if they incomes below about 26 percent of the poverty line.[19] Because Texas has lower Medicaid eligibility standards than most states, the coverage expansion to 138 percent of the poverty line for non-elderly adults (with and without dependent children) will help bring an unusually large number (1.4 million) of Texans insurance coverage.

The **Medicaid Current Access Index** is similar conceptually to the previously described overall Current Access Index, except it uses information about national norms about the extent to which primary care providers serve the low-income population targeted by the Medicaid expansion. On one hand, because Medicaid physician payment rates are generally lower than Medicare or commercial payment rates, physicians are often less willing to treat Medicaid patients or limit the number of Medicaid patients they will treat. On the other hand, since FQHCs focus on care for low-income patients, counties with FQHCs (or close to them) may have better access for Medicaid patients.

We estimate that the statewide average Current Medicaid Access Index is 85% (Table 3, Table A-2 provides county-specific results). For the median county, the Current Medicaid Access Index is 64%. Figure 3 presents a map of current Medicaid access, using the same designations as before: *Adequate* (100% or greater Medicaid index), *Underserved* (70% to 99% Medicaid index), *Very Underserved* (50% to 69%) and *Severely Underserved* (below 50% Medicaid index). Fifty one counties are rated as having adequate current Medicaid access, while 59 are underserved, 62 are very underserved and 82 are severely underserved. This is true even though FQHCs, which serve almost one million patients in Texas, primarily serve Medicaid or uninsured patients. Many of the counties which have the weakest Medicaid access are in North and West Texas.

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[19] Heberlein M, et al. "Performing Under Pressure: Annual Findings of a 50-State Survey Of Eligibility, Enrollment, Renewal, and Cost-Sharing Policies in Medicaid and CHIP, 2011-2012. "Washington, DC: Kaiser Commission on Medicaid and the Uninsured. Jan. 2012.

Table 3. Current and Projected Medicaid Access Indices: Key Statistics	
Current Access Measures	
Statewide Average Current Medicaid Access Index	85%
Median County Current Medicaid Access Index	64%
# Counties with "Adequate" Current Medicaid Access (100% or More)	51
# Counties with "Underserved" Current Medicaid Access (70% to 99%)	59
# Counties with "Very Underserved" Current Medicaid Access (50% to 69%)	62
# Counties with "Severely Underserved" Current Medicaid Access (Below 50%)	82
Post-ACA Medicaid Access Measures	
Statewide Average Projected Medicaid Access Index (after ACA implementation)	73%
Median County Projected Medicaid Access Index	54%
# Counties with "Adequate" Projected Medicaid Access (100% or more)	37
# Counties with "Underserved" Projected Medicaid Access (70% to 99%)	49
# Counties with "Very Underserved" Projected Medicaid Access (50% to 69%)	57
# Counties with "Severely Underserved" Projected Medicaid Access (Below 50%)	111

If, following the Hobby Center's moderate scenario, the number of Medicaid and CHIP beneficiaries rises by 1.4 million, the average **Projected Medicaid Access Index** will fall to 73%l and the level for the median county will fall to 54% after the Medicaid expansions are implemented. In general, Medicaid access is expected to decline in all areas of the state after the ACA expansions (Figure 4).

There are modest differences in the overall population access levels and those for the Medicaid target population. For example, the statewide average state Current Access Index is 86% while the average Current Medicaid Access Index is 85%. It may seem odd to some that the primary care capacity for low-income people is similar to that for the general population. For example, a 2008 survey revealed that only 66% of Texas physicians said they accepted all or some Medicaid patients.[20] But we are not measuring how many accept Medicaid, but the capacity of primary care physicians to serve low-income patients, based on national norms. While many private physicians fail to serve Medicaid patients, this is partially offset in some areas by the availability of care at federally qualified health centers (FQHCs) which primarily serve low-income patients. We do not have county-level statistics on the percentage or number of clinicians who accept Medicaid patients, but have incorporated assumptions based on national data that low-income patients get about 7% less ambulatory care than the general population.

Of the eight most populous counties in Texas, only two have adequate Current Medicaid Access Indices, Travis and Collin Counties. Four (Harris, Dallas, Tarrant and Bexar Counties) are classified as underserved and two (El Paso and Hidalgo Counties) are both severely underserved. A key difference between these counties is the percent of the county residents who have low incomes. In each of these counties, the Projected Medicaid Access Index is expected to drop after the expansion of Medicaid.

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[20] Texas Dept. of State Health Services. "Physician Acceptance of Medicaid Patients in Texas. " Nov. 2008.

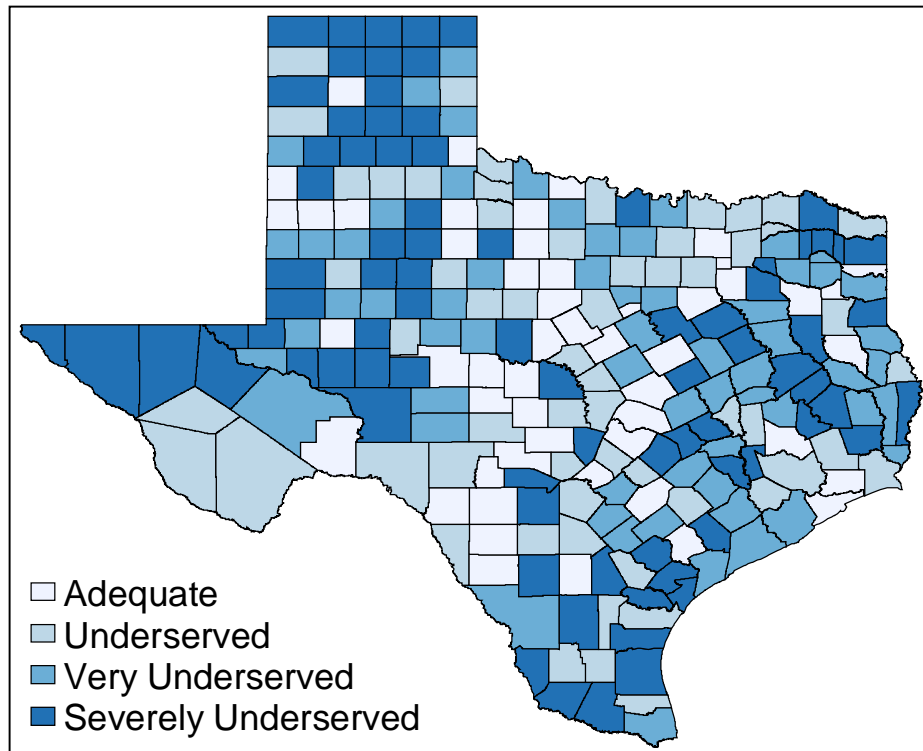# Figure 3: Medicaid Current Access Index

Legend:
- ☐ Adequate
- ☐ Underserved
- ☐ Very Underserved
- ■ Severely Underserved

Figure 4: Medicaid Projected Access Index

Legend:
- ☐ Adequate
- ☐ Underserved
- ☐ Very Underserved
- ■ Severely Underserved
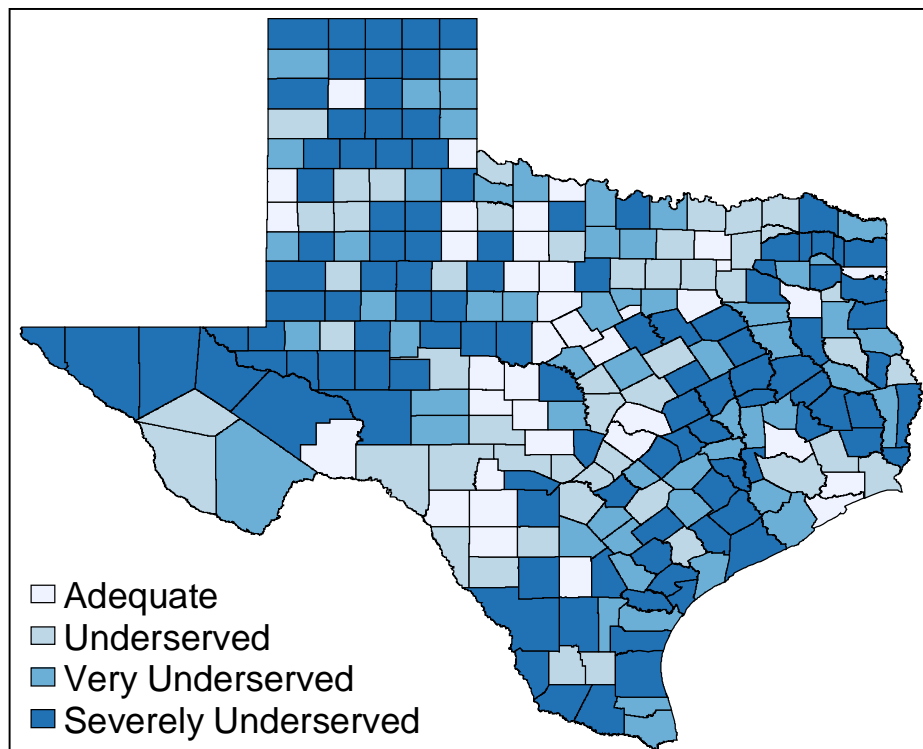
Table 4. Key Medicaid Access Measures for the Eight Largest Counties						
County Name	Medicaid Expansion Target Population	Projected Reduction in # Uninsured (among Target Population)	Adjusted Primary Care Providers	Current Medicaid Access Index	Projected Medicaid Access Index	Percentage Point Change
Harris	987,102	217,496	4,390	88%	76%	-11%
Dallas	583,850	128,448	2,872	94%	82%	-12%
Tarrant	391,291	87,588	1,820	85%	74%	-11%
Bexar	444,954	106,098	1,806	93%	80%	-13%
Travis	200,125	49,075	1,251	151%	129%	-22%
El Paso	270,737	61,185	539	36%	32%	-5%
Collin	107,156	25,070	923	159%	137%	-22%
Hidalgo	310,185	66,804	597	46%	40%	-6%

What Could Texas Do?

While this report focuses on the effects of the ACA insurance expansions, other forces also shape primary care capacity in Texas. Just as insurance expansions will stimulate the demand for primary care, the aging of the Baby Boomers and overall population growth also will increase the demand for care. At the same time, the population of primary care clinicians has been limited by the gradual shift of medical students away from selecting primary care residencies toward medical and surgical specialties. One major reason is that specialists usually earn more than primary care practitioners and medical students often choose more lucrative fields to help offset debts incurred during medical education. On the other hand, there has been a slight turnaround; at the national level more selected primary care residencies for the second year in a row in 2011, after many years of decline.[21] Because so few U.S. trained physicians go into primary care, many areas rely on the availability of international medical graduates, who are more likely to practice in primary care. Last year, Texas enacted a law expediting the ability of these foreign-trained physicians to practice after completing two years of medical residency in Texas, making it easier for them to begin to practice and serve patients.

Texas now has more medical school graduates than residency slots, so many young physicians must leave Texas to get their residency training.[22] One potential way to expand primary care capacity is to increase the number of primary care residencies for recent medical and osteopathic school graduates, recognizing that physicians often continue to practice in the areas where they receive their residency training. This could require additional financial support for graduate medical education. In order to make residencies more appropriate for primary care in the community, additional residency slots could also be offered outside of teaching hospitals, located in ambulatory facilities like community health centers. Last year, the federal government helped support eleven such programs, including one in Texas.[23] Of course, expanding primary

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[21] American Association of Medical Colleges, For Second Year, More U.S. Medical School Seniors Match to Primary Care Residencies, March 11, 2011. Available at
https://www.aamc.org/newsroom/newsreleases/2011/180410/110317.html
[22] Texas Higher Education Coordinating Board. Graduate Medical Education Report. April 2012.
[23] HHS Press Release. HHS announces new Teaching Health Centers Graduate Medical Education Program, Jan. 25, 2011.

care residencies also presumes that there are an adequate number of newly minted physicians who want to be in primary care practice.

Beyond simply expanding the size of existing residency programs, it may be possible to develop medical schools that specialize in training clinicians to serve medically underserved populations, such as in community health centers. A.T. Still University in Arizona has developed an osteopathic medical school in alliance with the National Association of Community Health Centers to specialize in training physicians for community health.[24] Similarly, the Oklahoma University School of Community Medicine was created to train physicians to serve in medically underserved areas.[25]

The Affordable Care Act includes a number of policies intended to boost the primary care workforce, including policies to improve primary care payment levels in Medicaid and Medicare, expanded funding for FQHCs, new training programs, changes in Medicare graduate medical education policies to favor primary care residencies, and increased funding for the National Health Service Corps. A particularly important change is the requirement that primary care payment rates in Medicaid be increased to levels equal to Medicare payment levels in 2013 and 2014. The federal government will cover the additional costs for boosting physician payment levels during that period. Analyses by the Urban Institute indicated that Medicaid primary care physician payments in Texas averaged about 68% of Medicare levels in 2008.[26] The reimbursement increase may lead more physicians to be willing to care for Medicaid patients. The ACA also provided a 10% increase in Medicare physician payment levels for primary care physicians and general surgeons practicing in Health Professional Shortage areas. These policies may improve incomes for primary care practitioners and encourage them to practice in the area and to serve low-income patients and those in geographically underserved areas.

In addition, under the ACA, the federal government has awarded substantial grant funding to help bolster primary care services and the health workforce in Texas. As of early 2012, the federal government provided $33.2 million of ACA funding to support Texas health centers and $17.4 million for health workforce and training efforts.[27]

Nurse practitioners and physician assistants, sometimes called "advanced practice clinicians," are important and often underutilized primary care resources, who can provide many of the primary care services offered by physicians. At the national level, they are important in part because the ranks of nurse practitioners and physician assistants have been growing more rapidly than the supply of primary care physicians.[28] This is also true in Texas: the number of primary care physicians in Texas remained flat (around 70 per 100,000 population) between 2000 and 2011, while the number of nurse practitioners doubled (from 12 per 100,000 population in 2000 to 26 in 2011) and the number of physician assistants also doubled (from 10 per 100,000

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[24] http://www.atsu.edu/soma/about/mission.htm

[25] http://www.ou.edu/content/tulsa/community_medicine/about.html

[26] Zuckerman S, Williams A, Stockley K. Trends in Medicaid Physician Fees, 2003-2008. *Health Affairs.* 28(3): w510-519, April 2009.

[27] Kaiser Family Foundation, ACA Federal Funds Tracker. Available at http://healthreform.kff.org/federal-funds-tracker.aspx, accessed on April 20, 2012.

[28] Government Accountability Office. Primary Care Professionals: Recent Supply Trends, Projections, and Valuation of Services. Congressional Testimony, GAO-08-472T, Feb. 2008.

population in 2000 to 21 in 2011).[29] Most health care experts agree that expanding the use of multidisciplinary team-based primary care (including nurse practitioners, physician assistants, registered nurses, and other health professionals) is critical to maintaining the quality and quantity of health care services in future years. Nurse practitioners and physician assistants may be particularly important in serving rural areas where physicians are scarcer; other states' experience suggests that rural areas rely more heavily on advanced practice clinicians.[30]

An oft-debated policy question is whether to allow nurse practitioners to make diagnoses and write prescriptions in primary care, independent of physician supervision. Sixteen states and the District of Columbia provide such a broad scope of practice. The prestigious Institute of Medicine recently reviewed the evidence on this issue and recommended an expansion in nurse practitioners' scope of practice.[31] Such proposals have met mixed reactions in Texas. For example, Bill Hammond, President of the Texas Association of Business, recommended allowing "nurse practitioners and physician assistants to provide primary care and reduce restrictions on those practices."[32] But Gary Floyd, Chair of the Texas Medical Association's Council on Legislation stated that "If by 'expanded roles' [for nurse practitioners] they mean independent practice, I don't think that's the right direction."[33] The belief that expanded roles for nurse practitioners erode physician income is one basis of physician opposition, but recent evidence suggests that expanding nurse practitioners' scope of practice does not harm physician incomes.[34]

It will be important for Texas to consider potential expansions in scope of practice for nurse practitioners and physician assistants. But regardless of the policy adopted, it is more important to consider how to continue to increase the supply of nurse practitioners and physician assistants who provide primary care in Texas. Texas has fewer nurse practitioners and physician assistants than most states. For example, in 2008 Texas had 56 nurse practitioners or physician assistants for every 100 primary care physicians, while the typical (median) state had 66, or 10 more, nurse practitioners or physician assistants per 100 physicians. Expanding the number and use of practicing nurse practitioners and physician assistants could substantially improve primary care availability, regardless of whether these clinicians practice in teams or independently. Because nurse practitioners and physician assistants sometimes have shorter practice careers, another approach to expanding supply is to identify strategies that increase retention. In terms of increasing the number entering practice, an advantage of focusing on advanced practice clinicians is the shorter period of training required, which translates into faster deployment into practice. Further, their lower salaries should lead to lower costs. A number of nurse practitioner

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[29] Health Professions Resource Center, *op cit.*

[30] United Health. "Modernizing Rural Health Care: Coverage, Quality and Innovation." Working Paper 6. UnitedHealth. July 2011

[31] Institute of Medicine. *The Future of Nursing: Leading Change, Advancing Health*. National Academies Press, 2011.

[32] Hammond B. "Texas Faces Critical Short of Primary Care Providers" op-ed in *Houston Chronicle,* Dec. 19, 2011.

[33] Quoted in Ortolon K, *op cit.*

[34] Pittman P, Williams B. "Physician Wages in States with Expanded APRN Scope of Practice." *Nursing Research and Practice.* Vol. 2012, Article ID 671974. doi:10.1155/2012/671974, Jan. 2012.

and physician assistant training programs already exist across Texas and it may be possible to expand their capacity.[35]

The bottom line, of course, is that it is important to expand the pool of all clinicians who can practice in primary care in Texas, including physicians, nurse practitioners and physician assistants, as well as the registered nurses, pharmacists, dentists and other medical professionals who work with them in the front lines of health care and to encourage these professionals to work together in efficient team-based care.[36]

While the discussion above examines potential policies to increase the supply of providers, it is probably even more important to consider the uneven distribution of primary care providers in Texas. This report shows that across Texas, many regions already face severe shortages and the situation may become more serious after health reform implementation. The federal government creates incentives for clinicians to practice in health professional shortage areas such as in rural or inner city practices by offering National Health Service Corps scholarships or loan repayments to those willing to practice in underserved areas in facilities like FQHCs. Additionally, physicians practicing in health professional shortage areas or rural health clinics earn higher Medicare payments. The state of Mississippi has funded a Rural Physician Scholarship program which provides medical school scholarships to rural Mississippians who agree to serve as primary care physicians in rural areas of the state after they complete their residencies.[37] Massachusetts used a combination of state and private funds to create similar incentive programs to help persuade physicians to practice in shortage areas.[38] A combination of federal, state, local and private funds could be used for similar purposes in Texas.

The FQHC program is another example of a federal program aimed at increasing the supply of providers in underserved geographies – one of the criteria for FQHC designation is service to an underserved region or population. The Affordable Care Act authorized $11 billion in additional core funding to double the national FQHC capacity. Health centers have been proven to be cost-effective; patients who received the majority of their care at health centers had much lower overall medical care expenditures than similar patients who did not use health centers.[39] FQHCs are also efficient from a staffing perspective, using a broader multidisciplinary mix of staff, including physicians, nurse practitioners, physician assistants, nurses, medical assistants and others than other, regular private physician practices.[40] However, after the ACA was enacted, federal budget concerns have limited the scope of funing to support

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[35] For listings of programs,see http://www.bestnursingdegree.com/programs/nurse-practitioner/texas/ or http://www.tapa.org/displaycommon.cfm?an=1&subarticlenbr=24

[36] Code Red Task Force on Access to Health Care in Texas, *op cit.*

[37] Mississippi Rural Physicians Scholarship Program. http://mrpsp.umc.edu/

[38] Ku, L., Jones, E., Shin, P., et al. "The Role of the Safety Net after Health Reform: Lessons from Massachusetts." *Archives of Internal Medicine*, 171(15): 1379-84, Aug. 8, 2011.

[39] Richard P, Ku L, Dor A., et al "Cost Savings Associated with the Use of Community Health Centers." *Journal of Ambulatory Care Management*, 35(1): 50-59. Jan-Mar. 2012. Ku L, Richard P, Dor A, et al "Strengthening Primary Care to Bend the Cost Curve: The Expansion of Community Health Centers Through Health Reform," Brief No. 19. Geiger Gibson/RCHN Community Health Foundation Research Collaborative, June 30, 2010.

[40] Hing E, Hooker R, Ashman J. Primary Health Care in Community Health Centers and Comparison with Office-Based Practice, *J. Community Health*, 36(3): 406-11, 2011.

FQHCs' growth.[41] While increased insurance coverage from Medicaid and the insurance exchange may provide additional revenues to health centers and decrease their uncompensated care costs, core funding through federal, state, local, and/or private grants will is critical to starting and supporting FQHCs and their primary care capacity. The state can serve an important role in coordinating with the federal Bureau of Primary Health Care and other state, local and private organizations, including foundations or other health care organizations, to enhance funding support for community health centers. The state can also encourage Congress to continue to support funding for FQHCs in underserved areas, so that they may better meet the needs of Texans.

Historically, one reason for the low primary care capacity of many rural and poor areas of Texas is the challenge of maintaining a medical practice when many residents are uninsured. It is harder to maintain a successful practice if a large share of potential patients are unable to pay. The insurance expansions of the ACA will greatly boost the number of insured patients in every county; this should gradually make it easier for practitioners to maintain a medical practice in these areas, even areas that are classified as underserved. However, such a gradual change may take many years to achieve; state and local officials should consider if there are ways to expedite this process through incentives, increased use of advanced practice clinicians, support of FQHCs, or other policies or initiatives.

More effort may be needed to encourage primary care providers to serve low-income Medicaid patients, who have more limited access and whose numbers will grow after the implementation of the ACA. The Texas Health and Human Services Commission should closely monitor the adequacy of the supply of primary care providers both in Medicaid managed care plans as well as fee-for-service Medicaid and take steps to ensure an adequate supply in all parts of the state. As noted above, the ACA boosts primary care physician payment levels in 2013 and 2014 and the state should encourage Congress to maintain this increase in future years, while also identifying ways to encourage additional clinicians to serve Medicaid patients.

What will happen if Texas does not address the primary care shortage? All the members of a community ultimately rely on the same limited pool of local primary care clinicians. As a result, if demand outstrips supply, everyone – whether privately insured, publicly insured or uninsured – will have greater difficulty getting primary care. Finding primary care providers will become more difficult and waiting times for appointments will increase. As a result, some people will turn instead to specialists or emergency rooms for care, causing medical spending to increase. Others will delay care, leading to an increased severity of chronic diseases, such as diabetes, asthma, or cardiovascular problems, potentially precipitating increases in hospitalizations and medical spending. More women and men will be unable to get basic screening services, like Pap tests, mammograms, or other cancer screening services on a timely basis and they will be less likely to receive early care that can reduce mortality and morbidity. Even if federal health reform insurance expansions are not implemented or are substantially altered, ongoing trends in Texas indicate that problems related to primary care shortages will continue to create a tightening noose for health care in Texas.

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[41] Kogan R. How Across-the-Board Cuts in the Budget Control Act Will Work. Washington (DC): Center on Budget and Policy Priorities. [2011 Dec 2; cited 2012 Feb 2]. Available from: http://www.cbpp.org/cms/?fa=view&id=3635

The review of primary care capacity that has been requested by House Speaker Joe Strauss is an important place to start, but it will require an ongoing commitment from state, local and federal officials, working together with insurers, the health care community and health professional training facilities to ensure that there is an adequate supply of primary care clinicians for all Texans. While this may be a challenge, it is important to remember that the health care sector has been one of the continuing areas of job growth in the United States and in Texas. Fostering primary care can help health care for millions of Texans while also providing more employment.

Texas Primary Care Capacity: County Tables Appendix

County Name	Population	Projected Reduction in # Uninsured	Adjusted Primary Care Providers	Current Access Index	Projected Access Index	Percentage Point Change
Table A-1. Key Overall Access Measures for All Counties						
State	25,145,562	2,861,561	23,606	86%	80%	-6%
Anderson	58,458	8,230	54	82%	75%	-7%
Andrews	14,786	1,951	12	71%	65%	-6%
Angelina	86,771	11,295	91	93%	85%	-8%
Aransas	23,158	2,550	11	41%	39%	-3%
Archer	9,054	1,052	2	26%	25%	-2%
Armstrong	1,901	210	1	45%	42%	-3%
Atascosa	44,911	6,015	21	60%	55%	-5%
Austin	28,417	3,553	12	38%	35%	-3%
Bailey	7,165	928	8	117%	108%	-10%
Bandera	20,485	2,374	3	13%	12%	-1%
Bastrop	74,171	9,725	39	49%	45%	-4%
Baylor	3,726	397	7	161%	150%	-11%
Bee	31,861	4,631	24	79%	72%	-7%
Bell	310,235	36,446	405	115%	106%	-8%
Bexar	1,714,773	212,458	1,806	97%	90%	-8%
Blanco	10,497	1,238	6	49%	46%	-4%
Borden	641	73	0	3%	3%	0%
Bosque	18,212	2,048	10	49%	45%	-3%
Bowie	92,565	12,545	120	114%	104%	-10%
Brazoria	313,166	30,659	192	54%	50%	-3%
Brazos	194,851	29,053	217	108%	97%	-10%
Brewster	9,232	1,175	8	80%	73%	-6%
Briscoe	1,637	189	1	53%	49%	-4%
Brooks	7,223	987	3	64%	58%	-6%
Brown	38,106	4,561	43	106%	98%	-8%
Burleson	17,187	2,128	5	30%	27%	-2%
Burnet	42,750	5,034	44	90%	84%	-7%
Caldwell	38,066	4,926	30	79%	72%	-7%
Calhoun	21,381	2,524	18	73%	67%	-5%
Callahan	13,544	1,543	3	32%	30%	-2%
Cameron	406,220	57,307	290	77%	70%	-7%
Camp	12,401	1,582	12	85%	78%	-7%
Carson	6,182	707	1	14%	13%	-1%
Cass	30,464	3,798	18	52%	48%	-4%
Castro	8,062	1,058	4	49%	45%	-4%
Chambers	35,096	3,300	11	43%	40%	-3%
Cherokee	50,845	6,537	37	65%	60%	-5%
Childress	7,041	928	12	149%	137%	-13%
Clay	10,752	1,226	5	47%	44%	-3%
Cochran	3,127	404	3	111%	102%	-9%
Coke	3,320	353	1	32%	30%	-2%

Table A-1. Key Overall Access Measures for All Counties						
County Name	Population	Projected Reduction in # Uninsured	Adjusted Primary Care Providers	Current Access Index	Projected Access Index	Percentage Point Change
Coleman	8,895	996	4	40%	37%	-3%
Collin	782,341	69,104	923	101%	95%	-6%
Collingsworth	3,057	369	3	85%	78%	-6%
Colorado	20,874	2,532	18	76%	70%	-6%
Comal	108,472	11,156	95	79%	74%	-5%
Comanche	13,974	1,591	14	103%	95%	-7%
Concho	4,087	578	2	71%	64%	-6%
Cooke	38,437	4,277	29	65%	60%	-5%
Coryell	75,388	8,869	48	57%	53%	-4%
Cottle	1,505	170	1	57%	53%	-4%
Crane	4,375	589	3	60%	55%	-5%
Crockett	3,719	490	2	51%	47%	-4%
Crosby	6,059	752	2	42%	39%	-3%
Culberson	2,398	329	2	74%	67%	-6%
Dallam	6,703	894	2	26%	24%	-2%
Dallas	2,368,139	260,022	2,872	109%	102%	-8%
Dawson	13,833	1,875	7	66%	60%	-6%
Deaf Smith	19,372	2,616	9	63%	58%	-6%
Delta	5,231	624	0	21%	19%	-2%
Denton	662,614	59,336	503	65%	61%	-4%
DeWitt	20,097	2,479	13	58%	54%	-5%
Dickens	2,444	301	1	37%	34%	-3%
Dimmit	9,996	1,383	5	79%	72%	-7%
Donley	3,677	413	2	46%	43%	-3%
Duval	11,782	1,636	1	25%	23%	-2%
Eastland	18,583	2,123	14	81%	75%	-6%
Ector	137,130	16,745	115	73%	67%	-6%
Edwards	2,002	243	1	61%	56%	-5%
El Paso	800,647	104,931	539	60%	55%	-5%
Ellis	149,610	12,811	66	71%	67%	-4%
Erath	37,890	4,804	31	75%	69%	-6%
Falls	17,866	2,397	8	44%	40%	-4%
Fannin	33,915	4,200	16	54%	50%	-4%
Fayette	24,554	2,847	19	68%	63%	-5%
Fisher	3,974	451	5	108%	100%	-8%
Floyd	6,446	800	8	116%	107%	-9%
Foard	1,336	147	1	66%	61%	-5%
Fort Bend	585,375	60,080	428	65%	61%	-4%
Franklin	10,605	1,248	7	57%	53%	-4%
Freestone	19,816	2,528	13	58%	53%	-5%
Frio	17,217	2,510	12	81%	73%	-8%
Gaines	17,526	2,199	7	38%	35%	-3%
Galveston	291,309	27,853	250	80%	75%	-5%
Garza	6,461	917	2	32%	29%	-3%

Table A-1. Key Overall Access Measures for All Counties					
County Name	Population	Projected Reduction in # Uninsured	Adjusted Primary Care Providers	Current Access Index	Projected Access Index	Percentage Point Change
Gillespie	24,837	2,635	38	130%	122%	-9%
Glasscock	1,226	154	0	2%	2%	0%
Goliad	7,210	859	2	26%	24%	-2%
Gonzales	19,807	2,564	14	82%	75%	-7%
Gray	22,535	2,793	20	79%	73%	-6%
Grayson	120,877	13,769	122	87%	81%	-6%
Gregg	121,730	16,304	166	127%	117%	-11%
Grimes	26,604	3,554	13	56%	52%	-5%
Guadalupe	131,533	14,686	56	41%	38%	-3%
Hale	36,273	4,913	23	74%	67%	-6%
Hall	3,353	384	1	26%	24%	-2%
Hamilton	8,517	898	12	120%	112%	-8%
Hansford	5,613	708	4	62%	57%	-5%
Hardeman	4,139	485	5	105%	97%	-8%
Hardin	54,635	6,011	20	33%	31%	-2%
Harris	4,092,459	441,081	4,390	97%	90%	-7%
Harrison	65,631	8,817	41	60%	55%	-5%
Hartley	6,062	806	7	101%	93%	-9%
Haskell	5,899	685	3	44%	41%	-3%
Hays	157,107	16,093	120	70%	65%	-5%
Hemphill	3,807	472	4	91%	84%	-7%
Henderson	78,532	9,376	56	63%	58%	-5%
Hidalgo	774,769	103,194	597	75%	68%	-7%
Hill	35,089	4,201	18	46%	42%	-3%
Hockley	22,935	3,000	14	76%	70%	-6%
Hood	51,182	5,702	40	67%	62%	-5%
Hopkins	35,161	4,356	24	61%	56%	-5%
Houston	23,732	3,084	11	40%	37%	-3%
Howard	35,012	4,700	31	80%	73%	-7%
Hudspeth	3,476	482	0	9%	9%	-1%
Hunt	86,129	11,039	64	75%	69%	-6%
Hutchinson	22,150	2,713	13	52%	48%	-4%
Irion	1,599	188	0	8%	8%	-1%
Jack	9,044	1,122	7	68%	63%	-5%
Jackson	14,075	1,522	4	25%	23%	-2%
Jasper	35,710	4,520	32	80%	74%	-6%
Jeff Davis	2,342	264	2	81%	75%	-6%
Jefferson	252,273	32,709	271	98%	90%	-8%
Jim Hogg	5,300	747	1	51%	46%	-5%
Jim Wells	40,838	5,680	24	70%	64%	-6%
Johnson	150,934	12,541	74	41%	39%	-2%
Jones	20,202	2,763	15	66%	60%	-6%
Karnes	14,824	2,078	5	43%	39%	-4%
Kaufman	103,350	8,758	65	57%	54%	-3%

Table A-1. Key Overall Access Measures for All Counties						
County Name	Population	Projected Reduction in # Uninsured	Adjusted Primary Care Providers	Current Access Index	Projected Access Index	Percentage Point Change
Kendall	33,410	3,978	37	96%	88%	-7%
Kenedy	416	59	0	2%	2%	0%
Kent	809	83	0	0%	0%	0%
Kerr	49,625	5,506	64	111%	103%	-8%
Kimble	4,607	520	4	79%	73%	-6%
King	286	35	1	301%	278%	-23%
Kinney	3,598	433	0	47%	43%	-4%
Kleberg	32,061	4,626	16	53%	48%	-5%
Knox	3,719	430	5	117%	108%	-9%
La Salle	6,886	1,022	5	67%	61%	-6%
Lamar	49,793	6,304	57	102%	94%	-8%
Lamb	13,977	1,775	5	33%	30%	-3%
Lampasas	19,677	2,397	13	66%	61%	-5%
Lavaca	19,263	2,223	16	75%	70%	-5%
Lee	16,612	2,069	6	32%	29%	-3%
Leon	16,801	1,946	5	33%	31%	-2%
Liberty	75,643	7,083	43	52%	49%	-3%
Limestone	23,384	3,023	21	81%	75%	-7%
Lipscomb	3,302	407	0	0%	0%	0%
Live Oak	11,531	1,407	1	14%	13%	-1%
Llano	19,301	1,913	14	61%	58%	-4%
Loving	82	11	0	0%	0%	0%
Lubbock	278,831	39,640	319	111%	101%	-10%
Lynn	5,915	741	4	67%	62%	-5%
Madison	13,664	1,855	9	62%	57%	-5%
Marion	10,546	1,326	-1	83%	76%	-7%
Martin	4,799	616	4	74%	68%	-6%
Mason	4,012	437	0	27%	25%	-2%
Matagorda	36,702	4,700	31	77%	70%	-6%
Maverick	54,258	7,924	15	60%	55%	-6%
McCulloch	8,283	964	5	76%	70%	-6%
McLennan	234,906	31,502	212	99%	91%	-8%
McMullen	707	79	0	54%	50%	-4%
Medina	46,006	6,069	16	38%	35%	-3%
Menard	2,242	244	1	107%	99%	-7%
Midland	136,872	16,127	112	81%	75%	-6%
Milam	24,757	2,999	18	65%	60%	-5%
Mills	4,936	527	4	72%	67%	-5%
Mitchell	9,403	1,317	5	47%	43%	-4%
Montague	19,719	2,214	9	41%	38%	-3%
Montgomery	455,746	42,557	443	86%	81%	-5%
Moore	21,904	3,027	12	53%	48%	-5%
Morris	12,934	1,636	6	41%	38%	-3%
Motley	1,210	124	1	72%	67%	-5%

Table A-1. Key Overall Access Measures for All Counties

County Name	Population	Projected Reduction in # Uninsured	Adjusted Primary Care Providers	Current Access Index	Projected Access Index	Percentage Point Change
Nacogdoches	64,524	8,845	74	112%	102%	-10%
Navarro	47,735	6,142	25	46%	42%	-4%
Newton	14,445	1,879	5	35%	32%	-3%
Nolan	15,216	1,875	12	69%	63%	-5%
Nueces	340,223	45,042	374	97%	89%	-8%
Ochiltree	10,223	1,352	6	52%	47%	-4%
Oldham	2,052	237	0	0%	0%	0%
Orange	81,837	9,143	36	40%	37%	-3%
Palo Pinto	28,111	3,358	19	58%	54%	-4%
Panola	23,796	3,060	10	41%	37%	-3%
Parker	116,927	9,558	62	45%	42%	-2%
Parmer	10,269	1,366	5	54%	49%	-5%
Pecos	15,507	2,215	11	68%	62%	-6%
Polk	45,413	5,626	27	53%	49%	-4%
Potter	121,073	15,955	195	150%	137%	-13%
Presidio	7,818	1,029	4	70%	64%	-6%
Rains	10,914	1,266	2	19%	17%	-1%
Randall	120,725	14,725	47	35%	33%	-3%
Reagan	3,367	460	2	57%	52%	-5%
Real	3,309	350	0	46%	43%	-3%
Red River	12,860	1,574	4	27%	25%	-2%
Reeves	13,783	2,029	10	65%	59%	-6%
Refugio	7,383	911	3	36%	33%	-3%
Roberts	929	108	0	0%	0%	0%
Robertson	16,622	2,134	4	32%	29%	-3%
Rockwall	78,337	6,588	78	84%	80%	-4%
Runnels	10,501	1,234	6	53%	49%	-4%
Rusk	53,330	7,114	26	55%	50%	-5%
Sabine	10,834	1,183	4	43%	40%	-3%
San Augustine	8,865	1,077	4	46%	42%	-3%
San Jacinto	26,384	3,257	4	18%	17%	-1%
San Patricio	64,804	8,177	28	42%	38%	-3%
San Saba	6,131	744	2	29%	27%	-2%
Schleicher	3,461	435	3	81%	75%	-6%
Scurry	16,921	2,189	10	52%	48%	-4%
Shackelford	3,378	385	2	79%	74%	-6%
Shelby	25,448	3,244	11	49%	45%	-4%
Sherman	3,034	381	0	0%	0%	0%
Smith	209,714	23,866	295	126%	117%	-9%
Somervell	8,490	1,023	14	142%	131%	-11%
Starr	60,968	8,887	25	42%	38%	-4%
Stephens	9,630	1,134	5	75%	69%	-6%
Sterling	1,143	140	1	81%	75%	-6%
Stonewall	1,490	165	3	171%	160%	-12%

Table A-1. Key Overall Access Measures for All Counties					
County Name	Population	Projected Reduction in # Uninsured	Adjusted Primary Care Providers	Current Access Index	Projected Access Index	Percentage Point Change
Sutton	4,128	540	4	88%	80%	-7%
Swisher	7,854	991	5	56%	52%	-5%
Tarrant	1,809,034	189,809	1,820	88%	82%	-6%
Taylor	131,506	17,052	160	106%	97%	-9%
Terrell	984	116	0	67%	62%	-5%
Terry	12,651	1,664	6	50%	46%	-4%
Throckmorton	1,641	173	2	107%	100%	-7%
Titus	32,334	4,179	28	77%	71%	-6%
Tom Green	110,224	14,466	121	105%	97%	-9%
Travis	1,024,266	109,094	1,251	114%	106%	-8%
Trinity	14,585	1,699	6	35%	33%	-3%
Tyler	21,766	2,686	13	53%	49%	-4%
Upshur	39,309	4,892	17	42%	39%	-3%
Upton	3,355	429	2	53%	49%	-4%
Uvalde	26,405	3,514	17	90%	83%	-8%
Val Verde	48,879	6,866	24	68%	62%	-6%
Van Zandt	52,579	6,235	13	23%	21%	-2%
Victoria	86,793	10,339	116	116%	107%	-9%
Walker	67,861	9,974	61	81%	73%	-8%
Waller	43,205	4,322	3	8%	8%	-1%
Ward	10,658	1,367	10	82%	75%	-7%
Washington	33,718	4,259	28	75%	69%	-6%
Webb	250,304	32,758	120	55%	51%	-5%
Wharton	41,280	5,267	34	75%	69%	-6%
Wheeler	5,410	638	6	96%	88%	-7%
Wichita	131,500	16,610	139	104%	96%	-8%
Wilbarger	13,535	1,702	11	74%	69%	-6%
Willacy	22,134	3,266	10	62%	56%	-6%
Williamson	422,679	42,076	410	91%	85%	-6%
Wilson	42,918	5,449	17	44%	41%	-4%
Winkler	7,110	944	1	12%	11%	-1%
Wise	59,127	7,355	48	70%	65%	-6%
Wood	41,964	4,698	27	56%	52%	-4%
Yoakum	7,879	1,052	7	83%	76%	-7%
Young	18,550	2,146	17	81%	75%	-6%
Zapata	14,018	2,038	2	26%	24%	-2%
Zavala	11,677	1,681	3	84%	77%	-8%

County Name	Medicaid Expansion Target Population	Projected Reduction in # Uninsured (among Target Population)	Adjusted Primary Care Providers	Current Medicaid Access Index	Projected Medicaid Access Index	Percentage Point Change
State	6,181,890	1,446,473	23,606	85%	73%	-12%
Anderson	16,130	4,489	54	63%	53%	-10%
Andrews	4,669	1,128	12	47%	40%	-7%
Angelina	25,242	6,221	91	67%	58%	-10%
Aransas	5,162	1,353	11	43%	36%	-7%
Archer	1,939	492	2	50%	43%	-8%
Armstrong	383	98	1	48%	40%	-7%
Atascosa	14,791	3,577	21	80%	68%	-11%
Austin	7,764	1,915	12	30%	26%	-4%
Bailey	2,342	535	8	117%	101%	-16%
Bandera	4,312	1,141	3	14%	11%	-2%
Bastrop	21,906	5,336	39	40%	34%	-6%
Baylor	749	192	7	178%	151%	-27%
Bee	10,391	2,781	24	78%	66%	-12%
Bell	74,492	16,869	405	107%	93%	-14%
Bexar	444,954	106,098	1,806	93%	80%	-13%
Blanco	2,342	606	6	47%	40%	-7%
Borden	136	35	0	13%	11%	-2%
Bosque	4,017	1,009	10	53%	45%	-8%
Bowie	27,430	7,073	120	80%	68%	-12%
Brazoria	56,704	13,237	192	67%	57%	-9%
Brazos	67,931	19,439	217	82%	68%	-14%
Brewster	2,423	645	8	75%	63%	-12%
Briscoe	381	96	1	48%	41%	-7%
Brooks	2,615	629	3	92%	79%	-13%
Brown	9,192	2,313	43	122%	104%	-18%
Burleson	4,513	1,136	5	34%	29%	-5%
Burnet	10,012	2,526	44	87%	74%	-13%
Caldwell	11,777	2,797	30	72%	62%	-10%
Calhoun	5,106	1,184	18	63%	55%	-9%
Callahan	2,857	730	3	81%	69%	-12%
Cameron	170,142	38,219	290	59%	51%	-8%
Camp	3,681	892	12	61%	52%	-9%
Carson	1,347	338	1	14%	12%	-2%
Cass	7,977	2,053	18	44%	37%	-7%
Castro	2,650	609	4	41%	36%	-6%
Chambers	5,756	1,353	11	132%	114%	-18%
Cherokee	14,638	3,608	37	49%	42%	-7%
Childress	1,851	500	12	120%	100%	-19%
Clay	2,194	570	5	75%	64%	-12%
Cochran	977	229	3	127%	110%	-18%
Coke	687	172	1	56%	48%	-8%

	Medicaid Expansion Target Population	Projected Reduction in # Uninsured (among Target Population)	Adjusted Primary Care Providers	Current Medicaid Access Index	Projected Medicaid Access Index	Percentage Point Change
Table A-2. Key Medicaid Access Measures for All Counties						
County Name						
Coleman	1,933	491	4	44%	37%	-7%
Collin	107,156	25,070	923	159%	137%	-22%
Collingsworth	834	199	3	65%	56%	-9%
Colorado	5,686	1,398	18	58%	50%	-8%
Comal	19,744	4,869	95	110%	94%	-16%
Comanche	3,332	813	14	142%	122%	-21%
Concho	1,019	304	2	150%	124%	-27%
Cooke	8,631	2,013	29	60%	52%	-8%
Coryell	17,299	3,985	48	59%	51%	-8%
Cottle	359	90	1	51%	43%	-8%
Crane	1,462	351	3	37%	32%	-5%
Crockett	1,155	276	2	41%	35%	-6%
Crosby	1,840	428	2	58%	50%	-8%
Culberson	839	204	2	43%	37%	-6%
Dallam	2,012	482	2	18%	15%	-3%
Dallas	583,850	128,448	2,872	94%	82%	-12%
Dawson	4,229	1,065	7	94%	80%	-14%
Deaf Smith	6,727	1,534	9	82%	71%	-11%
Delta	1,230	317	0	94%	79%	-14%
Denton	91,494	21,421	503	99%	85%	-14%
DeWitt	5,352	1,404	13	53%	44%	-8%
Dickens	592	157	1	36%	30%	-6%
Dimmit	3,719	880	5	113%	97%	-16%
Donley	774	200	2	47%	40%	-7%
Duval	4,168	1,031	1	47%	40%	-7%
Eastland	4,090	1,039	14	139%	118%	-21%
Ector	34,241	7,929	115	61%	52%	-8%
Edwards	543	140	1	91%	77%	-14%
El Paso	270,737	61,185	539	36%	32%	-5%
Ellis	21,407	4,756	66	284%	247%	-37%
Erath	9,171	2,366	31	78%	66%	-12%
Falls	5,188	1,358	8	41%	35%	-6%
Fannin	8,115	2,135	16	91%	76%	-14%
Fayette	5,918	1,486	19	61%	52%	-9%
Fisher	923	232	5	98%	84%	-15%
Floyd	1,973	456	8	94%	81%	-13%
Foard	280	72	1	74%	62%	-11%
Fort Bend	115,581	26,975	428	77%	67%	-11%
Franklin	2,568	638	7	50%	42%	-7%
Freestone	5,238	1,355	13	48%	41%	-7%
Frio	5,892	1,491	12	83%	71%	-12%
Gaines	5,218	1,221	7	35%	30%	-5%

County Name	Medicaid Expansion Target Population	Projected Reduction in # Uninsured (among Target Population)	Adjusted Primary Care Providers	Current Medicaid Access Index	Projected Medicaid Access Index	Percentage Point Change
Galveston	48,475	11,653	250	134%	115%	-19%
Garza	1,839	499	2	33%	28%	-5%
Gillespie	5,160	1,306	38	134%	114%	-20%
Glasscock	333	80	0	7%	6%	-1%
Goliad	1,836	470	2	25%	22%	-4%
Gonzales	6,178	1,519	14	104%	89%	-15%
Gray	5,784	1,461	20	70%	60%	-10%
Grayson	26,436	6,369	122	84%	72%	-12%
Gregg	36,164	9,094	166	109%	92%	-16%
Grimes	7,497	1,944	13	78%	66%	-12%
Guadalupe	29,014	6,875	56	55%	47%	-8%
Hale	11,852	2,829	23	85%	73%	-12%
Hall	886	211	1	20%	17%	-3%
Hamilton	1,687	428	12	132%	112%	-20%
Hansford	1,671	387	4	43%	37%	-6%
Hardeman	1,023	252	5	92%	79%	-13%
Hardin	10,759	2,716	20	45%	38%	-7%
Harris	987,102	217,496	4,390	88%	76%	-11%
Harrison	19,108	4,855	41	56%	48%	-8%
Hartley	1,559	422	7	83%	70%	-13%
Haskell	1,360	352	3	40%	34%	-6%
Hays	29,673	7,168	120	92%	79%	-13%
Hemphill	1,029	244	4	70%	60%	-10%
Henderson	18,707	4,778	56	61%	52%	-9%
Hidalgo	310,185	66,804	597	46%	40%	-6%
Hill	8,889	2,200	18	41%	35%	-6%
Hockley	6,807	1,645	14	110%	94%	-16%
Hood	10,465	2,709	40	70%	59%	-11%
Hopkins	9,180	2,276	24	53%	45%	-8%
Houston	6,402	1,713	11	32%	27%	-5%
Howard	9,805	2,546	31	64%	54%	-10%
Hudspeth	1,280	302	0	22%	19%	-3%
Hunt	22,855	5,776	64	89%	75%	-13%
Hutchinson	5,577	1,381	13	46%	39%	-7%
Irion	380	95	0	31%	26%	-5%
Jack	2,084	554	7	67%	57%	-11%
Jackson	2,764	651	4	28%	24%	-4%
Jasper	9,389	2,400	32	70%	60%	-11%
Jeff Davis	540	142	2	98%	83%	-15%
Jefferson	70,314	18,043	271	83%	70%	-13%
Jim Hogg	1,982	477	1	95%	82%	-14%
Jim Wells	14,579	3,522	24	77%	66%	-11%

Table A-2. Key Medicaid Access Measures for All Counties

	Medicaid Expansion Target Population	Projected Reduction in # Uninsured (among Target Population)	Adjusted Primary Care Providers	Current Medicaid Access Index	Projected Medicaid Access Index	Percentage Point Change
Table A-2. Key Medicaid Access Measures for All Counties						
County Name						
Johnson	19,137	4,392	74	69%	60%	-9%
Jones	5,185	1,472	15	55%	45%	-9%
Karnes	4,452	1,231	5	65%	54%	-11%
Kaufman	13,899	3,159	65	110%	95%	-15%
Kendall	7,854	1,973	37	86%	73%	-13%
Kenedy	140	35	0	5%	5%	-1%
Kent	169	41	0	1%	1%	0%
Kerr	11,028	2,809	64	106%	90%	-16%
Kimble	1,011	258	4	90%	76%	-14%
King	66	18	1	277%	232%	-45%
Kinney	980	254	0	171%	145%	-26%
Kleberg	11,240	2,850	16	48%	41%	-7%
Knox	954	231	5	98%	84%	-14%
La Salle	2,364	627	5	45%	38%	-7%
Lamar	13,034	3,334	57	90%	77%	-14%
Lamb	4,325	1,011	5	25%	22%	-3%
Lampasas	4,806	1,215	13	85%	72%	-13%
Lavaca	4,620	1,153	16	77%	66%	-11%
Lee	4,661	1,126	6	24%	21%	-3%
Leon	3,949	1,004	5	56%	47%	-8%
Liberty	11,834	2,877	43	88%	75%	-13%
Limestone	6,582	1,668	21	67%	57%	-10%
Lipscomb	880	213	0	0%	0%	0%
Live Oak	2,906	779	1	29%	24%	-5%
Llano	3,293	890	14	80%	67%	-13%
Loving	19	6	0	0%	0%	0%
Lubbock	84,641	22,543	319	105%	88%	-16%
Lynn	1,713	408	4	66%	57%	-9%
Madison	3,854	1,024	9	56%	47%	-9%
Marion	2,600	708	-1	363%	304%	-59%
Martin	1,428	336	4	54%	46%	-7%
Mason	852	216	0	134%	114%	-20%
Matagorda	11,160	2,679	31	55%	47%	-8%
Maverick	22,435	5,179	15	92%	80%	-13%
McCulloch	2,028	499	5	139%	118%	-20%
McLennan	71,098	17,739	212	116%	99%	-17%
McMullen	161	43	0	215%	182%	-33%
Medina	13,525	3,342	16	45%	38%	-7%
Menard	501	127	1	345%	294%	-51%
Midland	31,517	7,486	112	109%	93%	-15%
Milam	6,812	1,632	18	53%	46%	-8%
Mills	1,065	260	4	79%	67%	-11%

County Name	Medicaid Expansion Target Population	Projected Reduction in # Uninsured (among Target Population)	Adjusted Primary Care Providers	Current Medicaid Access Index	Projected Medicaid Access Index	Percentage Point Change
Mitchell	2,602	723	5	36%	30%	-6%
Montague	4,139	1,051	9	47%	40%	-7%
Montgomery	73,787	17,411	443	129%	111%	-18%
Moore	7,515	1,761	12	39%	34%	-5%
Morris	3,506	901	6	34%	29%	-5%
Motley	246	62	1	82%	69%	-12%
Nacogdoches	19,038	4,874	74	107%	90%	-16%
Navarro	14,101	3,421	25	32%	28%	-5%
Newton	3,795	999	5	40%	34%	-6%
Nolan	4,099	1,003	12	53%	45%	-8%
Nueces	97,968	24,436	374	72%	62%	-11%
Ochiltree	3,257	750	6	33%	28%	-4%
Oldham	533	121	0	0%	0%	0%
Orange	16,799	4,248	36	51%	44%	-8%
Palo Pinto	6,720	1,673	19	52%	44%	-8%
Panola	6,333	1,624	10	42%	36%	-6%
Parker	13,023	3,144	62	86%	74%	-12%
Parmer	3,395	783	5	59%	51%	-8%
Pecos	5,250	1,342	11	52%	44%	-8%
Polk	11,285	2,972	27	49%	42%	-8%
Potter	34,911	8,436	195	128%	110%	-18%
Presidio	2,770	652	4	92%	79%	-13%
Rains	2,414	624	2	28%	23%	-4%
Randall	28,234	7,092	47	37%	31%	-5%
Reagan	1,126	264	2	43%	37%	-6%
Real	703	182	0	223%	189%	-34%
Red River	3,193	837	4	24%	20%	-4%
Reeves	4,766	1,251	10	38%	32%	-6%
Refugio	2,111	532	3	29%	25%	-4%
Roberts	202	51	0	1%	1%	0%
Robertson	4,815	1,199	4	52%	44%	-8%
Rockwall	10,333	2,341	78	137%	119%	-18%
Runnels	2,653	644	6	52%	44%	-7%
Rusk	14,753	3,856	26	75%	64%	-12%
Sabine	2,227	588	4	93%	78%	-14%
San Augustine	2,230	586	4	57%	49%	-9%
San Jacinto	6,669	1,699	4	31%	26%	-5%
San Patricio	18,205	4,394	28	42%	36%	-6%
San Saba	1,475	386	2	28%	24%	-4%
Schleicher	1,023	238	3	67%	58%	-9%
Scurry	4,713	1,177	10	40%	34%	-6%
Shackelford	736	184	2	192%	164%	-28%

Table A-2. Key Medicaid Access Measures for All Counties

County Name	Medicaid Expansion Target Population	Projected Reduction in # Uninsured (among Target Population)	Adjusted Primary Care Providers	Current Medicaid Access Index	Projected Medicaid Access Index	Percentage Point Change
Shelby	7,235	1,786	11	69%	59%	-10%
Sherman	889	206	0	0%	0%	0%
Smith	49,963	11,694	295	121%	104%	-17%
Somervell	2,086	510	14	121%	104%	-17%
Starr	25,104	5,786	25	30%	26%	-4%
Stephens	2,281	572	5	168%	143%	-25%
Sterling	290	73	1	79%	67%	-12%
Stonewall	320	80	3	170%	145%	-25%
Sutton	1,263	302	4	62%	53%	-9%
Swisher	2,256	555	5	41%	35%	-6%
Tarrant	391,291	87,588	1,820	85%	74%	-11%
Taylor	36,448	9,058	160	80%	69%	-12%
Terrell	256	66	0	229%	195%	-35%
Terry	3,762	928	6	57%	48%	-8%
Throckmorton	326	82	2	130%	111%	-19%
Titus	10,468	2,402	28	48%	41%	-6%
Tom Green	29,820	7,447	121	110%	94%	-16%
Travis	200,125	49,075	1,251	151%	129%	-22%
Trinity	3,327	869	6	34%	28%	-5%
Tyler	5,001	1,368	13	52%	44%	-8%
Upshur	9,771	2,494	17	51%	43%	-8%
Upton	982	236	2	40%	34%	-6%
Uvalde	9,059	2,150	17	128%	110%	-18%
Val Verde	18,044	4,303	24	86%	74%	-12%
Van Zandt	12,279	3,105	13	26%	22%	-4%
Victoria	20,313	4,755	116	103%	89%	-14%
Walker	19,087	5,434	61	62%	52%	-11%
Waller	8,076	1,904	3	20%	17%	-3%
Ward	3,253	797	10	56%	48%	-8%
Washington	9,057	2,324	28	64%	55%	-10%
Webb	93,232	19,752	120	52%	46%	-7%
Wharton	12,550	3,007	34	54%	46%	-8%
Wheeler	1,357	328	6	80%	68%	-11%
Wichita	34,315	8,837	139	119%	101%	-18%
Wilbarger	3,667	914	11	67%	57%	-10%
Willacy	8,287	2,070	10	74%	63%	-11%
Williamson	77,632	18,625	410	137%	117%	-19%
Wilson	11,878	2,987	17	61%	52%	-9%
Winkler	2,306	556	1	8%	7%	-1%
Wise	14,476	3,625	48	61%	52%	-9%
Wood	9,019	2,350	27	59%	50%	-9%
Yoakum	2,597	601	7	58%	50%	-8%

Table A-2. Key Medicaid Access Measures for All Counties

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County Name	Medicaid Expansion Target Population	Projected Reduction in # Uninsured (among Target Population)	Adjusted Primary Care Providers	Current Medicaid Access Index	Projected Medicaid Access Index	Percentage Point Change
Young	4,217	1,055	17	84%	71%	-12%
Zapata	5,804	1,328	2	37%	32%	-5%
Zavala	4,616	1,085	3	159%	137%	-22%

Appendix:
Methodology

In this appendix, we provide a detailed description of how we estimated county-specific primary care access measures. These measures are based on the ratio of provider-capacity to expected increases in the insured population and indicate how likely it is that existing provider supplies can meet increased demand for primary care resulting from implementation of the Patient Protection and Affordable Care Act (ACA).

A key underlying concept is that uninsured people use less primary care than those with insurance because of cost barriers and expansions of insurance will stimulate the demand for primary care. If the number of primary care clinicians remains constant and the number of insured people rises, then effective primary care capacity will decline because of the demand for care climbed.

Data

Primary Care Clinician Counts. To reflect the counties' supply of primary care providers, we estimated the number of providers including practicing direct care primary care physicians, physician assistants, nurse practitioners, and nurse midwives. We obtained 2011 estimates of the numbers of primary care physicians,[42] physician assistants,[43] nurse midwives,[44] and nurse practitioners[45] from the Texas Department of State Health Services.[46] Primary care physicians include general practitioners, family practitioners, internists, pediatricians, obstetricians/gynecologists and geriatricians, who are licensed in Texas and not employed by the federal government or the military. These data are compiled by the Health Professions Resource Center (HPRC) which receives data files from each of the health professions licensing boards.

While the data are reported as county of practice, some data records only include the mailing address and in other data records, the street address and/or zip code may be missing. When a county was not specifically listed, HPRC assigned one based on the address provided.[47] Despite these limitations, we believe that these are the most current and accurate available at the

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[42] Texas Department of State Health Services. Primary Care Physicians (PC) by County of Practice. [2011 Sep; cited 2012 Feb 3]. Available from: http://www.dshs.state.tx.us/chs/hprc/tables/Primary-Care-Physicians-(PC)-by-County-of-Practice---September,-2011/.

[43] Texas Department of State Health Services. Physicians Assistants (PA) by County of Practice. [2011 Sep; cited 2012 Feb 3]. Available from: http://www.dshs.state.tx.us/chs/hprc/tables/Physician-Assistants-(PA)-by-County-of-Practice,-September,-2011/.

[44] Texas Department of State Health Services. Nurse Midwives (NM) by County of Practice. [2011 Sep; cited 2012 Feb 3]. Available from: http://www.dshs.state.tx.us/chs/hprc/tables/Nurse-Midwives-(NM)-by-County-of-Practice---September,-2011/.

[45] Texas Department of State Health Services. Nurse Practitioners (NP) by County of Practice. [2011 Sep; cited 2012 Feb 3]. Available from: http://www.dshs.state.tx.us/chs/hprc/tables/Nurse-Practitioners-(NP)-by-County-of-Practice---September,-2011/.

[46] The data for nurse practitioners and physician assistants do not indicate if they are in primary care or a specialty area. Thus, these data may overstate the availability of these clinicians for primary care.

[47] Texas Department of State Health Services. Methodology for Determining Health Professional Numbers by County. [2010 Sep 3; cited 2012 Feb 3]. Available from: http://www.dshs.state.tx.us/chs/hprc/coding.shtm.

county level at this time.[48] To generate a consolidated number of providers we divided the number of physicians assistants, nurse practitioners, and nurse midwives by two and added this to the number of primary care physicians to compute an adjusted number of primary care clinicians in each county. This is based on an approach proposed by the Health Resources and Services Administration for designation of Health Professional Shortage Areas.[49]

Federally Qualified Health Center (FQHC) Capacity. Another major source of primary care, particularly in underserved areas, are non-profit FQHCs. To estimate their contribution to the counties' primary care capacity, we used 2010 data reported by health centers in the Uniform Data System (UDS), provided by the Texas Association of Community Health Centers. The centers report the number of patients served by zipcode. To assist in geocoding, the Robert Graham Center converted these to Zip Code Tabulation Area (ZCTA) designations. Using a 2010 crosswalk between ZCTAs to counties from the U.S. Census Bureau,[50] we computed the number of FQHC served in each county. In cases where ZCTAs cross county borders, we apportioned FQHC patients to counties in proportion to the percent of the county population comprised of the ZCTA population.[51]

Adjusting Provider Estimates for Double Counting. Recognizing that the FQHC patients are seen by clinicians that are included in the primary care provider counts, we sought to eliminate duplicate providers. The UDS data for 2010 indicate there were 948,685 FQHC patients seen by 397 physicians and 331 nurse practitioners, nurse midwives, and physician assistants.[52] These numbers generate an adjusted provider total of 562 (physicians assistants, nurse midwives, and nurse practitioners are each weighted as one half a physician), which translates into 1,687 FQHC patients per FQHC provider. Using these estimates, we subtracted from each county's primary care provider estimate the number of FQHC patients divided by 1,687 to avoid double counting these clinicians.

Measures of Current Insurance and Increases in Insurance Coverage. All of these measures come from the Hobby Center estimates of the impact of health reform, prepared for Methodist Healthcare Ministries, based on the 2010 population of Texas.[53] We used the estimates produced under the moderate policy scenario in assessing insurance expansion

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[48] The Texas Board of Nursing also has data available on nurse practitioners and nurse midwives and their counts are different from those of the Department of State Health Services. We opted to use the statistics from the Department of State Health Services since large numbers of nurse midwives and nurse practitioners did not have county data in the Department of Nursing files. Also the Department of State Health Services data are more comparable with data on physicians and physician assistants, also obtained from the Department of State Health Service. The Texas Board of Nursing data are available at: http://www.bon.texas.gov/about/statistical.html.

[49] Department of Health and Human Services, "Designation of Medically Underserved Populations and Health Professional Shortage Areas," *Federal Register* 73(41):11232-81, Feb. 29, 2008.

[50] U.S. Census Bureau. 2010 ZIP Code Tabulation Area (ZCTA) Relationship Files. [2011 Dec 22; cited 2012 Feb 3]. Available from: http://www.census.gov/geo/www/2010census/zcta_rel/zcta_rel_download.html.

[51] In a few cases, our conversion approach produced counts that seemed impossible (e.g., more FQHC patients than county residents), so we recoded the data based on the city reported and assigned the cities to counties.

[52] Bureau of Primary Health Care. 2010 Texas Report (from the Uniform Data System). [2011 May 10; cited 2012 Feb 15]. Available from: http://bphc.hrsa.gov/uds/doc/2010/Texas.pdf.

[53] Cline ME, Murdock SH. Estimates of the impact of the Patient Protection and Affordability Act on Counties in Texas. Hobby Center for the Study of Texas, Rice University; Prepared for Methodist Healthcare Ministries (MHM). 2011 Oct.

estimates. Readers may review the report by Cline and Murdock for more detailed information about their estimates.

Measures of Primary Care Access

We measured primary care access by comparing the primary care capacity in each county with the demand for primary care, both before and after the ACA insurance expansions. We examined these for populations: the total population and those targeted by the Medicaid expansion (low-income, non-elderly adults and children).

National Norms for Average Patients Served by Primary Care Providers. In order to estimate the number of primary care providers needed to serve a county of a given population size, we relied on national norms about the extent to which the existing number of primary care physicians meet the current primary care demands of the U.S. population. There are about 379,000 primary care physicians[54] who provide primary care services to the overall population of the U.S. which includes about 267 million insured people and 52 million uninsured. Based on our analyses of ambulatory medical care use in analyses of the 2009 Medical Expenditure Panel Survey (MEPS), we estimated that uninsured people use about 40% as much care as those with insurance, so we estimate the total demand for primary care as being equivalent to 267 million insured people plus 40% times 52 million uninsured, or 287.8 million people. That is, national norms indicate that an average primary care clinician would serve an equivalent of the demand from 759 insured people. (An average physician's caseload may be higher than this, but patients may receive care from more than one doctor and patients may shift into and out of a physician's practice; the count of 759 assumes net care for 759 unduplicated patients.)

This normative approach does not mean that the current ratio of primary care providers to the population is providing the "optimal" level of primary care, which of course would vary depending on each individuals' health needs. The optimal level may be higher or lower. The "normal" level is simply the equivalent of the average level of primary care available for a typical insured American today.

Total Availability of Primary Care. For every county, the total availability of primary care equals the sum of the number of adjusted primary care providers times 759 plus the number of FQHC patients in each county. This is the number of patients in a county who could be served if primary care providers cared for the national average number of patients.

Total Patient Demand for Care. The total demand for care is based on the size of the county population and relative levels of insurance coverage. As noted above, analyses indicated that uninsured people receive about 40% as much ambulatory care as those are insured. Thus, our estimate of the total demand for care in a county was equal to the number of insured people in the county plus 40% of the number of uninsured people. We generated two estimates of patient demand in each county: the Current Patient Demand based on the current number of insured and uninsured people in each county and the Projected Patient Demand, based on the projected number of insured and uninsured people after ACA implementation, based on the Hobby Center estimates.

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[54] The Kaiser Family Foundation State Health Facts. Primary Care Physicians by Field, November 2011. [cited 2012 Feb 14]. Available from: http://statehealthfacts.kff.org/comparemaptable.jsp?ind=433&cat=8.

Total Population Access Measures. We computed two measures from these statistics. The first is the **Current Access Index,** which is the ratio of the Total Availability of Primary Care to the Current Patient Demand in each county, expressed as a percentage. A Current Access Index of 100% or more indicates that the county has average or greater than average primary care access, compared to national norms, while a Current Access Index below 100% indicates the county has less than adequate primary care access.

The second measure is the **Projected Access Index**, which is the ratio of the Total Availability of Primary Care to the Projected Patient Demand, after the implementation of the ACA. A Projected Access Index of 100% or more would indicate that the county still has average or greater than average primary care access after the ACA, while an index value below 100% indicate it would have a lower level of access.

These measures are all calculated at the county level, which may create two types of difficulties. First, people may cross county borders to obtain care (and some providers might practice outside their main county of practice). It is natural to expect that some patients in low access counties travel to get care in nearby counties with better access. Second, some counties are quite small; about half of Texas counties have less than 20,000 people. Thus, small differences or errors in the number of providers could create large apparent differences in access. If, for example, a county with a demand level of 1,400 people has two primary care providers we would give it an access index of 108% (2 clinicians times 759, divided by 1,500). But if one of the providers actually only practices half time, its actual access level might be 81% (1.5 times 759, divided by 1,500).

Medicaid Expansion Population

The ACA expands Medicaid eligibility for non-elderly adults with incomes up to 138 percent of poverty, but the Hobby Center reasonably assumes that there is also some growth in the number of children covered by Medicaid or CHIP with incomes up to 200 percent of poverty. Therefore, we focus on the demand for (and supply of) care for this low-income population in deriving our estimates. In Texas, this includes 3.7 million children and 2.5 million adults (both insured and uninsured).[55] The major effect of the ACA will be shift many of these individuals who are now uninsured into those who are insured by Medicaid or CHIP.

Medicaid Provider Supply. To estimate the extent to which primary care clinicians serve the target population, we once again used data to estimate norms for the number of patients primary care providers will serve. Using 2010 income data from the Current Population Survey, we estimate there are about 49 million insured people falling into the target population of low-income children and adults and 21.6 million uninsured and they are served by about 379,000 primary care physicians in the U.S.[56] Analyses from the 2009 Medical Expenditure Panel Survey (MEPS) indicate that low-income insured patients receive about 7% less ambulatory care than the overall population and that uninsured low-income people use about 45% as much care

[55] Cline ME, Murdock SH. Estimates of the impact of the Patient Protection and Affordability Act on Counties in Texas. Hobby Center for the Study of Texas, Rice University; Prepared for Methodist Healthcare Ministries (MHM). 2011 Oct.

[56] Kaiser Family Foundation State Health Facts. Primary Care Physicians by Field, November 2011. [cited 2012 Feb 14]. Available from: http://statehealthfacts.kff.org/comparemaptable.jsp?ind=433&cat=8.

as insured low-income people, so we reduce overall access levels by 7% and count an uninsured person as having the demand equivalent of 45% of an insured person. Thus, we compute 144 target patients are seen per primary care provider. As described above for the total population, we reduced the number of primary care providers in each county to account for the fact that the FQHC patients are seen by providers in our provider estimates. Based on the Texas UDS data, we estimate that an average FQHC primary care clinician sees 1,687 patients and use this level to avoid double counting primary care clinicians in each county.

Medicaid Availability of Primary Care. In each county, this is equal to the number of adjusted primary care clinicians times 144 plus 80% of the number of the county's FQHC patients. We use 80% of the FQHC patients, since on average in Texas, 80% of the FQHC patients are Medicaid or uninsured.

Medicaid Patient Demand. We computed two versions of the Medicaid patient demand. The Current Medicaid Patient Demand is the number of Medicaid or CHIP enrollees in each county plus 45% of the number of low-income uninsured. The Projected Medicaid Patient Demand is the number of Medicaid/CHIP enrollees in each county after the ACA implementation, based on the moderate Hobby Center scenarios, plus 45% of the low-income uninsured. Again, we assume that there is a lower demand for care from uninsured people, based on analyses of the Medical Expenditure Panel Survey.

Medicaid Access Measures. The **Current Medicaid Access Index** is the Medicaid Availability of Primary Care for each county divided by the Current Medicaid Patient Demand, expressed as a percentage. A value of 100% or more would indicate that the county currently has a level equal to the national average of primary care providers to serve the number of low-income Medicaid patients and uninsured patients that are now in the county.

The **Projected Medicaid Access Index** is the Medicaid Availability of Primary Care for each county divided by the Projected Medicaid Patient Demand, based on the Hobby Center's moderate scenario. A value of 100% or more indicates the county would continue to have a level of physician access equivalent to the national average, even after the ACA Medicaid expansions are implemented.

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